PUBLICATIONS OF THE EARTH PHYSICS BRANCH

VOLUME 45 - NO. 1

catalogue of paleomagnetic directions and poles

first issue

A. HICKEN, E. IRVING, L. K. LAW and J. HASTIE

DEPARTMENT OF ENERGY, MINES AND RESOURCES

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Contents

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Introduction

In this compilation the paleomagnetic data are set out in computer format to allow automatic sorting, merging, updating, and secondary processing of results. The results are presented as a table, with explanatory notes and bibliography following the style and numbering system of the appendix to the book *Paleomagnetism* (Irving 1964). The compilation is approximately complete up to 1971, but no special effort has been made to include late results. A second issue will appear in about six months in which it is planned to bring the catalogue up-to-date. The explanatory notes and references of *Paleomagnetism* are not repeated, but the numerical values are relisted in this new expanded form to ensure uniformity of format. Anyone having both this catalogue and *Paleomagnetism* has a ready access to the basic data and to the bibliography. The data are tabulated according to age and place. Alternative listings according to polarity, number of samples, reliability, pole location etc. can readily be obtained by sorting on any of the columns. Angles are given to tenths of a degree.

The columns contain the following information.

Column 1 contains an index number. The first two digits provide a means of sorting according to geological age. The significance of these digits is as follows: **01** Precambrian, **02** Cambrian, **03** Ordovician, **04** Silurian, **05** Devonian, **06** Carboniferous, **07** Permian, **08** Triassic, **09** Jurassic, **10** Cretaceous, **11** Tertiary, **12** Quaternary, and **13** data from seamounts. The remaining 4 digits of the index number are accession numbers of no special significance.

Column 2 gives the general sampling regions as follows: AFRIC Africa, ANTAR Antarctica, ARCTI Arctic Ocean and north polar islands, ASIA Asia excluding USSR, ATLAN islands and seamounts of the Atlantic Ocean and including the Mediterranean Sea, AUSTR Australia, EUROP Europe, INDOC islands of the Indian Ocean, NAMER North America, PACIF islands and seamounts of Pacific Ocean, SAMER South America, and USSR Union of Soviet Socialist Republics.

Column 3 gives the country and description of the rock unit. The word MIXED (or some abbreviation such as MIX) in this column denotes that both polarities are present, but that the polarity ratio (columns 11 and 12) cannot be calculated from the data given in the original. Goodness of fit ratios R for seamounts are given in this column; reasonable fits are indicated if R exceeds 2, but are questionable if R approaches 1.

Column 4 gives the first author.

Columns 5 and 6 give the geographical coordinates of the sampling area. If the area is large the mean position is quoted. If the coordinates were not given in the original, they have, where possible, been read from standard atlases and gazetteers.

Column 7 gives the number of collecting sites.

Column 8 gives the number of samples on which results are based. It is sometimes not possible to determine from the original whether this is the number of independent samples or the number of specimens cut from fewer samples, and subjective judgments have sometimes had to be made.

Column 9 give the treatment as follows: N means that the result is based on natural remanent magnetization; A means that the samples have been partially demagnetized in alternating magnetic fields; T means that the samples have been partially demagnetized by heating followed by cooling in zero field; Y is N+A; Z is N+T; W is N+A+T.

Column 10 contains a reliability index. A(B) indicates that the result does (does not) fulfil certain minimum reliability criteria. This does NOT mean that results in category A are necessarily reliable indicators of the ancient geomagnetic field. The purpose of these criteria is to separate from the main body of paleomagnetic data those results which can, on common sense grounds, be considered of little use for tracing the past history of the field. The minimum reliability criteria are as follows:

(1) No result is placed in the A category unless it is based on consistent observations from 10 or more separately oriented samples. Results based on fewer than 10 samples are placed in the B category whatever the stratigraphic distribution of samples and however many specimens were cut from them.

(2) Sometimes authors have stated that they do not consider their results reliable, and these are entered in category B.

(3) If the circle of confidence given in the original exceeds 20° the result is entered in the B category.

(4) Results from rocks whose age is Tertiary or older are placed in B unless there is evidence that the directions diverge significantly from the direction of the present field and that of the geocentric axial dipole field, or unless stability was demonstrated by a standard test.

(5) Results from rocks which are known to have acquired their magnetization long after the period of formation are not generally placed in the A category. However a class of data derived from secondary magnetization (in deeply buried and metamorphic rocks) is now emerging, and promises to be useful for determining motions of Precambrian basement terrains. Such data are not placed in the B category.

Columns 11 and 12 are the polarity ratios reckoned normal (reversed) if the pole toward which direction points is in the northern (southern) hemisphere. This convention is workable for the Phanerozoic but can be misleading in the Precambrian where poles often fall near the equator, and for this reason the rule may be relaxed for older data.

Columns 13 and 14 contain an estimate of the mean direction of magnetization. The declination D is reckoned clockwise east from geographic north, and I the inclination, is regarded as negative if the direction is upward and positive when below the horizontal. For rock units in which the beds are undisturbed the horizontal is the present-day horizontal, but if the beds have been tilted, the horizontal is assumed to be the bedding plane which, in the case of igneous rocks, is obtained from adjacent sediments. Exceptions are explained in the notes. If the results contain directions of both polarities. the mean irrespective of sign is given.

Column 15 gives Fisher's precision k (Fisher 1953) to nearest whole number.

Column 16 gives Fisher's circle of confidence α_{95} (P=0.05).

Columns 17 and 18 give the latitude (positive north) and longitude (positive east) of the pole.

Columns 19 and 20 give the precision (K) of poles and error A_{95} in pole calculated assuming model B (Creer *et al.* 1959).

Columns 21 and 22 give the semi-axes of the polar error ellipse (Irving 1956) calculated assuming model A (Irving and Ward 1964).

Column 23 gives the Geophysical Journal list number.

Models A and B, referred to above, are the two statistical models of the geomagnetic field used in the analysis of paleomagnetic directions, and from which other more complex models have been derived (see for example Cox 1962). On model A, individual directions are first measured, and a pole calculated from their mean, the errors in the pole being derived from the error in the mean. On model B, poles are calculated from individual directions and the mean pole and its error calculated from these poles. Many computer programs are available to perform these calculations (for example MAGPOL 1234 Grieves and Irving 1968). At first, the model A method of calculation was the more widely used, but lately there has been a tendency for model B type calculations to be favoured by many workers. For most general purposes the difference in results derived by the two methods is not important, but as the data increase undoubtedly more attention will have to be paid to this question. Results that are judged different by both methods can reasonably be accepted as different, but opinion is best suspended on results that are judged different by one method but not by the other.

Listing of Data

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 217	AFRIC	SAFRI VENTERSDOP LAVAS	JONES	-287	284	2	13	X	A	100	0	2110	715	390	130	-551	-52	0	0	220	220	9157
1 243	AFRIC	SAFRI VAN DIKE MINE DIKE	JONES	-262	282	1	8	A	B	100	0	1585	-665	140	47	124	139	0	0	80	70	8156
1 6	AFRIC	SAFRI PILANSBERG DIKES	GOUGH	-260	280	5	169	A	A	0	100	240	690	124	60	80	430	0	0	100	90	1141
1 128	AFRIC	SAFRI PREMIER MINE KIMB	JONES	-257	285	0	16	A	A	100	0	1860	-245	26	70	511	375	25	75	79	42	10197
1 242	AFRIC	SAFR BOTS POST WATERBURG	JONES	-250	280	13	90	A	A	92	8	1896	23	31	80	650	505	87	45	0	0	8155
1 7	AFRIC	SAFRI BUSHVELD GABBRO	GOUGH	-255	280	5	99	N	A	0	100	110	590	70	90	230	360	0	0	120	120	1142
1 154	AFRIC	BOTSWANA GABERONES GRAN	EVANS	-250	256	7	19	A	A	14	86	555	-65	11	180	345	1035	0	160	0	0	9158
1 166	AFRIC	BOTSWANA MODIPE GABBRO	EVANS	-247	262	10	36	A	A	70	30	1545	855	80	54	328	2109	22	105	0	0	8157
1 134	AFRIC	SAFRI WATERBERG REDBED 1	JONES	-240	290	2	9	X	B	100	0	1860	40	0	0	670	440	0	0	0	0	9148
1 135	AFRIC	SAFRI WATERBERG REDBED 2	JONES	-240	290	2	9	A	B	100	0	1820	-45	0	0	410	330	0	0	0	0	9149
1 136	AFRIC	SAFRI WATERBERG REDBED 3	JONES	-240	290	4	22	X	A	100	0	1100	-480	33	160	30	-270	0	0	210	140	9150
1 137	AFRIC	SAFRI WATERBERG REDBED 4	JONES	-240	290	1	5	A	B	100	0	1460	-700	0	0	80	100	0	0	0	0	9151
1 138	AFRIC	SAFRI WATERBERG REDBED 5	JONES	-240	290	3	15	X	A	0	100	170	450	41	190	360	480	0	0	240	150	9152
1 122	AFRIC	S RHOD UMKONDO DOLERITE	MCELHINN	-190	330	9	77	A	A	100	0	1825	-105	50	70	650	400	0	0	70	40	8152
1 123	AFRIC	RHOD UMKONDO LAVAS	MCELHINN	-200	320	9	21	A	A	100	0	1725	-125	13	150	625	160	0	0	150	80	8153
1 124	AFRIC	RHOD UMKONDO LAVAS DOLER	MCELHINN	-200	180	18	98	A	A	100	0	1780	-115	20	80	650	300	23	75	80	40	8154
1 63	AFRIC	SOUTHN RHOD GREAT DYKE 1	MCELHINN	-185	303	9	90	A	A	100	0	2180	-590	68	60	210	620	0	0	90	90	7062
1 64	AFRIC	SOUTHN RHOD GREAT DYKE 2	NAIRN	-185	303	6	10	A	A	100	0	2360	-610	12	200	110	690	0	0	310	230	7063
1 102	AFRIC	SRHCC MASHONALAND COLER	MCELHINN	-185	315	14	121	A	A	71	29	2920	510	40	60	70	-200	28	75	0	0	8151
1 127	AFRIC	MALA NTONYA RING STRUCT	BRIDEN	-155	355	7	27	A	A	0	100	3113	428	1054	19	277	-151	0	0	23	14	9137
1 253	AFRIC	MALAWI DEZA MT SYENITE	MCELHINN	-144	343	1	1	A	B	0	100	3080	410	0	0	266	-196	0	0	0	0	10150
1 203	AFRIC	MORCCCO RED SANDSTONES 1	TARLING	320	-70	2	6	T	B	0	100	1030	330	0	550	0	0	0	0	0	0	9139
1 204	AFRIC	MORCCCO RED SANDSTONES 2	TARLING	320	-70	4	12	T	B	0	100	1350	150	0	470	0	0	0	0	0	0	9138
1 55	ARCTI	GRNLD MULTICOLORED SERIE	BIDGOOD	730	-250	2	10	N	A	0	100	1100	360	31	90	130	390	0	0	100	50	4034
1 56	ARCTI	GRNLD TILLITE FM P MIXED	BIDGOOD	730	-250	0	16	N	A	0	0	1350	160	5	180	40	-1610	0	0	190	100	4033
1 62	ASIA	IND CUDDAPAH TRAPS SCATT	ATHAVALE	140	780	10	72	A	A	0	0	0	0	0	0	0	0	0	0	0	0	7059
1 251	ASIA	INDIA CUDDUPAH SEDIMENTS	PRSAD	150	780	2	0		A	0	100	2945	-80	0	0	225	-215	0	0	0	0	0
1 250	ASIA	INDIA CHITLOOR DYKE	PRSAD	146	790	3	9		B	33	67	1137	279	6	580	183	-319	0	0	633	344	0
1 125	ASIA	INDIA VLDURTI HEMATITE	VERMA	156	780	0	30	N	A	80	20	1330	-370	4	140	450	-270	0	0	160	100	8158
1 252	ASIA	INDIA HYDERABAD DYKE	VERMA	174	785	1	13	A	A	0	100	440	-30	32	50	430	-1730	0	0	50	30	10167

OTTAWA LIST	PLACE		ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GECJ LIST
1	247	ASIA	INDIA CHARNOKITES 1	BHIMASAN	175	830	0	6	T	B	0	100	2800	350	0	0	150	90	0	0	0	0	10188
1	248	ASIA	INDIA CHARNOKITES 2	BHIMASAN	175	830	0	4	T	B	0	100	450	450	0	0	480	1520	0	0	0	0	10189
1	249	ASIA	INDIA CHARNOKITES 3	BHIMASAN	175	830	0	6	T	B	0	100	450	-200	0	0	0	0	0	0	0	0	10190
1	246	ASIA	INDIA BANDED HEMATITE	MISHRA	240	810	2	10		A	0	100	2795	-105	0	0	65	-178	0	0	0	0	0
1	126	ASIA	INDIA KAIMUR SANDSTONE	SAHASRAB	246	831	20	47	A	A	32	68	3570	310	0	0	820	2860	0	0	0	0	8150
1	61	ASIA	INDIA MUNDWARRA COMPLEX	ATHAVALE	250	730	1	6	X	B	0	100	3290	-240	0	210	420	-650	0	0	220	120	7058
1	59	ASIA	INDIA MALANI RHYOLITES	ATHAVALE	260	730	9	60	X	A	0	100	3530	560	0	100	780	450	0	0	150	110	7061
1	60	ASIA	INDIA BIJAWAR TRAPS	ATHAVALE	260	780	1	7	X	B	0	100	70	30	0	180	190	1760	0	0	180	90	7060
1	175	ASIA	CHINA XIUNING SERIES 1	LIUCHUN	299	1181	0	12	N	A	0	100	3130	800	0	130	420	980	0	0	250	240	10162
1	176	ASIA	CHINA XIUNING SERIES 2	LIUCHUN	301	1186	0	5	N	B	0	100	2920	820	0	100	350	1000	0	0	210	190	10164
1	178	ASIA	CHINA XIUNING SERIES 3	LIUCHUN	299	1181	0	5	N	B	0	100	3110	760	0	150	450	900	0	0	280	260	10163
1	177	ASIA	CHINA LIANTC SERIES	LIUCHUN	309	1111	0	0	N	B	0	100	3000	830	0	0	370	950	0	0	0	0	10165
1	179	ASIA	CHINA L SINIAN COMBINED		0	0	0	0	N	A	0	100	3050	810	1165	27	398	959	207	64	0	0	0
1	218	AUSTR	MARINOAN SANDSTON NORMAL	BRIDEN	-351	1385	4	7	N	B	0	100	70	110	35	0	490	1490	0	0	0	0	9140
1	219	AUSTR	MARINOAN SANDSTON REVERS	BRIDEN	-351	1385	3	7	T	B	100	0	1910	390	5	0	740	1780	0	0	0	0	9141
1	214	AUSTR	IRON MONARCH POS GROUP	CHAMALAU	-330	1380	0	28	X	A	100	0	2830	630	12	80	150	-880	6	120	0	0	9145
1	215	AUSTR	IRON MONORCH NEG GROUP	CHAMALAU	-330	1380	0	13	X	A	0	100	260	-580	19	100	640	-930	20	90	0	0	9146
1	216	AUSTR	IRON PRINCE	CHAMALAU	-330	1380	0	22	X	A	0	100	630	-460	16	80	390	-1130	10	95	0	0	9147
1	8	AUSTR	EDITH RIVER VOLCANICS	IRVING	-130	1320	10	10	N	A	0	100	900	480	0	180	60	-140	0	0	240	150	1145
1	10	AUSTR	AUSTR BULDIVA QUARTZIT	IRVING	-140	1320	0	8	N	B	0	100	2430	380	0	120	300	-1210	0	0	140	80	1143
1	9	AUSTR	AUSTR NULLAGINE LAVAS	IRVING	-210	1200	0	5	N	B	100	0	1430	640	0	80	510	-180	0	0	130	100	1144
1	206	AUSTR	WIDGIEMOOLTH DYKE SUITE	EVANS	-315	1219	11	40	A	A	9	91	2420	-670	68	51	85	-230	31	80	90	70	10200
1	213	AUSTR	KOCLYANOBBING IRON CRES	PORATH	-310	1200	0	35	A	A	0	100	3030	-605	15	65	430	-40	9	85	0	0	10173
1	207	AUSTR	LODE ORE GROUP 1	PORATH	-205	1195	0	31	N	A	0	100	3170	540	23	60	200	840	19	60	0	0	10169
1	209	AUSTR	CRUST ORE GROUP 2	PORATH	-205	1195	0	6	N	B	100	0	2630	685	31	120	215	-1010	13	190	0	0	10171
1	208	AUSTR	LODE ORE GROUP 3	PORATH	-205	1195	0	8	N	B	100	0	1150	735	45	85	300	-305	20	125	0	0	10170
1	210	AUSTR	JASPILITES	PORATH	-205	1195	0	9	N	B	100	0	2980	680	27	100	0	860	0	160	0	0	10172
1	211	AUSTR	MT TOMPRICE ORE	PORATH	-225	1180	0	28	A	A	0	100	3040	250	6	120	220	570	6	120	0	0	10174
1	212	AUSTR	MT NEWMAN ORE	PORATH	-230	1195	0	20	N	A	0	100	3020	390	12	95	170	660	12	100	0	0	10175
1	1	EURCP	SCOTL TORRIDON GROUP	IRVING	580	-60	81	205	N	A	35	65	1230	440	12	50	60	430	0	0	60	40	1126

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 2	EUROP	SCOTLAND STOER GROUP	IRVING	580	-60	13	32	N	A	0	100	3070	340	40	70	350	-1180	0	0	80	50	1127
1 3	EUROP	ENGLAND LONGMYNDIAN	CREER	530	-30	12	40	N	A	29	71	1140	290	5	120	20	-1200	0	0	130	70	1128
1 92	EUROP	SCOT YOUNGER GABBROS	BLUNDELL	575	-25	0	21	N	A	100	0	1820	510	13	90	10	1760	0	0	120	80	2039
1 173	EUROP	ENG MALVERNIAN ROCKS	BROOKS	522	-23	0	16	N	B	0	100	1270	770	0	100	350	210	0	0	0	0	0
1 174	EUROP	ENG WARREN HOUSE SERIES	BROOKS	522	-23	0	7	N	B	0	100	2330	770	0	250	350	-260	0	0	0	0	0
1 4	EUROP	NORWAY SPARAGMITES	HARLAND	605	110	0	7	N	B	71	29	110	-210	7	240	180	1790	0	0	250	120	2040
1 156	EUROP	NORWAY EGERSUND DOLERITE	STORETVE	580	60	4	33	X	A	0	100	1140	645	6	115	280	520	0	0	170	150	9030
1 319	EUROP	SWEDEN TARENDO GABBRO	CORNWELL	671	225	5	17	A	A	0	100	3400	410	30	140	450	-1320	0	0	0	0	0
1 317	EUROP	SWEDEN TARENDO ACID ROCK	CORNWELL	671	-225	3	12	A	A	0	100	3240	420	51	180	420	-1120	0	0	0	0	0
1 98	EUROP	SWE UPPER DALA VOLCANIC	PRIEM	615	140	2	11	A	B	0	100	170	-90	0	0	230	-1760	0	0	0	0	10192
1 254	EUROP	SWEDEN JOTNIAN UP DALA	MULDER	610	140	8	40	A		0	100	130	-40	12	169	-260	-10	0	0	169	85	0
1 301	EUROP	SWEDEN UP DALA VOL COMBI		0	0	0	0			0	0	0	0	0	0	245	-1785	0	0	0	0	0
1 99	EUROP	SWEDEN JOTNIAN BASALTS	PRIEM	611	134	2	16	A	B	0	100	700	60	584	100	320	-1740	0	0	100	50	10193
1 100	EUROP	SWE LATE JOTNIAN DOL DYK	PRIEM	615	140	4	27	A	B	0	100	140	-90	6	400	230	1780	0	0	400	205	10194
1 101	EUROP	SWE HYPERITE DOLER DYKES	PRIEM	580	145	5	70	A	A	100	0	3170	-580	23	160	-120	-1340	0	0	230	170	10195
1 245	EUROP	SWED DOLER BAS DALARNA	DYRELIUS	610	130	0	5	A	B	100	0	850	-270	0	250	-100	1150	0	0	0	0	0
1 197	EUROP	FIN DIABASE DYKES FAME	NEUVONEN	614	248	0	19	A	A	0	100	480	780	23	70	670	720	0	0	140	130	10196
1 198	EUROP	FINLAND AVA INTRUSIVE	NEUVONEN	598	212	15	40	A	A	0	100	250	270	7	150	410	1690	0	0	170	90	0
1 199	EUROP	FINLAND MARKET DIABASES	NEUVONEN	602	193	9	65	A	A	100	0	600	-400	36	92	-59	1455	0	0	110	70	0
1 200	EUROP	FINLAND FOGLO DIABASES	NEUVONEN	602	206	8	56	A	A	0	100	120	40	24	115	313	1865	0	0	115	58	0
1 201	EUROP	FIN KUMLINGE DIABASES 1	NEUVONEN	603	208	5	24	A	B	0	100	1770	390	12	236	76	2038	0	0	280	180	0
1 202	EUROP	FIN KUMLINGE DIABASES 2	NEUVONEN	603	208	7	32	A	A	0	100	1810	320	14	170	130	2010	0	0	190	110	0
1 237	EUROP	FINLAND JOTNIAN DOLERITE	NEUVONEN	612	220	18	18	X	A	100	0	460	-340	60	40	20	1580	0	0	48	20	8185
1 238	EUROP	FINLAND VAASA DOLERITE	NEUVONEN	630	209	15	15	X	A	100	0	380	-290	54	50	70	1640	0	0	60	30	8186
1 318	EUROP	FINLAND YLIVIESKA GABBRO	PURANEN	641	-245	1	13		A	0	100	3410	410	145	40	470	-1290	0	0	0	0	0
1 93	EUROP	CZE BARRANDIAN PORPH A1	BUCHA	500	137	0	14	N	B	100	0	970	-220	0	210	130	-780	0	0	220	120	5088
1 94	EUROP	CZE BARRANDIAN PORPH A2	BUCHA	500	137	0	15	N	A	100	0	1230	80	0	160	170	-1050	0	0	160	80	5088
1 95	EUROP	CZE BARRANDIAN PORPH A3	BUCHA	500	137	0	12	N	A	100	0	170	350	0	90	660	1340	0	0	110	60	5088
1 96	EUROP	CZE BARRANDIAN PORPH A4	BUCHA	500	137	0	16	N	A	100	0	1080	-140	0	80	170	-860	0	0	90	40	5088
1 97	EUROP	CZE BARRAND A1 A2 A3 COM	BUCHA	500	137	0	45	N	A	100	0	1090	-90	16	0	160	-880	0	0	0	0	5088

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
1 267	EUROP	CZECHOSLOVAKIA SEDIMENTS	BUCHA	500	140	7	44	Y	B	57	43	3150	-90	5	290	210	2430	0	210	0	0	8149
1 52	NAMER	CANAC SIGNAL HILL SANDST	NAIRN	470	-530	1	9	N	B	0	100	2830	200	21	110	160	-1450	0	0	120	60	1139
1 53	NAMER	CANAD BLACKHEAD SANDSTON	NAIRN	470	-530	1	10	N	B	0	100	2320	510	25	100	20	-950	0	0	130	90	1140
1 54	NAMER	CAN SIGNAL BLACKHEAD COM	NAIRN	470	-530	2	19	N	A	0	100	2620	390	8	140	110	-1220	0	0	160	100	0
1 314	NAMER	CANADA MUGFORD VOLC SERI	MURTHY	578	-620	16	16	X	A	0	100	2970	630	41	60	490	-1430	0	0	110	90	0
1 315	NAMER	CANADA LABRADOR DYKE	MURTHY	544	-571	1	4	A	B	100	0	820	-470	111	90	292	-1240	0	0	0	0	0
1 316	NAMER	CANADA INDIAN HARB DYKES	MURTHY	544	-571	12	12	X	A	0	100	2420	220	15	120	-60	-1170	0	0	120	60	0
1 205	NAMER	CAN MICHIKAMAU ANORTHOS	MURTHY	545	-640	6	29	A	A	100	0	2620	96	35	97	-6	-1447	0	0	98	49	10191
1 130	NAMER	CAN ALLARD LAKE ANORTHOS	HARGRAVE	510	-630	4	112	X	A	90	10	2966	-790	88	98	386	-396	0	180	0	0	9142
1 41	NAMER	USA ADIRONDACK GNEISS	BALSLEY	440	-750	0	128	N	B	0	0	1450	500	0	0	0	0	0	0	0	0	0
1 42	NAMER	CANADA BOULTER INTRUSIVE	HOOD	450	-775	0	8	N	B	0	100	2970	550	19	50	420	-1570	0	0	70	50	5093
1 43	NAMER	CANADA UMFRAVILLE INTRUS	HOOD	450	-780	0	12	N	A	0	100	1150	430	8	70	10	-220	0	0	90	60	5094
1 44	NAMER	CANADA THANET INTRUSIVE	HOOD	450	-775	0	6	N	B	0	100	930	620	5	140	280	-230	0	0	220	180	5094
1 45	NAMER	CANADA TUDOR INTRUSIVE	HOOD	445	-775	0	11	N	A	0	100	3280	110	5	90	420	1490	0	0	90	50	5095
1 86	NAMER	CANADA GRENVILLE ROCKS	DUBOIS	450	-785	3	16	Y	A	100	0	2870	-440	0	0	70	-180	0	0	0	0	7080
1 170	NAMER	CAN NIPISSING DIABASE 1	SYMONS	470	-790	1	12	A	A	100	0	2860	-446	38	72	119	744	0	0	90	57	9156
1 171	NAMER	CAN NIPISSING DIABASE 2	SYMONS	473	-795	11	39	A	A	100	0	860	-399	60	54	194	919	0	0	65	39	0
1 271	NAMER	CAN NIPISSING DIABASE 3	SYMONS	460	-830	8	25	A	B	38	62	2008	691	5	270	10	1820	0	0	0	0	0
1 272	NAMER	CAN NIPISSING DIABASE 4		460	-830	4	16	A	A	100	0	3581	-431	148	76	189	988	0	0	94	58	0
1 273	NAMER	CAN NIPISSING DIABASE 5	SYMONS	460	-830	6	18	A	A	0	100	2711	690	17	170	360	-1310	0	0	0	0	0
1 168	NAMER	CAN COBALT GROUP SEDS	SYMONS	470	-790	4	8	A	B	100	0	353	-741	15	146	215	-975	0	0	264	238	9159
1 169	NAMER	CAN UPPER SLATE COBALT	SYMONS	470	-790	1	4	A	B	100	0	414	-304	5	482	162	489	0	0	537	299	0
1 129	NAMER	CAN CROKER ISLAND COMPL	PALMER	461	-822	19	23	A	A	0	100	2517	416	14	85	54	-1428	0	0	105	67	11090
1 50	NAMER	CANADA DYKES 1 ONT QUE	STRANGWA	490	-790	5	35	A	A	100	0	2546	-555	40	123	358	-50	0	0	176	126	6070
1 51	NAMER	CAN DYKES 2 ONT QUE MIX	STRANGWA	490	-790	5	73	A	A	0	0	100	-150	14	210	330	910	0	0	210	110	6071
1 108	NAMER	CAN ABITIBI DYKES	STRANGWA	480	-790	5	35	A	A	0	100	2540	550	40	120	170	2280	0	140	0	0	8180
1 112	NAMER	CAN ABITIBI DYKES	FAHRIG	485	-785	14	55	A	A	0	100	2685	651	35	68	323	-1318	0	0	110	890	8170
1 109	NAMER	CAN ABITIBI DYKES WEST	LAROCHEL	485	-785	10	83	A	A	0	100	2640	610	102	48	270	-1340	0	0	74	57	8171
1 110	NAMER	CAN ABITIBI DYKES NORTH	LAROCHEL	485	-785	2	13	A	A	0	100	3540	-320	390	0	240	1070	0	0	0	0	8172
1 111	NAMER	CAN ABITIBI DYKES S E	LAROCHEL	485	-785	4	14	A	A	100	0	2210	190	0	0	-210	-1220	0	0	0	0	8173

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 103	NAMER CAN	MATACHEWAN DYKES S W	FAHRIG	480	-810	0	39	A	A		100	0	2119	-59	4	124	372	592	0	0	125	63	8174
1 104	NAMER CAN	MATACHEWAN DYKES N E	FAHRIG	480	-810	0	15	A	A		0	100	166	423	6	175	629	612	0	0	216	133	8175
1 105	NAMER CAN	MATACHEWAN DYKES	STRANGWA	480	-790	5	43	A	B		100	0	1940	-90	12	230	450	810	0	220	0	0	8181
1 106	NAMER CAN	MATACHEWAN DYKES N E	STRANGWA	480	-790	0	31	A	A		0	100	180	300	24	50	540	710	0	0	60	30	8182
1 107	NAMER CAN	MATACHEWAN DYKES COM		0	0	0	128	A	B		64	36	2004	-219	18	220	501	684	11	130	0	0	0
1 46	NAMER CANADA	SUDBURY NI ERUP N	HOOD	466	-814	0	14	Y	A		0	100	3200	700	20	50	640	-1410	0	0	90	80	5092
1 47	NAMER CANADA	SUDBURY NI ERUP S	HOOD	465	-810	0	33	Y	A		0	100	1830	680	49	20	80	-820	0	0	30	20	5092
1 48	NAMER CAN	SUDBURY ERUPT COMB 1	HOOD	466	-812	0	0	Y	A		0	100	2450	820	0	0	390	-990	0	0	0	0	5092
1 49	NAMER CAN	SUDBURY ERUPT COMB 2	HOOD	466	-812	0	0	Y	A		0	100	3000	780	0	0	530	-1150	0	0	0	0	5092
1 87	NAMER CAN	SUDBURY IRRUPTIVE N	SOPHER	465	-811	0	68	A	A		0	100	3100	730	0	50	580	-1300	0	0	90	80	7076
1 88	NAMER CAN	SUDBURY IRRUPTIVE S	SOPHER	465	-811	0	39	A	A		0	100	1730	640	0	40	30	-860	0	0	60	50	7077
1 286	NAMER CAN	SUDBURY NORITE 1	LAROCHEL	465	-815	5	10	A			0	100	2578	614	0	0	0	0	0	0	0	0	0
1 287	NAMER CAN	SUDBURY NORITE 2	LAROCHEL	466	-814	24	86	A			0	100	2943	649	0	0	0	0	0	0	0	0	0
1 288	NAMER CAN	SUDBURY MICROPEG 2	LAROCHEL	466	-814	16	54	A			0	100	3038	612	0	0	0	0	0	0	0	0	0
1 289	NAMER CAN	SUDBURY NORITE 3	LAROCHEL	466	-813	5	11	A			0	100	3044	706	0	0	0	0	0	0	0	0	0
1 290	NAMER CAN	SUDBURY MICROPEG 3	LAROCHEL	466	-813	5	10	A			0	100	3014	785	0	0	0	0	0	0	0	0	0
1 291	NAMER CAN	SUDBURY NORITE 5	LAROCHEL	467	-810	3	6	A	B		0	100	220	860	0	0	0	0	0	0	0	0	0
1 292	NAMER CAN	SUDBURY NORITE 6	LAROCHEL	467	-798	19	55	A			0	100	620	460	0	0	0	0	0	0	0	0	0
1 293	NAMER CAN	SUDBURY MICROPEG 6	LAROCHEL	467	-798	16	42	A			0	100	500	785	0	0	0	0	0	0	0	0	0
1 294	NAMER CAN	SUDBURY NORITE 7	LAROCHEL	466	-799	3	7	A	B		0	100	1882	384	0	0	0	0	0	0	0	0	0
1 295	NAMER CAN	SUDBURY NORITE 8	LAROCHEL	465	-810	25	74	A			0	100	1709	640	0	0	0	0	0	0	0	0	0
1 296	NAMER CAN	SUDBURY NORITE 9	LAROCHEL	464	-812	10	24	A			0	100	1765	643	0	0	0	0	0	0	0	0	0
1 114	NAMER CAN	MARATHON DYKES	FAHRIG	490	-860	5	9	A	B		0	100	2682	605	25	105	290	-1468	0	0	160	122	8176
1 113	NAMER CAN	NOLSON DYKES	FAHRIG	550	-960	4	5	A	B		0	100	2096	799	275	148	362	-1089	0	0	284	272	8177
1 34	NAMER USA	BARAGA COUNTY DYKS	GRAHAM	465	-885	2	36	N	A		100	0	820	-860	82	10	450	-990	0	0	20	20	1129
1 232	NAMER USA	BARRON QUARTZITE 1	RUNCORN	450	-920	1	8	N	B		0	100	2730	780	6	250	420	-1220	0	0	470	450	8164
1 233	NAMER USA	BARRON QUARTZITE 2	RUNCORN	450	-920	1	9	N	B		0	100	2080	620	21	120	20	-1120	0	0	190	150	8164
1 234	NAMER USA	SIOUX QUARTZITE 1	RUNCORN	440	-940	1	8	N	B		0	100	2430	560	2	580	90	-1410	0	0	830	600	8165
1 85	NAMER CAN	SANDSTONE DYKES	DUBOIS	470	-845	2	4	N	B		0	100	2430	660	14	260	190	-1230	0	0	0	0	7075
1 75	NAMER USA	ORIENTA SANDSTONE	DUBOIS	470	-910	0	8	N	B		0	0	2730	-50	7	220	0	1760	0	0	220	110	7064

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 76	NAMER USA	AMNICON FM SCATTERED	DUBOIS	470	-910	0	6	N B	0	0	0	0	0	0	0	0	0	0	0	0	7065
1 77	NAMER USA	EILEEN SANDSTONE	DUBOIS	470	-910	5	28	N A	0	100	3000	-180	18	70	130	1510	0	0	70	40	7066
1 78	NAMER CAN	SEDS SAULT STE MARIE	DUBOIS	470	-845	2	4	N B	0	100	3060	190	25	170	310	1650	0	0	180	90	7068
1 35	NAMER USA	CHEQUAMEGON SANDST	DUBOIS	470	-885	2	15	N B	0	100	300	740	47	60	690	-470	0	0	110	100	1130
1 36	NAMER USA	JACOBSVILLE SANDST	DUBOIS	470	-885	0	15	N A	0	100	2500	-110	11	130	180	140	0	0	130	70	1131
1 74	NAMER CAN	JACOBSVILLE SANDST	DUBOIS	470	-845	2	14	N A	0	100	2890	-210	11	140	50	1640	0	0	150	70	7067
1 302	NAMER CAN	JACOBSVILLE SS COMBI		0	0	0	0		0	0	0	0	0	0	50	1640	0	0	0	0	0
1 37	NAMER USA	FREDA AND NONESUCH 1	DUBOIS	470	-885	12	68	N A	0	100	2850	-10	26	30	90	1700	0	0	30	20	1132
1 133	NAMER USA	FREDA AND NONESUCH 2	VINCENZ	470	-885	5	0	T A	0	100	2790	20	31	140	70	1760	0	0	140	70	10184
1 303	NAMER USA	FREDA NONESUCH COMB		0	0	0	0		0	0	0	0	0	0	80	1730	0	0	0	0	0
1 38	NAMER USA	COPPER HARBOUR	DUBOIS	470	-885	4	25	N A	0	100	2940	320	20	70	290	1760	0	0	70	40	1133
1 132	NAMER USA	COPPER HARBOUR LAV 2	VINCENZ	470	-885	6	0	X A	0	100	2820	120	30	120	130	1760	0	0	120	60	10183
1 304	NAMER USA	COPPER HARBOUR COMB		0	0	0	0		0	0	0	0	0	0	210	1760	0	0	0	0	0
1 39	NAMER USA	PORTAGE LAKE LAVAS	DUBOIS	470	-885	6	31	N A	0	100	2820	440	47	40	260	-1690	0	0	50	30	1134
1 131	NAMER USA	PORTAGE LAKE LAVAS 2	VINCENZ	470	-885	14	18	T A	0	100	2860	330	22	90	240	-1770	0	0	100	60	10168
1 148	NAMER USA	PORTAGE LAKE LAVAS 3	BOOKS	450	-885	29	145	A A	0	100	2893	353	106	26	271	-1790	0	0	0	0	0
1 305	NAMER USA	PORTAGE LAKE COMBINE		0	0	0	0		0	0	0	0	0	0	258	-1750	262	0	0	0	0
1 146	NAMER USA	NORTH SHORE VOL NORM	PALMER	475	-910	54	54	A A	0	100	2877	473	23	41	321	-1725	0	0	53	36	0
1 159	NAMER USA	BEAVER BAY COMPLEX	BECK	470	-915	29	80	A A	0	100	2825	450	36	45	275	-1705	0	0	55	35	11087
1 266	NAMER USA	BASALTS BEAVER BAY	JAHREIN	470	-910	4	19	N B	0	100	2910	380	12	280	300	1800	0	0	330	200	10187
1 307	NAMER USA	BEAVER BAY COMBINED		0	0	0	0		0	0	0	0	0	0	288	-1752	0	0	0	0	0
1 180	NAMER USA	ANORTHOSITIC GABBRO	BECK	469	-920	12	40	A A	0	100	2945	565	40	70	420	-1690	0	0	100	75	0
1 181	NAMER USA	LAYERED SERIES	BECK	469	-920	24	80	A A	0	100	2900	530	116	30	365	-1700	0	0	40	25	0
1 182	NAMER USA	ENDION SILL	BECK	469	-920	14	45	A A	0	100	2860	490	53	55	315	-1710	0	0	75	50	0
1 183	NAMER USA	LESTER RIVER SILL	BECK	469	-920	20	60	A A	0	100	2830	575	79	35	350	-1610	0	0	50	40	0
1 261	NAMER USA	MELLEN GABBRO	BOOKS	465	-910	14	0	A A	0	100	2940	480	14	0	360	1840	0	0	0	0	11084
1 79	NAMER USA	DULUTH GABBRO	DUBOIS	470	-920	9	18	N A	0	100	2860	330	17	90	230	1800	0	0	100	60	7069
1 235	NAMER USA	SIOUX QUARTZITE 2	RUNCORN	440	-940	1	8	N B	0	100	1220	790	7	250	310	-730	0	0	470	450	8165
1 236	NAMER USA	REDBEDS WISC MINN		445	-930	4	33	N B	0	100	2245	738	17	227	229	-1132	7	389	0	0	0
1 184	NAMER USA	DULUTH GABBRO NORMAL	BECK	480	-914	10	30	A A	0	100	2800	560	25	100	325	-1600	0	0	145	105	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KO	EO 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 264	NAMER USA	DULUTH GABBRO	JAHREIN	470	-920	7	23	N	A	0	100	2900	420	120	60	310	1820	0	0	70	50	10185
1 265	NAMER USA	DULUTH DIABASE	JAHREIN	470	-920	4	21	N	A	0	100	2910	470	30	170	340	1850	0	0	220	140	10186
1 308	NAMER USA	KEWEENAWAN INTR COMB		0	0	0	0			0	100	0	0	0	0	352	-1722	79	55	0	0	0
1 82	NAMER CAN	LOGAN DIABASE NORM 1	DUBOIS	480	-895	15	25	N	A	0	100	2880	480	21	70	330	-1720	0	0	80	60	7073
1 268	NAMER CAN	LOGAN DYKES NORM 2	ROBERTSO	483	-891	15	69	A	A	0	100	2950	430	54	53	350	-1790	0	50	70	40	0
1 185	NAMER USA	LOGAN DIABASE NORM 3	BECK	480	-914	8	25	A	A	0	100	2775	470	37	90	255	-1660	0	0	115	75	0
1 80	NAMER USA	MAMAINSE POINT LAVAS	DUBOIS	470	-845	0	12	N	A	0	100	2920	400	19	100	320	-1730	0	0	120	90	7070
1 141	NAMER CAN	MAMAINSE LAVAS NOR 2	PALMER	470	-847	52	52	A	A	0	100	2999	404	21	44	368	-1796	0	0	53	35	0
1 311	NAMER CANADA	MAMAINSE NORM COM		0	0	0	0			0	100	0	0	0	0	344	-1762	0	0	0	0	0
1 142	NAMER CAN	MICHIPICOTEN IS VOLC	PALMER	477	-858	28	40	A	A	0	100	2936	323	13	77	287	1790	0	0	87	52	0
1 143	NAMER CAN	GARGANTUA VOLC UPPER	PALMER	476	-850	8	14	A	A	0	100	2976	377	58	73	339	1797	0	0	86	55	0
1 145	NAMER USA	N SHORE VOLCAN REV 1	PALMER	478	-899	14	14	A	A	100	0	1164	-629	31	73	470	-1598	0	0	117	93	0
1 149	NAMER USA	N SHORE VOLCAN REV 2	BOOKS	480	-900	11	52	A	A	100	0	1170	-592	129	40	445	-1630	0	0	0	0	0
1 306	NAMER USA	N SHORE REV COMBINED		0	0	0	0			0	0	0	0	0	0	458	-1614	0	0	0	0	0
1 160	NAMER USA	COCK COUNTY GABBRO	BECK	480	-905	7	39	A	A	100	0	1250	-550	47	75	480	-1830	0	0	110	80	11088
1 147	NAMER CAN	OSLER VOLCANICS	PALMER	486	-881	12	24	A	A	100	0	1175	-645	24	90	489	-1567	0	0	144	117	0
1 186	NAMER USA	DULUTH LOGAN REVERSE	BECK	480	-914	13	40	A	A	100	0	910	-655	44	60	425	-1560	0	0	95	70	0
1 81	NAMER CAN	LOGAN DIABASE REV 1	DUBOIS	485	-890	18	80	N	A	100	0	1170	-760	13	50	540	-1300	0	0	80	80	7072
1 151	NAMER CANADA	LOGAN SILL REV 2	PALMER	495	-885	21	34	A	A	100	0	1083	-733	59	42	492	-1369	0	0	76	67	0
1 152	NAMER CANADA	LOGAN SILL REV 3	PALMER	485	-890	9	15	A	A	100	0	1107	-692	46	76	475	-1464	0	0	129	112	0
1 153	NAMER CANADA	LOGAN SILL REV 4	PALMER	490	-890	0	0	A	A	100	0	0	0	0	0	484	-1417	0	0	0	0	0
1 269	NAMER CANADA	LOGAN SILLS REV 5	ROBERTSO	488	-889	12	51	A	A	100	0	1070	-720	34	80	470	-1400	0	80	130	120	0
1 309	NAMER USA	CANADA LOGAN REV COM		0	0	0	0			100	0	0	0	0	0	484	-1425	108	74	0	0	0
1 84	NAMER CANADA	ALONA BAY LAVAS 1	DUBOIS	470	-845	0	12	N	A	100	0	500	-840	12	140	390	-950	0	0	250	250	7071
1 139	NAMER CANADA	ALONA BAY LAVAS 2	PALMER	476	-847	11	11	A	A	100	0	1063	-748	21	102	474	-1273	0	0	185	171	0
1 310	NAMER CANADA	ALONA LAVAS COMBI		0	0	0	0			100	0	0	0	0	0	440	-1100	0	0	0	0	0
1 140	NAMER CAN	MAMAINSE LAV REV DIV	PALMER	470	-847	20	20	A	A	100	0	1248	-679	20	75	544	-1476	0	0	128	106	0
1 144	NAMER CAN	GARGANTUA VOLC LOWER	PALMER	476	-850	9	11	A	A	100	0	1543	-715	90	55	721	-1367	0	0	95	84	0
1 187	NAMER USA	KEWEEN INTRUS COMBIN	BECK	0	0	0	0	A	A	15	85	0	0	0	0	330	-1670	143	51	0	0	0
1 83	NAMER CAN	SIBLEY SERIES	DUBOIS	485	-890	4	18	N	A	72	28	780	-510	23	80	160	-1490	0	0	100	80	7074

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 191	NAMER CAN	GUNFLINT IRON FORMAT	SYMONS	485	-892	20	20	A	A	20	80	1920	790	14	90	280	-940	0	0	170	160	10152
1 192	NAMER USA	HEMATITE ORE ETC	SYMONS	479	-921	5	31	A	A	0	100	2901	809	16	196	510	-1193	20	180	378	364	10154
1 193	NAMER USA	ELY GREENSTONE	SYMONS	479	-921	2	9	A	B	0	100	2601	760	25	519	378	-1258	16	114	0	0	10157
1 194	NAMER USA	SOUDAN FE FM SURFACE	SYMONS	479	-921	1	8	A	B	0	100	3380	30	13	160	390	2390	0	0	160	90	10153
1 195	NAMER USA	NEGAUNEE IRON CRES 1	SYMONS	465	-876	0	6	A	B	100	0	1690	190	4	350	330	1050	0	0	360	180	9153
1 196	NAMER USA	NEGAUNEE IRON CRES 2	SYMONS	465	-876	0	8	A	B	100	0	2390	300	10	170	80	-160	0	0	190	180	9154
1 150	NAMER USA	LOW KEWEEN IRONWOOD	BOOKS	465	-900	14	61	A	A	100	0	740	-715	71	48	280	-1275	0	0	0	0	0
1 189	NAMER USA	KEWEENAWAN DIORITE 1	SYMONS	465	-876	0	4	A	B	0	100	2130	580	4	400	0	0	0	0	0	0	9155
1 190	NAMER USA	KEWEENAWAN DIORITE 2	SYMONS	455	-879	0	4	A	B	0	100	2480	720	8	280	280	-1220	0	0	510	450	10151
1 115	NAMER CANADA	MUSKOX INTRUSION	ROBERTSO	660	-1130	65	0	A	A	0	100	0	0	0	0	90	-1700	25	80	0	0	8183
1 121	NAMER CAN	COPPERMINE LAVAS	ROBERTSO	670	-1160	24	48	A	A	0	100	2430	220	23	60	10	-1750	34	50	0	0	8184
1 116	NAMER CAN	MACK DYKES AT MUSKOX	ROBERTSO	670	-1160	26	54	A	A	0	100	2270	310	4	150	40	-1580	4	160	0	0	0
1 117	NAMER CAN	MACKENZIE DYKES	FAHRIG	650	-1120	23	34	A	A	0	100	2508	247	7	102	38	-1773	0	0	110	59	8179
1 118	NAMER CANADA	MACKENZIE DIABASE	FAHRIG	0	0	14	63	A	A	0	100	0	0	0	0	35	-1669	82	40	0	0	11089
1 89	NAMER CAN	SUDBURY DIABASE DYKE	SOPHER	465	-810	2	13	A	A	100	0	2580	-10	35	70	80	170	0	0	70	40	7078
1 119	NAMER CANADA	SUDBURY DYKES	FAHRIG	470	-820	22	37	A	A	0	100	2641	10	4	130	-38	-1665	0	0	132	66	8178
1 120	NAMER CANADA	SUDBURY DYKES	LAROCHEL	464	-815	11	53	A	A	0	100	2680	-10	52	30	-20	-1710	0	0	30	10	9143
1 162	NAMER CANADA	FRANKLIN DIABASE	FAHRIG	0	0	24	114	A	A	21	79	0	0	0	0	80	1670	32	50	0	0	0
1 312	NAMER CANADA	CORONATION SILLS	ROBERTSO	678	-1160	13	78	X	A	100	0	810	-40	11	130	-10	1630	0	90	0	0	0
1 313	NAMER CANADA	FRANKLIN DIAB COM	ROBERTSO	0	0	37	192	X	A	47	53	0	0	0	0	48	1653	26	47	0	0	0
1 161	NAMER CANADA	GRENVILLE DYKES	MURTHY	460	-780	11	55	A	A	9	91	1189	452	14	113	-30	1510	0	110	0	0	0
1 23	NAMER USA	BELT SPOKANE SHALE 1	COLLINSO	470	-1120	0	39	N	A	0	100	2320	550	18	40	50	-1520	0	0	60	40	3079
1 24	NAMER USA	BELT SPOKANE SHALE 2	COLLINSO	490	-1140	0	5	N	B	100	0	2060	390	10	80	160	410	0	0	100	60	3080
1 22	NAMER USA	BELT MILLER PEAK FM	COLLINSO	470	-1140	0	14	N	A	100	0	2340	300	20	70	110	140	0	0	80	40	3078
1 21	NAMER USA	BELT SER MCNAMARA FM	COLLINSO	470	-1140	0	20	N	A	100	0	260	-430	30	40	140	420	0	0	50	30	3077
1 26	NAMER USA	BELT APPEKUNNY FM	COLLINSO	490	-1140	0	15	N	A	100	0	2230	290	15	60	150	240	0	0	70	40	3082
1 28	NAMER CANADA	BELT SER KINTLA 1	NORRIS	494	-1149	0	27	A	A	0	100	390	-400	23	60	110	300	0	0	70	50	5089
1 29	NAMER CANADA	BELT SER KINTLA 2	NORRIS	493	-1143	0	24	A	A	50	50	380	-490	24	70	30	340	0	0	90	60	5090
1 30	NAMER CANADA	BELT SER KINTLA 3	NORRIS	490	-1140	0	8	A	B	0	100	500	-380	40	100	70	210	0	0	120	80	5091
1 31	NAMER CANADA	BELT KINTLA COMB	NORRIS	490	-1143	0	59	A	A	20	80	430	-430	111	0	70	280	0	0	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	REV	NOR	DECL	INCL	KO	EO 95	POLE LAT	POLE LONG	KP	EP 95	CM	CP	GEOJ LIST
1 67	NAMER CAN	KINTLA FORMATION A	BLACK	492	-1143	3	13	A	A	0	100	460	-340	25	90	120	210	0	0	0	0	0
1 65	NAMER CAN	KINTLA FORMATION C	BLACK	493	-1146	2	25	A	A	100	0	2210	490	14	80	30	310	0	0	0	0	0
1 66	NAMER CAN	SILL KINTLA FORM B	BLACK	493	-1142	1	4	A	B	0	100	180	-120	24	190	310	440	0	0	0	0	0
1 68	NAMER CAN	PURCELL LAVA	BLACK	503	-1143	5	22	A	A	0	100	250	-180	4	180	290	360	0	0	0	0	0
1 69	NAMER CAN	UPPER SIYEH FORMAT	BLACK	492	-1141	2	4	A	B	0	100	470	-240	34	160	160	180	0	0	0	0	0
1 71	NAMER CANADA	WATERTON FM MIXED	BLACK	491	-1141	3	17	A	A	0	0	2020	330	25	70	200	430	0	0	0	0	0
1 70	NAMER CAN	GRINNEL FORMATION	BLACK	492	-1141	3	16	A	A	100	0	2120	510	52	50	50	370	0	0	0	0	0
1 25	NAMER USA	BELT GRINNEL FM 2	COLLINSO	490	-1140	0	16	N	A	100	0	2250	480	15	60	20	280	0	0	80	50	3081
1 223	NAMER USA	BELT GRINNEL FM 3	RUNCORN	480	-1140	1	9	N	B	100	0	2400	70	12	160	170	10	0	0	160	80	8162
1 224	NAMER USA	MISSOULA GROUP	RUNCORN	480	-1140	1	39	N	A	0	100	380	-270	19	60	190	270	0	0	60	30	8161
1 225	NAMER	BELT SERIES COMBINED 1		480	-1140	11	216	Y	A	46	54	430	-374	26	90	102	264	36	77	0	0	0
1 300	NAMER	BELT SERIES COMBINED 2		0	0	0	0		A	0	0	0	0	0	0	-128	-1496	37	85	0	0	0
1 244	NAMER USA	STILLWATER COMPLEX	BERGH	454	-1100	9	96	A	A	100	0	1600	-400	23	109	-620	-680	0	0	130	80	0
1 172	NAMER USA	SHERMAN GRANITE	EGGLER	410	-1054	5	14	A	A	20	80	520	-440	86	40	80	290	0	0	60	40	9144
1 155	NAMER USA	PIKES PEAK GRANITE	SPALL	389	-1053	4	30	T	A	0	100	2650	290	144	70	60	-1790	0	0	80	40	0
1 188	NAMER USA	SIERRA ANCHA DIABASE	HELSLEY	0	0	0	0			0	0	0	0	0	0	275	1820	0	0	0	0	0
1 13	NAMER USA	BONITO CANYON QTZITE	COLLINSO	360	-1090	0	16	N	A	0	100	310	-250	19	40	330	340	0	0	40	20	3087
1 14	NAMER USA	BASS LIMESTONE	COLLINSO	360	-1120	0	14	N	A	100	0	2250	340	0	0	210	220	0	0	0	0	3086
1 220	NAMER USA	BASS LIMESTONE	RUNCORN	360	-1120	1	8	N	B	100	0	2310	360	0	20	160	180	0	0	20	10	8168
1 221	NAMER USA	BASS LIMESTONE COMB		360	-1120	2	22	N	A	100	0	2280	350	0	0	180	200	0	0	0	0	0
1 15	NAMER USA	BASS AND HAKATAI FMS	DOELL	360	-1120	0	10	N	B	100	0	2050	650	6	210	40	520	0	0	330	270	1138
1 16	NAMER USA	HAKATAI SHALES 1	RUNCORN	360	-1120	0	15	N	A	0	100	2680	730	22	50	300	-1500	0	0	100	90	1137
1 17	NAMER USA	HAKATAI SHALES 2	COLLINSO	360	-1120	0	14	N	A	100	0	2450	310	0	0	90	60	0	0	0	0	3084
1 222	NAMER USA	HAKATAI SHALE 3	RUNCORN	360	-1120	1	9	N	B	0	100	2240	740	152	40	120	1330	0	0	70	70	8169
1 18	NAMER USA	SHINUMO QUARTZITE	COLLINSO	360	-1120	0	14	N	A	100	0	2460	330	0	0	70	70	0	0	0	0	3083
1 19	NAMER USA	GRAND CANYON SER COM		360	-1120	0	67	N	B	100	0	2370	480	12	230	30	230	0	0	260	260	0
1 20	NAMER USA	PRECAMB ARIZONA COMB		360	-1120	0	83	N	B	63	37	2310	450	11	210	80	250	0	0	230	230	0
1 226	NAMER USA	UINTA MOUNTAIN GROUP	RUNCORN	410	-1100	1	8	N	B	0	100	530	-70	9	240	240	90	0	0	240	120	8166
1 227	NAMER USA	BIG COTTONWOOD FORM	RUNCORN	410	-1100	1	7	N	B	0	100	780	-310	0	180	20	-1800	0	0	190	110	8167
1 228	NAMER USA	PIONEER SHALE 1	RUNCORN	330	-1110	1	15	N	A	0	100	180	-480	11	120	250	520	0	0	160	100	8163

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 229	NAMER USA	PIONEER SHALE 2	RUNCORN	340	-1110	1	13	N A	0	100	290	-330	5	200	200	360	0	0	230	130	8163
1 230	NAMER USA	PIONEER SHALE 3	RUNCORN	330	-1120	1	21	N B	0	100	180	-520	5	230	230	520	0	0	310	210	8163
1 231	NAMER USA	PC SEDS SW USA COMB		0	0	9	108	N A	34	66	446	-347	15	138	208	248	0	0	0	0	1020
1 167	NAMER USA	ROCKS OF EL PASO TEX	SPALL	319	-1064	12	101	A A	0	100	2790	620	557	40	280	-1600	0	0	60	50	0
1 11	NAMER USA	HAZEL FM FLAT	HOWELL	310	-1050	5	15	N B	0	100	3160	560	35	60	530	-1730	0	0	90	70	1135
1 12	NAMER USA	HAZEL FM FOLDED	HOWELL	310	-1050	9	37	N B	0	100	3280	370	3	170	600	1540	0	0	200	120	1136
1 157	NAMER USA	ARBUCKLE GRANITES	SPALL	343	-967	4	19	T B	0	100	2710	420	3	220	140	-1660	0	0	270	170	10166
1 158	NAMER USA	ARBUCKLE GRAN COMBIN		343	-967	0	0	T B	0	100	0	0	0	0	180	-1570	69	150	0	0	0
1 239	NAMER USA	TUFFS ST FRANCOIS	CHIHSU	376	-907	11	49	A A	0	100	2433	474	110	44	12	391	0	0	56	37	8159
1 240	NAMER USA	IGN RX ST FRANCOIS	HAYS	375	-905	5	95	Y A	0	100	2446	459	80	75	13	361	0	0	96	61	0
1 241	NAMER USA	IGN RX ST FRANC COMB		375	-905	6	144	Y A	0	100	2449	456	65	96	13	367	0	0	122	77	8160
1 298	NAMER	IRON MT PRIMARY ORE	EHRLICH	377	-906	0	25	A A	0	100	2193	173	0	82	-307	-1373	0	0	0	0	0
1 299	NAMER	IRON MT CONTACT ORE	EHRLICH	377	-906	0	0	A	0	100	0	0	0	0	-40	-1330	0	0	0	0	0
1 163	SAMER	GUYAN VENZ RORAIMA DOL 1	HARGRAVE	60	-610	7	34	A A	0	100	3335	275	29	110	630	-1290	47	90	0	0	10160
1 164	SAMER	GUYAN VENZ RORAIMA DOL 2	HARGRAVE	60	-610	7	35	A A	100	0	1450	395	25	120	450	1670	40	100	0	0	10161
1 165	SAMER	GUY VEN MINOR DYKE SUITE	HARGRAVE	60	-610	4	29	A A	0	100	165	210	36	160	730	110	53	130	0	0	0
1 90	SAMER	ARG RED SEDS JUJUY PROV	CREER	-250	-650	0	7	N B	100	0	1960	-320	0	250	450	-430	0	0	0	0	6072
1 91	SAMER	BRAZIL RED SEDS PARANA	CREER	-250	-490	0	3	N B	100	0	2100	-710	0	0	60	-320	0	0	0	0	6073
1 256	USSR	JOTNIAN SANDST VAZHINKA	KATSEBLI	615	340	0	57	N A	6	94	3475	295	0	45	440	2310	0	0	50	40	10199
1 255	USSR	JOTNIAN SANDSTON SHOKSHA	KATSEBLI	615	350	0	29	N A	0	100	3440	460	58	35	540	2400	0	0	50	40	10198
1 257	USSR	JOTNIAN SANDSTONE COMBIN		615	350	0	86	N A	4	96	3460	380	0	0	490	2360	0	0	0	0	0
1 281	USSR	KATAV SUITE SOUTH URALS	KOMISSAR	530	570	0	16	A	100	0	1930	340	0	80	170	2240	0	0	90	50	0
1 280	USSR	BURCVUYA SUITE	GONCHARO	660	890	0	39	A	0	100	3360	340	0	80	400	2980	0	0	80	40	0
1 282	USSR	KOKIN SUITE YENISEI AREA	VLASSOV	590	920	0	22	A	0	100	120	120	0	180	370	2570	0	0	180	90	0
1 57	USSR	LOWER ANGARA SUITE	VLASSOV	580	950	0	0	A A	0	100	60	-280	0	0	170	-930	0	0	0	0	7056
1 58	USSR	KONINSK SUITE	VLASSOV	590	920	0	23	A A	0	100	120	120	0	0	350	-1030	0	0	0	0	7057
1 259	USSR	TINGUISIK SERIES POL MIX	VLASSOV	590	980	0	159	N A	0	0	1630	164	99	164	-213	1161	0	0	128	66	10177
1 277	USSR	TUNGUSIK SERIES 2 MIXED	POPOVA	590	950	0	83	N A	0	0	1550	100	0	80	-220	1220	0	0	80	40	0
1 260	USSR	SUKHOPIT SERIES POL MIX	VLASSOV	590	980	0	139	N A	0	0	1730	247	121	112	-179	1040	0	0	120	70	10180
1 278	USSR	SUKHOPITIAN SERIES 2	POPOVA	590	950	0	78	N A	72	28	1628	267	83	136	-155	1123	0	0	148	80	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
1 279	USSR	SUKHOPITIAN SER 3 COMB		590	965	0	217	N	A	63	37	0	0	0	0	-169	1070	107	65	0	0	0
1 284	USSR	KARAGASSKI SAYAN MIXED	DAVYDOV	550	980	0	23	N	A	0	0	1410	90	0	100	-220	1410	0	0	100	50	0
1 258	USSR	OSLYANSK SERIES	VLASSOV	590	980	0	9	N	B	100	0	1320	240	0	140	100	1420	0	0	150	80	10176
1 276	USSR	OSLYANSK SERIES 2	VLASSOV	590	950	0	9	N	B	100	0	3070	-250	0	190	60	1450	0	0	200	110	0
1 5	USSR	USSR SINIAN SEDIMENTS	KHRAMOV	600	1170	0	30	N	A	0	100	350	-70	0	0	210	-1010	0	0	90	40	6069
1 275	USSR	ULUNTUI SUITE N BAIKAL	DAVYDOV	550	1090	0	53		A	100	0	2020	40	0	80	290	2630	0	0	80	40	0
1 283	USSR	L SINIAN SEDS YAKUTSK	SIDOROVA	590	1348	0	229		A	58	42	2961	246	0	90	244	287	0	0	103	55	0
2 43	AFRIC	MALA NTONYA RING STRUCT	BRIDEN	-155	355	7	77	A	A	0	100	3113	428	1054	19	277	-151	0	0	23	14	9137
2 53	AFRIC	ZAMBIA HOOK INTRUSIVES	BROCK	-150	265	3	10	A	B	0	100	3004	493	14	343	140	-240	0	0	455	302	9132
2 51	AFRIC	MALAWI DEZA MT SYENITE	MCELHINN	-144	343	1	1	A	B	0	100	3080	410	0	0	266	-196	0	0	0	0	10150
2 47	AFRIC	MOROCCO RED SANDSTONES 2	TARLING	320	-70	4	12	T	B	0	100	1350	150	0	470	0	0	0	0	0	0	9138
2 48	AFRIC	MOROCCO RED SANDSTONES 3	TARLING	320	-70	1	3	T	B	0	100	1050	140	0	140	0	0	0	0	0	0	9136
2 42	ANTAR	ADMIRALTY GRANITES	BULL	-774	1619	5	5	A	B	0	100	2570	-770	23	90	600	370	0	0	150	120	6039
2 41	ANTAR	BASEMENT DYKES	BULL	-774	1616	29	48	A	B	0	100	2470	-640	67	40	400	400	0	0	60	50	2030
2 73	ANTAR	ANTARCTIC GNEISSES 2	KANEOKA	-690	400	0	30	N	A	100	0	3469	489	0	0	118	-1525	0	0	0	0	0
2 31	ANTAR	OLDER INTR SCATTERED OIR	BLUNDELL	-680	-670	3	22	N	B	0	0	0	0	0	0	0	0	0	0	0	0	7053
2 44	ASIA	PAK PURPLE SS SALT RANGE	MCELHINN	327	730	1	10	T	A	75	25	2180	315	15	120	280	-1480	0	110	0	0	11085
2 70	ASIA	PAKISTAN PURPLE SANDST	MCELHINN	327	730	1	10	T	A	73	27	2180	315	15	120	280	-1480	17	110	0	0	0
2 59	ASIA	NORTH KOREA CAMBRIAN SS	GURARII	390	1260	0	23	T	A	100	0	1650	580	0	0	110	-430	0	0	0	0	10146
2 17	AUSTR	ANTRIM PLATEAU BASALTS	IRVING	-160	1260	3	7	N	B	66	34	530	-20	0	120	360	-1540	0	0	120	60	1125
2 18	AUSTR	ELDER MOUNTAIN SANDSTONE	IRVING	-160	1260	0	3	N	B	100	0	2310	-150	0	100	340	-1640	0	0	100	50	1124
2 50	AUSTR	SEDIMENTS KANGAROO ISLAN	BRIDEN	-356	1375	22	50	N	B	9	91	3570	-750	28	60	640	-390	0	0	0	0	9134
2 69	AUSTR	ANTRIM PLATEAU BASALTS	MCELHINN	-160	1300	14	52	X	A	29	71	510	660	6	130	90	1600	0	170	0	0	0
2 49	AUSTR	VOLC AND SEDS TASMANIA	BRIDEN	-410	1455	12	44	N	B	0	100	90	-770	18	105	660	-450	0	0	0	0	9133
2 2	EURCP	WALES CAERFAI SERIES 1	CREER	520	-50	10	12	N	A	100	0	1870	390	32	80	150	1690	0	0	90	60	1121
2 68	EURCP	WALES CAERFAI SERIES 2	BRIDEN	518	-51	16	47	N	A	100	0	1850	230	10	123	260	1690	0	0	130	70	0
2 1	EURCP	SCOT YOUNGER GABBROS	BLUNDELL	575	-25	0	21	N	A	100	0	1820	510	13	90	10	1760	0	0	120	80	2039
2 3	EURCP	ENG HARTSHILL QUARTZITE	BIDGOOD	525	-15	0	7	A	B	100	0	1930	340	12	160	180	1650	0	0	180	100	5083
2 4	EURCP	CZE BARRANDIAN PORPHYS C	BUCHA	500	137	0	10	N	A	0	100	260	330	0	120	520	1470	0	0	130	80	5086
2 5	EURCP	CZE BARRANDIAN PORPHYS D	BUCHA	500	137	0	16	N	A	100	0	2080	-120	0	150	400	1560	0	0	150	80	5086

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
2	6	EURCP	CZE BARRANDIAN PORPHYS E	BUCHA	500	137	0	13	N	A	100	0	2260	-140	0	150	320	1360	0	0	150	80	5086
2	7	EURCP	CZE BARRANDIAN PORPHYS F	BUCHA	500	137	0	9	N	B	100	0	1880	160	0	250	300	1850	0	0	260	130	5086
2	8	EURCP	CZE EARRANC C TO F COMB	BUCHA	500	137	0	48	N	A	71	29	270	110	10	0	400	1570	0	0	0	0	5086
2	9	EURCP	CZE BARRAND PORPHYRITE B	BUCHA	500	137	0	37	N	A	0	100	1920	660	0	90	90	60	0	0	140	120	5087
2	10	EURCP	CZE BARRANDIAN PORPHY A1	BUCHA	500	137	0	14	N	B	100	0	970	-220	0	210	130	-780	0	0	220	120	5088
2	11	EURCP	CZE BARRANDIAN PORPHY A2	BUCHA	500	137	0	15	N	A	100	0	1230	80	0	160	170	-1050	0	0	160	80	5088
2	12	EURCP	CZE BARRANDIAN PORPHY A3	BUCHA	500	137	0	12	N	A	100	0	170	350	0	90	660	1340	0	0	110	60	5088
2	13	EURCP	CZE BARRANDIAN PORPHY A4	BUCHA	500	137	0	16	N	A	100	0	1080	-140	0	80	170	-860	0	0	90	40	5088
2	14	EURCP	CZE BARRAND A1 A2 A4 COM	BUCHA	500	137	0	45	N	A	100	0	1090	-90	1600	0	160	-880	0	0	0	0	5088
2	32	EURCP	CZECH PORPHYRITES	ANDREEVA	508	138	0	5	N	B	100	0	1250	260	0	0	100	-1120	0	0	0	0	8139
2	33	EURCP	CZECH JINCE BEDS	BUKHA	500	140	5	66	Y	B	40	60	430	-210	6	320	160	1490	0	240	0	0	8140
2	34	EURCP	CZECH GLUBSHSKY CONGLOM	ANDREEVA	497	140	0	9	A	B	0	100	2800	200	0	0	140	-770	0	60	0	0	8141
2	35	EUROP	CZECH SADECKY BEDS	ANDREEVA	497	140	0	20	N	A	0	100	2540	340	0	0	10	1250	0	50	0	0	8142
2	36	EURCP	CZECH BOGUTINSKY SANDST	ANDREEVA	497	140	0	19	A	B	0	100	1900	660	0	0	80	70	0	0	210	120	8143
2	37	EUROP	CZECH HLUBOS SADEK BEDS	BUKHA	500	140	14	25	Y	A	0	100	2630	330	7	160	100	-580	0	160	0	0	8146
2	67	EURCP	CZECH PORPHYRIES SEDIM	BUCHA	500	140	8	122	Y	B	100	0	1810	110	4	320	340	1930	0	220	0	0	8138
2	65	NAMER	CANADA BRADORE FORMATION	BLACK	510	-580	0	10	A	A	0	0	1512	445	27	94	90	1488	0	0	118	74	8147
2	66	NAMER	CANADA RATCLIFFE FORMAT	BLACK	450	-670	0	12	A	A	0	0	1681	532	10	149	100	1240	0	0	206	143	8148
2	46	NAMER	USA RED SANDSTONE MICHIG	SYMONS	460	-880	0	3	A	B	100	0	1310	280	6	400	150	1410	0	0	450	240	10149
2	75	NAMER	USA LAMOTT FM GROUP 1	ALKHAFAJ	377	-905	0	34	A	B	0	100	2953	443	5	131	300	-1730	0	0	90	80	0
2	76	NAMER	USA LAMOTT FM GROUP 2A	ALKHAFAJ	377	-905	0	33	A	A	0	100	523	267	10	70	-380	-1660	0	0	80	40	0
2	77	NAMER	USA LAMOTT FM GROUP 2B	ALKHAFAJ	377	-905	0	9	A	B	0	100	959	450	30	91	-115	1150	0	0	110	70	0
2	78	NAMER	USA LAMOTT FM GP 2 COMB	ALKHAFAJ	377	-905	0	42	A	A	0	100	599	319	9	77	-261	1713	0	0	0	0	0
2	79	NAMER	USA LAMOTT FM LOCALITY E	ALKHAFAJ	377	-905	0	11	A	B	100	0	1429	314	10	127	320	1370	0	0	200	100	0
2	19	NAMER	USA WILBERNS FORMATION	HOWELL	305	-990	10	158	N	A	0	0	980	240	0	0	0	1580	0	0	0	0	1123
2	54	NAMER	USA BASEMENT WICHITA MTS	KU	348	-999	8	28	A	B	100	0	1380	114	11	147	334	1339	0	0	0	0	9135
2	45	NAMER	USA WICHITA GRANITES OKL	SPALL	350	-990	0	33	T	A	100	0	970	80	3	180	40	1640	0	0	180	90	10148
2	20	NAMER	USA SAWATCH SANDY COLOM	HOWELL	390	-1065	2	31	N	B	100	0	1480	-150	44	40	470	1250	0	0	40	20	1122
2	24	NAMER	USA DEADWOOD FORMATION	COLLINSO	420	-1070	0	7	N	B	100	0	1510	-140	16	70	470	1170	0	0	70	40	3075
2	21	NAMER	USA LODORE FORMATION NEG	COLLINSO	410	-1100	0	26	N	A	0	100	590	40	14	80	0	0	0	0	0	0	3076

