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Supplemental Material

Table S1. Paleomagnetic results from the samples collected at different stratigraphic levels of Echo Canyon Conglomerate and Weber Canyon Conglomerate from the Echo Canyon area of northeast Utah, USA.

Table S2. Paleomagnetic results from the samples collected from the red siltstone, likely Triassic age, intraclasts (cobbles and boulders) from the Echo Canyon and Weber Canyon Conglomerates in the Echo Canyon area of northeast Utah, USA.

TABLE S1. Paleomagnetic results from the samples collected at different stratigraphic levels of Echo Canyon Conglomerate and Weber Canyon Conglomerate from the Echo Canyon area of northeast Utah, USA

Sample ID	NRM intensity	Low-temperature component						High-temperature component					
		Dec	Inc	MAD	T1	T2	PCA line	Dec	Inc	MAD	T1	T2	PCA line
EC60Cc	0.0005043	-	-	-	-	-	-	29.6	35	10.7	5mT	55 mT	Anchored
EC60Gb	0.000651	-	-	-	-	-	-	353.3	51.8	15.9	105	205	"
EC61Aa	0.0005269	-	-	-	-	-	-	14.3	54.8	9	25	400	"
EC61Ba	0.0004322	-	-	-	-	-	-	12.1	63.5	5	5mT	55 mT	"
EC61Da	0.0004008	-	-	-	-	-	-	21.9	41	14.1	105	325	"
EC61Fb	0.0005088	-	-	-	-	-	-	50.3	34.6	1.7	105	460	"
EC61G	0.0005264	-	-	-	-	-	-	5.3	39	16.3	105	490	"
EC61H	0.0005495	-	-	-	-	-	-	345	75.6	13.4	105	460	"
EC61I	0.0006618	-	-	-	-	-	-	351.9	47.3	8.3	105	325	"
EC63Aa	0.001401	-	-	-	-	-	-	45.2	72.5	4.5	105	400	"
EC63Ea	0.001354	-	-	-	-	-	-	28.5	55.8	13.3	105	490	"
EC63Fa	0.0003752	-	-	-	-	-	-	336.3	16.4	25.6	105	550	"
EC63Ga	0.0009422	-	-	-	-	-	-	47.4	48.7	13.2	105	550	"
EC63Ia	0.001567	-	-	-	-	-	-	65.1	56.2	10.1	105	675	"
EC63Ja	0.001939	-	-	-	-	-	-	51.8	60.3	9	105	675	"
EC63Ka	0.002135	-	-	-	-	-	-	77	26.7	4.2	105	675	"
EC63Kb	2.30E-03	-	-	-	-	-	-	71.3	26.7	4.3	105	675	"
EC63Ma	0.0004899	-	-	-	-	-	-	325.2	30.8	12.7	105	400	"
EC63Mb	0.0004751	-	-	-	-	-	-	339.1	36.1	12.9	105	400	"
EC64Aa	1.60E-03	-	-	-	-	-	-	30.3	48.6	6.2	325	675	"
EC64Ba	0.001823	-	-	-	-	-	-	26.7	56.6	5.6	105	675	"
EC64Ca	0.00157	-	-	-	-	-	-	44.8	50.4	5.8	250	675	"
EC65Aa	0.001547	-	-	-	-	-	-	343	71	12.9	105	520	"
EC65Ba	0.001293	-	-	-	-	-	-	340.2	21.9	19	105	490	"
EC65Da	0.002726	-	-	-	-	-	-	343.5	41.5	3.8	105	250	"