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	K E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
2	22 NAMER	USA LODORE FORMATION POS	COLLINSO	410	-1100	0	7	N	B	100	0	2340	130	25	130	0	0	0	0	0	0	3076
2	23 NAMER	USA LODORE FORMATION COM	COLLINSO	410	-1100	0	33	N	A	79	21	560	-50	0	0	230	60	0	0	70	40	3076
2	25 NAMER	USA BRIGHT ANGEL SCATTER	COLLINSO	360	-1140	0	20	N	B	0	0	0	0	0	0	0	0	0	0	0	0	0
2	26 NAMER	USA TAPEATS SANDSTONE	COLLINSO	360	-1140	0	15	N	B	100	0	0	0	0	0	220	270	0	0	0	0	0
2	38 SAMER	ARGENTINA REDBEDS	CREER	-230	-660	0	17	T	A	100	0	170	560	0	140	270	-500	0	100	0	0	8145
2	30 SAMER	ARG RED SEDS SALTA PROV	CREER	-245	-655	0	20	N	B	0	100	240	170	0	260	500	-280	0	0	0	0	6068
2	85 SAMER	ARGEN CAMB ORDOV REDBEDS	CREER	-240	-655	0	13	T	B	0	100	420	640	4	210	80	-400	2	280	0	0	0
2	29 SAMER	ARGENT RED SEDIMENTS	CREER	-245	-650	0	17	N	B	0	100	240	180	0	470	490	-280	0	0	0	0	6067
2	15 USSR	SEDIMENT DNIESTER REGION	KRUGLYAK	490	250	0	0	N	A	0	100	2330	510	0	0	20	-160	0	0	0	0	5085
2	39 USSR	UKRAINIAN BASALT	KOMARCV	510	260	1	6	N	B	0	100	1400	750	40	110	280	460	0	0	200	180	3071
2	80 USSR	ASHA SUITE URALS MIXED	KOMISSAR	557	570	0	191	N	A	0	0	500	-310	31	169	78	1889	37	152	0	0	0
2	27 USSR	ALDAN STAGE POLAR MIXED	POPOVA	0	0	0	11	N	B	0	0	0	0	0	0	0	0	0	0	0	0	7055
2	93 USSR	UPPER CAMBRIAN KULIUMEE	GONCHARO	680	880	0	53		A	100	0	3230	340	0	40	-360	1340	0	0	50	30	11084
2	94 USSR	MAIYAN STAGE 1	GONCHARO	680	880	0	27		A	100	0	3170	340	0	90	-360	1350	0	0	100	60	0
2	95 USSR	MAIYAN STAGE 2	GONCHARO	670	870	0	58		A	100	0	3050	340	0	60	-310	1520	0	0	70	40	0
2	96 USSR	MAIYAN STAGE 3	SIDOROVA	610	1350	0	16		A	100	0	3510	390	0	60	-500	1480	0	0	80	40	0
2	84 USSR	KOSTINO SUITE TUNGUSKA R	GONCHARO	660	890	0	35		A	100	0	2810	-470	0	60	210	1570	0	0	80	50	0
2	61 USSR	EVENKIY SERIES	GURARIY	580	970	0	300		A	45	55	0	0	0	0	370	-400	0	0	0	0	11081
2	16 USSR	VERKHOLENSK SUITE MIXED	KHRAMOV	610	1160	0	47	N	A	0	0	10	160	0	80	370	-640	0	0	80	40	5084
2	60 USSR	VERKHOLENSK SUITE 2	GURARII	543	1047	17	202	A	A	50	50	1580	-30	0	0	340	-480	0	0	0	0	10145
2	40 USSR	SINIAN SEDIMENTS	KHRAMOV	600	1170	0	30	N	A	0	100	350	-70	0	0	210	-1010	0	0	90	40	6069
2	28 USSR	UPPER LENA STAGE	POPOVA	0	0	0	19	N	A	63	37	1630	30	0	100	300	-670	0	0	100	50	7054
2	55 USSR	UPPER LENA SUITE 1 MIXED	RODIONOV	540	1060	0	35	A	A	0	0	1600	20	0	117	330	-500	0	0	118	60	10141
2	56 USSR	UPPER LENA SUITE 2 MIXED	RODIONOV	580	1080	0	39	A	A	58	42	1710	-80	0	73	360	-610	0	0	74	37	10142
2	57 USSR	UPPER LENA SUITE 3 MIXED	RODIONOV	570	1070	0	39	A	A	0	0	1650	-160	0	84	410	-530	0	0	86	44	10143
2	58 USSR	UPPER LENA SUITE 4 MIXED	RODIONOV	540	1020	0	28	A	A	0	0	1620	-130	0	79	410	-540	0	0	79	39	10144
2	87 USSR	UPPER LENA SUITE 5 MIXED	RODIONOV	610	1160	0	47		A	0	0	1810	-160	0	80	-370	1160	0	0	80	40	0
2	88 USSR	UPPER LENA SUITE 6 MIXED	VLASSOV	580	970	0	159		A	0	0	1630	30	0	100	-290	1160	0	0	100	50	11082
2	89 USSR	UPPER LENA SUITE 7 MIXED	RODIONOV	590	1065	0	43		A	0	0	1670	-70	0	110	-340	1220	0	0	110	60	0
2	90 USSR	UPPER LENA SUITE 8 MIXED	RODIONOV	590	1065	0	52		A	0	0	1690	-60	0	80	-340	1200	0	0	80	40	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GECJ LIST
2 91	USSR	UPPER LENA SUITE 9 MIXED	RODIONOV	590	1065	0	18	A		0	0	1630	-160	0	130	-380	1280	0	0	130	70	0
2 92	USSR	UPPER LENA SUITE 10 MIX	DAVYDOV	550	1060	0	167	A		0	0	1580	-50	0	60	-360	1320	0	0	60	30	11083
2 81	USSR	LENA ST B SUKHARAIN MIX	GONCHARO	570	870	0	22	A		0	0	2720	360	0	100	-190	1700	0	0	120	70	0
2 82	USSR	LENA STAGE C SUB REDROCK	GONCHARO	605	1205	0	21	A		100	0	1350	-590	0	110	-540	1920	0	0	160	120	0
2 83	USSR	LENA STAGE D CHARA SUITE	GONCHARO	605	1340	0	18	A		0	100	2990	180	0	80	-250	2060	0	0	40	20	0
2 99	USSR	UST BOTOMA SUITE	SIDOROVA	615	1290	0	12	A		100	0	3140	360	0	100	-360	1880	0	0	110	70	0
2 97	USSR	UST MIYA SUITE	SIDOROVA	600	1350	0	182	A		100	0	3400	350	0	20	-460	1630	0	0	30	10	0
2 98	USSR	AMGA RIVER STAGE	SIDOROVA	600	1350	0	101	A		100	0	3380	340	0	30	-460	1660	0	0	40	30	0
3 30	AFRIC	ZAMBIA HOOK INTRUSIVES	BROCK	-150	265	3	10	A	B	0	100	3004	493	14	343	140	-240	0	0	455	302	9132
3 9	ANTAR	ANTARCTIC GNEISSES 1	NAGATA	-690	400	3	30	N	A	0	100	3430	530	128	0	140	-1540	0	0	0	0	2041
3 36	ANTAR	ANTARCTIC GNEISSES 2	KANEOKA	-690	400	0	30	N	A	100	0	3469	489	0	0	118	-1525	0	0	0	0	0
3 23	ANTAR	BASEMENT DYKES	BULL	-774	1616	29	48	A	B	0	100	2470	-640	67	40	400	400	0	0	60	50	2030
3 25	ANTAR	OLDER INTR SCATTERED CIR	BLUNDELL	-680	-670	3	22	N	B	0	0	0	0	0	0	0	0	0	0	0	0	7053
3 35	ANTAR	SOR MOUNTAINS INTRUSIVES	ZIJDERVE	-720	240	3	16	A	A	100	0	3415	640	0	45	285	-1705	0	0	60	50	10140
3 26	AUSTR	TASMANIAN SANDSTONE	BRIDEN	-411	1461	3	16	N	B	0	100	140	-700	7	108	750	-660	0	0	0	0	9128
3 48	ALSTR	JUNDUCKIN FORMATION	LUCK	-140	1320	7	20	T	A	15	85	2520	-140	10	200	160	-1510	14	170	0	0	0
3 28	EUROP	PORTUGAL COIMBRA VOLCAN	VANDERVO	400	-80	1	2	A	B	0	100	1010	165	0	0	30	2480	0	0	0	0	0
3 46	EUROP	EIRE IGNIMBRITES KILLARY	DEUTSCH	536	-97	4	25	X	A	100	0	1340	320	23	200	90	-1460	0	0	220	120	11080
3 47	EUROP	WALES SKOMER VOLC GROUP	BRIDEN	518	-52	10	30	A	B	100	0	1960	90	9	175	320	2055	0	0	170	85	0
3 34	EUROP	SCOTLAND ARENIG LAVAS	NESBITT	552	-49	4	12	A	A	100	0	1890	400	19	90	110	1680	0	100	0	0	9131
3 32	EUROP	WALES BUILTH VOLCANIC	NESBITT	521	-32	0	9	A	B	100	0	1964	349	12	158	180	1690	16	131	0	0	9130
3 31	EUROP	ENGLAND BORROWDALE VOLC	NESBITT	547	-29	7	7	A	B	0	100	135	-336	17	149	140	1651	29	114	0	0	9129
3 33	EUPCP	BRITAIN MID ORD VOLCANIC		0	0	0	16	A	A	57	43	0	0	0	0	160	1670	0	0	0	0	0
3 17	EUROP	SCOT YOUNGER GABBROS	BLUNDELL	575	-25	0	21	N	A	100	0	1820	510	13	90	10	1760	0	0	120	80	2039
3 13	EUROP	CZECH OOLITIC CRES 1	ANDREEVA	497	135	0	22	N	A	100	0	1950	400	0	0	160	1790	0	0	110	90	8134
3 14	EUROP	CZECH OOLITIC CRES 2	ANDREEVA	500	140	0	28	N	A	100	0	2790	-550	0	0	210	740	0	0	110	80	8136
3 18	EUROP	CZE BARRANDIAN PORPHYS C	BUCHA	500	137	0	10	N	A	0	100	260	330	0	120	520	1470	0	0	130	80	5086
3 19	EUROP	CZE BARRANDIAN PORPHYS D	BUCHA	500	137	0	16	N	A	100	0	2080	-120	0	150	400	1560	0	0	150	80	5086
3 20	EUROP	CZE BARRANDIAN PORPHYS E	BUCHA	500	137	0	13	N	A	100	0	2260	-140	0	150	320	1360	0	0	150	80	5086
3 21	EUROP	CZE BARRANDIAN PORPHYS F	BUCHA	500	137	0	9	N	B	100	0	1880	160	0	250	300	1850	0	0	260	130	5086

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
3	22	EURCP	CZE EARRANC C TO F COMB	BUCHA	500	137	0	48	N	A	71	29	270	110	10	0	400	1570	0	0	0	0	5066
3	11	EURCP	CZECH ZAMORAMY BEDS	ANDREEVA	502	142	0	11	N	A	0	100	1190	520	0	0	90	620	0	0	60	50	8133
3	12	EURCP	CZECHOSLOVAKIA SEDIMENTS	BUKHA	500	140	0	71	Y	B	0	100	1010	560	9	220	210	720	0	280	0	0	8132
3	15	EUROP	CZECH KRUSNE HORY BEDS	ANDREEVA	499	138	0	17	N	B	0	100	1060	420	0	0	130	720	0	0	360	270	8135
3	16	EURCP	CZECH RED SEDS AND DIABA	BUKHA	500	140	12	169	Y	A	8	92	1330	590	11	140	90	480	0	170	0	0	8137
3	6	NAMER	USA JUNIATA FORMATION	COLLINSO	400	-790	0	12	N	A	100	0	1310	260	6	80	200	1530	0	0	90	50	3074
3	8	NAMER	USA TRENTON GROUP	GRAHAM	435	750	0	45	N	B	0	100	1790	820	23	50	270	-750	0	0	100	100	3073
3	7	NAMER	USA TRENTON GP CONGLOMER	GRAHAM	425	-750	0	28	N	B	0	100	1770	710	23	60	90	-740	0	0	100	80	3072
3	54	SAMER	BOLIVIA RED SEDIMENTS	CREER	-175	-655	0	12	T	B	0	100	420	840	4	220	40	-580	0	0	0	0	0
3	50	SAMER	ARGENTINA JACADIGO SER	CREER	-190	-580	0	13	N	A	0	100	600	390	0	190	190	0	0	0	0	0	6066
3	24	SAMER	ARG RED SEDS SALTA PROV	CREER	-245	-655	0	20	N	B	0	100	240	170	0	260	500	-280	0	0	0	0	6068
3	53	SAMER	ARGEN SEDIMENTS JUJUY	CREER	-235	-655	8	25	T	A	0	100	630	-70	2	140	110	-270	2	160	0	0	0
3	52	SAMER	ARGEN CAME CRDOV REDBEDS	CREER	-240	-655	0	13	T	B	0	100	420	640	4	210	80	-400	2	280	0	0	0
3	1	USSR	TREMADOCIAN SEDIMENTS	KHRAMOV	600	300	0	20	N	A	0	0	0	0	0	180	420	1690	0	0	220	130	2038
3	65	USSR	OBILIC SST R NARVA TREMA	KOMISSAR	590	280	0	10		A	100	0	2370	-340	0	70	330	1370	0	0	80	50	0
3	63	USSR	ARENIG LIMEST R POPOVKA	KOMISSAR	600	300	0	11		A	100	0	2400	-390	0	160	340	1350	0	0	190	110	0
3	64	USSR	OBILIC SST R TOSNA TREMA	KOMISSAR	600	300	0	6		B	100	0	2160	-350	0	110	420	1620	0	0	130	80	0
3	2	USSR	UKRAINIAN BASALT	KOMAROV	510	260	2	8	N	B	0	100	2550	570	23	120	200	-290	0	0	170	120	3070
3	3	USSR	UKRAINIAN BASALT	KOMAROV	510	260	1	6	N	B	0	0	1400	750	40	110	280	460	0	0	200	160	3071
3	4	USSR	ASHA STGE KURKUALT SUITE	KHRAMOV	540	570	0	60	N	A	100	0	2530	-270	0	0	210	1520	0	0	80	40	5079
3	57	USSR	ASHA KURKUAT BED 2	KOMISSAR	545	570	0	6		B	100	0	2720	-200	0	160	80	1410	0	0	170	90	0
3	58	USSR	ASHA KURKUAT BED 3	KOMISSAR	536	565	0	110		A	100	0	2550	-260	0	40	200	1510	0	0	50	30	0
3	59	USSR	ASHA KURKUAT BED 4	KOMISSAR	535	570	0	22		A	100	0	2640	-70	0	80	70	1500	0	0	80	40	0
3	10	USSR	LUGOV SUITE UST KUTSK ST	POPOVA	0	0	2	28	N	A	68	32	1570	190	0	130	210	-610	0	0	130	70	7052
3	56	USSR	UST KUTSK STAGE 2 MIXED	VLASSOV	580	970	0	101	N	A	0	0	1570	-190	0	130	-190	1200	0	0	140	70	0
3	44	USSR	UST KUTSK STAGE 3	RODIONOV	570	1070	0	22	A	A	77	23	1640	-190	0	127	410	-520	0	0	132	71	10138
3	60	USSR	CIAEASE SERGINSKI	KARANOV	570	600	0	134		A	100	0	2330	120	0	110	160	1840	0	0	110	60	0
3	42	USSR	KRIVAYA LUKA 1 PCL MIXED	RODIONOV	580	1080	0	31	A	A	83	17	1620	140	0	90	230	-520	0	0	94	49	10136
3	43	USSR	KRIVAYA LUKA 2 PCL MIXED	RODIONOV	600	1180	0	20	A	A	42	58	1660	40	0	131	270	-460	0	0	134	69	10137
3	61	USSR	KRIVAYA LUKA 3 MIXED	RODIONOV	580	1060	0	33		A	0	0	1560	140	0	80	-220	1320	0	0	80	40	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
3 62	USSR	KRIVAYA LUKA 4	GONCHARO	680	880	0	90		A	100	0	3040	120	0	10	-180	1480	0	0	10	10	0
3 67	USSR	UNDIFFERENTIATED ROCKS	GONCHARO	670	880	0	28		A	100	0	3110	170	0	60	-260	1440	0	0	60	20	0
3 45	USSR	CHUNYA STAGE 1 ILIM R	RODIONOV	570	1040	0	19	A	A	90	10	1600	-230	0	118	-420	1310	0	0	120	70	10139
3 66	USSR	CHUNYA STAGE 2 KULIUMBE	GONCHARO	680	880	0	42		A	100	0	3080	50	0	60	-190	1440	0	0	60	30	0
3 37	USSR	BRATSK SUITE POLAR MIXED	RODIONOV	570	1030	0	133	A	A	100	0	1640	230	0	42	200	-600	0	0	45	24	10131
3 38	USSR	MAKAROVSKI SUITE POL MIX	RODIONOV	580	1080	0	78	A	A	100	0	1620	100	0	60	250	-520	0	0	61	31	10132
3 40	USSR	MANGAZEIKA 1 POLAR MIXED	RODIONOV	580	1080	0	20	A	A	90	10	1590	120	0	130	240	-490	0	0	140	70	10134
3 41	USSR	MANGAZEIKA 2 POLAR MIXED	RODIONOV	600	1180	0	27	A	A	73	27	1650	140	0	65	220	-460	0	0	67	34	10135
3 39	USSR	DOLECR SUITE POLAR MIXED	RODIONOV	600	1180	0	49	A	A	97	3	1710	170	0	45	210	-530	0	0	46	28	10133
3 51	USSR	DOLECR STAGE 2	SIDOROVA	610	1160	0	20		A	0	0	1840	190	0	130	-190	1120	0	0	140	70	0
3 5	USSR	SECIMENTS LENA REGION	KHRAMOV	600	1180	0	87	N	A	0	0	3520	160	0	40	220	-530	0	0	40	20	5080
4 9	AFRIC	SAFRI TAELE MOUNTAIN SER	GRAHAM	-340	180	1	8	N	B	0	100	1620	-40	0	50	500	-110	0	0	50	30	4032
4 31	AFRIC	SAFRI TABLE MOUNTAIN SER	MCELHINN	-295	308	8	46	T	B	0	100	3430	-560	0	0	740	-900	94	60	0	0	10130
4 23	ANTAR	BASEMENT CYKES	BULL	-774	1616	29	48	A	B	0	100	2470	-640	67	40	400	400	0	0	60	50	2030
4 38	ANTAR	ANTARCTIC GNEISSES 1	NAGATA	-690	400	3	30	N	A	0	100	3430	530	128	0	140	-1540	0	0	0	0	2041
4 29	ANTAR	ANTARCTIC GNEISSES 2	KANEOKA	-690	400	0	30	N	B	100	0	3469	489	0	0	118	-1525	0	0	0	0	0
4 25	ANTAR	OLDER INTR SCATTERED OIR	BLUNDELL	-680	-670	3	22	N	B	0	0	0	0	0	0	0	0	0	0	0	0	7053
4 8	ASIA	CHINA RED SILTSTNE KANSU	CHANGWEN	400	970	1	3	N	B	0	100	2940	550	16	90	390	250	0	0	120	90	1119
4 32	AUSTR	MUGGA MUGGA PORPHYRY	BRIDEN	-351	1494	1	17	T	A	0	100	20	-430	29	70	800	-1600	0	0	90	60	8127
4 22	AUSTR	CANBERRA IGNEOUS ROCKS	GREEN	-352	1490	8	40	N	B	13	87	120	-370	6	210	710	-1720	0	0	240	140	3066
4 10	AUSTR	DURO PORPHYRY	GREEN	-347	1489	2	7	N	B	0	100	3060	-110	18	180	320	970	0	0	180	90	3067
4 33	EURCP	WALES SKOMER VOLC GROUP	BRIDEN	518	-52	10	30	A	B	100	0	1960	90	9	175	320	2055	0	0	170	85	0
4 1	EURCP	WALES LUDLOW SERIES	CREER	520	-50	0	7	N	B	100	0	2050	-360	33	140	520	1340	0	0	0	0	3068
4 20	EURCP	SPAIN VOLCANICS ALMADEN	VANDERVO	390	-50	2	10	A	A	100	0	1310	220	0	110	210	-1320	0	0	110	60	9127
4 34	EURCP	SCOTLAND ARROCHAR INTRUS	BRIDEN	562	-48	6	47	A	A	100	0	2133	366	167	52	84	1439	0	50	61	36	0
4 35	EURCP	SCOT CARABAL HILL COMPL	BRIDEN	562	-48	5	17	A	B	0	100	322	-425	11	240	46	1462	0	230	296	183	0
4 19	EURCP	SPAIN ANDESITES ATIENZA	VANDERVO	410	-30	6	33	A	A	100	0	1590	190	0	120	360	-1570	0	0	120	60	9126
4 21	EUROP	SCOT YCUNGER GABBROS	BLUNDELL	575	-25	0	21	N	A	100	0	1820	510	13	90	10	1760	0	0	120	80	2039
4 30	EURCP	NORWAY RINGERIKE SANDST	STORETVE	600	100	0	7	T	B	0	100	310	-110	0	0	210	-1590	0	0	0	0	10129
4 17	EUROP	CZECHOSLOVAKIA DIABASE	BUKHA	500	140	0	25	Y	B	100	0	2320	-190	0	60	270	1320	0	0	60	30	8129

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
4 16	EURCP	CZECHOSLOVAKIA DIABASE	ANDREEVA	500	142	0	32	N B	100	0	1790	430	0	0	150	-1660	0	0	170	130	8130
4 27	NAMER	USA BLOOMSBURG FORMATION	ROY	400	-775	9	77	T A	0	100	10	-320	35	90	320	1020	0	0	100	60	9125
4 11	NAMER	USA ROSEHILL FORMATION	GRAHAM	395	-790	5	35	N A	0	100	3250	-390	33	130	200	1360	0	0	150	100	1117
4 12	NAMER	USA CLINTON IRON ORE	HOWELL	336	-867	1	7	N B	100	0	1430	190	107	120	340	1390	0	0	120	70	1118
4 13	NAMER	USA SILURIAN SEDS COMBIN		0	0	6	42	N A	20	80	3240	-300	0	0	270	1370	0	0	0	0	0
4 24	SAMER	BRAZIL SEDIMENTS	CREER	-250	-500	1	3	N B	100	0	1500	410	0	0	620	-1440	0	0	0	0	6064
4 18	SAMER	ARGENTINA URUCUM FORMAT	CREER	-120	-580	0	23	T A	100	0	370	410	0	90	340	-160	0	90	0	0	8131
4 15	SAMER	ARGENTIN JACADIGO SERIES	CREER	-190	-580	0	13	N A	0	100	600	390	0	190	190	0	0	0	0	0	6066
4 2	USSR	SILURIAN DNIESTER MIXED	KHRAMOV	490	260	0	12	N A	0	0	740	100	0	0	140	1240	0	0	180	100	7048
4 3	USSR	SILURIAN DNIESTER REV	KRUGLYOK	490	260	0	0	N A	100	0	2140	-200	0	0	400	1600	0	0	0	0	7049
4 4	USSR	SILURIAN DNIESTER COMB		490	260	0	0	N A	0	0	0	0	0	0	290	1400	0	0	0	0	0
4 38	USSR	GREY DOLOMITE BELAYA RIV	KOMISSAR	525	570	0	9	B	100	0	2320	-350	0	120	380	1660	0	0	140	80	0
4 43	USSR	ASHA KURKUAT BED 2	KOMISSAR	545	570	0	6	B	100	0	2720	-200	0	160	80	1410	0	0	170	90	0
4 44	USSR	ASHA KURKUAT BED 3	KOMISSAR	536	565	0	110	A	100	0	2550	-260	0	40	200	1510	0	0	50	30	0
4 46	USSR	GREY DOLOMITE BELAYA RIV	KOMISSAR	525	570	0	9	B	100	0	2320	-350	0	120	380	1660	0	0	140	80	0
4 47	USSR	PORPHYRITES URALS	KARMANOV	590	600	0	241	A	0	100	830	100	0	130	80	1520	0	0	130	70	0
4 45	USSR	ASHA KURKUAT BED 4	KOMISSAR	535	570	0	22	A	100	0	2640	-70	0	80	70	1500	0	0	80	40	0
4 5	USSR	URAL PERIDOTITES	KOMAROV	670	660	1	6	N B	0	100	980	380	0	0	160	1400	0	0	0	0	3069
4 6	USSR	OTZ DIORITE NORTH URALS	KOMAROV	0	0	0	0	N B	0	100	950	440	0	210	220	1410	0	0	260	160	6065
4 39	USSR	LOW SILURIAN RIV KUREIKA	GONCHARO	670	880	0	16	A	0	100	420	450	0	160	410	2100	0	0	200	120	0
4 40	USSR	LOW SIL MIXED R KULIUMBE	GONCHARO	680	880	0	53	A	0	0	2850	-500	0	50	230	1520	0	0	60	40	0
4 41	USSR	UPP SILURIAN RIV KUREIKA	GONCHARO	670	880	0	21	A	0	100	470	360	0	90	340	2120	0	0	110	60	0
4 42	USSR	UPP SILURIAN R KULIUMBE	GONCHARO	680	880	0	16	A	100	0	3020	-660	0	100	340	1320	0	0	160	130	0
4 14	USSR	CHERGAKA SUITE TUVA	VLASOV	520	940	2	42	N A	100	0	1420	320	0	130	130	-480	0	0	150	90	7051
4 7	USSR	RED SANDSTONE LENA REG	KHRAMOV	610	1160	0	12	N A	0	0	1970	460	0	0	0	1010	0	0	110	70	7050
4 37	USSR	ALKALOLITES LENA RIVER	ROCIONOV	610	1160	0	29	A	100	0	2010	480	0	80	20	980	0	0	110	70	0
5 58	AFRIC	SAFRI TABLE MOUNTAIN SER	GRAHAM	-340	180	1	8	N B	0	100	1620	-40	0	50	500	-110	0	0	50	30	4032
5 60	ANTAR	BASEMENT DYKES	BULL	-775	1619	29	48	A B	0	100	2470	-640	67	40	400	400	0	0	60	50	2030
5 59	ANTAR	BEACON GROUP SEDIMENTS	TURNBULL	-780	1610	5	0	Y B	0	100	2540	-760	62	100	580	350	0	0	160	130	2029

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
5 87	ANTAR	ANTARCTIC GNEISSES 1	NAGATA	-690	400	3	30	N A	0	100	3430	530	128	0	140	-1540	0	0	0	0	2041
5 70	ANTAR	ANTARCTIC GNEISSES 2	KANEOKA	-690	400	0	30	N B	100	0	3469	489	0	0	118	-1525	0	0	0	0	0
5 47	ASIA	CHINA HEMATITE ROCKS	WANG	310	1110	0	6	N B	0	100	3500	60	0	320	610	-490	0	0	0	0	6061
5 52	ASIA	JAP BASALT TUFF KITAKAMI	MINATO	391	1417	1	8	A B	0	100	710	640	0	200	390	-1600	0	0	0	0	0
5 35	AUSTR	NETHERCOTE SEDIMENTS	GREEN	-370	1500	0	14	N B	0	100	150	-640	10	130	760	-770	0	0	200	170	3063
5 36	AUSTR	YALWAL STAGE BASALTS	GREEN	-370	1500	7	19	N A	28	72	50	-230	29	140	650	1600	0	0	150	80	3064
5 78	AUSTR	MUGGA MUGGA PORPHYRY	BRIDEN	-351	1494	1	17	T A	0	100	20	-430	29	70	800	-1600	0	0	90	60	8127
5 34	AUSTR	CATCHBAL FORMATION	GREEN	-330	1490	16	80	N B	0	100	10	-670	75	50	730	-330	0	0	80	60	3062
5 32	AUSTR	CANBERRA IGNEOUS ROCKS	GREEN	-352	1490	8	40	N A	13	87	120	-370	6	210	710	-1720	0	0	240	140	3066
5 33	AUSTR	MURRUMBIDGEE SERIES	GREEN	-347	1488	1	11	N A	0	100	400	-290	10	100	490	-1390	0	0	110	50	3065
5 37	AUSTR	RED BEDS OF VICTORIA	GREEN	-370	1470	8	40	N B	0	100	170	-650	0	0	740	-790	0	0	0	0	3061
5 65	AUSTR	DOTSWOOD REDBEDS	CHAMALAU	-198	1464	0	19	T B	100	0	1951	751	17	80	461	-444	0	0	0	0	9121
5 69	AUSTR	HOUSETOP GRANITE AUREOLE	BRIDEN	-413	1459	5	24	N B	0	100	320	-690	9	280	0	0	0	0	0	0	9123
5 63	EUROP	SWED JOTNIAN UPPER DALA	MULDER	610	140	8	40	A B	0	100	130	-40	12	169	-260	-10	0	0	169	85	0
5 79	EUROP	ENGLAND ASHFRINGTON VOLC	CORNWELL	510	-50	2	5	N B	100	0	2090	-240	17	0	0	0	0	0	0	0	0
5 76	EUROP	ENGLAND S W DYKES SILLS	CREER	515	-45	18	258	N B	100	0	2020	70	5	150	320	1490	0	0	150	80	8019
5 67	EUROP	ENGLAND ULTRAMAFIC INTR	CORNWELL	510	-40	0	0	B	0	0	1850	520	0	0	0	0	0	0	0	0	0
5 2	EUROP	UK OLD RED SANDSTONE	CREER	520	-30	6	35	N B	100	0	1960	-40	19	50	380	1560	0	0	50	30	1114
5 3	EUROP	ENG BROWNSTONE SERIES	CLEGG	520	-30	0	3	N B	100	0	2330	-220	4	120	310	1110	0	0	120	70	1115
5 77	EUROP	WALES OLD RED SANDSTONE	CHAMALAU	520	-30	0	35	T A	0	100	660	-380	4	130	30	-620	0	0	140	120	8126
5 6	EUROP	SCOT UPPER OLD RED SEDS	NAIRN	555	-25	0	10	N A	100	0	1880	220	7	90	230	1690	0	0	100	50	4031
5 56	EUROP	SCOT YOUNGER GABBROS	BLUNDELL	575	-25	0	21	N A	100	0	1820	510	13	90	10	1760	0	0	120	80	2039
5 4	EUROP	SCOT LR DEV LAVAS 1 MIX	STUBBS	570	-20	0	0	N A	0	0	460	-540	0	0	100	-390	0	0	0	0	8125
5 5	EUROP	SCOT LR DEVONIAN LAVAS 2	NAIRN	570	-25	5	9	N B	0	100	350	50	25	110	290	1360	0	0	110	70	4030
5 62	EUROP	SCOT LR DEVONIAN LAVAS 3	EMBLETON	565	-40	10	73	A A	20	80	576	-313	15	129	10	1210	0	110	0	0	9124
5 61	EUROP	SCOT LR DEVONIAN LAVAS 4	MCMURRY	567	-35	26	112	A A	34	66	380	-474	17	71	-13	1450	0	0	93	60	0
5 112	EUROP	SCOT LR DEVONIAN LAVAS 5	STORETVE	550	-20	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
5 82	EUROP	SCOTLAND ARROCHAR INTRUS	BRIDEN	562	-48	6	47	A A	100	0	2133	366	167	52	84	1439	0	50	61	36	0
5 83	EUROP	SCOT CARABAL HILL COMPL	BRIDEN	562	-48	5	17	A B	0	100	322	-425	11	240	46	1462	0	0	296	183	0
5 1	EUROP	WEST GER EIFEL SANDSTONE	NAIRN	510	60	1	4	N B	100	0	1970	-110	15	230	420	1630	0	0	80	40	4029

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	PCLE LAT	PCLE LONG	KP	EP 95	DM	DF	GECJ LIST
5 53	EURCP	NORW KVAMSHESTEN CLG RED	LIE	614	56	0	40	T A	100	0	1940	120	7	0	220	1700	0	0	95	45	0
5 80	EURCP	NORWAY YTTEROY DYKE MIX	STORETVE	631	110	1	2	X B	0	0	2300	140	0	0	0	0	0	0	0	0	0
5 75	EURCP	NORWAY RORAGEN SANDSTONE	STORETVE	625	119	8	13	T A	69	31	2100	90	0	150	190	1600	0	0	150	80	8124
5 81	EURCP	CZECH BARRANDIAN RED LST	KRS	500	143	15	29	T E	100	0	1962	42	4	159	356	1719	0	0	160	80	0
5 74	NAMER	CANADA CLAM BANK GROUP	BLACK	480	-590	0	18	A A	0	100	3375	-198	10	114	280	1462	0	0	119	62	8123
5 73	NAMER	CANADA PERRY FM SEDIMENT	BLACK	450	-670	0	36	A A	100	0	1737	195	9	85	347	1205	0	0	88	46	8121
5 66	NAMER	CANADA PERRY FORMATION	ROBERTSO	450	-670	8	55	T A	100	0	1750	230	0	0	320	1180	0	0	0	0	10126
5 72	NAMER	CANADA PERRY FM VOLCANIC	BLACK	450	-670	0	16	A A	100	0	1835	338	7	151	264	1093	0	0	172	98	8120
5 68	NAMER	USA PERRY LAVAS MAINE	PHILLIPS	450	-680	2	32	A A	100	0	0	0	0	0	240	1280	0	0	0	0	9120
5 115	NAMER	CANADA USA PERRY FM COMB		0	0	0	0		0	0	0	0	0	0	294	1190	93	96	0	0	0
5 38	NAMER	USA ONONDAGA LIMESTONE	GRAHAM	425	-740	2	65	N B	0	100	1770	790	19	40	210	-730	0	0	70	70	3060
5 50	SAMER	BRAZIL SEDIMENTS	CREER	-250	-500	0	3	N B	100	0	1500	410	0	0	620	-1440	0	0	0	0	6064
5 109	SAMER	BRAZIL SEDIMENTS N E	CREER	-70	-415	0	12	T B	55	45	200	-760	2	260	300	1330	1	300	0	0	0
5 110	SAMER	BOLIVIA RED SANDSTONES	CREER	-177	-670	11	26	T A	0	100	250	700	2	190	70	1270	0	0	0	0	0
5 49	SAMER	URUGUAY SEDIMENTS	CREER	-300	-655	0	6	N B	0	100	20	-360	0	340	800	-460	0	0	0	0	6063
5 48	SAMER	ARGEN RED PURPLE SANDST	CREER	-240	-655	0	22	N A	0	100	280	470	0	180	310	-370	0	0	230	150	6062
5 51	SAMER	ARG REDBEDS SALTA JUJUY	CREER	-230	-660	0	10	T A	100	0	560	510	0	80	90	-220	0	100	0	0	8122
5 7	USSR	FAMENNIAN SEDS MIXED	LINKOVA	580	330	0	48	N A	0	0	440	240	0	100	340	1580	0	0	110	60	4026
5 8	USSR	UPPER FRASNIAN SED MIXED	LINKOVA	570	310	0	49	N A	0	0	400	100	0	100	290	1640	0	0	100	60	4027
5 9	USSR	LOWER FRASNIAN SEDIMENTS	LINKOVA	600	330	0	50	N A	100	0	2270	-160	0	100	280	1590	0	0	100	50	4028
5 90	USSR	FAMENNIAN RED BEDS	KHRAMOV	590	340	0	8	B	100	0	2250	-230	0	50	320	1590	0	0	50	30	0
5 114	USSR	UPPER DEV SEDS LENINGRAD		0	0	0	0	A	0	0	0	0	0	0	308	1600	504	41	0	0	0
5 11	USSR	SEDIMENTS DNIESTER	KRUGLYAK	490	250	0	0	N A	100	0	2010	-220	0	0	500	1750	0	0	0	0	5061
5 12	USSR	SEDIMENTS DNIESTER	KRUGLYAK	490	250	0	0	N A	100	0	2100	-130	0	0	400	1650	0	0	0	0	5062
5 13	USSR	SEDIMENTS DNIESTER	KRUGLYAK	490	250	0	0	N A	100	0	2020	-220	0	0	460	1720	0	0	0	0	5063
5 14	USSR	SEDIMENTS DNIESTER	KRUGLYAK	490	250	0	0	N A	100	0	2120	-160	0	0	400	1620	0	0	0	0	5064
5 15	USSR	SEDIMENTS DNIESTER	KRUGLYAK	490	250	0	80	N A	100	0	2090	-120	0	0	410	1660	0	0	80	40	5065
5 104	USSR	RED SEDIMENTS DNIESTER	TRETIAK	490	250	0	32	N A	100	0	2110	-40	0	110	360	1680	0	0	110	60	0
5 105	USSR	ZHECIAN ST 1 DNIEST MIX	TRETIAK	490	250	0	64	N A	0	0	320	-50	0	50	310	1670	0	0	50	30	0
5 106	USSR	ZHECIAN STAGE 2	POGARSKA	490	255	0	63	A	100	0	2140	-130	0	50	390	1590	0	0	50	30	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	PLE LONG	KP	EP 95	CM	CF	GECJ LIST
5	107 USSR	ZHECIAN STAGE 3	POGARSKA	490	255	0	97		A		100	0	2130	-180	0	30	420	1600	0	0	30	20	0
5	108 USSR	ZHECIAN STAGE 4	POGARSKA	490	255	0	20		A		100	0	2130	-200	0	80	430	1590	0	0	80	40	0
5	113 USSR	RED SEDS DNEISTER COMB		0	0	0	0		A		98	2	0	0	0	0	409	1651	154	39	0	0	0
5	100 USSR	DIABASES ETC SOUTH URALS	DANUKALO	530	580	0	40	N	A		100	0	2200	-400	0	20	470	1780	0	0	30	20	0
5	92 USSR	BAUXITES HYDROHEMATITES	KARMANOV	570	570	0	126		A		100	0	2250	-270	0	80	350	1810	0	0	80	50	0
5	91 USSR	RED BAUXITES SOUTH URALS	IVANOV	550	585	0	35	N	A		100	0	2430	-110	0	180	200	1640	0	0	180	90	0
5	86 USSR	PORPHYRITES URALS	KARMANOV	590	600	0	241		A		0	100	830	100	0	130	80	1520	0	0	130	70	0
5	57 USSR	NORTH URALS GTZ CICRITE	KOMAROV	0	0	0	0	N	B		0	100	950	440	0	210	220	1410	0	0	260	160	6065
5	17 USSR	BAUXITE NORTH URALS	IVANOV	600	600	0	0	N	A		100	0	2270	-230	0	40	310	1780	0	0	40	20	5066
5	89 USSR	ZILAYIR R SUITE P MIXED	KARMANOV	540	590	0	80		A		0	0	440	340	0	90	400	1790	0	0	100	60	0
5	88 USSR	UPP DEVONIAN LMST KAZAK	BEKETOV	500	660	0	8		B		100	0	2090	-420	0	90	560	1930	0	0	110	60	0
5	94 USSR	RED SEDS N KAZAKHSTAN	BEKETOV	520	680	0	78		A		100	0	2940	-740	0	60	340	1010	0	0	110	100	0
5	39 USSR	KAZAKHSTAN PORPHYRITES	RUSSINOV	480	740	1	22	A	A		100	0	2180	-230	0	0	430	-1590	0	0	0	0	6060
5	97 USSR	MID DEV GIVETIAN STAGE	GONCHARO	670	880	0	22		A		100	0	640	630	0	50	500	1780	0	0	90	70	0
5	98 USSR	MID DEV EIFFELIAN MIXED	GONCHARO	670	880	0	68		A		0	0	2330	-460	0	70	380	2030	0	0	90	60	0
5	99 USSR	M DEV GIVET EIFFEL MIXED	GONCHARO	680	860	0	37		A		0	0	2800	-670	0	60	400	1470	0	0	90	80	0
5	103 USSR	KUREIKA ZUBOVIAN SUITES	GONCHARO	680	880	0	38		A		100	0	2790	-550	0	20	290	1560	0	0	30	20	0
5	18 USSR	CHARGIN SERIES MIXED	VLASSOV	560	930	0	0	N	A		0	0	1020	530	0	0	230	1540	0	0	0	0	5067
5	28 USSR	BYSKAR SERIES 1	VLASSOV	560	930	0	0	N	A		0	0	880	530	0	0	320	1620	0	0	0	0	5076
5	42 USSR	BYSKAR SERIES 2	POPOVA	0	0	0	21	N	A		38	62	880	530	0	0	320	1620	0	0	0	0	7046
5	101 USSR	BYSKAR SERIES 3 P MIXED	VLASSOV	550	930	0	500	N	A		0	0	940	560	0	30	310	1540	0	0	30	20	0
5	20 USSR	TATYSHEVA SERIES MIXED	VLASSOV	560	930	0	0	N	A		0	0	1030	610	0	0	280	1470	0	0	0	0	5069
5	21 USSR	KUNGUSS SERIES 1 MIXED	VLASSOV	560	930	0	0	N	A		0	0	970	530	0	0	240	1570	0	0	0	0	5070
5	22 USSR	KUNGUSS SERIES 2	VLASSOV	550	950	0	0	N	A		0	100	1040	650	0	0	300	1460	0	0	0	0	5071
5	44 USSR	KUNGUSS SUITE 3	POPOVA	0	0	0	17	N	A		47	53	1000	590	0	0	270	1520	0	0	0	0	7044
5	19 USSR	CHARGIN AMONASH LOVAT SR	VLASSOV	550	950	0	0	N	A		0	100	1130	510	0	0	150	1500	0	0	0	0	5068
5	23 USSR	KUNGUSS SERIES COMBINED	VLASSOV	555	940	0	0	N	A		0	0	1010	590	0	0	270	1510	0	0	0	0	0
5	24 USSR	CHASOVENNAY SERIES MIXED	VLASSOV	560	930	0	0	N	A		0	0	980	590	0	0	280	1520	0	0	0	0	5072
5	25 USSR	RED SEDS KRASNOYARSK	KHRAMOV	560	930	0	28	N	A		100	0	2850	-560	0	100	230	1500	0	0	140	100	5073
5	26 USSR	KARYMOV IVASHIKHIN SER	VLASSOV	560	930	0	0	N	A		0	100	890	550	0	0	290	1630	0	0	0	0	5074

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	P E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
5 27	USSR	ANZHIN SERIES MIXED	VLASSOV	550	950	0	0	N	A	0	0	860	500	0	0	280	1680	0	0	0	0	5075
5 71	USSR	OKLER SUITE	VLASOV	554	942	0	70	A	A	50	50	1018	503	46	137	190	1560	0	0	184	123	10127
5 40	USSR	OKLER SERIES MIXED	VLASSOV	0	0	0	0	N	A	0	0	910	510	0	0	250	1630	0	0	0	0	7043
5 29	USSR	OKLER PENOV SERIES MIXED	VLASSOV	550	950	0	0	N	A	0	0	860	660	0	0	390	1540	0	0	0	0	5077
5 30	USSR	SEDS KRASNOYARSK REGION	VLASSOV	560	980	0	0	N	A	0	0	-0	-0	0	0	280	1550	0	0	0	0	5078
5 41	USSR	SIBERIAN SEDIMENTS	POPOVA	0	0	2	18	N	A	100	0	1150	260	0	0	40	-240	0	0	0	0	7047
5 43	USSR	SIBERIAN SEDIMENTS	POPOVA	0	0	0	18	N	A	39	61	870	570	0	0	320	1620	0	0	0	0	7045
5 45	USSR	SIBERIAN SEDIMENTS MIXED	POPOVA	0	0	0	0	N	A	0	0	1060	550	0	0	220	1500	0	0	0	0	0
5 54	USSR	TUVA BYSTRIANSKAYA SUITE	APARIN	540	920	0	126	N	A	100	0	2950	-660	6	90	250	1340	0	0	140	120	10124
5 55	USSR	OIDANOVSKAYA KOKHAI SUIT	APARIN	550	900	0	16	N	A	100	0	2990	-460	8	140	80	1470	0	0	180	120	10125
5 93	USSR	U DEV REDBED RYBINSK MIX	VLASSOV	560	940	0	204	N	A	0	0	1030	570	0	50	240	1510	0	0	60	30	0
5 96	USSR	M DEV REDBED RYBINSK MIX	VLASSOV	530	950	0	162	N	A	0	0	870	570	0	50	320	1620	0	0	60	30	0
5 95	USSR	RED SEDIMENT KRASNOYARSK	DAVYDOV	560	930	0	18		A	100	0	3010	-600	0	120	190	1360	0	0	200	160	0
5 102	USSR	B YERDAR SUITE REDBEDS	VLASSOV	520	940	0	23	N	A	0	100	1150	260	0	100	40	-240	0	0	110	60	0
5 84	USSR	ROCKS NORTHEAST SIBERIA	PECHERSK	652	1660	0	18	N	B	100	0	250	-790	3	210	450	1530	0	0	0	0	0
6 84	AFRIC	TANZANIA K3 BEDS GALULA	OPDYKE	-88	329	5	34	T	A	100	0	1720	690	227	50	455	-1400	91	80	0	0	8092
6 165	AFRIC	DWYKA GLACIAL VARVES	MCELHINN	-120	300	5	29	T	A	80	20	0	0	0	0	265	2065	52	105	0	0	9117
6 56	AFRIC	RHOC DWKYA VARVES NEG	NAIRN	-180	290	0	2	N	B	0	100	0	-810	84	50	360	-1510	0	0	100	100	1112
6 57	AFRIC	RHOC DWKYA VARVES POS	NAIRN	-180	290	0	2	N	B	100	0	3330	760	57	70	70	170	0	0	130	120	1113
6 125	ANTAR	BASEMENT DYKES	BULL	-775	1616	29	48	A	B	0	100	2470	-640	67	40	400	400	0	0	60	50	2030
6 124	ANTAR	BEACON GROUP SEDIMENTS	TURNBULL	-780	1610	5	0	Y	A	0	100	2540	-760	62	100	580	350	0	0	160	130	2029
6 133	ASIA	TURKEY BADEMLI REDBEDS	VANDERVO	373	317	6	19	T	A	0	100	410	135	22	73	430	1500	0	0	74	37	0
6 95	ASIA	INDIA TALCHIR SERIES	WENSINK	214	790	2	23	A	A	0	100	661	592	109	29	315	1343	0	0	32	26	10114
6 71	ASIA	CHINA SEDIMENTS	WANG	400	1160	0	4	N	B	0	100	50	520	0	340	620	-940	0	0	0	0	6055
6 83	ASIA	JAP BASALT TUFF KITAKAMI	MINATO	391	1417	3	25	A	A	0	100	80	390	0	170	710	-630	0	0	0	0	0
6 119	ASIA	JAP LATE PAL MES INTRUS	KAWAI	350	1340	7	63	N	A	0	100	300	470	15	160	630	-1300	0	0	210	140	5013
6 190	ASIA	JAPAN TUFFACEOUS SHALES	FUJIWARA	-0	-0	0	7	N	B	100	0	2450	270	0	150	70	-1130	0	0	160	100	0
6 161	AUSTR	PERCY CREEK VOLCANICS	CHAMALAU	-198	1764	0	5	A	B	100	0	2440	854	20	182	233	3172	0	0	360	360	9097
6 59	AUSTR	PATERSON TOSCANITE	IRVING	-326	1517	4	12	A	A	0	100	20	-670	0	30	730	-330	0	0	50	40	0
6 58	AUSTR	UPPER KUTTUNG SEDIMENTS	IRVING	-316	1514	9	40	T	A	100	0	2130	790	114	60	480	-460	0	0	110	110	1110

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	P E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
6	76	AUSTR UPPER KUTTUNG SEDS COMB	IRVING	-315	1505	18	83	T	A	100	0	2010	800	45	50	500	-400	15	90	0	0	8106
6	77	AUSTR LATE PAL REV DIVISION		0	0	33	151	X	A	100	0	0	0	0	0	459	-485	14	70	0	0	0
6	60	AUSTR LOWER KUTTUNG LAVAS	IRVING	-326	1515	3	8	A	B	100	0	1870	500	50	110	840	-1340	0	0	150	100	0
6	169	AUSTR GOONA GOONA MUDSTONE	IRVING	-315	1509	2	4	T	B	100	0	1020	720	0	0	0	0	0	0	0	0	8116
6	120	AUSTR REC BEDS OF VICTORIA	GREEN	-370	1470	8	40	N	B	0	100	170	-650	0	0	740	-790	0	0	0	0	3061
6	5	EURCP SCO KINGHORN LAVAS 9TO15	EVERITT	560	-30	0	0	N	A	0	100	120	-180	0	0	0	0	0	0	0	0	0
6	6	EURCP SCO KINGHORN LAVA 16TC20	EVERITT	560	-30	0	0	N	A	100	0	1700	240	0	0	0	0	0	0	0	0	0
6	7	EURCP SCO KINGHORN LAVA BED 21	EVERITT	560	-30	0	0	N	B	0	100	550	190	0	0	0	0	0	0	0	0	0
6	8	EURCP SCO KINGHORN LAVA 25TO48	EVERITT	560	-30	0	0	N	A	0	100	130	-350	0	0	0	0	0	0	0	0	0
6	9	EURCP SCO KINGHORN LAVA 50TO55	EVERITT	560	-30	0	0	N	A	100	0	2050	410	0	0	0	0	0	0	0	0	0
6	10	EURCP SCO KINGHORN LAVA BED 69	EVERITT	560	-30	0	0	N	A	0	100	150	-350	0	0	0	0	0	0	0	0	0
6	11	EURCP SCO KINGHORN LAVAS COMB	EVERITT	560	-30	21	43	N	A	0	0	100	-310	32	140	170	1670	0	0	160	90	1099
6	12	EURCP SCO KINGHORN SILL BED 65	EVERITT	560	-30	1	2	N	B	0	100	150	140	0	0	0	0	0	0	0	0	0
6	175	EURCP SCOTLAND KINGHORN LAVAS	WILSON	560	-30	17	33	T	A	47	53	159	-285	0	80	180	1610	0	0	90	50	8118
6	13	EURCP SCO SOUTHOCAN BASANITE	NAIRN	555	-25	1	5	N	B	100	0	2270	-380	13	100	410	1120	0	0	120	70	4022
6	36	EURCP WALES SEDIMENTS	EVERITT	512	-35	2	18	N	A	100	0	2050	490	0	0	60	1550	0	0	0	0	4020
6	14	EURCP ENG CARBONIFEROUS LIMEST	DUBOIS	540	-30	0	14	N	A	71	29	410	340	13	90	430	1190	0	0	100	60	5047
6	15	EUROP ENG LANCASHIRE SEDS NEG	EVERITT	540	-30	4	14	N	A	0	100	240	220	0	0	430	1440	0	0	0	0	1103
6	16	EUROP ENG LANCASHIRE SEDS POS	EVERITT	540	-30	3	10	N	A	100	0	1840	230	0	0	240	1730	0	0	0	0	1103
6	17	EURCP ENG LANCASHIRE SEDS COMB		540	-30	7	24	N	A	42	58	140	-10	0	0	340	1600	0	0	0	0	0
6	18	EUROP ENG KEELE BEDS 1	NAIRN	530	-20	0	17	N	A	100	0	2200	-200	67	100	370	1260	0	0	100	50	4019
6	19	EUROP ENG KEELE BEDS 2	EVERITT	530	-20	1	7	N	B	100	0	1990	340	0	0	160	1590	0	0	0	0	4020
6	20	EURCP ENG KEELE BEDS COMBINED		530	-20	0	24	N	A	100	0	190	-60	0	0	280	1440	0	0	0	0	0
6	21	EUROP ENG DERBYSHIRE SEDS NEG	EVERITT	530	-15	3	13	N	A	0	100	370	390	0	0	460	1280	0	0	0	0	1103
6	22	EURCP ENG DERBYSHIRE SEDS POS	EVERITT	530	-15	3	11	N	A	100	0	1970	370	0	0	150	1620	0	0	0	0	1103
6	23	EURCP ENG DERBYSHIRE SEDS COMB		530	-15	6	24	N	A	46	54	280	10	0	0	330	1480	0	0	0	0	0
6	24	EURCP ENG TIDESWELLDALE IGN RX	EVERITT	535	-15	1	7	N	B	100	0	2180	360	0	0	0	0	0	0	0	0	1097
6	25	EURCP ENG TIDESWELLDALE BAKED	EVERITT	535	-15	1	6	N	B	100	0	2210	340	0	0	0	0	0	0	0	0	1097
6	26	EURCP ENGL TIDESWELLDALE COMB		535	-15	1	13	N	A	100	0	2200	350	0	0	90	1620	0	0	0	0	0
6	27	EURCP ENG DERBYSHIRE LAVA NEG	EVERITT	530	-15	1	3	Z	B	0	100	480	-450	0	0	0	0	0	0	0	0	1102

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
6 28	EUROP ENG	DERBYSHIRE LAVA POS	EVERITT	530	-15	2	3	Z B	100	0	2000	290	0	0	0	0	0	0	0	0	1102
6 29	EUROP ENG	DERBYSHIRE LAVA COMB		530	-15	3	6	Z B	50	50	330	-370	0	0	100	1470	0	0	0	0	1102
6 30	EUROP ENG	MIDLAND SILLS	EVERITT	525	-20	5	8	N B	75	25	1980	150	12	230	0	0	0	0	0	0	1096
6 31	EUROP ENG	MIDLAND BAKED SEDS	EVERITT	525	-20	5	10	N A	100	0	1990	120	59	100	0	0	0	0	0	0	1096
6 32	EUROP ENG	MID SILLS BAKED SEDS		525	-20	10	18	N A	89	11	1990	130	22	110	280	1570	0	0	0	0	1096
6 33	EUROP ENG	LITTLE WENLOCK LAVA	EVERITT	525	-25	1	2	N B	0	100	3560	150	0	0	0	0	0	0	0	0	0
6 34	EUROP ENG	L WENLOCK BAKED SEDS	EVERITT	525	-25	1	2	N B	0	100	3590	-70	0	0	0	0	0	0	0	0	0
6 35	EUROP ENG	LITTLE WENLOCK COMB		525	-25	2	4	N B	0	100	3570	40	0	0	390	-1720	0	0	0	0	4020
6 37	EUROP ENG	PENNANT SANDSTONE	CLEGG	515	-25	1	1	N B	0	100	330	350	13	110	490	1260	0	0	120	70	0
6 38	EUROP	CARBONIFEROUS BRIT COM 1		540	-30	0	0	N A	0	0	200	-330	31	100	160	1590	0	0	80	80	0
6 39	EUROP	CARBONIFEROUS BRIT COM 2		540	-30	0	0	N A	0	0	370	310	48	110	430	1260	0	0	60	60	0
6 118	EUROP ENG	GREAT WHIN SILL	CREER	550	-20	34	102	A A	100	0	1880	-50	34	40	370	1690	0	0	30	30	2036
6 139	EUROP ENGL	GREAT WHIN SILL 2	STORETVE	555	-17	5	24	X A	100	0	1939	-217	259	48	444	1591	0	0	50	30	11077
6 166	EUROP ENGLAND	SEDS OOLER DEVON	CORNWELL	510	-40	5	34	N B	100	0	1890	-210	49	130	0	0	0	0	0	0	9118
6 167	EUROP ENGLAND	ULTRAMAFIC INTR	CORNWELL	510	-40	0	0	B	0	0	1850	520	0	0	0	0	0	0	0	0	0
6 177	EUROP ENGLAND	S W DYKES SILLS	CREER	515	-45	18	258	N B	100	0	2020	70	5	150	320	1490	0	0	150	80	8019
6 90	EUROP PORTUGAL	EUCACO REDBEDS	VANDERVO	403	84	4	17	A A	100	0	1490	110	0	70	355	-1485	0	0	70	40	11072
6 91	EUROP SPAIN	VIAR REDBEDS	VANDERVO	375	59	3	8	T B	100	0	1510	20	0	60	425	-1440	0	0	60	30	11073
6 92	EUROP SPAIN	VIAR DYKES SILLS	VANDERVO	375	-59	3	14	T A	100	0	1560	100	0	130	410	-1520	0	0	0	0	11074
6 93	EUROP SPAIN	VIAR ROCKS COMBIN		375	-59	6	22	T A	100	0	-0	-0	0	0	-0	-0	0	0	0	0	0
6 106	EUROP FRA	CTTA GABBRO DIORITE	NAIRN	422	88	2	14	A A	100	0	1892	-131	56	5	535	1370	0	0	50	30	9119
6 105	EUROP FRA	LAVAS DYKES CORSICA	NAIRN	423	85	37	0	A A	100	0	1770	-140	9	84	550	-1660	0	0	80	40	11075
6 81	EUROP FRA	LAVAS TUFFS CORSICA	ASHWORTH	423	86	15	15	A A	100	0	1410	85	8	140	315	-1240	0	0	140	70	9088
6 2	EUROP FRA	STEPHANIAN SANDST 2	NAIRN	470	45	1	0	N A	100	0	1800	200	12	50	330	-1750	0	0	60	30	4024
6 3	EUROP FRA	STEPHANIAN SANDST 3	NAIRN	454	45	1	0	N B	100	0	1810	220	4	220	330	-1760	0	0	230	120	4025
6 4	EUROP FRA	WGER STEPHANIAN COMB		0	0	3	32	N A	100	0	1800	140	44	190	360	-1750	0	0	0	0	0
6 1	EUROP WGER	STEPHANIAN SS 1	NAIRN	490	70	1	0	N A	100	0	1800	0	16	60	410	-1730	0	0	60	30	4023
6 104	EUROP NORWAY	DIAB NY HELLESUND	HALVORSE	580	78	10	37	X A	100	0	2013	-184	284	29	386	1607	0	0	0	0	0
6 131	EUROP SWED	INTRUSIVES OF SOUTH		570	140	13	161	A A	100	0	1963	-89	77	48	359	1739	0	0	48	24	0
6 126	EUROP SWEDEN	MT BILLINGEN SILL	PRIEM	582	140	9	81	A A	100	0	1980	-30	529	20	310	1740	0	0	20	10	10107

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	B	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
6 127	EURCP	SWE MT HUNNEBERG SILL	PRIEM	585	125	3	33	A	A		100	0	2010	-170	660	50	380	1770	0	0	50	30	10108
6 128	EURCP	SWE DYKES OF SKANE	PRIEM	555	135	8	46	A	A		100	0	1950	-90	60	70	370	1740	0	0	70	40	10109
6 94	EURCP	POL IGN RX LOWER SILESIA	BIRKENMA	505	-165	8	33	Y	A		100	0	1960	-120	17	140	430	1740	0	0	140	70	11071
6 89	EURCP	POL DIABASE SILL KRAKOW	BIRKENMA	500	200	1	5	A	B		100	0	2125	-158	60	100	401	1559	0	0	0	0	8102
6 107	EURCP	CZECH HEMATITE VEINS	KRS	500	135	7	55	Y	A		97	3	2140	-120	17	150	380	1490	0	90	0	0	8094
6 129	EURCP	CZECH MIN VEINS FRIEBERG	BAUMANN	509	134	4	62	O	A		100	0	2092	49	5	89	311	1587	0	0	89	44	0
6 96	EURCP	CZECH RED SED PLENZEN	BIRKENMA	498	133	3	65	T	A		100	0	2147	21	13	51	311	1517	0	0	51	26	10112
6 97	EUROP	CZECH RED BEDS KLADNO	BIRKENMA	502	140	4	73	T	A		100	0	2117	-54	4	26	305	1538	0	0	26	13	10113
6 99	EURCP	CZECH RED BEDS BLANICE	KRS	500	148	3	25	T	A		100	0	2103	-141	91	31	402	1539	0	0	31	16	0
6 100	EURCP	CZECH RED SED BLOSKOVICE	KRS	492	164	0	40	N	A		100	0	2009	-47	34	39	399	1686	0	0	40	20	0
6 101	EURCP	CZECH RED SED KRAKONOSE	KRS	505	154	5	57	T	A		100	0	1951	-137	31	34	447	1741	0	0	35	18	0
6 102	EURCP	CZ CARB BOHEM MASSIF COM		500	150	30	336				100	0	2046	-63	56	90	388	1627	66	83	90	45	0
6 98	EURCP	CZPCL SEDS IGN SUDETIC	BIRKENMA	506	161	15	76	X	A		100	0	1951	-18	18	40	387	1768	0	0	40	20	10111
6 103	EURCP	ITALY COLLIC AUCCIC VOLC	ZIJDERVE	458	102	5	33	A	A		100	0	1350	-210	0	20	380	-1080	0	0	210	110	11069
6 82	EURCP	ITA LAGORAI OTZ PORPHY	FINDHAMM	462	114	1	38	A	A		100	0	1370	-80	0	0	340	-1130	0	0	0	0	9082
6 132	EURCP	ITALY CLASTICS PRAMOLO	GUICHERI	460	110	0	9	A	B		0	100	240	400	0	0	600	1420	0	0	0	0	9091
6 67	NAMER	CANADA CODROY RED BEDS	NAIRN	480	-590	0	9	N	B		100	0	1660	80	38	80	430	1390	0	0	80	40	1109
6 170	NAMER	CANADA CODROY GROUP NFLD	BLACK	480	-590	0	32	A	A		100	0	1745	234	7	101	296	1272	0	0	107	57	8117
6 240	NAMER	CANADA CODROY SEDS COMB		0	0	0	0				0	0	0	0	0	0	364	1326	0	0	0	0	0
6 85	NAMER	CANADA REDBEDS PEI	BLACK	460	-640	0	154	A	A		100	0	1727	60	433	59	408	1260	0	0	60	30	8095
6 86	NAMER	CANADA REDBEDS PEI	ROY	465	-637	17	58	T	A		100	0	1680	0	36	60	420	1330	45	50	60	30	8099
6 171	NAMER	CANADA PRE PICTOU SANDST	BLACK	480	-660	0	8	A	B		100	0	1615	305	14	154	235	1334	0	0	172	96	8113
6 87	NAMER	CANADA PICTOU GROUP NS	ROY	460	-640	11	18	T	A		100	0	1680	40	107	40	410	1320	213	30	40	20	8101
6 68	NAMER	CANADA EASTERN SEDIMENTS	DUBOIS	480	-660	0	46	N	A		100	0	1640	200	0	50	300	1330	0	0	50	30	1108
6 138	NAMER	CANADA HOPEWELL GROUP	ROY	477	-645	15	67	T	A		67	33	3580	-200	32	70	340	1180	0	0	70	40	11078
6 136	NAMER	CANADA MARINGOUIN FORM	ROY	456	-646	8	46	T	A		100	0	1790	210	46	80	340	1170	0	0	90	40	10120
6 137	NAMER	CANADA CUMBERLAND GROUP	ROY	457	-645	10	48	T	A		100	0	1720	160	85	50	360	1250	0	0	50	30	11076
6 140	NAMER	CANADA HURLEY CREEK FM	ROY	460	-660	5	19	T	A		100	0	1710	90	58	100	390	1250	0	0	100	50	9098
6 173	NAMER	CANADA BONAVENTURE FORM	DU BOIS	480	-660	0	22	A	A		100	0	1661	131	22	68	340	1308	0	0	69	35	0
6 88	NAMER	CANADA BONAVENTURE FM 2	ROY	460	-660	11	21	T	A		100	0	1660	50	20	100	380	1330	29	80	100	50	8100

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	R E V	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	OM	OF	GEOJ LIST
6 172	NAMER	CANADA BATHURST FORMAT	DU BOIS	480	-560	0	10	A A	100	0	1623	156	22	93	319	1348	0	0	94	49	0
6 174	NAMER	CANADA KENNEBECASIS FORM	DU BOIS	480	-660	0	14	A A	100	0	1613	333	18	96	217	1332	0	0	109	62	0
6 135	NAMER	USA MAUCH CHUNK FORM	KNOWLES	400	-770	20	96	T A	100	0	1620	80	28	63	430	1270	0	0	60	30	10119
6 61	NAMER	USA BARNETT FORMAT NEGAT	MARTINEZ	310	-990	1	8	N B	0	100	3190	80	200	40	410	1440	0	0	40	20	1107
6 62	NAMER	USA BARNETT FORMAT POSIT	MARTINEZ	310	-990	8	60	N A	100	0	1490	190	11	60	390	1230	0	0	60	30	1106
6 63	NAMER	USA BARNETT FORM COMBIN		310	-990	9	68	N A	88	12	3220	-50	0	0	410	1350	0	0	0	0	0
6 122	NAMER	USA SANGRE DE CRISTO FM	GRAHAM	354	-1035	1	19	N A	100	0	1750	310	9	110	380	810	0	0	110	70	0
6 117	NAMER	USA FOUNTAIN LYCKENS FM	MCMAHON	402	-1053	27	98	A A	100	0	1514	-122	6	131	474	1193	0	0	133	68	10106
6 116	NAMER	USA UPPER MINTURN FORM	MCMAHON	396	-1064	10	37	A A	60	40	3362	-116	8	179	390	1050	0	0	80	40	10115
6 121	NAMER	USA DEADWOOD FORMATION	COLLINSO	420	-1070	0	7	N B	100	0	1510	-140	16	70	470	-1170	0	0	70	40	3075
6 123	NAMER	USA SUPAI FORMATION	RUNCORN	350	-1105	0	114	N A	100	0	1500	110	35	100	400	1100	45	90	0	0	1088
6 64	NAMER	USA NACO FORM CARIZZO CK	RUNCORN	360	-1130	1	8	N B	100	0	1500	-30	40	40	460	1130	0	0	40	20	1105
6 65	NAMER	USA NACO FORM FOSSIL CK	RUNCORN	340	-1120	1	9	N B	100	0	1250	160	22	70	230	1300	0	0	70	40	2059
6 66	NAMER	USA NACO FORM COMBINED		350	-1125	2	17	N A	100	0	1370	60	0	0	350	1220	0	0	0	0	0
6 236	SAMER	COLOMBIA FIRNAL FM	CREER	40	-740	-0	-0		64	36	3242	-254	0	0	505	-1906	0	0	0	0	0
6 235	SAMER	COLOMBIA PERM CARB SS	CREER	70	-730	4	66	B	0	0	1820	-300	0	0	800	-620	0	0	0	0	0
6 134	SAMER	BRAZIL TUBARAO SERIES	CREER	-250	-500	0	7	N B	0	100	290	-240	0	270	0	0	0	0	0	0	10110
6 78	SAMER	BRAZIL IRATI FORMATION	CREER	0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 79	SAMER	BRAZIL PIAUI FORMATION	CREER	-50	-430	0	20	T A	100	0	1650	440	0	90	650	1670	0	100	0	0	8107
6 230	SAMER	BRAZIL PIAUI FORMATION 2	CREER	-57	-428	0	15	T A	100	0	1600	520	7	90	500	1650	6	100	0	0	0
6 232	SAMER	BOLIVIA TUPAMBI FM	CREER	-175	-660	4	0	N B	0	100	20	-230	38	30	850	-450	65	20	0	0	0
6 80	SAMER	BOLIVIA TAIGUATI FM	CREER	-170	-650	0	38	T A	58	42	2940	-725	0	50	280	1460	0	90	0	0	8109
6 233	SAMER	BOLIVIA TAIGUATI FM 2	CREER	-176	-654	3	0	T A	40	60	3190	-620	34	40	450	1600	16	60	0	0	0
6 234	SAMER	BOLIVIA VICLACIC FM	CREER	-175	-660	4	0	N B	0	100	3590	-200	2	160	830	-680	2	150	0	0	0
6 229	SAMER	PERU AMBO GROUP TUFFS	CREER	-100	-762	2	10	N B	0	0	0	0	0	0	0	0	0	0	0	0	0
6 72	SAMER	PERU GREY TUFFS	CREER	-120	-750	0	12	N A	100	0	3150	750	0	0	80	-950	0	0	0	0	6058
6 74	SAMER	PERU MITU FORM MIXED	CREER	-120	-750	0	27	N A	0	0	760	-520	0	0	180	470	0	0	0	0	6056
6 228	SAMER	ARG M PEGANZO GROUP COMB		-300	-677	0	0	T A	100	0	1553	610	99	93	668	1642	0	0	142	109	0
6 227	SAMER	ARG MIDDLE PEGANZO GROUP	EMBLETON	-300	-677	0	0	T A	100	0	1541	593	82	137	666	1697	0	0	205	154	0
6 231	SAMER	ARGEN PAGANZO FM TWO A	CREER	-300	-680	4	15	N A	100	0	1640	670	25	70	650	1360	10	110	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	PLE LONG	KP	EP 95	DM	DP	GEOJ LIST
6 237	SAMER	ARGEN PAGANZO TWO E	EMBLETON	-300	-670	0	0	A	100	0	1541	593	82	0	666	-1904	0	0	0	0	0
6 73	SAMER	ARG SEDIMENTS LA RIOJA	CREER	-240	-650	0	3	N B	100	0	1800	550	0	0	780	1150	0	0	0	0	6059
6 185	USSR	PRODUCTIVE MEASURES	KHRAMOV	610	370	0	13	N A	100	0	2260	-480	0	43	460	1520	0	0	60	40	0
6 158	USSR	VISEAN SEDIMENTS TIKHVIN	KHRAMOV	600	340	0	0	A	100	0	2170	-440	0	40	470	1600	0	0	50	30	9111
6 159	USSR	VISEAN NEBOLCHI POL MIX	KHRAMOV	590	330	0	0	A	0	0	2200	-400	0	60	410	1580	0	0	80	50	9112
6 160	USSR	VISEAN SEDIMENTS VYTEGRA	KHRAMOV	610	370	0	0	A	100	0	2260	-480	0	40	460	1520	0	0	60	40	9113
6 44	USSR	TULA HORIZON TIKVIN MIX	KHRAMOV	590	340	0	18	N A	0	0	410	290	0	0	370	1620	0	0	70	40	5051
6 183	USSR	TULA HORIZON 2	KHRAMOV	590	340	0	25	N A	76	24	400	400	0	61	410	1580	0	0	60	40	0
6 45	USSR	TOURNAI STAGE TIKVIN MIX	KHRAMOV	590	340	0	17	N A	0	0	780	250	0	0	170	1270	0	0	40	20	5052
6 184	USSR	OKA BEDS	KHRAMOV	590	340	0	20	N A	40	60	2140	-440	0	47	490	1640	0	0	60	40	0
6 43	USSR	OKA SERPUKHOV STG TIKVIN	KHRAMOV	590	340	0	40	N A	0	0	380	380	0	0	430	1620	0	0	70	40	5050
6 182	USSR	OKA SERPUKHOV SUITE 2	KHRAMOV	590	340	0	38	N A	100	0	2210	-430	0	40	450	1560	0	0	50	30	0
6 186	USSR	KASHIRA HORIZON	KHRAMOV	560	340	0	40	N A	100	0	2250	-210	0	39	330	1580	0	0	40	20	0
6 69	USSR	KRASNOTSVET BEDS GZHEL 1	ANDREEVA	544	375	0	40	Y A	100	0	2080	-320	0	0	470	1780	0	0	0	0	6054
6 176	USSR	GZHELIAN STAGE BEDS 2	BAGINA	560	380	0	0	N B	100	0	2120	-210	0	0	380	1760	0	0	0	0	8111
6 218	USSR	GZHELIAN STAGE RED BED 3	KOMISSAR	560	380	0	33	A	100	0	2170	-320	0	20	420	1670	0	0	20	10	0
6 142	USSR	REDBEDS OF PODMOSKOVE	KHRAMOV	560	390	3	104	A	100	0	2170	-310	86	0	420	1680	0	0	0	0	9093
6 225	USSR	SHCHELKOVKA BED	KOMISSAR	555	390	0	71	A	100	0	2175	-305	0	0	415	1680	0	0	0	0	0
6 148	USSR	MOSCOW STAGE RZHEV RIVER	KHRAMOV	560	340	0	0	A	100	0	2250	-210	0	40	330	1580	0	0	40	20	9101
6 149	USSR	MOSCOW STAGE OZERY	KOMISSAR	550	390	0	0	A	100	0	2200	-160	0	70	340	1700	0	0	0	0	9102
6 187	USSR	VEREYA HORIZON	KHRAMOV	550	380	0	35	N A	100	0	2410	-70	0	37	200	1500	0	0	40	20	0
6 150	USSR	VEREYA HORIZON 2	KHRAMOV	550	380	0	0	A	100	0	2320	-180	0	50	290	1550	0	0	0	0	9103
6 222	USSR	VEREYA HORIZON 3	KHRAMOV	550	360	0	17	A	100	0	2210	-140	0	70	320	1660	0	0	80	40	0
6 151	USSR	VEREYA HORIZON 4	KOMISSAR	540	420	0	0	A	100	0	2240	-130	0	60	310	1680	0	0	0	0	9104
6 155	USSR	SUITE E POLARITY MIXED	KOMISSAR	480	380	0	0	A	0	0	2220	150	0	80	230	1710	0	0	0	0	9108
6 188	USSR	F SUITE	KHRAMOV	470	380	0	33	N A	36	64	370	-210	0	68	230	1790	0	0	70	40	0
6 154	USSR	BASHKIR STAGE POL MIXED	KHRAMOV	480	380	0	0	A	0	0	2180	110	0	100	280	1770	0	0	100	50	9107
6 219	USSR	BASHKIR STAGE 2 DONBASS	TRETIAK	480	380	0	38	N A	100	0	2095	105	0	0	305	1830	0	0	0	0	0
6 152	USSR	MOSCOW STAGE DONBASS		480	410	0	0	A	100	0	2120	50	0	140	330	1900	0	0	0	0	9105
6 153	USSR	MOSCOW STAGE DONBASS	TRETYAK	480	380	0	0	A	100	0	2230	90	0	80	240	1660	0	0	0	0	9106