EC65Ea	0.001441	-	-	-	-	-	-	37.5	62.8	16.2	105	400	"
EC65Eb	0.001698	-	-	-	-	-	-	336.5	46.8	13	105	550	"
EC65Fa	0.004154	-	-	-	-	-	-	317	70.7	18.3	105	570	"
EC65G	0.00117	-	-	-	-	-	-	285.9	35.7	14.7	250	590	"
EC65Ha	0.002275	-	-	-	-	-	-	332.1	43.4	14.9	105	520	"
EC66Aa	0.001497	-	-	-	-	-	-	331.6	34.6	20.7	105	400	"
EC66Ba	0.001125	-	-	-	-	-	-	336.5	50.1	11.8	105	400	"
EC66C	0.001581	-	-	-	-	-	-	346	39.7	16.1	105	490	"
EC66Da	0.001639	-	-	-	-	-	-	356.7	196	25.6	105	550	"
EC66Ea	0.001595	-	-	-	-	-	-	348	4.7	12.6	105	400	"
EC66Ga	0.001423	-	-	-	-	-	-	27.8	60	14.5	105	520	"
EC66Gb	0.001126	-	-	-	-	-	-	348.9	51.3	15.9	105	520	"
EC66Ha1	0.0009665	-	-	-	-	-	-	308.8	32.7	16	105	490	"
EC66Ia	0.001038	-	-	-	-	-	-	271.7	65	19	105	490	"
EC66Ib	0.0015	-	-	-	-	-	-	0.4	45.2	12.3	25	325	"
EC66Jb	0.001369	-	-	-	-	-	-	31.2	37.7	16	105	400	"
EC66Jc	0.001346	-	-	-	-	-	-	325.9	24.4	10.3	105	325	"
EC66Ka1	0.001095	-	-	-	-	-	-	291.2	21.7	12.8	105	460	"
EC66Kb	0.00087	-	-	-	-	-	-	328.9	43.3	19.6	105	490	"
EC66Da	0.001035	-	-	-	-	-	-	51.2	44	6.2	105	325	"
EC67Db	0.001675	-	-	-	-	-	-	63.3	56.3	10.9	105	550	"
EC67Ea	0.0009301	-	-	-	-	-	-	55.7	72.8	12.9	105	450	"
WC1Aa	0.0001582	-	-	-	-	-	-	14.2	-30.1	11.8	105	660	"
WC1Ca	0.0004383	-	-	-	-	-	-	8	52.3	13.5	105	550	"
WC1Ja	0.0006553	-	-	-	-	-	-	347.9	15.7	4	105	550	"
WC1Ka	0.0006171	-	-	-	-	-	-	349.9	19.7	6.3	105	570	"
WC1La	0.0005127	-	-	-	-	-	-	39.3	44.1	9.1	105	668	"
WC1Lb	0.0004129	-	-	-	-	-	-	50.9	19.5	11.3	105	668	"
WC1M	0.0005139	-	-	-	-	-	-	11.7	16	10	105	550	"
WC1Q	0.0005555	-	-	-	-	-	-	17	29.5	18.6	185	590	"
WC1Qa	0.0006511	-	-	-	-	-	-	346.5	51.9	7.6	105	675	"

WC1R	0.0009162	-	-	-	-	-	-	0.8	20.7	8.1	105	675	"
WC1S	0.0002813	-	-	-	-	-	-	225.4	-13.4	10	105	675	"
WC1T	0.000447	-	-	-	-	-	-	262.1	-33	21.2	185	675	"
WC2A	0.001454	-	-	-	-	-	-	350.2	46.9	4.3	105	675	"
WC2B	0.001998	-	-	-	-	-	-	349.8	51.3	5.9	105	675	"
WC2D	0.002537	-	-	-	-	-	-	353.4	61.6	2.9	185	668	"
WC2F	0.002039	-	-	-	-	-	-	7	59.7	3.8	105	675	"
WC2H	0.001128	-	-	-	-	-	-	349.1	40.5	5.4	105	675	"
WC2I	0.0009988	-	-	-	-	-	-	334.1	27.3	6.2	105	683	"
WC4Ba	0.0009683	-	-	-	-	-	-	329	42.7	18.2	325	675	"
WC4Da	0.000897	-	-	-	-	-	-	20.6	1.3	10.8	105	668	"
WC4Eb	0.000548	-	-	-	-	-	-	71.8	-23.9	13.2	185	668	"
WC4Fa	0.0004479	-	-	-	-	-	-	6.2	25.2	17.1	185	675	"
WC4Ga	0.001391	-	-	-	-	-	-	13.4	24.7	9.2	460	683	"
WC4Ha	0.0009232	-	-	-	-	-	-	46.3	73.5	7.5	105	570	"
WC4Hb	0.001545	-	-	-	-	-	-	37.1	69.8	7.8	105	675	"
WC4I	0.001539	-	-	-	-	-	-	289.6	42.8	8.3	325	675	"
WC4J	0.001309	-	-	-	-	-	-	348.4	67.3	9.9	105	675	"
WC4Kb	0.001146	-	-	-	-	-	-	233.5	57.3	11	185	668	"
WC4La	0.001187	-	-	-	-	-	-	39.7	25.3	7.8	460	675	"
WC4M	0.0006499	-	-	-	-	-	-	352.2	52.8	11	400	675	"
WC4N	0.0006707	-	-	-	-	-	-	347.1	20.2	10.1	325	675	"
WC5A	0.0009357	-	-	-	-	-	-	23	57.8	5	95	610	"
WC5B	0.0008949	-	-	-	-	-	-	38.7	58.8	5.5	95	674	"
WC5C	0.0008929	-	-	-	-	-	-	23.2	26.2	15.7	95	674	"
WC5D	0.0004442	-	-	-	-	-	-	326.4	65.8	5.2	95	530	"
WC5E	0.0007728	-	-	-	-	-	-	19	51	6.2	95	674	"
WC5F	0.0005505	-	-	-	-	-	-	349.7	55.9	16.2	95	674	"
WC5G	0.0005591	-	-	-	-	-	-	14.5	25.3	9.6	325	630	"
WC5H	0.0005591	-	-	-	-	-	-	59.5	47.5	9.8	95	674	"
WC5I	0.0005475	-	-	-	-	-	-	62.2	40.6	8.9	95	674	"

WC5J	0.0005509	-	-	-	-	-	-	32.5	70.5	7.8	95	645	"
WC5K	0.0005197	-	-	-	-	-	-	345.3	66.3	7.1	95	610	"
WC5L	0.0003758	-	-	-	-	-	-	347.1	62.9	8.3	95	630	"
WC5M	0.0003201	-	-	-	-	-	-	358	47.1	7.8	95	530	"
WC2AE	0.0007026	-	-	-	-	-	-	1	69.7	6.4	95	645	"
WC2AF	0.0005989	-	-	-	-	-	-	47	72.3	6.8	95	662	"
WC2AH	0.0004841	-	-	-	-	-	-	354.9	52.5	13.5	95	662	"
BM1B	0.0012270	-	-	-	-	-	-	242.7	59.7	7.8	265	682	"
BM2C	0.0001277	-	-	-	-	-	-	91.1	-4.9	10.6	110	565	"
BM3A	0.0005764	-	-	-	-	-	-	300.9	20	10.4	215	630	"
BM3B	0.0002429	-	-	-	-	-	-	18	33.6	18.2	185	630	"
BM3E	0.0002849	-	-	-	-	-	-	3.4	13.6	19.5	85	495	"
BM3F	0.0002449	-	-	-	-	-	-	282.8	-0.9	6.5	175	565	"
BM3H	0.0002475	-	-	-	-	-	-	344.2	25.3	18.7	140	615	"
BM3I	0.0006660	-	-	-	-	-	-	304.6	29.6	8.5	90	495	"
BM3J	0.0007503	240.0	-12.7	12.5	185	280	Free floating	-	-	-	-	-	-
BM3L	0.0002427	-	-	-	-	-	-	323.2	39.3	16.9	140	530	"
BM4A	0.0004890	-	-	-	-	-	-	319.6	10.6	16.9	85	615	"
BM4C	0.0005394	-	-	-	-	-	-	20.4	38.8	35	140	450	"
BM4F	0.0002773	45.8	64.3	15.6	140	235	"	-	-	-	-	-	-
BM4H	0.0003613	-	-	-	-	-	-	337.3	25.1	23.4	140	450	"
BM5B	0.0002585	-	-	-	-	-	-	295.4	70.4	11.5	140	590	"
BM5C	0.0015290	-	-	-	-	-	-	321.6	16.3	7.9	90	410	"
BM5D	0.0005712	-	-	-	-	-	-	248.1	4.3	15.1	90	565	"
BM5E	0.0007863	-	-	-	-	-	-	297.2	9.5	13.5	85	595	"
BM9A	0.0017590	-	-	-	-	-	-	336.4	56.7	9.5	85	615	"
BM9Ba	0.0014840	-	-	-	-	-	-	330.6	42.2	6.7	3	75	"
BM9Bb	0.0024760	-	-	-	-	-	-	331.4	50.4	6.4	3	100	"
BM9C	0.0008277	-	-	-	-	-	-	319.5	45.2	5.1	3	45	"
BM9D	0.0015130	-	-	-	-	-	-	355.2	69.9	11.8	90	630	"
BM9E	0.0019470	-	-	-	-	-	-	332.7	69.7	7	90	615	"