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
6 141	USSR	DONBASS REDBEDS	KHRAMOV	480	380	4	218			A	100	0	2130	-100	37	0	390	1740	0	0	0	0	9092
6 41	USSR	AVILOV STAGE DONBAS	KHRAMOV	480	380	0	48	N		A	100	0	2090	-80	0	0	390	1790	0	0	40	20	5049
6 179	USSR	AVILOV SUITE 2	KHRAMOV	480	380	0	73	N		A	100	0	2070	-80	0	30	400	-1780	0	0	30	20	0
6 143	USSR	AVILOV SUITE 3 DONBAS	KHRAMOV	480	380	0	186			A	100	0	2065	-80	0	0	400	1830	0	0	0	0	9094
6 144	USSR	ISAEV SUITE DONBASS	KOMISSAR	480	410	0	0			A	100	0	2120	200	0	80	250	1860	0	0	80	40	9095
6 180	USSR	LOW FERM RED SED DONBASS	KHRAMOV	490	380	0	424			A	74	26	396	231	154	54	407	1627	0	0	58	31	0
6 75	USSR	SEDS DONBASS UPPER CARB	KHRAMOV	490	380	0	7	Y		B	100	0	2050	90	13	180	320	-1720	0	0	180	90	8110
6 40	USSR	ARALCARITE STAGE DONBAS	KHRAMOV	480	380	0	76	N		A	100	0	2180	-150	0	0	380	1680	0	0	20	10	5048
6 181	USSR	ARAUCARITE SUITE 2	KHRAMOV	480	390	0	129	N		A	100	0	2150	-110	0	20	380	1700	0	0	20	10	0
6 201	USSR	ARALCARITE SUITE 3	SHOLPO	0	0	0	60	N		A	100	0	2020	-270	0	0	0	0	0	0	0	0	0
6 239	USSR	ARALCARITE SUITE 4	TRETIAK	490	380	0	137	N		A	100	0	2130	-230	0	30	440	1710	0	0	30	20	0
6 207	USSR	LIMESTONES DONBASS	KOMISSAR	480	380	0	25			A	100	0	2240	50	0	130	270	1670	0	0	120	60	0
6 206	USSR	SEDIMENTS DONBASS MIXED	KOMISSAR	480	380	0	42			A	0	0	2110	-50	0	100	380	1780	0	0	100	50	0
6 205	USSR	SEDIMENTS AZOV AREA	TRETIAK	480	380	0	10			A	100	0	2000	350	0	170	210	1980	0	0	200	110	0
6 211	USSR	GREY SHALE BASHKIR MIXED	TRETIAK	480	380	0	45			A	0	0	420	-150	0	0	230	1710	0	0	0	0	0
6 220	USSR	NAGOLCHI SUITE MIXED	KHRAMOV	480	380	0	49			A	0	0	320	-120	0	0	240	1820	0	0	0	0	0
6 217	USSR	BELAYA KALITVA SUITE MIX	KHRAMOV	480	395	0	45			A	0	0	2170	95	0	0	285	1770	0	0	0	0	0
6 215	USSR	DIAMOND SUITE	KHRAMOV	480	380	0	20			A	100	0	2230	-20	0	110	260	1570	0	0	100	50	0
6 216	USSR	KAMENSKOYE SUITE MIXED	KHRAMOV	480	395	0	48			A	0	0	2145	150	0	0	260	1820	0	0	0	0	0
6 214	USSR	LISICHANSK SUITE MIXED	KHRAMOV	480	410	0	20			A	0	0	2210	-60	0	210	360	1950	0	0	210	110	0
6 213	USSR	SMOLIANINOV SUITE MIXED	KHRAMOV	480	410	0	9			B	0	0	1920	250	0	110	280	2080	0	0	110	60	0
6 147	USSR	MOSCOW STAGE BAGARYAK R	IVANOV	560	620	0	0			A	100	0	2470	-270	0	60	220	1600	0	0	0	0	9100
6 209	USSR	RED SS VISEAN RIV MIASS	IVANOV	553	615	0	19	N		A	100	0	2090	-300	0	100	450	1990	0	0	100	60	0
6 47	USSR	TOURNAI STAGE SOUTH URAL		540	570	0	10	N		A	100	0	2430	-300	0	0	290	1590	0	0	110	60	5053
6 163	USSR	TOURNAI SEDS URAL RIVER	KARIANOV	520	590	0	145			A	100	0	2500	-200	0	100	200	1630	0	0	100	50	9115
6 164	USSR	TOURNAI SEDS SOUTH URALS	KOMISSAR	530	570	0	0			A	100	0	2570	-270	0	80	190	1470	0	0	90	50	9116
6 212	USSR	VALERYANOVSKAYA SUITE	IVANOV	526	625	0	23	N		A	100	0	2350	100	0	120	160	1840	0	0	120	60	0
6 162	USSR	TOURNAI SEDS KULYMNEE R	GONCHARO	660	890	0	0			A	100	0	2840	-660	0	70	390	1460	0	0	110	90	9114
6 156	USSR	SEDIMENTS BAGARYAKA RIV	KHRAMOV	560	620	0	0			A	100	0	1900	110	0	60	280	2290	0	0	60	30	9109
6 210	USSR	RED BROWN SS LOWER CARB	IVANOV	562	618	0	20	N		A	100	0	1900	110	0	60	280	2290	0	0	60	30	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GECJ LIST
6	189 USSR	VISEAN LIMESTONE S URALS	KHRAMOV	580	570	0	13	N	A	100	0	2570	-270	0	83	190	1470	0	0	100	50	0
6	157 USSR	VISEAN SEDIMENTS MIASS R	KHRAMOV	550	630	0	0		A	100	0	2090	-300	0	90	450	1990	0	0	100	60	9110
6	145 USSR	REDBEDS TCBCL	IVANOV	520	630	0	0		A	100	0	2000	-470	0	20	590	1980	0	0	30	20	9096
6	203 USSR	LOW TOURNAISIAN RED SS	BEKETOV	520	680	0	117		A	0	100	2600	-740	0	30	480	1140	0	50	0	0	0
6	146 USSR	VLADIMIROVSKAYA SUITE	BEKETOV	510	680	0	51		A	100	0	2320	-520	0	50	480	1610	0	0	70	50	9099
6	193 USSR	UP CARB REDBEDS A KAZAK	KUMPAN	520	675	0	70	X	A	100	0	2100	-570	0	0	650	1800	0	0	0	0	0
6	194 USSR	UP CARB REDBEDS B KAZAK	KUMPAN	505	680	0	40	X	A	100	0	2020	-520	0	0	650	1960	0	0	0	0	0
6	195 USSR	UP CARB REDBEDS C KAZAK	KUMPAN	500	700	0	50	N	A	100	0	2040	-530	0	0	650	1930	0	0	0	0	0
6	196 USSR	UP CARB REDBEDS D KAZAK	KUMPAN	480	675	0	70	X	A	100	0	2060	-500	0	0	640	1880	0	0	0	0	0
6	197 USSR	UP CARB REDBEDS E KAZAK	KUMPAN	435	700	0	378	X	A	100	0	2040	-460	0	0	630	1890	0	0	0	0	0
6	198 USSR	LR CARB REDBEDS A KAZAK	KUMPAN	505	680	0	40	N	A	100	0	2010	-530	0	0	670	1960	0	0	0	0	0
6	199 USSR	LR CARB REDBEDS B KAZAK	KUMPAN	500	700	0	44	N	A	100	0	1960	-540	0	0	700	2060	0	0	0	0	0
6	200 USSR	LR CARB REDBEDS C KAZAK	KUMPAN	480	675	0	40	N	A	100	0	1970	-510	0	0	690	2020	0	0	0	0	0
6	226 USSR	UPP BALAKHONIKHA KUZNETZ	VLASSOV	540	880	0	16	N	A	0	100	1590	420	0	180	-80	1070	0	0	220	130	0
6	108 USSR	LOWER BALAKHONIKHA SUITE	APARIN	540	880	0	20	N	A	100	0	2960	-410	6	140	100	1460	0	0	160	110	10116
6	223 USSR	LOW BALAKHONIKHA 2 KUZN	VLASSOV	540	880	0	30	N	A	100	0	2700	-420	0	110	200	1620	0	0	140	80	0
6	110 USSR	RED SEDIMENTS KUZNETZ	APARIN	540	880	0	9	N	B	100	0	2740	-400	4	280	180	1620	0	0	340	210	10121
6	109 USSR	OSTROG SUITE 1 KUZNETZ	APARIN	540	880	0	12	N	B	100	0	3020	-240	4	260	70	1340	0	0	280	150	10117
6	111 USSR	OSTROG SUITE 2 KUZNETZ	VLASSOV	550	880	0	14	N	A	100	0	3150	-420	0	140	-10	1390	0	0	170	100	0
6	224 USSR	TONSK SUITE KUZNETZ	VLASSOV	550	880	0	18	N	A	100	0	2900	-460	0	100	130	1460	0	0	120	80	0
6	70 USSR	SEDIMENTS MINUSINSK BAS	FOFOVA	0	0	0	10	Y	A	0	0	0	0	0	0	380	1270	0	0	60	60	7041
6	204 USSR	GREY SS MINUSINSK MIXED	VLASSOV	540	910	0	107	N	A	0	0	1090	710	0	60	340	1320	0	0	110	90	0
6	168 USSR	SEDIMENT MINUSINSK BASIN	VLASOV	540	910	7	180	N	A	0	100	1010	720	22	130	380	1340	0	0	230	200	10123
6	48 USSR	CARBONIFEROUS SIBERIA 1	VLASSOV	530	910	0	0	N	A	0	100	1420	870	0	0	480	980	0	0	0	0	5054
6	49 USSR	CARBONIFEROUS SIBERIA 2	VLASSOV	550	900	0	0	N	A	0	100	1000	500	0	0	200	1530	0	0	0	0	5055
6	50 USSR	CARBONIFEROUS SIBERIA 3	VLASSOV	530	910	0	0	N	A	0	100	820	780	0	0	490	1290	0	0	0	0	5056
6	51 USSR	CARBONIFEROUS SIBERIA 4	VLASSOV	550	910	0	0	N	A	0	100	920	700	0	0	410	1410	0	0	0	0	5057
6	52 USSR	CARBONIFEROUS SIBERIA 5	VLASSOV	540	920	0	0	N	A	0	100	1030	450	0	0	120	1560	0	0	0	0	5058
6	53 USSR	CARBONIFEROUS SIBERIA 6	VLASSOV	540	920	0	0	N	A	0	100	1200	840	0	0	460	1100	0	0	0	0	5059
6	54 USSR	CARBONIFEROUS SIBERIA 7	VLASSOV	540	910	0	0	N	A	0	100	1210	840	0	0	460	1100	0	0	0	0	5060

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
6 113	USSR	TUVA BYSTRIANSKAYA SUITE	APARIN	540	920	0	126	N	A	100	0	2950	-660	6	90	250	1340	0	0	140	120	10124
6 114	USSR	BAINOVSKAYA YAMINSKAY ST	APARIN	540	920	0	19	N	A	100	0	2860	-360	6	140	70	1580	0	0	170	100	10122
6 112	USSR	AKTAL OUKAZHA SUITES	APARIN	510	940	0	41	N	A	100	0	2920	-310	6	100	30	1600	0	0	110	60	10118
6 208	USSR	TUMASHE SUITE RIV ANGARA	DAVYDOV	580	1030	0	19	N	A	100	0	2870	-850	0	120	530	1210	0	0	240	230	0
6 221	USSR	KATA RIVER SUITE MIXED	DAVYDOV	590	1050	0	61	N	A	0	0	1280	810	0	100	470	1250	0	0	190	190	0
6 192	USSR	ROCKS NORTHEAST SIBERIA	PECHERSK	652	1660	0	18	N	B	100	0	250	-790	3	210	450	1530	0	0	0	0	0
6 191	USSR	ROCKS NORTHEAST SIBERIA	PECHERSK	652	1660	0	21	N	A	100	0	110	-760	3	170	390	1590	0	0	0	0	0
7 71	AFRIC	MALAG SERIE ROUGES INFER	NAIRN	-235	440	2	6	N	B	100	0	1410	450	13	100	550	-590	0	0	130	80	8085
7 61	AFRIC	TANZANIA ECCA SANDST K3	NAIRN	-95	337	0	0	A	B	100	0	1560	520	0	70	580	-1060	0	0	90	70	8090
7 91	AFRIC	TANZANIA K3 BEDS GALULA	OPDYKE	-88	329	5	34	T	A	100	0	1720	690	227	50	455	-1400	91	80	0	0	8092
7 92	AFRIC	TANZ K3 SONGWE KETEWAK	OPDYKE	-100	345	4	27	T	A	100	0	1170	540	60	120	270	-910	35	155	0	0	8091
7 40	AFRIC	KEN MAJI YA CHUMVI FORM	NAIRN	-30	390	1	5	N	B	100	0	2670	380	9	110	40	1500	0	0	130	80	1092
7 41	AFRIC	KENYA TARU GRIT	NAIRN	-30	390	2	8	N	B	0	0	870	610	23	160	0	870	0	0	250	190	1093
7 152	ANTAR	BEACON GROUP SEDIMENTS	TURNBULL	-780	1610	5	31	N	B	0	100	2540	-760	62	100	580	350	0	0	160	130	2029
7 53	ARCTI	GREENLAND SEDIMENTS	BIDGOOD	725	-235	2	10	N	A	100	0	1750	-370	50	70	380	1630	0	0	80	50	4014
7 166	ASIA	TURKEY BADEMLI REDBEDS	VANDERVO	373	317	6	19	T	A	0	100	410	135	22	73	430	1500	0	0	74	37	0
7 70	ASIA	TURKEY RED SANDST AMASRA	GREGOR	416	325	3	16	A	A	100	0	2920	-150	0	0	180	-780	0	180	0	0	8084
7 118	ASIA	INDIA KAMTHI SANDSTONE	VERMA	190	795	3	52	A	A	4	96	3060	-500	85	20	180	-530	0	0	30	20	9066
7 119	ASIA	INDIA KAMTHI SANDSTONE	WENSINK	201	790	5	57	T	A	100	0	794	616	63	20	211	1299	0	0	37	28	11064
7 121	ASIA	INDIA KAMTHI SANDSTONE	WENSINK	202	793	2	17	T	B	50	50	1220	751	41	180	41	-772	0	0	32	29	11063
7 120	ASIA	INDIA HIMGIR SANDSTONE		220	840	1	31		A	0	100	3320	-440	0	60	300	-580	0	0	0	0	0
7 58	ASIA	CHINA SEDIMENTS	WANG	360	1170	0	8	N	B	100	0	2700	-290	0	380	90	-1650	0	0	0	0	6052
7 59	ASIA	CHINA BASALTS	WANG	300	1030	0	10	N	B	0	100	320	-40	0	400	500	-1300	0	0	0	0	6051
7 150	ASIA	JAP LATE PAL MES INTRUS	KAWAI	350	1340	7	63	N	A	0	100	300	470	15	160	630	-1300	0	0	210	140	5013
7 86	ASIA	JAP MAG SS KITAKAMI MT	MINATO	391	1417	2	13	A	A	0	100	120	390	0	0	650	-670	0	0	0	0	0
7 65	AUSTR	DYKE NEWCOUNCIL QUARRY	IRVING	-327	1518	1	11	X	B	100	0	3054	732	118	231	-124	1270	0	0	416	374	8089
7 43	AUSTR	LOWER MARINE BASALT	IRVING	-327	1516	1	6	A	B	100	0	2300	760	170	50	460	-580	0	0	90	90	1095
7 42	AUSTR	UPPER MARINE LATITES	IRVING	-346	1508	12	43	A	A	100	0	2320	810	26	60	440	-480	0	0	120	120	1094
7 64	AUSTR	MOONBI LAMPROPHYRE	IRVING	-310	1510	1	3	A	B	100	0	2530	800	100	110	350	-520	0	0	0	0	8079
7 66	AUSTR	MILTON MONZONITE	ROBERTSO	-353	1505	4	9	A	B	100	0	850	810	39	150	320	-95	0	0	240	240	8080

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	CM	CF	GEOJ LIST
7 67	AUSTR	LATE PALEOZ REV DIV NSW		0	0	33	151	X	A	0	0	0	0	0	0	459	-485	14	0	0	0	0
7 109	EURCP	PORTUGAL EUCACC REDBEDS	VANDERVO	403	84	4	17	A	A	100	0	1490	110	0	70	355	-1485	0	0	70	40	11072
7 55	EURCP	SPA ANDESITE HUESCA PROV	SCHWARZ	430	-10	0	14	A	A	100	0	1520	-220	65	50	510	-1330	0	0	50	30	7036
7 56	EURCP	SPA RED SEDS HUESCA PROV	SCHWARZ	430	-10	0	9	A	B	0	100	2500	510	7	0	80	-540	0	0	0	0	0
7 110	EURCP	SPAIN VIAR REDBEDS	VANDERVO	375	59	3	8	T	B	100	0	1510	20	0	60	425	-1440	0	0	60	30	11073
7 111	EURCP	SPAIN VIAR DYKES SILLS	VANDERVO	375	-59	3	14	T	A	100	0	1560	100	0	130	410	-1520	0	0	130	70	11074
7 112	EURCP	SPAIN VIAR ROCKS COMBIN		375	-59	6	22	T	A	100	0	1535	60	0	0	426	-1486	0	0	0	0	0
7 105	EURCP	SPAIN ANDESITES URGEL	VANDONGE	420	15	10	41	A	A	100	0	1695	-30	0	60	485	-1630	0	0	60	30	9080
7 21	EURCP	SPAIN PYRENEAN ROCKS	VANDERLI	427	-5	0	0	N	A	100	0	1590	-140	0	0	520	-1540	0	0	0	0	0
7 79	EURCP	SPAIN PYRRENEAN ROCKS	VANDERLI	427	5	1	11	A	A	100	0	1630	-135	0	0	511	2071	0	0	0	0	0
7 106	EURCP	SPAIN SEDIMENTS PYRENEES	VANDONGE	420	15	1	7	A	B	100	0	1620	-35	0	80	470	-1540	0	0	80	40	9079
7 107	EURCP	SPAIN SEDIMENTS PYRENEES	VANDONGE	420	15	1	6	A	B	100	0	1525	-330	0	100	565	-1280	0	0	110	70	9078
7 108	EUROP	SPAIN SEDIMENTS PYR COMB		420	15	2	13	A	A	100	0	1577	-183	0	0	519	-1440	0	0	0	0	0
7 14	EURCP	ENGLAND EXETER TRAPS	CREER	510	-40	5	34	N	A	100	0	1890	-90	15	200	430	1640	0	0	200	100	1073
7 88	EURCP	ENGLAND EXETER TRAPS	ZIJDERVE	510	-40	5	30	A	A	100	0	1980	-250	0	70	495	1485	0	0	80	40	9089
7 87	EURCP	ENGLAND EXETER TRAPS	CORNWELL	510	-40	22	66	W	A	100	0	1880	-130	19	70	460	1650	0	0	70	40	9090
7 89	EURCP	ENG RED SEDIMENTS DEVON	CORNWELL	500	-35	3	7	N	B	100	0	1880	-140	24	260	460	1650	0	0	0	0	0
7 15	EURCP	ENGLAND GREAT WHIN SILL	CREER	550	-20	34	102	A	A	100	0	1880	-50	34	40	370	1690	0	0	30	30	2036
7 168	EURCP	ENGL GREAT WHIN SILL 2	STORETVE	555	-17	5	24	X	A	100	0	1939	-217	259	48	444	1591	0	0	50	30	11077
7 16	EURCP	SCOT MAUCHLINE LAVAS	DUBOIS	554	-45	0	34	N	A	100	0	1800	-40	9	80	360	1750	0	0	80	40	1074
7 17	EURCP	SCOT MAUCHLINE SEDIMENTS	DUBOIS	554	-45	0	26	N	A	100	0	1870	-60	5	120	370	1670	0	0	120	60	1075
7 18	EURCP	SCOT AYRSHIRE KYLITES	ARMSTRON	554	-45	0	7	Y	B	100	0	1900	20	5	120	340	1630	0	0	120	60	1076
7 1	EURCP	FR ESTEREL PYROMERIDE R4	ROCHE	435	68	1	5	N	B	100	0	2100	-160	0	0	460	1420	0	0	0	0	1078
7 2	EURCP	FRA ESTEREL RHYOLITE R3	ROCHE	435	68	1	14	N	A	100	0	2170	-230	69	50	450	1310	0	0	50	30	1079
7 3	EURCP	FRANCE ESTEREL DOLERITE	ROCHE	435	68	1	3	N	B	100	0	1750	-130	20	180	530	1650	0	0	180	90	1060
7 4	EURCP	FRA ESTEREL IGN RX COMB		435	68	3	22	N	A	100	0	2010	-180	14	0	500	1460	0	0	0	0	0
7 5	EURCP	FR ESTEREL IGN SED ROCKS	AS	435	68	0	14	X	A	100	0	2070	-160	59	50	470	1450	0	0	50	30	1081
7 6	EURCP	FRA MONTGENIS SANDSTONE	NAIRN	465	45	1	3	N	B	100	0	1970	60	93	40	380	1620	0	0	40	20	1083
7 7	EURCP	FRA NIDECK PORPHYRY 1	NAIRN	480	60	0	14	N	A	100	0	1930	-70	22	50	430	1680	0	0	50	30	1082
7 54	EURCP	FRA VOLCAN NIDECK CONON	ROCHE	539	57	9	37	T	A	100	0	1930	-130	134	40	410	1690	0	0	40	20	7035

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
7 99	EURCP FRA	DACITES VALLEE GUIL	ROCHE	445	70	0	8	X	B	100	0	1470	-320	17	140	510	1160	0	0	140	70	11068
7 100	EURCP FRA	VOLC VALLEE GUIL	VANDERVO	445	70	0	10	A	A	100	0	1550	-270	0	0	531	1300	0	0	0	0	0
7 101	EURCP FRA	VOLC VALLEE GUIL COM		445	70	0	18	X	A	100	0	1511	-296	0	0	524	1234	0	0	0	0	0
7 141	EURCP	FRANCE RHYOLITE FLOWS 1	BOBIER	441	73	3	8	N	B	100	0	1100	-760	2130	110	470	-310	0	0	200	190	10097
7 142	EURCP	FRANCE RHYOLITE FLOWS 2	BOBIER	441	73	4	14	N	A	100	0	620	-520	1750	80	50	-410	0	0	110	80	10098
7 164	EURCP FRA	RED BEDS DOME BARROT	VANDENEN	441	67	35	133	A	A	100	0	2060	-135	0	25	465	1475	0	0	26	13	0
7 130	EURCP FRA	LAVAS DYKES CORSICA	NAIRN	423	85	37	0	A	A	100	0	1770	-140	9	84	550	-1660	0	0	80	40	11075
7 75	EURCP FRA	LAVAS TUFFS CORSICA	ASHWORTH	423	86	15	15	A	A	100	0	1410	85	8	140	315	-1240	0	0	140	70	9088
7 137	EURCP	BELG CONGLOMER MALMEDY	DEMAGNE	503	60	7	26	N	A	100	0	1935	-142	129	53	462	1664	0	0	54	28	9076
7 13	EURCP	NORW OSLO IGNEOUS COMPL	VEVERCIN	597	104	0	484	A	A	100	0	2040	-360	21	10	470	1570	0	0	20	10	5037
7 153	EURCP	SWE MT BILLINGEN SILL	PRIEM	582	140	9	80	A	A	100	0	198	-30	529	20	310	1740	0	0	20	10	10107
7 154	EURCP	SWE MT HUNNEBERG SILL	PRIEM	585	125	3	33	A	A	100	0	2010	-170	660	50	380	1770	0	0	50	30	10108
7 155	EURCP	SWE DYKES OF SKANE	PRIEM	555	135	8	48	A	A	100	0	1950	-90	60	70	370	1740	0	0	70	40	10109
7 165	EURCP	SWEC INTRUSIVES OF SOUTH		570	140	13	161	A	A	100	0	1963	-89	77	48	359	1739	0	0	48	24	0
7 8	EURCP	WGER ST WENDEL SANDSTONE	NAIRN	495	70	0	5	N	B	100	0	1810	-90	27	40	450	-1750	0	0	40	20	1084
7 9	EURCP	WGER ROTLIEGENDE SED LAV	NAIRN	485	75	4	36	N	A	100	0	1770	10	27	180	400	-1700	0	0	140	140	4015
7 10	EURCP	WGER NAHE IGNEOUS RX 1	SCHMUCKE	500	80	4	18	N	A	100	0	1950	-40	5	0	400	1680	0	0	0	0	2037
7 11	EURCP	WGER NAHE IGNEOUS RX 2	NIJENHUI	500	80	0	75	A	A	100	0	1950	-150	54	130	460	1670	0	0	130	70	5036
7 12	EUROP	WGER NAHE IGN RX COMBIN		500	80	4	93	Y	A	100	0	1950	-100	0	0	430	1670	0	0	0	0	0
7 19	EURCP	ITA BOLZANO QTZ PORPH 1	DIETZEL	466	112	0	51	A	A	100	0	1640	-110	0	80	450	-1460	0	0	80	40	6049
7 20	EURCP	ITA BOLZANO QTZ PORPH 2	VANHILTO	465	114	0	33	A	A	100	0	1500	-310	0	40	510	-1190	0	0	40	30	6050
7 102	EURCP	ITA BOLZANO QTZ PORPH 3	VANDERVO	466	112	0	0	A	A	100	0	1522	-190	0	0	462	1272	0	0	0	0	0
7 175	EURCP	ITA BOLZANO QTZ PORPH 4	ZIJDERVE	463	115	39	152	X	A	100	0	1500	-195	0	49	457	2363	0	0	0	0	0
7 76	EURCP	ITALY POSINA IGN COMPLEX	DEBOER	450	110	1	7	A	B	100	0	1480	-290	0	0	500	-1560	0	0	0	0	9084
7 77	EURCP	ITALY LAGORAI QTZ PORPHY	FINDHAMM	462	114	9	33	A	A	100	0	1430	-150	0	110	401	2426	0	0	0	0	0
7 78	EURCP	ITALY CHUISA VOLCANICS	NIJENHUI	466	113	1	8	N	B	100	0	1730	-85	0	0	480	-1580	0	0	0	0	9081
7 80	EURCP	ITALY DYKES VINCENTIAN	DEBOER	488	113	1	9	A	B	100	0	1430	-340	0	0	476	2491	0	0	0	0	0
7 81	EURCP	ITA VIOLET PORPH CAVALES	VANLOCKE	463	115	1	6	A	B	100	0	1620	-230	0	0	540	-1380	0	0	0	0	9083
7 82	EURCP	ITA GARDENA SS CORTINA	DEBOER	457	113	0	5	A	B	100	0	1500	-220	0	0	480	-1220	-0	-0	-0	-0	9068
7 83	EURCP	ITA GARDENA SS SAN MARTI	GUICHERI	467	115	0	10	A	A	0	100	3330	260	0	0	500	2348	0	0	0	0	9077

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
7	84	EURCP	ITA GARDENA SS CCCCAU	GUICHERI	465	137	0	9	A	B	0	100	350	240	0	0	451	1413	0	0	0	0	9077
7	85	EURCP	ITA IGN RX CAMPARNC STAR	GUICHERI	450	110	0	19	A	A	53	47	3320	320	220	60	530	-1190	0	0	70	40	9067
7	128	EURCP	ITALY COLLIC AUCCIO VOLC	ZIJDERVE	458	102	5	33	A	A	100	0	1350	-210	0	20	380	-1080	0	0	21	11	11069
7	68	EURCP	ITALY PORPHYRIES LUGANO	VANHILTE	459	88	7	11	A	A	100	0	1435	-170	28	87	415	-1195	0	0	89	46	8081
7	133	EURCP	ITA VAL GARDENA SANDSTON	MANZONI	465	118	4	7	T	B	100	0	1480	-130	0	180	415	-1236	0	0	0	0	0
7	176	EURCP	ITALY IGN RX S ALPS COMB	ZIJDERVE	463	110	68	280	X	A	100	0	1480	-200	0	40	449	2384	0	0	0	0	0
7	132	EURCP	ITALY RHYOL IGNAMB SARD	ZIJDERVE	410	90	6	29	A	A	100	0	1425	-20	34	115	380	-1210	0	0	0	0	0
7	131	EUROP	ITA RED SANDST SARDINIA	ZIJDERVE	405	85	2	15	A	A	100	0	1100	-155	0	0	200	-890	0	0	0	0	0
7	103	EURCP	POL VOLCANICS KRAKOW	BIRKENMA	500	200	11	41	Y	A	100	0	2052	-164	35	79	430	1650	0	0	0	0	8087
7	104	EURCP	POL DIABASE SILL KRAKOW	BIRKENMA	500	200	1	5	A	B	100	0	2125	-158	60	100	401	1559	0	0	0	0	8102
7	113	EURCP	POL IGN RX LOWER SILESIA	BIRKENMA	510	155	14	60	Y	A	100	0	1960	-40	15	110	430	1750	0	0	110	60	11070
7	69	EURCP	CZECHOSLOVAKIAN SANDSTON	ANDREEVA	495	-166	0	15	N	A	100	0	2160	-90	0	0	360	1500	0	40	0	0	8083
7	122	EUROP	CZECH RED SEDS BLANICE N	KRS	501	149	0	43	N	A	100	0	2077	-116	38	36	400	1577	0	0	36	18	0
7	123	EURCP	CZECH RED SEDS BLANICE S	KRS	494	148	0	34	N	A	100	0	2041	-91	154	20	408	1623	0	0	20	10	0
7	124	EURCP	CZECH RED SED BOSKOVIC S	KRS	492	164	4	40	T	A	100	0	2012	-58	53	31	403	1681	0	0	31	16	0
7	125	EURCP	CZECH RED SED BOSKOVIC C	KRS	495	166	6	45	T	A	100	0	2073	-129	37	35	413	1593	0	0	36	18	0
7	127	EURCP	CZECH ROTLIEGENDE LOWER	KRS	506	155	0	89	Z	A	100	0	2002	-24	30	28	376	1697	0	0	28	14	0
7	126	EURCP	CZECH ROTLIEGENDE UP MID	KRS	505	157	0	116	Z	A	100	0	1999	-106	14	37	419	1686	0	0	38	19	0
7	129	EURCP	CZECH TURKANK VEINS	HANUS	500	153	0	16	A	A	100	0	1937	7	27	72	384	1777	0	0	72	36	0
7	134	EURCP	CZECH HEMATITE VEINS	KRS	500	135	7	55	Y	A	97	3	2140	-120	17	150	380	1490	0	90	0	0	8094
7	136	EURCP	SEDS BOHEMIAN MASSIF COM		500	155	0	367	Z	A	100	0	2034	-67	238	43	404	1643	365	35	0	0	0
7	158	EURCP	CZECH MIN VEINS FRIEBERG	BAUMANN	509	134	4	62	O	A	100	0	2092	49	5	89	311	1587	0	0	89	44	0
7	159	EURCP	CZECH GREISENS HORNI SLA	HANUS	501	128	3	32	N	A	100	0	2080	100	0	80	0	0	0	0	0	0	0
7	169	EURCP	CZECH CARPATHIAN MTS	KOTASEK	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0
7	179	EUROP	CZE L PERM BOHEMIA COMB	KRS	0	0	0	0		A	100	0	0	0	0	0	405	1643	371	35	0	0	0
7	93	NAMER	CANADA REDBEDS PEI	BLACK	460	-640	0	154	A	A	100	0	1727	60	433	59	408	1260	0	0	60	30	8095
7	94	NAMER	CANADA REDBEDS PEI	ROY	465	-637	17	58	T	A	100	0	1680	0	36	60	420	1330	45	50	60	30	8099
7	117	NAMER	CANADA BASIC INTRUS PEI	LAROCHEL	465	-638	1	12	A	A	100	0	1462	-70	0	0	433	1198	0	0	0	0	0
7	73	NAMER	USA DUNKARD SERIES	HELSLEY	395	-810	9	57	Y	A	95	5	1640	80	177	40	440	1220	0	0	40	20	8088
7	44	NAMER	USA CUTLER FORMATION 1	GRAHAM	396	-1074	0	2	N	B	100	0	1400	60	0	0	340	1230	0	0	0	0	1086

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	POLE LONG	KP	EP 95	OM	OP	GEOJ LIST
7 45	NAMER USA	CUTLER FORMATION 2	GRAHAM	370	-1100	0	4	N B	100	0	1610	330	96	100	330	920	0	0	0	0	0
7 97	NAMER USA	CUTLER FORMATION 3	FARRELL	361	-1122	1	14	T A	100	0	1510	-110	54	60	490	1170	0	0	60	30	11067
7 177	NAMER USA	CUTLER FORMATION 4	HELSLEY	387	-1099	2	44	T A	100	0	1462	-70	0	0	436	1196	0	0	0	0	0
7 205	NAMER USA	CUTLER FM COMBINED		0	0	0	0		0	100	0	0	0	0	405	1126	36	0	0	0	0
7 47	NAMER USA	ABO FORMATION 1	GRAHAM	344	-1064	0	11	N A	100	0	1490	80	5	180	420	1170	0	0	180	90	1087
7 48	NAMER USA	ABO FORMATION 2	GRAHAM	353	-1084	0	13	N A	100	0	1600	550	7	120	170	880	0	0	170	120	0
7 49	NAMER USA	ABO FORMATION COMBIN		350	-1070	0	24	N A	100	0	1530	320	0	0	300	1000	0	0	0	0	0
7 50	NAMER USA	YESO FORMATION	GRAHAM	355	-1052	1	26	N A	100	0	1430	-10	99	30	410	1270	0	0	30	20	1085
7 51	NAMER USA	SUPAI FORMATION 1	RUNCORN	350	-1105	0	114	N A	100	0	1500	110	35	100	400	1100	45	90	0	0	1088
7 98	NAMER USA	SUPAI FORMATION 2	FARRELL	360	-1130	5	132	T B	0	0	0	0	0	0	0	0	0	0	0	0	0
7 52	NAMER USA	SANGRE DE CRISTO FM	GRAHAM	345	-1053	1	19	N A	100	0	1750	310	9	110	380	810	0	0	110	70	0
7 95	NAMER USA	TOROWEAP FORMATION	FARRELL	361	-1122	2	11	T A	100	0	1570	30	38	70	470	1030	0	0	80	40	11065
7 96	NAMER USA	HERMIT SHALE	FARRELL	361	-1122	2	4	T B	100	0	1610	-70	76	80	530	1010	0	0	80	40	11066
7 147	NAMER USA	LOWER MAROON FORM	MCMAHON	396	-1066	36	104	A A	100	0	1355	47	15	63	315	1287	0	0	64	32	10105
7 148	NAMER USA	UPPER MAROON FORM	MCMAHON	396	-1066	11	48	A A	45	55	3460	235	26	91	596	1024	0	0	97	52	10096
7 149	NAMER USA	FOUNTAIN LYCKINS FM	MCMAHON	402	-1053	27	98	A A	100	0	1514	-122	6	131	474	1193	0	0	133	68	10106
7 160	NAMER USA	WOLFCAMPIAN SEDIMENT	PETERSON	0	0	10	54	T A	100	0	0	0	0	0	412	1177	61	62	0	0	0
7 161	NAMER USA	LEONARDIAN SEDIMENTS	PETERSON	0	0	9	62	T A	89	11	0	0	0	0	448	1146	17	127	0	0	0
7 162	NAMER USA	GUADALUPIAN SEDIMENT	PETERSON	0	0	7	33	T A	86	14	0	0	0	0	511	1254	176	46	0	0	0
7 163	NAMER USA	OCHOAN SEDIMENTS	PETERSON	0	0	7	37	T A	50	50	0	0	0	0	549	1189	64	76	0	0	0
7 206	NAMER USA	WOLFCAMP ETC COMBINE		0	0	0	0		0	0	0	0	0	0	481	1189	140	78	0	0	0
7 151	NAMER USA	CHUGWATER FM 1	COLLINSO	430	-1075	10	98	N A	74	26	3340	170	51	50	480	1120	0	0	50	50	3045
7 200	SAMER	COLOMBIA PERM CARB SS	CREER	70	-730	4	66	B	0	0	1820	-300	0	0	800	-620	0	0	0	0	0
7 201	SAMER	COLOMBIA FIFIRAL FM	CREER	40	-740	-0	-0		64	36	3242	-254	0	0	505	-1906	0	0	0	0	0
7 60	SAMER	BRAZIL CORUMBATAI FORM	CREER	-250	-500	0	0	N A	100	0	1800	600	0	0	740	1300	0	0	0	0	6053
7 119	SAMER	BRAZ CORUMBATAI FORMAT	CREER	-250	-500	0	12	N A	33	66	30	-310	0	100	810	320	0	100	0	0	11062
7 198	SAMER	PERU MITU FORMATION 2	CREER	-101	-752	7	19	T B	26	74	1880	250	0	0	820	260	0	0	0	0	0
7 202	SAMER	ARGEN PAGANZO TRC E	EMBLETON	-300	-678	0	0	A	100	0	1541	593	82	0	666	-1904	0	0	0	0	0
7 199	SAMER	ARG PAGANZO FM THREE B	CREER	-235	-655	0	0	N A	100	0	1980	590	12	100	670	750	10	110	0	0	0
7 116	SAMER	ARG PAGANZO FM LA RIOJA	CREER	-290	-680	0	22	T A	0	100	130	-400	0	60	770	-50	0	60	0	0	11060

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GECJ LIST
7 72	SAMER	ARGEN REDBEDS LARICJA	CREER	-300	-680	0	53	T A	100	0	1600	660	0	40	650	1670	0	60	0	0	8086
7 196	SAMER	ARG MIDDLE PAGANZO GROUP	EMBLETON	-300	-677	0	0	T A	100	0	1541	593	82	137	666	1697	0	0	205	154	0
7 197	SAMER	ARG M PAGANZO GROUP COMB		-300	-677	0	0	T A	100	0	1553	610	99	93	668	1642	0	0	142	109	0
7 114	SAMER	ARGENT PILAHUINCO GROUP	CREER	-380	-620	0	9	T B	100	0	2000	570	0	140	780	390	0	170	0	0	11061
7 195	SAMER	ARGENTINA PORPHYRITIC SR	CREER	-350	-685	3	41	T A	24	76	3513	-656	64	116	756	1357	0	0	189	154	0
7 38	USSR	DONBAS RED SEDIMENTS	KHRAMOV	480	380	0	34	N A	100	0	2250	-90	0	0	330	1610	0	0	90	50	5046
7 139	USSR	SEDIMENTS DONBASS	KHRAMOV	490	380	3	151	A	100	0	2230	-200	37	0	370	1610	0	0	0	0	9086
7 204	USSR	LR PERM REDBEDS DONBASS	KHRAMOV	490	380	0	424	A A	74	26	396	231	154	54	407	1627	0	0	58	31	0
7 140	USSR	RED SEDS SAKMARIAN STAGE	KHRAMOV	480	380	3	82	A	100	0	2190	-190	33	0	410	1650	0	0	0	0	9087
7 146	USSR	DRONOVSKAYA SUITE	KHRAMOV	485	380	0	29	N A	100	0	2235	-230	0	0	390	1585	0	0	0	0	0
7 189	USSR	SUKHONA SUITE MIXED	KHRAMOV	610	450	0	8	N B	0	0	460	390	0	70	400	1600	0	0	80	50	0
7 22	USSR	UPP TARTARIAN SEDS 1 MIX	KHRAMOV	610	460	0	49	N A	0	0	420	480	0	110	480	1650	0	0	140	100	5038
7 23	USSR	UPP TARTARIAN SEDS 2 MIX	KHRAMOV	590	510	0	34	N A	0	0	420	480	0	0	490	1690	0	0	70	50	5039
7 24	USSR	UPP TARTARIAN SEDS 3 MIX	KHRAMOV	530	520	0	35	N A	0	0	460	460	0	0	480	1640	0	0	110	80	5040
7 186	USSR	UP TARTARIAN SED 4 MIXED	KHRAMOV	540	520	0	38	N A	0	0	430	460	0	50	490	1670	0	0	60	40	0
7 187	USSR	UP TARTARIAN SED 5 MIXED	KHRAMOV	590	510	0	29	N A	0	0	490	440	0	110	430	1620	0	0	130	80	0
7 188	USSR	UP TARTARIAN SED 6 MIXED	KHRAMOV	550	530	0	7	N B	0	0	400	370	0	130	450	1730	0	0	170	110	0
7 26	USSR	LOWER TARTARIAN SEDS 1	KHRAMOV	540	520	0	19	N A	100	0	2220	-390	0	0	450	1710	0	0	100	70	5041
7 27	USSR	LOWER TARTARIAN SEDS 2	KHRAMOV	610	450	0	37	N A	100	0	2200	-350	0	0	410	1720	0	0	110	60	5042
7 28	USSR	LOWER TARTARIAN SEDS 3	KHRAMOV	570	540	0	35	N A	100	0	2260	-440	0	0	450	1670	0	0	110	70	5043
7 190	USSR	LOWER TARTARIAN SEDS 4	KHRAMOV	570	540	0	35	N A	100	0	2300	-370	0	70	390	1670	0	0	80	50	0
7 191	USSR	LOWER TARTARIAN SEDS 5	KHRAMOV	540	520	0	20	N A	100	0	2230	-390	0	80	440	1690	0	0	100	70	0
7 30	USSR	TARTARIAN UNDIFFENT MIX	KHRAMOV	590	505	0	74	N A	0	0	0	0	0	0	520	1760	0	0	130	90	2033
7 31	USSR	UPP LOW TARTARIAN COMBIN		0	0	0	283	N A	0	0	+20	440	199	40	470	1690	295	0	40	40	0
7 157	USSR	TARTARIAN SEDIMENTS	AVCHIAN	580	490	0	0	N A	100	0	2270	-270	0	0	340	1702	0	0	0	0	0
7 184	USSR	RED BEDS LAKE INDER MIX	SLAUCITA	485	520	0	35	N A	0	0	370	500	0	40	520	1520	0	0	50	40	0
7 135	USSR	SEDIMENTS	KHRAMOV	570	530	20	262	O A	0	100	2267	-418	259	38	432	1672	250	38	460	280	9069
7 62	USSR	USSR SEDIMENTS ZAVOLZHY	CHRAANDR	550	530	0	7	A B	71	29	400	370	21	130	440	1760	0	0	170	110	8082
7 32	USSR	KAZANIAN RED SEDIMENTS 1	KHRAMOV	575	550	2	24	N A	100	0	2220	-420	0	0	460	1730	0	0	0	0	2034
7 33	USSR	KAZANIAN RED SEDIMENTS 2	KHRAMOV	570	550	0	15	N A	100	0	2300	-390	0	80	400	1670	0	0	110	70	5044

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	R E V	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
7 34	USSR	KAZANIAN COMBINED		570	550	0	39	N A	100	0	2270	-430	0	0	450	1700	0	0	0	0	0
7 156	USSR	KAZANIAN SEDIMENTS	AVCHIAN	580	490	0	0	N A	100	0	2270	-230	0	0	320	1715	0	0	0	0	0
7 35	USSR	UFIMIAN RED SEDIMENTS 1	KHRAMOV	575	560	2	20	N A	100	0	2200	-380	0	0	430	1790	0	0	0	0	2035
7 36	USSR	UFIMIAN RED SEDIMENTS 2	KHRAMOV	560	550	0	31	N A	100	0	2290	-370	0	70	400	1680	0	0	90	60	5045
7 37	USSR	UFIMIAN SEDS COMBINED		570	550	0	51	N A	100	0	2240	-390	0	0	430	1730	0	0	0	0	0
7 185	USSR	SARMA SUITE RIVER DONGUZ	SLAUCITA	525	550	0	12	N A	0	100	390	590	0	110	610	1520	0	0	170	120	0
7 173	USSR	LR PERM REDBEDS A KAZAK	KUMPAN	520	675	0	55	X A	100	0	2330	-560	0	0	510	1600	0	0	0	0	0
7 174	USSR	LR PERM REDBEDS B KAZAK	KUMPAN	435	700	0	266	X A	100	0	2040	-460	0	0	630	1890	0	0	0	0	0
7 172	USSR	UPPER PERM REDBEDS KAZAK	KUMPAN	520	675	0	23	X A	100	0	2250	-560	0	0	540	1690	0	0	0	0	0
7 57	USSR	BELOYARSK SUITE	POPOVA	0	0	0	23	N A	35	65	0	0	0	0	430	1570	0	0	0	0	7038
7 183	USSR	BELYI YAR SUITE MIXED	VLASSOV	530	910	0	62	N A	0	0	740	690	0	120	470	1510	0	0	200	170	0
7 74	USSR	YUZAGOL KALUZINA PCLMIX	VLASOV	0	0	0	0	N A	0	0	940	500	0	0	160	-1640	0	100	0	0	10102
7 63	USSR	TUFF SANDST TAIMIR PENIN	VLASOV	760	1110	3	60	A A	0	100	1490	510	0	0	190	1390	0	0	100	70	8078
7 143	USSR	ILYINSKI SUITE	APARIN	540	870	0	40	N A	0	100	1580	610	0	40	-10	1080	0	0	60	40	10099
7 144	USSR	YERUNAKOVO SUITE	APARIN	540	870	0	10	N A	0	100	1090	570	0	140	210	1360	0	0	210	150	10100
7 193	USSR	BASIC RX R KOLIUMBE MIX	GONCHARO	580	880	0	50	A	0	0	2900	560	0	70	260	1460	0	0	100	70	0
7 180	USSR	UPP BALAKHONIKHA KUZNETZ	VLASSOV	540	880	0	16	N A	0	100	1590	420	0	180	-80	1070	0	0	220	130	0
7 145	USSR	UPP BALAKHONIKHA KUZNETZ	APARIN	540	880	0	35	N A	100	0	3060	-410	0	100	30	1360	0	0	120	80	10103
7 138	USSR	BARREN SED MINUSINSK MIX	KHRAMOV	530	920	0	0	A	0	0	840	640	0	40	370	1550	0	0	60	50	9085
7 39	USSR	ULTRABAS MAYMECHA KOTUY	GUSEV	720	1020	0	388	N A	100	0	2950	-680	0	50	400	1500	0	0	80	70	3055
7 194	USSR	ULTRABAS BASICS MAYMECHA	GUSEV	710	1015	0	747	A	85	15	1020	638	61	86	388	1632	0	0	137	109	0
7 192	USSR	NERSKAYA SUITE	SLAUCITA	660	1280	0	18	A	0	100	2400	470	0	60	150	740	0	0	80	50	0
7 181	USSR	YUZAGOL SUITE	VLASSOV	430	1320	0	48	A	0	100	900	480	0	100	190	2000	0	0	130	90	0
7 182	USSR	KUZULIAN SUITE	VLASSOV	430	1320	0	29	A	100	0	2740	-500	0	100	180	1960	0	0	130	90	0
7 170	USSR	ALKALOLITE NE SIBERIA	PECHERSK	630	1593	0	12	A A	0	100	390	520	31	80	520	2790	0	0	0	0	0
7 171	USSR	ROCKS NORTHEAST SIBERIA	PECHERSK	652	1660	0	21	N A	100	0	110	-760	3	170	390	1590	0	0	0	0	0
8 60	AFRIC	SAFRI UPPER BEAUFORT SED	GRAHAM	-270	320	4	19	A A	0	100	3337	-596	76	38	670	-930	0	0	0	0	8073
8 61	AFRIC	SAFRI MID BEAUFORT SHALE	NAIRN	-287	292	1	2	N B	0	100	360	-220	79	68	520	990	0	0	70	40	8074
8 55	AFRIC	SAFRI STORMBERG REDBEDS	NAIRN	-285	286	1	5	N B	0	100	70	-460	139	34	840	1100	0	0	40	30	8066
8 26	AFRIC	BECHUANALAND CAVE SANDST	NAIRN	-230	270	2	10	N A	0	100	3250	-130	7	80	530	-440	0	0	90	50	1071

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
8 27	AFRIC	RHODESIA SANDSTONE	NAIRN	0	0	6	21	N	B	0	100	3520	-310	100	70	840	-80	0	0	80	40	2031
8 59	AFRIC	ZAMBIA RED SANDSTONE	OPDYKE	-162	288	6	32	Y	A	0	100	3503	-556	208	46	680	-1295	0	0	65	50	8067
8 53	AFRIC	RHODESIA SHAWA IJOLITE	GOUGH	-192	317	5	13	A	A	0	100	3350	-520	40	120	640	-940	30	140	0	0	8072
8 52	AFRIC	RHODESIA NUANETSI LAVAS	BROCK	-216	312	4	6	A	B	100	0	1103	717	8	250	0	0	0	0	0	0	10080
8 159	AFRIC	RHOD MARANGUDZI COMPL 1	GOUGH	-220	307	4	20	A	A	100	0	1520	480	78	100	-637	976	67	113	0	0	8062
8 54	AFRIC	TANZANIA KARROO SS K5	NAIRN	-95	335	2	5	N	B	0	100	140	-270	23	98	750	1440	0	0	110	60	8065
8 74	AFRIC	MORROCO RED SANDSTONES	TARLING	320	-70	4	12	T	B	0	100	140	370	0	630	0	0	0	0	0	0	9059
8 75	AFRIC	MORROCO RED SANDSTONES	TARLING	320	-70	2	6	T	B	0	100	3440	410	0	240	0	0	0	0	0	0	9064
8 93	ANTAR	BEACON GROUP SEDIMENTS	TURNBULL	-780	1610	5	0	Y	B	0	100	2540	-760	62	100	580	350	0	0	160	130	6038
8 115	ANTAR	DUFEK MASSIF GABBRO	BECK	-825	-520	43	57	N	A	12	88	615	-630	15	30	475	160	0	0	50	40	9063
8 45	ARCTI	GREENLAND KAPP BIOT SEDS	BIDGOOD	720	-230	0	44	N	A	18	78	3580	680	41	30	680	1600	0	0	50	40	4014
8 46	ASIA	CHINA DOLERITE	WANG	0	0	0	5	N	B	0	100	630	180	0	320	270	-1430	0	0	0	0	6044
8 84	ASIA	INDIA KAMTHI SANDSTONE	VERMA	190	795	3	52	A	A	4	96	3060	-500	85	20	180	-530	0	0	30	20	9066
8 85	ASIA	INDIA MANGLI BEDS	WENSINK	205	790	2	23	T	A	100	0	1001	628	43	46	73	1243	0	0	73	57	11057
8 86	ASIA	INDIA PACKMARHI BEDS	WENSINK	224	784	3	31	T	A	100	0	1172	489	33	46	101	-499	0	0	61	40	11043
8 91	ASIA	JAPAN MESOZOIC INTRUSIVE	KAWAI	370	1400	9	87	N	A	0	100	3320	610	11	170	680	730	0	0	250	200	5014
8 96	ASIA	INDIA PARSORA SANDSTONE	BHALLA	234	810	3	49	T	A	0	100	3200	-390	200	60	300	-550	0	0	70	40	11045
8 158	ASIA	JAPAN LATE PAL MES INTR	KAWAI	350	1340	7	63	N	A	0	100	300	470	15	160	630	-1300	0	0	210	140	5013
8 28	AUSTR	NARRABEEN CHOCOLATE SH	IRVING	-339	1509	4	32	T	A	0	100	3390	-820	0	70	490	-200	0	0	140	140	7034
8 29	AUSTR	BRISBANE TUFF	ROBERTSO	-278	1530	6	12	A	A	0	100	110	-740	145	60	570	-370	0	0	110	100	7033
8 5	EURCP	SPAIN SANDSTONE	CLEGG	430	-50	7	0	N	A	0	100	3530	570	0	0	820	-1310	0	0	0	0	0
8 102	EURCP	SPAIN GARALDA REDBEDS	VANDERVO	429	-13	5	95	A	A	0	100	3500	180	0	0	550	1960	0	0	0	0	11054
8 103	EURCP	SPAIN ALCAZAR REDBEDS	VANDERVO	390	-30	2	39	A	A	0	100	3595	230	0	60	630	1775	0	0	60	30	9061
8 95	EURCP	SPA RED BEDS HUESCA PROV	SCHWARZ	430	-10	0	9	A	B	0	100	2500	510	7	0	80	-540	0	0	0	0	7037
8 94	EURCP	SPA ANDESITE HUESCA PROV	SCHWARZ	430	-10	0	14	A	A	100	0	1520	-220	65	50	510	-1330	0	0	50	30	7036
8 73	EURCP	SPAIN SEDIMENTS PYRENEES	VANDONGE	420	15	1	4	A	B	0	100	3405	240	0	110	545	-1420	0	0	120	60	9062
8 6	EURCP	ENGLAND KEUPER MARLS	CLEGG	530	-20	9	43	N	A	44	56	330	270	18	120	430	1310	0	0	120	80	1064
8 7	EURCP	ENGLAND KEUPER MARLS MIX	CREER	507	-32	0	35	Y	A	0	0	300	230	0	0	440	1340	0	0	0	0	0
8 8	EURCP	SCOT NEW RED SS ARRAN	LENG	556	-53	0	41	N	B	100	0	2140	-480	3	210	540	1180	0	0	0	0	1065
8 110	EURCP	FRANCE VOLCANIC PYRENEES	GIRDLER	430	13	7	26	A	A	0	100	292	468	69	73	625	1142	55	82	0	0	10079

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
8 123	EUROP	FRANCE RED BDS NORMANDY	BIGUAND	494	-12	6	51	N	B	67	33	173	340	5	321	562	1483	0	0	367	210	0
8 1	EUROP	FRANCE VOSGE SANDST NEG	NAIRN	490	70	3	9	N	B	0	100	100	400	9	230	620	1670	0	0	280	170	4007
8 2	EUROP	FRANCE VOSGE SANDST POS	CLEGG	480	70	7	61	N	A	100	0	2180	90	2	110	280	1430	0	0	120	60	1063
8 3	EUROP	FRANCE VOSGE SANDST COMB		485	70	10	70	N	A	77	23	250	160	0	0	440	1510	0	0	0	0	0
8 4	EUROP	WGER BUNTER SANDST MIXED	NAIRN	483	63	5	27	N	A	0	0	170	290	36	130	550	1590	0	0	100	100	4008
8 116	EUROP	WGERM LADINIAN VOLCANICS	CHATTERJ	464	117	2	8	A	B	0	100	240	140	0	0	460	1550	0	0	0	0	10091
8 109	EUROP	ITALY SCALVE PORPHYRITE	ZIJDERVE	458	102	0	5	A	B	100	0	1615	-215	0	60	520	2210	0	0	60	30	11048
8 97	EUROP	ITALY CLASTIC SEDS SCHIO	DE BOER	450	110	0	3	A	B	0	100	150	470	0	0	690	1510	0	0	0	0	9048
8 98	EUROP	ITALY BASIC DYKES SCHIO	DE BOER	450	110	0	7	A	B	0	100	3300	490	0	0	620	2590	0	0	0	0	9055
8 99	EUROP	ITALY VOLC AND SED SCHIO	DE BOER	450	110	5	43	A	A	40	60	3300	410	230	50	570	2490	0	0	60	40	9060
8 100	EUROP	ITALY MID TRIASSIC INTR		460	110	4	40	Y	A	0	100	244	408	0	0	600	1418	0	0	0	0	9056
8 101	EUROP	ITALY IGNEOUS ROCKS	DE BOER	450	110	3	20	A	A	0	100	3330	419	0	0	598	2463	0	0	0	0	0
8 87	EUROP	ITA PREDAZZO DYKES	MANZONI	465	117	2	9	A	B	0	100	3360	430	0	0	612	-1183	0	0	0	0	0
8 88	EUROP	ITA TRIAS RX DOLOMITES	MANZONI	464	118	12	57	A	A	0	100	3290	250	0	90	480	-1200	0	0	100	50	0
8 69	EUROP	POL SS KIELCE SCATTERED	BIRKENMA	510	210	5	21	N	B	0	0	0	0	0	0	0	0	0	0	0	0	8071
6 122	EUROP	CZECH RED SS N E BOHEMIA	KRS	506	161	7	85	N	B	0	100	3598	651	27	30	865	1982	0	0	48	39	0
8 70	EUROP	CZECH WERFENIAN BEDS	ANDREYEV	489	192	0	21	N	A	0	100	60	190	0	0	510	-1700	0	0	30	30	8075
8 124	EUROP	CZECH CARPATHIAN MTS	KOTASEK	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0
8 71	NAMER	CAN VOLC MISTASTIN LAKE	CURRIE	559	-634	10	73	A	A	100	0	1799	-682	0	24	855	1177	0	0	30	30	11044
8 128	NAMER	CAN DIAB DYKES ANTICOSTI	LAROCHEL	498	-632	2	11	A	A	0	100	95	566	0	0	757	847	0	0	0	0	0
8 67	NAMER	CAN MANICOUAGAN STRUCT 1	ROBERTSO	514	-686	6	14	T	A	0	100	126	390	52	100	570	890	0	0	110	60	9051
8 66	NAMER	CAN MANICOUAGAN STRUCT 2	LAROCHEL	514	-666	11	44	A	A	0	100	105	403	0	0	604	914	0	0	84	51	9052
8 135	NAMER	CANADA MANICOUAGAN STR 3		515	-686	17	56	X	A	0	100	121	400	58	47	598	888	0	0	57	34	0
8 64	NAMER	CAN NORTH MT BASALT NS 1	LAROCHEL	450	-640	17	28	A	A	0	100	11	380	0	0	660	1130	0	0	105	60	9049
8 63	NAMER	CAN NORTH MT BASALT NS 2	CARMICHA	449	-654	25	40	A	A	0	100	36	473	33	50	730	1040	0	0	65	45	10089
8 65	NAMER	CAN GRAND MANAN IS LAVAS	CARMICHA	445	-665	4	8	A	B	0	100	25	550	12	165	805	1005	0	0	240	170	10090
8 62	NAMER	CAN DIABASE DYKE NOVA SC	LAROCHEL	440	-655	2	11	A	A	0	100	70	410	94	50	690	980	0	0	60	40	8068
8 165	NAMER	CANADA BASIC RX NOVA SCO		0	0	0	0	A	A	0	100	0	0	0	0	722	1048	149	0	0	0	0
3 41	NAMER	USA NEW OXFORD FORMATION	GRAHAM	400	-770	1	13	N	A	0	100	3340	480	36	70	660	1740	0	0	80	60	1070
8 43	NAMER	USA CONNECTICUT VALL RX	DUBOIS	420	-730	0	12	N	A	31	59	120	140	0	150	540	860	0	0	150	80	1067

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	PCLE LAT	PCLE LONG	KP	EP 95	DM	DP	GECJ LIST
8 111	NAMER USA	IGN RX CONNECTICUT	DEBOER	415	-750	50	313	A	A	0	100	80	330	31	110	650	870	0	0	120	70	10088
8 44	NAMER USA	MASSACHUSETTS LAVAS	DUBOIS	420	-725	5	16	A	A	0	100	100	160	41	100	550	880	0	0	110	60	5035
8 42	NAMER USA	NEWARK GROUP NEW JER	DUBOIS	405	-749	29	78	Y	A	0	100	3590	250	49	40	630	1080	0	0	40	30	5034
8 68	NAMER USA	DIABASE PENNSYLVANIA	BECK	400	-765	20	95	A	A	0	100	3595	230	102	30	620	1050	0	0	30	20	8069
8 112	NAMER USA	APPALACHIAN DYKES	DEBOER	-0	-0	74	121	A	A	0	100	0	0	0	0	660	1450	0	30	0	0	9047
8 113	NAMER EASTERN USA	INTRUS SEDS	BOWKER	-0	-0	50	387	N	A	8	92	0	0	0	0	680	910	0	60	0	0	9050
8 30	NAMER USA	CHUGWATER FORM 1	COLLINSO	430	-1075	10	98	N	A	74	26	3340	170	51	50	480	1120	0	0	50	50	3054
8 114	NAMER USA	CHUGWATER FORMATIC 2	PICARD	430	-1085	0	150	N	A	61	39	3311	390	0	0	580	1296	0	0	0	0	9053
8 166	NAMER USA	CHUGWATER FM COMBINE		0	0	0	0			0	0	0	0	0	0	533	1198	0	0	0	0	0
8 32	NAMER USA	SPRINGDALE SANDSTONE	RUNCORN	370	-1130	1	8	N	B	0	100	3380	160	0	0	550	1070	0	0	0	0	1069
8 33	NAMER USA	CHINLE SHINARUMP MIX	GRAHAM	360	-1110	0	17	N	B	0	0	3550	430	27	70	790	900	0	0	80	50	0
8 34	NAMER USA	CHINLE FM LAS VEGAS	GRAHAM	350	-1050	0	6	N	B	0	100	330	470	12	160	610	-100	0	0	210	140	0
8 35	NAMER USA	CHINLE FM COLORADO 1	COLLINSO	390	-1090	0	6	N	B	0	100	3560	660	25	50	810	-1250	0	0	90	70	3036
8 36	NAMER USA	CHINLE FM COLORADO 2	COLLINSO	390	-1090	0	7	N	B	0	100	340	600	14	70	640	-350	0	0	110	80	3035
8 37	NAMER USA	CHINLE ROMEROVIL MIX	GRAHAM	350	-1050	1	16	N	A	0	0	160	90	14	90	560	470	0	0	90	40	0
8 38	NAMER USA	CHINLE FM MOAB 1	COLLINSO	390	-1090	0	14	N	A	100	0	1560	-70	0	0	490	1090	0	0	0	0	3034
8 39	NAMER USA	CHINLE FM MOAB 2 MIX	COLLINSO	390	-1090	0	10	N	A	0	0	1600	-100	0	0	500	1140	0	0	0	0	3033
8 40	NAMER USA	CHINLE FM COMBINED		0	0	0	40	N	A	0	0	0	0	0	0	550	930	0	0	0	0	0
8 31	NAMER USA	MOENKOPI FORM 1	RUNCORN	385	-1105	8	92	N	A	50	50	3380	190	21	130	570	1070	0	0	100	100	3044
8 72	NAMER USA	MOENKOPI HOSKINNIN 2	FARRELL	369	-1103	1	18	T	A	100	0	1500	-160	23	70	500	1210	0	0	70	40	11058
8 120	NAMER USA	MOENKOPI FORMATION 3	HELSLEY	386	-1089	0	318	Z	A	58	42	3460	170	85	50	570	890	0	0	50	30	11059
8 167	NAMER	MOENKOPI FM COMBINED		0	0	0	0			0	0	0	0	0	0	554	1066	64	0	0	0	0
8 89	NAMER USA	UPPER MAROON FORM	MCMAHON	396	-1066	11	48	A	A	45	55	3460	235	25	91	598	1024	0	0	97	52	10096
8 90	NAMER USA	FOUNTAIN LYCKENS FM	MCMAHON	402	-1053	27	98	A	A	100	0	1514	-122	6	131	474	1193	0	0	133	68	10106
8 132	NAMER CANADA	GUICHON BATHOLITH	SYMONS	505	-1210	15	58	A	A	13	87	204	506	12	113	656	129	0	0	140	94	0
8 168	NAMER CANADA	KARMUTSEN 1 POS A	SYMONS	495	-1254	7	23	A		0	100	13	605	14	140	817	480	0	0	213	162	0
8 169	NAMER CANADA	KARMUTSEN 2 NEG B	SYMONS	495	-1254	5	14	A	B	0	100	104	-456	8	220	128	454	0	0	286	182	0
8 171	NAMER CANADA	KARMUTSEN 4 NEG B	IRVING	497	-1256	3	9	X	B	0	100	3540	-350	0	190	210	610	0	0	200	140	0
8 170	NAMER CANADA	KARMUTSEN 3 POS A	IRVING	497	-1256	8	24	A		0	100	3370	770	12	170	703	-1548	0	0	310	280	0
8 51	SAMER VENEZ	LA QUINTA FM ZERO	CREER	80	-710	0	18	N	B	100	0	2540	-410	0	240	180	-30	0	0	290	180	6048

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
8	105	SAMER	VENEZUALA LA QUINTA FM 1	CREER	90	-710	5	38	N	B	0	100	3470	160	0	240	650	2560	0	240	0	0	11051
8	107	SAMER	VENEZUALA LA QUINTA FM 2	VALENCIO	90	-720	4	50	T	B	70	30	329	127	15	250	570	200	0	0	254	130	0
8	163	SAMER	VENEZUELA LA QUINTA FM 3	CREER	82	-720	2	18	T	B	0	100	3570	220	2	280	0	0	0	0	0	0	0
8	108	SAMER	VENEZ LA QUINTA COMBINED	HARGRAVE	90	-720	5	52	X	B	68	32	289	65	11	242	607	275	0	0	240	122	0
8	50	SAMER	COLUMBIA GIRON BLDS	CREER	65	-745	0	27	N	B	0	100	30	260	0	170	820	-500	0	0	180	100	6047
8	104	SAMER	COLOMBIA GIRON FORM 2	CREER	80	-740	6	28	T	A	0	100	130	100	0	160	768	270	0	160	0	0	11050
8	164	SAMER	COLOMBIA GIRON FM 3	CREER	70	-730	7	11	T	B	0	100	90	-70	2	300	770	740	0	0	0	0	0
8	78	SAMER	BRAZIL MOTUCA FM MIXED	CREER	-70	-430	4	7	T	B	0	0	10	40	0	110	850	-330	0	100	0	0	11055
8	161	SAMER	BRAZIL MOTUCA FORM 2	CREER	-70	-430	4	7	T	B	80	20	30	-270	0	0	810	1160	0	0	0	0	0
8	92	SAMER	URUG TACUAREMBO SS MIX	CREER	-290	-570	8	24	Y	A	0	0	3540	-430	24	30	830	-1120	0	0	30	20	1062
8	48	SAMER	ARG RIO BLANCO SCATTERED	CREER	0	0	0	0	N	B	0	0	0	0	0	0	0	0	0	0	0	0	0
8	80	SAMER	ARG LAVAS MENDOZA PROV	VALENCIO	-330	-680	15	41	A	A	25	75	20	-620	33	40	810	1020	0	60	70	50	11056
8	81	SAMER	ARG LAVAS MENDOZA MIXPOL	VILAS	-330	-680	0	91	A	A	0	0	110	-680	0	80	800	480	0	100	110	90	11049
8	83	SAMER	ARG BOTACATU SANDSTONE	CREER	-230	-490	3	9	N	B	0	100	3530	-310	0	430	780	990	0	580	0	0	11042
8	77	SAMER	ARG SANTA MARIA FORM	CREER	-300	-530	0	4	N	B	0	100	3520	-290	0	140	750	-840	0	150	0	0	11047
8	79	SAMER	ARG RED BEDS SALTA MIXED	CREER	-240	-640	0	7	N	B	0	0	2030	380	0	260	700	340	0	210	0	0	11053
8	47	SAMER	ARGENTINA LAS CABRAS FM	CREER	-330	-690	0	11	N	B	0	100	20	-270	0	260	710	-640	0	0	0	0	6046
8	82	SAMER	ARGEN LAS CABRAS 2 LAVAS	VALENCIO	-325	-691	5	30	A	A	20	80	100	-650	0	130	740	860	0	140	180	110	11046
8	49	SAMER	ARG RED BEDS LA RIOJA	CREER	-240	-650	0	13	N	A	100	0	1980	560	0	160	700	680	0	0	230	160	6045
8	76	SAMER	ARG PAGANZO FM LA RIOJA	CREER	-290	-680	0	22	T	A	0	100	130	-400	0	60	770	-50	0	60	0	0	11060
8	162	SAMER	ARG PAGANZO FM THREE B	CREER	-235	-655	0	0	N	A	100	0	1980	590	12	100	670	750	10	110	0	0	0
8	106	SAMER	ARGENTINA MIRANDA FORMAT	CREER	-290	-670	0	10	N	B	0	100	110	-420	0	220	780	510	0	220	0	0	11052
8	10	USSR	SEREBRYANSK SUITE 1 MIX	KHRAMOV	480	360	0	26	N	A	0	0	390	570	0	40	600	1350	0	0	60	40	5023
8	144	USSR	SEREBRYANSK SUITE 2 MIX	TRETIAK	480	380	0	53	N	A	0	0	410	420	0	110	490	1520	0	0	140	80	0
8	56	USSR	SEDIMENTS DONBASS	KHRAMOV	490	360	0	7	Y	B	57	43	420	460	13	180	510	1460	0	0	220	140	8077
8	11	USSR	BASHUNCHAK SUITE	KHRAMOV	480	470	0	52	N	A	0	100	420	560	0	0	570	1420	0	0	60	40	5024
8	149	USSR	VARIEGATED SUITE	SLAJCITA	480	470	0	48	N	A	100	0	490	550	0	50	520	1500	0	0	70	50	0
8	148	USSR	VARIEGATED SUITE	SLAJCITA	485	520	0	17	N	A	100	0	460	420	0	100	480	1530	0	0	130	80	0
8	9	USSR	VITLOSIAN SEDIMENTS	KHRAMOV	590	500	0	9	N	B	100	0	2220	-190	0	0	310	1800	0	0	0	0	2032
8	155	USSR	VETLUGA STAGE 2	KHRAMOV	590	510	0	10	N	A	100	0	2180	-450	0	150	500	1740	0	0	190	120	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	R E V	NOR	DECL	INCL	KO	ED 95	POLE LAT	POLE LONG	KP	EP 95	OM	OF	GEOJ LIST
8 12	USSR	TANANYK SUITE 1 MIXED	KHRAMOV	490	520	0	14	N A	0	0	450	460	0	0	490	1580	0	0	90	50	5025
8 141	USSR	TANANYK SUITE 2	SLAJCITA	525	510	0	4	B	0	100	510	430	0	190	430	1550	0	0	240	150	0
8 145	USSR	YUSHATYR SUITE	SLAJCITA	525	550	0	18	A	0	100	770	540	0	90	350	1580	0	0	130	90	0
8 142	USSR	DONGUZ SUITE	SLAJCITA	525	550	0	42	A	0	100	470	700	0	50	620	1250	0	0	90	70	0
8 13	USSR	BUZULUK SUITE 1	KHRAMOV	530	520	0	9	N B	100	0	2220	-510	0	130	540	1640	0	0	170	100	5026
8 139	USSR	BUZULUK SUITE 2	SLAJCITA	525	550	0	19	A	0	100	550	500	0	40	450	1520	0	0	50	30	0
8 140	USSR	BUZULUK SUITE 3 MIXED	SLAJCITA	525	510	0	10	N A	0	0	410	470	0	150	510	1640	0	0	190	120	0
8 146	USSR	TUFFACEOUS SUITE	KARTANOV	578	620	0	711	A	67	33	629	601	182	92	476	1470	0	0	139	105	0
8 125	USSR	TRIASS RX CENTRAL URALS	KARTANOV	560	630	19	0	X A	68	32	660	590	0	90	440	1420	0	0	140	110	10093
8 129	USSR	TRACHY BASALTS KAZAKSTAN	SHOLPO	0	0	0	70	N A	100	0	2640	110	0	0	0	0	0	0	0	0	0
8 156	USSR	BASALTS KAZAKSTAN	RUSSINOV	480	800	0	21	N A	100	0	2800	590	0	80	250	1350	0	0	120	90	0
8 130	USSR	SEREBRYANSK SUITE 2	SHOLPO	0	0	0	35	N A	100	0	2160	-560	0	0	0	0	0	0	0	0	0
8 134	USSR	BASIC RX R KOLIUMEE MIX	GONCHARO	580	880	0	50	A	0	0	2900	560	0	70	260	1460	0	0	100	70	0
8 15	USSR	SIBERIAN TRAPS 1 MIXED	FEINBERG	0	0	0	0	N A	0	0	670	840	0	30	610	1170	0	0	60	60	5027
8 16	USSR	SIBERIAN TRAPS 2	MAKAROVA	660	880	6	50	N A	0	100	900	710	0	40	480	1480	0	0	100	80	3031
8 17	USSR	SIBERIAN TRAPS 3	DEUTSCH	670	888	4	26	N A	0	100	620	760	0	90	650	1560	0	0	160	150	3032
8 18	USSR	SIBERIAN TRAPS 4 MIXED	KOCHEGUR	670	920	0	92	N A	0	0	920	800	0	120	600	1330	0	0	230	230	5028
8 19	USSR	SIBERIAN TRAPS 5	KOMAROV	630	1140	0	0	N A	0	100	1790	870	0	130	590	1140	0	0	250	250	5029
8 152	USSR	SIBERIAN TRAPS 6	KAMYSHEV	640	1120	0	114	N A	0	100	860	830	0	20	610	1420	0	0	40	40	0
8 153	USSR	SIBERIAN TRAPS 7	KAMYSHEV	640	1120	0	11	N A	0	100	900	750	0	70	520	1620	0	0	130	120	0
8 154	USSR	SIBERIAN TRAPS 8	KAMYSHEV	630	1120	0	25	N A	0	100	1030	800	0	50	540	1450	0	0	100	90	0
8 22	USSR	SIBERIAN PLAT DOLER 1	GUSEV	710	1010	0	31	N A	100	0	2860	-590	0	50	320	1630	0	0	80	60	5030
8 23	USSR	SIBERIAN PLAT DOLER 2	GUSEV	710	1010	0	34	N A	0	100	1170	640	0	40	350	1500	0	0	60	50	5031
8 24	USSR	SIBERIAN PLATFORM DIKES	GUSEV	710	1010	0	25	N A	100	0	3030	-640	0	50	340	1460	0	0	80	60	5032
8 151	USSR	KHONDAMAKIT SUITE	GUSEV	680	910	0	36	N A	100	0	820	710	0	60	430	1530	0	0	110	90	0
8 150	USSR	AYAN SUITE BASALT TUNGUS	GUSEV	700	960	0	120	N A	100	0	1020	750	0	60	530	1460	0	0	110	100	0
8 143	USSR	ULTRABAS BASICS MAYMECHA	GUSEV	710	1015	0	747	A	85	15	1020	638	61	86	388	1632	0	0	137	109	0
8 136	USSR	TUFFOGENIC SUITE 1	DAVYDOV	630	1070	0	79	N A	0	100	1200	830	0	100	520	1250	0	0	200	100	0
8 137	USSR	TUFFOGENIC SUITE 2	DAVYDOV	590	1030	0	65	N A	0	100	1360	850	0	40	530	1150	0	0	80	40	0
8 147	USSR	TAIMYR PEN RED SANDST 2	GUSEV	750	1060	0	22	N A	100	0	2870	-650	0	50	410	1680	0	0	80	60	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GECJ LIST
8 21	USSR	TAIMYR PENIN RED SANDST	GUSIV	750	1080	0	29	N	A		0	100	1300	680	0	60	400	1470	0	0	100	80	5033
8 57	USSR	SS INDSKIAN OLENEKIAN ST	VLASOV	760	1110	4	160	A	A		0	100	1610	390	0	0	90	1290	0	0	100	60	8076
8 58	USSR	SS ANISIAN LADINIAN STAG	VLASOV	760	1110	2	98	A	A		100	0	1680	180	0	0	40	-570	0	0	80	40	8070
8 157	USSR	BEGICZHAN SUITE	SLAUCITA	640	1300	0	21		A		0	100	1510	700	0	150	320	1510	0	0	30	20	0
8 138	USSR	LOWER KELTER SUITE	SLAUCITA	640	1300	0	15	N	A		0	100	1520	810	0	100	490	1410	0	0	190	180	0
8 117	USSR	SEDIMENTS LIANGCHI RIVER	VLASSOV	430	1320	0	0	A	A		0	100	560	700	0	100	530	1840	0	0	170	150	10092
8 126	USSR	LOWER TRIAS SEDS SIBERIA	PECHERSK	630	1593	0	35	A	A		14	86	578	671	0	0	568	2450	0	0	0	0	0
8 127	USSR	UPPER TRIAS SEDS SIBERIA	PECHERSK	641	1592	0	135	A	A		29	71	528	744	14	188	660	2320	0	0	0	0	0
9 26	AFRIC	SAFR KARROO DOL SURF MIX	GRAHAM	-303	285	20	33	N	A		0	0	1720	620	0	120	760	-1280	0	0	190	140	1056
9 27	AFRIC	SA KARROO DOLERITE MINES	GRAHAM	0	0	0	64	N	A		63	37	1600	600	52	90	680	-780	0	0	140	140	1060
9 70	AFRIC	SAFRI KARROO DOLERITE	IRVING	-300	300	3	6	N	B		33	67	152	-691	18	302	647	-1719	0	0	514	437	0
9 69	AFRIC	SAFRI KARROO DOLER COMB		0	0	10	0	Y	A		30	70	0	0	0	0	654	-1049	16	123	0	0	8059
9 68	AFRIC	SAFRI KARROO DOL UMGENI	NAIRN	-298	310	1	3	A	B		0	100	260	-670	286	70	620	1740	0	0	120	100	8058
9 51	AFRIC	SAFR RHOD KARROO VOL COM		0	0	0	226	Y	A		0	0	0	0	0	0	690	-970	0	0	80	80	0
9 25	AFRIC	SAFRIC STORMBERG LAVAS	HALLS	0	0	14	119	N	A		36	64	3400	-490	9	140	720	-720	0	0	190	130	4004
9 46	AFRIC	BAS STORMBERG SANI NORM	VANZIJL	-296	293	0	33	A	A		0	100	3290	-540	66	40	640	-780	0	0	40	30	6040
9 48	AFRIC	BAS STORMBERG SANI REV	VANZIJL	-296	293	0	13	A	A		100	0	1620	540	18	110	740	-840	0	0	160	110	6042
9 47	AFRIC	BAS STORMBERG MASERU NOR	VANZIJL	-294	278	0	21	A	A		0	100	3300	-500	40	50	640	-740	0	0	70	50	6041
9 49	AFRIC	BAS STORMBERG MASERU REV	VANZIJL	-294	278	0	7	A	B		100	0	1780	660	36	100	710	-1470	0	0	160	130	6043
9 50	AFRIC	BAS STORMBERG LAVAS COMB		-295	285	0	74	A	A		27	73	3380	-560	68	0	710	-910	0	0	150	150	0
9 24	AFRIC	RHODESIA KARROO BASALT	NAIRN	-180	260	0	11	N	A		0	100	3320	-400	19	50	630	-790	0	0	60	40	1055
9 67	AFRIC	RHODESIA KARROO DOLERITE	MCELHINN	-200	320	4	13	Y	B		0	100	3300	-550	200	210	590	-940	0	0	290	210	8057
9 57	AFRIC	RHOD MATEKE HILLS	GOUGH	-218	312	6	36	A	A		100	0	1490	590	113	60	586	-1003	66	83	0	0	8063
9 58	AFRIC	RHOD MATEKE COMPLEXES	GOUGH	-218	317	7	44	A	A		86	14	1429	552	29	114	549	-899	0	0	162	115	0
9 60	AFRIC	RHOD MARANGUDZI COMPL 1	GOUGH	-220	307	4	20	A	A		100	0	1520	480	78	100	637	-824	67	113	0	0	8062
9 61	AFRIC	RHOD MARANGUDZI COMPL 2	GOUGH	-220	307	5	29	A	A		80	20	1537	465	73	90	655	-783	0	0	0	0	0
9 59	AFRIC	RHOD MARANGUDZI COMPL 3	BROCK	-221	307	8	68	A	A		88	12	1593	436	41	87	702	-749	40	85	109	68	10077
9 66	AFRIC	RHODESIA LIMBURGITE PLUG	NAIRN	-196	299	1	2	N	B		100	0	1570	500	101	50	660	-940	0	0	70	50	8056
9 76	AFRIC	MOZ LUPATA ALKALINE VOLC	GOUGH	-167	342	7	61	A	A		0	100	3360	-540	339	30	620	-1010	0	0	40	40	7021
9 75	AFRIC	MALAWI MICROGIORITE CYKL	MCELHINN	-141	348	1	4	A	B		0	100	630	700	0	0	40	670	0	0	0	0	10104

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
9 110	AFRIC	MOZAMBIQUE RED SILTSTONE	GOUGH	-162	342	1	5	A	B	0	100	3590	-460	160	60	790	-1420	0	0	80	50	7022
9 92	AFRIC	MOROCCO RED SANDSTONE	TARLING	320	-70	5	13	T	B	0	100	3500	420	0	240	0	0	0	0	0	0	9045
9 111	AFRIC	MOROCCO DRAA VALLEY SILL	HAILWOOD	295	-65	16	96	A	A	0	100	3390	275	0	45	655	2305	0	35	0	0	0
9 112	AFRIC	MOROCCO FOUM ZGUID DYKE	HAILWOOD	305	-65	5	27	A	A	0	100	3250	400	316	40	580	2590	0	40	0	0	0
9 113	AFRIC	MOROCCO CENT ATLAS INTR	HAILWOOD	320	-60	6	35	A	B	0	100	3184	385	10	220	530	2615	0	240	0	0	0
9 114	AFRIC	MOROCCO JUR INTRUS COMB	HAILWOOD	310	-60	27	158	A	A	0	100	3332	331	26	56	623	2446	25	56	0	0	0
9 41	ANTAR	ADMIRALTY GRANITES	BULL	-774	1619	5	5	A	B	0	100	2570	-770	23	90	600	370	0	0	150	120	6039
9 40	ANTAR	BASEMENT DIKES	BULL	-775	1615	29	48	A	B	0	100	2470	-640	67	40	400	400	0	0	60	50	6037
9 39	ANTAR	BEACON GROUP SEDIMENTS	TURNBULL	-780	1610	5	31	Y	B	0	100	2540	-760	62	100	580	350	0	0	160	130	6038
9 37	ANTAR	FERRAR DOLERITE 1	TURNBULL	-780	1610	5	57	N	A	0	100	2550	-760	52	30	580	380	0	0	50	50	2027
9 38	ANTAR	FERRAR DOLERITE 2	BULL	-774	1616	46	83	A	A	0	100	2500	-680	63	30	450	390	0	0	40	30	6036
9 56	ANTAR	FERRAR DOLERITE 3	BRIDEN	-840	1650	9	13	A	A	0	100	2440	-750	18	110	590	410	0	0	200	180	0
9 42	ANTAR	DOLERITE INTRUSIONS	BLUNDELL	-805	-250	7	8	N	B	67	43	640	-680	0	120	540	440	0	0	0	0	2026
9 93	ANTAR	DUFEK MASSIF GABBRO	BECK	-825	-520	43	57	N	A	12	88	615	-630	15	30	475	160	0	0	50	40	9063
9 55	ANTAR	DIKES SCATTERED	BLUNDELL	-630	-600	5	18	A	B	0	0	0	0	0	0	0	0	0	0	0	0	7030
9 54	ANTAR	UPPER JUR VOL SCATTERED	BLUNDELL	-630	-600	12	43	A	B	0	0	0	0	0	0	0	0	0	0	0	0	7029
9 65	ANTAR	GRAHAM LD LAVAS ARGEN IS	EVANS	-653	-643	0	12	T	B	0	0	1210	550	20	350	440	-1430	0	0	0	0	8054
9 87	ARCTI	SPITZBERGEN DOLERITE	SPALL	785	155	7	37	T	A	100	0	250	-760	22	130	530	-20	0	0	250	230	10067
9 88	ARCTI	SPITZBERGEN DOLERITE	KRUMSIEK	783	162	1	8	A	B	100	0	1985	-647	38	80	580	1790	0	0	180	140	10069
9 73	ASIA	LEB KIMMERIDGIAN BAS TUF	VANDONGE	340	360	6	20	A	A	0	0	925	105	0	30	10	1200	0	0	30	20	9044
9 78	ASIA	TURKEY BAYBURT VOLC SEDS	VANDERVO	404	399	0	8	A	B	100	0	1465	30	51	80	390	-950	0	0	80	40	10071
9 44	ASIA	INDIA SYLHET TRAPS NW GP	ATHAVALE	250	910	0	25	X	A	0	100	3220	-590	0	70	160	-600	0	0	110	80	7031
9 45	ASIA	INDIA SYLHET TRAPS SW GP	ATHAVALE	250	910	0	11	X	A	100	0	2430	-600	0	160	360	1470	0	0	240	180	7032
9 23	ASIA	INDIA RAJMAHAL TRAPS	CLEGG	250	879	3	33	N	A	0	100	3270	-640	36	40	130	-690	0	0	60	50	1054
9 71	ASIA	INDIA RAJMAHAL TRAPS	RADHAKRI	245	875	15	92	A	A	0	100	3220	-640	170	30	120	-660	0	0	50	40	8060
9 43	ASIA	CHINA DARK RED HEMATITE	WANG	290	1060	0	7	N	B	0	100	2610	340	0	540	10	370	0	0	0	0	6034
9 77	ASIA	CHINA JURASSIC REDBEDS	LEE	285	1046	5	0	N	A	0	100	368	656	151	63	557	1502	0	0	102	83	10072
9 21	ASIA	JAP MESOZOIC INTRUSIVES	KAWAI	370	1400	9	0	N	A	0	100	3320	610	11	170	680	730	0	0	250	200	5014
9 22	ASIA	JAP LATE PAL MES INTR	KAWAI	350	1340	7	63	N	A	0	100	300	470	15	160	630	-1300	0	0	210	140	5013
9 32	AUSTR	NOOSA HEADS INTRUS COMPL	ROBERTSO	-264	1531	4	0	A	A	25	75	510	-700	48	130	360	-480	0	0	250	240	7028

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
9 29	AUSTR	PROSPECT DOLERITE	BOESEN	-338	1508	3	10	N	A	0	100	3590	-810	28	70	510	-290	0	0	130	130	5021
9 28	AUSTR	GIBRALTER MICROSYENITE	BOESEN	-345	1504	2	10	N	A	0	100	270	-860	9	120	410	-340	0	0	240	240	5020
9 33	AUSTR	GINGENBULLEN DOLERITE	BOESEN	-344	1503	1	8	A	B	100	0	1910	800	23	80	530	-360	0	0	150	150	5019
9 31	AUSTR	TASMANIAN DOLER RED HILL	STOTT	-430	1480	8	37	N	A	0	100	2940	-750	70	70	0	0	0	0	0	0	0
9 30	AUSTR	TASMANIAN DOL GENERAL	IRVING	-420	1470	51	132	N	A	0	100	3190	-840	111	30	510	-200	0	0	60	60	7026
9 1	EURCP	ENG NORTHANTS IRONSTONE	BELSHE	520	-10	0	0	N	B	0	100	3410	560	0	0	700	-1330	0	0	0	0	0
9 2	EURCP	ENGLAND BRIDPORT SANDS	GIRDLER	510	-25	0	0	N	B	0	100	230	600	73	50	710	1110	0	0	80	60	0
9 3	EURCP	ENGLAND YEOUVIL SANDS	GIRDLER	510	-25	0	10	N	B	0	100	3590	640	57	60	850	-1750	0	0	90	80	0
9 4	EURCP	ENGLAND MIDFORD SANDS	GIRDLER	510	-25	3	20	N	A	0	100	1040	700	10	70	330	410	0	0	130	110	2024
9 5	EURCP	ENG COTSWOLD SANDS NEG	GIRDLER	510	-25	0	17	N	B	0	100	70	660	22	60	850	1150	0	0	100	80	0
9 6	EURCP	ENG COTSWOLD SANDS POS	GIRDLER	510	-25	0	17	N	A	100	0	2630	-640	7	100	380	590	0	0	160	130	2023
9 7	EURCP	ENG MIDFORD COTS POS COM		510	-25	0	37	N	A	46	54	910	670	0	0	360	500	0	0	0	0	0
9 8	EURCP	ENG BLEA WYKE BEDS 1	GIRDLER	545	-5	0	9	N	B	0	100	100	670	46	40	820	1240	0	0	70	50	0
9 9	EURCP	ENG BLEA WYKE BEDS 2	GIRDLER	545	-5	0	5	N	B	0	100	3490	660	18	90	810	-1280	0	0	140	120	0
9 10	EURCP	ENG YORKSHIRE SEDIMENTS	NAIRN	540	-10	0	6	N	B	0	100	30	670	88	50	850	1500	0	0	80	60	4006
9 11	EURCP	SCOTLAND SEDIMENTS MIXED	NAIRN	575	-50	0	4	N	B	0	0	2340	-660	33	70	560	760	0	0	110	90	1051
9 85	EURCP	FRANCE VOLCANIC PYRENEES	GIRDLER	430	13	7	26	A	A	0	100	292	468	69	73	625	1142	55	82	0	0	10079
9 89	EURCP	FRANCE VOLCANIC PYRENEES	GIRDLER	420	13	8	26	A	A	0	100	163	387	70	70	649	1436	82	62	0	0	10078
9 12	EURCP	FRANCE PYRENEAN TUFFS	GIRDLER	430	16	4	18	N	B	0	100	550	590	17	60	490	770	0	0	90	60	2025
9 79	EURCP	ITALY BIOCHEMIC SEDS	DE BOER	450	110	0	4	A	B	100	0	1900	-140	0	0	510	1750	0	0	0	0	9046
9 13	EURCP	AUSTRIA ALPINE RED LMST	HARGRAVE	476	126	0	16	N	A	0	100	480	510	71	70	510	1090	0	0	90	60	1053
9 14	EURCP	AUST ALPINE RADIOLARITE	HARGRAVE	476	126	0	15	N	A	0	100	370	480	100	60	560	1220	0	0	70	50	1052
9 15	EURCP	AUST ALPINE SEDS COMBIN		476	126	0	31	N	A	0	100	420	500	0	0	540	1150	0	0	0	0	0
9 97	EURCP	CZECH MINERALIZED VEINS	BAUMANN	509	134	8	113	A	A	13	87	16	589	8	51	787	1869	0	0	76	57	0
9 103	NAMER	CAN DIAB DYKES ANTICOSTI	LAROCHEL	498	-632	2	11	A	A	0	100	95	566	0	0	757	847	0	0	0	0	0
9 72	NAMER	USA WHITE MOUNTAIN SER	OPDYKE	440	-710	12	130	A	A	50	50	3585	590	110	40	855	1265	64	55	60	45	8061
9 91	NAMER	USA APPALACHIAN DYKES	DEBDER	-0	-0	74	121	A	A	0	100	0	0	0	0	660	1450	0	30	0	0	9047
9 35	NAMER	USA CARMEL FORMATION	COLLINSO	390	-1090	0	9	N	B	0	100	3490	630	10	90	800	-1600	0	0	140	110	3026
9 34	NAMER	USA KAYENTA FORMATION	COLLINSO	370	-1115	4	39	N	B	0	100	40	500	36	0	830	390	0	0	0	0	3030
9 63	NAMER	USA GUADAL MT IGN COMPLX	GROMME	375	-1200	4	0	A	A	25	75	2973	570	23	198	426	-1893	13	270	0	0	9042

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	OM	DP	GEOJ LIST
9	64	NAMER	USA BUCKS BATH SIERR NEV	GROMME	399	-1213	9	0	A	A	45	55	3171	713	90	55	576	-1652	44	79	96	84	9043
9	80	NAMER	USA FRANCISCAN PERIDOTIT	SAAD	374	-1215	6	41	A	A	0	100	445	593	302	39	556	-499	0	0	58	43	11038
9	81	NAMER	USA FRANCISCAN DUNITE	SAAD	374	-1215	5	18	A	A	0	100	3500	746	144	64	656	-1320	0	0	116	105	11039
9	82	NAMER	USA FRANCISCAN DIVERGENT	SAAD	374	-1215	5	17	A	B	0	100	899	108	9	266	34	-358	0	0	270	137	11040
9	90	NAMER	USA FRANCISCAN FORMATION	GROMME	380	-1225	25	127	N	A	0	100	740	440	13	84	290	-440	0	0	105	66	10068
9	94	NAMER	CANADA BC GABBRO INTRUS	SYMONS	525	-1275	4	0	A	B	0	100	10	550	26	220	730	500	0	0	310	220	0
9	95	NAMER	CANADA BC GABBRO DYKES	SYMONS	525	-1275	2	0	A	B	0	100	3030	670	0	210	550	1600	0	0	340	280	0
9	96	NAMER	CANADA ANDESITIC DYKES	SYMONS	525	-1275	11	0	A	A	9	91	377	741	18	110	682	-722	0	0	200	180	0
9	104	NAMER	CANADA ISLAND INTRUSIVES	SYMONS	496	-1255	17	65	A	A	6	94	19	739	32	60	790	-1200	0	0	110	100	0
9	77	SAMER	VEN LA QUINTA FORMATION	CREER	80	-710	0	18	N	B	100	0	2540	-410	0	240	180	-30	0	0	290	180	6048
9	83	SAMER	VENEZUALA LA QUINTA FORM	HARGRAVE	90	-720	4	50	T	B	70	30	329	127	15	250	570	200	0	0	254	130	0
9	74	SAMER	ARG BOTACATU SANDSTONE	CREER	-230	-490	3	9	N	B	0	100	3530	-310	0	430	780	990	0	580	0	0	11042
9	84	SAMER	ARGENTINA CHON AIKE FM	VALENCIO	-480	-660	0	66	A	A	5	95	3530	-630	14	50	840	2360	0	0	70	60	11041
9	52	SAMER	ARG KIMMERIDGIAN SED MIX	CREER	-390	-710	0	7	N	B	0	0	40	-570	0	230	860	-80	0	0	330	240	6033
9	107	USSR	IGNEOUS ROCKS CRIMEA	KRUGLIAK	450	350	0	190	A	A	0	100	308	541	37	153	644	1381	0	0	215	151	0
9	16	USSR	ARMENIAN PORPHYRITES 1	AKOPYAN	0	0	0	0	N	B	0	100	430	710	0	0	0	0	0	0	0	0	0
9	17	USSR	ARMENIAN PORPHYRITES 2	AKOPYAN	0	0	0	0	N	B	0	100	430	530	0	0	0	0	0	0	0	0	0
9	18	USSR	ARMENIAN PORPHYRITES 3	AKOPYAN	0	0	0	0	N	B	0	100	610	580	0	0	0	0	0	0	0	0	0
9	19	USSR	ARMENIAN PORPHY COMBIN		400	450	0	0	N	B	0	100	500	610	58	0	530	1150	0	0	0	0	0
9	20	USSR	TURKMENIAN SEDIMENTS	KHRAMOV	395	545	0	10	N	A	0	100	320	400	0	0	590	1650	0	0	0	0	2021
9	108	USSR	PETROPAVLOVSK SUITE MIX	DAVYDOV	510	1050	0	53	N	A	0	0	130	750	0	60	770	1320	0	0	110	100	0
9	62	USSR	SEDIMENTS TAIMIR PENINS	VLASOV	760	1110	0	0	A	B	100	0	1230	490	0	0	220	1620	0	0	100	70	8055
9	109	USSR	LIASSIC SEDIMENTS MIXED	SLAUCITA	660	1250	0	36		A	0	0	3090	690	0	30	620	450	0	0	60	50	0
9	98	USSR	LOWER JUR SEDS SIBERIA	PECHERSK	646	1588	0	95	A	A	25	75	149	752	25	189	829	2627	0	0	0	0	0
9	99	USSR	BASALTS CONTACTS SIBERIA	PECHERSK	668	1633	0	16	A	A	44	56	715	781	0	0	636	2191	0	0	0	0	0
9	100	USSR	VOLC NECK CONTACT SIBER	PECHERSK	630	1593	0	12	A	A	0	100	2380	770	11	0	640	1030	0	0	0	0	0
9	101	USSR	SYENITE INTRUS SIBERIA	PECHERSK	652	1660	0	7	N	B	0	100	2930	810	7	0	670	1240	0	0	0	0	0
9	102	USSR	IGNEOUS ROCKS NE SIBERIA	PECHERSK	-0	-0	0	19	Y	A	0	100	0	0	0	0	660	1140	0	0	0	0	0
10	8	AFRIC	MADAGASCAR LAVAS DYKES	ROCHE	0	0	10	0	N	A	0	100	0	0	0	0	680	-1680	0	0	0	0	1050
10	27	AFRIC	MADAGASCAR LAVAS	NAIRN	-235	443	3	11	A	A	0	100	440	-610	0	80	460	1780	0	0	0	0	8047

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
10	70	AFRIC	MAGALASY VOLCAN MANGOKY	ANDRIAMI	-230	440	9	47	A	A	0	100	3530	-530	30	100	741	2447	0	110	0	0	11034
10	69	AFRIC	MAGALASY VOLCANIC ANDROY	ANDRIAMI	-243	460	7	36	A	A	0	100	3450	-640	116	60	651	2521	0	80	0	0	11033
10	80	AFRIC	MALAWI MLANJE SYENITE	BRIDEN	-160	356	0	8	A	B	0	100	3330	-540	36	90	600	-980	0	120	0	0	9040
10	81	AFRIC	SOUTHEAST AFRI ALKALI RX	BRIDEN	-160	355	0	69	A	A	0	100	3345	-540	66	47	605	-995	0	61	0	0	0
10	15	AFRIC	MOZAM LUPATA ALKAL VOLC	GOUGH	-167	342	7	61	A	A	0	100	3360	-540	339	30	620	-1010	0	0	40	40	7021
10	16	AFRIC	MOZAMBIQUE RED SILTSTONE	GOUGH	-162	342	1	5	A	B	0	100	3590	-460	160	60	790	-1420	0	0	80	50	7022
10	32	AFRIC	TANZAN RED SS SONGWE RI	NAIRN	-95	330	0	3	N	B	0	100	210	-540	20	110	580	-1780	0	0	150	100	8050
10	106	AFRIC	ETHIOPIAN TRAP SERIES	GRASTY	101	383	11	21	T	A	0	100	3580	150	17	110	870	-1070	0	100	0	0	8036
10	97	AFRIC	MOROCCO RED SANDSTONE	TARLING	330	-60	5	15	T	B	0	100	30	360	0	0	0	0	0	0	0	0	9037
10	38	ANTAR	ANDEAN INTRUSIVE SUITE	BLUNDELL	0	0	12	77	N	A	17	83	3510	-770	253	30	860	1780	0	0	60	60	7019
10	82	ANTAR	DUFEK MASSIF GABBRO	BECK	-825	-520	43	57	N	A	12	88	615	-630	15	30	475	160	0	0	50	40	9063
10	37	ASIA	LEB BASALTS TUFFS LIMEST	VANJONGE	340	360	5	15	A	A	0	100	3135	95	0	55	380	-780	0	0	60	30	9041
10	53	ASIA	TURKEY GUMUSHANE GROUP	VANDERVO	408	389	6	23	A	A	0	100	3460	400	90	70	690	-990	0	0	80	50	10049
10	54	ASIA	TURKEY GUMUSHANE GROUP	VANDERVO	405	393	6	31	A	A	100	0	1535	-365	35	110	610	-820	0	0	130	80	10056
10	55	ASIA	TURKEY NIKSAR BASALT	VANDERVO	407	370	2	9	A	B	100	0	1400	-360	8	0	510	-640	0	0	0	0	10062
10	22	ASIA	INDIA DECCAN TRAPS	IRVING	180	740	7	7	N	B	72	28	1490	560	21	140	280	-780	0	0	0	140	1038
10	23	ASIA	INDIA DECCAN TRAPS COMB	196+SUMM	180	740	58	0	N	A	60	40	1610	460	20	80	390	-840	28	90	0	0	0
10	24	ASIA	INDIA DECCAN TRAPS COMB	1963SUMM	180	750	92	0	X	A	68	32	1530	510	23	30	330	-760	28	30	0	0	8044
10	61	ASIA	INDIA DECCAN TRAP MYSORE	BHIMASAN	175	775	6	38		A	100	0	1540	610	0	0	260	2790	0	0	0	0	10050
10	112	ASIA	INDIA DECCAN TRAPS MALWA	PAL	225	758	15	0	A	A	94	6	1683	511	0	0	-346	679	0	0	0	0	0
10	113	ASIA	INDIA DECCAN TRAPS JALNA	PAL	199	759	3	42	A	A	100	0	1600	460	32	38	399	-811	0	0	0	0	0
10	45	ASIA	INDIA TIRUPATI SANDSTONE	VERMA	168	812	4	65	A	A	86	14	1530	560	0	40	280	-730	0	0	60	40	9039
10	46	ASIA	INDIA RAJMAHAL TRAPS	CLEGG	250	879	3	33	N	A	0	100	3270	-640	36	40	130	-690	0	0	60	50	1054
10	47	ASIA	INDIA RAJMAHAL TRAPS 2	MCDOUGAL	256	877	8	16	A	A	0	100	3100	-670	187	40	30	-620	91	60	0	0	0
10	44	ASIA	INDIA SATYAVEDU SANDSTON	ATHAVALE	135	800	1	13		A	0	100	3210	-580	0	40	260	-670	0	0	0	0	0
10	52	ASIA	CHINA CRETACEOUS REDBEDS	LEE	250	1130	7	0	N	A	0	100	0	0	0	0	594	1580	54	83	0	0	10059
10	65	ASIA	TAIWAN GNEISS TARCKO	CHI HSU	242	1216	4	15	A	B	50	50	27	318	0	130	826	-988	0	0	0	0	9032
10	31	ASIA	SOUTH KOREA IGNECUS ROCK	KIENZLE	360	1290	5	35	A	A	0	100	195	533	44	95	739	222	0	0	132	92	8049
10	76	ASIA	NORTH KOREA SANDSTONES	GURARIY	390	1260	0	8	N	B	0	100	260	670	70	40	690	1820	0	30	0	0	10055
10	7	ASIA	JAPAN INKSTONE SERIES	NAGATA	345	1315	3	60	N	A	0	100	580	500	0	20	420	-1530	0	0	30	20	2019

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
10 116	ASIA	JAPAN INKSTONE SER 2 ETC	DOMEN	345	1315	5	72	N	A	0	100	404	669	88	82	570	1819	0	0	136	112	0
10 117	ASIA	JAPAN INKSTONE COMBINED		345	1315	7	120	N	A	0	100	516	588	40	96	491	1987	0	0	106	143	0
10 39	ASIA	JAP MESOZOIC INTRUSIVES	KAWAI	370	1400	9	87	N	A	0	100	3320	610	11	170	680	730	0	0	250	200	5014
10 41	ASIA	JAP LATE PAL MES INTRUS	KAWAI	350	1340	7	63	N	A	0	100	300	470	15	160	630	-1300	0	0	210	140	5013
10 21	ASIA	JAPAN QUARTZ DIOR NOSE	ITO	350	1345	6	62	N	A	67	33	2390	-610	20	150	440	-1660	0	190	0	0	8035
10 89	ASIA	JAPAN HOKKAIDO IGN ROCKS	FUJIWARA	433	1467	4	0	N	A	50	50	3365	826	31	169	563	1360	0	0	329	322	0
10 74	ASIA	JAPAN KANAI GAURA FORMAT	FUJIWARA	390	1415	3	0	N	B	0	100	3537	-270	0	0	360	-310	0	0	0	0	10064
10 58	ATLAN	JOICES CRETACEOUS SEDIM	SCLATER	329	-522	0	20	A	A	0	0	0	355	0	31	0	0	0	0	0	0	0
10 77	ARCTI	SPITZBERGEN DOLERITE	SPALL	785	155	7	37	T	A	100	0	250	-760	22	130	530	-20	0	0	250	230	10067
10 10	AUSTR	MT DROMEDARY IGN COMPLEX	ROBERTSO	-360	1500	22	55	X	A	>	95	190	-790	47	50	560	-420	0	0	90	90	7023
10 9	AUSTR	CYGNET ALKALINE COMPLEX	ROBERTSO	-432	1471	15	45	A	A	0	100	3140	-850	776	50	500	-220	0	0	100	100	6031
10 59	EUROP	PORTUGAL LISBON VOLCAN 1	WATKINS	388	-92	12	39	A	A	0	100	3467	372	16	112	687	2070	0	0	132	77	10042
10 60	EUROP	PORTUGAL LISBON VOLCAN 2	VANDERVO	388	-92	5	19	A	A	0	100	3515	420	0	100	735	-1700	0	0	0	0	10043
10 83	EUROP	PORTUGAL LISBON VOLCANIC	VANDERVO	388	-92	33	176	A	A	0	100	3520	400	66	30	725	-1630	0	0	30	20	0
10 64	EUROP	PORTUGAL SINTRA GRANITE	VANDERVO	388	-95	8	25	A	A	0	100	3590	435	0	80	765	1740	0	0	120	70	11032
10 1	EUROP	ENG WEALDEN SEDIMENTS	WILSON	505	15	0	19	Y	B	0	100	3450	630	260	20	790	-1150	0	0	30	20	3025
10 2	EUROP	ENG IRON GRIT NEGATIVE	NAIRN	510	5	0	0	N	A	0	100	30	680	20	60	0	0	0	0	0	0	5015
10 3	EUROP	ENG IRON GRIT POSITIVE	NAIRN	510	5	0	0	N	A	100	0	1850	-720	10	70	0	0	0	0	0	0	5016
10 4	EUROP	ENG IRON GRIT COMBINED		510	5	0	21	N	A	33	67	3590	700	0	0	870	-110	0	0	0	0	0
10 33	EUROP	ENGLAN WEALDEN IRON GRIT	EDWARDS	510	50	0	0	N	A	45	55	20	720	0	0	840	110	0	0	0	0	8051
10 34	EUROP	ENGLAND IRON GRIT COMB 2	EDWARDS	0	0	0	0			0	0	0	710	0	0	850	30	0	0	0	0	0
10 57	EUROP	ITALY BIOCHEMIC SEDS	DE BOER	450	110	0	4	A	B	0	100	3560	370	0	0	650	2000	0	0	0	0	9038
10 20	EUROP	CZECH SPECUL WALDENSTEIN	KRS	469	149	0	22	A	A	100	0	1580	-850	>	150	560	80	0	0	300	290	8034
10 26	EUROP	CZECHOSLOVAK SANDSTONES	ANDREEVA	502	-146	0	12	N	A	0	100	3580	690	0	0	870	-130	0	0	80	40	8046
10 88	EUROP	CZECH MINERALIZED VEINS	BAUMANN	509	134	8	113	A	A	13	87	16	589	8	51	787	1669	0	0	76	57	0
10 51	EUROP	HUNGARY MECSEK VOLCANICS	DAGLEY	461	183	11	0	A	A	37	63	3337	467	7	189	625	2562	0	0	240	160	0
10 56	EUROP	BULG CRET ANDES FCL MIX	VOLLSTAD	420	270	1	6	A	B	0	0	120	380	26	130	660	1770	0	0	150	90	9035
10 12	NAMER	CANADA MT MEGANTIC INTR	LAROCHEL	455	-710	1	12	A	A	100	0	1570	-520	44	70	690	1720	0	0	100	70	5018
10 11	NAMER	CANADA MONTEREGIAN HILLS	LAROCHEL	455	-730	8	49	N	A	80	20	0	0	0	0	650	-1570	0	0	0	0	5017
10 72	NAMER	CAN MONTEREGIAN HILLS 2	LAROCHEL	453	-728	32	147	A	A	81	19	1555	-592	0	24	713	-1705	0	0	30	20	11036

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
10	35	NAMER	USA MT ASCUTNEY GABBR VT	OPDYKE	434	-725	2	24	A	A	100	0	1500	-540	0	0	640	-1870	335	140	220	180	8052
10	79	NAMER	USA APPALACHIAN DYKES	DEBOER	-0	-0	74	121	A	A	0	100	0	0	0	0	660	1450	0	30	0	0	9047
10	42	NAMER	JAMAICA CRET DYKES GP A	WATKINS	181	-771	11	55	A	A	36	64	3419	171	6	198	701	1677	0	0	205	100	0
10	43	NAMER	JAMAICA CRET DYKES GP B	WATKINS	181	-771	4	22	A	B	75	25	1020	9	13	267	116	1891	0	0	267	134	0
10	73	NAMER	USA ARKANSAS ALKALIC	SCHARON	345	-928	19	47	A	A	0	100	3296	543	0	89	651	-1733	0	0	125	88	11037
10	71	NAMER	USA MESAVERDE GROUP	KILBOURN	410	-1090	45	0	Z	A	0	100	3270	690	4	130	650	1980	0	0	240	220	11035
10	17	NAMER	CAN ISACHSEN DIABASE	LAROCHEL	787	-1037	10	20	A	A	0	100	2840	800	20	80	690	-1800	0	0	140	140	7025
10	13	NAMER	USA DAKOTA SANDSTONE	RUNCORN	340	-1100	0	3	N	B	100	0	1640	-620	0	0	750	-1600	0	0	110	90	1049
10	48	NAMER	USA BASIC DYK SAPPINGTON	HANNA	458	-1117	1	13	A	A	100	0	570	810	120	40	530	-870	0	0	70	70	9033
10	49	NAMER	USA VOLCANICS OF MONTANA	HANNA	460	-1120	0	0	A	A	43	57	3340	680	160	140	699	-1715	0	0	240	200	9036
10	50	NAMER	USA VOLC AND SED MONTANA	HANNA	460	-1120	10	0	A	A	0	100	0	0	0	0	710	-1560	0	0	80	60	0
10	90	NAMER	USA BOULDER BATHOLITH	COLVILLE	460	-1125	0	15		A	0	100	3400	640	70	40	760	-1960	0	0	0	0	0
10	28	NAMER	USA SIERRA NEVADA PLUTON	GROMME	380	-1200	14	80	Y	A	0	100	0	0	0	0	688	-1648	18	96	0	0	8048
10	29	NAMER	USA GUADAL MT IGN COMPLX	GROMME	375	-1200	4	0	A	A	25	75	2373	570	23	198	426	-1893	13	270	0	0	9042
10	30	NAMER	USA BUCKS BATH SIERR NEV	GROMME	399	-1213	9	0	A	A	45	55	3171	713	90	55	576	-1652	44	79	96	84	9043
10	66	NAMER	USA FRANCISCAN PERIDOTIT	SAAD	374	-1215	6	41	A	A	0	100	445	593	302	39	556	-499	0	0	58	43	11038
10	67	NAMER	USA FRANCISCAN GLNITE	SAAD	374	-1215	5	18	A	A	0	100	3500	746	144	64	656	-1320	0	0	116	105	11039
10	68	NAMER	USA FRANCISCAN DIVERGENT	SAAD	374	-1215	5	17	A	B	0	100	899	108	9	266	34	-358	0	0	270	137	11040
10	78	NAMER	USA FRANCISCAN FORMATION	GROMME	380	-1225	25	127	N	A	0	100	740	440	13	84	290	-440	0	0	105	66	10068
10	84	NAMER	CANADA BC GABBRO INTRUS	SYMONS	525	-1275	4	0	A	B	0	100	10	550	26	220	730	500	0	0	310	220	0
10	85	NAMER	CANADA BC GABBRO DYKES	SYMONS	525	-1275	2	0	A	B	0	100	3030	670	0	210	550	1600	0	0	340	280	0
10	86	NAMER	CANADA ANDESITIC DYKES	SYMONS	525	-1275	11	0	A	A	9	91	377	741	18	110	682	-722	0	0	200	180	0
10	87	NAMER	CANADA BC GRANODIORITE	SYMONS	525	-1275	2	0	A	A	0	100	228	668	0	87	754	-345	0	0	143	118	0
10	109	SAMER	VENEZUELA YEGUERA FM	CREER	90	-681	2	22	N	A	55	45	125	10	0	0	749	1917	0	0	0	0	0
10	108	SAMER	COLOMBIA APTRAXA FM	CREER	55	-734	1	0	N	A	100	0	1790	120	39	50	800	1080	64	40	0	0	0
10	107	SAMER	PERU SEDS IGNEOUS ROCKS	CREER	0	0	4	11	N	A	25	75	0	0	0	0	630	-1500	12	60	0	0	0
10	114	SAMER	URUG SERRA GERAL 1 MIXED	CREER	-290	-570	8	24	Y	A	0	0	3540	-430	24	30	830	-1120	0	0	30	20	1062
10	110	SAMER	BRA URU SERRA GERAL FM 2	CREER	0	0	30	80	A	A	50	50	3470	-380	22	60	780	-1260	0	60	0	0	6035
10	19	SAMER	ARG HUITRINIAN SEDIMENTS	CREER	-390	-710	0	13	N	B	0	100	3410	-380	0	140	660	-1180	0	0	130	130	6032
10	14	USSR	VOLCANICS GEORGIA	VEKJA	410	450	0	10	N	B	0	100	130	540	0	220	780	1650	0	0	310	220	7020

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
10 105	USSR	YUNUS DAGH SUITE	KHRAMOV	400	490	0	23	N	A	0	100	160	110	0	90	520	2020	0	0	90	40	0
10 5	USSR	LOWER ALBIAN SEDS MIXED	KHRAMOV	395	545	0	0	N	B	0	0	280	380	0	0	620	1690	0	0	0	0	2021
10 6	USSR	UPPER ALBIAN SEDIMENTS	KHRAMOV	395	550	0	0	N	B	0	100	320	420	0	0	600	1650	0	0	0	0	2020
10 100	USSR	APTIAN SEDIMENTS MIXED	KHRAMOV	390	550	0	22	N	A	0	0	300	400	0	80	600	1670	0	0	90	60	0
10 36	USSR	SEDIMENTS HISSAR CHAIN	ABDULLAE	380	670	10	0	N	A	40	60	170	550	110	50	760	1620	0	50	0	0	8053
10 98	USSR	SEDIMENTS HISSAR CHAIN 2	ABDULLAY	380	670	0	321	N	A	80	20	174	541	130	81	756	1650	0	0	114	80	0
10 99	USSR	SEDS TADZHIK DEPRESSION	RZHEVSKI	380	680	0	250	N	A	0	100	3520	560	0	30	830	3150	0	0	50	40	0
10 62	USSR	FERGHANA SEDIMENTS 1	SHMELEVA	410	730	0	13	N	A	15	85	180	320	5	200	620	1920	0	0	225	103	10053
10 63	USSR	FERGHANA SEDIMENTS 2	SHMELEVA	410	730	0	52	N	A	0	100	3420	560	35	30	750	3320	0	0	43	31	10054
10 101	USSR	FERGHANA SEDIMENTS 3	SHMELEVA	410	730	0	62	N	A	0	100	250	530	0	70	690	1760	0	0	100	70	0
10 102	USSR	FERGHANA SEDIMENTS 4	MURATOV	410	730	0	56	N	A	0	100	310	540	0	80	650	1760	0	0	110	80	0
10 103	USSR	FERGHANA SEDIMENTS 5	MURATOV	410	730	0	41	N	A	0	100	290	490	0	140	650	1780	0	0	190	120	0
10 104	USSR	FERGHANA SEDIMENTS 6	MURATOV	410	730	0	50	N	A	0	100	290	490	0	90	650	1780	0	0	120	80	0
10 25	USSR	ILEKSKAY SIMONOVAYA FORM	VLASOV	560	920	0	93	A	A	0	100	3300	720	0	0	740	180	0	0	180	162	8045
10 75	USSR	SUCHAN SUITE MIXED	VLASSOV	430	1320	0	25		A	0	100	250	810	0	110	580	1460	0	0	210	210	10065
10 95	USSR	SEDIMENTS SAKHALIN MIXED	PECHERSK	473	1423	0	0	A	A	0	0	3380	680	0	0	750	780	0	0	0	0	0
10 93	USSR	DIABASE SEDIMENT SIBERIA	PECHERSK	618	1560	0	0	X	A	0	100	927	835	0	0	587	1812	0	0	0	0	0
10 94	USSR	METAMOR SEDIMENT SIBERIA	PECHERSK	640	1620	0	0	Z	A	10	90	1719	869	334	33	618	1627	0	0	66	66	0
10 91	USSR	BASALTS CONTACTS SIBERIA	PECHERSK	668	1633	0	16	A	A	44	56	715	781	0	0	636	2191	0	0	0	0	0
10 92	USSR	CRET SEDIMENT NE SIBERIA	PECHERSK	630	1700	0	21	X	A	9	91	2768	870	17	192	630	1570	0	0	0	0	0
11 143	AFRIC	MADAGASC CUIRASSE FERRUG	NAIRN	-225	454	0	4	N	B	0	100	140	-370	27	80	770	1270	0	0	100	60	8022
11 185	AFRIC	MALAG UP TERT VOLC AMBRE	ANDRIAMI	-121	492	0	0	A	B	70	30	13	-352	0	0	826	-1404	0	0	0	0	0
11 184	AFRIC	MALAG M TERT VOLC AMBRE	ANDRIAMI	-121	492	0	3	A	B	0	100	3540	-450	0	230	0	0	0	0	0	0	0
11 183	AFRIC	MALAGASY PLIOC LAV AMBRE	ANDRIAMI	-121	492	0	7	A	B	100	0	1870	250	0	80	820	1600	0	0	0	0	0
11 166	AFRIC	TANZANIA VOLS NGORONGORO	GROMME	-32	356	22	112	A	A	85	15	0	0	0	0	795	-601	9	110	0	0	0
11 128	AFRIC	TANZANIA RUNGWE VOLCANIC	NAIRN	-92	336	3	9	A	B	33	67	160	-280	22	120	730	1460	0	0	120	70	8007
11 146	AFRIC	KENYA TURKANA LAVAS	RAJA	36	351	35	57	A	A	69	31	20	-10	30	30	850	-1670	0	0	30	20	8025
11 129	AFRIC	EAST AFRICAN VOLCAN COMB	0000000	0	0	7	20	A	A	70	30	141	-131	13	170	753	1377	36	102	0	0	8008
11 130	AFRIC	KENYA LAVAS NAIROBI DIST	NAIRN	-13	368	6	15	A	A	17	83	76	-51	46	99	820	1390	0	0	100	50	8024
11 186	AFRIC	ETHIOPIA AFARS TERT VOLS	POUCHAN	120	-425	21	24	A	B	62	38	140	210	47	374	760	1336	40	404	0	0	0

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11 159	AFRIC	ETHIOPIAN TRAP SERIES	GRASTY	101	383	11	21	T	A	0	100	3580	150	17	110	870	-1070	0	100	0	0	8036
11 160	AFRIC	ETHIOPIAN TRAP SERIES	BROCK	95	387	20	52	A	A	5	95	72	72	35	56	808	1677	59	43	0	0	0
11 310	AFRIC	ALGERIA KAVALLO BASALTS	BOBIER	320	50	13	51	A	A	0	100	10	540	3681	20	880	1540	0	0	30	20	11019
11 126	ANTAR	ANDEAN INTRUSIVE SUITE	BLUNDELL	0	0	12	77	N	A	17	83	3510	-770	253	30	860	1780	0	0	60	60	7019
11 177	ANTAR	LAVAS OF CAPE HALLET	TURNBULL	-720	1710	0	23	N	A	91	9	280	-800	48	40	810	-860	0	0	80	80	2011
11 315	ANTAR	JAMES ROSS ISLAND LAVAS	VALENCIO	-640	-560	4	0	A	A	75	25	10	-710	0	130	830	-660	0	0	230	200	0
11 314	ANTAR	25 MAY ISLANDS LAVAS	VALENCIO	-622	-589	22	0	A	A	41	59	80	-760	9	60	860	540	0	0	100	80	0
11 109	ARCTI	GREENLD SKAERGAARD GABB	GIRDLER	682	-317	0	0	N	A	100	0	1930	-710	0	50	760	1140	0	0	90	80	6030
11 222	ARCTI	GREENLAND TERTIARY LAVAS	TARLING	700	-250	28	157	A	A	100	0	1680	-620	0	150	630	1740	0	0	220	160	9027
11 223	ARCTI	GREENLD TRAPPED DIABASE	KETELAAR	0	0	0	15	O	A	100	0	1600	-620	0	80	680	1740	0	0	120	100	0
11 271	ASIA	TURKEY TUNCELLI GROUP	VANDERVO	390	395	4	16	A	A	75	25	1525	-480	33	160	650	-660	0	0	200	140	10041
11 272	ASIA	TURKEY GUMUSHANE GROUP	VANDERVO	408	389	6	23	A	A	0	100	3460	400	90	70	690	-990	0	0	80	50	10049
11 164	ASIA	SYRIA BASALTS	VANDONGE	350	360	2	7	A	B	100	0	1700	-355	0	100	730	-1090	0	0	110	60	9018
11 173	ASIA	SOUTH ARABIA VOLC 1	IRVING	128	450	12	55	N	A	75	25	3530	240	34	30	830	-500	0	0	30	20	4001
11 275	ASIA	S ARABIA ADEN VOLC 2	TARLING	128	449	2	6	A	B	0	100	0	210	0	0	880	2550	0	0	20	10	9016
11 274	ASIA	S ARABIA LITTLE ADEN VOL	TARLING	127	449	5	16	A	A	100	0	120	220	0	110	780	1470	0	0	110	60	9015
11 276	ASIA	SOUTH ARABIA ADEN COMBIN	TARLING	128	449	11	0	Y	A	64	36	3550	220	0	20	850	2950	0	0	20	10	9017
11 277	ASIA	SOUTH ARABIA TERT COMBIN		130	450	0	0	Y	A	45	55	3580	210	0	0	870	2725	0	0	0	0	0
11 273	ASIA	SOUTH ARABIA KHARIZ VOLC	TARLING	127	441	14	47	A	A	7	93	2470	220	0	70	770	3090	0	0	70	40	9014
11 79	ASIA	INDIA DECCAN TRAPS	IRVING	180	740	7	7	N	B	72	28	1490	560	21	140	280	-780	0	0	200	140	1038
11 91	ASIA	INDIA DECCAN TRAPS COMB	1964+SUMM	180	740	58	0	N	A	60	40	1610	460	20	80	390	-840	28	90	0	0	0
11 163	ASIA	INDIA DECCAN TRAPS COMB	1963SUMM	180	750	92	0	X	A	68	32	1530	510	23	30	330	-780	28	30	0	0	8044
11 201	ASIA	INDIA UPPER DECCAN TRAPS	ATHAVALE	0	0	23	497		A	0	100	3450	-440	0	100	420	-870	0	0	0	0	0
11 202	ASIA	INDIA LOWER DECCAN TRAPS	ATHAVALE	0	0	05	1299		A	100	0	1540	530	0	100	340	-780	0	0	0	0	0
11 260	ASIA	INDIA DECCAN TR GULBARGA	PAL	0	0	0	230		A	100	0	1520	550	0	0	0	0	0	0	0	0	0
11 306	ASIA	INDIA DECCAN TRAP MYSORE	BHIMASAN	175	775	6	38		A	100	0	1540	610	0	0	260	2790	0	0	0	0	10050
11 370	ASIA	INDIA DECCAN TRAPS MALWA	PAL	225	758	15	0	A	A	94	6	1683	511	0	0	-346	879	0	0	0	0	0
11 371	ASIA	INDIA DECCAN TRAPS JALNA	PAL	199	759	3	42	A	A	100	0	1600	460	32	38	399	-811	0	0	0	0	0
11 92	ASIA	INDIA MT PAVAGADH TUFFS	DEUTSCH	225	716	2	8	N	B	0	100	3350	170	0	70	750	-890	0	0	70	40	1048
11 204	ASIA	INDIA DYKES PALAMAL ETC	RADHAKRI	230	830	10	0		A	50	50	3380	-460	0	0	350	-730	0	0	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	CM	CP	GECO LIST
11 203	ASIA	INDIA RAJMAHENDRI TRAPS	ATHAVALE	170	818	3	50	A		0	100	3070	-470	0	40	220	-480	0	0	0	0	8038
11 259	ASIA	INDIA RAJAHMUNDRY TRAPS	PAL	0	0	0	34	A		0	100	3020	-420	0	0	0	0	0	0	0	0	0
11 269	ASIA	CHINA RED BEDS LOW TERT	LEE	285	1120	0	0	N	B	0	100	3579	479	0	0	881	373	0	0	0	0	10045
11 270	ASIA	CHINA REDBEDS TERTIARY	LEE	270	1127	0	0	N	A	33	67	3450	400	0	0	758	287	0	0	113	68	10038
11 278	ASIA	TAIWAN TATUN VOLCANICS	CHI HSU	253	1215	36	161	A	A	0	100	27	364	0	48	844	-852	0	0	60	40	9006
11 279	ASIA	TAIWAN PENGHU BASALTS	CHI HSU	236	1195	14	165	Y	A	57	43	25	348	0	85	850	-886	0	0	100	60	9007
11 280	ASIA	TAIWAN SHIUKURAN ANDES A	CHI HSU	235	1214	14	69	A	A	0	100	14	325	0	86	857	-766	0	0	100	60	9008
11 285	ASIA	TAIWAN SHIUKURAN ANDES B	CHI HSU	235	1214	4	15	A	A	100	0	1815	-250	0	163	795	-667	0	0	180	100	9022
11 281	ASIA	TAIWAN VOLCANICS COMBIN		244	1210	96	0	Y	A	34	66	58	338	171	71	820	2569	0	0	81	56	0
11 284	ASIA	TAIWAN CHIAOPANSHAN BAS	CHI HSU	248	1213	10	67	A	A	70	30	11	307	0	126	817	-660	0	0	140	80	9021
11 286	ASIA	TAIWAN MIOCENE VOLS COMB		242	1213	14	0	A	A	78	22	15	280	0	0	806	2924	0	0	0	0	0
11 287	ASIA	TAIWAN LOWC TUFFS	CHI HSU	233	1213	3	12	A	B	0	100	532	466	0	208	396	-1680	0	0	270	190	9023
11 333	ASIA	SOUTH KOREA BASALTS	BONG	370	1285	5	35	N	A	20	80	260	450	26	150	660	2370	0	0	190	120	10016
11 301	ASIA	JAPAN ISHIGAKI ANDESITES	SASAJIMA	244	1242	3	16	A	A	0	100	3147	360	0	78	532	400	0	0	100	60	10033
11 302	ASIA	JAPAN KUME OKINAWA ANDES	SASAJIMA	264	1270	7	55	A	A	30	70	79	431	0	49	846	-1080	0	0	60	40	10034
11 171	ASIA	JAP AND E ASIA IGN ROCKS	MATUYUMA	0	0	36	39	N	A	50	50	110	610	5	110	800	1730	0	0	170	130	4002
11 78	ASIA	JAP TAKOASAN ANDESITE	MOMOSE	0	0	3	17	N	A	0	100	350	700	0	0	0	0	0	0	0	0	0
11 70	ASIA	JAP KOMORO SHIGARAMI VOL	MOMOSE	0	0	0	0	N	A	0	0	0	0	0	0	0	0	0	0	0	0	0
11 154	ASIA	JAPAN SED YAMAGUCHI SOAT	DOMEN	340	1310	0	31	N	B	0	0	0	0	0	0	0	0	0	0	0	0	8031
11 155	ASIA	JAPAN SED YAMAGUCHI SOAT	DOMEN	340	1310	0	26	N	B	0	0	0	0	0	0	0	0	0	0	0	0	8032
11 309	ASIA	JAPAN YAMAGUCHI BASALTS	DOMEN	340	1310	5	416	N	A	20	80	89	545	16	198	760	1119	19	187	0	0	0
11 191	ASIA	JAP LAVAS NINGYO ISHIYAM	NAGATA	333	1298	7	36	N	B	72	28	3582	540	7	257	881	781	0	0	360	252	0
11 298	ASIA	JAPAN MATSUURA BASALT	OZIMA	333	1298	13	65	A	B	46	54	0	540	5	210	890	1310	0	0	290	200	10022
11 328	ASIA	JAPAN IGNEOUS ROCKS A	ITO	340	1333	15	164	N	A	0	100	24	545	49	55	880	2128	28	73	0	0	0
11 329	ASIA	JAPAN IGNEOUS ROCKS B	ITO	340	1333	36	300	N	B	64	36	0	0	0	0	0	0	0	0	0	0	0
11 330	ASIA	JAPAN IGNEOUS ROCKS C	ITO	340	1333	16	166	N	A	75	25	16	531	27	72	852	2424	25	72	0	0	0
11 63	ASIA	JAPAN LAVAS TUFFS MIX	KAWAI	345	1355	0	0	N	A	0	0	0	0	0	0	0	0	0	0	0	0	0
11 172	ASIA	JAPAN SEDS BOSO PENIN 1	KAWAI	350	1400	0	147	N	B	0	100	3560	340	70	110	730	-270	0	0	0	0	0
11 60	ASIA	JAPAN CENOZOIC RX SW JAP	KAWAI	350	1340	0	182	N	A	25	75	90	500	48	80	810	-1090	0	0	100	70	5011
11 230	ASIA	JAPAN LOW TERT VOLCANICS	SASAJIMA	350	1340	10	158	A	A	10	90	330	530	40	71	620	-1390	0	0	100	70	10040

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
11 62	ASIA	JAP LATE TERTIARY VOLCAN	KUMAGAI	360	1380	0	0	N	A	14	86	3500	480	37	130	790	130	0	0	160	110	0
11 61	ASIA	JAP CENOZOIC RX NE JAPAN	KAWAI	370	1400	0	71	N	A	0	100	100	500	68	90	800	-960	0	0	110	80	5012
11 64	ASIA	JAP MIOCENE IGN ROCKS 1	NAGATA	0	0	0	32	N	A	50	50	270	590	0	30	680	-1520	0	0	50	40	2009
11 65	ASIA	JAP MIOCENE IGN ROCKS 2	NAGATA	0	0	0	20	N	A	34	66	320	400	0	110	590	-1130	0	0	130	80	2010
11 66	ASIA	JAP MIOCENE IGN RX COMB		0	0	7	52	N	A	0	0	0	0	0	0	730	-1440	8	220	0	0	0
11 67	ASIA	JAP PLIOCENE LAVAS 1 MIX	NAGATA	0	0	2	12	N	A	0	0	30	420	0	20	790	-570	0	0	30	20	2007
11 68	ASIA	JAP PLIOCENE LAVAS 2 MIX	NAGATA	0	0	3	10	N	A	0	0	140	520	0	40	770	-1090	0	0	60	40	2008
11 69	ASIA	JAP PLIOCENE LAVAS COMB		0	0	5	22	N	A	0	0	0	0	0	0	800	-890	82	100	0	0	0
11 71	ASIA	JAP ENREI FM 1 WADA TOGA	MOMOSE	0	0	7	19	Y	B	100	0	1690	-470	6	260	0	0	0	0	0	0	0
11 72	ASIA	JAP ENREI FORMATION 2	MOMOSE	0	0	0	19	Y	A	100	0	1820	-380	16	180	0	0	0	0	0	0	0
11 73	ASIA	JAP ENREI FORMATION 3	MOMOSE	0	0	5	33	Y	B	100	0	1940	-390	13	220	0	0	0	0	0	0	0
11 74	ASIA	JAP ENREI FORMATION 4	MOMOSE	0	0	5	30	Y	B	100	0	1500	-610	8	280	0	0	0	0	0	0	0
11 75	ASIA	JAP ENREI FORMATION 5	MOMOSE	0	0	1	6	Y	B	100	0	1680	-190	0	0	0	0	0	0	0	0	0
11 76	ASIA	JAP ENREI FORMATION 6	MOMOSE	0	0	3	9	Y	B	100	0	1530	-260	76	0	0	0	0	0	0	0	0
11 77	ASIA	JAP ENREI FORMATION COMB		360	1380	27	116	Y	A	100	0	1720	-430	9	100	770	-80	0	0	130	80	6027
11 158	ASIA	JAPAN QUARTZ DIOR NOSE	ITO	350	1345	6	62	N	A	67	33	2390	-610	20	150	440	-1660	0	190	0	0	8035
11 121	ASIA	JAPAN GABBRO KOFU	ITO	357	1386	1	8	N	B	0	100	3570	450	0	60	0	0	0	0	0	0	0
11 122	ASIA	JAPAN QTZ DIOR TANZAWA	ITO	360	1390	1	11	N	A	0	100	3590	520	0	100	0	0	0	0	0	0	0
11 120	ASIA	JAPAN QTZ DIOR LAKE SUWA	ITO	360	1381	4	16	N	A	0	100	3290	450	0	90	0	0	0	0	0	0	0
11 119	ASIA	JAPAN INTRUSIVES SUSAKA	ITO	366	1383	3	8	N	B	0	100	200	550	0	80	0	0	0	0	0	0	0
11 118	ASIA	JAPAN QTZ DIOR SHIMIZU	ITO	370	1390	3	20	N	A	0	100	30	520	0	70	0	0	0	0	0	0	0
11 123	ASIA	JAP INT FOSSA MAGNA COMB		363	1386	12	63	N	A	0	100	3570	510	41	120	850	-90	0	0	160	110	7013
11 192	ASIA	JAP LAVAS OF FOSSA MAGNA	NAGATA	364	1387	6	30	A	A	67	33	250	581	24	140	701	2141	0	0	206	152	0
11 321	ASIA	JAPAN HOKKAIDO IGN ROCKS	FUJIWARA	433	1467	4	0	N	A	50	50	3365	826	31	169	563	1360	0	0	329	322	0
11 108	ATLAN	ICELAND MIOCENE LAVAS	HOSPERS	652	-200	102	102	N	A	50	50	20	780	7	60	890	50	0	0	100	100	1025
11 175	ATLAN	ICELAND LAVAS NEGATIVE	SIGURGEI	650	-220	0	33	A	A	0	100	0	0	0	0	770	740	0	0	60	60	1019
11 176	ATLAN	ICELAND LAVAS POSITIVE	SIGURGEI	650	-220	0	26	A	A	100	0	0	0	0	0	880	1490	0	0	70	70	1020
11 209	ATLAN	ICELAND LAVA LATERITE	SMITH	650	-200	31	47	X	A	38	62	77	667	7	88	737	1418	0	0	0	0	9019
11 303	ATLAN	ICELAND LAVAS POL MIXED	KRISTJAN	660	-235	60	175	A	A	0	0	5	730	13	53	829	1550	0	0	93	84	10039
11 200	ATLAN	DEN LAVAS OF FAEROE ISL	TARLING	620	-70	0	0	A	A	91	9	1834	-668	0	30	770	1610	0	20	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	R E V	NOR	DECL	INCL	KO	ED 95	PCLE LAT	PCLE LONG	KP	EP 95	DM	DP	GEOJ LIST
11 224	ATLAN	DEN VOLCANICS FAERCE ISL	ABRAHAMS	620	-70	0	33	O A	100	0	1760	-690	0	60	800	1590	0	0	100	90	0
11 294	ATLAN	PORTUGAL LAVA FLORES	SERJGHET	394	-312	24	120	A A	8	92	0	0	0	0	879	638	30	55	0	0	10004
11 140	ATLAN	MADIERA VOLCANICS	WATKINS	325	166	29	58	A A	86	14	35	473	21	60	849	1260	0	0	78	51	8019
11 296	ATLAN	SPAIN MADIERA LAVAS 2	WATKINS	327	-169	9	46	A A	55	45	37	498	23	109	862	1059	0	0	145	97	0
11 290	ATLAN	JOIDES MIOCENE SEDIMENTS	SCLATER	329	-522	0	14	A A	0	0	0	516	0	54	0	0	0	0	0	0	0
11 291	ATLAN	JOIDES OLIG MIOC SEDIM	SCLATER	329	-522	0	9	A B	0	0	0	223	0	50	0	0	0	0	0	0	0
11 293	ATLAN	JOIDES MID EOCENE SEDIM	SCLATER	329	-522	0	6	A B	0	0	0	420	0	48	0	0	0	0	0	0	0
11 292	ATLAN	JOIDES UPPER EOCENE SED	SCLATER	329	-522	0	10	A A	0	0	0	457	0	50	0	0	0	0	0	0	0
11 138	ATLAN	CANARY VOLC GRAN CANARIA	WATKINS	280	-160	39	78	A A	10	90	101	376	8	93	785	1094	0	0	109	64	8017
11 139	ATLAN	CANARY VOLC LANZAROTE	WATKINS	290	-135	38	76	A A	26	74	109	346	23	50	759	1097	0	0	57	33	8018
11 137	ATLAN	CANARY VOLCAN TENERIFFE	WATKINS	280	-170	46	92	A A	74	26	34	398	15	56	834	1352	0	0	68	41	8016
11 136	ATLAN	CANARY VOLCANICS GOMERA	WATKINS	280	-175	18	36	A A	50	50	79	331	8	130	776	1254	0	0	147	84	8015
11 135	ATLAN	CANARY VOLCANICS HIERRO	WATKINS	280	-180	33	66	A A	0	100	69	456	17	62	839	770	0	0	79	50	8014
11 226	ATLAN	SPAIN CANARY ISL VOL COM		283	-165	174	348	A A	32	68	79	382	222	52	803	1130	289	45	0	0	0
11 225	ATLAN	PORT VOLC CAPE VERDE ISL	WATKINS	165	-240	139	432	A A	58	42	16	222	13	35	852	1366	0	0	37	20	10032
11 317	ATLAN	FERNANDO NORONHA IGN RX	RICHARDS	-38	-324	24	97	A A	38	62	8	-113	9	104	877	1265	0	0	90	50	9034
11 187	AUSTR	SECONDARY MAGNETIZ TERT		0	0	37	110	N		4	96	73	-741	346	66	686	-475	116	115	0	0	0
11 152	AUSTR	LAVAS DYKES SE QUEENSLAN	ROBERTSO	-270	1522	12	33	A A	50	50	130	-490	25	90	780	-930	0	0	120	80	8029
11 235	AUSTR	BARRINGTON VOLCANO	WELLMAN	-320	1514	33	0	A A	67	33	1930	650	48	36	700	-540	0	50	0	0	11027
11 233	AUSTR	NANDEWAR VOLCANO	WELLMAN	-303	1502	34	0	A A	47	53	1924	530	43	37	780	-960	0	40	0	0	11020
11 234	AUSTR	LIVERPOOL VOLCANO	WELLMAN	-317	1502	36	0	A A	9	91	2004	592	45	35	710	-840	0	50	0	0	11022
11 94	AUSTR	TERTIARY BASALTS NSW	GREEN	0	0	8	37	A A	100	0	1900	700	16	140	630	-430	0	0	200	200	5010
11 96	AUSTR	TASMANIAN BASALTS	GREEN	-420	1470	4	8	N B	0	100	120	-720	29	0	730	-550	0	0	0	0	6028
11 95	AUSTR	TASMANIAN BASALT CORES	ALMOND	0	0	0	6	N B	0	100	0	0	0	0	0	0	0	0	0	0	0
11 93	AUSTR	OLDER VOLCANICS VICTORIA	IRVING	-380	1450	15	45	N A	34	66	170	-730	35	70	670	-570	0	0	120	110	1037
11 124	AUSTR	OLDER VOLCAN VICTORIA 2	MUMME	-380	1455	20	50	A A	25	75	100	-770	0	90	630	-400	0	0	160	160	7014
11 131	AUSTR	AUSTR NEWER VOL VICTORIA	MCDOUGAL	-380	1435	11	33	A A	45	55	3500	-560	56	70	825	568	0	77	0	0	8009
11 174	AUSTR	NEWER VOLCANICS VICTORIA	IRVING	-380	1435	32	100	N A	55	45	30	-600	37	50	860	-780	0	0	70	60	1023
11 313	EURCP	PORTUGAL MONCHIQUE SYEN	VANDERVO	373	-85	2	8	A B	100	0	1820	-370	0	140	730	1655	0	0	160	110	11029
11 304	EURCP	PORTUGAL LISBON VOLCAN 1	WATKINS	388	-92	12	39	A A	0	100	3467	372	16	112	687	2070	0	0	132	77	10042