BM9Fb	0.0009162	-	-	-	-	-	-	339.7	60.2	4.8	140	590	"
BM9G	0.0009223	354.7	65.8	17.3	90	255	"	-	-	-	-	-	"
BM9H	0.0011410	-	-	-	-	-	-	316.5	48.7	9.2	145	615	"
BM9J	0.0006973	337.1	67.1	16	140	235	"	-	-	-	-	-	-
BM9K	0.0009545	345.8	58.9	1.3	90	175	"	-	-	-	-	-	-
BM11A	0.0006761	-	-	-	-	-	-	170	-29.6	16.7	130	535	"
BM11D	0.0003868	-	-	-	-	-	-	173.2	-40	20.7	110	672	"
BM11Eb	0.0005592	-	-	-	-	-	-	117.2	-32.5	7.5	140	450	"
BM11Fa	0.0003320	-	-	-	-	-	-	133	-34.3	14	85	465	"
BM11Fb	0.0004132	-	-	-	-	-	-	144.3	-35.3	8.5	140	495	"
BM11G	0.0003218	-	-	-	-	-	-	170.6	-38.9	24.2	110	495	"
BM11Ha	0.0004940	-	-	-	-	-	-	169.3	-63.6	15	255	535	"
BM11Hb	0.0005140	-	-	-	-	-	-	129.6	-22.9	24.1	140	590	"
BM11Ia	0.0004997	-	-	-	-	-	-	175.7	-21.3	25.1	130	535	"
BM11Jb	0.0004896	-	-	-	-	-	-	145.8	-77.9	11.9	140	530	"
BM11Ka	0.0003240	-	-	-	-	-	-	114.1	-44.9	21.9	175	595	"
ECD1Ab	0.0002454	10.3	49	0	95	185	-	243.5	-42.1	7.4	185	425	"
ECD1B	0.0001124	7.7	65.5	0	95	185	-	201.1	-69.2	14.1	270	668	"
ECD1C	0.0001252	331.4	50.3	5.8	95	270	-	226	-61.3	22.6	270	676	"
ECD1D	0.0003138	344.9	55.9	0	95	185	-	110.7	-68.7	18.8	270	562	"
ECD1Ea	0.0001517	355.8	60.2	5.2	85	215	-	205.8	-64.3	14	265	530	"
ECD1Eb	0.0000707	5.4	33.5	12.9	100	250	-	189.8	-61.2	14.4	250	662	"
ECD1Fa	0.0005111	-	-	-	-	-	-	231.5	-21.5	10.3	100	530	"
ECD1H	0.0004254	93.2	82	9	100	250	-	207.6	-3.7	8.8	205	530	"
ECD1I	0.0001741	341.4	45.4	9.4	100	250	"	202.3	-51.3	8.9	290	676	"
ECD1J	0.0002051	13.9	49.6	6.3	100	250	-	198.6	-57.2	6.6	250	662	"
ECD2A	0.0001730	-	-	-	-	-	-	146.4	-12	19.2	95	676	"
ECD2B	0.0004161	-	-	-	-	-	-	295.4	-8.9	13.2	95	490	"
ECD2C	0.0001709	39.1	44.3	11.5	95	270	"	115.2	-82.7	18.5	270	658	"
ECD2D	0.0003871	-	-	-	-	-	-	186.7	-26.4	18.4	270	630	"
ECD2E	0.0001173	-	-	-	-	-	-	186.2	-52.8	6.9	205	530	"