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
11	305	EUROP	PORTUGAL LISBON VOLCAN 2	VANDERVO	388	-92	5	19	A	A	0	100	3515	420	0	100	735	-1700	0	0	0	0	10043
11	318	EUROP	PORTUGAL LISBON VOLCANIC	VANDERVO	388	-92	33	176	A	A	0	100	3520	400	66	30	725	-1630	0	0	30	20	0
11	316	EUROP	IRELAND ANTRIM BASALT	SYMONS	0	0	1	56	A	A	100	0	1147	-594	1107	6	0	0	0	0	0	0	0
11	18	EUROP	NIRL ANTRIM LOWER BAS 1	HOSPERS	551	-64	24	72	N	A	100	0	1940	-600	31	50	730	1350	0	0	80	60	1029
11	19	EUROP	NIRL ANTRIM LOWER BAS 2	WILSON	551	-64	19	35	N	A	100	0	1730	-650	13	100	800	-1580	0	0	150	120	2018
11	20	EUROP	NIRL ANTRIM LOW BAS COMB		551	-64	43	107	N	A	100	0	1830	-630	0	0	790	1620	0	0	0	0	0
11	21	EUROP	NIRL ANTRIM UPPER BASALT	WILSON	551	-64	6	7	N	B	100	0	2060	-620	18	160	690	1090	0	0	250	190	2017
11	22	EUROP	NIRL ANTRIM INTRUSIVES	WILSON	551	-64	16	25	N	A	100	0	1840	-630	20	90	790	1580	0	0	130	110	2016
11	24	EUROP	NIRL ANTRIM IGN RX COMB	WILSON	551	-64	89	0	N	A	100	0	1880	-630	18	40	780	1450	0	0	60	50	0
11	23	EUROP	NIRL ANTRIM NON IGN RX	WILSON	551	-64	0	24	N	A	100	0	1910	-620	13	80	760	1380	0	0	140	90	0
11	199	EUROP	N IRELAND ANTRIM LAVAS	WILSON	551	-61	54	216	A	A	100	0	1847	-543	33	51	696	1629	0	0	70	50	0
11	27	EUROP	ENGLAND LUNCY DYKES	BLUNDELL	512	-47	8	0	N	A	100	0	1940	-590	64	70	750	1300	0	0	110	80	1033
11	25	EUROP	ENGLAND NORTH WEST DYKES	BRUCKSHA	555	-30	7	0	N	A	100	0	1740	-730	0	160	850	-470	0	0	280	250	2012
11	156	EUROP	SCOTLAND DYKES CONTACTS	SMITH	550	-44	21	84	X	A	95	5	1720	-593	17	36	734	-1632	0	0	50	40	8033
11	17	EUROP	SCOTLAND ARRAN DYKES	LONG	555	-72	7	77	N	A	71	29	70	630	35	100	780	1490	0	0	150	120	1032
11	145	EUROP	SCOTLAND AYRSHIRE DYKES	RAJA	560	-50	9	18	T	B	89	11	10	582	7	210	0	0	0	0	0	0	8023
11	15	EUROP	SCOTLAND MULL LAVAS	BRUCKSHA	564	-58	8	53	N	A	100	0	1660	-730	11	180	820	-690	0	0	310	280	1030
11	16	EUROP	SCOTLAND MULL INTRUSIVES	VINCENZ	564	-58	5	50	N	A	20	80	160	600	70	90	720	1330	0	0	140	110	1031
11	249	EUROP	SCOT MULL DYKES NORMAL	ADE HALL	567	-62	18	72	A	A	0	100	3410	750	0	60	0	0	0	0	0	0	0
11	250	EUROP	SCOT MULL DYKES REVERSED	ADE HALL	567	-62	20	80	A	A	100	0	1780	-690	0	40	0	0	0	0	0	0	0
11	251	EUROP	SCOT MULL DYKES COMBINED		567	-62	38	152	A	A	53	47	3495	720	0	0	840	-890	0	0	0	0	0
11	252	EUROP	SCOT MULL DYKES SHALLOW	ADE HALL	567	-62	19	76	A	A	100	0	1830	-160	0	120	0	0	0	0	0	0	0
11	13	EUROP	SCOT ARDNAMURCHAN GABBRO	KHAN	567	-62	3	15	N	A	100	0	1840	-550	62	160	690	1650	0	0	220	150	2014
11	14	EUROP	SCOTLAND RUM GABBRO	KHAN	570	-64	4	8	N	A	100	0	1810	-550	97	90	690	1710	0	0	140	100	2015
11	12	EUROP	SCOTLAND SKYE LAVAS INTR	KHAN	574	-63	53	174	N	A	100	0	1860	-600	60	30	740	1570	0	0	50	40	2013
11	26	EUROP	UK TERTIARY IGN RX COMB		560	-50	0	0	N	A	97	3	60	630	123	40	780	1530	0	0	60	50	0
11	237	EUROP	UK TERTIARY DYKES	DAGLEY	535	-15	11	54	A	A	100	0	1695	-614	26	92	770	-1490	0	0	140	110	11028
11	221	EUROP	FRA VOLCANICS PROVENCE	NAIRN	435	50	3	26	A	A	50	50	176	606	0	0	769	975	0	0	0	0	0
11	197	EUROP	FRA UPPER MIOCENE LAVAS	WENSINK	448	45	3	18	A	B	100	0	1866	-608	30	228	848	1089	0	328	0	0	0
11	196	EUROP	FRA LOWER PLIOCENE LAVA	WENSINK	448	45	9	54	A	A	0	100	3597	566	19	121	842	-1755	0	155	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	PCLE LAT	PCLE LONG	KP	EP 95	DM	DP	GEOJ LIST
11 195	EUROP	FRA MIDDLE PLIOCENE LAVA	WENSINK	448	45	8	48	A	A	12	88	30	557	18	133	826	1715	0	175	0	0	0
11 194	EUROP	FRANCE U PLIOCENE LAVAS	WENSINK	448	45	13	78	A	A	0	100	103	537	27	81	786	1398	0	97	0	0	0
11 193	EUROP	FRANCE PLIO PLIOCENE LAV	WENSINK	448	45	1	6	A	B	100	0	1781	-538	0	0	796	-1666	0	0	0	0	0
11 198	EUROP	FRA COIRON LAVAS COMBIN	WENSINK	448	45	36	216	A	A	15	85	95	549	18	58	804	1429	0	72	0	0	0
11 3	EUROP	FRA U MIOC LAVAS CANTAL	ROCHE	451	30	3	0	N	A	0	100	3290	410	0	0	570	-1190	0	0	0	0	3021
11 4	EUROP	FRA U MIOC LAVAS LIMAGNE	ROCHE	460	30	2	0	N	A	100	0	1580	-350	0	0	570	-1330	0	0	0	0	3022
11 5	EUROP	FRANCE U MIOC LAVAS COMB		455	30	5	0	N	A	40	60	3320	390	62	100	570	-1240	0	0	120	80	0
11 168	EUROP	FRA AUVERGNE LAVAS	ROCHE	451	35	0	0	N	A	100	0	1970	-630	28	130	780	930	0	0	200	160	1021
11 6	EUROP	FRA LAVA MT DORE LIMAGNE	ROCHE	456	30	5	40	N	A	100	0	1770	-510	27	140	760	-1640	0	0	190	130	1024
11 1	EUROP	FRA GERGOVIE INTRUSIVES	ROCHE	458	31	9	0	N	A	100	0	2010	-570	24	110	720	1150	0	0	160	120	1034
11 2	EUROP	FRANCE LIMAGNE BASALT	ROCHE	460	30	0	0	N	A	100	0	1800	-730	0	0	770	30	0	0	0	0	1035
11 311	EUROP	ITALY ALGHERO TRACHYAND	DEJONG	405	85	10	49	A	A	50	50	3220	420	20	110	540	2630	0	0	140	80	11023
11 367	EUROP	ITALY ALGHERO VOLCANIC 2	BOBIER	405	87	11	28	A	A	45	55	3345	435	13	18	640	2511	0	0	0	0	0
11 368	EUROP	ITALY ALGHERO VOL COMB	BOBIER	405	87	21	77	A	A	48	52	3285	430	40	10	576	2607	0	0	0	0	0
11 288	EUROP	ITALY BASALTS MAROSTICA	DE BOER	450	110	0	16	A	A	100	0	1840	-610	0	0	860	1450	0	0	0	0	9026
11 369	EUROP	ITALY VOLCANICS SARDINIA	BOBIER	405	87	8	22	A	A	0	100	3435	590	57	16	774	-793	0	0	0	0	0
11 289	EUROP	ITALY BASALTS PRIABONA	DE BOER	450	110	0	29	A	A	0	100	3530	500	0	0	750	2140	0	0	0	0	9028
11 110	EUROP	WGER IGNEOUS RX EIFEL	NAIRN	503	70	8	15	Y	A	13	87	260	660	58	70	730	920	0	0	110	90	6011
11 7	EUROP	WEST GER BONN INTRUSIVES	NAIRN	507	70	0	18	N	A	100	0	1880	-630	16	140	820	1420	0	0	220	170	4003
11 112	EUROP	WGER IGN RX SIEBENGEBIRG	NAIRN	507	75	8	21	Y	A	62	38	340	610	69	70	650	1040	0	0	100	80	6012
11 113	EUROP	WGER IGN RHEINLAND PFALZ		506	75	22	73	Y	A	55	45	280	620	38	50	700	1080	0	0	80	60	0
11 227	EUROP	WGER IGN KAISERSTUHL 1	LAUER	481	77	5	30	A	A	100	0	1136	-532	53	106	396	-731	0	0	147	102	0
11 228	EUROP	WGER IGN KAISERSTUHL 2	LAUER	481	77	2	12	A	A	100	0	1913	-510	0	0	703	1709	0	0	0	0	0
11 208	EUROP	WGER VOLC KAISERSTUHL	LAUER	481	77	9	0		A	100	0	1870	-370	8	200	620	1737	0	0	0	0	0
11 300	EUROP	WGER KAISERSTUHL VOLCAN	ROCHE	481	76	8	0	Y	A	100	0	1860	-490	21	120	710	1710	0	0	160	110	10025
11 111	EUROP	WGER IGN ROCK WESTERWALD	NAIRN	507	80	6	17	Y	A	67	33	230	550	20	150	680	1320	0	0	210	150	6013
11 8	EUROP	WGER VOGELSBERG RX NEG	NAIRN	505	90	0	9	N	B	0	100	90	730	23	110	0	0	0	0	0	0	4004
11 9	EUROP	WGER VOGELSBERG RX POS	NAIRN	505	90	0	16	N	A	100	0	1770	-570	10	120	0	0	0	0	0	0	4004
11 10	EUROP	WGER VOGELSBERG RX COMB		505	90	0	25	N	A	64	36	20	650	0	0	860	1680	0	0	0	0	0
11 11	EUROP	WGER VOGELSBERG BSLT MIX	ANGENHEI	505	95	42	200	N	A	0	0	80	580	0	60	760	1600	0	0	0	0	3023

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	PCLE LAT	PCLE LONG	KP	EP 95	DM	DF	GECJ LIST
11 116	EUROP	WGER VOLC HAEICHTSWALD	SCHULT	513	94	4	11	A	A	25	75	3580	660	24	190	870	-1410	0	0	310	250	7008
11 114	EUROP	WGER VOLC GOTTINGEN 1	SCHULT	514	98	12	0	Y	A	100	0	1880	-630	0	110	810	1510	0	0	170	140	7006
11 115	EUROP	WGER VOLC GOTTINGEN 2	SCHULT	514	98	15	155	Y	A	80	20	1840	-640	14	110	830	1630	0	0	170	140	7007
11 322	EUROP	WGER PARKSTEIN BASALT	SOFFEL	497	122	0	31	A	A	100	0	1774	-514	0	25	720	1990	0	0	0	0	0
11 153	EUROP	WGER SUEVITE RIES CRATER	ANGENHEI	499	105	12	111	A	A	100	0	1910	-600	997	20	780	1430	0	0	20	20	8030
11 220	EUROP	EGER VOLCANICS LAUSITZ	NAIRN	510	147	27	167	Y	A	81	19	2000	-630	16	70	750	1230	0	0	110	90	10035
11 334	EUROP	POLAND NEPHELINITE LUBAN	BIRKENMA	510	152	5	33	A	A	100	0	3490	525	0	0	705	2229	0	0	0	0	0
11 253	EUROP	POLAND L SILESIAN BASALT	BIRKENMA	510	160	65	390	A	A	58	42	20	620	10	60	820	1840	0	0	100	90	11016
11 326	EUROP	POLAND VOLCANICS JAWOR	BIRKENMA	510	163	12	69	Y	A	67	33	3500	617	15	110	794	2394	0	0	181	140	0
11 325	EUROP	POLAND VOLC LADEK ZDROJ	BIRKENMA	503	169	13	13	Y	A	0	100	3574	658	0	0	870	2355	0	0	0	0	0
11 335	EUROP	POLAND VOLC NIEMCOLIN	BIRKENMA	506	179	6	32	Y	A	33	67	235	509	29	126	643	1464	0	0	170	115	0
11 299	EUROP	POLAND ANDESITES WZAR MT	KRUCZYK	494	203	0	16	N	A	88	12	180	800	21	80	670	360	0	0	140	110	10023
11 236	EUROP	POLAND DYKES WZAR MTS	BIRKENMA	495	205	15	52	A	A	100	0	1915	-732	18	94	790	540	0	0	160	140	11021
11 141	EUROP	CZECH GESCHIEBER VEIN	KRS	504	129	0	38	N	B	37	63	251	637	0	0	725	1101	0	0	0	0	0
11 345	EUROP	CZECH MINERALIZED VEINS	BAUMANN	509	134	8	113	A	A	13	87	16	589	8	151	787	1869	0	0	76	57	0
11 157	EUROP	CZECH WALDENSTEIN VEIN	KRS	469	149	1	22	A	A	100	0	1581	-849	5	150	560	80	0	0	300	290	8034
11 264	EUROP	CZECH BOHEMIAN VOLCAN 1	KRS	500	133	39	83	A	A	25	75	32	649	6	67	862	1574	0	0	108	87	0
11 265	EUROP	CZECH BOHEMIAN VOLCAN 2	KRS	500	133	17	48	A	A	23	77	130	631	6	92	796	1300	0	0	145	114	0
11 142	EUROP	CZECH TERTIARY BASALT	ANDREEVA	508	144	0	18	N	B	100	0	1700	-540	0	0	720	-1370	0	0	80	60	8021
11 144	EUROP	CZECH HEMATITE VEINS MIX	KRS	500	170	9	596	N	A	0	0	0	630	61	70	850	-1640	0	100	0	0	8020
11 219	EUROP	CZE VOLCANIC RX SLOVAKIA	NAIRN	485	188	70	280	Y	A	66	34	92	647	53	77	835	1223	0	0	124	100	10024
11 218	EUROP	CZE POST OROGENIC BASALT	NAIRN	485	190	14	77	A	A	64	36	106	617	49	57	807	1420	0	0	88	68	0
11 210	EUROP	CZECH VOLC EAST SLOVAKIA	NAIRN	480	210	33	170	Y	A	45	55	3590	640	14	70	870	-1630	0	0	110	90	9024
11 263	EUROP	HUNGARY COMLO ANDESITE	DAGLEY	461	183	1	9	A	B	0	100	212	632	288	20	751	1061	0	0	30	30	0
11 262	EUROP	HUNGARY MATRA CZERHAT RX	DAGLEY	478	200	9	37	A	A	89	11	3598	551	40	82	778	2007	0	0	120	80	0
11 324	EUROP	HUNGARY VOLC ICKAJI MTS	NAIRN	484	211	17	90	A	A	59	41	3492	656	17	90	828	-704	0	0	146	119	0
11 261	EUROP	HUNGARY ZEMPLENI IGN RX	DAGLEY	484	216	10	48	A	A	40	60	3522	663	26	96	850	2986	0	0	160	130	0
11 358	EUROP	BULGARIA CLIG ANDESITES	VOLLSTAD	413	256	3	19	A	A	67	33	190	610	38	200	760	1050	0	0	310	240	9025
11 308	EUROP	GREECE VOLCANIC ALMFOIAS	BOBIER	411	220	5	15	A	A	80	20	150	660	40	100	770	700	0	0	160	140	11014
11 258	INDOC	MAURITIUS OLDER VOLCANIC	MCDOUGAL	-203	570	26	0	A	A	35	65	3583	-422	12	85	855	2572	0	0	100	60	11013

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
11 257	INDOC	MAURITIUS YOUNGER VOLC 2	MCDOUGAL	-203	575	10	0	A A	60	40	49	-452	12	147	781	2170	0	0	190	130	11011
11 132	INDOC	HEARD ISLAND IGNEOUS FX	IRVING	-530	735	9	22	A A	11	89	3530	-620	53	70	810	410	22	110	0	0	8010
11 167	NAMER	CAN LAVAS CAPE DYER	DEUTSCH	666	-613	5	38	A A	8	92	27	817	155	62	830	-550	0	0	120	115	0
11 295	NAMER	MEXICO SANTIAGO VOLCANIC	WATKINS	208	-1033	7	69	A A	57	43	3498	348	17	129	803	1588	0	0	148	85	0
11 374	NAMER	MEXICO MUDS BAJA CALIF 2	STRANGWA	310	-1150	42	61	A A	0	100	410	430	82	102	530	-250	0	0	130	80	0
11 238	NAMER	USA SPANISH PEAKS DYKES	LARSON	373	-1045	6	39	A A	0	100	3510	630	27	130	810	-1490	0	0	200	160	11025
11 240	NAMER	USA BASALT FLOW 1	LARSON	408	-1052	0	6	A B	100	0	1850	-270	39	108	645	629	0	0	118	64	11030
11 241	NAMER	USA BASALT FLOW 2	LARSON	408	-1052	0	9	A B	100	0	1820	-500	49	76	814	637	0	0	102	69	11031
11 165	NAMER	USA TERT INT AND BAKED	MCMAHON	400	-1053	3	15	A A	0	100	3310	640	76	140	680	1890	0	0	230	180	10046
11 217	NAMER	USA LAVAS NEW MEXICO	OZIMA	364	-1057	16	116	A A	19	81	1795	-508	15	98	849	908	0	0	132	89	9013
11 307	NAMER	USA VALLES CALDERA ROCKS	DOELL	359	-1065	22	70	A A	69	31	3590	480	30	50	830	830	0	0	70	50	11008
11 361	NAMER	USA BASALTS COLORADO	YORK	398	-1067	17	35	A A	29	71	3513	544	38	151	816	1310	0	0	213	150	0
11 239	NAMER	USA SHIPROCK DYKE N MEX	LARSON	365	-1084	3	8	A B	0	100	2400	690	27	180	680	-1440	0	0	300	260	11026
11 102	NAMER	USA ARIKEE FORMATION	TORRESON	440	-1030	0	21	N B	0	100	660	690	3	260	470	-490	0	0	440	370	3016
11 100	NAMER	USA GREEN RIVER FORMAT	TORRESON	395	-1080	0	7	N B	0	100	3450	650	168	50	780	1580	0	0	70	60	3017
11 101	NAMER	USA GREEN RIV FM LANEY	TORRESON	415	-1095	0	19	N A	0	100	3550	630	28	60	850	1680	0	0	90	80	3018
11 99	NAMER	USA WASATCH FORMATION	TORRESON	445	-1090	1	4	N B	0	100	3510	640	30	170	840	1800	0	0	270	200	3019
11 97	NAMER	USA DUCHESNE RIVER FORM	COLLINSO	400	-1100	0	24	N B	0	100	20	650	14	50	830	-990	0	0	80	60	3020
11 216	NAMER	USA LAVAS ARIZONA	KONO	352	-1116	7	34	A A	100	0	1786	-528	15	181	878	1011	13	193	0	0	9013
11 214	NAMER	USA BASIC DYK SAPPINGTON	HANNA	458	-1117	1	13	A A	100	0	570	810	120	40	530	-870	0	0	70	70	9033
11 213	NAMER	USA VOLC PLUG SAPPINGTON	HANNA	458	-1118	1	5	A B	0	100	110	750	31	110	730	-940	0	0	200	180	9031
11 215	NAMER	USA VOLC AND SED MONTANA	HANNA	460	-1120	10	0	A A	0	100	0	0	0	0	710	-1560	0	0	80	60	0
11 211	NAMER	USA BEAVERHEAD VAL VOL 1	HANNA	451	-1128	2	0	A B	0	100	30	760	100	100	720	-1090	0	0	180	170	9020
11 212	NAMER	USA BEAVERHEAD VAL VOL 2	HANNA	451	-1128	4	0	A A	0	100	3515	790	150	60	660	-1210	0	0	110	100	9029
11 105	NAMER	USA PAYETTE FORMATION	TORRESON	430	-1150	0	13	N B	0	100	10	620	240	30	890	-440	0	0	50	30	3014
11 363	NAMER	USA SANTA ROSA REV TRANS	LARSON	417	-1176	24	0		0	0	0	0	0	0	0	0	0	0	0	0	0
11 364	NAMER	USA STEENS MT TRANSITION	WATKINS	427	-1186	71	0		0	0	0	0	0	0	0	0	0	0	0	0	0
11 149	NAMER	USA OREG OWYHEE BSLT MIX	WATKINS	430	-1190	235	515	A A	0	0	133	607	13	23	801	-322	0	0	380	290	8028
11 365	NAMER	USA POKER JIM RIDGE	GOLDSTEI	426	-1197	19	0	A	0	0	0	0	0	0	0	0	0	0	0	0	0
11 150	NAMER	USA COLUMBIA RIV BASALTS	WATKINS	450	-1190	198	396	A A	0	0	3563	648	12	29	871	1716	0	0	48	38	8028

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
11	106	NAMER USA COLUMBIA R BSLT MIX	CAMPBELL	465	-1205	73	138	N	A	0	0	70	650	29	90	850	-430	0	0	140	90	1026
11	151	NAMER USA COLUM PLAT BSLT COMB	WATKINS	0	0	433	911	A	A	0	0	29	628	13	64	879	-227	0	0	105	73	8028
11	148	NAMER USA LOVEJOY BASALT CALIF	GROMME	400	-1210	13	158	A	B	54	46	1740	-420	4	260	760	740	0	250	0	0	8027
11	104	NAMER USA ELLENSBURG FORMATION	TORRESON	460	-1200	0	23	N	A	0	100	10	690	12	90	850	-1150	0	0	150	130	3015
11	282	NAMER USA LOUSETOWN VOLCAN A	HEINRICH	394	-1200	23	138	A	A	74	26	227	453	14	84	673	-32	11	94	106	67	9011
11	283	NAMER USA LOUSETOWN VOLCAN B	HEINRICH	394	-1200	32	192	A	A	0	0	638	-674	132	22	157	2038	58	34	40	30	9012
11	147	NAMER USA ABERT RIM BASALT ORE	WATKINS	426	-1202	16	98	A	A	100	0	1800	-520	48	50	800	620	0	0	60	60	8026
11	232	NAMER CAN CARIBOO PLATEAU BAS	SYMONS	518	-1218	48	251	A	A	54	46	3564	723	44	30	840	-1403	0	0	54	48	11017
11	231	NAMER CANADA GABBROIC PLUGS BC	SYMONS	515	-1212	17	70	A	A	50	50	3560	714	117	33	849	-1467	0	0	55	48	11018
11	103	NAMER USA NEROLY FORMATION	DOELL	375	-1220	3	29	X	B	0	100	70	580	69	30	850	-420	0	0	40	30	3013
11	229	NAMER USA WESTERN CASCADE SER	BECK	420	-1223	24	96	A	A	46	54	130	655	28	70	795	-675	0	80	0	0	0
11	98	NAMER USA SILETZ RIVER VOLCAN	COX	450	-1235	8	57	T	A	38	62	700	550	50	70	370	-490	0	0	100	70	1036
11	312	NAMER USA MARYS PEAK SILL ORE	CLARK	445	-1236	24	200	A	A	0	100	190	390	14	80	630	1960	0	0	100	60	11024
11	319	NAMER CANADA BC GRANODIORITE	SYMONS	525	-1275	2	0	A	A	0	100	228	668	0	87	754	-345	0	0	143	118	0
11	320	NAMER CAN BROWN BASALTIC DYKES	SYMONS	525	-1275	9	0	A	A	22	78	45	740	25	94	817	-1122	0	0	170	154	0
11	107	NAMER CAN TERTIARY BASALTS	DUBOIS	610	-1340	0	48	N	A	50	50	3490	750	28	40	850	1500	0	0	60	50	1027
11	188	NAMER USA LAVAS WAIT CREEK	STONE	623	-1432	9	51	A	A	0	100	3064	489	0	10	428	1091	0	0	0	0	0
11	189	NAMER USA LAVAS OF THE CASTLES	STONE	623	-1432	10	38	A	A	0	100	1086	797	0	19	514	2483	0	0	0	0	0
11	190	NAMER USA LAVAS OF AIR	STONE	623	-1432	9	36	A	A	0	100	354	769	0	17	855	1731	0	0	0	0	0
11	362	NAMER MEXICO IZTAUCIHUATL VOLC	STEELE	196	-990	35	232	A	A	0	100	9	344	10	82	888	343	0	0	94	54	0
11	207	PACIF MOHOLE EM 7	COX	285	-1175	1	0	N		100	0	0	-360	0	0	0	0	0	0	0	0	0
11	127	PACIF USA HAWAIIAN ISLAND LAVA	TARLING	200	-1570	38	106	A	A	75	25	3570	300	18	50	840	-580	0	0	60	30	8005
11	178	PACIF HAWAII HAMAKUA VOLC SER	DOELL	196	-1556	23	0	N	A	0	100	130	520	65	40	730	-1160	0	0	50	40	5006
11	179	PACIF HAWAII POLOLU VOLC SER	DOELL	196	-1556	40	0	N	A	0	100	60	320	60	30	840	-450	0	0	30	20	5007
11	180	PACIF HAWAII NINOLE VOLC SER	DOELL	196	-1556	25	0	N	A	0	100	10	250	33	50	840	-190	0	0	50	30	5008
11	181	PACIF HAWAII LAVAS COMBINED		196	-1556	143	0	N	A	0	100	60	340	29	20	840	-570	0	0	20	10	5009
11	375	PACIF USA KOLOA VOL SER KAUAI	DOELL	220	-1594	19	90	Y	A	87	13	3581	312	78	0	849	421	126	30	0	0	0
11	376	PACIF USA MAKAWELI FORM KAUAI	DOELL	220	-1596	24	190	Y	A	100	0	67	290	79	0	808	-263	92	31	0	0	0
11	377	PACIF USA NAPALI FM KAUAI	DOELL	220	-1596	46	220	Y	A	6	94	3565	269	28	0	821	457	47	31	0	0	0
11	378	PACIF USA KAUAI LAVAS COMBINED	DOELL	220	-1595	89	600	Y	A	48	52	3596	285	37	0	836	234	55	20	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KO	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
11 268	PACIF	COOK ISL RARCTONGA ROCKS	TARLING	-212	-1597	11	0	A	B	100	0	1944	564	5	220	699	-149	0	0	318	229	10018
11 323	PACIF	USA MIDWAY ATOLL	VINE	282	-1774	0	0	A	B	0	0	0	0	0	0	750	120	0	0	30	20	0
11 133	PACIF	SAMOA VOLCANICS	TARLING	-140	-1720	16	0	A	A	44	56	50	-320	20	80	840	-470	0	0	90	50	0
11 205	PACIF	NZ STOCKART FM AKAROA	EVANS	-437	1728	44	0	A	A	100	0	1561	796	90	23	611	95	0	0	35	34	0
11 206	PACIF	NZ AKAROA SUCCESSION	EVANS	-437	1728	70	0	A	A	67	33	3573	-549	14	47	813	1585	0	0	66	47	0
11 356	SAMER	PERU BOQUERON SEDIMENTS	CREER	-90	-760	3	7	T	B	100	0	1790	390	9	100	750	1060	10	110	0	0	0
11 125	SAMER	ARGENTINA LAVAS	CREER	-380	-710	1	0	N	A	100	0	1810	730	0	40	690	1080	0	0	70	60	6029
11 254	SAMER	ARGENTINA BASALT INTER 2	CREER	-370	-700	5	28	A	A	100	0	40	-600	0	180	850	750	0	270	0	0	0
11 255	SAMER	ARGENTINA TERT BASALTS	CREER	-370	-700	7	44	A	A	85	15	3560	-570	0	90	860	1940	0	100	0	0	0
11 256	SAMER	ARGENTINA BASALTS COMBIN	CREER	-370	-700	18	156	A	A	50	50	3590	-590	0	60	870	1320	0	80	0	0	11015
11 267	SAMER	ARGENTINA WEST LAVAS	VALENCIO	-375	-700	24	234	A	A	46	54	3520	-600	16	80	830	1650	0	0	120	90	10021
11 346	USSR	PLICCENE SEDIMENT KERCHE	TRETIAK	457	358	0	33		A	15	85	106	552	12	0	772	1734	0	0	0	0	0
11 341	USSR	MAIKOP SUITE	TRETIAK	450	360	0	131		A	100	0	1792	-476	0	0	737	2185	0	0	0	0	0
11 33	USSR	ARMENIAN GRANODIORITE	AKOPYAN	0	0	0	0	N	B	0	100	400	370	0	0	0	0	0	0	0	0	0
11 35	USSR	ARMENIAN DIABASE	AKOPYAN	0	0	0	0	N	B	100	0	1930	-650	0	30	0	0	0	0	0	0	0
11 36	USSR	ARMENIAN ANDES BRECCIA	AKOPYAN	0	0	0	0	N	B	100	0	2070	-450	0	20	0	0	0	0	0	0	0
11 34	USSR	ARMENIAN PORPHYRITE 1	AKOPYAN	0	0	0	0	N	B	0	100	350	470	0	0	0	0	0	0	0	0	0
11 37	USSR	ARMENIAN PORPHYRITES 2	AKOPYAN	0	0	0	0	N	B	100	0	1640	-380	0	10	0	0	0	0	0	0	0
11 39	USSR	ARMENIAN PORPHYRITES 3	AKOPYAN	0	0	0	0	N	B	0	100	170	-90	0	50	0	0	0	0	0	0	0
11 38	USSR	ARMENIAN AUGITE PORPHYR	AKOPYAN	0	0	0	0	N	B	100	0	1860	-560	0	20	0	0	0	0	0	0	0
11 40	USSR	ARMENIAN EOCENE IGN COMB		400	450	0	0	N	B	0	0	190	500	21	150	720	1610	0	0	0	0	0
11 41	USSR	ARMENIAN PLIOCENE LAVAS	POSPELOV	400	440	0	30	N	A	0	100	150	430	0	50	700	-1780	0	0	60	40	3024
11 42	USSR	ARMENIAN ANDESITES MIXED	AKOPYAN	400	450	0	0	N	A	0	0	30	380	0	0	710	-1430	0	0	0	0	0
11 169	USSR	ARMENIAN PIC PLEIST LAVA	POSPELOV	400	450	0	60	N	A	100	0	1920	-450	0	20	740	-1750	0	0	30	20	3003
11 29	USSR	GEORGIAN ANDESITES	VEKUA	420	430	0	29	N	A	0	100	3560	560	0	70	850	1100	0	0	90	70	7009
11 31	USSR	GEORGIAN ANDESITES	VEKUA	420	430	0	4	N	B	100	0	1860	-230	0	0	600	-1520	0	0	0	0	7010
11 30	USSR	GEORGIAN ANDESITE BASALT	VEKUA	420	450	0	13	N	A	0	100	3320	550	0	80	680	-520	0	0	110	80	7011
11 32	USSR	GEORGIAN PLIOCENE COMBIN		420	440	0	71	N	A	0	0	3540	460	13	0	740	-1150	0	0	0	0	0
11 117	USSR	VOLS SEDS GEORGIA MIX	VEKUA	420	430	11	75	N	A	0	0	3560	450	10	150	750	-1230	0	0	190	120	7012

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	CM	CF	GEOJ LIST
11 182	USSR	GEORGIAN DOLERITE 1 MIX	VEKUA	410	450	0	28	N A	0	0	3580	600	0	60	880	700	0	0	90	70	7005
11 28	USSR	GEORGIAN IGNEOUS ROCKS	VEKUA	410	450	0	25	N A	0	100	0	0	0	0	670	-1240	0	0	0	0	0
11 134	USSR	PLIOCENE SEDS AZERBAIDZHAN	KHRAMOV	410	490	0	13	Y A	46	54	120	490	11	130	750	-1760	0	0	170	110	8013
11 352	USSR	PLIOC SEDS AZERBAIDZHAN	ISHMAYIL	400	490	0	144	A	66	33	40	481	137	47	787	2107	0	0	62	41	0
11 336	USSR	SUMGAIT RIVER SUITE MIX	KHRAMOV	400	490	0	5	N B	0	0	3580	320	0	200	670	2350	0	0	220	130	0
11 354	USSR	PLIOCENE SEDS TURKMENIA	MAMMEDOV	400	530	0	257	A	0	100	220	530	0	30	710	1570	0	0	40	30	0
11 170	USSR	APSHERON AKCHAGYL 1 MIX	KHRAMOV	390	540	0	47	N A	0	0	3590	420	9	80	750	-1220	0	0	100	60	3004
11 297	USSR	PLIOCENE SEDS S CASPIAN	MAMMEDOV	390	540	15	890	N A	29	71	0	0	0	0	790	1920	0	60	0	0	10017
11 353	USSR	APSHERONSK AKCHAGYLSK 2	KHRAMOV	388	570	0	326	A	56	44	121	451	73	90	742	1936	0	0	114	72	0
11 43	USSR	RED COLORED SUITE 1 MIX	KHRAMOV	395	540	0	246	N A	0	0	130	370	7	40	690	-1620	0	0	50	30	2005
11 351	USSR	RED COLOURED SUITE 2	KHRAMOV	390	539	0	355	A	63	37	69	419	127	60	740	2103	0	0	73	45	0
11 44	USSR	TURKMENIAN SEDS 1 MIXED	KHRAMOV	395	550	0	26	N A	0	0	340	440	10	90	600	1580	0	0	100	60	2006
11 45	USSR	TURKMENIAN SEDS 2 MIXED	KHRAMOV	360	620	0	0	N A	0	0	220	500	0	150	700	1620	0	0	140	90	6014
11 343	USSR	MIOCENE SEDS TURKMENIA	MAMMEDOV	390	562	0	122	A	58	42	70	367	39	0	705	2162	0	0	0	0	0
11 373	USSR	KAZGANCHAI SUITE	MAMMEDOV	387	570	0	239	A	49	51	84	468	103	0	772	2011	0	0	0	0	0
11 339	USSR	BASALTS SEDS TURKMENIA	KHRAMOV	0	0	0	47	N B	0	100	3400	650	0	70	750	470	0	0	110	90	0
11 337	USSR	L TERTIARY SED TURKMENIA	KHRAMOV	380	580	4	224	N A	16	84	176	371	62	118	670	1917	0	0	138	81	0
11 345	USSR	KAZGANCHAI SUITE	MAMMEDOV	387	570	0	239	A	49	51	84	468	103	0	772	2011	0	0	0	0	0
11 342	USSR	KARAGAUDAN SUITE	MAMMEDOV	375	592	0	187	A	39	61	145	452	0	0	737	1865	0	0	0	0	0
11 355	USSR	PLIOC SEDS SOUTHERN USSR	TRETIAK	0	0	0	35	A	12	88	0	0	0	0	812	1210	14	0	0	0	0
11 46	USSR	NORTH FERGHANA SEDS MIX	VALIEV	410	710	0	0	N A	0	0	100	420	25	120	710	-1380	0	0	150	90	6019
11 47	USSR	N FERGHANA PLI SED 1 MIX	VALIEV	410	710	0	0	N A	0	0	20	400	200	60	720	-1150	0	0	70	40	6017
11 48	USSR	N FERGHANA PLI SED 2 MIX	VALIEV	410	710	0	0	N A	0	0	40	310	100	80	650	-1180	0	0	90	50	6018
11 49	USSR	N FERGHANA PLI SED 3 MIX	VALIEV	410	710	0	0	N A	0	0	40	380	75	80	690	-1220	0	0	100	60	6016
11 50	USSR	N FERGHANA PLI SED 4 MIX	VALIEV	410	710	0	0	N A	0	0	10	440	50	100	750	-1120	0	0	130	80	6015
11 51	USSR	N FERGHANA PLIO SEDS COM		410	710	0	0	N A	0	0	30	380	21	60	700	-1170	0	0	70	50	0
11 338	USSR	LIULINVOR SUITE	KHRAMOV	670	740	0	14	A	0	100	680	710	0	60	570	1520	0	0	110	100	0
11 340	USSR	SEDIMENTS KOMPASSKII BOR	POSPELOV	600	830	0	15	A	100	0	1980	-600	0	0	680	2230	0	0	0	0	0
11 344	USSR	COAL BEARING SUITE BSLT	DAVYDOV	530	1030	0	75	N A	100	0	1980	-480	0	60	640	2450	0	0	80	50	0
11 54	USSR	PRIMORE NEOG BSLT 1 MIX	KOCHEGUR	430	1310	0	280	N A	0	0	0	640	0	50	890	1310	0	0	80	70	6020

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GECJ LIST
11 347	USSR	PRIMORE NEOGENE BASALT 2	KOCHEGUR	430	1310	0	882	A	51	49	3560	609	61	119	869	221	0	0	182	139	0
11 53	USSR	PRIMORE OLIG BASALT MIX	KOCHEGUR	440	1320	0	19	N A	0	0	520	760	0	50	550	1720	0	0	90	90	6021
11 52	USSR	KHABAROVSK BASALT 1 MIX	KOCHEGUR	490	1360	0	110	N A	0	0	70	660	0	50	860	-1290	0	0	80	70	6022
11 348	USSR	KHABAROVSK BASALT 2 MIX	KOCHEGUR	490	1400	0	75	A	0	0	110	640	0	60	830	2460	0	0	100	80	0
11 55	USSR	SAKHALIN BASALTS 1 MIXED	KOCHEGUR	490	1410	0	102	N A	0	0	3520	700	0	30	830	1000	0	0	50	40	6023
11 349	USSR	SAKHALIN BASALTS 2	KOCHEGUR	490	1420	0	202	A	53	47	60	707	0	0	829	1711	0	0	0	0	0
11 59	USSR	KAMCHATKA AND BSLT 1 MIX	KOCHEGUR	550	1580	0	64	N A	0	0	3560	650	0	60	820	-40	0	0	100	80	6026
11 350	USSR	KAMCHATKA BASALTS 2	KOCHEGUR	560	1590	0	172	A	62	38	3585	653	362	48	814	3457	0	0	78	64	0
11 56	USSR	KAMCHATKA SEDIMENTS	KHRAMOV	550	1610	0	11	N A	0	100	3380	670	0	160	760	580	0	0	260	210	6025
11 57	USSR	KAMCHATKA BASALTS	KHRAMOV	550	1610	0	36	N A	0	100	3440	630	0	0	760	270	0	0	130	100	6024
11 58	USSR	KAMCHATKA ROCKS COMBINED		550	1610	0	47	N A	0	100	3420	650	0	0	760	430	0	0	0	0	0
12 92	AFRIC	MAGALASY LAVAS AMBRE MT	ANDRIAMI	-121	492	0	14	A A	0	100	40	-340	0	50	830	1970	0	0	0	0	0
12 78	AFRIC	TANZANIA RUNGWE VOLCANIC	NAIRN	-92	336	3	9	A B	33	67	160	-280	22	120	730	1460	0	0	120	70	8007
12 116	AFRIC	TANZANIA OLDUVAI BED 1	GROMME	-30	353	2	7	W B	0	100	20	-30	0	0	880	-920	0	0	0	0	9002
12 77	AFRIC	KENYA LAVAS RIFT VALLEY	NAIRN	-3	361	4	11	A A	100	0	1920	120	40	80	770	-1530	0	0	70	40	8006
12 79	AFRIC	EAST AFRICAN VOLCAN COMB	0000000	0	0	7	20	A A	70	30	141	-131	13	170	753	1377	36	102	0	0	8008
12 93	AFRIC	ETHIOPIA AFARS QUAT VOLS	POUCHAN	120	425	7	10	A A	40	60	3539	70	0	0	799	2590	0	0	0	0	0
12 44	AFRIC	ALGERIA AHAGGAR BASALTS	ROCHE	230	50	0	61	N A	0	100	3450	320	24	140	740	-1040	0	0	160	90	6009
12 43	AFRIC	TUNISIA ARCH BAKED CLAYS	THELLIER	370	100	0	18	N A	0	100	3590	540	0	0	880	-1550	0	0	0	0	3012
12 55	ANTAR	LAVAS CAPE HALLET	TURNBULL	-720	1710	0	23	N A	91	9	280	-800	48	40	810	-860	0	0	80	80	2011
12 67	ANTAR	S SANDWICH ISL VOLCANICS	BLUNDELL	-580	-260	0	6	N B	0	100	190	-690	123	60	780	450	0	0	100	90	7003
12 140	ANTAR	DECEPTION ISLAND LAVAS	VALENCIO	-630	-607	15	0	A A	0	100	110	-730	46	60	840	-100	0	0	100	90	0
12 66	ANTAR	S SHETLAND ISL VOLCANICS	BLUNDELL	-630	-610	12	51	N A	17	83	150	-740	333	30	820	510	0	0	60	60	7004
12 74	ARCTI	JAN MAYAN LD LAVAS DYKES	FITCH	711	-82	10	10	A A	0	100	3400	830	52	70	830	-340	0	0	140	140	8003
12 132	ASIA	TURKEY ANATOLIA VOLC	SANVER	385	360	22	145	A A	27	73	3574	545	0	58	866	1623	0	70	0	0	10011
12 89	ASIA	CAMBODIA RATTANAKIRI 1	LACOMBE	137	1071	0	14	A A	0	100	2	145	0	0	835	2857	0	0	0	0	0
12 90	ASIA	CAMBODIA RATTANAKIRI 2	LACOMBE	137	1071	0	9	A B	100	0	1766	-232	0	0	862	3457	0	0	0	0	0
12 91	ASIA	CAMBODIA RATTANAKIRI 3	LACOMBE	137	1071	0	0	A A	39	61	3574	188	0	0	854	3071	0	0	0	0	0
12 110	ASIA	TAIWAN KEELUNG VOLCANICS	CHI HSU	252	1218	32	79	A A	78	22	162	308	0	76	726	-1217	0	0	90	50	9005
12 111	ASIA	TAIWAN TATUN VOLCANICS	CHI HSU	253	1215	36	161	A A	0	100	27	364	0	48	844	-852	0	0	60	40	9006

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
12	112	ASIA	TAIWAN PENGHU BASALTS	CHI HSU	23E	1195	14	16E	Y	A	57	43	25	348	0	85	850	-886	0	0	100	60	9007
12	113	ASIA	TAIWAN SHIUKURAN ANDES A	CHI HSU	235	1214	14	69	A	A	0	100	14	325	0	86	857	-766	0	0	100	60	9008
12	114	ASIA	TAIWAN VOLCANICS COMBIN		244	1210	96	0	Y	A	34	66	58	338	171	71	820	2569	0	0	81	56	0
12	35	ASIA	JAPAN SEDS BOSO PENIN 1	KAWAI	350	1400	0	147	N	B	0	100	3560	340	70	110	730	-270	0	0	0	0	0
12	36	ASIA	JAPAN SEDS BOSO PENIN 2	NAGATA	350	1400	0	0	N	B	0	100	50	580	0	0	0	0	0	0	0	0	0
12	134	ASIA	JAPAN USAMI VOLCANC	KONO	350	1391	11	72	A	A	47	55	3380	520	13	80	710	470	0	0	110	70	10012
12	135	ASIA	JAPAN ANDESITES KIRUZUMI	OZIMA	364	1387	11	57	A	A	73	27	580	610	7	180	460	2030	0	0	280	210	10015
12	139	ASIA	JAPAN YAMAGUCHI BASALTS	DOMEN	340	1310	5	416	N	A	20	80	89	545	16	198	760	1119	19	187	0	0	0
12	41	ASIA	JAP ARCHEOL BAKED CLAYS	WATANABE	357	1398	55	1378	N	A	0	100	3560	530	17	30	860	-190	0	0	40	30	3005
12	40	ASIA	JAPAN HISTORIC LAVAS	KATO	357	1395	0	0	N	A	0	100	3570	460	100	40	820	-250	0	0	60	40	5002
12	39	ASIA	JAPAN QUATERNARY VOLC RX	KUMAGAI	360	1380	0	0	N	A	0	100	3590	470	18	110	830	-350	0	0	150	100	3007
12	38	ASIA	JAP NORTH IZU HAKONE RX	NAGATA	350	1390	42	300	N	A	21	79	3430	510	10	70	780	460	0	0	70	70	1007
12	37	ASIA	JAPAN YAMAGUCHI BASALT	DOMEN	345	1315	85	300	N	A	9	91	0	570	18	40	870	1320	0	0	60	40	3008
12	150	ASIA	JAPAN IGNEOUS ROCKS D	ITO	340	1333	32	304	N	A	48	52	10	499	45	38	877	3037	40	41	0	0	0
12	34	ASIA	JAP AND E ASIA IGN ROCKS	MATUYUMA	0	0	36	39	N	A	50	50	110	610	5	110	800	1730	0	0	170	130	4002
12	49	ATLAN	ICELAND LAVAS NEGATIVE	SIGURGEI	650	-220	0	33	A	A	0	100	0	0	0	0	770	740	0	0	60	60	1019
12	50	ATLAN	ICELAND LAVAS POSITIVE	SIGURGEI	650	-220	0	26	A	A	100	0	0	0	0	0	880	1490	0	0	70	70	1020
12	51	ATLAN	ICELAND EARLY QUAT LAVAS	HOSPERS	646	-220	9	51	N	A	100	0	1810	-750	9	70	870	1490	0	0	130	120	1018
12	52	ATLAN	ICELAND POSTGLAC LAVAS 1	HOSPERS	640	-190	8	30	N	A	0	100	10	740	0	80	860	1520	0	0	150	130	1017
12	53	ATLAN	ICELAND POSTGLAC LAVAS 2	BRYNJOLF	640	-190	21	0	A	A	0	100	0	0	0	0	890	540	0	0	60	60	0
12	54	ATLAN	ICEL POSTGLAC LAVAS COMB		640	-190	29	0	Y	A	0	100	0	0	0	0	880	1350	0	0	0	0	0
12	85	ATLAN	CANARY VOLCANICS HIERRO	WATKINS	280	-180	33	66	A	A	0	100	69	456	17	62	839	770	0	0	79	50	8014
12	86	ATLAN	CANARY VOLCAN TENERIFFE	WATKINS	280	-170	46	92	A	A	74	26	34	398	15	56	834	1352	0	0	68	41	8016
12	87	ATLAN	MADIERA VOLCANICS	WATKINS	325	166	29	58	A	A	86	14	35	475	21	60	849	1260	0	0	78	51	8019
12	125	ATLAN	PORTUGAL LAVA FLORES	SCRUGHET	394	-312	24	120	A	A	8	92	0	0	0	0	879	638	30	55	0	0	10004
12	126	ATLAN	PORTUGAL LAVA FAIAL	SAUDIER	381	-281	7	7	Y	B	0	100	40	640	30	110	820	-60	0	0	180	140	10002
12	127	ATLAN	PORTUGAL LAVA GRACIOSCA	SAUDIER	390	-280	7	7	N	B	0	100	3460	450	86	60	730	1990	0	0	80	50	10003
12	131	ATLAN	SPAIN MADIERA LAVAS 2	WATKINS	327	-169	9	46	A	A	55	45	37	498	23	109	862	1059	0	0	145	97	0
12	70	ATLAN	TRISTAN LAVAS AND DYKES	BLUNDELL	-373	-125	3	8	A	B	0	100	3590	-460	40	90	800	3423	0	0	120	80	8001
12	71	ATLAN	TRISTAN DA CUHNA LAVAS	CREER	-373	-135	9	27	A	A	0	100	3597	-502	54	71	836	-159	13	93	0	0	8002

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GECO LIST
12 72	ATLAN	TRISTAN LAVAS DYKES COMB		-373	-135	12	35	A	A	0	100	3595	-453	11	135	795	-160	0	0	172	109	0
12 73	ATLAN	INACCESSIBLE ISLA BASALT	CREER	-373	-127	1	3	A	B	100	0	1609	733	460	20	650	-1692	0	0	0	0	8002
12 45	AUSTR	NEWER VOLCANICS VICTORIA	IRVING	-380	1435	32	100	N	A	55	45	30	-600	37	50	860	-780	0	0	70	60	1023
12 80	AUSTR	NEWER VOLCAN VICTORIA 2	MCDOUGAL	-380	1435	11	33	A	A	45	55	3500	-560	56	70	825	568	0	77	0	0	8009
12 6	EURCP	ENG ARCHEOL BAKED CLAY 1	COOK	520	0	14	72	N	A	0	100	0	660	242	20	870	1800	0	0	30	30	0
12 7	EURCP	ENG ARCHEOL BAKED CLAY 2	AITKEN	520	-10	6	0	N	A	0	100	30	580	174	50	770	1700	0	0	70	60	5001
12 8	EURCP	ENG ARCH BAKED CLAY COMB		520	-10	20	0	N	A	0	100	10	640	149	30	820	1720	0	0	50	40	0
12 1	EURCP	FRANCE AUVERGNE LAVAS	ROCHE	451	35	6	0	N	A	100	0	1970	-630	28	130	780	930	0	0	200	160	1021
12 2	EUROP	FRANCE PLATEAUX BASALTS	ROCHE	455	30	8	0	N	A	100	0	2060	-640	0	0	720	840	0	0	0	0	3010
12 3	EURCP	FRA CHAINE DES PUYS LAVA	ROCHE	455	30	10	0	N	A	0	100	3530	620	0	0	850	-1060	0	0	0	0	3009
12 97	EURCP	FRA CHAINE DES PUIS 2	BONHOMME	451	35	30	0	A	A	7	93	3535	620	0	0	830	2250	0	0	0	0	0
12 144	EURCP	FRANCE CHAINE DES PUYS 3	DOELL	458	20	31	221	Y	A	0	100	3578	603	47	38	864	2122	28	50	0	0	0
12 145	EURCP	FRANCE CHAINE DES PUYS 4	DOELL	458	20	10	73	Y	A	70	30	3579	494	17	121	775	1875	17	120	0	0	0
12 117	EURCP	FRA LASCHAMP FLOW	BONHOMME	450	30	2	5	A	B	100	0	2310	-650	354	0	550	700	0	0	0	0	11002
12 118	EURCP	FRA CLEY FLOW	BONHOMME	450	30	2	6	A	B	100	0	2340	-715	214	0	550	550	0	0	0	0	11003
12 119	EURCP	FRA LOUCHADIERE FLOW	BONHOMME	450	30	0	10	A	A	0	0	1140	570	193	0	117	-1293	0	0	0	0	11004
12 120	EURCP	FRA RECOLEINE FLOW	BONHOMME	450	30	0	7	A	B	0	100	3395	830	120	0	0	0	0	0	0	0	11005
12 121	EURCP	FRA NEBOUZAT FLOW	BONHOMME	450	30	0	6	A	B	0	100	120	840	69	0	0	0	0	0	0	0	11006
12 122	EURCP	FRA ROYAT FLOW	BONHOMME	450	30	6	19	A	A	0	100	2955	665	331	0	470	-1225	0	0	0	0	11007
12 123	EURCP	FRA CHAINE DES PUYS COMB		450	30	5	43	A	A	40	60	137	795	25	158	640	136	0	0	301	288	0
12 138	EURCP	FRANCE VOLCANICS VELAY	BOBIER	450	38	28	81	A	A	61	39	100	580	130	40	800	1320	0	0	60	40	11012
12 152	EURCP	SPAIN VOLCANICS GERONA	GAURDIA	420	25	7	69	A	A	0	100	3560	540	38	100	810	2040	0	0	140	100	10005
12 9	EURCP	ITALY MT ETNA LAVAS	CHEVALLI	377	150	11	81	N	A	0	100	40	560	50	70	860	1260	0	0	100	70	1001
12 159	EUROP	ITALY VOLCANICS SARDINIA	BOBIER	405	87	8	22	A	A	0	100	3435	590	57	16	774	-793	0	0	0	0	0
12 10	EURCP	SWEDEN GLACIAL VARVES 1	ISING	0	0	8	39	N	A	0	100	3560	690	23	120	840	-1410	0	0	140	140	1004
12 11	EURCP	SWEDEN GLACIAL VARVES 2	GRIFFITH	632	160	0	120	N	A	0	100	3590	710	0	0	820	-1600	0	0	0	0	1005
12 12	EURCP	SWE POSTGLACIAL VARVES 1	BANCROFT	631	177	1	0	N	A	0	100	3570	730	42	30	860	-1420	0	0	60	50	1002
12 13	EURCP	SWE POSTGLACIAL VARVES 2	GRIFFITH	631	177	2	150	N	A	0	100	20	750	34	40	890	1560	0	0	80	70	1003
12 14	EURCP	SWE POSTGLACIAL VARVES 3	GRANAR	630	180	0	0	N	A	0	100	3380	770	0	0	800	-490	0	0	0	0	0
12 15	EURCP	SWE POSTGLAC VARVES COMB		630	180	0	0	N	A	0	100	3530	750	477	0	870	-840	0	0	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R F	REV	NOR	DECL	INCL	KD	ED 95	PCLE LAT	PCLE LONG	KP	EP 95	DM	DF	GEOJ LIST
12 88	EURCP	GER IGNEOUS ROCKS EIFEL	NAIRN	503	70	8	15	A	A	13	87	260	660	58	70	730	920	0	0	110	90	6011
12 4	EURCP	GER ROMAN KILN TREVES	THELLIER	499	47	1	14	N	A	0	100	3590	610	933	40	830	-1720	0	0	60	50	0
12 146	EURCP	POLAND VOLC LACEK ZDROJ	BIRKENMA	503	169	13	13	Y	A	0	100	3574	658	0	0	870	2355	0	0	0	0	0
12 147	EURCP	POLAND VOLC NIEMOCLIN	BIRKENMA	506	179	6	32	Y	A	33	67	235	509	29	126	643	1464	0	0	170	115	0
12 148	EURCP	POLAND NEPHELINITE LUBAN	BIRKENMA	510	152	6	33	A	A	100	0	3493	525	0	0	705	2229	0	0	0	0	0
12 100	EURCP	CZE POST OROGENIC BASALT	NAIRN	485	190	14	77	A	A	64	36	106	617	49	57	807	1420	0	0	88	68	0
12 106	EURCP	CZECH BOHEMIAN VOLCAN 3	KRS	499	175	6	18	A	A	66	34	109	729	17	88	794	501	0	0	157	140	0
12 105	EURCP	HUNGARY BASALTS BALATON	DAGLEY	469	174	13	57	A	A	62	38	89	605	27	81	817	1447	0	0	120	90	0
12 103	INDOC	MAURITIUS YOUNGER VOLC 1	MCDOUGAL	-203	575	13	0	A	A	0	100	3593	-457	58	54	831	2422	0	0	60	40	11010
12 104	INDOC	MAURITIUS YOUNGER VOLC 2	MCDOUGAL	-203	575	10	0	A	A	60	40	49	-452	12	147	781	2170	0	0	190	130	11011
12 128	INDOC	FRANCE REUNION LAVAS 1	CHAMALAU	-210	555	49	59	A	A	0	100	63	-392	17	51	832	1843	17	50	0	0	10006
12 129	INDOC	FRANCE REUNION LAVAS 2	CHAMALAU	-210	555	10	13	A	B	90	10	1901	416	7	205	802	1653	5	229	0	0	10007
12 130	INDOC	FRANCE REUNION LAVAS 3	CHAMALAU	-210	555	38	58	A	A	68	32	1811	354	15	61	891	1821	16	59	0	0	10008
12 81	INDOC	HEARD ISLAND IGNEOUS RX	IRVING	-530	735	9	22	A	A	11	89	3530	-620	53	70	810	410	22	110	0	0	8010
12 47	NAMER	USA NEW ENG GLAC VARVES	JOHNSON	430	-730	11	1019	N	B	0	100	3550	510	50	100	790	1280	0	0	130	90	1006
12 69	NAMER	CAN USA PLEISTOCENE SILT	HARRISON	410	-840	11	0	N	B	0	100	0	0	0	0	870	1660	0	0	220	220	6010
12 161	NAMER	MEXICO MUDS BAJA CALIF 1	STRANGWA	310	-1150	16	16	A	A	0	100	190	570	25	75	790	-500	0	0	110	80	0
12 136	NAMER	USA VALLES CALDERA ROCKS	DOELL	359	-1065	22	70	A	A	69	31	3590	480	30	50	830	830	0	0	70	50	11008
12 99	NAMER	USA VOLCANICS OF NORRIS	HANNA	456	-1117	1	12	A	A	100	0	370	730	550	50	640	-660	0	0	100	90	9010
12 98	NAMER	USA VOLC VIRGINIA CITY	HANNA	453	-1119	5	0	A	A	0	100	3470	820	89	70	600	-1190	0	0	130	130	9009
12 160	NAMER	USA WILSON CRK FM MONO L	DENHAM	380	-1190	60	0	A	A	0	100	3	493	16	45	-0	-0	0	0	0	0	0
12 115	NAMER	USA LOUSETOWN VOLCAN A	HEINRICH	394	-1200	23	138	A	A	74	26	227	453	14	84	673	-32	11	94	106	67	9011
12 94	NAMER	USA LAVAS MT EDGECOMB	STONE	471	-1356	5	18	A	A	0	100	3346	774	0	32	747	1827	0	0	0	0	0
12 95	NAMER	USA LAVAS MOUNT GRIGGS	STONE	584	-1551	5	24	A	A	0	100	3302	767	0	46	747	1515	0	0	0	0	0
12 96	PACIF	EQUAD LAVA SAN CRISTOBAL	COX	-6	-894	24	192	A	A	8	92	3588	25	33	64	876	-1207	54	49	0	0	0
12 133	PACIF	COSTA RICA COCOS VOLCAN	DALRYMPL	55	-870	4	4	A	B	75	25	3570	70	49	130	860	1520	0	0	130	70	10013
12 108	PACIF	CHILE EASTER ISLD BASALT	BOOKER	-270	-1093	0	8	N	B	0	100	3570	-480	31	55	870	1240	0	0	80	50	9001
12 56	PACIF	HAWAII HISTORIC LAVAS	DOELL	196	-1556	9	0	N	A	0	100	90	380	416	30	810	-770	0	0	40	20	5003
12 68	PACIF	HAWAII HISTORIC LAVA	DOELL	195	-1555	9	67	A	A	0	100	100	360	643	20	800	-710	0	0	20	20	7001
12 75	PACIF	USA HAWAII LAVAS	DOELL	195	-1555	112	632	Y	A	0	100	57	311	27	26	842	-71	46	20	20	20	8004

OTTAWA LIST		PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	R E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
12	76	PACIF	USA HAWAIIAN ISLAND LAVA	TARLING	200	-1570	38	106	A	A	75	25	3570	300	18	50	840	-580	0	0	60	30	8005
12	57	PACIF	HAWAII PUNA VOLCANIC SER	DOELL	196	-1556	17	0	N	A	0	100	40	420	116	30	840	-1150	0	0	40	20	5004
12	58	PACIF	HAWAII KAHUKU VOLCAN SER	DOELL	196	-1556	29	0	N	A	0	100	80	240	31	50	790	-260	0	0	50	30	5005
12	59	PACIF	HAWAII HAMAKUA VOLC SER	DOELL	196	-1556	23	0	N	A	0	100	130	520	65	40	730	-1160	0	0	50	40	5006
12	60	PACIF	HAWAII POLOLU VOLCAN SER	DOELL	196	-1556	40	0	N	A	0	100	60	320	60	30	840	-450	0	0	30	20	5007
12	61	PACIF	HAWAII NINOLE VOLCAN SER	DOELL	196	-1556	25	0	N	A	0	100	10	250	33	50	840	-190	0	0	50	30	5008
12	62	PACIF	HAWAII LAVAS COMBINED		196	-1556	143	0	N	A	0	100	60	340	29	20	840	-570	0	0	20	10	5009
12	124	PACIF	USA KAU VOLCANICS HAWAII	DOELL	195	-1556	54	419	N	A	0	100	3548	241	479	9	815	613	617	8	0	0	11001
12	63	PACIF	SAMOA LAVAS NEGATIVE	TARLING	-140	-1720	9	30	A	A	0	100	10	-300	15	140	880	-130	0	0	160	90	0
12	64	PACIF	SAMOA LAVAS POSITIVE	TARLING	-140	-1720	7	18	A	A	100	0	1910	350	35	100	790	-530	0	0	110	70	0
12	82	PACIF	SAMOAN VOLCANICS	TARLING	-140	-1720	16	0	A	A	44	56	50	-320	20	80	840	-470	0	0	90	50	8012
12	83	PACIF	TONGA VOLCANICS	TARLING	-210	-1750	3	9	A	B	0	100	261	282	91	130	645	-942	0	0	142	78	0
12	84	PACIF	TONGA DYKES	TARLING	-210	-1750	3	6	A	B	100	0	1200	460	0	250	350	760	0	0	0	0	8012
12	143	PACIF	NZ MATAHINA IGNIMBRITE	HOARE	-400	1760	2	4	T	B	0	100	190	-550	0	0	0	0	0	0	0	0	0
12	46	PACIF	NEW ZEALAND IGNIMBRITES	HATHERTO	-380	1760	0	114	N	B	0	100	3500	-650	0	0	790	350	0	0	0	0	1028
12	137	PACIF	NZ NORTH ISLAND VOLCANIC	COX	-370	-1740	22	176	Y	A	0	100	20	-631	49	45	825	3462	21	69	0	0	11009
12	142	PACIF	NZ WANGANUI HAWERA SER	COX	-380	1750	0	0	A	B	0	100	18	-680	19	216	768	-101	0	0	362	303	0
12	109	PACIF	NEW HEBRIDES VOLCANICS	TARLING	-160	1680	9	31	A	A	0	100	10	-220	0	100	850	1800	0	0	100	50	9003
12	48	SAMER	ARGENTINA NEUQUEN LAVAS	CREER	-380	-700	10	20	A	A	30	20	10	-610	15	50	860	1000	0	0	80	60	1022
12	101	SAMER	ARGENTINA BASALT INTER 1	CREER	-370	-700	6	66	A	A	0	100	3580	-600	0	90	850	1310	0	140	0	0	0
12	102	SAMER	ARGENTINA BASALT INTER 2	CREER	-370	-700	5	28	A	A	100	0	40	-600	0	180	850	750	0	270	0	0	0
12	107	SAMER	ARGENTINA WEST LAVAS	VALENCIO	-375	-700	24	234	A	A	46	54	3520	-600	16	60	830	1650	0	0	120	90	10021
12	16	USSR	GEORGIAN ANDESITE BASALT	VEKUA	420	450	0	5	N	A	0	100	50	300	0	160	630	-1440	0	0	170	100	6006
12	18	USSR	GEORGIAN ANDESITES	VEKUA	430	450	0	17	N	A	0	100	180	570	0	110	740	1550	0	0	160	120	6005
12	65	USSR	GEORGIAN DOLERITE 1 MIX	VEKUA	410	450	0	28	N	A	0	0	3580	600	0	60	880	700	0	0	90	70	7005
12	17	USSR	GEORGIAN DOLERITE 2	VEKUA	410	440	0	21	N	A	100	0	1710	-540	0	70	800	-900	0	0	100	70	6004
12	156	USSR	IGNEOUS ROCKS GEORGIA 2	ADAMIYA	410	440	0	24		A	0	100	40	580	0	80	860	1740	0	0	110	80	0
12	19	USSR	GEORGIAN IGN ROCKS COMB		420	450	0	43	N	A	49	51	70	470	26	0	750	-1590	0	0	0	0	0
12	20	USSR	ARMENIAN PLIO PLEIST LAV	POSPELOV	400	450	0	60	N	A	100	0	1920	-450	0	20	740	-1750	0	0	30	20	3003
12	21	USSR	ARMENIAN LAVAS AND TUFFS	POSPELOV	400	450	0	50	N	A	0	100	0	580	0	30	880	-1350	0	0	40	30	3002

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T	R	E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DP	GEOJ LIST
12 22	USSR	ARMENIAN VOLCANIC TUFF 1	AKOPYAN	0	0	0	0	N	B		0	100	3470	550	0	0	0	0	0	0	0	0	0
12 23	USSR	ARMENIAN VOLCANIC TUFF 2	AKOPYAN	0	0	0	0	N	B		0	100	3530	480	0	0	0	0	0	0	0	0	6001
12 24	USSR	ARMENIAN ANDESITE BSLT 1	AKOPYAN	0	0	0	0	N	B		0	100	30	440	0	0	0	0	0	0	0	0	6003
12 25	USSR	ARMENIAN ANDESITE BSLT 2	AKOPYAN	0	0	0	0	N	B		0	100	3300	500	0	0	0	0	0	0	0	0	0
12 26	USSR	ARMENIAN DACITE ANDESITE	AKOPYAN	0	0	0	0	N	B		0	100	80	440	0	0	0	0	0	0	0	0	6002
12 27	USSR	ARMENIAN IGNEOUS COMBIN		400	450	0	0	N	B		0	100	3530	490	55	100	780	-1030	0	0	130	90	0
12 153	USSR	BAKU STAGE M TURKMENIA	KHRAMOV	390	530	0	60	N	A		0	100	70	520	0	40	810	1860	0	0	60	40	0
12 28	USSR	KHAZAR BEDS	KHRAMOV	395	530	0	20	N	B		0	100	20	530	0	0	870	-1900	0	0	0	0	2002
12 29	USSR	BAKU BEDS	KHRAMOV	395	532	0	47	N	A		0	100	110	540	26	40	810	1680	0	0	60	40	2001
12 30	USSR	APSHERON AKCHAGYL 1 MIX	KRAMOV	390	540	0	47	N	A		0	0	3590	420	9	80	750	-1220	0	0	100	60	3004
12 151	USSR	APSHERONSK AKCHAGYLSK 2	KHRAMOV	380	570	0	326		A		36	44	121	451	73	90	742	1930	0	0	114	72	0
12 157	USSR	LOESS LOAM CLAY S RUSSIA	TRETIAK	0	0	9	120		A		0	100	0	0	0	0	819	915	315	29	0	0	0
12 155	USSR	SEDIMENTS TUNGUSKA RIVER	GONCHARO	660	880	0	21		A		0	100	30	740	0	30	840	2270	0	0	60	50	0
12 33	USSR	KURILE ISLAND LAVAS	POSPELOV	490	1540	0	7	N	B		0	100	3450	650	0	50	800	-640	0	0	70	50	6008
12 31	USSR	KAMCHATKA ANDES BASALTS	KOCHEGUR	530	1590	0	19	N	A		0	100	150	610	0	30	790	-690	0	0	50	30	6007
12 154	USSR	KAMCHATKA BASALTS 3	KOCHEGUR	530	1580	0	320		A		0	100	0	730	0	60	840	1590	0	0	110	100	0
12 32	USSR	SHEVELUCH VOLCANIC ROCKS	POSPELOV	570	1610	2	17	N	A		0	100	40	620	0	60	770	-200	0	0	90	70	3001
13 3	ATLAN	GUINEA SEAMOUNT 1 R 1 61	HARRISON	8	21	0	0				100	0	1084	261	0	0	709	2107	0	0	0	0	0
13 4	ATLAN	GUINEA SEAMOUNT 2 R 1 46	HARISSON	-16	35	0	0				0	100	3268	13	0	0	567	2764	0	0	0	0	0
13 5	ATLAN	GUINEA SEAMOUNT 3 R 1 86	HARRISON	4	20	0	0				100	0	1588	237	0	0	653	2402	0	0	0	0	0
13 48	ATLAN	GUINEA SEAMOUNT 3 R 3 34	HARRISON	4	26	0	0				100	0	1555	239	0	0	624	2434	0	0	28	15	0
13 6	ATLAN	GUINEA SEAMOUNT COMBINED	HARRISON	0	0	0	0				60	40	0	0	0	0	664	2523	17	189	0	0	0
13 44	ATLAN	CARYN SEAMOUNT	VINE	367	-680	0	0				0	0	0	0	0	0	740	1780	0	0	0	0	0
13 45	ATLAN	KELVIN GROUP SEAMOUNTS	RICHARDS	383	-626	0	0				0	100	0	0	0	0	716	1032	8	230	0	0	0
13 46	ATLAN	VEMA SEAMOUNT	HEIRTZLE	-317	83	0	0				100	0	750	650	0	0	0	0	0	0	0	0	0
13 47	ATLAN	MADCAP VOLCANO	JONES	288	-254	0	0				100	0	3050	-250	0	0	220	2650	0	0	0	0	0
13 1	PACIF	MANIHIKI COOK ISL R 2 78	WOODWARD	-104	-1610	0	0				100	0	980	600	0	0	128	691	0	0	0	0	0
13 2	PACIF	RARCTONGA COOK IS R 1 81	WOODWARD	-212	-1598	0	0				100	0	1650	240	0	0	733	1389	0	0	0	0	0
13 7	PACIF	HAWAIIAN DEVELOPM R 2 07	RICHARDS	192	-1615	0	0				22	78	108	-347	0	0	580	210	19	120	0	0	0
13 8	PACIF	DIXON SEAMOUNT R 5 60	FRANCHET	126	1809	0	0				0	100	0	-189	0	0	680	10	0	0	29	18	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R E	REV	NOR	DECL	INCL	K0	E0 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
13 9	PACIF	SHOA SEAMOUNT R 3 20	FRANCHET	179	2073	0	0		100	0	1998	180	0	0	565	3501	0	0	26	14	0
13 10	PACIF	BUSHNEL SEAMOUNT 1 R 2 3	FRANCHET	190	2062	0	0		0	100	29	2	0	0	709	171	0	0	0	0	0
13 11	PACIF	BUSHNEL SEAMOUNT 2 R 2 3	FRANCHET	192	2062	0	0		0	100	89	-194	0	0	597	84	0	0	0	0	0
13 12	PACIF	BUSHNEL SEAMOUNT 3 R 2 3	FRANCHET	190	2064	0	0		0	100	3357	6	0	0	597	807	0	0	0	0	0
13 13	PACIF	KONA SEAMOUNT 1 R 2 90	FRANCHET	173	2058	0	0		0	100	135	-84	0	0	646	3528	0	0	0	0	0
13 14	PACIF	KONA SEAMOUNT 2 R 2 90	FRANCHET	171	2056	0	0		100	0	1964	353	0	0	498	15	0	0	0	0	0
13 15	PACIF	CHATAUQUA SEAMOUNT	SCHIMKE	222	1974	0	0		100	0	1893	127	0	0	600	3590	0	0	0	0	0
13 16	PACIF	HAWAIIAN SEAMOUNTS COMB	FRANCHET	0	0	0	0		29	71	0	0	0	0	610	160	23	76	0	0	0
13 17	PACIF	JAPAN SEAMOUNT A R 1 8	UYEDA	413	1460	0	0		0	100	3528	24	0	0	490	3370	0	0	0	0	0
13 18	PACIF	JAPAN SEAMOUNT B R 1 4	UYEDA	406	1468	0	0		0	100	3529	-36	0	0	470	3370	0	0	0	0	0
13 19	PACIF	JAP SEAMOUN SISOEV R 2 0	UYEDA	409	1449	0	0		0	100	3413	222	0	0	560	3590	0	0	0	0	0
13 20	PACIF	JAP SEAMOUNT RYOFU R 2 4	UYEDA	380	1460	0	0		0	100	3439	28	0	0	500	3520	0	0	0	0	0
13 21	PACIF	JAP Z 3 1 SEAMOUNT R 1 2	VACQUIER	370	1638	0	0		0	100	2680	380	0	0	110	920	0	0	0	0	0
13 22	PACIF	JAP Z 3 2 SEAMOUNT R 2 5	VACQUIER	366	1639	0	0		0	100	2780	440	0	0	210	910	0	0	0	0	0
13 23	PACIF	JAP Z 4 1 SEAMOUNT R 2 3	VACQUIER	288	1484	0	0		0	100	3340	90	0	0	550	190	0	0	0	0	0
13 24	PACIF	JAP Z 4 2 SEAMOUNT R 2 6	VACQUIER	284	1482	0	0		0	100	280	50	0	0	530	2780	0	0	0	0	0
13 25	PACIF	JAP Z 4 3 SEAMOUNT R 4 1	VACQUIER	271	1487	0	0		0	100	160	-130	0	0	530	3020	0	0	0	0	0
13 26	PACIF	JAP Z 4 4 SEAMOUNT R 1 8	VACQUIER	280	1476	0	0		0	100	110	-10	0	0	600	3060	0	0	0	0	0
13 27	PACIF	JAP Z 4 5 SEAMOUNT R 3 9	VACQUIER	277	1404	0	0		0	100	50	390	0	0	820	2820	0	0	0	0	0
13 28	PACIF	JAP Z 4 6 SEAMOUNT R 1 9	VACQUIER	296	1371	0	0		0	100	3590	310	0	0	770	3200	0	0	0	0	0
13 29	PACIF	JAP Z 4 7 SEAMOUNT R 1 4	VACQUIER	302	1367	0	0		0	100	3590	70	0	0	630	3190	0	0	0	0	0
13 30	PACIF	JAPANESE SEAMOUNTS COMB	FRANCHET	0	0	0	0		0	100	0	0	0	0	557	3257	21	130	0	0	0
13 31	PACIF	TRIFOD SEAMOUNTS A R 2 3	FRANCHET	210	2474	0	0		0	100	0	0	0	0	847	3465	9	190	0	0	0
13 32	PACIF	TRIFOD SEAMOUNTS B R 2 4	FRANCHET	210	2474	0	0		0	100	0	0	0	0	870	904	19	144	0	0	0
13 33	PACIF	CALIFORN SMT MARIE R 1 1	FRANCHET	307	2173	0	0		0	100	623	-121	0	0	200	3278	0	0	0	0	0
13 34	PACIF	CALIF SMT MCONLESS R 4 2	FRANCHET	319	2182	0	0		0	100	3594	380	0	0	794	413	0	0	0	0	0
13 35	PACIF	CALIFORN SMT MAHER BAD	GROSSLIN	295	2112	0	0		0	100	915	463	0	0	120	2761	0	0	0	0	0
13 36	PACIF	CALIF SMT BOUTELLE FAIR	GROSSLIN	390	2289	0	0		100	0	2337	-245	0	0	180	3533	0	0	0	0	0
13 37	PACIF	CALIFORNIA SMT HOKE GOOD	GROSSLIN	321	2330	0	0		0	100	172	309	0	0	681	35	0	0	0	0	0
13 38	PACIF	CALIF SMT UNNAMED R 2 0	RICHARDS	390	2290	0	0		0	100	59	471	0	0	790	230	0	0	0	0	0

OTTAWA LIST	PLACE	ROCK UNIT	AUTHOR	LAT	LONG	NO. SITE	NO. SAMP	T R	P E	REV	NOR	DECL	INCL	KD	ED 95	POLE LAT	POLE LONG	KP	EP 95	DM	DF	GEOJ LIST
13 39	PACIF	SEAMT FIEBERLING 2	R 3 8	RICHARDS	323	2328	0	0		0	100	322	484	0	0	621	3200	0	0	0	0	0
13 40	PACIF	CALI SMT UNNAMED W	R 1 8	RICHARDS	366	2344	0	0		100	0	1969	-131	0	0	560	250	0	0	0	0	0
13 41	PACIF	CALI SMT UNNAMED M	R 1 8	RICHARDS	366	2346	0	0		100	0	1733	-435	0	0	770	830	0	0	0	0	0
13 42	PACIF	CALI SMT UNNAMED E	R 1 8	RICHARDS	367	2347	0	0		100	0	2207	-433	0	0	540	3310	0	0	0	0	0
13 43	PACIF	CALIFORNIA SEAMCNT COMB		FRANCHET	0	0	0	0		50	50	0	0	0	0	707	3540	48	134	0	0	0

Explanatory Notes

Some entries in the computer listing do not have corresponding notes. These may be found in Irving (1964 p. 316).

010001 **Torridon Group** (Moorbath *et al.* 1967, Moorbath 1969) Rb/Sr whole rock isochron gave 751 m.y.

010002 **Stoer Group** (Moorbath 1969) Rb/Sr whole rock isochron gave 935 m.y.

010032 **Belt Series Montana and BC** Age of at least 1100 m.y. cited by Runcorn (1964) and younger than 1600 m.y. by Gileatti. Obradovitch Peterman (1968) give age as 1100 to 1325 m.y. See Eggler Larson (1968).

010046 **Sudbury Nickel Eruptive** Rb/Sr whole rock age of 1704 m.y. given by Fairbairn *et al.* (1968) for the norite and granophyre, and 1720 m.y. for slates and greywackes at the centre of the basin.

010050 to 010051 **Diabase Dykes Ontario and Quebec** (Strangway 1960 1961 1964) Results initially considered unreliable by author because he thought the magnetization was controlled by the internal field of the dyke. This now is known to be incorrect (Evans 1968) and results are placed in A category. **010050** are "so-called Grenville dykes" (see also **010161**) recalculated omitting dyke 2 of the original which belongs to Mackenzie swarm. Interesting examples of normal and reversed directions in last reference.

010057 **Lower Angara Suite** Absolute age of 745 to 925 m.y. cited in Khramov Sholpo 1967.

010059 **Malani Rhyolites** Rb/Sr isochron age of 745 m.y. given by Crawford (1969).

010063 to 010064 **Great Dyke** Age amended by Allsopp (1965) to lower limit 2530 m.y. and upper limit 2800 m.y. making it significantly older than Bushveld Gabbro.

010098 **Upper Dala Volcanics** (Priem *et al.* 1968, Mulder 1971). Rb/Sr age of 1570 m.y. cited. Magnetic cleaning in 200 oe. Samples spread over 60 km. Pole is situated within the group of European Lower Paleozoic poles, and the authors assume that the rocks were remagnetization during the Caledonian orogeny. K/Ar ages (605 to 921 m.y.) are much younger than their real age, and for this reason the result entered in B.

010099 **Jotnian Basalts** (Priem *et al.* 1968, Mulder 1971) K/Ar ages of 745 to 931 m.y. given in original which are considered rejuvenated, so age minimum is 931 m.y. Since pole is situated in the group of the Lower Paleozoic poles for Europe the authors assume that stable magnetization is due to remagnetization in the Lower Paleozoic; for this reason the result is entered in category B. The sites are spread over 40 km.

010100 **Late Jotnian Dolerite Dykes** (Priem *et al.* 1968, Mulder 1971) Since pole is situated in the middle of the Lower Paleozoic poles for Europe the authors assume that stable magnetization is due to remagnetization in Lower Paleozoic time, and for this reason the result is entered in B.

010101 **Hyperite-Dolerite Dykes** (Priem *et al.* 1968, Mulder 1971) K/Ar ages are in 2 groups, 800 to 900 m.y. and 1550 m.y. Latter considered to be original age, and the former an imprint of the Sveconorwegian Event. The magnetization is considered in the original to date from the time of original intrusion. Magnetic cleaning in fields of 400 oe. Sampling sites spread over 300 km. These dykes are unaltered intrusives which occur in a zone of schists between Gothian and Pre-Gothian rocks in S. Sweden.

010102 **Mashonaland Dolerite** (McElhinny Opdyke 1964) K/Ar ages of 1430 to 1640 m.y. cited. Directions corrected to bedding deduced from adjacent sediments. Samples collected over 400 km.

010103 to 010104 **Matachewan Dykes** (Fahrig Gaucher Larochelle 1965) Samples spread over 150 km. Single K/Ar age of 2485 m.y. on chilled diabase quoted. Directions fall into 2 groups approximately reversed from one another.

010105 **Matachewan Dykes** (Strangway 1964) Based on 5 dykes each given unit weight. Author states that inclinations were inadvertently reversed in his previous publication, so that this is a correction to entry **010051**. Result entered in B because the error is greater than 20°.

010106 **Matachewan Abana Dyke** (Strangway 1964)

010107 **Matachewan Dykes Combined** Directions and poles of entries **010103** to **010106** are combined giving each unit weight (N=4).

010108 **Abitibi Dykes** (Strangway 1964) This is a correction to entry **010050**. Dykes given unit weight in the analysis (N=5).

010109 to 010111 **Abitibi Dykes** (Larochelle 1966a) Results from 12 dykes which trend in a E N E direction. Ten dykes give very consistent westerly directions (**010109**) which confirm earlier results of Strangway (1965); this is presumably to be regarded as an updating of

earlier work (**010112**). Entry **010110** is based on results from the other 2 dykes. Entry **010111** is based on 4 sites from a single N N E dyke. Samples spread over 50 km.

010112 **Abitibi Dykes** (Fahrig Gaucher Larochelle 1965) K/Ar age of 1230 m.y. obtained from these dykes (Fahrig Wanless 1964). This result is presumably superseded by **010109**.

010113 **Molson Dykes** (Fahrig Gaucher Larochelle 1965) K/Ar age of 1445 m.y. is cited. Of 7 samples from 5 sites, 2 were considered unstable. Result placed in B being based on fewer than 10 samples.

010114 **Marathon Dykes** (Fahrig Gaucher Larochelle 1965) Samples collected from 5 dykes. K/Ar age of 1810 m.y. is cited. Result placed in category B since it is based on fewer than 10 samples.

010115 **Muskox Intrusion** (Robertson 1964a) K/Ar age of biotite in the sulphide zone gave 1150 m.y. and whole rock from the granophyre-bearing gabbro in the upper border zone gave 1095 m.y. Samples spread over about 20 km. Thirteen specimens of baked sediments from 5 sites give a mean of 224,+40; $\alpha_{95}=5^{\circ}$, which is in good agreement with the intrusion itself. The intrusion is divided into 3 zones which have the means 240,+38 (9 sites) 238,+34 (40 sites) 241,+38 (16 sites). The mean pole quoted here gives unit weight to groups which represent a certain ordering of sites.

010116 **Mackenzie Dykes at Muskox** (Robertson 1969) Result quoted here is that obtained after demagnetization in 75 oe. Thermal demagnetization of duplicate specimens gave mean of 239,+19; $\alpha_{95}=10^{\circ}$ which is not significantly different.

010117 **Mackenzie Dykes** (Fahrig Gaucher Larochelle 1965) Samples spread over 500 km. K/Ar age of 1315 m.y. cited in the original. Samples cleaned in 80 oe. Samples collected from between Great Slave Lake and Coronation Gulf.

010118 **Mackenzie Dykes** (Fahrig Jones 1969) Result is an up-dating of **010117**. Samples from a wide area mainly in the western Canadian Shield. They are grouped in the original into 4 localities, and the mean pole for these is given (N=4). K/Ar ages range from 899 to 1360 m.y. and a probable age of 1200 m.y. is suggested by the authors.

010119 **Sudbury Dykes 2** (Fahrig Gaucher Larochelle 1965) Age based on K/Ar age determination of 1285 m.y. Samples collected over 200 km.

010120 **Sudbury Diabase Dykes 3** (Larochelle 1966b) Samples cleaned in 150 oe. Samples collected over about 60 km. Result based on 53 cores from 11 dykes with stable magnetization.

010121 **Coppermine Lavas** (Robertson 1964a, 1969) Whole rock K/Ar ages average 1150 m.y. Sample of red sandstone between the flows gave 236,+24. The result given here is that obtained after cleaning in 75 oe. After thermal cleaning, companion samples gave 236,+11.

010122 **Umkundo Dolerite** (McElhinny and Opdyke 1964) K/Ar ages of 650 to 1150 m.y. cited by Jones and McElhinny (1966). In the original a similar result is derived from 10 sites.

010123 **Umkundo Lavas** (McElhinny 1966a) Sites given unit weight. Samples were spread over 120 km.

010124 **Umkundo Lavas and Dolerites Combined** (McElhinny 1966a) Results **010122** and **010123** combined giving unit weight to each site (N=18).

010125 **Veldurti Hematite Deposits** (Verma Pullaiah Bhalla 1966) Unit weight given to each deposit (N=30). Directions in 11 test specimens unchanged after thermal demagnetization at 600°C. Little change in direction in 20 test specimens in a.f. up to 100 oe.

010126 **Kaimur Sandstone** (Sahasrabudhe Mishra 1966, Radhakrishnamurty Mishra 1966) The Kaimur series is 160 m. to 430 m. thick and is the lowest member of the Upper Vindhyan. Crawford (1969) has shown that the Kaimur series is about 1150 m.y. old from Rb/Sr ages on the Panna diamond pipe that intrudes it. In the original means are given for normal and reversed groups; these are 000,+30 ($\alpha_{95}=6^{\circ}$, N=32) and 173,−32 ($\alpha_{95}=7^{\circ}$, N=15). In this entry these 2 directions are averaged and pole calculated.

010127 **Ntonya Ring Structure** (Briden 1968) K/Ar age indicate a minimum of 520 m.y. Author favours a probable age of 600 m.y. Sites given unit weight (N=7). Sites spread over 6 km.

010128 **Premier Mine Kimberlite** (Jones 1968) Premier Mine, Coolinan, Transvaal. Lead model age from the kimberlite of 1750 m.y. The Premier pipe contains Waterburg xenoliths. A sill (Jones McElhinny 1966) which intrudes the kimberlite, gave direction 22° different from that quoted here, showing that the kimberlite was not affected by this intrusion. Magnetic cleaning in 300 oe.

010129 **Croker Island Complex** (Palmer 1969) Rb/Sr isochron age of 1475 m.y. cited. Magnetic cleaning in 200 to 300 oe.

010130 **Allard Lake Anorthosite Suite** (Hargraves Burt 1967, Hargraves 1959) K/Ar ages in the vicinity

give an average of about 1000 m.y. corresponding to the Grenville orogeny. Mixed polarities occur and the normal polarity is attributed to titano-magnetite and the reverse to ilmeno-hematite. The mean is calculated giving unit weight to each locality (N=4).

010131 **Portage Lake Lavas 2** (Vincenz 1968) Age is a little younger than the Duluth gabbro, about 1000 m.y.

010132 **Copper Harbour Lavas** (Vincenz Yaskawa 1968) Age of between 1046 and 1200 m.y. cited. Thermal cleaning at 450°C and a.f. cleaning in 250 to 1400 oe.

010133 **Nonesuch Shale and Freda Sandstone** (2) (Vincenz Yaskawa 1968) K/Ar age of 1046 m.y. cited.

010134 to 010138 **Waterberg Red Beds** (Jones McElhinny 1967) The Waterberg is younger than the Bushveld complex (1950 m.y.) and is cut by rocks that have been dated at 1400 m.y. In the original 120° of apparent polar wandering through the succession is postulated. Pole of the lowest group is near Bushveld pole. The youngest pole agrees with that of post-Waterberg diabases. Following Geophysical Journal list 9, the 12 sites are arranged in 5 groups in approximate stratigraphic order from the youngest (**010134**) to the oldest (**010138**).

010139 **Alona Bay Lavas** (Palmer 1970) Sites given unit weight (N=3). Sites spread over 12 km.

010140 and 010141 **Mamainse Point Lavas** (Palmer 1970) Magnetization of conglomerates is widely scattered indicating stability. Sites given unit weight. Rb/Sr isochron cited that gave an age of 1076 m.y.

010142 **Michipicoten Island Volcanics** (Palmer 1970) Unit weight given to sites.

010143 and 010144 **Gargantua Cape Volcanics** (Palmer 1970) Section is about 800 m thick, the lower half being reversed (lower reversed division) and the upper normal (upper normal division). Sites given unit weight.

010145 and 010146 **North Shore Volcanics of Lake Superior** (Palmer 1970) Lower Keweenawan. Zircon age of 1115 m.y. cited. Results fall into 2 groups, the reversally magnetized ones from Horland and Grand Portage section, and the normally magnetized ones from the Duluth to Horland section.

010147 **Osler Volcanics** (Palmer 1970) Sites given unit weight (N=12).

010148 **Portage Lake Lavas 3** (Books 1968) Middle Keweenawan. Directions corrected to 45°N, 90°W. Unit weight given to 29 sites each from separate flows.

010149 **North Shore Volcanics of Lake Superior** (Books 1968) Lower Keweenawan. Results quoted reduced to 45°N,90°W.

010150 **Lower Keweenawan Lavas** (Books 1968) Ironwood Michigan. Lavas are approximately contemporaneous with **010149** and **010145** from the North Shore of Lake Superior. Dips at these two places differ by about 90°. The corrected values are quoted here and they agree well but not exactly. This indicates that all or most of the magnetization was acquired prior to folding. The small discrepancy that remains could be due to the presence of secondary components, to the beds not being exactly contemporaneous, or to relative rotation of localities. Directions corrected to 45°N,90°W.

010151 to 010153 **Logan Sills** (Palmer 1970) K/Ar ages of 1060 to 730 m.y. quoted. Results obtained from the Nipigon (**010151**) and Thunder Bay (**010152**) areas. In **010153** the directions and poles are averaged giving each unit weight (N=2).

010154 **Gaberones Granite** (Evans 1967) Rb/Sr isochron age of 2340 m.y. cited. Samples obtained over 60 km.

010155 **Pikes Peak Granite** (Spall 1970a) Radiometric ages both Rb/Sr and K/Ar in the range 1020 to 1040 m.y. Sites given unit weight (N=4). Some specimens have been partially remagnetized presumably during Laramide Orogeny.

010156 **Egersund Dolerites** (Storetvedt 1966, Storetvedt Gidskenhaug 1968) Earlier paleomagnetic work suggested a Tertiary age. This now revised to Precambrian. Divergence from present field previously ascribed to secular change and sudden emplacement and this is now considered unlikely.

010157 **Arbuckle Granites** (Spall 1968, 1970b) Radiometric ages are in the range 1250 to 1400 m.y. Two granites (Troy and Tishomingo) and a diorite dyke sampled. Directions in the dyke and its baked contact were not consistent. Baked margins in approximate agreement with granites themselves. Result in category B because the error is so large.

010158 **Arbuckle Granites** Spall (1970b) has averaged the poles from the baked Troy Granite and two determinations from the main body of the granites. His calculations are repeated in this entry and the relevant statistics given. Spall considered this mean "a speculative index of the field axis at 1350 to 1400 m.y.".

010159 **Beaver Bay Complex Minnesota** (Beck Lindsley 1969) K/Ar age of 1000 m.y. cited. Sites given unit

weight (N=29). Result based on gabbro samples from the Beaver River (18 sites) and Black Bay (11 sites). Beaver Bay Ferrogabbro also studied, but it is anisotropic, and has systematically lower inclinations, and is not included in the analysis.

010160 **Cook Country Gabbro Minnesota** (Beck Lindsley 1969) Sites given unit weight (N=7).

010161 **Grenville Dykes** (Murthy 1971) Result based on 11 dykes giving each unit weight (N=11). Results from 17 other dykes gave other directions or were directed along the present earths field and were unstable. Instability attributed to titanomaghemite.

010162 **Franklin Diabase** (Fahrig Irving Jackson 1970) Probable mean age for these diabase is given as 675 m.y. in the original. Sites spread over 1500 km in northern Canada and the results are expressed as a mean pole. Unit weight is given to each dyke (N=24). Six dykes from the northeast coast of Baffin Island have different directions and these were attributed to remagnetization during the early Tertiary opening of Davis Strait.

010163 to 010165 **Roraima Dolerite** (Hargraves 1968) Material is difficult to date radiometrically and is only defined in the range about 1500 to 2070 m.y., with the possibility that the upper limit is the more correct. Magnetic cleaning at 300 oe. Twelve sites were highly scattered and did not respond to cleaning. Remaining sites fall into 3 groups, one of which (the Minor Dyke suite **010165**) is geologically separate. Sites distributed over distance of 7°.

010166 **Modipe Gabbro** (Evans McElhinny 1966) Rb/Sr isochron gives an age of 2630 m.y. (McElhinny 1966). Magnetization is extremely stable and is due to the presence of long magnetite inclusions in the pyroxenes (Evans McElhinny Gifford 1968). Samples at contact with Gaberones Granite (**010154**) were magnetized parallel to granite but become parallel to gabbro after a.f. demagnetization in 800 oe. Sites given unit weight (N=10). Result indicates that field present in the Archean and that reversals occurred.

010167 **Rocks from El Paso Texas** (Spall 1971) Result is an average (N=4) of results from the Red Bluff Granite (5 sites), Franklin Mountain Rhyolite (3 sites), Fusselman Canyon Diabase (3 sites), and Castner Marble hornfelsed by the granite. Cobbles from recent conglomerates have random directions, as have samples from a tuffisite horizon at the base of the rhyolite pile. Rb/Sr isochron from the granite and rhyolite give 953 m.y.

010168 **Cobalt Group Sediments** (Symons 1967b) There is some indication from a conglomerate test that the remanence is primary. The result is placed in B category since it is based on fewer than 10 samples. Samples obtained from mines through a thickness of about 30 m. Samples given unit weight (N=8).

010169 **Upper Slate Cobalt Group** (Symons 1967b) Stated that samples were contact metamorphosed by the Nipissing Diabase. Entered in B because only 4 samples.

010170 **Nipissing Diabase 1** (Symons 1967b) Sill near Cobalt Ontario. It is stated that "the time of intrusion is indicated by one K/Ar radiometric age of 2095 m.y. and 6 Rb/Sr dates on felspar and the whole rock of 2170 m.y.".

010171 **Nipissing Diabase 2** (Symons 1970) Cobalt Ontario. Stated to be "about 2140 m.y.". Whole rock Rb/Sr age of 2180 m.y. and biotite K/Ar age of 2095 m.y. are quoted.

010172 **Sherman Granite and other Igneous Rocks** (Eggler Larson 1968) Front Ranges Colorado. Rb/Sr isochron of 1410 m.y. cited. Samples spread over 16 km. Unit weight given to samples (N=14).

010173 and 010174 **Malvernian Rocks and Warren House Series** (Brooks 1963) Results uncorrected for geological dip which is very steep. Placed in B because of the uncertainty about the dip correction. If corrected for 90° westerly dip (geological evidence indicates that the Malvern Hills are the vertical limb of a N-S monocline) author states that results agree with those from Longmyndian.

010175 to 010177 **Lower Sinian** (Liu Ch'un Liu Haishan 1965, quoted in Liu Ch'un Feng Hao 1965) Two results, one from Xiuning Series and one from Lianto Series listed.

010178 **Lower Sinian Sandstones** (Liu Ch'un Feng Hao 1965)

010179 **Lower Sinian Sandstones Combined** Directions and poles in **010175** to **178** combined giving each unit weight (N=4).

010180 to 010187 **Keweenawan Intrusive Rocks** (Beck 1970) Four rock units (**010180** to **010183**) Sampled near Duluth, and 3 units (**010184** to **010186**) from further north in Cook county. A north to south streaking of poles is evident from both locations. Following age determinations cited: K/Ar 950 to 1200 m.y., Rb/Sr 1100 m.y., and Pb 1100 m.y. In entry **010187** these units are averaged giving each

unit weight (N=7). Helsley (1965) gave a pole for the Endion Sill which was near 27.5°N, 178°W.

010188 **Serra Ancha Diabase** (Helsley 1965a) Result from the S W USA available in abstract only. Age of 1100 m.y. cited.

010189 **Keweenawan Diorite** (Symons 1967c) In B category because the number of samples is fewer than 10. Author believes magnetization acquired after folding.

010190 **Keweenawan Diorite** (Symons 1967d)

010191 **Iron Formation Lake Superior** (Symons 1966) Three Middle Animikee formations (Gunflint, Biwabik, and Deerwood iron formations) were sampled. These unconformably overlie the Archean and are unconformably overlain by Keweenawan rocks. Radiometric age determinations suggest age of 1700 to 2300 m.y. Results from Biwabik and Deerwood iron formation of the Mesabi and Cuyana ranges respectively, have directions which tend toward the present field direction and the author interpreted this as due to weathering in the Mesozoic or Cenozoic. Only the Gunflint gave coherent data.

010192 and 010193 **Hematite Ore and Associated Rocks of the Vermilion Range Minnesota** (Symons 1967e) The Soudan Formation "are found as infolded sediments within the Ely Greenstones". Both are considered to be of Keewatin age. This preliminary survey indicates that magnetizations were acquired after deformation and directions are given with respect to horizontal. Other results from Soudan Iron Formation given in **010194**. In **010192** results from 5 sites averaged giving each unit weight (N=5). In **010193** 2 sites are averaged giving each unit weight (N=2).

010194 **Soudan Iron Ores and Andesites** (Symons 1967e) These are surface samples whose directions are given with respect to bedding. After correction for folding the precision parameter improves from 6 to 13 indicating post-folding magnetization.

010195 and 010196 **Negaunee Iron Ore** (Symons 1967c) Results from magnetite bands at the Cliff-Shaft Mine, Marquette Range of Michigan (**010195**), and hard hematite (**010196**). Directions corrected to bedding. Results also given from various rock units from the Caland and Steep Rock Mines in Canada. Placed in B because of the small number of samples.

010197 **Diabase Dykes Hame** (Neuvonen 1967) Direction close to present field and author suggests magnetization secondary. Dykes cut the Sveco-Fennian basement (dated at 1800 m.y.) and their age is "possibly somewhat more than that of the Rapikivi Granite", (1640 m.y.). Samples obtained over 100 km. Samples given unit weight (N=19).

010198 **Ava Intrusives Aaland Island** (Neuvonen 1970) Samples obtained from ring complex. Results based on samples of monzonite (12 sites), granite (1 site), and diabase (2 sites) from 15 sites each given unit weight. Pb/U age of about 1830 m.y. is cited in an addendum to the original.

010199 **Market Diabases** (Neuvonen Grundstrom 1969) These dykes are "younger than Rapikivi granite". Sites given unit weight (N=9).

010200 **Föglo Diabase** (Neuvonen Grundstrom 1969) Stated that the "age uncertain but probably somewhat older than Rapikivi Granite". Sites given unit weight (N=8).

010201 and 010202 **Kumlinge Diabase** Dykes stated to be "clearly older than Rapikivi Granite". Early result (**010201**) given by Neuvonen and Grundstrom (1969) updated by Neuvonen (1970) with the addition of 2 new dykes. Sites given unit weight.

010203 **Red Sandstones Morocco** (1) (Tarling Sutton 1967) Entered in B the samples being fewer than 10.

010204 **Red Sandstone Morocco** (2) (Tarling Sutton 1967) Eo-Cambrian to Lower Cambrian. Entered in B because the error exceeds 20° .

010205 **Michikamau Anorthosite Labrador** (Murthy Fahrig Jones 1968) K/Ar age of 1400 m.y. cited. Sites given unit weight (N=6).

010206 **Widgiemooltha Dyke Suite Western Australia** (Evans 1968) Rb/Sr isochron age of 2420 m.y. cited. Sites given unit weight (N=11). Eleven sites from 4 dykes. Samples obtained over 120 km.

010207 to 010210 **Mount Goldsworthy Iron Deposits** (Porath Chamalaun 1968) Point Hedland Australia. Unit weight given to samples. Demagnetization of pilot specimens did not cause appreciable change in direction. Precambrian age inferred from directions of magnetization.

010211 and 010212 **Hammersley Iron Province** (Porath Chamalaun 1968) Archean. Hematite ore.

010213 **Koolyanobbing Iron Ores** (Porath Chamalaun 1968) Archean Dowd's Hill Deposit. Samples given unit weight (N=35).

010214 to 010216 **Middleback Ranges Hematite Ores** (Chamalaun Porath 1967) Archean. Groups with positive and negative inclinations recognized at Iron Monarch.

010217 **Ventersdop Lavas** (Jones Walford Gifford 1967) Sampling at two levels (at least three flows) in a mine, Cape Province. Authors cite age of "around 2100 m.y.".

010218 and 010219 **Lower Marinoan Sandstone Adelaide System** (Briden 1967c) both entered in B because of the few samples.

010220 **Bass Limestone Grand Canyon Series** (Runcorn 1964) Entered in B because the number of samples is fewer than 10. Thickness sampled is 10 m.

010221 **Bass Limestone Combined** The directions and poles of entries **010014** and **010220** are combined giving each unit weight (N=2). Thickness spanned is about 100 m.

010222 **Hakatai Shale Grand Canyon Series** (Runcorn 1964) Thickness sampled is 10 m. Placed in B because number of samples fewer than 10.

010223 **Grinnell Formation 3 Belt Series** (Runcorn 1964) Placed in B because number of samples is fewer than 10.

010224 **Missoula Group Belt Series Montana** (Runcorn 1964) Thickness sampled is 130 m.

010225 **Belt Series Combined 1** Directions and poles **010021** to **010026**, **010028** to **010030**, **010223**, **010224** are combined (N=11).

010226 **Uinta Mountain Group Utah** (Runcorn 1964) Placed in B category because it is based on fewer than 10 samples. Samples span 10 m.

010227 **Big Cottonwood Formation Utah** (Runcorn 1964) Entered in the B category because the number of samples is fewer than 10. Thickness sampled is about 300 m.

010228 to 010230 **Pioneer Shale Apache Group Arizona** (Runcorn 1964) Samples obtained from 3 localities.

010231 **Precambrian Sediments of S W USA Combined.** In this entry unit weight is given to **010013**, **010014**, **010018**, **010220**, **010226** to **010230** to obtain average directions and poles (N=9). Results from Hakatai shale **010016**, **010017**, and **010222** are not included because they are inconsistent with one another.

010232 to 010236 **Red Beds of Wisconsin and Minnesota** (Runcorn 1964) Samples from 2 localities in Barron Quartzite (at each of which a thickness of about 30 m was sampled) and 2 localities in Sioux Quartzite (about 10 m sampled at each). Placed in B because individually they are all based on fewer than 10 samples. In **010236** the directions and poles of the previous 4 entries are averaged giving each unit weight (N=4).

010237 **Jotnian Dolerite** (Neuvonen 1965) Samples obtained over 60 km. K/Ar ages of 970 and 1330 m.y. are cited but an older age is preferred by the author.

010238 **Vaasa Dolerite** (Neuvonen 1966) This is "generally assumed to be of Jotnian age".

010239 **Volcanics and Tuffs St. Francois Mountains** (Chi-Hsu Anderson Scharon 1966). Age of these rock units is presumably comparable to those in **010240**. Rocks are devitrified volcanics. Mean direction and pole calculated from Table 1 of the original giving unit weight to each site (N=11).

010240 **Igneous Rocks St. Francois Mountains Missouri** (Hays Scharon 1966) Samples obtained from 3 rhyolite, 1 diabase and 1 andesite units. Result calculated giving unit weight to each (N=5). Rb/Sr age of 1300 m.y. for associated granites is cited.

010241 **Igneous Rocks St. Francois Mountains Combined** Calculated by giving unit weight to each (5) of the results in entry **010240** and the result in entry **010239** (N=6).

010242 **Post-Waterburg Diabase** (Jones McElhinny 1966) K/Ar ages between 600 and 1250 m.y. cited. Sites given unit weight (N=3). Samples distributed over 600 km.

010243 **Van Dike Mine Dolerite Dyke** (Jones McElhinny 1966) K/Ar age of 1120 m.y. cited. Entered in B because it is based on too few samples.

010244 **Stillwater Complex Montana** (Bergh 1970) Author states that "the most reasonable estimate for the age–thus appears to be 3100 m.y.". He also states that "regional metamorphism–occurred between 2600 and 2700 m.y." and that "the magnetization–most probably relates to the time of initial cooling (3100 m.y.)". Directions corrected for the dip of layering (50° to 80°) assumed to have been horizontal at the time of cooling. Samples collected from 15 localities, 9 of which gave consistent results after a.f. demagnetization. Most stable magnetization associated with plagioclase-rich phases.

010245 **Dolerites and Basalts Dalarna Sweden** (Dyrelius 1970) Age determination of 1200 m.y. cited. Result is entered in B category since it is based on fewer than 10 samples.

010246 **Banded Hematite** (Mishra 1965 quoted in Athavale *et al.* 1970) Age cited as 750 to 950 m.y. Average of sites is quoted here, from which a pole is calculated.

010247 to 010249 **Charnokites** (Bhimasankaram 1964) These rocks are described as the Visakhapatnam Charnokites (1 and 2) and the C. Kondapalle Charnokites (3). Age of 1300 to 1520 m.y. is cited but an age range of 1650 to 1800 m.y. is described as "more realistic" in the Geophysical Journal pole list. Entered in B category because they are based on fewer than 10 samples. Declination in **010249** is approximate only.

010250 **Chitloor Dyke** (Prasad 1966 quoted in Athavale *et al.* 1970) Age range of 1100 to 1200 m.y. is cited. Average of 3 site direction (one reversed and two normal) and a pole from this is calculated. Entered in B because it is based on fewer than 10 samples.

010251 **Cuddupah Sediments** (Prasad 1966 quoted in Athavale *et al.* 1970) Age range of 1400 to 1600 m.y. is cited. Two sites sampled, and a mean direction and pole has been calculated from them. Placed in A category although the number of samples is not stated; it is probably about 10.

010252 **Hyderabad Dyke** (Verma Pullaiah Hasnain 1968) Samples given unit weight (N=13). Samples obtained, from what is probably the same body over 2 km.

010253 **Deza Mountain Syenite** (McElhinny Briden Jones Brock 1968) Precambrian to Cambrian. Entered in B because the number of samples is less than 10. Directions suggest a comparable age to the Ntonya Ring Structure (**020043**).

010254 **Jotnian and Upper Dala Rocks** (Mulder 1971) Give K/Ar ages which are younger than their true age (**010098** to **010100**) and are thought by the author to have been remagnetized during the Caledonian Orogeny. Eight sites are supposedly affected in this way and the average of them is given here (N=8). This remagnetization hypothesis has been questioned by Neuvonen (1970).

010255 to 010257 **Jotnian Sandstones** (Katseblin 1968) Th/Pb and K/Ar ages of 1850 to 1950 m.y. cited. Dolerites intruding the Jotnian are said to be 1600 to 1800 m.y. Two sections sampled, the first (**010255**) about 100 m thick, and the second (**010256**) about 1000 m thick. In **010257** the average of directions and poles of two previous entries is given.

010258 **Oslyansk Series** (Vlassov Popova 1968) Entered in B because it is based on fewer than 10 samples.

010259 **Tinguisik Series** (Vlassov Popova 1968) Obtained by averaging the means from 3 localities (N=3).

010260 **Sukhopit Series** (Vlassov Popova 1968) Result obtained by combining mean directions from 3 localities: Pogoryin Suite 170,+22; Uderei Suite 174,+20; Gorbilok Suite 178,+31; giving each unit weight (N=3).

010261 **Keweenawan Gabbro Mellen Wisconsin** (Books White Bec 1966) Sites given unit weight (N=14).

010264 **Duluth Gabbro** (Jahrein 1965) Rb/Sr age of 1115 m.y. cited for Duluth Gabbro Complex. (Faure *et al.* 1969) Sites given unit weight (N=7). Abstracted from Geophysical Journal list.

010265 **Duluth Diabase** (Jahrein 1965) Sites given unit weight (N=4). Abstracted from Geophysical Journal list.

010266 **Basalts Beaver Bay** (Jahrein 1965) Site given unit weight (N=4). Entered in B because the error exceeds 20°. Abstracted from Geophysical Journal list.

010267 **Sediments** (Bucha 1965) Upper Proterozoic to Eo-Cambrian. Sites given unit weight (N=7). Placed in the B category because the error exceeds 20°.

010268 and 010269 **Logan Dykes and Sills** (Robertson and Fahrig 1971) K/Ar ages range from 730 to 1060 m.y. and from analysis of these it is stated that these intrusions occurred between 1000 and 1100 m.y. There is field evidence that the dykes post-date the sills. **010268** 15 dykes sampled in two localities 60 km apart, **010269** 12 sites from at least 3 sills over a distance of 150 km. Two samples of baked sediment near to the sill gave directions parallel to the sill.

010271 **Nipissing Diabase 3** (Symons 1971c) Sheets in the Blind River – Elliot Lake area of Ontario. Whole rock Rb/Sr isochron of 2155 m.y. is quoted, and author believes that magnetization dates from this time. Rb/Sr isochron age on feldspars of 1700 m.y. and whole rock K/Ar ages (mean 1508 m.y.) are quoted; these presumably reflect late metamorphic events. Placed in B because error exceeds 20°.

010272 **Nipissing Diabase 4** Selected sites from Symons (1971c) in sheets Blind River – Elliot Lake area. Means of 4 sites (14, 15, 16, 18) are averaged giving each unit weight. Direction is not dissimilar from that observed in rocks about 1700 m.y. old and may correspond to the younger ages cited in **010271**.

010273 **Nipissing Diabase 5** (Symons 1971c) Dykes in Blind River – Elliot Lake area. Four whole rock K/Ar ages quoted in the original and gave an average of 1600 m.y. Author states that the dykes were intruded probably during a single polarity interval about 1995 m.y. ago, corresponding to the oldest K/Ar age.

010275 **Uluntui Suite** (Davydov Kravchinski quoted in Khramov Sholpo 1967) Lower Proterozoic red beds north Baikal.

010276 **Oslyansk Series 2** (Vlassov Popova quoted in Khramov Sholpo 1967) Sinian sediments, Lower Angara Suite, Yenisei Ridge.

010277 **Tungusik Series 2** (Popova quoted in Khramov Sholpo 1967) Sinian sediments, Yenisei Ridge. Presumably supplements **010259**. Primary magnetization determined by "reversal" and "intersection" methods.

010278 **Sukhopitian Series 2** (Popova quoted in Khramov Sholpo 1967) Proterozoic sediments of the Yenisei Ridge. Average of 3 entries (337, −21; 164, +24; 348, −35) from the same Suites as those listed in **010260**, but from a different locality.

010279 **Sukhopitian Series 3 Combined** Average of poles **010260** and **010278** (N=6).

010280 **Burovuya Suite** (Goncharov quoted in Khramov Sholpo 1967) Lower Tunguska River. Absolute age of 925 m.y. cited. Primary magnetization determined by thermal and a.f. demagnetization.

010281 **Katav Suite** (Komissarova quoted in Khramov Sholpo 1967) River Chisheniak. Absolute age of approximately 1000 m.y. cited. Primary magnetization determined by a.f. demagnetization.

010282 **Kokin Suite** (Vlassov quoted in Khramov Sholpo 1967) Lower Sinian sediments Bolshoi Pit River. Absolute age of 1140 m.y. cited. Primary magnetization determined by a.f. demagnetization. Result essentially the same as **010058** and may be from the same beds.

010283 **Lower Sinian Sediments Yakutsk Region** (Sidorova quoted in Khramov Sholpo 1967) Average of 4 results (Bolshaya Lakhanda River Suite 299, +18; Cipanda Suite 296, +25; Malgin Suite 287, +23; Maimakan 303, +32). Primary magnetization determined by a.f. demagnetization.

010284 **Karagasski Suite** (Davydov Kravchinski quoted in Khramov Sholpo 1967) Sinian red beds and carbonatites Sayan region. Primary magnetization determined by the "reversal" and "intersection" methods.

010286 to 010296 **Sudbury Nickel Irruptive** (Larochelle 1969) Results arranged in groups corresponding to sectors arranged clockwise around the oval body. Sector directions are listed with exception of those based on fewer than 3 sites. Regarding origin of magnetization, author says "the hypothesis of primary thermo remanent magnetization appears more likely" than other causes. Results confirm earlier studies of Hood and Sopher in the North and South Ranges and in addition provide detailed information from eastern limb.

010298 and 010299 **Iron Mountain Missouri** (Ehrlich Sun Scharon Soffel 1968) Orebody of high temperature origin. Of samples of ore, andesite, host rock, and later diabase, only ore samples stable. Two groups recognized: **010298** primary hematite ore with less than 2 per cent magnetite; and hematite ore (**010299**) containing more than 2 per cent magnetite formed close to diabase dykes by reduction of primary ore.

010300 **Belt Series Combined 2** B data rejected. Poles **010021** to **010023**, **010026**, (**010028**, **010029**, **010065**, **010067** N=1), **010068**, **010071**, (**010025**, **010070** N=1), **010224** are combined giving each formation unit weight (N=9).

010301 **Upper Dala Volcanics Combined** Mean of **010098** **010254**.

010302 **Jacobsville Sandstone Combined** Mean of **010036** **010075**.

010303 **Nonesuch Shale and Freda Sandstone Combined** Mean of **010037** **010133**.

010304 **Copper Harbour Lavas Combined** Mean of **010038** **010132**.

010305 **Portage Lake Lavas Combined** Mean of **010039** **010131** **010148**.

010306 **North Shore Volcanics Reversed Combined** Mean of **010145** **010149**.

010307 **Beaver Bay Rocks Combined** Mean of **010159** **010266**.

010308 **Keweenawan Intrusives Combined** Mean of **010160** **010180** to **010183** **010261** **010079** **010184** **010264** **010265** (N=10).

010309 **Logan Sills Reversed Combined** Mean of **010151** to **010152** **010081** **010186** **010269** (N=5). A possible polar trend may be present within this group.

010310 **Alona Bay Lavas Combined** Mean of **010084** **010139**.

010311 **Mamainse Lavas Normal Combined** Mean of **010080** **010141**.

010312 **Coronation Sills** (Robertson Baragar 1972) Mean K/Ar age of 647 m.y. quoted. Thirteen sills with agreggate thickness of about 1400 m sampled over distance of 120 km. Results from 2 other sites in islands to north also quoted.

010313 **Franklin Diabase Combined** (Robertson Baragar 1972) Results of **010162** and **010312** combined giving site poles unit weight (N=37).

010314 **Mugford Volcanic Series Labrador** (Murthy Deutsch 1972) Single K/Ar determination of 948 m.y. quoted. Direction corrected to "bedding". Samples unit weight N=16.

010315 **Labrador Dyke** (Murthy Deutsch 1972) Single dyke. K-Ar age 958 m.y. quoted.

010316 **Indian Harbour Dyke Swarm** (Murthy Deutsch 1972) Single K-Ar age of 2080 m.y. quoted.

010317 **Tarendo Acid Rocks** (Cornwell 1968) Granite, syenite and migmatite near **010319**.

010318 **Ylivieska Gabbro** (Puranen 1960) Age probably ~ 2000 m.y.

010319 **Tarendo Gabbro** (Cornwell 1968) Minimum age of 1775 to 1845 m.y. and maximum age of 2000 m.y. quoted.

020032 **Porphyrites Czechoslovakia** (Andreyeva Bucha Petrova 1965) Upper Cambrian rocks regarded by the authors as "metastable" and in need of cleaning. Entered in B.

020033 **Jince Beds Czechoslovakia** (Bucha 1965) Middle Cambrian. Calculated giving unit weight to each site (N=5). Placed in B because the error is so large.

020034 **Glubshsky Conglomerate** (Andreyeva Bucha Petrova 1965) Lower-Middle Cambrian. Result placed in B being based on fewer than 10 samples.

020035 **Sadecky Beds** (Andreyeva Bucha Petrova 1965) Lower-Middle Cambrian.

020036 **Bogutinsky Sandstone** (Andreyeva Bucha Petrova 1965) Lower-Middle Cambrian. No numerical data was given and the direction has been estimated graphically. For this reason the result is entered in B.

020037 **Hlubos and Sadek Beds** (Bucha 1965) Lower Cambrian. Sites given unit weight (N=14).

020038 **Red sediments** (Creer 1964a 1964b 1965) Cambrian or Precambrian. Supersedes entry **020029**. Samples given unit weight (N=17).

020039 See **030002**

020040 See **010005**

020041 See **090040**

020042 See **090041**

020043 See **010127**

020044 **Purple Sandstone Salt Ranges Pakistan** (McElhinny 1970) Lower Cambrian. One locality near Khewra spanning 30 m. Specimens from one sample gave two directions (one normal and one reversed). Unit weight given to directions observed (N=13).

020045 **Wichita Granites Oklahoma** (Spall 1968, 1970b) Radiometric ages given of 525 m.y. cited. Result is puzzling as the mean direction obtained after a.f. cleaning in 700 oe. (115,+22; α_{95}=21°; pole 13°N,147°E) does not agree well with that after thermal demagnetization at 500°C (given here).

020046 **Red Sandstone Michigan** (Symons 1967d) Cambrian. Placed in B because there are fewer than 10 samples.

020047 See **010204**

020048 **Red Sandstone 3** (Tarling Sutton 1967) Lower Cambrian. Entered in B because it is based on few samples.

020049 **Volcanics and Sediments of Tasmania** (Briden 1967a) Cambrian. Directions given with respect to horizontal. Precision decreases significantly after application of fold test and the magnetization is believed to be secondary and to date from the Tertiary. For this reason the result is entered in B. Sites spread over 20 km. See **110187**.

020050 **Sediments from Kangaroo Island** (Briden 1967c) Cambrian. Precision decreased significantly after correction for folding and n.r.m. is believed to be secondary, probably of Tertiary age. For this reason result entered in B. See **110187**.

020051 See **010253**

020053 **Hook Intrusives** (Brock 1967) Rb/Sr age of associated granite is 500 m.y. (Cambro-Ordovician). Sites given unit weight (N=3). Samples of gabbro, syenite, and diorite were collected over 100 km. Entry placed in B because error exceeds 20°.

020054 **Basement Rocks Wichita Mountains Oklahoma** (Ku Sun Soffel Scharon 1967) Rb/Sr ages of 520 to 560 m.y. cited for these granitic rocks. Authors regard the magnetization as c.r.m. (owing to secondary hematite), acquired during the Carboniferous orogenesis. Entered in B category. Sampling sites spread over 60 km each given unit weight (N=8).

020055 to **020056** **Upper Lena Suite** (Rodionov 1966) Upper Cambrian. Localities are: **020055** Upper Lena,

020058 Smeyinova, 020057 Upper Lena, 020058 Angara and Oka Rivers.

020059 **Cambrian Sandstones North Korea** (Gurariy Kropotkin Pevzner Ro Trubikhin 1966) Two results are given from Middle (170,+62) and Lower (160,+54) Cambrian sandstones. The average of these is entered.

020060 **Verkholensk Series** (Gurariy Trubikhin 1968) Upper Cambrian red beds. Mean of results from 3 levels each given unit weight (N=3).

020061 **Evenkiy Series Siberia** (Gurariy 1969) Lower Cambrian.

020065 **Bradore Formation Newfoundland** (Black 1964) Cambrian. Samples given unit weight (N=10).

020066 **Ratcliffe Brook Formation** (Black 1964) Cambrian. Samples given unit weight (N=12).

020067 **Porphyries and Sediments** (Bucha 1965) Upper Cambrian. Placed in B because error exceeds 20°.

020068 **Caerfai Series** (Briden Irons Johnson 1970) Samples spread over 1 km and through 100 m. Directions unchanged in fields up to 1500 oe. Sites given unit weight (N=16).

020069 **Antrim Plateau Basalts** (McElhinny Luck 1970) Basalts post-date shales dated at 666 m.y. and underlie late Cambrian sediments and generally regarded as early Cambrian. Samples collected over 500 km. Sites given unit weight (N=14).

020073 **Antarctic Gneisses Ongul Island** (Kaneoka Ozima Ozima Ayukawa Nagata 1968) Pb/U ages range 375 to 485 m.y. Rb/Sr ages on biotite range 500 to 530 m.y. Whole rock and mineral K/Ar ages range 350 to 421 m.y. If magnetization is referred to Rb/Sr ages it is Cambrian. If referred to K/Ar ages it is Siluro-Devonian. Magnetic results appear to be an updating of (**030009**). Directions of sites and poles listed in Table 3 in original are averaged, giving each unit weight (N=3). Result computed from reversed samples, normally magnetized samples being unstable.

020075 to 020079 **Lamotte Formation** Missouri (Al-Khafaji Vincenz 1971) Upper Cambrian. Seven localities. Directions fall into 4 groups. Group E from brownish coarse sandstones is believed to have a secondary c.r.m. being magnetized near the expected Carboniferous field; the magnetization is associated with homogenous ilmeno-hematites. Group IIa and b from white fine-grained sandstones are considered to represent the Upper Cambrian field; the magnetization is associated with hematite and is considered to be an original d.r.m. **020078** is IIa and b combined. Group I (**020075**) is of uncertain origin.

020080 **Asha Suite Basa River Formation** (Komissarova quoted in Khramov Sholpo 1967) Middle Cambrian. Absolute age of 570 m.y. cited. Average of 4 results (Beloretsk Highway 061,-33; R. Inzer 060,-36; R. Rau 037,-38; R. Belaya 043,-15). Note that previous results from Asha stage indexed in Ordovician **030004**. Primary magnetization determined by "reversal" method and a.f. demagnetization.

020081 to 020083 **Lena Stages B to D** (Goncharov and Sidorova quoted in Khramov Sholpo 1967) Middle Cambrian. Relation of these data to **020028** and **020055** to **020058** not explained. Primary magnetization determined by a.f. demagnetization.

020084 **Kostino Suite** (Goncharov quoted in Khramov Sholpo 1967) Lower to Middle Cambrian? Primary magnetization determined by a.f. demagnetization.

020085 **Cambrian and Cambro-Ordovician Red Beds** (Creer 1970c) Samples given unit weight (N=13). Although it is not made clear in original it appears that this result supersedes **020030** and **030024**.

020087 to 020092 **Upper Lena Suite** (Rodionov Sidorova Vlassov Davydov Kravchinski Goncharov quoted in Khramov Sholpo 1967) Upper Cambrian red sediments. Primary magnetization determined by a.f. demagnetization and by reversal method.

020093 **Upper Cambrian Undifferentiated Rocks** (Goncharov quoted in Khramov Sholpo 1967). Primary magnetization determined by demagnetization.

020094 to 020096 **Maiyan Stage** (Goncharov Sidorova quoted in Khramov Sholpo 1967) Middle Cambrian. Rivers Koliumbe, Sukharikha, and Aldan, respectively. Primary magnetization determined by demagnetization.

020097 to 020099 **Middle Cambrian Sediments** (Sidorova quoted in Khramov Sholpo 1967) Grey and red shales, marls and limestone from Rivers Maiya, Maiya, Lena respectively. Primary magnetization determined by thermal demagnetization.

030009 See **090041**

030011 **Zahoramy Beds Czechoslovakia** (Andreyeva Bucha Petrova 1965) Upper Ordovician. Stability of pilot samples determined by demagnetization.

030012 **Sediments Czechoslovakia** (Bucha 1965) Upper Ordovician. Unit weight given to 7 sites (N=7). Error exceeds 20° and result placed in B category.

030013 **Oolitic ores 1 Czechoslovakia** (Andreyeva Bucha Petrova 1965) Lower Ordovician. Stated that stability was studied by demagnetization. Compare **030014**.

030014 **Oolitic Ores 2 Czechoslovakia** (Andreyeva Bucha Petrova 1965) Lower Ordovician. Stated that stability was determined by demagnetization studies. Relationship of this result to that obtained from similar rock **030013** is uncertain; the directions disagree.

030015 **Krusne Hory Beds** (Andreyeva Bucha Petrova 1965) Lower Ordovician. Stability studied by demagnetization techniques. Entered in B category because polar error is large.

030016 **Red Sediments and Diabase Czechoslovakia** (Bucha 1965) Lower Ordovician. Unit weight given sites (N=12). Relationship of this result to **030013**, **030014**, **030015** is not clear.

030023 See **090040**

030024 See **020030**

030025 See **020031**

030026 **Sandstone Tasmania** (Briden 1967a) Ordovician. Directions given with respect to horizontal. Precision decreases significantly after correction for folding and magnetization is therefore secondary and probably of Tertiary age. Entered in B. Sites spread over 160 km. See **110187**

030028 **Ciombra Volcanics** (van der Voo 1969) Entered in the B category being based on fewer than 10 samples.

030030 See **020053**

030031 **Borrowdale Volcanics** (Nesbitt 1967 and private communication) Middle Ordovician (Llanvirn-Llandeilo). Seven flows, 7 samples. Result placed in B being based on fewer than 10 samples.

030032 **Builth Volcanic Series** Llanelwedd Wales (Nesbitt 1967 and private communication) Middle Ordovician (Upper Llanvirn). Result placed in B being based on fewer than 10 samples.

030033 **Middle Ordovician Volcanics Britain.** Poles for **030031** and **030032** are combined giving each unit weight (N=2).

030034 **Arenig Lavas Girvan** (Nesbitt 1967) Lower Ordovician. Magnetization referred to the present horizontal. Author argues that the magnetization may "correspond to the age of the folding". Samples given unit weight (N=12).

030035 **Intrusives Sør Rondane Mountains Antarctica** (Zidjerveld 1968) Ordovician. Rb/Sr ages on biotites give a mean age of 480 m.y., the age of the final thermal event. Three sites (granite, monzonite, syenite) sampled over 50 km each given unit weight (N=3).

030036 See **020073**

030037 to 030039 **Upper Ordovician Red Beds Siberian Platform** (Rodionov 1966) Entries **030038** and **030039** from the Lena River.

030040 and 030041 **Middle Ordovician Sediments Siberian Platform** (Rodionov 1966) Two results available from the Mangazeika Suite, 1 from the Upper (**030040**) and 2 from the Middle (**030041**) Lena.

030042 and 030043 **Krivaya Luka Stage 1 and 2** (Rodionov 1966) Middle Ordovician sediments River Lena. Primary magnetization estimated by a.f. demagnetization and "reversal" method.

030044 **Ust-Kutsk Stage 3** (Rodionov 1966) Lower Ordovician red beds, Upper Lena River.

030045 **Chunya Stage 1** (Rodionov 1966) Lower Ordovician limestones and sandstones Ilim River.

030046 **Ignimbrites Killary Harbour** (Deutsch Somayajulu 1970) Middle Ordovician. Samples from 4 bands each given unit weight (N=4). Sampled over distance of 10 km.

030047 **Skomer Volcanic Group** (Briden Irons Johnson 1970) Upper Ordovician or Lower Silurian. Result based on 10 sites each given unit weight (N=10). Samples spread over 3 km and thickness of 55 m. Magnetization in situ parallel to Late Paleozoic field and may be secondary.

030048 **Junduckin Formation** (Luck 1970) Early Ordovician. Sites given unit weight (N=7).

030050 See **040015**

030051 **Dolbor Stage 2** (Sidorova quoted in Khramov Sholpo 1967) Middle to Upper Ordovician red sediments River Niuya. Primary magnetization estimated by "reversal" method. Presumably **030039** are earlier data from these rocks.

030052 See **020085**

030053 **Ordovician Sediments** (Creer 1970c) Discs given unit weight (N=42). Stated that this result mistakenly referred to as Devonian in previous reviews by the author. Result may supersede **050051**, but the directions are very different.

030054 **Red Sediments Bolivia** (Creer 1970d) Ordovician. Several different pole results given. Author prefers the one given here.

030056 **Ust-Kutsk Stage 2** (Vlassov quoted in Khramov Sholpo 1967) Lower Ordovician carbonate sandstone of Angara region. Numerically very similar to **030010** which is data of Popova. Primary magnetization determined by "reversal" method.

030057 to 030059 **Kurkuat bed of Asha River Suite 2 to 4** (Komissarova quoted in Khramov Sholpo 1967) Mid-Ordovician to Lower Silurian red sandstone. Primary magnetization determined by a.f. demagnetization.

030060 **Diabases North Serginski District** (Karmanova quoted in Khramov Sholpo 1967) Middle to Upper Ordovician. Primary magnetization determined by thermal demagnetization.

030061 and 030062 **Krivaya Luka Suite 3 and 4** (Rodionov and Goncharov quoted in Khramov Sholpo 1967) Middle Ordovician sediments of River Lena (**030061**) and River Kuliumbe (**030062**). Primary magnetization estimated by "reversal" method and a.f. demagnetization.

030063 to 030065 **Lower Ordovician Sediments near Leningrad** (Komissarova quoted in Khramov Sholpo 1967) Primary magnetization determined by a.f. demagnetization.

030066 **Chunya Stage 2** (Goncharov quoted in Khramov Sholpo 1967) Ordovician sediments River Kuliumbe. Primary magnetization determined by demagnetization.

030067 **Undifferentiated Rocks** (Goncharov quoted in Khramov Sholpo 1967) Lower Ordovician R. Kureika. Primary magnetization estimated by demagnetization.

040014 **Chergaka Suite** (Popova 1963 data of Vlassov quoted in Khramov Sholpo 1967) Green to grey aleurolites and sandstones Tuva Basin.

040016 **Diabase Czechoslovakia** (Andreyeva Bucha Petrova 1965) Upper Silurian. This and entry **040017** may result from the same collection but this is not made clear in originals. Authors regard rocks as unstable and say that the "results must be regarded with great caution". Entered in B category.

040017 **Diabase Czechoslovakia** (Bucha 1965) Upper Silurian. Unit weight given to samples (N=25). Direction close to Permian field and may therefore be secondary. Entered in B. See **040016**.

040018 **Urucum Formation** (Creer 1965) Silurian. Result based on 23 thermally demagnetized arkose samples. Stability indicated by divergence from the present field. Samples given unit weight. Supersedes entry **040015**.

040019 **Andesites of Atienza** (van der Voo 1967) Upper Silurian. Result based on 33 samples from 6 sites distributed among at least 4 flows over about 5 km. Samples magnetically cleaned. Sites given unit weight (N=6).

040020 **Volcanics of Almaden** (van der Voo 1967) Lower Silurian. Result based on 10 samples from 2 flows 11 km apart. Samples given unit weight (N=10).

040021 See **020001**

040022 See **050032**

040023 See **090040**

040024 See **050050**

040025 See **020031**

040027 **Bloomsburg Formation** (Irving Opdyke 1965, Roy Opdyke Irving 1967) Upper Silurian red beds. Precision greatly increases after correction for folding. Sites (given unit weight (N=9)) spread over 250 km. Less stable southerly component regarded by authors as Appalachian (Permian) age.

040029 See **020073**

040030 **Ringerike Sandstone** (Storetvedt Halvorsen Gjellested 1968) Late Ludlovian to Early Downtonian. N.r.m. agrees well with the Permian field direction, but after thermal cleaning a normal direction is obtained. Result entered in B because it is based on fewer than 10 samples.

040031 **Table Mountain Series** (McElhinny Briden Jones Brock 1968) N.r.m. is thought to be of recent origin and the result entered in B.

040032 **Mugga Mugga Porphyry** (Briden 1966) Upper Silurian to Lower Devonian. Samples given unit weight (N=17).

040033 See **030047**

040034 **Arrochar Intrusive Complex** (Briden 1970) Mean K/Ar age of 418 m.y. Result based on samples from 6 sites (one in contact Dalradian rocks) each given unit weight (N=6).

040035 **Carabal Hill Glen Fyne Complex** (Briden 1970) K/Ar and Rb/Sr ages average 415 m.y. Placed in B category because the error exceeds 20°.

040037 **Red and Green Aleurolites Lena River** (Rodionov quoted in Khramov Sholpo 1967) Lower Silurian. Direction of primary magnetization determined by a.f. cleaning but no details are available. Result very similar to **040007** and may be a revision of it.

040038 See **030009**

040039 and 040040 **Lower Silurian Sediments** (Goncharov quoted in Khramov Sholpo 1967) Primary magnetization determined by a.f. and thermal demagnetization. Wenlock and Llandovery stages.

040041 and 040042 **Upper Silurian Sediments Siberia** (Goncharov quoted in Khramov Sholpo 1967) Ludlow Stage. Primary magnetization determined by a.f. demagnetization but no details given.

040043 to 040045 See **030057** to **030059**

040046 **Grey Dolomites Belaya River** (Komissarova quoted in Khramov Sholpo 1967) Placed in B category because it is based on fewer than 10 samples. Direction of primary magentization determined by a.f. demagnetization.

040047 **Porphyrites River Is and Vyva** (Karmanova quoted in Khramov Sholpo 1967) Upper Silurian to Lower Devonian. Primary magnetization determined by thermal demagnetization.

050007 **Famennian Sediments** (Lin'kova 1963, further data in Khramov Sholpo 1967)

050008 **Upper Frasnian Sediments Lake Ilmen** (Lin'kova 1963, further data in Khramov Sholpo 1967)

050009 **Frasnian Sediments** (Lin'kova 1963, further data in Khramov Sholpo 1967) In earlier reference result referred to Middle Frasnian, in the later reference to the Lower Frasnian.

050051 **Red Beds Salta and Jujuy Provinces** (Creer 1964a, 1964b, 1965) Lower Devonian. Samples given unit weight (N=10). Supersedes **050048**.

050052 **Basaltic Tuff Nakazato Series** (Minato Fujiwara 1963, 1964, 1965) Lower or Middle Devonian. Result entered in B category since the number of samples is fewer than 10.

050053 **Kvamshesten Old Red Sequence** (Lie Storetvedt Gjellestad 1969) Age stated to be "Middle or possibly Upper Devonian". Result based on about 40 samples. It is stated that "deviation in declination of about 15° is thought to have arisen from anticlockwise rotations of this complex, a conclusion which is compatible with geological evidence". Result placed in B.

050054 **Bystrianskaya Altai and Supra-Altai Suites** (Aparin Vlasov 1965) Famennian and Tournasian (Late Devonian to Lower Carboniferous) sediments of Minusinsk Intermontane Depression, Tuva River.

050055 **Oidanovskaya and Kokhai Suites** (Aparin Vlasov 1965) Frasnian (Upper Devonian).

050056 See **020001**

050057 See **040006**

050058 See **040009**

050059 See **090039**

050060 See **090040**

050061 **Lower Devonian Lavas** (McMurry 1970) Result based on 26 sites from 2 localities separated by 100 km (Glencoe 56.7N,5°W; Strathmore-Montrose area 56.7N, 2.5°W). Precision improves from 5 to 17 after correction for folding, which is pre-Upper Devonian, showing magnetization to be Devonian. Sites given unit weight (N=26).

050062 **Lower Devonian Lavas** (Embleton 1968) Midland Valley and Lorne Plateau of Scotland. K/Ar ages of 401 and 406 m.y. cited in Embleton (1970). Sites given unit weight (N=10). Samples from 3 localities spread over 100 km.

050063 See **010254**

050065 **Dotswood Red Beds** (Chamalaun 1968b) Upper Devonian. Magnetization regarded as secondary being acquired during the long interval of reversed polarity during the Late Paleozoic. Result placed in B.

050066 **Perry Formation New Brunswick** (Robertson Roy Park 1968) Upper Devonian. Magnetization is complex and consists of at least 2 components. One of these is considered to be pre-folding (which is Westphalian) and the direction given is the author's best estimate of it.

050067 **Ultrabasic Intrusions of Clicker Tor and Polyphant** (Cornwell 1967a) Upper Devonian or Lower Carboniferous. Mean direction only given and result entered in B.

050068 **Perry Lavas Maine** (Phillips Heroy 1966).

050069 **Housetop Granite and Thermal Aureole** (Briden 1967a) Middle Devonian. Magnetization regarded as of recent age by author and entered in B.

050070 See **040029**

050071 **Okler Suite** (Vlasov Kovalenko 1963) Lower Devonian redbeds. Reversals found at two localities

(Yerlykovka and Kanokler) and this result is the mean of the polarity groups at each (N=4).

050072 **Perry Formation Volcanics** (Black 1964) Upper Devonian. Unit weight given to samples (N=16).

050073 **Perry Formation Sediments** (Black 1964) Upper Devonian. Unit weight given to samples (N=36).

050074 **Clam Bank Group Newfoundland** (Black 1964) Lower Devonian. Unit weight given to samples (N=18).

050075 **Roragen Sandstone** (Storetvedt Gjellestad 1966) Lower Devonian.

050076 **Basic Dykes and Sills Southwest England** (Creer 1966) Devonian or Carboniferous. Bodies are intrusive into Devonian and Lower Carboniferous sediments, but predate Dartmoor Granite. Sites given unit weight (N=18). K/Ar ages range 295 to 372 m.y. Magnetization parallel to the Permian field and is probably secondary. Entered in B.

050077 **Old Red Sandstone Welsh Cuvette** (Chamalaun Creer 1964) Lower Devonian.

050078 See **040032**

050079 **Ashprington Volcanic Series Devon** (Cornwell 1966) Middle and Upper Devonian. Mean of two sites is given. Magnetization is thought to be due to deep weathering in the Late Paleozoic or Triassic. Placed in B.

050080 **Ytteröy Basic Dyke Norway** (Storetvedt 1967) Dyke cuts Ordovician limestone and affected by Caledonian orogeny. Age previously thought to be Permian but magnetization suggests late Caledonian age. Placed in B category because it is based on fewer than 10 samples.

050081 **Barrandian Red Limestone** (Krs 1966, Chulpac Krs 1967) Lower and Middle Devonian. Scatter increases after correction for Upper Devonian folding. Directions close to Permian field and regarded as secondary. Placed in B.

050082 See **040034**

050083 See **040035**

050084 **Effusive Sedimentary Mass Northeast Siberia** (Pecherskiy 1970) Upper Devonian to Carboniferous of Umkuveyem. Placed in B because the error exceeds 20°.

050086 See **040047**

050087 See **030009**

050088 **Upper Devonian Kazakhstan** (data of Beketov quoted in Khramov Sholpo 1967) Famennian limestones. Directions of primary magnetization determined by thermal demagnetization. Placed in B category because the number of samples is fewer than 10.

050089 **Zilayir River Suite** (Karmanova quoted in Khramov Sholpo 1967) Upper Devonian sediments of southern Urals. Direction of primary magnetization determined by a.f. and thermal demagnetization.

050090 **Famennian Red Beds** (Khramov quoted in Khramov Sholpo 1967) Samples from upper reaches of Rivers Lininka and Mda. Direction of primary magnetization determined by a.f. demagnetization. Placed in B because there are fewer than 10 samples.

050091 **Red Bauxites Southern Urals** (Ivanov quoted in Khramov Sholpo 1967) Frasnian. Compare **050017**.

050092 **Bauxites and Hydrohematites Urals** (Karmanova quoted in Khramov Sholpo 1967) Upper Devonian (Frasnian) of Pashnia. Primary magnetization determined by a.f. demagnetization but no details given.

050093 **Red Sediments Rybinsk Basin** (Vlassov quoted in Kramov Sholpo 1967) Upper Devonian (Frasnian). Result numerically similar to **050022**. Primary magnetization determined by "reversal" method.

050094 **Red Sediments Northern Kazakhstan** (Beketov quoted in Khramov Sholpo 1967) Middle and Upper Devonian. Direction of primary magnetization determined by a.f. demagnetization but no details given.

050095 **Red Sediments Krasnoyarsk** (Davydov Kravchinski quoted in Khramov Sholpo 1967) Middle Devonian. Direction of primary magnetization determined by a.f. demagnetization but no details given.

050096 **Red Sediments Rybinsk Depression** (Vlassov quoted in Khramov Sholpo 1967) Middle Devonian (Givetian). Directions and poles numerically identical with **050043** (data of Popova). Primary magnetization determined by "reversal" method.

050097 to 050099 **Middle Devonian of Siberia** (Goncharov quoted in Khramov Sholpo 1967) **050097 050098** River Kureika. **050099** River Koliumbe. Direction of primary magnetization determined by thermal and a.f. demagnetization but no details given.

050100 **Diabase Porphyries and Tuffs Southern Urals** (Danukalov quoted in Khramov Sholpo 1967) Middle Devonian.

050101 **Byskar Series 3** (Vlassov quoted in Khramov Sholpo 1967) Lower and Middle Devonian red sediments of

Rybinsk Depression. Primary magnetization determined by "reversal" method.

050102 **B'yerdar Suite Red Sediments** (Vlassov quoted in Khramov Sholpo 1967) Lower Devonian of Tuva Basin. Directions and poles numerically identical to entry **050041** which is data of Popova.

050103 **Kureika and Zubovian Suites** (Goncharov quoted in Khramov Sholpo 1967) Lower Devonian limestones dolomites and red aleurolites. Direction of primary magnetization determined by a.f. demagnetization studies.

050104 to 050108 **Sediments Dniester Valley** (given in Khramov Sholpo 1967) **050104 050105** red sandstones and aleurolites Volyn (Tretiak). **050106 050107 050108** red sandstones aleurolites and argillites (Pogarskaya). Primary magnetization determined by a.f. demagnetization and "reversal" method. Results from 3 separate horizons.

050109 **Devonian Sediments NE Brazil** (Creer 1970b) Result based on 12 samples from Picos Member, Pimenteirs Formation (Lower Devonian) and Passagem Member, Cabecas Formation (Middle Devonian). Samples given unit weight (N=12).

050110 **Devonian Red Sandstone** (Creer 1970d)

050112 **Lower Devonian Lavas** (Storetvedt Halvorsen 1968) Study of 30 samples from 6 sites allowed no accurate determination of the high stability component to be made but the authors state that it is "slightly east of true north with shallow to moderate negative inclination".

050113 **Red Sediments Dneister Combined** Poles **050011** to **050015** and **050104** and **050108** combined giving each unit weight (N=10).

050114 **Upper Devonian Sediments Leningrad Region** Poles **050007** to **050009** and **050090** combined (N=4).

050115 **Perry Formation Combined** Mean of poles **050073 050066 050072** and **050068** giving each unit weight (N=4).

060059 **Patterson Toscanite** (Irving 1966) Upper Carboniferous. K/Ar age of 298 m.y. cited.

060075 **Sediments of Donbass** (Khramov Andreyeva 1964) Upper Carboniferous. Correction made for secondary magnetization using demagnetization. Placed in B because the number of specimens is less than 10.

060076 **Upper Kuttung Sediments** (Irving 1966) Upper Carboniferous. Samples from 3 formations over 250 km and through a thickness in excess of 450 m. Sites given unit weight (N=18). Samples cleaned in 300 to 500°C. Shown by the fold test to be magnetized prior to the Triassic. Supersedes **060058**.

060077 **Late Paleozoic Reversed Division of New South Wales** Poles for entries **070064** (N=1), **070065** (N=1), **060076** (N=18), **070042** (N=12), **070043** (N=1) combined giving each site unit weight (N=33).

060078 **Irati Formation** (Creer 1964b) Too weakly magnetized. Lowest member of Estrada Nova Group which is cited as Permian. Overlain by the Corumbatai.

060079 **Piaui Formation** (Creer 1964b, 1964a, 1965) Age variously stated in originals to be "Middle-Pennsylvanian" and "Pennsylvanian". Samples given unit weight (N=20).

060080 **Taiguati Formation** (Creer 1964b, 1965) Pennsylvanian red beds. Samples given unit weight (N=38). Number of sites not stated. Collinson (1966) showed from chemical demagnetization that red pigment responsible for NRM.

060081 See **070075**

060082 See **070077**

060083 **Basaltic Tuff Arisu and Ohdaira Series** (Minato Fujiwara 1963, 1964, 1965) Lower Carboniferous. Arisu is Upper Tournaisian. Ohdaira is unfossiliferous but probably Upper Tournaisian or Visean.

060084 **K3 Beds Galula Coalfield** (Opdyke 1964a, McElhinny Opdyke 1968) Upper Carboniferous to Lower Permian red sediments. Regarded as comparable in age to Patterson Toscanite by latter authors. Sites given unit weight (N=5). Samples obtained from thickness of 250 m.

060085 **Red Sediments Prince Edward Island** (Black 1964) Upper Carboniferous to Lower Permian. Magnetic cleaning of pilot specimens in fields up to 300 oe. Mean of directions from 3 localities (N=3).

060086 **Red Beds Prince Edward Island** (Roy 1963, 1966) Upper Carboniferous to Lower Permian. Thermal cleaning at 450°C. Samples collected over 450 km. Sites given unit weight (N=17).

060087 **Pictou Group Nova Scotia** (Roy 1966) Upper Pennsylvanian red sandstones. Sites given unit weight (N=11).

060088 **Bonaventure Formation Gaspe** (Roy 1966) Carboniferous. Sites given unit weight (N=11). See **060068**.

060089 **Diabase Sill, Krakow District** (Birkenmajer Nairn 1964) Upper Carboniferous or Permian. Based on 3 diabase and 2 contact samples, diabase agreeing with contact. Samples given unit weight (N=5). Results given with respect to horizontal. Direction with respect to bedding is (212,+8). Result entered in B category.

060090 See **070109**

060091 See **070110**

060092 See **070111**

060093 See **070112**

060094 **Igneous Rocks, Lower Silesia** (Birkenmajer Grocholski Milewicz Nairn 1968) Upper Carboniferous extrusive and intrusive porphyries of Sudetic Region. Rocks are "all considerably altered", but it is stated that "the current geological view is that the alteration is largely autometamorphism and dates from near the time of formation". Samples obtained over 25 km. Magnetic cleaning in 0 to 255 oe.

060095 **Talchir Series** (Wensink Klootwijk 1968, Wensink 1968) Upper Carboniferous. Samples from 2 localities only one of which gave reliable results. Magnetic cleaning in 300 oe.

060096 **Red Sediments Plenzen Basin** (Birkenmajer Krs Nairn 1968, Krs Pesek Skarov 1967, Krs 1968b) Westphalian C to Stephanian (Upper Carboniferous) red sandstone. Samples given unit weight (N=65). Cleaning at 600°C.

060097 **Red Mudstone Kladno-Rakovnik Basin** (Birkenmajer Krs Nairn 1968, Krs Pesek Skarov 1967, Krs 1968b) Westphalian and Stephanian. Samples given unit weight (N=73).

060098 **Sediments and Igneous Rocks Inner Sudetic Basin** (Birkenmajer Krs Nairn 1968, Krs 1968b, 1966a) Westphalian B to Stephanian sills and flows of porphyry and melaphyre, greywacke, and red beds. Sites given unit weight (N=76). Thermal cleaning at 600°C and magnetic cleaning at 0 to 1000 oe.

060099 **Red Beds of Blanice Graben** (Krs 1968b) Cited as "Stephanian, most likely Stephanian C". Samples given unit weight (N=25). Thermal cleaning at 100°C.

060100 **Red Sediments Bloskovice Graben** (Krs 1968b) Age cited as Upper Stephanian. Samples from Pass Oslavany and several sites near Sbysov. Samples given unit weight (N=40).

060101 **Red Sediments Sud-Krakonose Basin** (Krs 1968b) Stephanian "probably Stephanian C". Samples given unit weight (N=57). Thermal cleaning at "various" temperatures.

060102 **Upper Carboniferous Bohemian Massif Combined** Westphalian and Stephanian. Average of directions and poles in **060096** to **060101**, giving each unit weight (N=6).

060103 **Lower Collio and Auccio Volcanics** (Zijderveld de Jong 1969) Auccio Volcanics are "most probably early Permian". Lower Collio Volcanics are "latest Carboniferous perhaps early Permian". Directions corrected for geological dip from interbedded sediments. Flows given unit weight (N=5). Magnetic cleaning in 500 oe.

060104 **Younger Diabase Ny-Hellesund Area** (Halvorsen 1970) K/Ar ages of 5 samples range from 380 to 255 m.y. average 297 m.y., which is Upper Carboniferous (Westphalian). Results based on 10 intrusive bodies each given unit weight (N=10).

060105 **Lavas and Dykes Corsica** Osani area (Nairn Westphal 1968) Permian or late Carboniferous (post Westphalian). Samples collected from 37 sites spread over 15 km in diabase and rhyolite dykes (25) and rhyolite and andesite lavas (12) each given unit weight (N=37). Stability established by thermal and a.f. demagnetization. Other results reported by Nairn and Westphal 1967a which are presumably a preliminary report; they give 2 results: ignimbrites (35 samples; 182,–22.5), rhyolites (33 samples; 174,–25), assigning the latter to Permian.

060106 **Otta Gabbro-Diorite** (Nairn Westphal 1967b) Age of this body is uncertain and assigned here to Carboniferous. Samples given unit weight (N=15).

060107 See **070134**

060108 **Lower Balakhonikha Suite Kuznetz Intermontane Basin** (Aparin Vlasov 1965) Middle to Upper Carboniferous (Post Namurian).

060109 **Ostrog Suite Kuznetz Intermontane Basin** (Aparin Vlasov 1965) Namurian. Error exceeds 20° and result is placed in the B category.

060110 **Red Sediments Kuznetz Intermontane Basin** (Aparin Vlasov 1965) Visean. Result placed in B since it is based on fewer than 10 samples.

060111 **Ostrog Suite 2 Kuznetz Basin** (Vlassov quoted in Khramov Sholpo 1967) Lower to Middle Carboniferous argillites.

060112 **Aktal and Oukazha Suites** (Aparin Vlasov 1965) Namurian (Lower to Middle Carboniferous) red sediments of Tuva Intermontane Basin.

060113 See **050054**

060114 **Bainovskaya and Yaminskay Suites** (Aparin Vlasov 1965) Lower Carboniferous sediments of Minusinsk Intermontane Depression.