ECD2F	0.0001271	305.8	76.5	14.9	85	215	"	89.2	-28.3	18.5	265	430	"
ECD2G	0.0001392	4.9	63.5	9.4	100	250	"	173.4	-20.9	5.9	290	530	"
ECD2H	0.0000942	20.7	38.9	11.0	100	250	"	205.4	-67.3	8.8	290	530	"
ECD3A	0.0007876	352.3	58.6	4.6	95	270	"	-	-	-	-	-	-
ECD3C	0.0007627	8.1	68.5	0.0	95	185	"	-	-	-	-	-	-
ECD3F	0.0006808	14.8	64.5	0.0	95	185	"	-	-	-	-	-	-
ECD3G	0.0006594	349.7	69.5	4.6	80	200	"	-	-	-	-	-	-
ECD3H	0.0007465	9.9	64.2	0.0	95	185	"	-	-	-	-	-	-
ECD4A	0.0003576	16	60.6	0	95	185	"	181.8	-66.9	14.4	270	676	"
ECD4B	0.0003539	82.2	63.6	0.0	95	185	"	216	-64	14.8	270	590	"
ECD4D	0.0004310	6.9	60.7	0.0	95	185	"	246.8	-57.6	17.6	185	610	"
ECD4E	0.0007465	4.2	63.6	0.0	95	185	"	-	-	-	-	-	-
ECD4F	0.0003368	172.1	-43.2	5.3	85	175	"	-	-	-	-	-	-
ECD4H	0.0011246	6.3	71.8	4.3	80	160	"	-	-	-	-	-	-
ECD4I	0.0009178	6.4	66.8	2.2	80	160	"	-	-	-	-	-	-
ECD5A	0.0003538	20.3	63.3	0.0	95	185	"	-	-	-	-	-	-
ECD5B	0.0007960	3.3	60.2	0.0	95	185	"	-	-	-	-	-	-
ECD5C	0.0009096	349.1	64.7	0.0	95	185	"	-	-	-	-	-	-
ECD5D	0.0013226	12.9	66.2	0.0	95	185	"	-	-	-	-	-	-
ECD5E	0.0005798	10.5	70.6	5.1	80	200	"	-	-	-	-	-	-
ECD6B	0.0003135	29.5	62.7	3.6	85	175	"	-	-	-	-	-	-
ECD6E	0.0003197	-	-	-	-	-	-	176.6	-28.9	9.8	155	530	"
ECD6F	0.0001843	16.8	62.2	6.4	85	175	-	157.2	-73.2	17.9	215	672	"
ECD6G	0.0002068	15.9	49.5	5.4	100	205	"	66.6	-74.5	18.6	330	662	"
ECD6J	0.0002071	27.5	35	5.3	100	205	"	134.6	-71.3	13.5	330	662	"
ECD7A	0.0018071	41.6	63.5	5.2	85	235	"	325.6	-8.3	17.5	275	510	"
ECD7B	0.0016550	18.1	62.1	5.0	85	325	"	292.4	-15.8	14.9	375	615	"
ECD7C	0.0009673	334.3	55.1	4.3	85	215	"	214.7	-37.7	16.4	325	595	"
ECD7H	0.0019	23.2	51.9	3.2	85	325	"						
ECD8B	0.0001756	71.9	69	5.2	25	155	"	153.7	-23.2	4.8	205	530	"
ECD8Fa	0.0005649	-	-	-	-	-	-	333	-6.8	6.8	3mT	85mT	"