060116 **Upper Minturn Formation Red Sandstone Creek** (McMahon Strangway 1968a and b) Middle Pennsylvanian. Stratigraphic thickness is 600 m. Sites given unit weight (N=10).

060117 **Fountain and Lyckens Formations** (McMahon Strangway 1968a and b) Figures in original indicate that Fountain Formation is Upper Pennsylvanian to Lower Permian and the Lyckens Formation is Upper Permian to lowest Triassic. Not possible to separate results from the original and they are lumped together here, giving each site unit weight (N=27).

060118 See **070015**

060119 See **090022**

060120 See **050037**

060121 See **020024**

060122 See **070052**

060123 See **070051**

060125 See **090040**

060126 **Mt. Billinger Sill East Vastergotland** (Priem *et al.* 1968, Mulder 1971) K-Ar age of 287 m.y. cited. Magnetic cleaning in 200 oe. Nine sites from 5 localities.

060127 **Mt. Hunneberg Sill West Vastergotland** (Priem *et al.* 1968, Mulder 1971) K-Ar age of 279 m.y. cited. Unit weight given to sites (N=3). Magnetic cleaning in 200 oe.

060128 **Dolerite Dykes Skane** (Priem *et al.* 1968, Mulder 1971) Directions of magnetization are similar to **060126** and **060177**. Concluded in the original that dykes "have the same Permian-Carboniferous age". Magnetic cleaning in 200 oe.

060129 **Mineralized Veins (First Phase) Frieberg** (Baumann Krs 1967) Veins of the first mineralization cycle (Permo-Carboniferous or Variscan). Stability checked by a.f. and thermal methods. Samples given unit weight.

060131 See **070165**

060132 **Clastic Sediments Pramolo** (Guicherit 1964, de Boer 1965) Upper Carboniferous. Entry placed in B because it is based on fewer than 10 samples.

060133 **Bademli Red Beds** (van der Voo van der Kleijn 1970) Overlie Devonian sediment and underlie Triassic limestone. Three components recognized and most stable is quoted here.

060134 **Tubarao Series** Brazil (Creer 1967) Upper Carboniferous. Entry placed in B because it is based on fewer than 10 samples.

060135 **Mauch Chunk Formation** (Knowles Opdyke 1968) Upper Mississippian. Samples spread over 200 km.

060136 **Maringouin Formation** (Roy Robertson 1968) Late Mississippian. Precision improves after correction for early Pennsylvanian folding. Samples spread over 30 km. In some cases single specimens were magnetized during reversal.

060137 **Cumberland Group Nova Scotia** (Roy 1969) Pennsylvanian. Precision improves after folding, which occurred shortly after deposition. Samples collected over 25 km through 700 m.

060138 **Hopewell Group New Brunswick** (Roy Park 1969) Late Mississippian to early Pennsylvanian. Precision improves after correction for early Pennsylvanian folding. Fifteen sites from 2 formations (Shepody and Enragé).

060139 **Great Whin Sill 2** (Storetvedt Gidskehaug 1969) K/Ar age of 295 m.y. cited. Sample spread 15 km.

060140 **Hurley Creek Formation New Brunswick** (Roy Robertson Park 1968) Pennsylvanian. Sites given unit weight (N=5).

060141 to 060145 **Upper Carboniferous Sediments USSR** (Khramov 1967, Khramov Komissarova Ivanov quoted in Khramov Sholpo 1967) Various stability tests made. Although many entries do not contain requisite experimental details, results are placed in A. **060143** is an average of two results (153,154) given in second reference. Primary magnetization determined by a.f. demagnetization and "displacement" method.

060146 **Vladimirov Suite** (data of Beketov in Khramov 1967, Khramov Sholpo 1967) Middle Carboniferous sediments. Stated that direction of primary magnetization determined by a.f. demagnetization. Result obtained by combining entries **060179** and **060180**

060147 **Moscow Stage Sediments** (Ivanov quoted in Khramov 1967).

060148 to 060149 **Moscow Stage Kashira River Horizon** (quoted in Khramov 1967).

060150 **Vereya Horizon 2** (Khramov Komissarova quoted in Khramov Sholpo 1967).

060151 **Vereya Horizon 4** (Komissarova quoted in Khramov 1967).

060152 and 060153 **Moscow Stage** (quoted in Khramov 1967).

060154 **Bashkir Stage Sediments** (Khramov 1967) Entry placed in A although information not sufficient to make a firm assignment.

060155 **Suite E** (data of Komissarova quoted in Khramov 1967) Lower to Middle Carboniferous. Placed in A although data insufficient to make a firm assignment.

060156 **Sediments Bagaryaka River** (Khramov 1967) Namurian to Visean. Entered in A although data insufficient to make firm assignment.

060157 to 060160 **Visean Sediments** (Khramov 1967) Results entered in A although data insufficient to make firm assignment. See Khramov Sholpo (1967) entry 191.

060161 **Percy Creek Volcanics Queensland** (Chamalaun 1968b) Late Middle or Upper Carboniferous. Result entered in B being based on fewer than 10 samples.

060162 to 060164 **Tournaisian Sediments** Results of Goncharov Karmanova Komissarova respectively quoted in Khramov Sholpo 1967. Entered in A provisionally although information given unsufficient to make firm assignment. **060163** is numerically identical to entry 194 in Khramov Sholpo (1963) which is described as "Porphyrites Tournaisian, Ural and Olkhovka Rivers". Primary magnetization determined by a.f. demagnetization.

060165 **Dwyka Glacial Varves** (McElhinny Opdyke 1968) Sites spread over 1000 km in Rhodesia, Zambia and Tanzania. Rocks are generally assigned to the Upper Carboniferous. Authors suggest a Lower Carboniferous age for these rocks on paleomagnetic considerations.

060166 **Sediments and Dolerites of Culm Devonshire** (Cornwell 1967a) Lower Carboniferous. Author regards these rocks as being remagnetized in Upper Carboniferous or Permian times. Result is entered in B category. Directions very similar to nearby Exeter Traps.

060167 See **050067**

060168 **Sediments Minusinsk Basin** (Vlasov Kovalenko Popova 1961) Lower Carboniferous. Sites given unit weight (N=7).

060169 **Goono Goono Mudstone** (Irving 1966) Lower Carboniferous (Lower Burindi). Remanence acquired after tilting, and although very stable, is parallel to the Permian field. Regarded by the author as secondary and so it entered in B.

060170 **Codroy Group Newfoundland** (Black 1964) Lower Carboniferous. See **060067**. Unit weight given to samples (N=32).

060171 **Pre-Pictou Sandstones** (Black 1964) Carboniferous probably Middle. Samples given unit weight (N=8).

060172 to 060174 **East Canadian Sediments** (Du Bois 1959) In **060068** the results from 3 formations combined. Breakdown is given here: **060172** Pennsylvanian; **060173** Carboniferous probably Middle Carboniferous; **060174** Mississippian. Directions all reduced to 48N, 66W. Samples given unit weight.

060175 **Kinghorn Lavas Scotland** (Wilson Everitt 1963) Lower Carboniferous. Early results reported in **060011**. Baked contacts parallel to the lavas. Flows given unit weight (N=17).

060176 **Gzhelian Stage Sediments 2** (Bagina 1966) Upper Carboniferous. Earlier results in **060069**.

060177 See **050076**

060179 **Avilov Suite 2** (Khramov Komissarova 1963) Upper Carboniferous. Appears to be revision of **060041**. Stability determined by fold test. Direction estimated by "remagnetization great circle method".

060180 **Lower Permian Red Sediments Donbass** (Khramov Komissarova 1963, Khramov Tretiak quoted in Khramov Sholpo 1967) Average of 6 results (140 to 144 and Khramov 1965) giving each unit weight (N=6). Samples mainly from Cupriferous Sandstone Suite. Primary magnetization determined by displacement and reversal method and by demagnetization.

060181 **Araucarite Suite 2** (Khramov Komissarova 1963) Gzhelian Stage sediments Upper Carboniferous of Donbass. Authors state that stability was determined by fold test and that direction of primary magnetization determined by "intersection" method. Probably revision of **060040**.

060182 **Oka-Serpukhov Beds 2 Tikhvin** (Khramov Komissarova 1963) Visean (Lower Carboniferous). Stability determined by fold test. Apparently updating of **060043**. Primary magnetization determined by "displacement" method.

060183 **Tula Horizon 2** (Khramov Komissarova 1963) Visean sediments (Lower Carboniferous) from Nebolchi area. Directions of magnetization determined by the "reversal" method. Probably a revision **060044**.

060184 **Oka Beds** (Khramov Komissarova 1963) Visean sediments (Lower Carboniferous). Bauxitogorsk. Authors state stability determined by fold test. Primary magnetization determined by a.f. demagnetization.

060185 **Productive Measures** (Khramov Komissarova 1963) Visean (Lower Carboniferous) sediments from Vytegra area.

060186 **Kashira Horizon** (Khramov Komissarova 1963) Moscovian (Upper Carboniferous) near Rzehev.

060187 **Vereya Horizon** (Khramov Komissarova 1963) Moscovian (Upper Carboniferous) of Serpukhov area.

060188 **F. Suite** (Khramov Komissarova 1963) Bashkirian (Upper Carboniferous) Donbass. Authors state that direction of primary magnetization estimated by "rotation method".

060189 **Visean Limestones Southern Urals** (Khramov Komissarova 1963) Lower Carboniferous. Authors state that direction of primary magnetization determined by "analysis of the distribution".

060190 **Tuffaceous Shales Akiyoshi Province** (Fujiwara 1967) Lower Namurian of Honshu. Result placed in B category being based on fewer than 10 samples.

060191 **Effusive Sedimentary Mass Umkuveym** (Pecherskiy 1970) Carboniferous to Lower Permian of NE Siberia.

060192 See **050084**

060193 to 060197 **Middle to Upper Carboniferous Red Beds** (Kumpan Rusinov Sholpo 1968) **060193** Kayrakty River, "fold test" applied. **060194** Shabdar River "intersection of the planes of magnetic reversal" applied. **060195** Kulan-Utpes River "method of Q_n vectors" applied. **060196** Zhilandy and Dzhezdy River "analysis of the planer distributions" applied. **060197** Koktal River "intersections of the planes of magnetic reversals" applied.

060198 to 060200 **Lower to Middle Carboniferous Red Beds** (Kumpan Rusinov Sholpo 1968) **060198** Shabdar River "intersection of the planes of magnetic reversal" applied. **060199** Kulan-Utpes River "fold test" applied. **060200** Zhilandy and Dzhezdy River "intersection of the planes of magnetic reversal and method of Q_n vectors" applied.

060201 **Araucarite Suite 3** (Sholpo Mamedov 1969) Upper Carboniferous. Result obtained from data of Kramov who obtained by his methods the direction 210,–25. Samples from "western part of the Donbass". Primary magnetization determined by "intersection" method.

060203 **Lower Tournaisian Red Sandstones** (Beketov quoted in Khramov Sholpo 1967) Lower Carboniferous of southern Kazakhstan. Direction of primary magnetization determined by a.f. demagnetization but no details given.

060204 **Grey Sandstones Minusinsk Basin** (Vlassov quoted in Khramov Sholpo 1967) Lower Carboniferous. Result numerically similar to **060168**. Primary magnetization determined by "reversal" method.

060205 **Grey Clays Shales and Limestones** (Tretiak quoted in Khramov Sholpo 1967) Lower Carboniferous, Azov Sea area. Direction of primary magnetization determined by a.f. demagnetization.

060206 **Grey Limestones Aleurolites and Sandstones** (Komissarova quoted in Khramov Sholpo 1967) Visean. Direction of primary magnetization determined by a.f. demagnetization but no details given.

060207 **Grey Limestones** (Komissarova quoted in Khramov Sholpo 1967) Tournaisian of Donbass. Direction of primary magnetization determined by a.f. demagnetization but no details given.

060208 **Tumashe Suite** (Davydov quoted in Khramov Sholpo 1967) Tuffaceous sandstones of River Angara. Lower Carboniferous? Primary magnetization determined by "intersection" method.

060209 **Red Sandstones** (Ivanov quoted in Khramov Sholpo 1967) Visean of River Miass.

060210 **Red-Brown Sandstones** (Ivanov quoted in Khramov Sholpo 1967) Namurian to Visean of River Bagariak.

060211 **Grey Shales Bashkin Stage**(Appears to be data of Tretiak quoted in Khramov Sholpo 1967) Three results (**060181** to **060183**) are quoted in this list and have been averaged. Relationship of this data to **060154** and **060155** is not clear. Primary magnetization determined by a.f. demagnetization and the "reversal" method.

060212 **Valer'yanovskaya Suite** (Ivanov quoted in Khramov Sholpo 1967) Namurian porphyrites of the River Tobol.

060213 to 060217 **Grey Sediments Donbass** (Khramov Komissarova 1967) Middle Carboniferous. Direction of primary magnetization determined by a.f. demagnetization and the "reversal" method.

060218 **Gzhelian Stage Red Sediments 3** (Komissarova quoted in Khramov Sholpo 1967) Direction of primary magnetization determined by a.f. demagnetization.

060219 **Bashkir Stage 2 Donbass** (Tretiak quoted in Khramov Sholpo 1967) Middle Carboniferous grey sediments. Primary magnetization determined by "displacement" method. Average of 2 results (174, 177).

060220 **Nagol'chi Suite** (Khramov Komissarova quoted in Khramov Sholpo 1967) Middle Carboniferous grey sediments. Mean of 2 results determined by a.f. demagnetization and the "reversal" method.

060221 **Kata River Suite** (Davydov quoted in Khramov Sholpo 1967) Lower to Middle Carboniferous tuffites and argillites of the Angara and Lower Tunguska Rivers. Direction of primary magnetization determined by "displacement" method.

060222 **Vereya Horizon 3** (Khramov Komissarova quoted in Khramov Sholpo 1967) Red clays of Moscovian stage (Middle Carboniferous). Direction of primary magnetization determined by a.f. demagnetization.

060223 **Lower Balakhonikha 2 Kuznetz Basin** (Vlassov quoted in Khramov Sholpo 1967) Lower to Middle Carboniferous argillites.

060224 **Tonsk Suite Kuznetz Basin** (Vlassov quoted in Khramov Sholpo 1967) Middle Carboniferous argillites.

060225 **Shchelkovka Bed** (Komissarova quoted in Khramov Sholpo 1967) Kasimovian Stage near Noginsk and Voskresensk. Mean of two results (155, 156). Direction of primary magnetization determined by a.f. demagnetization.

060226 **Upper Balakhonikha Suite** (Vlassov Aparin quoted in Khramov Sholpo 1967) Late Carboniferous to Lower Permian argillites.

060227 **Middle Paganzo Group** (Embleton 1970, Valencio Embleton Vilas 1971) Upper Carboniferous to Lower Permian red beds. Average of 3 results (174,+63; 144,+57; 148,+56).

060228 **Middle Paganzo Group Combined** Average of **070072** and the 3 results in **070196**.

060229 **Ambo Group** (Creer 1970a) Pennsylvanian tuffs. No reliable estimate of primary magnetization made.

060230 **Piaui Formation 2** (Creer 1970b) Upper Carboniferous. Discs given unit weight (N=44). Based on same collections as **060079** and presumably supersedes that result.

060231 **Paganzo Formation II A** (Creer 1970b) Upper Carboniferous La Rioja Province. Discs given unit weight (N=15).

060232 **Tupambi Formation** (Creer 1970d) Carboniferous. Magnetization considered secondary by author. Specimens given unit weight (N=63).

060233 **Taiguati Formation 2** (Creer 1970d) Pennsylvanian. Specimens given unit weight (N=35). Based on same collections as **060080** and presumably an updating.

060234 **Violacio Formation** (Creer 1970d) Carboniferous. Specimens given unit weight (N=78). Magnetization regarded as secondary by author.

060235 **Permo-Carboniferous Sandstone** (Creer 1970e). Poles said to be "more consistent with a post Triassic possibly Cretaceous rather than a Permo-Carboniferous magnetic age". Later the author says that the magnetization "is consistent with magnetization in the Triassic geomagnetic field". B result. A stable magnetization direction estimated graphically.

060236 **Pipiral Formation** (Creer 1970e) Permo-Carboniferous of the Llanos Region. Average of normal and reversed directions (N=2).

060237 **Paganzo IIB** (Embleton 1970) Upper Carboniferous to Lower Permian. Average of 3 locality directions given in original (N=3).

060239 **Araucarite Stage 4** (Tretiak quoted in Khramov Sholpo 1967) Upper Carboniferous red and grey sediments. Direction of primary magnetization determined by "intersection" method.

070033 **Kazanian Red Sediments 2** (Khramov updating of earlier result by Khramov Sholpo 1967) Primary magnetization determined by "displacement method".

070036 **Ufimian Red Sediments 2** (Khramov updating of earlier result by Khramov Sholpo 1967) Primary magnetization determined by "displacement method".

070061 **Ecca Sandstone** (Nairn 1964) Lower Permian. Mean direction from 11 specimens cleaned in 750 oe. Number of samples not stated and result is entered in B.

070062 **Sediments Zavolzhye** (Khramov Andreyeva 1964) Upper Permian. Corrected for secondary magneti-

zation using demagnetizing fields. Result based on fewer than 10 samples and placed in B. Samples given unit weight (N=7).

070063 **Tuffaceous Sandstone** (Vlasov Nikolaickik 1964) Khatanga Depression Taimyr Peninsula. Samples from base of Permian – Triassic sequence and probably Permian. Samples taken from 3 exposures in a 90 m section along the Chernokhrebetnaya River near Cape Tsvetkov.

070064 **Moonbi Lamprophyre** (Irving 1966) Pre-Triassic probably Permian. Magnetic cleaning in 450 oe. Samples given unit weight (N=3).

070065 **Dyke New Council Quarry** (Irving 1966) Probably Permian. After cleaning at 300 oe 6 samples from dyke had mean 299,+69 (k=23, $\alpha 95=14°$). Directions in 5 samples of baked sediment within 15 cm of the contact, cleaned in 500°C, was 319, +78 (k=400, $\alpha 95=4°$). The overall mean is listed giving unit weight to samples (N=11).

070066 **Milton Monzonite** (Robertson 1964b) K/Ar age of 240 m.y. Magnetic cleaning in 225 oe. Unit weight given to sites (N=4). The samples spread over 8 km.

070067 See **060077**

070068 **Porphyries Lugano** (Van Hilten Zijderveld 1966) Permian. Rocks overlain by Lower Triassic sediments. Samples given unit weight (N=11). Samples obtained from 4 sites is 3 flows over 10 km.

070069 **Sandstones Czechoslovakia** (Andreyeva Bucha Petrova 1965) Permian. Stability tests involving demagnetization reported in original.

070070 **Red Sandstones Turkey** (Gregor Zijderveld 1964) Probably Permian but may be younger. Sites given unit weight (N=3). Samples collected over 15 km. Magnetic cleaning in 950 oe.

070071 **Serie Rouges Inferiere Malagasy** (Nairn 1964) Permian. Specimens given unit weight (N=15). Placed in B being based on fewer than 10 samples.

070072 **Red Beds LaRioja Province** (Creer 1964b, 1964a, 1965a) Permian. Samples given unit weight (N=53).

070073 **Dunkard Series** (Helsley 1965b) Lower Permian West Virginia. Samples span 100 m and having a lateral spread of 100 km. Sites given unit weight (N=9). Dispersion reduced by magnetic cleaning in 500 oe.

070074 **Yuzagol and Kaluzina Suites** (Vlasov Popova 1963) Lower and Upper Permian respectively. Collections from Pervay and Redska River valley (Yuzagol), and Tikhaya Bay and Cape Irodov (Kaluzina). Former yielded normal magnetization some of which was acquired in present field. Latter is reversed. Mean given is irrespective of sign. Separate means are given in **070181** and **070182**. Results do not agree with results from Europe and Siberia. Difficult to assess their reliability and they are assigned to category A arbitrarily.

070075 **Lavas and Tuffs** (Ashworth Nairn 1965) Stephanian or Permian. Osani Peninsula. Sites given unit weight (N=15). Magnetic cleaning in 250 oe.

070076 **Posina Igneous Complex** (de Boer 1965) The complex considered to be Middle Triassic but stated on the basis of its paleomagnetic directions that it is "most probably of Lower or Middle Permian age". Result entered in B because the number of samples is fewer than 10. Magnetic cleaning in 500 oe.

070077 **Lagorai Quartz Porphyrites** (work of Findhammer described by Guicherit 1964, and later by Zijderveld, Hazeu, Nardin van der Voo 1970) Upper Carboniferous or Permian. These form the southern part of the Bolzano quartz porphyry sheets. Magnetic cleaning in 400-1000 oe. Tectonic corrections applied.

070078 **Basic Dykes** (Nijenhuis described by Guicherit 1964) Permian. They are intrusive into the Quartz Phyllite Series. Samples cleaned in 100-600 oe and tectonic corrections applied. Result entered in B because the number of samples is fewer than 10.

070079 **Pyrenean Rocks** (van der Lingen 1960) Permian. Five samples collected from andesite sill 50 m thick (163,–15), and 6 from above and below the sill at distances of several tens of m (163,–12). Samples cleaned in 900 oe and dip corrections applied assuming the sill intruded when the sediments were horizontal.

070080 **Dykes of Vincentian Alps** (de Boer 1963) Post-Silurian and pre-Upper Permian. Magnetic cleaning in 500 oe. No tectonic corrections.

070081 **Violet Porphyries Cavalese** (work of van Lookeren Campagne described by Guicherit 1964) Cited as Permian. Tectonic correction applied.

070082 **Gardena Sandstone** (de Boer 1963) Middle to Upper Permian. Result based on 5 samples after cleaning in 400 oe.

070083 **Gardena Sandstone** (Guicherit 1964) Middle to Upper Permian. Result based on 10 samples. Magnetic cleaning 350 oe.

070084 **Gardena Sandstone** (Guicherit 1964) Middle to Upper Permian. Result based on 9 samples. Magnetic cleaning in 750 oe.

070085 **Igneous Rocks Camparno and Staro** (Guicherit 1964) Upper Permian. Lavas and dykes. Tectonic corrections applied. Calculated giving unit weight to 4 mean directions quoted in original (N=4). Samples collected from 4 flows and several dykes.

070086 **Magnetic Sandstone of the Sakamotosawa Series** (Minato Fujiwara 1963, 1964, 1965). Lower Permian.

070087 **Exeter Traps** (Cornwell 1967b) Lower Permian. Intermediate to basic flows. Killerton lava 279 m.y. (Miller *et al.* 1962), and Dunchideock lava 281 m.y. (Miller Mohr 1964). Unit weight given to flows (N=22). Baked sandstones at two sites gave the same directions. Dip corrections possible only at 9 sites and mean of these is 189,–19 (k=29; pole 48N, 163E).

070088 **Exeter Traps** (Zijderveld 1967) Lower Permian. Magnetic cleaning in several hundred oersted. Sampling over 15 km.

070089 **Red Sediments Devon** (Cornwell 1967b) Permian. Result based on fewer than 10 samples and placed in B.

070091 See **060084**

070092 **K3 Beds Songwe-Kiwira and Ketewaka-Mchuchuma Coalfields** (Opdyke 1964a, McElhinny Opdyke 1968). Age considered to be Lower Permian or younger. Red sediments. Samples span of 100 m. Sites given unit weight (N=4).

070093 See **060085**

070094 See **060086**

070095 **Toroweap Formation** (Farrel May 1969) Permian of Grand Canyon. Result based on 11 samples each given unit weight (N=11). Thermal cleaning at 500°C. Specimens which decreased in intensity by more than 20 per cent after cleaning were discarded.

070096 **Hermit Shale** (Farrel May 1969) Permian. Grand Canyon. Result based on 4 samples each given unit weight (N=4). Thermal cleaning at 500°C. Specimens which decreased in intensity by more than 20 per cent after cleaning were discarded. The result is entered in the B category being based on fewer than 10 samples.

070097 **Culter Formation** (Farrel May 1969) Permian. Halgaito Tongue. Result based on 14 samples each given unit weight (N=14). Thermal cleaning at 500°C. Specimens which decreased in intensity by more than 20 per cent after cleaning were discarded.

070098 **Supai Formation** (Farrel May 1969) Permian. Extensive collection from 5 sites did not, according to the authors, yield a thermally stable magnetization. Their criteria was that the intensity after demagnetization at 500°C should not decrease by more than 20 per cent. See **070051**.

070099 **Dacites of Vallée du Guil** (Roche Westphal 1969) Permian. Samples given unit weight (N=8). Entered in B.

070100 **Volcanics Vallée du Guil** (van der Voo Zijderveld 1969) Permian.

070101 **Volcanics Vallée du Guil combined** Entries **070099** and **070100** combined giving each unit weight (N=2).

070102 **Bolzano Quartz Porphyries** (van der Voo Zijderveld 1969) Lower Permian. Combined result from Bolzano, Lugano, East Lombardy, Chiuzi. No statistics reported. See **070019**

070103 **Volcanics** (Birkenmajer Nairn 1964) Lower Permian of Krakow District. Quartz porphyry and melaphyre lavas. Sites given unit weight (N=11). Magnetic cleaning in 0 to 255 oe.

070104 See **060089**

070105 **Andesites** (van Dongen 1967) Lower Permian, Seo de Urgel. Sites given unit weight (N=10). Locality described as the Sierra del Cadi by van der Voo and Zijderveld (1969).

070106 **Sediments** (van Dongen 1967) Lower Permian, Seo de Urgel. Samples given unit weight (N=7). Result placed in B category being based on fewer than 10 samples.

070107 **Sediments** (van Dongen 1967) Permian of Seo de Urgel. Samples given unit weight (N=6). B category result.

070108 **Sediments Seo de Urgel** Permian. Entries **070106** and **070107** combined giving each unit weight.

070109 **Bucaco Red Beds** (van der Voo 1969) Upper Carboniferous or Lower Permian. Stability demonstrated by a.f. and thermal demagnetization and by fold test.

070110 **Viar Red Beds** (van der Voo 1969) Upper Carboniferous or Lower Permian.

070111 **Viar Dykes and Sills** (van der Voo 1969) Upper Carboniferous or Lower Permian.

070112 **Viar Rocks Combined** Entries **070110** and **070111** combined and given unit weight (N=2).

070113 **Igneous Rocks** (Birkenmajer Grocholski Milewicz Nairn 1968) Lower Permian. Lower Silesia, Sudetic Region. Melaphyre lavas (10), extrusive porphyry (1), intrusive porphyry (1), and baked sandstone (2). Unit weight to each (N=14). Samples over 35 km. Magnetic cleaning in 0 to 340 oe.

070114 **Pilahuinco Group** (Creer Embleton Valencio 1970) Cited as Upper Triassic. Result based on 26 specimens from 8 samples, thermally cleaned at 650°C. Samples are from the Tunas and Boneta Formation of Sierra de la Ventana. Thickness sampled is about 400 m. Result is entered in B because number of samples is fewer than 10.

070115 **Corumbatai Formation** (Creer Embleton Valencio 1970) Upper Permian. Parana State. Formation is said to be in Estrada Group of Passa Dois Series. Results obtained from 18 samples, 12 normal and 6 reversed. Latter assigned to Late Paleozoic Reversed Interval. The former are summarized here. Polarity ratio includes all samples. See G.J. List 10101.

070116 See **080076**

070117 **Basic Intrusive George Island P.E.I.** (Larochelle 1967) Direction used to estimate age as between Permian and Triassic. Samples obtained over 150 m. Samples given unit weight (N=12).

070118 **Kamthi Sandstone** (Verma Bhalla 1968, Verma Nargin 1968) Rocks are "taken to be Upper Permian" in the original, although the possibility that they are "of Lower Triassic age cannot be ruled out". Result disagrees with **070119**, and McDougall and McElhinny believe that this suggests dissimilar ages; they therefore assign these results to the Lower Triassic. Result based on 52 samples (given unit weight in the analysis N=52) from 4 levels in 3 quarries. Magnetic cleaning in 600 oe.

070119 **Kamthi Sandstone** (Wensink 1968) Age cited as Upper Permian. Wardha Valley. Sample given unit weight (N=57). Stability demonstrated by thermal and a.c. demagnetization. Thermal cleaning at 550 to 660°C.

070120 **Himgir Sandstone** (Unpublished N.G.I.R. data quoted in Athavale *et al.* 1970). Age of Upper Permian cited. Disagrees with other Permian and Carboniferous results from India, but agrees well with results from the Late Mesozoic.

070121 **Kamthi Sandstone** (Wensink 1968) Possibly Upper Permian, but the author states that some Precambrian sediments may have been sampled in error, and the result is entered in B category. Thermal cleaning at 550 to 660°C.

070122 **Red Sediments Blanice Graben (northern part)** (Krs 1968b) Autunian.

070123 **Red Sediments Blanice Graben (south)** (Krs 1968b) Autunian.

070124 **Red Sediments Boskovice Graben (south)** (Krs 1968b) Autunian. Four localities. Thermal cleaning at 100°C.

070125 **Red Sediments Boskovice Graben (centre)** (Krs 1968b) Autunian. Six localities. Thermal cleaning at 100°C.

070126 **Upper and Middle Rotliegende** (Krs 1968b) Red beds of Sub-Krknose Basin. Permian. Thermal cleaning of some specimens at 150-500°C.

070127 **Lower Rotliegende** (Krs 1968b) Red beds of Sub-Krknose Basin. Permian. Thermal cleaning of some specimens at 150-500°C.

070128 See **060103**

070129 **Turkank Veins from Kutna Hora** (Hanus Krs 1968) Bohemia. Direction close to late Paleozoic field and entry assigned to Permian. Pyrrhotite is carrier of n.r.m. Curie temp 325°C. Magnetic cleaning in 50 oe. Thermal demagnetization of 4 test specimens at 280°C gave 183,–09.

070130 See **060105**

070131 **Red Sandstones** (Zijderveld de Jong van der Voo 1970) Permian of Sardinia. Magnetic cleaning in 2000 to 3000 oe.

070132 **Rhyolitic Ignimbrites** (Zijderveld de Jong van der Voo 1970) Permian of Sardinia. Magnetic cleaning in fields up to 400 oe. Sites given unit weight (N=6).

070133 **Val Gardena Sandstone** (Manzoni 1970) Middle or Upper Permian. Result based on 7 samples from 4 sites. Entered in B category. Stability demonstrated by thermal and a.f. demagnetization. Thermal cleaning in 650°C. Sites given unit weight (N=4).

070134 **Mineralized Hematitic Veins** (Krs 1966b) There is uncertainty as to age but probably late Paleozoic.

070135 **Sediments** (Khramov 1967) Upper Permian. Result obtained by averaging the directions and poles from 7 localities listed in the original. Spread over 500 km. These are: Sokhona R. (5 sites, 81 samples) Uyatka R. (2 sites, 15 samples) Volga R. (2 sites, 23 samples) Zavolzlie (4 sites, 44 samples) Kama R. (3 sites, 54 samples) Kama R. (2 sites, 12 samples) Belaga R. (2 sites, 33 samples)

070136 **Red Sediments Bohemian Massif combined.** Average of directions and poles of **070122** to **070127** giving unit weight to each.

070137 **Conglomerate of Malmedy** (de Magnée Nairn 1962) Generally assigned to Permian and the magnetization directions are consistent with this. Sites given unit weight (N=7).

070138 **Barren Measures Minusinsk** (Khramov 1967, data of Vlassov quoted in Khramov and Sholpo 1967) Lower Permian. Number of samples and treatment used is not made clear on the original.

070139 **Red Sediments Donbass** (Khramov 1967) Lower Permian. Number of samples not stated.

070140 **Red Sediments Sakmarian Stage** (Khramov 1967) Lower Permian.

070141 and 070142 **Rhyolite Flows Monte Besimauda 1 and 2** (Bobier Guillaume 1966) Upper Permian. **070141** entered in B the number of samples being fewer than 10.

070143 **Il'yinski Suite** (Aparin Vlasov 1965, updated in Khramov Sholpo 1967) Upper Permian redbeds of Kusnetz Basin.

070144 **Yerunakovo Suite** (Aparin Vlasov 1965, and updated in Khramov Sholpo 1967) Upper Permian. Overlies the Il'yinski Suite.

070145 **Upper Balanhonka and Kuznetz Suites** (Aparin Vlasov 1965, updated in Khramov Sholpo 1967) Lower Permian or lowermost Upper Permian.

070146 **Pronovskaya Suite** (Khramov, Tretiak quoted in Khramov Sholpo 1967) Upper Permian red sediments, Donbass. Primary magnetization determined by "intersection" method. Average of 131 and 132.

070147 **Lower Maroon Formation** (McMahon Strangway 1968a and b) Maroon ranges from Upper Pennsylvanian through to Lower Triassic. In this entry the results from 36 sites from 3 localities assigned to Late Paleozoic Reversed Interval are averaged (N=36). Stratigraphic thickness exceeds 1000 m.

070148 **Upper Maroon Formation** (McMahon Strangway 1968a and b) Maroon Formation ranges from Upper Pennsylvanian to Lower Triassic. In the original these results are "assigned to the post-Kiaman". They are therefore probably Lower Triassic. Thickness sampled is over 100 m. In this entry 11 sites from 2 localities are averaged given each unit weight (N=11).

070149 See **080090**

070150 See **080158**

070151 See **080030**

070152 See **090039**

070153 See **060126**

070154 See **060127**

070155 See **060128**

070156 **Kazanian Sediments** (Avchian Faustov 1965) Upper Permian of Viatka River. Direction of stable magnetization determined by the "circle of remagnetization" method, and checked by magnetic cleaning in fields of 600 oe. Number of samples studied is presumably a score or more. No accurate location stated and this is estimated for pole calculation.

070157 **Tartarian Sediments** (Avchian Faustov 1965) Upper Permian. Notes as for **070156**.

070158 See **060129**

070159 **Greisens of Horni Slavkov** (Hanus Krs 1965) Result based on 32 samples from 3 localities. The directions are as expected for the Permian and the rocks are therefore presumed to be this age. In the original the magnetization was thought to be due to cassiterite but this has been disputed by Banerjee. Directions in test samples stable up to 1200 oe and 500°C.

070160 to 070163 **Permian Sediments S.W. U.S.A.** (Peterson Nairn 1971) Results obtained by averaging the site poles listed in original. The series are the standard stratigraphic units for the U.S.A., Wolfcampian being the oldest and Ochoan the youngest. Samples obtained over about 1000 km from Utah, Oklahoma, Arizona and New Mexico. Magnetizations are predominantly reversed but there are 2 normal sites in the Ochoan, 1 in the Guadalupian and 1 in the Leonardian. Three of these normally magnetized sites have inclinations over 30° and are far from being reversed from the remaining sites, which for the most part have inclinations less than 15°. Ten sites from the Supai Formation (Wolfcampian) are not included since their orientations are thought to be influenced by compass error.

070164 **Red Beds Dome de Barrot** (van der Ende 1970) Result based on about 4 samples from each of 35 layers at one locality on River Var. Position within the Permian uncertain, but author is "inclined to give an Upper Permian Age" to them. Unit weight given to each level (N=35).

070165 **Intrusives Southern Sweden** Entries **060126** to **060128** combined giving unit weight to each locality (N=13). Samples of Ordovician red limestone in Vastergotland gave direction 198,–04. Magnetization thought by authors to have been

acquired at the time of intrusion (Permian-Carboniferous).

070166 See **060133**

070168 See **060139**

070169 **Rocks from the Carpathian Mountains** (Kotasek Krs 1965) Upper Permian and Lower Triassic. About 100 samples collected from 3 localities in Eastern Czechoslovakia. Reversals occurred at all localities. Declinations showed a progressive trend, which the authors attributed to tectonic bending in plan (orocline). No numbers reported but the values read from their figures were as follows: Kosice 037,+18; Spisska 029,+16; Poprad 074,+21.

070170 **Aleurolite Chivach** (Pecherskiy 1970) Upper Permian Northeast Siberia. Observed magnetizations are given in this entry. Direction corrected for presumed declination and inclination errors is 058, +62.

070171 See **060191**

070172 **Red Sediments** (Kumpan Rusinov Sholpo 1968) Upper Permian of Kayrakty River. Kazakhstan. Cleaning by a.f. fields and heat.

070173 and 070174 **Lower Permian Red Beds** (Kumpan Rusinov Sholpo 1968) **070173** Kayrakty River (fold test applied). **070174** Koktal River (method of Q_n vectors applied). Sholpo and Mamedov (1969) quote a direction 202, –42 for Permian red beds of Kazakstan determined by the Q_n vector method, which is conformable with these data.

070175 **Bolzano Quartz Porphyry** (Zijderveld Hazeu Nardin van der Voo 1970) Fold test applied. Sites spread over 40 km 39 sites from 12 flows given unit weight (N=39).

070176 **Permian Igneous Rocks Southern Alps Combined** (Zijderveld Hazeu Nardin van der Voo 1970) Result obtained by averaging the following giving unit weight to collecting sites (N=68); **070020, 070077, 070175, 070078, 070129, 070068. These** results the authors regard as the most reliable Permian data from Southern Alps.

070177 **Culter Formation** (Helsley 1971) Stated in the original that the age is "most certainly Lower Permian and most likely lowest Permian". Three units, each 10 to 20 m thick, were sampled at 2 sites, with a total stratigraphic range of about 200 m. Result is average of two site directions and poles.

070179 **Permian Bohemian Massif Combined** (Krs 1968b) Average of poles **070122** to **070127.**

070180 See **060226**

070181 **Yuzagol Suite** (Vlassov quoted in Khramov Sholpo 1967) Lower Permian grey sandstones Vladivostok. Direction of primary magnetization determined by a.f. demagnetization. See **070074**.

070182 **Kuzulian Suite** (Vlassov quoted in Khramov Sholpo 1967) Middle Permian grey sandstones and tuffs of Vladivostok. Direction of primary magnetization determined by a.f. demagnetization. See **070074.**

070183 **Belyi Yar Suite** (Vlassov quoted in Khramov Sholpo 1967) Grey sandstones of Yenisey-Abakn trough. Primary magnetization determined by "reversal" method.

070184 **Red Beds Lake Inder** (Slaucitajs quoted in Khramov Sholpo 1967) Upper Permian. Direction of primary magnetization determined by "intersection" method.

070185 **Sarma Suite** (Slaucitajs quoted in Khramov Sholpo 1967) Upper Permian sediments, River Donguz.

070186 to 070188 **Upper Tartarian Sediments** (Khramov quoted in Khramov Sholpo 1967) Direction of primary magnetization determined by various graphical methods. Results supplement those given earlier (**070022 070023 070024**). **070186** Buguruslan; **070187** R. Viatka; **070188** Transvolga Region.

070189 **Sukhona Suite** (Khramov quoted in Khramov Sholpo 1967) Upper Permian red sediments R. Sukhona. Primary magnetization determined by "intersection" method.

070190 and 070191 **Lower Tartarian Sediments** (Khramov quoted in Khramov Sholpo 1967) Upper Permian red sediments. Primary magnetization determined by "displacement" method. **070190** R. Karma, **070191** Buguruslan.

070192 **Nerskaya Suite** (Slaucitajs quoted in Khramov Sholpo 1967) Upper Permian grey sediments, Verkhoyhan Region. Primary magnetization determined by a.f. demagnetization.

070193 **Basic Igneous Rocks River Koliumbe** (Goncharov quoted in Khramov Sholpo 1967) Permian or Triassic. Primary magnetization determined by a.f. demagnetization.

070194 **Ultrabasic and Basic Rocks of Maymecha-Kotuy** (Gusev quoted in Khramov Sholpo 1967) Cited as Lower Triassic but earlier account (**070039**) suggests Late Permian. Calculated from 6 results from basalts, maymechites, tuffs, dykes, and ultrabasic rocks.

070195 **Porphyritic Series Mendoza Province** (Creer Mitchell Valencio 1971) Middle Permian. K/Ar age of 263 m.y. given. Average of 4 results in Table 1 of original. Indicates the presence of normal magnetization in the Late Paleozoic Reversed Interval.

070196 See **060227**

070197 See **060228**

070198 **Mitu Formation 2** (Creer 1970a) Permian. Result apparently based on samples from 7 sites. Thermal cleaning incomplete. Primary magnetization estimated by intersection of circles of remagnetization. Supersedes **060074** in which Upper Carboniferous age cited. Magnetization thought to be pre-folding and Triassic, hence placed in B category.

070199 **Panganzo Formation III (Upper) B** (Creer 1970c) Permo-Triassic. Salta and Jujuy Provinces. Discs given unit weight (N=17).

070200 See **060235**

070201 See **060236**

070202 See **060237**

070204 See **060180**

070205 **Culter Formation Combined** Mean of **070044 070045 070097 070144** (N=4).

070206 **Permian Combined** Mean of **070160** to **070163** N=4.

080013 **Buzuluk Suite 1** (data of Khramov updated in Khramov Sholpo 1967) Primary magnetization determined by "displacement" method.

080052 **Nuanetsi Lavas** (Brock 1968) Upper Triassic. Rb/Sr age of 194 m.y. Preliminary result from samples collected over 30 km and a thickness of 1700 m.

080053 **Shawa Ijolite** (Gough Brock 1964) Middle Triassic. Rb/Sr age of 209 m.y. Magnetic cleaning in 150 to 400 oe. Sites given unit weight (N=5).

080054 **Karroo Sandstone K5 Horizon** (Nairn 1964) Triassic probably Upper Triassic. Eleven specimens (N=11) from 5 samples from 2 sites in the Songwe Rift Valley. Result is placed in B because number of samples fewer than 10.

080055 **Stormberg Red Beds** (Nairn 1964) Upper Triassic of O.F.S. Result based on 14 specimens (N=14) from 5 samples. Placed in B because it is based on fewer than 10 samples.

080056 **Sediments Donbass** (Khramov Andreyeva 1964) Lower Triassic. Correction for secondary magnetization using a.f. Result in B because it is based on fewer than 10 samples.

080057 **Sandstones Indskian and Olenekian Stages** (Vlasov Nikolaichik 1964) Lower Triassic of Khatanga Depression, Taimir Peninsula.

080058 **Sandstones Anisian and Ladinian Stages** (Vlasov Nikolaichik 1964) Middle Triassic of the Taimir Peninsula. Stratigraphic spread 200 m Khatanga Depression.

080059 **Red Sandstones** (Opdyke 1964c) Upper Triassic sandstones, Lusitu River. Probably correlative with the Stormberg. Calculations based on n.r.m. directions except one site cleaned in 800 oe. Unit weight given to sites (N=6). Stability of pilot specimens determined by a.f. and thermal demagnetization.

080060 **Upper Beaufort Beds** (Graham 1961, Graham Helsley Hales 1964) Lower Triassic. 19 cores of fine-grained red sediment from 4 sites spread over 150 km near Queenston. Demagnetization of test samples up to 550 oe did not change directions. Samples given unit weight (N=19).

080061 **Middle Beaufort Sediments** (Nairn 1964) Lower Triassic Natal. Result entered in B because it is based on fewer than 10 samples. Unit weight given to specimens (N=7).

080062 **Diabase Dyke Nova Soctia** (Larochelle Wanless 1966) K/Ar age of 197 m.y. Magnetic cleaning in 350 oe. Sample directions given unit weight (N=11).

080063 **North Mountain Basalt Nova Scotia** (Carmichael Palmer 1968) K/Ar age of 200 m.y. Stability demonstrated by a.f. and thermal demagnetization and by random directions of boulders in a Late Triassic conglomerate. Magnetic cleaning in 100 oe. Samples obtained through 300 m and each given unit weight (N=25).

080064 **North Mountain Basalt Nova Scotia** (Larochelle 1967) Upper Triassic. Samples obtained through 300 m. Magnetic cleaning in 300 oe. Sites given unit weight (N=17).

080065 **Grand Manan Island Lavas** (Carmichael Palmer 1968) Upper Triassic. Samples given unit weight (N=8). Result placed in B being based on fewer than 10 samples.

080066 **Manicouagan Structure** (Larochelle Currie 1967) K/Ar age 225 m.y. Five rock units each given unit weight (N=5). Magnetic cleaning in 200 oe.

080067 **Manicouagan Structure** (Robertson 1967) Meteoric or eruptive origin. Dacite obtained over 30 km.

Thermally cleaned at 360°C. Sites given unit weight (N=11).

080068 **Diabase Southeastern Pennsylvania** (Beck 1965) Upper Triassic. Samples obtained over 120 km from 3 bodies. Sites given unit weight (N=20).

080069 **Sandstone Kielce District** (Birkenmajer Nairn 1964) Triassic. Scattered directions.

080070 **Werfenian Beds Czechoslovakia** (Andreeva Bucha Petrova 1965) Lower Triassic. Stability determined by various demagnetization studies.

080071 **Volcanics Mistastin Lake** (Currie Larochelle 1969) Radiometric age of 202 m.y. A.f. cleaning in 250 oe. Samples obtained over 100 sq km and given unit weight (N=10).

080072 **Moenkopi Formation** (Farrel May 1969) Lower Triassic, Hoskinnini Tongue, Monument Valley. Result based on 18 samples. Thermal cleaning at 500°C. Specimens which decreased in intensity by more than 20 per cent after cleaning were discarded.

080073 **Sediments Seo du Urgel** (van Dongen 1967) Lower Triassic. Samples given unit weight (N=4). B category result.

080074 **Red Sandstone** (Tarling Sutton 1967) Triassic(?). Samples given unit weight (N=12). Result placed in B category because of large error.

080075 **Red Sandstone** (Tarling Sutton 1967) Permian or Triassic. Samples given unit weight (N=6). Result based on fewer than 10 samples and placed in B.

080076 **Paganzo Formation III (Upper) A** (Creer Embleton Valencio 1970 Creer 1970c) Age cited as Permian to Triassic. Samples given unit weight (N=22). Span a thickness of 900 m. In the latter reference the direction (14,-37) given, which is not significantly different from that quoted here.

080077 **Santa Maria Formation** (Creer Embleton Valencio 1970) Middle Triassic red sandstone of Rio Grande du Sul. Result entered in B category being based on fewer than 10 samples.

080078 **Motuca Formation** (Creer Embleton Valencio 1970) Age cited as Lower Triassic. Samples from 4 sites. Entered in B category because it is based on fewer than 10 samples.

080079 **Red Sediments Salta Province** (Creer Embleton Valencio 1970) Triassic. Entered in B because the number of samples is fewer than 10.

080080 **Lavas Mendoza Province** (Valencio 1970) Age cited as Lower Triassic (Vilas Valencio 1970). Results based on 41 samples of andesites, basalts and rhyolites from 15 sites at 4 localities in the Nihuil area. Three localities are normal and 1 reversed. Samples spread over 60 km.

080081 **Lavas Mendoza Province** (Vilas 1969 quoted in Vilas Valencio 1970, Creer Embleton Valencio 1970) Cited as Lower Triassic Cuesta Los Teneros area.

080082 **Lavas Mendoza Province** (Vilas Valencio 1970, Valencio 1969) Triassic. Grupo Cacheuta Uspallata area. Samples spread over 12 km. Presumably supersedes 080047.

080083 **Botacatu Sandstone** (Creer Embleton Valencio 1970) Rio Grande du Sul. Overlie the Santa Maria and underlie the Sierra Jeral (120 m.y.) hence the probable age is Upper Triassic or Jurassic. Earlier result based on 4 samples given by Creer (1967) with mean direction 353,-31 and error 35°.

080084 See 070118

080085 **Mangli Beds** (Wensink 1968) Lower Triassic red beds. Samples given unit weight (N=23). Thermal cleaning in 550 to 660°C.

080086 **Packmarhi Beds** (Wensink 1968) Upper Triassic red beds. Samples given unit weight (N=31). Thermal cleaning in 550 to 660°C.

080087 **Predazzo Dykes** (Manzoni 1970) K/Ar age of 230 m.y. (Lower Triassic). Result entered in B because no accurate tectonic control is possible. Directions given with respect to horizontal.

080088 **Triassic Rocks Dolomites** (Manzoni 1970) Upper Ladinian to Lower Carnian. Sites given unit weight (N=12). Result based on samples from 6 porphyrites, 4 dykes, and 2 tuffites spread over 30 km. Magnetic cleaning in 300 oe.

080089 See 070148

080090 **Fountain and Lyckens Formations** (McMahon Strangway 1968a and b) Figures in original indicate the Fountain Formation is Upper Pennsylvanian to Lower Permian and the Lyckens Formation is Upper Permian to lowest Triassic. Not possible to separate the results from the original and they have been combined here, giving each site unit weight (N=27).

080091 See 900021

080092 See 090036

080093 See 090039

080094 **Andesite Huesca Province** (Schwarz 1963)

080095 **Red Sediments Huesca Province** (Schwarz 1963)

080096 **Parsora Sandstone** (Bhalla Verma 1969) Assigned to Upper Triassic.

080097 **Clastic Sediments Schio** (de Boer 1963 1965) Age described as Norian (Upper Triassic). Result placed in B since it is based on fewer than 10 samples.

080098 **Basic Dykes Schio** (de Boer 1963 1965) Result based on fewer than 10 samples and placed in B category. Dykes are considered to be feeders for the Late Ladinian volcanics.

080099 **Acid Volcanics and Sediments Schio** (de Boer 1963 1965) Scythian and Anisian (Lower Triassic). Mean of 5 sites (each given unit weight).

080100 **Middle Triassic Acid Intrusives** (de Boer 1963, Guicherit 1964, van Lookeren Campagne in Guicherit 1964) Age cited Ladinian or Ladino-Carnian (Middle or Early Lower Triassic). Results from 3 localities are averaged giving each unit weight (N=3).

080101 **Igneous Rocks Northern Italy** (de Boer 1963) Lower and Middle Triassic. Three results are given as follows: Guizza-Faeda volcanics (330,+41), Alba Fratte igneous complex (327,+39), and "igneous intrusives" (343,+45). Average of these is entered.

080102 **Garalda Red Beds Western Pyrenees** (van der Voo 1969) Triassic. Direction is that obtained by eye as the greatest density distribution of directions.

080103 **Alcaz de San Juan Red Beds** (van der Voo 1969) Lower Triassic. Samples given unit weight (N=39).

080104 **Giron Formation** (Creer Embleton Valencio 1970) Triassic. Sites given unit weight (N=6). Supersedes **080050**.

080105 **La Quinta Formation 1** (Creer Embleton Valencio 1970) Sites given unit weight (N=3). Result placed in B category because error exceeds 20°. Earlier result **080051**.

080106 **Miranda Formation La Rioja** (Creer Embleton Valencio 1970) Triassic. Result entered in B because error exceeds 20°.

080107 **La Quinta Formation 2 Venezuala** (Hargraves Shagam 1969) Triassic or Jurassic. Four localities sampled and "moderately consistent" results obtained from 2. Directions better grouped before than after correction and vector analysis suggests that magnetization acquired during folding and straddled at least one reversal. Result obtained from 4 groups of samples (N=4) after thermal cleaning at 500°C without tectonic correction. Entry placed in B because error exceeds 20°.

080108 **La Quinta Formation Combined** (Hargraves Shagam 1969) Authors report results from 2 samples (013,-18 a.f. cleaning) from the base of La Quinta, whose magnetization they regard as "primary". Result is combined with the 4 mean directions averaged in **080107** giving each unit weight (N=5).

080109 **Valle di Scalve Porphyrite** (Zijderveld de Jong 1969) Middle Triassic. Entry placed in B because it is based on fewer than 10 samples. Samples given unit weight (N=5).

080110 **Volcanics Pyrenees** (Girdler 1968) Late Triassic to Early Jurassic. Sites given unit weight (N=7). Scatter decreases after correction for tilt. Sampling over 30 km.

080111 **Igneous Rocks Connecticut Valley** (de Boer 1968) K/Ar age of 193 m.y. cited for one flow unit. Earlier results from some of these bodies in **080044**. In this entry results from 7 units from a variety of sources, are averaged giving each unit weight (N=7).

080112 **Appalachian Dykes** (de Boer 1967) Geological relationships indicate Late Triassic to Early or Middle Cretaceous age. Most probable age for these has been generally considered to be Late Triassic. Dykes have approximately uniform directions giving poles between those for Upper Triassic and Cretaceous. Author therefore suggests a Jurassic age. Results obtained from 74 dykes from 9 regions, and poles for regions are averaged giving each unit weight (N=9). Samples from Georgia to Connecticut (800 km).

080113 **Intrusives and Sediments Eastern U.S.A.** (Bowker 1960) Samples obtained over 800 km. Site poles are averaged giving each unit weight (N=50).

080114 **Chugwater Formation** (Picard 1964) Lower Triassic. In the original the last two values in Table 4 are 343,+46 and 141.5,-31 which are averages of 3 normal and 5 reversed intervals respectively. Their mean is given here.

080115 **Gabbro Dufek Massif** (Beck Ford Boyd 1968) Mesozoic of the Pensacola Mountains. Demagnetization of pilot specimens showed the magnetization to be stable. Pole is similar to that of Ferrar dolerite and authors suggest Jurassic age.

080116 **Ladinian Volcanics** (Chatterjee 1965) Middle Triassic. Result based on fewer than 10 samples and is placed in B category.

080117 **Sediments Liangchi River** (Vlassov Popova 1963) Middle Triassic (Ladinian) of Vladivostok. Number

of samples not given but result provisionally placed in A category.

080120 **Moenkopi Formation Western Colorado** (Helsley 1969) Lower Triassic. Unit weight given to 12 stratigraphic units (N=12).

080122 **Red Sandstones NE Bohemia** (Krs 1966c, 1967a) Triassic. Directions close to present field and did not change during demagnetization. Samples are porous sandstone and their magnetization is probably of recent origin, and result placed in the B category.

080123 **Upper Triassic Red Beds Normandy** (Biquand 1967) Results from 6 sites were averaged (N=6), one divergent result not included. A.f. demagnetization up to 600 oe did not change directions. Result placed in B because the error exceeds 20°.

080124 See **070169**

080125 **Triassic Rocks Central Urals** (Karmanova 1965)

080126 **Lower Triassic Sediments Chivach Northeast Siberia** (Pecherskiy 1970) Average direction of 3 results (1, 3, 4 listed in Table 2 of the original) is given, and pole calculated.

080127 **Upper Triassic Sediments Northeast Siberia** (Pecherskiy 1970) Six directions from 2 localities (Khivach and Finish) are averaged giving each unit weight (N=6) and pole calculated.

080128 **Diabase Dykes Anticosti Island Quebec** (Larochelle 1971) Based on 11 samples from 2 dykes. K/Ar ages range from 168 to 191 m.y. (Wanless 1971) with a mean 178 m.y., which is near Triassic-Jurassic boundary.

080129 **Trachy-Basalts Kazakstan** (Sholpo Mammedov 1969) Triassic. Direction determined by Q_n vector method. Some specimens thermally cleaned gave the direction 259,+08.

080130 **Serebryansk Suite 2** (Sholpo Mammedov 1969) Lower Triassic. Result obtained by the authors from the data of Khramov who had obtained the direction 219,-57 by the method of "intersecting magnetic reversal circles". Samples from "western part of the Donbass".

080132 **Guichon Batholith British Columbia** (Symons 1971b) K/Ar age of 198 m.y. (Late Triassic) quoted in the original. Batholith intrudes Late Triassic volcanics and is overlain by Jurassic sediments.

080134 See **070193**

080135 **Manicouagan Structure 3** Results of entries **080066** and **080077** combined giving sites unit weight (N=17).

080136 and 080137 **Tuffogenic Suite** (Davydov Kravchinski quoted in Khramov Sholpo 1967) Lower Triassic. **080136** Lower Tungunska River, primary magentization determined by "displacement" method; **080137** Angara River.

080138 **Lower Kelter Suite** (Slaucitajs quoted in Khramov Sholpo 1967) Lower Triassic sediments, Verkhoyan Region. Primary magnetization determined by a.f. demagnetization.

080139 **Buzuluk Suite 2** (Slaucitajs quoted in Khramov Sholpo 1967) Lower Triassic sediments, River Donguz. Primary magnetization determined by a.f. demagnetization.

080140 **Buzuluk Suite 3** (Slaucitajs quoted in Khramov Sholpo 1967) Lower Triassic sediments. Primary magnetization determined by a.f. demagnetization.

080141 **Tananyk Suite 2** (Slaucitajs quoted in Khramov Sholpo 1967) Lower Triassic sediments. Stability determined by a.f. demagnetization.

080142 **Donguz Suite** (Slaucitajs quoted in Khramov Sholpo 1967) Lower Triassic sediments, Donguz River. Primary magnetization determined by a.f. demagnetization.

080143 See **070194**

080144 **Serebryansk Suite 2** (Tretiak quoted in Khramov Sholpo 1967) Middle Triassic sediments of Donbass. Primary magnetization determined by "reversal" and "intersection" methods.

080145 **Yushatyr Suite** (Slaucitajs quoted in Khramov Sholpo 1967) Middle to Upper Triassic sediments of SE Russian Plain. Primary magnetizations determined by a.f. demagnetization.

080146 **Tuffaceous Suite** (Karmanova quoted in Khramov Sholpo 1967) Lower to Middle Triassic basalts dolerites and sediments. Result obtained by combining these 3 entries: 93, 069,+64; 94, 243,-54; 95, 057,+62. Primary magnetization determined by thermal and a.f. demagnetization. Results presumably supplements **080125**.

080147 **Taimyr Peninsula Red Sandstone 2** (Gusev quoted in Khramov Sholpo 1967) Presumably additional information to **080021**.

080148 and **Variegated Suite** (Slaucitajs quoted in Khramov Sholpo 1967) Lower Triassic sediments. These

080149 results are probably from same formation as **080011**.

080150 **Ayan Suite** (Gusev quoted in Khramov Sholpo 1967) Lower Triassic basalts, Tungus Basin.

080151 **Khonnamakit Suite** (Gusev quoted in Khramov Sholpo 1967) Lower Triassic basalts, Tungus Basin.

080152 to 080154 **Siberian Traps 6 to 8** (Kamysheva quoted in Khramov Sholpo 1967) Lower Triassic trap rocks, River Viliui. **080152** dykes, **080153** baked tuffs at contact, **080154** sheets.

080155 **Vetluga Stage 2** (Khramov quoted in Khramov Sholpo 1967) Lower Triassic sediments River Viatka. Primary magnetization determined by "displacement" method. Presumably supplementary to **080009**.

080156 **Basalts Kazakstan** (Russinov quoted in Khramov Sholpo 1967) Lower Triassic.

080157 **Begidzhan Suite** (Slaucitajs quoted in Khramov Sholpo 1967). Middle to Upper Triassic Sandstones of Verkhoyan Region. Primary magnetization determined by a.f. demagnetization.

080158 See **070150**

080159 See **090061**

080161 **Motuca Formation 2** (Creer 1970b) Triassic. Result based on same collections as **080078** but results differ even though they were published in the same year. Entry calculated as an average of normal and reversed directions (N=2) after demagnetization at 600°C given in original. Entered in B category being based on fewer than 10 samples.

080162 See **070199**

080163 **La Quinta Formation 3** (Creer 1970e) Triassic. Samples given unit weight (N=18). Thermal demagnetization "failed to reveal the direction of primary remanance". Directions with respect to horizontal given for comparison with **080107**. Direction with respect to bedding 343,+27. Appears to be updating of **080105**.

080164 **Giron Formation 3** (Creer 1970e) Triassic. Samples given unit weight (N=11). Appears derived from same collection as **080104**.

080165 **Basic Rocks Nova Scotia** Upper Triassic. Average of **080062** to **080065** giving each unit weight (N=4).

080166 **Chugwater Formation Combined** Mean of **080030**, **080114**.

080167 **Moenkopi Formation Combined.** Mean of **080030** **080072** **080120** (N=3).

080168 and 080169 **Karmutsen Volcanic Group 1 and 2 Vancouver Island** (Symons 1971d) Sets with positive (A) and negative (B) inclinations recognized. Author believes sets to be of equal stability. Sites given unit weight.

080170 and 080171 **Karmutsen Volcanic Group 3 and 4 Vancouver Island** (Irving Yole 1972) Upper Triassic. Sets with positive (A) and negative (B) inclinations. Former less stable and regarded as imposed during intrusion of Jurassic granites. Latter stable and considered primary. Two-tier statistics. A (B) with respect to horizontal (bedding).

090034 **Kayenta Formation** This result previously regarded as of low reliability because directions are close to present field. Later work indicates that Jurassic field may have been close to present field so this previous opinion may be incorrect.

090057 **Mateke Hills Complexes** (Gough Brock Jones Opdyke 1964) Rb/Sr age 177 m.y. (Lower Jurassic). Three igneous complexes. Unit weight given to 6 reversed sites. One normally magnetized site is excluded. Magnetic cleaning in 100-500 oe. Sampling over 20 km.

090058 **Mateke Hills Complexes.** As **090057** except that normally magnetized site is included (N=7).

090059 **Marangudzi Complex 3** (Brock 1968) Lower Jurassic. Samples obtained over 50 sq km. Results supersedes **090060** and **090061** with addition of 3 more sites.

090060 **Marangudzi Ring Complex 1** (Gough Brock Jones Opdyke 1964) K/Ar ages range 182 to 196 m.y. Unit weight given to 4 reversed sites. One normally magnetized site excluded. Magnetic cleaning in 300 to 800 oe.

090061 **Marangudzi Ring Complex 2** (Gough Brock Jones Opdyke 1964) As **090060** except that 1 normally magnetized site is included (N=5).

090062 **Sediments Khatanga Depression Taimir Peninsula** (Vlassov Nikolaichik 1964) Middle and Upper Jurassic. Number of samples not stated and result entered in B.

090063 See **100029**

090064 See **100030**

090065 **Lavas Argentine Islands** (Evans 1965) Jurassic. Author regards results as too scattered to give useful pole and result placed in B.

090066 **Limburgite Plug** (Nairn 1964) Age is "presumed Karroo". Unit weight given to 7 specimens (N=7) from 2 samples.

090067 **Karroo Dolerite Rhodesia** (McElhinny Jones 1965) Jurassic. Demagnetization in 60 oe did not change direction of test samples. Sites given unit weight (N=4).

090068 **Karroo Dolerite Umgeni Sill** (Nairn 1964) Jurassic. Unit weight to 11 specimens from 3 samples.

090069 **Karroo Dolerite Combined** Result obtained by combining the poles of Geophysical Journal list Nos. 01057, 01058, 01059, and 01060 and Ottawa index Nos. **090066**, **090068**, and the 4 site poles of entry **090067**.

090070 **Karroo Dolerite** (Irving 1956) unpublished data. Jurassic. Results based on 6 samples from 3 sites without magnetic cleaning. Site directions are: Kinross Quarry 222,+63; Umgeni Sill 356,–54; Sill Umzimvubu Valley 006,–86.

090071 **Rajmahal Traps** (Radhakrisnamurthy 1963) Middle Jurassic. Thickness sampled 100 m. Lateral spread 100 km. Sites given unit weight (N=15). Stability determined by a.f. and thermal demagnetization of pilot specimens.

090072 **White Mountain Plutonic-Volcanic Series** (Opdyke Wensink 1966) Lower Jurassic. Concordant radiometric ages (K/Ar, Rb/Sr, U/Pb) give average of 180 m.y. Samples spread over 200 km. Unit weight to sites (N=112).

090073 **Kimmeridgian Basalts and Tuffs** (van Dongen van der Voo Raven 1967) Upper Jurassic. Samples given unit weight (N=20). Directions have same trend which indicates a large rotation of uncertain sense.

090074 See **080083**

090075 **Microdiorite Dyke Monkey Bay** (Briden unpublished, quoted in McElhinny Briden Jones Brock 1968) Age range Upper Carboniferous to Jurassic. In Geophysical Journal list 10104 it is stated that "age is regarded as Karroo" and it is indexed here as Jurassic. B category being based on fewer than 10 samples.

090077 **Jurassic Red Beds** (Lee Lee Liu Liu Yeh 1963, Chen Zhiqiang Wang Cenghang Deng Xingchui 1965) Results from 5 sites listed in original and these are averaged (N=5) and pole calculated. Uniformity of data indicates a degree of stability.

090078 **Bayburt Volcanics and Sandstones** (van der Voo 1968a) B category the samples being fewer than 10.

090079 **Biochemic Sediments Schio** (de Boer 1963, 1965) B category because samples fewer than 10.

090080 to 090082 See **100066 100067 100068**

090083 See **080107**

090084 **Chon Aike Formation** (Valencio Vilas 1970) Middle Jurassic lavas. K/Ar age of 160.7 m.y. cited. Samples given unit weight (N=66).

090085 See **080110**

090087 See **100077**

090088 **Diabase Spitzbergen** (Krumsiek Nagel Nairn 1968) Upper Jurassic. Result based on 6 samples from one dyke, so B category. Presumably same dolerites as **090087**, **100077**.

090089 **Volcanics Pyrenees** (Girdler 1968) Lower Jurassic. Sites given unit weight (N=8). Scatter decreases after correction for dip.

090090 **Franciscan Formation** (Gromme Gluskoter 1965) Upper Jurassic to Lower Cretaceous. Spillites and diabase. Sites given unit weight (N=25). Stability indicated by demagnetization studies. Samples collected over 16 km. Precision improves after unfolding.

090091 See **080112**

090092 **Red Sandstone Morocco** (Tarling Sutton 1967) Jurassic. Result entered in B because error exceeds 20°.

090093 See **080115 100082**

090094 **Gabbro Intrusive British Columbia** (Symons 1968) Mid-Jurassic to Upper Cretaceous. Two plutons. B category because error exceeds 20°. Studies also made of neighbouring greenstone complex which gave direction (002,+72) close to present field; author considered this magnetization secondary.

090095 **Gabbroic Dykes British Columbia** (Symons 1968) Mid-Jurassic to Upper Cretaceous. Two dykes. Result entered in B because error exceeds 20°.

090096 **Green Andesitic Dykes British Columbia** (Symons 1968) Mid-Jurassic to Upper Cretaceous. Dykes metamorphosed to greenschist facies in Late Mesozoic orogeny.

090097 **Mineralized Veins Second or Neoidic Stage Freiberg** (Baumann Krs 1967) Upper Mesozoic to Tertiary.

Stability checked by demagnetization studies. These veins correspond to the "eba" formation.

090098 **Lower Jurassic Sediments Northeast Siberia** (Pecherskiy 1970) Two directions from each of 2 localities (Finish and Start believe it or not) are combined, giving each unit weight (N=4), and pole calculated. Results used are entries 1, 3, 5 and 6 in Table 3 of original.

090099 **Basalts with Contacts Northeast Siberia** (Pecherskiy 1970) Upper Jurassic to Lower Cretaceous. Mean of entry 21 (baked contact) and 24 (basalt) of Table 3 in original is given.

090100 **Volcanic Neck and Baked Contact Khivach Northeast Siberia** (Pecherskiy 1970) Age cited as Middle to Upper Jurassic (?).

090101 **Syenite Intrusion Umkuveyem Northeast Siberia** (Pecherskiy 1970) Age is stated to be Jurassic (?). Result entered in B category because it is based on fewer than 10 samples.

090102 **Igneous Rocks Northeast Siberia** (Pecherskiy 1970) Jurassic (?). Average pole for **090100 090101** is given.

090103 See **080128**

090104 **Island Intrusions Vancouver Island** (Symons 1971a) Granodioritic batholiths. Seven K/Ar dates give average 159 m.y. (Middle Jurassic). Samples obtained over 250 km. Sites given unit weight (N=17).

090107 **Igneous Rocks Crimea** (Krugliakova quoted in Khramov Sholpo 1967) Age cited as Middle to Upper Jurassic (?). Basalts, andesites, dacites, tuffs. Average of entries 82 to 85 in the above list.

090108 **Petropavlovsk Suite** (Davydov Kravchinski quoted in Khramov Sholpo 1967) Lower to Middle Jurassic lavas R. Dzhida. Primary magnetization determined by "reversal" method.

090109 **Liassic Sediments** (Slaucitajs quoted in Khramov Sholpo 1967) Verkhoyan Region. Primary magnetization determined by a.f. demagnetization.

090110 See **100016**

090111 to 090114 **Jurassic Intrusions South Morocco** (Hailwood Mitchell 1971) Results from 3 units: Draa Valley Sills K/Ar ages 180 to 186 m.y.; Foum-Zguid Dyke K/Ar ages 182-187 m.y.; Central Atlas Intrusives K/Ar ages 152 to 160 m.y. for gabbro and 119 to 134 m.y. for dykes. Unit weight to sites. **090114** average of the 3 units unit weight to sites (N=27).

100015 **Lupata Alkaline Volcanics** (McDougall) Upper Cretaceous. K/Ar age on 2 samples gave a mean of 109 m.y.

100020 See **110157**

100021 See **110158**

100022 See **110079**

100023 See **110091**

100024 See **110163**

100025 **Ilekskay and Simonovaya Formations** (Vlasov Nikolaickik 1964) Upper Cretaceous sediments. Samples obtained near Bogotol and Ashinsk in Krasnoyarsk Territory.

100026 **Sandstones** (Andeyeva Bucha Petrova 1965) Upper Cretaceous. Stability based on demagnetization of pilot specimens.

100027 **Lavas Madagascar** (Nairn 1964) Cited as Upper Cretaceous. Samples from 3 sites in 2 lava flows. Magnetic cleaning in 250 oe. Pole is 20° from previous result. See **100008**.

100028 **Sierra Nevada Granitic Plutons** (Gromme Merrill 1965) Upper Cretaceous. Supersedes **100018** with the addition of 5 further sites. Sampling over 20 km. Stability determined by a.f. and thermal demagnetization studies. K-Ar ages ranging from 83-90 m.y. cited in the original. Sites given unit weight (N=14).

100029 **Guadeloupe Mountains Igneous Complex Sierra Nevada** (Gromme Merrill Verhoogen1967) K-Ar age of 136 m.y. which is Late Jurassic to Early Cretaceous. Sites given unit weight (N=4). Sample spread is 8 km. Based on 56 specimens.

100030 **Bucks Batholith Sierra Nevada** (Gromme Merrill Verhoogen 1967) K-Ar dates range from 129-142 m.y., Upper Jurassic to Lower Cretaceous. Samples taken over 8 km. Magnetic cleaning in 50-800 oe. Sites given unit weight (N=9). Based on 116 specimens.

100031 **Igneous Rocks South Korea** (Kienzle Scharon 1966) Cretaceous andesites dacites and rhyolites. Localities given unit weight (N=5).

100032 **Red Sandstones Songwe River** (Nairn 1964) Cretaceous. Unit weight given to 11 specimens. Result in B as the number of samples is fewer than 10.

100033 **Wealden Iron Grit** (Edwards 1965) Lower Cretaceous. Reversals occur within a short stratigraphic thickness. Agrees with **100004**. Result

based on about 100 specimens. Stability demonstrated by a.f. and thermal demagnetization.

100034 **Wealden Iron Grit Combined** Average **100004** and **100033** giving each unit weight (N=2).

100035 **Mount Ascutney Gabbro** (Opdyke Wensink 1966) K-Ar ages of 125 and 135 m.y. cited (Lower Cretaceous). Samples demagnetized in a.f. of 250 oe. Sites given unit weight (N=2).

100036 **Red Sediments Hissar Chain** (Abdullaev 1964) Lower Cretaceous. Numerous samples were collected from 10 sites each given unit weight (N=10). Stable directions determined by "circle of remagnetization".

100037 **Basalts Tuffs and Limestone** (van Dongen van der Voo Raven 1967) Lower Cretaceous. Samples given unit weight (N=15).

100038 See **110126**

100039 See **090021**

100041 See **090022**

100042 and 100043 **Cretaceous Dykes Jamaica** (Watkins Cambray 1971) Authors assume that "the dykes are Pre-Maastrichtian, possibly Campanian, or even Santonian in age". Basaltic and andesitic composition. Divided into 2 groups: Group A with poles in high latitude and Group B with poles in low latitude. Low stability of dykes attributed to their low oxidation state.

100044 **Satyavedu Sandstones** (unpublished N.G.R.I. data quoted in Athavale *et al.* 1970) Middle Cretaceous.

100045 **Tirupati Sandstones** (Verma Pullaiah 1967) Cited in the original as Middle Cretaceous but McDougall and McElhinny (1970) suggest a Late Cretaceous age.

100046 **Rajmahal Traps.** Result now assigned to Cretaceous. See **090023**.

100047 **Rajmahal Traps 2** (McDougall McElhinny 1970) K/Ar age of 100 to 105 m.y. Samples taken from 8 levels (given unit weight (N=8)) at 5 localities.

100048 See **110214**

100049 **Volcanics of Montana** (Hanna 1967) Cited as "late Cretaceous". Dispersion decreases after correction for geological dip. Result based on samples from 37 rock units distributed among 6 localities. Direction is that given by Hanna (private communication) and pole is the average of eight poles (N=8) given in the original (first 8 poles of Table 2).

100050 **Volcanics and Sediments Jefferson Valley Montana** (Hanna 1967) Probable age cited as "Late Cretaceous or Early Tertiary". Based on 10 volcanic units "tuffs, flows, and tuffaceous sandstones".

100051 **Volcanics of Mecsek Mountains** (Dagley Ade-Hall 1970a) Age is cited as Valanginian and Hauterivian (Lower Cretaceous). Corrected for geological dip. Each rock unit is given unit weight (N=11).

100052 **Cretaceous Red Beds** (Lee Lee Liu Liu Yeh 1963, Chen Zhiqiang Wang Cenghang Deng Xinghui 1965) Results from 7 localities (Hunan, Hupei, and from near Canton) reported, and their poles are averaged here giving each unit weight (N=7). Conformity of directions indicates a degree of stability and result is entered in A.

100053 **Gumushane Group** (van der Voo 1968a) Eocene limestones and volcanics. Scatter decreases after correction for folding. Sites given unit weight (N=6).

100054 **Gumushane Group** (van der Voo 1968a) Middle or Upper Cretaceous. Sites given unit weight (N=6).

100055 **Niksar Basalt** (van der Voo 1968a) Result entered in B category because the number of samples is fewer than 10.

100056 **Andesites Bulgaria** (Vollstadt Rother Nozharov 1968) Senonian (Upper Cretaceous). Result entered in B category being based on fewer than 10 samples.

100057 **Biochemic Sediments** (de Boer 1963, 1965) Result entered in B being based on fewer than 10 samples.

100058 **Joides Sediment Leg 2 Station 10** (Sclater Cox 1970) Campanian. Age determined by fossils is 76 m.y. Standard error is quoted.

100059 See **110304**

100060 See **110305**

100061 See **110306**

100062 and 100063 **Sediments Ferghana Range 1 and 2** (Shmeleva 1963) Upper Cretaceous. Stable magnetization determined by "intersection" method. **100062** Yalovach, Agaraal Suite etc Senonian and Turonian. **100063** Upper Changet River Suite Cenomanian.

100064 **Sintra Granite** (van der Voo 1969) K/Ar age of 80 m.y. (Upper Cretaceous) is cited. Sites given unit weight (N=8).

100065 **Gneiss Taroko Gorge** (Chi-Hsu Kienzle Scharon Sun 1966) Pre-Tertiary. Sites given unit weight (N=4). Result in B category because error exceeds 20°.

100066 to 100068 **Franciscan Ultramafics** (Saad 1969) Upper Jurassic to Upper Cretaceous. Entirely serpentinized rocks are unstable, whereas partially serpentinized peridotites pyroxenites and dunites are stable. Results from peridotites **(100066)** and dunites **(100067)** give poles in high latitudes, whereas a third group **(100068)** consisting of results from dunites and pyroxenites give a pole in low latitudes. K/Ar age of 155 m.y. reported (Lanphere 1971).

100069 **Volcanics Massif d'Androy** (Andriamirado Roche 1969) Upper Cretaceous.

100070 **Volcanics Mangoky-Onilahy** (Andriamirado Roche 1969) Santonian to Campanian (Upper Cretaceous).

100071 **Mesaverde Group Sediments** (Kilbourne 1969) Upper Cretaceous. Samples spread over 300 km.

100072 **Monteregian Hills** Lower Cretaceous. K/Ar ages range between 100 and 120 m.y. with an average of 111 m.y. This study has progressed through 3 stages. The first is given in entries **100011** and **100012**. The second (Larochelle 1968) is based on 16 sites. The third (Larochelle 1969) is quoted here, and is based on 32 sites (given unit weight (N=32)) from 10 bodies spread over 130 km.

100073 **Magnetite Cove and Potash Sulphur Spring Complexes Arkansas** (Scharon Hsu 1969) K/Ar, Rb/Sr and fission track dates ranging from 105 to 95 m.y. are quoted. Nineteen sites (given unit weight) measured from 2 complexes spaced 8 km apart.

100074 **Kanai Gaura Formation Oshima Island** (Fujiwara 1966) Lower Cretaceous. Stability checked by demagnetization studies. Result based on 3 sites (given unit weight (N=3)) and about 60 samples collected over about 4 km. Result in B category because the scatter is so large. Results also given for andesite intrusion (Post-Kanai Gaura and Pre-Tertiary) that had direction 316,+12.

100075 **Suchan Suite** (Vlassov Popova 1963, see also Khramov Sholpo 1967) Lower Cretaceous sediments Cape Firsov. Primary magnetization determined by "reversal" method.

100076 **Sandstone North Korea** (Gurarii Kropotkin Pevzner Ro Vu Son Trubikhin 1966) Upper Cretaceous. Entered in B being based on fewer than 10 samples.

100077 **Dolerite Spitzbergen** (Spall 1968) Late Jurassic to Early Cretaceous. K/Ar age of 149 m.y. quoted. Sites given unit weight (N=7). Spread over 3000 sq km.

100078 See 090090

100079 See 080112, 090091

100080 **Mlanje Syenite** (Briden 1967b) Lower Cretaceous. K/Ar age of 122 m.y. Result in B being based on fewer than 10 samples.

100081 **Alkali Rocks Mozambique and Malawi** (Briden 1967b) Results from 8 samples **(100080)** and 7 flows **(100015)** averaged giving each unit weight (N=15). Four K/Ar ages from these 2 units give average of 115 m.y.

100082 See 090093, 080115

100083 **Lisbon Volcanics** (van der Voo Zijderveld 1971) Lie between Turonian (Upper Cretaceous) limestone and the Benfica Formation (Oligocene). Interbasaltic sediments contain Oligocene fossils. Precision (k) improves from 15 to 52 after correction for tilt. Sites given unit weight (N=33).

100084 See 090094

100085 See 090095

100086 See 090096

100087 **Granodiorite British Columbia** (Symons 1968) Upper Cretaceous to Eocene. Five K/Ar ages ranging from 77 to 47 m.y. are cited.

100088 See 090097

100089 **Igneous Rocks of Hokkaido, Nemuro Peninsula** (Fujiwara Nagase 1965) Senonian to Danian.

100090 **Boulder Batholith Montana** (Colville 1961) Cretaceous. Samples given unit weight (N=15).

100091 See 090099

100092 **Cretaceous Sediments** (Pecherskiy 1970) Five results from 4 localities in NE Siberia spread over 150 km giving each one unit weight (N=5).

100093 **Diabase Dykes and Metamorphosed Sediments Viliga NE Siberia** (Pecherskiy 1970) Age is cited as Lower to Middle Cretaceous (?). Result obtained by averaging entries 3, 4, 5 in Table 4 of original. Number of samples not stated but is probably greater than 10 and result therefore placed in A category.

100094 **Metamorphosed Sediments Northeast Siberia** (Pecherskiy 1970) Sediments from 4 localities, over a distance of several hundred km, have been metamorphosed by granitic rocks presumably of Cretaceous age. Polarity ratio cannot be formally calcu-

lated and an estimate is given here. Result obtained by averaging entries 14 to 20 in original.

100095 **Sediments Sakhalin** (Pecherskiy 1970) Upper Cretaceous. Result is entry 24 in Table 4 of the original. Samples obtained from 6 sections so probably more than 10 samples are involved.

100097 **Red Sandstone** (Tarling Sutton 1967) High scatter.

100098 **Sediments Hissar Chain 2** (Abdullayev quoted in Khramov Sholpo 1967) Lower Cretaceous red sediments. Average of results 75, 79 to 81 given in their list. Appears to be revision of **100036**. Primary magnetization determined by "intersection" method.

100099 **Sediments Tadzhik Depression** (Rzhevski quoted in Khramov Sholpo 1967) Albian-Valanginian. Primary magnetization determined by "intersection" method.

100100 **Aptian Sediments** (Khramov quoted in Khramov Sholpo 1967) Lower Cretaceous Bolshoi Balkhan. Result numerically similar to **100005** and **100006**, which are from Lower Albian sediments and may represent same data. Primary magnetization determined by "intersection" and "reversal" methods.

100101 **Ferghana Sediments 3** (Shmeleva quoted in Khramov Sholpo 1967) Senonian red beds. Primary magnetization determined by "intersection" method.

100102 to 100104 **Ferghana Sediments 4 to 6** (Muratov quoted in Khramov Sholpo 1967) Upper Cretaceous. **100102** Senonian to Turonian. **100103**, **100104** Albian to Cenomanian. Primary magnetization determined by "intersection" method.

100105 **Yunus-Dagh Suite** (Khramov quoted in Khramov Sholpo 1967) Senonian sediments from Azerbaidzhan. Primary magnetization determined by "intersection" method.

100106 See **110159**

100107 **Sediments and Igneous Rocks, Peru** (Creer 1970a) Cretaceous. Unit weight given to specimens (N=40).

100108 **Aptraxa Formation** (Creer 1970e) Lower Cretaceous. Discs given unit weight (N=23).

100109 **Yeguera Formation** (Creer 1970e) Cretaceous. Average of normal and reversed directions (N=2).

100110 **Serra Geral Formation** K/Ar mineral ages range 120 to 126 m.y. indicating early Cretaceous age (McDougall Ruegg 1966). See **090053** in Irving (1964). Replaces entry **100112**.

100112 See **110370**

100113 See **110371**

100114 **Serra Geral Formation 1** See **090037** in Irving (1964).

100116 **Inkstone Series 2 and Volcanics** (Domen 1971) Lower to Middle Cretaceous of the Yamaguchi Prefectur. Average of 5 site means given in original (2 lavas 3 sediments).

100117 **Inkstone Series and Volcanics Combined** Lower to Middle Cretaceous. Five sedimentary sites and 2 lavas combined giving each unit weight (N=7). Site 1 of Domen (1971) deviates from main group and is excluded.

110076 **Enrei Formation** (Momose Kobayashi Yamada Ozima Kaneoka 1966) Two samples from upper member of Lower Enrei dated at 1.3 m.y.

110079 **Deccan Traps** (Irving 1954 1956) Unit weight given to sites (N=7). Result placed in category B being based on few samples. The lower age limit of the traps is set by the fact that they rest on sediments of Danian, Cenomanian, and Turonian ages (Krishnan 1968). Upper limit is set by K-Ar dates (range 64.1 to 59.0 m.y., mean 60.9 m.y.) on 7 samples of "later" felsic lavas and intrusions from 3 widely spaced localities (Wellman McElhinny 1970). Age of traps is therefore Paleocene or latest Cretaceous.

110091 **Deccan Traps** (Clegg Deutsch Griffiths 1956, Deutsch Radhakrishnamurty Sahasrabudha 1958 1959) Unit weight given to results from 9 localities (N=9). Summary of Irving (1964).

110127 **Lavas Hawaiian Islands** (Tarling 1965) Plio-Pleistocene. Samples span approximately the last 5 m.y. Results from 11 volcanic units distributed among 5 islands over 500 km. Sites given unit weight (N=38).

110128 **Rungwe Volcanic Group** (Nairn 1964) Plio-Pleistocene. Flows given unit weight (N=3). Cleaning in about 250 oe.

110129 See **120079**

110130 **Lavas of Kenya** (Nairn 1964) Mio-Pliocene. Cleaning in 50 to 150 oe. Flows (N=6) given unit weight.

110131 See **120080**

110132 **Igneous Rocks Heard Island** (Irving Stephenson Major 1965) Pleistocene and Recent lavas and hyperbyssal intrusives of probable Upper Tertiary

age. Samples collected over 20 km. Two-tier statistical analysis used. Between-site precision quoted.

110133 **Volcanics Samoa** (Tarling 1965) Pliocene to Recent. Result based on 1 to 10 samples per site. Sites given unit weight (N=16). Cleaning in 150 oe.

110134 **Pliocene Sediments Azerbaidzhan** (Khramov Andreyeva 1964) Corrections for secondary magnetization using demagnetizing fields. Presumed that 13 data points plotted in the original represent independent samples.

110135 See **120085**

110136 **Volcanics Gomera Island** (Watkins Richardson Mason 1966a, Abdel-Monem Watkins Gast 1967) Stated that "the ages of the volcanic sequence above the major unconformity on Gomera Island range from 12.7 to 5.1 m.y. based on K-Ar age determinations". Samples from alkali basalt and phonolite-trachyte formations. Cleaning in 150 oe. Unit weight to flows (N=18).

110137 **Volcanics Teneriffe** (Watkins Richardson Mason 1966a) Age is Upper Tertiary or Quaternary. Ancient Basalt Formation and phonolites sampled. Samples obtained from 46 flows each given unit weight (N=46). Cleaning in 150 oe.

110138 **Volcanics Gran Canaria** (Watkins Richardson Mason 1966a) K-Ar ages range from 2.2 to 16.0 m.y. Samples obtained from 39 flows (given unit weight (N=39)) of plagioclase and olivine basalts, and nepheline phonolites. Cleaning in 150 oe.

110139 **Volcanics Lanzarote** (Watkins Richardson Mason 1966a) Authors regard these lavas as "much older than those sampled on Hierro". This is supported by K/Ar ages as old as 12 m.y. (Abdel-Monem Watkins Gast 1967). It seems reasonable to assign the rocks to Upper Tertiary. Samples from 38 flows (given unit weight (N=38)) in the Basaltic Tableland Series. Cleaning in 150 oe.

110140 **Lavas of Madiera** (Watkins Richardson Mason 1966b) Lavas overlie a Miocene limestone. Unit weight given to flows (N=29). Cleaning in 150 oe. Results similar to those from Teneriffe.

110141 **Geschieber Vein** (Krs 1963) Generally considered Permian. Thirty-eight samples collected from Svornost Mine in Krusne Hory region. Veinlets of earthy hematite were reversely magnetized (N=14, 212,-63) and samples of cinopel normal (N=24; 018,+64). Mean of these irrespective of sign is given here. Directions unchanged in a.f. fields of 600 oe. Result suggests age is Cenozoic. Because of uncertainty in age, result placed in B category.

110142 **Basalts Czechoslovakia** (Andreyeva Bucha Petrova 1965) Tertiary. Regarded as unstable by the authors and indexed in B category.

110143 **Cuirasse Ferrugineuse** (Nairn 1964) Age cited as "Neogene". Result entered in B category as there are fewer than 10 samples.

110144 **Mineralized Hematite Veins** (Krs 1966) Age probably Tertiary. Localities given unit weight (N=9).

110145 **Tertiary Dykes and Contacts** (Raja 1964) Lower Tertiary of Ayrshire. Samples from 9 dykes each given equal weight (N=9). Directions in baked sediment at each dyke are consistent. Result calculated giving unit weight to average of baked and dyke samples.

110146 **Turkana Lavas** (Raja Reilly Musset 1966) Oligocene-Miocene. K/Ar ages ranging from 32.2 to 12.5 m.y. cited in Reilly Musset Raja Grasty Walsh (1966). Age originally cited as Miocene by Raja *et al.* but age determinations suggest that some may be as old as Oligocene.

110147 **Basalts Oregon Abert Rim** (Watkins 1965) Miocene. Flows given unit weight (N=16). Twelve samples from four horizons of baked interbasaltic sediment gave similar directions. Thickness sampled is 250 m. Cleaning in 50 oe.

110148 **Lovejoy Basalt California** (Gromme 1965) Miocene. K/Ar age of 24 m.y. cited. Samples from 13 flows over 120 km. Scatter is high and author concludes that "basalts were erupted during a period of time in which the earths field was predominantly reversed but varied to an unusal degree". Cleaning in 75 to 250 oe with one site thermally cleaned at 250°C.

110149 **Basalts of Oregon Plateaus and Owyhee Uplands** (Watkins 1965) Thirteen sections including the Abert Rim **110147**. Most common basalt is the Steens basalt. Age of 21.3 to 14.5 m.y. for Steens Mountain section given by Evernden James (1964). Lateral spread of 200 km. Total vertical thickness of sections is over 2000 m but degree to which they overlap is unknown. Age of reversal transition (**110364**) in the Steens Mountain Basalt given as 15.1 m.y. by Baksi York Watkins (1967).

110150 **Basalts Columbia River** (Watkins 1965) K-Ar ages ranging 24.9 to 15.4 m.y. are quoted. Lateral spread about 300 km. Total vertical extent of the 10 sections is over 3500 m, but degree to which they overlap is not known.

110151 **Basalts Columbia Plateaus Combined** Entries **110149** and **110150** giving unit weight to flows

(N=433). Author concludes that directions of magnetization indicate a small degree of rotation since Miocene.

110152 **Lavas and Dykes SE Queensland** (Robertson 1966) Miocene. Cleaning in 150 oe. Sites given unit weight (N=12). Sites spread over 150 km. K-Ar ages of 22 to 25 m.y. reported in Webb Stevens McDougall (1967).

110153 **Suevite Ries Crater** (Angenheister Pohl 1964, Petersen Soffel Pohl Helbig 1965, Pohl Angenheister 1969) Miocene. Samples from 12 sites over 35 km near Nordlingen. K/Ar ages on 8 glass samples gave 14.8 m.y. Fission track age is 15 m.y. Sites given unit weight (N=12). Crater thought to have formed by meteor impact, and geological evidence places this in the Miocene near Tortonian-Samartian boundary in excellent agreement with radiometric ages.

110154 and 110155 **Sediments Yamaguchi Prefecture** (Domen 1965) Miocene and Lower Tertiary. Scattered directions and results placed in B category.

110156 **Dykes and Baked Contacts** (Smith 1966) Lower Tertiary of Scotland. Two samples from each of 21 dykes, and 2 from baked rocks within 5 cm of margins. K/Ar ages on 3 dykes range 33.9 to 57.1 m.y. Cleaning at 270°C (dykes) and 100°C (contacts). Magnetic cleaning also at 150 oe. Average agreement between dyke and baked rock pairs is 13°. Mean direction of dykes is 175,–61 and of contacts 171,–58. Unit weight given to 99 specimens (N=99) cut from 84 samples.

110157 **Specularite Vein from Waldenstein** (Krs 1966b) Samples given unit weight (N=22). Age assigned Upper Mesozoic to Tertiary.

110158 **Quartz-Diorite Nose District Kinki Province** (Ito 1965) Age estimated to be "between the late Mesozoic and late Tertiary". Sites given unit weight (N=6). Intermediate directions also observed. Sampling over 15 km. Stability determined by contact studies and a.f. demagnetization of pilot specimens.

110159 **Ethiopian Trap Series** (Grasty 1964) Blue Nile Gorge. Sites given unit weight (N=11). See **110160** for later results.

110160 **Ethiopian Trap Series** (Brock Gibson Gacii 1970) Authors state that basalts "probably range from Eocene to Miocene". Grasty Miller and Mohrs (1963) give K-Ar ages on 5 samples ranging 30 to 69 m.y. with average of 49 m.y. Samples from 21 volcanic units at 3 localities one of which was the Blue Nile Gorge previously studied by Grasty (**110159**). One site gave intermediate directions. Cleaning in 600-100 oe.

110163 **Deccan Traps** (Sahasrabudha 1963, Verma Rao 1963, Bhimasankaram 1965) Unit weights given to sites. Summary of McElhinny (1968).

110164 **Basalts** (van Dongen van der Voo Raven 1967) Pliocene of Syria. Samples given unit weight (N=7). B category result.

110165 **Tertiary Intrusive and Baked Rocks** (McMahon Strangway 1968a and b) Paleocene or Eocene of Colorado. Sites given unit weight (N=3).

110166 **Volcanic Rocks Ngorongoro Caldera** (Gromme Reilly Musset Hay 1970) Pliocene of Tanzania. K-Ar age of 2.45 m.y. Three lower levels are normal, the next 2 intermediate, and the upper 17 reversed. Age corresponds well with the transition from polarity intervals 3 to 2 (Gauss to Matuyama) at 2.43 m.y. Result based on 22 volcanic units (21 trachy-andesite lavas and one tuff) each given unit weight (N=22). The sequence is 340 m thick and spread of samples 2 km.

110167 **Lavas Cape Dyer** (Deutsch Kristjansson May 1972) Lower Tertiary Baffin Island. Underlying sediments are Paleocene. K/Ar age is 58 m.y. Result based on 5 flows (N=5) collected over 3 km and a stratigraphic thickness of 400 m. Cleaning in 400 oe.

110168 See 120001

110169 See 120020

110170 See 120030

110171 See 120034

110172 See 120035

110173 **Aden Volcanics** (Irving Tarling 1961) Tertiary See 120042 (Irving 1964). Formerly assigned to Quaternary.

110174 See 120045

110175 and 110176 See 120049 120050

110177 See 120055

110178 See 120058

110179 See 120060

110180 See 120061

110181 See 120062

110182 See 120065

110183 **Upper Pliocene Lavas Ambre Mountains** (Andriamirado Karche 1970) Samples given unit weight (N=7).

110184 **Middle Tertiary Volcanics Ambre Mountains** (Andriamirado Karche 1970) Upper Miocene to Lower Pliocene

110185 **Upper Tertiary Lavas Ambre Mountains** Mean of **110183** and **110184**.

110186 **Tertiary Volcanics Afars and Issas Territory** (Pouchon Roche 1971) Stated that K/Ar dates indicate Eocene to Miocene age. Authors give mean for normal (023,+21; $\alpha_{95}=7°$ based on 9 samples from 8 sites) and reversed (185,–21; $\alpha_{95}=7°$ based on 15 samples from 13 sites) lavas. These mean directions and poles are averaged (N=2).

110187 **Secondary Magnetizations of Probable Tertiary age.** Poles **020049 020050** and **030027** are combined giving each unit weight (N=3). Magnetization of these Lower Paleozoic rocks considered Tertiary (Briden 1965 1967a).

110188 **Lavas Wait Creek** (Stone 1970) Age stated to be "about six million years". Nine flows. Angular standard error given.

110189 **Lavas of the Castles** (Stone 1970) Author states the age is "probably very close to that of the Wait Creek section" (**110188**). Ten flows. Angular standard error given.

110190 **Lavas of Air** (Stone 1970) Author states that "the section appears to be contemporaneous with the Castles section". Angular standard error given.

110191 **Lavas of Ningyo-Ishiyama** (Nagata Ozima Kaneoka 1970) Kyushu. Mean K/Ar age of 8.4 m.y. is given. Mean direction and pole calculated for this compilation excluding site KM41 whose error exceeds 50°.

110192 **Lavas of Fossa-Magna** (Nagata Ozima Kaneoka 1970) Hanamagari volcanic area and the Kirizumi Group. K/Ar ages 1.1 to 3.6 m.y. given. Entry calculated from 6 flow means given in original. Five flows were excluded because errors exceeded 40°.

110193 to 110198 **Coiron Lavas Ardêche** (Wensink 1970) Five lithostratigraphical units. Individual values given in **110193** to **110197** and combined result in **110198**. Individual lavas given unit weight. In the combined entry, the results for 2 sites not included in the individual entries, are used.

110199 **Antrim Lavas** (Wilson 1970) 47 lavas from 3 sections spread over 3 km. One specimen of baked rock gave the same direction as the lava baking it. One lava had intermediate direction, rest are reversed. Result based on 25 directions (N=25) which are regarded as independent in time, and which were obtained by combining results from 54 lavas.

110200 **Lavas of the Faeroe Islands** (Tarling Gale 1968, 1970) Presumably a progress report. Most lavas are reversed. Polarity ratio estimated from Figure 4 in the original. Mean direction of 99 pilot specimens given. Pole result based on 253 lavas. K/Ar ages ranging from 41.2 to 61.7 m.y. quoted.

110201 and 110202 **Deccan Traps** (Athavale Verma Bhalla Pullaiah 1970) Summary of data from Upper Deccan Traps (data of Sahasrabudhe (1963) 8 localities) and Lower Deccan Traps (data of Sahasrabudhe (1963) and Verma Apparao (1963) 15 localities).

110203 **Rajmahendri Traps** (Radakrishramurty 1963, Bhimasankaram 1965, unpublished N.G.R.I. data). Regarded by Bhimasankaram as outlier of Deccan Traps. Athavale *et al.* 1970 (from whom this result is quoted) regard them as "Upper Jurassic or perhaps middle Cretaceous age". Result obtained by combining the directions given in the originals.

110204 **Dykes Palamau Satpura and Surguja** (Radakrishramurty 1963, quoted in Athavale *et al.* 1970) Two results (158,+52 and 338,–33) are averaged. Age relationships not stated but directions are very similar to the Deccan Traps and for this reason are assigned here to Tertiary.

110205 **Stoddart Formation Akaroa Volcano** (Evans 1970) K/Ar age of 5.04 m.y. given. Flows given unit weight (N=44).

110206 **Akaroa Succession** (Evans 1970) K/Ar ages show the sequence extruded over the interval 9.1 to 8.4 m.y. with 7 reversals of the field. Results provide an estimate of the time of the reversal that terminates the normal interval associated with anomaly 5, as 8.67 m.y.

110207 **Mohole Project Hole EM7** (Cox Doell 1962) Age of overlying sediments is Miocene or younger. K/Ar ages of 15 and 32 m.y. quoted. Twenty-three cylinders cut from 12.6 m of core retrieved from hole drilled in 3568 m of water near Guadaloupe Island give this mean inclination. Directions unchanged in 800 oe. Reversed and normal magnetizations present in sediment of same core but no numerical values given (Fuller Harrison Nayudu 1966).

110208 **Volcanic Rocks Kaiserstuhl 3** (Lauer 1964) Oligocene to Miocene. Lavas and tuffs from 9 different bodies (4 to 26 samples from each) gave positive

directions. Mean direction calculated giving each unit weight (N=9). Results based on a.f. demagnetization.

110209 **Iceland Lavas Baked Laterites** (Smith 1967a) Results from laterites (14 samples) and lavas which bake them (15 samples) and certain very oxidized lavas (18 samples).

110210 **Volcanics of East Slovakia** (Nairn 1967) Age cited as Tortonian and Samartian. Sites given unit weight (N=33). Samples collected over 90 km.

110211 and 110212 **Beaverhead Valley Volcanics Montana** (Hanna 1967) One result from rocks whose probable age is cited as Eocene (**110212**), and a second from rocks whose probable age is cited as Late Miocene or Pliocene (**110211**). In original mean directions were not given and these have kindly been supplied by W.F. Hanna privately.

110213 **Volcanic Plug Sappington Montana** (Hanna 1967) Probable age cited as "Post Eocene, Pre-Quaternary". Pole only given in the original, and directions kindly supplied by W.F. Hanna.

110214 **Basic Dyke Sappington Montana** (Hanna 1967) Probable age cited as "late Cretaceous or younger".

110215 See **100050**

110216 **Lavas Flagstaff Arizona** (Kono *et al.* 1967) "Geologically" dated as Middle Pliocene. Seven sites sampled from 3 localities. Six well grouped sites given unit weight (N=6). Two baked sediment layers magnetized parallel to lavas.

110217 **Lavas New Mexico** (Kono Kobayashi Ozima Kinoshita Nagata Larson Strangway 1967, Ozima Kono Kaneoka Kinoshita Kobayashi Nagata Larson Strangway 1967) K/Ar ages ranging 4.50 to 3.62 m.y. quoted in original. Seventeen lavas sampled and the mean direction and poles are given, one site (819) excluded (N=16). Samples from 2 baked contacts gave similar directions to lavas.

110218 **Post-Orogenic Basalts Slovakia** (Nairn 1967) Cited as "Quaternary or upper most Pliocene". Mean direction and poles calculated from 14 site directions selected from the original. Samples obtained over 100 km.

110219 **Volcanic Rocks Slovakia** (Nairn 1967) Age cited as Tortonian and Samartian (Upper Miocene). Result calculated by McElhinny by averaging the 8 mean directions in Table 6 of original (N=8). About 4 samples from each site.

110220 **Volcanics Lausitz Area** (Nairn Vollstadt 1967) Age probably Oligocene or Lower Miocene. Result based on 27 sites, each given unit weight (N=27), spread over 35 km.

110221 **Tertiary Volcanics Province** (Nairn Roche Westphal Zijderveld 1967) Result based on observations from 2 flows with mean directions 014,+54 and 203, −67. Directions averaged and pole calculated.

110222 **Tertiary Lavas Greenland** (Tarling 1967a) Probable age of 50 to 60 m.y. cited in original. Directions corrected for few degrees of tilt. Result based on 28 flows from 4 localities spread over 70 km.

110223 **"Trapped Diabase" Southwest Greenland** (Ketelaar 1963 quoted in Tarling 1967)

110224 **Volcanics Faeroe Islands** (Abrahamsen quoted in Tarling 1967) Age cited as 50 to 60 m.y.

110225 **Cape Verde Island Volcanics** (Watkins Richardson Mason 1968) Result based on the detailed survey of lavas, dykes, and welded tuffs, which "appear to be overwhelmingly Miocene in age".

110226 **Canary Island Volcanics Combined** Average of directions and poles for entries **110135** to **110139** (N=5).

110227 **Igneous Rocks Kaiserstuhl Sponeck-Humberg Region** (Lauer 1967) K/Ar ages 16 to 18 m.y. cited. Result obtained by averaging directions for 5 units (N=5) given on page 93 of the original.

110228 **Igneous Rocks Kaiserstuhl D'Ihringen Region** (Lauer 1967) Results from 2 flows given and the mean calculated here.

110229 **Western Cascade Series** (Beck 1962) Lavas of Late Eocene to Late Miocene age. Based on 24 flows.

110230 **Lower Tertiary Volcanics Japan** (Sasajima Nishida Shimada 1968) Result based on 10 rock units, each given unit weight (N=10). Collected over 800 km.

110231 **Gabbroic Plugs British Columbia** (Symons 1969a) These intrude lavas dated by K/Ar at 10 to 13 m.y. Result based on observations from 17 sites distributed among 4 olivine gabbro plugs spaced over 20 km.

110232 **Cariboo Plateau Basalts** (Symons 1969b) K/Ar ages of 10 to 13 m.y. cited in original. Flows given unit weight (N=48).

110233 **Nandewar Volcano** (Wellman McElhinny McDougall 1969) K/Ar age of 17.5 m.y. cited. Samples collected through 700 m. Flows given unit weight (N=34).

110234 **Liverpool Volcano** (Wellman McElhinny McDougall 1969) K/Ar age of 17.5 m.y. cited. Samples

collected through a thickness of 700 m. Flows given unit weight (N=36).

110235 **Barrington Volcano** (Wellman McElhinny McDougall 1969) K/Ar age of 51.5 m.y. cited. Samples obtained through 60 m. Flows given unit weight (N=33).

110236 **Andesite Dykes Wzar Mountain** (Birkenmajer Nairn 1968) Age is cited as Miocene. Sites given unit weight (N=15).

110237 **Tertiary Dykes Britain** (Dagley 1969) Early results (**110025**) showed considerable scatter reduced in the present study after magnetic cleaning. Result based on 9 dykes from 11 sites, each given unit weight (N=11).

110238 **Spanish Peaks Dykes Colorado** (Larson Strangway 1969) Age cited is Late Eocene to Early Oligocene. Results based on 26 sites from 6 dykes, spread over 25 km, each given unit weight (N=6).

110239 **Shiprock Dyke New Mexico** (Larson Strangway 1969) Result based on 3 sites each given unit weight (N=3). Results from second dyke were random (k=2). Placed in B category being based on fewer than 10 samples.

110240 and 110241 **Tertiary Basalt Golden, Colorado** (Larson Mutschler Brinkworth 1969) K/Ar age of 58.7 m.y. cited. These 2 results, from separate flows, are based on fewer than 10 samples and entered in B.

110249 to 110252 **Mull Linear Dyke Swarm Scotland** (Ade-Hall Wilson 1969) Baked rocks gave directions parallel to intruding body. Nineteen dykes were reversed with shallow inclination. Swarm is stated to be "probably of Paleocene age". It is stated that "relatively high magnetite deuteric oxidation and separate ilmenite development are associated with reversed polarity". Entry **110251** obtained by averaging directions **110249 110250**.

110253 **Lower Silesian Basalts** (Birkenmajer Nairn 1969) Samples obtained over 200 km. Sites given unit weight (N=65). Stated in original that "the activity began in the Oligocene times —— reached a maximum during the Miocene, finally dying out in the Late Pliocene or Pleistocene".

110254 to 110256 **Cenozoic Basalts West Argentina** (Creer Valencio 1969, Valencio 1965a and b, Valencio Linares Creer 1969) Samples over 500 km. Results arranged in 3 groups: **120101** referred to Polarity Interval 1 (Bruhnes); **110254** (**120102**) referred to Polarity Interval 2 (Matuyama); and an Upper Miocene to Pliocene group **110255**. In **110256** grand average is given. Sites given unit weight throughout. K/Ar ages ranging 27.6 to 0.1 m.y. cited.

110257 See **120104**

110258 **Older Volcanic Series Mauritius** (McDougall Chamalaun 1969) K/Ar ages of 4.73 to 7.88 m.y. cited. Flows given unit weight (N=26).

110259 **Rajahmundry Traps** (Pal Bhimasankaram 1967) Presumably same rock unit as **110203**.

110260 **Deccan Traps Gulbarga** (Pal Bhimasankaram 1967)

110261 **Igneous Rocks of Zempleni Mountains** (Dagley Ade-Hall 1970a and b) Acid to intermediate intrusions and flows. Age cited as Tortonian or Samartian (Upper Miocene). Sites given unit weight (N=10).

110262 **Volcanic Rocks of Matra-Czerhat Mountains** (Dagley Ade-Hall 1970a and b) Age cited as Helvetian and Tortonian (Middle Miocene). Sites given unit weight (N=9).

110263 **Comlo Andesite Lacolith** (Dagley Ade-Hall 1970a and b) Cited as Tertiary. Result placed in B being based on fewer than 10 samples.

110264 and 110265 **Cenozoic Volcanics Bohemian Massif** (Krs 1966a 1968) Samples from 3 volcanic phases: **110264** phase 1 Upper Aquitainian to Burdigalian (Lower Miocene); **110265** phase 2 Upper Tortonian and pre-Quaternary (Middle Miocene to Pliocene); and **120106** phase 3 Pleistocene.

110267 **Lavas Neuquen and Mendoza Provinces** (Valencio Creer 1968) Samples obtained over 500 km. Sites given unit weight (N=24). K/Ar ages 0.47 to 27.8 m.y. reported. Presumably an early report of results described in more detail in **110253** to **110256**.

110268 **Igneous Rocks Rarotonga** (Tarling 1967b) Eleven site directions are averaged (N=11). Site 1 of the original is excluded because of very wide scatter K/Ar ages of 2.3 and 2.8 m.y. cited, indicating an Upper Pliocene age.

110269 **Lower Tertiary Red Beds** (Lee Lee Liu Liu Yeh 1963) In original results from 2 localities given (344,+45; 013,+49). These directions are averaged and a pole calculated. In absence of evidence for stability result entered in B.

110270 **Middle and Upper Tertiary Red Beds** (Lee Lee Liu Liu Yeh 1963) In the original results from 3 localities were given (166,–36; 344,+37; 345, +47). Reversals indicate stability and result entered in A.

110271 **Tuncelli Group** (van der Voo 1968) Eocene red siltstones and volcanics. Sites given unit weight (N=4).

110272 See **100053**

110273 to 110276 **Volcanics South Arabia** (Tarling Sanver Hutchings 1967) Entries taken from Table 2 of the original using the B selection; i.e. all sites with significant directions at P=0.1. Entry **110276** obtained by combining **110275** with earlier data (**110346**). K/Ar ages are cited as follows: entry **110273** 10 m.y.; **110274** 5 and 6 m.y.; **110275** 5 m.y.

110277 **South Arabian Volcanics Combined** Results from the Jebel Khariz (**110273**), Little Aden (**110274**), and Aden itself (**110276**) are combined giving each unit weight.

110278 to 110280 See **120111**

110281 See **120114**

110282 **Lousetown Volcanics A** (Heinrichs 1967) K/Ar ages from 1 to 1.9 m.y. cited. Twenty-three flows, given unit weight (N=23), from 3 localities.

110283 **Lousetown Volcanics B, Lousetown Creek** (Heinrichs 1967) K/Ar age of 6.8 m.y. Author regards these directions as "indicating a reversal transition". Lava flows given unit weight (N=32).

110284 to 110287 **Taiwan Lavas and Tuffs** (Chi-Hsu Kienzle Scharon Sun 1966) Sites given unit weight. **110287** placed in the B category because error exceeds 20°. In **110286** the mean of **110284** and **110285** is given.

110288 **Basalts Marostica** (de Boer 1963 1965) Middle Oligocene.

110289 **Basalts Priabona** (de Boer 1963 1965) Middle Eocene.

110290 to 110293 **Joides Sediment Cores Leg 2 Station 10** (Sclater Cox 1970) Ages determined by fossils as follows: **110290** 12 m.y.; **110291** 30 m.y. (Stated in original that this result may be unreliable); **110292** 40 m.y.; **110293** 45 m.y. standard errors given.

110294 See **120125**

110295 **Rio Grande de Santiago Volcanics** (Watkins Gunn Baksi York Ade-Hall 1971) K/Ar ages ranging 4.65 to 9.27 m.y. given. Sites given unit weight (N=7).

110296 **Lavas Madiera 2** (Watkins Abdel-Monem 1971) K/Ar ages ranging 0.7 to 1.76 m.y. quoted. Directions from 9 sites averaged giving each unit weight and pole calculated. Results from a tenth site (183.3, −56.5) with K/Ar age of 3.05 m.y. also given.

110297 **Pliocene Sediments Kopet-Dagh and Krasnovodsk Peninsula** (Mammedov 1967) Average of poles from 15 sections (N=15). Sites spread over 500 km and through 1000 m.

110298 **Kita-Matsuura Basalt Kyushu** (Ozima Kaneoka Kono Kinoshita Kobayashi Ohnaka Nagata Kurasawa 1968) K/Ar ages ranging 7.0 to 10.6 m.y. given. Flows given unit weight (N=13). Result in B because error exceeds 20°.

110299 **Andesites Wzar Mountain** (Kruczyk 1966) Cited as Upper Tertiary. Samples given unit weight (N=16). Data from Geophysical Journal list.

110300 **Kaiserstuhl Volcanics 4** (Roche Lauer 1964) K/Ar age of 16.2 m.y. cited. Sites given unit weight (N=8).

110301 and 110302 **Andesites Ryukyu Islands** (Sasajima Shimada 1965) Miocene. **110301** Ishigaki Island unit weight given to 3 sites (N=3). **110302** Kume-Jima (6 sites) and Okinawa-Jima (1 site) giving sites unit weight (N=7).

110303 **Iceland Lavas** (Kristjansson 1968) Eocene to Miocene. Unit weight given to flows (N=60).

110304 **Lisbon Volcanics 1** (Watkins Richardson 1968a and b) Lavas lie beneath the Oligocene Benfica Formation and above Upper Cenomanian limestones, so their probable age is Eocene or Upper Cretaceous.

110305 **Lisbon Volcanics 2** (van der Voo 1968 1969) See **110304**. Sites given unit weight (N=5).

110306 **Deccan Traps Chincholi Mysore State** (Bhimasankaram Sampath 1967) Data from Geophysical Journal list.

110307 **Volcanics Tuffs Valles Caldera New Mexico** (Doell Dalrymple Smith Bailey 1968) K/Ar ages 0.2 to 2.19 m.y. cited. Sites given unit weight (N=26).

110308 **Volcanic Complex of Almopias** (Bobier 1968) Pliocene. Sites given unit weight (N=5).

110309 **Yamaguchi Basalt** (Domen 1965) Plio-Pleistocene to Holocene. Results from 5 igneous rock "groups" are averaged giving each unit weight (N=5).

110310 **Lavas Massif de Kavallo** (Bobier Robin 1969) Miocene. Thirteen sites each given unit weight (N=13). Scattered directions observed in a nearby set of dykes.

110311 **Alghero Trachyandesites Sardinia** (de Jong Manzoni Zijderveld 1969) Age "Oligocene, perhaps early Miocene". Deviation of declination may indicate

rotation of Sardinia. Flows given unit weight (N=10). Samples collected over 10 km.

110312 **Marys Peak Sill Oregon** (Clark 1969) K/Ar age of 29.6 m.y. (Middle Oligocene). Sites spread through 390 m and given unit weight (N=24).

110313 **Monchique Syenite** (van der Voo 1969) K/Ar age of 57 m.y. (Eocene) cited. Result placed in B being based on fewer than 10 samples.

110314 **Lavas 25th of May Islands** (Valencio Fourcade 1969) Upper Miocene of South Shetlands. Sites given unit weight (N=22).

110315 **Lavas James Ross Island** (Blundell 1962, Valencio Fourcade 1969) Middle Miocene. Remaining sites of Blundell 1962 (entry **120140**) are combined giving each unit weight (N=4).

110316 **Antrim Basalt Column Giant's Causeway** (Symons 1967a) Detailed sampling of single basalt column.

110317 **Fernando Noronha Igneous Rocks** (Richardson Watkins 1967) Post Upper Cretaceous of Brazil. Results from 24 units each given unit weight (N=24).

110318 See **100083**

110319 See **100087**

110320 **Brown Basaltic Dykes** (Symons 1968) Post-Upper Miocene. Nine dykes sampled. One other (blue porphyritic dyke 281, +76) of Lower Tertiary age, and an olivine basalt flow (321,+76) of Upper Miocene to Lower Pliocene age also sampled.

110321 See **100089**

110322 **Parkstein Basalt** (Soffel Supalak 1968) Tertiary, perhaps Upper Miocene. Samples from one flow given unit weight (N=31).

110323 **Midway Atoll** (Vine quoted in Francheteau Harrison Sclater Richards 1970) Oligocene. Result based on 2 cores demagnetized at 700 oe. Confidence angle seems too small to be derived from so few samples.

110324 **Volcanics Tokaji Mountains Hungary** (Nairn Negendank Panto 1971) Tortonian to Samartian (Upper Miocene) andesites with subordinate rhyodacites and rhyolites. Samples spread over 30 km.

110325 **Ladek Zdroj Volcanics Lower Silesia** (Birkenmajer Jerzmanski Nairn 1970) Age cited as Pliocene or Lower Pleistocene. Correspond to Polarity Interval 1 (Bruhnes). Result calculated from 3 site directions given in Table 7 of original.

110326 **Volcanics Jawor Lower Silesia** (Birkenmajer Jerzmanski Nairn 1970) Oligocene (?). Helium ages 29 to 36 m.y. quoted. Four of the sites known to be Oligocene from geological evidence. Result calculated from 12 sites listed in Table 2 in original.

110328 **Igneous Rocks Southwest Japan A** (Ito 1970) Upper Miocene basalts, andesites, ryholites and dacites. Average of directions and poles of Table 1 in the original. Stability established by demagnetization of test specimens.

110329 **Igneous Rocks Southwest Japan B** (Ito 1970) Mio-Pliocene. Six radiometric ages quoted range 13 to 14.3 m.y. Variety of igneous rocks sampled ranging from granites to basalts. Result based on 300 samples from 36 sites. Directions widely scattered and thought to represent a reversal transition.

110330 **Igneous Rocks Southeast Japan C** (Ito 1970) Middle Pliocene basalt and andesite. K/Ar ages of 5.8 and 6.3 m.y. quoted. Calculated from directions and poles listed in Table 3 in original. Stability demonstrated by demagnetization of pilot specimens.

110331 **Igneous Rocks Southwest Japan D** (Ito 1970) Plio-Pleistocene. K/Ar ages quoted are 1.6 and 0.8 m.y. Stability demonstrated by demagnetization of pilot specimens.

110333 **Basalts South Korea** (Bong Kyun Kim 1965) Plio-Pleistocene. Lateral spread 250 km. Data from Geophysical Journal pole list.

110334 **Nephelinites Luban Area Lower Silesia** (Birkenmajer Jerzmanski Nairn 1970) Upper Tertiary. Result calculated from 5 reversed sites in Table 5 of original.

110335 **Volcanics Niemodlin Lower Silesia** (Birkenmajer Jerzmanski Nairn 1970) Tertiary. Result calculated from 6 site directions listed in Table 6 of original.

110336 **Sumgait River Suite** (Khramov quoted in Khramov Sholpo 1967) Paleocene red clays of Azerbaidzhan. Primary magnetization determined by "intersection" method.

110337 **Lower Tertiary Sediments Turkmenia** (Khramov and Mammedov quoted in Khramov Sholpo 1967) Eocene to Oligocene clays and aleurolites. Average of results from 4 localities over 500 km. Primary magnetization determined by a.f. demagnetization and "reversal" method.

110338 **Liulinvor Suite** (Goncharov quoted in Khramov Sholpo 1967) West Siberia. Primary magnetization determined by a.f. demagnetization.

110339 **Basalts and Sediments Turkmenia** (Khramov quoted in Khramov Sholpo 1967) Miocene. Stability determined by "pebble" method. Locality given as 55N,161E which is inconsistent with location in western Turkmenia. Result entered in B category.

110340 **Sediments Kompasskii Bor** (Pospelova quoted in Khramov Sholpo 1967) Lower Miocene lacustrine clays. Primary magnetization determined by thermal demagnetization.

110341 **Maikop Suite** (Tretiak and Krugliakova quoted in Khramov Sholpo 1967) Lower Miocene clays Kerch Peninsula. Stability determined by "intersection" method and thermal cleaning. Average of 2 entries 60 and 63 (176,–37; 184,–58) given.

110342 **Karagaudan Suite** (Mammedov quoted in Khramov Sholpo 1967) Miocene clays and aleurolites Turkmenia. Primary magnetization determined by a.f. demagnetization. Average of 2 entries (Keliata 009, +40 and Khodzhabulak 021, +50).

110343 **Middle and Upper Miocene Sediments** (Mammedov quoted in Khramov Sholpo 1967) Clays and aleurolites Turkmenia. Primary magnetization determined by "intersection" method. Average of 3 results (Keliata 009, +36; Ilanly 006, +50; another 186, –24).

110344 **Coal Bearing Suite Basalts** (Davydov Kravchinski quoted in Khramov Sholpo 1967) Mio-Pliocene of Tunka Depression.

110345 See **100088**

110346 **Pliocene Sediments** (Tretiak quoted in Khramov Sholpo 1967) River Molochanya. Primary magnetization determined by demagnetization. Average of 3 results 22, 24 and 51 (182, –33; 013, +54; 037, +77).

110347 **Primore Neogene Basalts 2** (Kochegura quoted in Khramov Sholpo 1967) Pliocene andesites and basalts of Maritime Krai. Average of 4 results (156, –55; 019,+68; 173,–60; 004,+57). Presumably supersedes **110054**.

110348 **Khabarovsk Basalt 2** (Kochegura quoted in Khramov Sholpo 1967) Pliocene andesites and basalts Khabarovsk Krai. Presumably supplements **110052**.

110349 **Sakhalin Basalts 2** (Kochegura quoted in Khramov Sholpo 1967) Pliocene andesites and basalts. Presumably supplements **110055**. Average of 2 results (355, +75; 193, –66).

110350 **Kamchatka Basalts 2** (Kochegura quoted in Khramov Sholpo 1967) Pliocene andesites and basalts. Presumably supplements **110059**. Average of 4 results (183, –64; 005, +68; 173, –61; 354, +68).

110351 **Red Coloured Suite 2** (Khramov quoted in Khramov Sholpo 1967) Pliocene clays west Turkmenia. Average of 6 results 11,+39; 191,–44; 9, +37; 181–42; 16,+49; 175,–39). Primary magnetization determined by "intersection" method. Presumably supersedes **110043**.

110352 **Pliocene Sediments Azerbaidzhan** (Ismayil-Zade and Khramov quoted in Khramov Sholpo 1967) Primary magnetization determined by "intersection" method and a.f. demagnetization. Clays of Surakhany, Sabuchin, and Balakhany Suites. Average of 8 results (000, +47; 012, +43; 174, –40; 001, +54; 192, –51; 011, +50; 187, –53; 177, –46).

110353 **Apsheronsk and Akchagylsk Stages 2** (Khramov and Mammedov quoted in Khramov Sholpo 1967) Pliocene and Lower Pleistocene clays and aleurolites Turkmenia. Average of 5 entries (196,–45; 197-37; 181-49; 5,+43; 24,+56). Primary magnetization determined by demagnetization.

110354 **Pliocene Sediments Turkmenia** (Mammedov quoted in Khramov Sholpo 1967) Kaksar Bulak. Primary magnetization determined by thermal cleaning.

110355 **Pliocene Sediments Southern USSR** (Tretiak quoted in Khramov Sholpo 1967) Primary magnetization determined by a.f. demagnetization. Average of poles of 3 results distributed over 1000 km (R. Kuban 71N, 73E; Crimea 77N,65E; Odessa 64N,199E).

110356 **Boqueron Sediments** (Creer 1970a) Tertiary. Unit weight given to specimens (N=21). Placed in B because number of samples fewer than 10.

110358 **Andesites Bulgaria** (Vollstadt Rother Nozharov 1968) Sites given unit weight (N=3).

110361 **Basalts Colorado** (York Strangway Larson 1971) Miocene. Of 26 flows near State Bridge, 12 below (K/Ar age 24 m.y.) were normal, 9 transitional, and 5 above (K/Ar age 21.5 m.y.) reversed. Four groups of normal and reversed flows are formed in original, and are averaged here giving each unit weight.

110362 **Iztaccihuatl Volcano** (Steele 1971) Pliocene. Three K/Ar dates quoted 5.1, 8.7 and 13.2 m.y., the latter being considered too old.

110363 **Santa Rosa Range Reversal Transition** (Larson Watson Jennings 1971) Miocene. K/Ar age 15.1 m.y. cited. Reversal transition reversed to normal

comparable to that observed in Oregon (Steens Mountain and Poker Jim Ridge (**110364**)).

110364 **Steens Mountain Transition** (Watkins 1969, Goldstein Strangway Larson 1969) Miocene. K/Ar age of 15.1 m.y. cited. Study of 71 successive lavas revealed polarity transition reversed to normal.

110365 **Poker Jim Ridge Transition** (Goldstein Strangway Larson 1969) Miocene K/Ar age of 15.1 m.y. cited.

110367 **Volcanics near Alghero Sardinia** 2 (Bobier Coulon 1970) Oligocene to Early Miocene. Pre-Helvetian volcanics. Previous results from different sampling locations given **110311**.

110368 **Volcanics Alghero Combined** (Bobier Coulon 1970) Results of **110367** and **110311** combined giving unit weight to sites (N=21).

110369 **Volcanics Sardinia** (Bobier Coulon 1970) Age post-Tortonian and possibly Quaternary. Flows given unit weight (N=8).

110370 **Deccan Traps Malwa Plateau** (Pal BinduMadhar Bhimasankaram 1971) "Middle Trap" horizon. K/Ar age of 60 m.y. quoted. Fifteen flows bottom 2 normal upper 13 reversed, which contradicts simple reversed to normal sequence that is apparently valid for W. Ghats. Apparently more than one reversal is present in Deccan Traps. Original contains good review of paleomagnetic studies of Traps.

110371 **Deccan Traps Jalna** (Pal Bhimasankaram 1971) Three flows spanning 10 m.

110373 **Kazganchai Suite** (Mammedov quoted in Khramov Sholpo 1967) Pliocene aleurolites Turkmenia. Primary magnetization determined by a.f. and thermal demagnetization. Mean of 3 results (Karu-Gaudan 188,–45; Karu Gaudan 003,+41; Kaksar-Bulak 016,+54).

110374 **Pliocene Muds Baja California** (Strangway McMahon Walker Larson 1971). Samples grouped into 4 sets each given unit weight (N=4).

110375 to 110378 **Kauai Lavas Hawaiian Islands** (Doell 1972) Pliocene. Each site a separate flow and given unit weight in analysis. K-Ar ages (McDougall 1964) as follows: Koloa 1.4 m.y. one result, Makaweli 3.5 to 4.0 m.y., Napali 4.5 to 5.6 m.y. High precision attributed to low secular variation in Pacific.

120070 **Lavas and Dykes Tristan da Cuhna** (Blundell 1964) Quaternary to Recent. Cleaned in 100 oe. Samples given unit weight (N=8).

120071 **Lavas Tristan da Cuhna** (Creer 1964c) Quaternary to Recent. Magnetically cleaned. Samples from 10 flows each given unit weight (N=10).

120072 **Lavas and Dykes Tristan da Cuhna** Entries **120070** and **120071** combined giving unit weight to flows (N=12).

120073 **Basalt Inaccessible Island** (Creer 1964c) Quaternary-Recent. Unit weight to specimens (12 specimens 3 samples).

120074 **Recent Lavas Dykes Jan Mayen Land** (Fitch Nairn Talbot 1965) Age cited as 9,000 years or less. Cleaning in 0 to 250 oe. Sites given unit weight (N=12). Curie temperatures range from 500 to 570°C.

120075 **Hawaiian Lavas** (Doell Cox 1965) Radiometric ages of less than 0.8 m.y. cited. Flows given unit weight (N=112). Distributed through 140 m and spread over 125 km. Stability of pilot specimens shown by a.f. demagnetization. Curie temperatures generally above 500°C.

120076 See **110127**

120077 **Lavas Rift Valley** (Nairn 1964) Pleistocene. Samples from 4 flows each given unit weight (N=4). Magnetic cleaning in about 250 oe.

120078 See **110128**

120079 **Plio-Pleistocene Volcanics East Africa** (Nairn 1964) Average pole calculated from the data of entries A_9 A_{10} A_{11} in original giving unit weight to each site pole (N=7).

120080 **Newer Volcanics Victoria 2** (McDougall Allsop Chamalaun 1966) K-Ar ages ranging from 4.5 to 0.5 m.y. given. Result confirms (**120045**) based on n.r.m. Pole given is that quoted by Wellman McElhinny McDougall (1969).

120081 See **110132**

120082 See **110133**

120083 **Volcanics Tonga** (Tarling 1966) Age probably Quaternary. Results from 3 sites at Hungar Tonga and Tofua. Cleaning in 225 oe. Result placed in B category being based on fewer than 10 samples.

120084 **Tonga Dykes** (Tarling 1966) Based on 6 samples collected from 3 dykes of pre-Upper Eocene age, from the Island of 'Eua. Dykes given unit weight (N=3). Result placed in B category because number of samples less than 10 and error exceeds 20°.

120085 **Volcanics Hierro Island** (Watkins Richardson Mason 1966a) K-Ar ages suggest the major volcanism on

Hierro is "entirely within the last two million years" (Abdel – Monem Watkins Gast 1967). Magnetic cleaning in 150 oe. Flows given unit weight (N=33).

120086 See **110137**

120087 See **110140**

120088 See **110110**

120089 to 120091 **Rattanakivi Volcanic Massif** (Lacombe Roche 1970) In the original, analyses of normal and reverse magnetizations quoted separately, giving samples unit weight (N=14) and (N=9) respectively. Authors attribute these to Polarity Intervals 1 (Bruhnes) and 2 (Matuyama) respectively. In **120091** directions and poles of 2 previous entries are averaged (N=2).

120092 **Lavas Ambre Mountains** (Andriamirado Karche 1970) Recent. Samples given unit weight (N=14).

120093 **Volcanics Afars and Issas** (Pouchan Roche 1971) In original the directions of normal samples (359,+13; $\alpha_{95}=12°$; based on 6 samples from 5 sites) and reversed samples (169,–01; $\alpha_{95}=14°$; based on 4 samples from 2 sites) given. These are averaged (N=2). Pole given is the mean of poles given in original.

120094 **Lavas Mt. Edgecomb** (Stone 1970) Quaternary of Krusov Island Alaska. Five flows. Angular standard error given.

120095 **Lavas Mount Griggs** (Stone 1970) Quaternary. Five flows. The angular standard error given.

120096 **Lavas San Cristobal Island Galapagos** (Cox 1970) It is stated that the lavas have "a maximum age of about one million years". Two lavas are assigned to Polarity Interval 2 (Matuyama Reversed Epoch) and the remainder to Polarity Interval 1 (Bruhnes Normal Epoch). Result based on samples from 24 sites. In several instances, the proximity of flows to one another suggested that they formed at essentially the same time and hence recorded the field at the same time. The number of such "non-redundant" sites is said to be 17, and these given unit weight (N=17).

120097 **Chaine des Puys 2** (Bonnhommet 1970) Direction agrees very well with that previously obtained, **120003**. About 30 units studied but no statistics given. C_{14} dates indicate that age of these volcanics is "very near to 8,000 years". K/Ar dates vary between 20,000 and 50,000 years. Lavas and scoria from the Puys de Laschamp and lava from Puys de Barne are reversed.

120098 and 120099 **Plio-Pleistocene Volcanics Montana** (Hanna 1967) Probable age stated to be Pliocene or Early Pleistocene. Two results given from Virginia City (**120098** 5 sites) and Norris (**120099** 1 flow). Although number of samples in **120098** is not stated in original, it is very likely more than 10 and result placed in A category. In original poles only given, and mean directions were kindly supplied by W.F. Hanna.

120100 See **110218**

120101 and 120102 See **110253**

120103 and 120104 **Younger Volcanic Series Mauritius** (McDougall Chamalaun 1969) Results from late (K/Ar ages 0.17 to 0.70 m.y.) and early lavas (K/Ar ages 1.96 to 3.40 m.y.). Flows given unit weight.

120105 **Basalts Balaton Highlands** (Dagley Ade-Hall 1970) Stated that basalts are "Upper Pliocene to Lower Pleistocene". Overlie Pannonian clays, which are Pliocene. At one quarry a fan-shaped display of basalt columns gave uniform directions, which shows that cooling stresses did not affect the magnetization directions.

120106 See **110264**

120107 See **110267**

120108 **Easter Island Basalts** (Booker Bullard Grasty 1967) K/Ar age of 0.72 m.y. cited. Specimens given unit weight (N=23). Result in the B category being based on fewer than 10 samples.

120109 **Volcanic Rocks New Hebrides** (Tarling 1967c) Samples from 9 sites (given unit weight in the analysis (N=9)) on 4 islands over 150 km. Some lavas are historic and it is stated that "the normal polarity of all sites would be consistent with a middle to late Pleistocene age". K/Ar ages from 2 sites of 0.26 and 1.7 m.y. cited.

120110 **Keelung Volcanic Group** (Chi-Hsu Kienzle Scharon Sun 1966) Sites given unit weight (N=32).

120111 to 120113 **Taiwan Volcanics** (Chi-Hsu Kienzle Scharon Sun 1966) Results from 3 groups: Tatun Volcanic Group (**120111 110278**), Penghu Islands Basalt (**120112 110279**), and Shiukuran River Andesites (**120113 110280**). Sites given unit weight.

120114 **Taiwan Volcanics Combined** Plio-Pleistocene. Average of directions in **120110** to **120113** each unit weight (N=4).

120115 See **110282**

120116 **Olduvai Gorge Bed 1** (Gromme Hay 1963 1967) K/Ar age of 1.9 m.y. quoted. Results from upper flow (1963) and lower flow (1967) are averaged. Result placed in B being based on fewer than 10 samples.

120117 to 120123 **Lavas Chaine des Puys** (Bonnhommet Zahringer 1969, Bonnhommet Babkine 1966) K/Ar gives 11 to 45 thousand years. Maximum age of 20,000 yrs is suggested. Laschamp Flow yields C_{14} age of 18,000 yrs. Hence a reversed polarity interval sometime between 20,000 and 8,000 yrs is indicated. In **120123** the results in **120117 120118 120120** to **120122** are averaged giving each unit weight (N=5).

120124 **Kau Volcanic Series Hawaii** (Doell 1969) Age of less than 9,000 yrs suggested. Angular deviation of site poles only 3° suggesting that non-dipole field was small over the Pacific. Samples from 54 flows over 150 m.

120125 **Lavas of Flores Azores** (Serughetti Roche 1968) K/Ar ages in range 0.2 to 2.19 m.y. cited.

120126 and 120127 **Lavas Faial and Graciosca, Azores** (Saucier Roche 1964/65) Recent. Entered in B being based on fewer than 10 samples.

120128 to 120130 **Lavas Reunion Island** (Chamalaun 1968a) Three groups with K/Ar ages (McDougall 1971) as follows: Group 1 0.57 to 0.43 m.y., Group 2 1.2 to 1 m.y., Group 3 about 2 m.y. **120129** placed in B category because of large error. Flows given unit weight.

120131 See **110296**

120132 **Volcanic Rocks Anatolia** (Sanver 1968a) Samples from wide area of eastern Anatolia. K/Ar ages ranging from 0.4 to 1.45 m.y.

120133 **Volcanics Cocos Island** (Dalrymple Cox 1968) K/Ar ages ranging 1.93 to 2.09. Samples spaced over 1 km. Baked tuffs beneath 2 reversed lavas were reversely magnetized. Result entered in B being based on fewer than 10 samples.

120134 **Usami Volcano** (Kono 1968) Age cited as Pleistocene. Andesites and scoria. Seven K/Ar dates on andesites range 0.45 to 0.87 m.y. given in Kaneoka Ozima Kono (1970). Sites given unit weight (N=11). Earlier work in **120038**.

120135 **Hanamagiri and Kiruzumi Andesites** (Ozima Kaneoka Kono Kinoshita Kobayashi Ohnaka Nagata Aramaki 1968) K/Ar ages from 1.01 to 3.07 m.y. Flows given unit weight (N=11).

120136 See **110307**

120137 **Volcanics North Island New Zealand** (Cox 1969) Age of less than 0.68 m.y. cited. Sites given unit weight (N=22) and spread over approx. 400 km.

120138 **Basalts Plateau du Velay** (Bobier 1969) Pleistocene. Sites given unit weight (N=28). Data from Geophysical Journal list.

120139 See **110309**

120140 **Lavas Deception Island** (Blundell 1962, Valencio Fourcade 1969) South Shetland Islands. From the work of Blundell (**120066**) results from 7 sites from the younger normally magnetized lavas are combined with results from 8 sites of Valencio Fourcade. Sites given unit weight (N=15).

120142 **Wanganui and Hawera Series** (Cox 1971) Ignimbrites and andesites. From stratigraphy and polarity rocks assigned to Polarity Interval 1 (Bruhnes less than 0.69 m.y.). Samples spread over 500 km. In original, directions divided into 4 groups (A to D) and these given unit weight (N=6). Result placed in B category because error exceeds 20°.

120143 **Matahina Ignimbrite** (Hoare 1967) Pleistocene. Two samples from each of 2 localities on the Lower Rangitiki River gave this direction. Result in the B category being based on fewer than 10 samples.

120144 **Lavas Chaine des Puys 3** (Doell 1970) Lavas assigned to Polarity Interval 1 (Bruhnes less than 0.8 m.y.) on the basis of polarity. Sites given unit weight (N=21).

120145 **Lavas Chaine des Puys 4** (Doell 1970) Pre-polarity Interval 1 (Pre-Bruhnes). Flows given unit weight (N=10).

120147 and 120148 See **110335** and **110334**

120150 See **110331**

120151 See **110353**

120152 **Volcanics Gerona** (Guardia 1964) Recent flows given unit weight (N=7). Spread over 10 km. Taken from Geophysical Journal pole list.

120153 **Baku Stage 2** (Khramov quoted in Khramov Sholpo 1967) Middle Quaternary sediments, west Turkmenia. Primary magnetization determined by "intersection" method.

120154 **Kamchatka Basalts 3** (Kochegura quoted in Khramov Sholpo 1967) Upper Quaternary andesites and basalts.

120155 **Sediments Tunguska River** (Goncharov quoted in Khramov Sholpo 1967) Late Quaternary clays and loams of the Lower Tunguska River. Primary magnetization determined by a.f. demagnetization.

120156 **Igneous Rocks Georgia 2** (Adamiya quoted in Khramov Sholpo 1967) Middle Quaternary andesites, dacites and dolerites.

120157 **Loess Loams and Clays** (Tretiak quoted in Khramov Sholpo 1967) Results from 9 localities distributed from Moldavia to the Kuban in southern Russia. Average of poles 3 to 9, 12, 13 given in list.

120159 See **110369**

120160 **Wilson Creek Formation Mono Lake** (Denham Cox 1971) Age of 30,400 to 13,300 yrs cited based on ^{14}C determinations. Magnetic cleaning at 200 oe. Thickness of 7 metres sampled at 60 levels. No reversal occurs and this is regarded as evidence against the reality of the Laschamp reversal. See **120117**. An excursion of 42° noted at 24,600 BP and this is attributed to secular variation.

120161 **Modern Muds Baja California** (Strangway McMahon Walker Larson 1971) Sites given unit weight (N=16).

130001 **Manihiki, Northern Cook Islands** (Woodward Hochstein 1970, Woodward Reilly 1970) Direction and pole inferred from magnetic anomalies. Authors state that results indicate a "Pre-Cretaceous age for the bulk of Manihiki".

130002 **Rarotonga, Southern Cook Islands** (Woodward Hochstein 1970) Goodness of fit ratio R=1.81. Authors state the pole implies a relatively young age (Upper Tertiary) for this Island. Four other islands in the southern Cooks were studied, but their goodness of fit ratios were close to 1(R=1.10 to 1.15).

130003 to 130006 **Seamounts Gulf of Guinea** (Harrison 1970) Age estimated to be 130 m.y. **130003, 130004** results based on two surveys each. **130005** result based on one survey. **130006** mean result of five surveys.

130007 to 130016 **Hawaiian Seamounts** These 17 seamounts are regarded (Francheteau Harrison Sclater Richards 1970) as approximately the same age, "probably Upper Cretaceous". The poles from seamounts **130007** (N=9) and **130008** to **130015** are averaged, in entry **130016**, giving each unit weight (N=17).

130007 **Hawaiian Development** (Richards Vacquier Van Voorhis 1967) Results from 9 seamounts in 6 areas. Goodness of fit R varies from 1.3 to 4.7 and average is quoted. Four K/Ar ages from dredged trachytes ranged 79 to 86 m.y. (Dymond Windom 1968). One alkali basalt gave age 0.7 m.y. and probably reflects recent vulcanism unrepresentative of the seamount. Pole given is the mean of poles for each seamount (N=9).

130008 **Dixon Seamount** (Francheteau Sclater Craig 1969) Goodness of fit R is 5.60.

130009 **Show Seamount** (Francheteau Harrison Sclater Richards 1970) Goodness of fit R is 3.2.

130010 to 130012 **Bushnel Seamounts** (Francheteau Harrison Sclater Richards 1970) Goodness of fit factor in all three is R=2.30.

130013 and 130014 **Kona Seamount** (Francheteau Harrison Sclater Richards 1970) Goodness of fit R=2.9.

130015 **Chatauqua Seamount** (Schimke Buffe 1968, Francheteau Harrison Sclater Richards 1970) Goodness of fit said to be 'good'. Age regarded as same as other Hawaiian seamounts. Values listed are those given by Francheteau *et al.* 1970.

130016 **Hawaiian Seamounts combined** (Francheteau *et al.* 1970).

130017 **Japanese Seamount A** (Uyeda Richards 1966) Goodness of fit R=1.8.

130018 **Japanese Seamount B** (Uyeda Richards 1966) Goodness of fit R=1.4.

130019 **Japanese Seamount Sisoev** (Uyeda Richards 1966) Goodness of fit R=2.0. Cretaceous molluscs dredged from this Seamount noted in Francheteau *et al.* (1970).

130020 **Japanese Seamount Ryofu** (Uyeda Richards 1966) Goodness of fit R=2.4. K/Ar age on basalt gave 72 m.y. (Ozima *et al.* 1968).

130021 and 130022 **Japanese Seamount Z-III-I and Z-III-II** (Vacquier Uyeda 1967) Altered basalt give a K/Ar age of 25 m.y. (Ozima *et al.* 1968). Goodness of fit factors (R) are 1.2 and 2.5 respectively. Former too low to be reliable. Located on the Shatsky Rise and may not be part of the Pacific plate and this might account for the difference between these poles and those for the other Japanese seamounts.

130023 **Japanese Seamount Z-IV-I** (Vacquier Uyeda 1967) Goodness of fit R=2.3. Seamount is within a regional magnetic anomaly making difficult the separation of that part due to the seamount. An alternative interpretation may be found in original.

130024 to **Seamount Z-IV-II, Z-IV-III and Z-IV-IV** (Vacquier Uyeda 1967) **130024**, K/Ar ages ranging from 64 to

130026 79 m.y.; **130025**, K/Ar ages of 87 and 96 m.y., **130026**, K/Ar age of altered basalt is 18 m.y. (Ozima *et al.* 1968). The goodness of fit ratios (R) respectively are 2.6, 4.1, and 1.8.

130027 to 130029 **Japanese Seamounts Z-IV-V, Z-IV-VI and Z-IV-VII** (Vacquier Uyeda 1967) Situated in Shikoku Basin west of the Izu - Bonin trench and so results are not directly relevant to motion of Pacific plate. Goodness of fit (R) is 3.9, 1.9 and 1.4 respectively.

130030 **Japanese Seamounts Pacific Plate Combined** (Francheteau Harrison Sclater Richards 1970) Cretaceous. Results from seamounts near the western edge of the Pacific Plate are combined (**130017**, **130018**, **130019**, **130020**, **130024**, **130025**, and **130026**) giving each unit weight (N=7).

130031 and 130032 **Tripod Seamounts** (Francheteau Harrison Sclater Richards 1970) Upper Tertiary. K/Ar age of 3 m.y. (Ozima *et al.* 1968). Fourteen seamounts surveyed, 2 gave poorly defined magnetization vectors and 4 had low goodness of fit factors (R<1.3). Remainder had goodness of fit ratios ranging from 1.3 to 3.0 and in **130031** these are averaged giving each unit weight (N=8). In **130032**, one divergent pole from a seamount about 600 km distant from the others, is excluded (N=7). Tripod seamounts are between anomalies 5 and 6.

130033 and 130034 **Californian Seamounts** (Francheteau Harrison Sclater Richards 1970) Marie gives a very poor fit (R=1.1). Moonless, which gives an excellent fit (R=4.2), is on magnetic anomaly 19.

130035 to 130037 **Californian Seamounts** (Grossling 1967) Only one (**130037**) gave a good fit.

130038 to 130042 **Californian Seamounts** (Richards Vacquier Van Voorhis 1967) Results from 5 seamounts gave satisfactory R values.

130043 **Californian Seamounts Combined** (Francheteau Harrison Sclater Richards 1970) Poles in **130037** to **130042** are combined giving each unit weight (N=6). These seamounts lie between anomalies 11 and 15. Moonless excluded being probably older.

130044 **Caryn Seamount** (Vine 1965) Age presumed Cretaceous.

130045 **Kelvin Group of Seamounts** (Richards Vacquier Van Voorhis 1967) Age cited in Harrison (1970) is "about 160 m.y." SE of Nova Scotia. Seven determinations (given unit weight N=7) from 3 seamounts. Mean pole calculated by Harrison (1970). Results are rather scattered.

130046 **Vema Seamount** (Heirtzler Hadley 1966) Magnetization vector has declination between 60 and 90° and an inclination between +50 and +70° and average quoted. Goodness of fit ratio is not given.

130047 **Madcap Volcano** (Jones Laughton Hill Davies 1966) Age not stated in the original.

130048 **Seamounts Gulf of Guinea** (Harrison 1971) Recalculation of entry **130005** assuming top 500 m are non-magnetic (due to hydration of basalt) and base extends about 1000 m beneath adjacent sea floor. Fit much improved. Pole little changed.

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WILSON R L EVERITT C W F 1963 GEOPHYS J R ASTR SOC 8 149

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