ECD8H	0.0006891	343.5	69.5	6.1	100	205	"	62.6	-40.2	4.7	100	662	"
ECD9C	0.0005451	127.2	78.2	2.0	85	215	"	6.8	-0.7	14	325	565	"
ECD9E	0.0006874	103.4	-28.2	7.7	85	145	"		-25.1	16.7	215	645	"
ECD9G	0.0005155	273.4	35.2	1.5	85	175	"	-	-	-	-	-	-
ECD9I	0.0010890	291.9	68.7	6.7	85	187	"	-	-	-	-	-	-
EC10C	0.0004309	354.8	56.3	2.7	85	175	"	255.4	-10.9	18.9	148	565	"
ECD10D	0.0003248	18.4	65.8	2.5	85	175	"	331.4	-55.2	15.2	265	430	"
ECD10E	2.733174E-04	345	60	1.9	85	187	"	-	-	-	-	-	-
ECD10F	0.0004705	321.6	51	6.3	85	187	"	9.8	-43.5	16.4	175	565	"
ECD10H	0.0005221	351.7	60.4	1.7	85	175	"	-	-	-	-	-	-
ECD10I	0.0010010	-	-	-	-	-	-	273.5	-9.8	4.7	105	565	"
ECD10J	0.0002829	339	50.3	5.2	100	205	"	127.8	-73.4	18.6	385	562	"
TC1Ab	0.001621	-	-	-	-	-	-	17	74.4	7.3	95	495	"
TC1Cb	0.002118	-	-	-	-	-	-	337.5	76.7	15.6	95	495	"
TC1Da	0.002128	-	-	-	-	-	-	6	54.6	5.7	145	595	"
TC1Ea	0.001692	-	-	-	-	-	-	2.3	69.3	10.6	145	565	"
TC1Fa	0.002058	-	-	-	-	-	-	32.9	60.2	11.5	145	615	"
TC1Ga	0.00185	-	-	-	-	-	-	21.3	68.6	8.9	195	565	"
TC1Ha	0.001759	-	-	-	-	-	-	338.8	56	6.1	145	395	"
TC1Ja	0.001793	-	-	-	-	-	-	15.3	60.9	10.3	195	635	"
TC1K	0.001881	-	-	-	-	-	-	19.9	56.8	5.9	95	495	"
TC1Lb	0.001383	-	-	-	-	-	-	23.6	58.7	11.7	195	595	"
TC2A	0.0016740	-	-	-	-	-	-	75	52.4	12.9	85	535	"
TC2C	0.0027990	-	-	-	-	-	-	136.5	4.1	8.3	320	662	"
TC2Pa	0.0020600	-	-	-	-	-	-	18.8	67.3	5.4	110	648	"
TC2Qa	0.0016400	-	-	-	-	-	-	123.5	31.4	15.9	320	662	"
TC2Ta	0.0025950	-	-	-	-	-	-	9.9	65	8.5	145	565	"
TC3A	0.0027000	97.1	49.4	4.7	110	275	"	59.1	40	12.8	110	565	"
TC3B	0.0019770	-	-	-	-	-	-	3	44.2	7.1	465	662	"
TC3C	0.0035370	-	-	-	-	-	-	357.4	43.3	10	145	673	"
TC3D	0.0032520	89.6	61.6	4.7	85	225	"	355.1	30	10.7	320	673	"

TC3E	0.0035110	-	-	-	-	-	-	70.8	51.4	10.3	110	630	"
TC3H	0.0017940	81.5	60.4	6.2	85	275	"	335.8	23.3	15.8	320	673	"
TC3I	0.0019040	80	58.4	5.8	85	275	"	28.2	33.6	16	320	673	"
TC3J	0.0015880							331.8	82.3	20.7	110	648	"
TC3K	0.0011970	99.2	54.2	5.8	85	275	"	25.8	-5.2	15.1	320	673	"
TC3L	0.0020470	-	-	-	-	-	-	340.6	24.7	13.9	320	673	"
TC3M	0.0012050	-	-	-	-	-	-	358.5	64.6	19.6	320	590	"
TC3N	0.0014320	88.4	63.4	3.9	85	275	"	307.4	21.9	28.3	320	673	"
TC3O	0.0010190	-	-	-	-	-	-	355.7	30.2	32.6	320	648	"
2TC1A	0.001567	-	-	-	-	-	-	333.9	45.3	9	145	662	"
2TC1B	0.001478	-	-	-	-	-	-	351.9	24.8	13.1	145	610	"
2TC1D	0.001378	-	-	-	-	-	-	306.1	26.7	11.5	95	610	"
2TC1N	0.001976	-	-	-	-	-	-	310.7	68.7	12.3	145	645	"
2TC2A	0.009417	-	-	-	-	-	-	358.3	57.3	1.1	95	345	"
2TC2B	0.01034	-	-	-	-	-	-	343.2	58	2.9	95	345	"
2TC2Cb	0.01087	-	-	-	-	-	-	339.2	57.2	3.5	95	345	"
2TC2D	0.008239	-	-	-	-	-	-	1.4	62.2	1.7	95	345	"
2TC2E	0.007376	-	-	-	-	-	-	331.7	67.4	5.9	95	345	"
2TC2F	0.007431	-	-	-	-	-	-	2.8	50.4	1.9	95	345	"
2TC2G	0.006565	-	-	-	-	-	-	352.6	48.7	3.7	95	345	"
2TC2H	0.00726	-	-	-	-	-	-	346.3	41.4	2.9	95	345	"
2TC2Ib	0.00647	-	-	-	-	-	-	345.1	60.1	3.1	95	345	"
2TC2J	0.006628	-	-	-	-	-	-	351.5	62.8	2.4	95	345	"
2TC2K	0.008314	-	-	-	-	-	-	341.4	63.9	2.5	95	345	"
2TC3A	0.00202	-	-	-	-	-	-	17.9	66.5	4.3	95	662	"
2TC3B	0.001758	-	-	-	-	-	-	0.5	67.1	5.4	95	674	"
2TC3Cb	0.002035	-	-	-	-	-	-	23.2	61.8	7.1	95	662	"
2TC3D	0.001306	-	-	-	-	-	-	354.1	60.1	18.7	95	662	"
2TC3Eb	0.001678	-	-	-	-	-	-	35	62.7	7.6	95	662	"
2TC3Fb	0.001459	-	-	-	-	-	-	356.2	51.4	16.4	95	662	"
2TC3G	0.001975	-	-	-	-	-	-	359.9	44.6	13.5	95	635	"

2TC3H	0.001481	-	-	-	-	-	-	21.9	51.5	5.7	95	595	"
2TC3I	0.001918	-	-	-	-	-	-	17.1	68.4	6.1	95	595	"
2TC3K	0.001933	-	-	-	-	-	-	12.3	54.6	2.8	95	495	"
2TC3La	0.00203	-	-	-	-	-	-	15.5	55.4	3.5	95	495	"
3TC1Ab	0.003334	-	-	-	-	-	-	358.2	49.6	2.3	95	682	"
3TC1B	0.003649	-	-	-	-	-	-	5.8	53.1	1.8	95	674	"
3TC1Db	0.003512	-	-	-	-	-	-	9.7	51.5	1.6	95	674	"
3TC1Ea	0.003132	-	-	-	-	-	-	6.3	50.5	2.2	95	674	"
3TC1Fc	0.002235	-	-	-	-	-	-	5.1	48.5	1.9	95	674	"
3TC1Ga	0.003512	-	-	-	-	-	-	355.6	48.2	2.4	95	674	"
3TC1Hb	0.002707	-	-	-	-	-	-	355.4	43.9	1.8	95	674	"
3TC1Ia	0.003157	-	-	-	-	-	-	9.2	51.6	2.1	95	674	"
3TC1Ja	0.00375	-	-	-	-	-	-	0.3	53.2	1.2	95	662	"
3TC1Kb	0.002608	-	-	-	-	-	-	4.9	51.1	1.7	95	674	"
3TC1Lb	0.00296	-	-	-	-	-	-	358.3	47.7	1.6	95	674	"
3TC1Mb	0.002098	-	-	-	-	-	-	2.3	47.5	1.6	95	682	"
3TC1Nb	0.003252	-	-	-	-	-	-	359	51.7	1.8	95	662	"

TABLE S2. Paleomagnetic results from the samples collected from the red siltstone, likely Triassic age, intraclasts (cobbles and boulders) from the Echo Canyon and Weber Canyon Conglomerates in the Echo Canyon area of northeast Utah, USA

Sample ID	NRM intensity	Low temperature component						High temperature component					
		Declination	Inclination	MAD	T1	T2	PCA line	Declination	Inclination	MAD	T1	T2	PCA line
EC62A	0.004015	71.6	38.5	2.1	105	520	Floating	286.7	36.7	12.7	550	630	Anchored
EC62C	0.0009469	-	-	-	-	-	-	235.2	47.2	13.4	105	630	"
EC62D	6.40E-05	-	-	-	-	-	-	320.9	-57.6	17.1	105	675	"
EC62Ha	0.0005799	-	-	-	-	-	-	350	-7.3	5.4	5	45	"
WC1U	0.0009756	-	-	-	-	-	-	38.3	58.8	3.1	105	630	"
WC1Va	0.0008405	-	-	-	-	-	-	34.7	58.6	2.9	325	630	"
WC2La	0.0004031	-	-	-	-	-	-	340.7	-50.7	4.2	105	570	"
WC2Lb	0.0004179	-	-	-	-	-	-	344	-36	5.7	185	520	"
WC2M	0.0005345	-	-	-	-	-	-	318.6	-76.1	4.2	185	570	"
WC2N	0.007077	-	-	-	-	-	-	94.6	-18.9	4	460	668	"
WC2P	0.00056	-	-	-	-	-	-	297.1	-75.1	6.7	105	570	"
WC2AI	0.002058	-	-	-	-	-	-	28.9	68.4	8.1	95	590	"
WC2AJ	0.002409	-	-	-	-	-	-	80.2	17.6	15.1	95	674	"
WC2AKb	0.002075	-	-	-	-	-	-	24.9	21.4	16.8	95	662	"
WC2AL	0.002103	-	-	-	-	-	-	359.4	30.5	20.4	385	674	"
WC4P	0.0005502	-	-	-	-	-	-	167.4	27.5	6.8	105	490	"
WC4Qa	0.0003625	-	-	-	-	-	-	139.7	31.7	13.5	105	520	"
WC4Qb	0.0006552	-	-	-	-	-	-	307.9	-83.1	19.5	105	668	"
WC4Qc	0.001188	-	-	-	-	-	-	115.2	29.7	9.4	105	630	"
WC4Ra	0.002273	-	-	-	-	-	-	134.8	16.2	6.1	105	683	"
WC4Rb	0.001253	-	-	-	-	-	-	141.3	-32.8	4.6	490	660	"
WC4Rc	0.001246	113.7	49.2	7.6	105	460	"	132.7	-30.3	15.3	520	675	"
WC4Ta	0.000829	-	-	-	-	-	-	228.4	59.6	20.4	105	460	"

Notes:

- I. All data expressed are in tilt corrected.
- II. NRM (Natural remanent magnetization) is in A/m.
- III. Declination and Inclination data are in (°).
- IV. MAD (Maximum angular deviation) is in (°).
- V. Laboratory unblocking temperature interval T1-T2 is in (°C) if not otherwise mentioned.
- VI. PCA (Principal components analysis) line is free floating for the low temperature component and anchored to the origin for the high temperature component.