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CATALOGUE OF AGE DETERMINATIONS CARRIED OUT BY THE K-Ar, Rb-Sr, Re-Os, and Pb-α METHODS ON AUSTRALIAN ROCKS BETWEEN JUNE 1962 AND DECEMBER 1965.

Compiled by

R.R. Harding.

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CONTENTS

SUMMARY

A catalogue of age determinations carried out on 479 samples from Australian territory between June 1962 and December 1965 has been compiled. This record lists the sample numbers, method of age determination, analytical data, locality, collector, and a brief evaluation of the age. Most of the determinations have been carried out at the Department of Geophysics and Geochemistry, Australian National University, Canberra, and many are the result of co-operation between this Department and the Bureau of Mineral Resources in the programme of dating the Australian continent. Some results have been supplied by Companies.

INTRODUCTION

Age determinations carried out on Australian rocks were summarised to June 1962 by R.P. Coats (1961) and D.A. White (1962); the present record lists the analytical data of samples that have been published between June 1962 and December 1965; some unpublished data are also included. Most of the determinations have been carried out at the Department of Geophysics and Geochemistry, Australian National University, Canberra. Some of these represent independent projects of the staff and students of this Department; a substantial proportion are the result of co-operation between this Department and the Bureau of Mineral Resources in the programme of dating the Australian continent. In this programme, specimens for age determination are collected by Bureau field parties and analysed under the supervision of members of staff of the Department, on machines provided by the University and the Bureau. The samples are listed under State headings and are further subdivided on the basis of publication. Results from the whole of Antarctica up to 1965 are summarised in two compilations by P.N. Webb (1962, 1965) and are not repeated here. One paper on age determinations of Australian Antarctic rocks (McDougall & Grindley, 1965) has appeared since Webb (1965) and the results are summarised here. The list of published papers referred to in this record appear under "General" or under State headings at the end of this record. An abbreviated reference number e.g. N.S.W. 1, N.S.W. 2 etc. is given to each publication.

The data listed for each sample are set out as follows:

Ref. No.	Type of sample analysed.	Method of determination.	Age.
B.M.R. No.	Analytical Data.		
GA or	Rock type.		
Sample No.	Locality.		
	Latitude. Longitude. Name of 1:250,000 sheet area.		
	Collector.		
	Evaluation of age.		

It was aimed to present enough analytical data for the reader also to evaluate the age quoted for a particular specimen. It must be emphasized, however, that for discussion of the limitations and for proper assessment of the results, the original publication or the analyst should be consulted.

The GA or sample number of each set of data is tabulated (Table 1) under "Period" and "State". Precambrian has been divided into Proterozoic (Adelaidean 600-1400 m yr, Carpentarian 1400-1800 myr and "Lower Proterozoic" 1800-2500 myr) and Archean. Each subdivision in the Proterozoic has been further subdivided into 200 million year periods for ease of presentation. The divisions of Phanerozoic time are taken from "The Phanerozoic Time-scale" (Geol. Soc. London, 1964), to which readers should refer for a discussion of the evidence for the divisions. Different components (eg. feldspar and biotite) of some samples indicate different ages; in these cases, the sample number is assigned to the older or to the more reliable age and tabulated accordingly.

The samples are also indexed according to 1:250,000 sheet number (Index I), and in order of GA and sample number (Index II). Text fig. 1 shows the location of sheet numbers in Australia; those areas from which samples have been dated are shaded. If, for example, the reader wishes to ascertain which rocks have been analysed isotopically from North Queensland, he should consult Text fig. 1 and note the appropriate 1:250,000 sheet numbers, consult the Queensland part of Index I for these numbers, and note the page references indicated. Areas of Australia at present being investigated geochronologically, but for which data are not yet available, include the Kimberley Region (W.A.), Kalgoorlie region (W.A.), Pilbara region (W.A.), Bowen Basin (Qld.), Broken Hill (N.S.W.), Melbourne (Vic.), and New Guinea, and Antarctica. Text fig. 2 shows the location of samples dated from New Guinea and Antarctica.

Unless otherwise stated, the constants used in determining the ages listed are:

K-Ar Methods: $\lambda_\beta K^{40} = 4.72 \times 10^{-10} yr^{-1}$ (3% uncertainty)

$\lambda_K K^{40} = 0.584 \times 10^{-10} yr^{-1}$ (")

$K^{40} = 1.22 \times 10^{-4} g/gK = 1.19 \times 10^{-4}$ mole/mole K.

Rb-Sr Method: $\lambda_\beta Rb^{87} = 1.39 \times 10^{-11} yr^{-1}$ (6% uncertainty)

$Rb^{85}/Rb^{87} = 2.600$

$Sr^{88}/Sr^{86} = 8.34$

The Sr in most samples was determined by isotope dilution, but where the present day Sr^{87}/Sr^{86} was determined on an unspiked sample, the Sr^{87}/Sr^{86} value quoted in the text is followed by "(unsp.)". The initial Sr^{87}/Sr^{86} value of the sample, quoted after the age of the sample, may have been assumed, or deduced from an isochron: this is indicated by (A) or (I) respectively.

Re-Os Method: Half-life of $Re^{187} = (4.3 \pm 0.5) \times 10^{10}$ yr.

C^{14} Method: Results of C^{14} age determinations carried out on Australian samples of archaeological or geological interest appear in the "Australian Journal of Science", and in "Radiocarbon", an annual publication of the "American Journal of Science".

An attempt has been made to collect all the information available concerning age determinations of Australian rocks; however, it would be appreciated if the Bureau of Mineral Resources could be notified of any omissions so that they can be included in the next Catalogue of Age Determinations.

ACKNOWLEDGEMENTS

I am indebted to members of the Department of Geophysics and Geochemistry for their assistance and advice in the collection and presentation of the age determination results.

Acknowledgements are due to the N.S.W. Department of Mines, the Victorian Department of Mines, Planet Exploration Co. Pty. Ltd., Esso Mineral Exploration Pty. Ltd., Delhi Australian Petroleum Ltd., Australian Associated Oilfields, French Petroleum Ltd., Woodside Oil Co., Burma Oil Corp., and the Water Conservation and Irrigation Commission and to other organizations for information or for permission to include results in this record.

ANTARCTICA

Ref: ANT 1
GA 762

Biotite, K-Ar age 476 m.y.
K 7.62% $*Ar^{40}/K^{40}$ 0.0316
From biotite-bearing lamprophyre.
Lat. 85°08'S Long. 156°52'E.
Collected by G.W. Grindley.
Lamprophyre intrusive into Nimrod Gp.; could be genetically related to the Hope Granite.

Ref: ANT 1
GA 763

Muscovite, K-Ar age 487 m.y.
K 7.81% $*Ar^{40}/K^{40}$ 0.0325
Muscovite, K-Ar age 491 m.y.
K 7.83% $*Ar^{40}/K^{40}$ 0.0328
From Fuchsite-quartz-schist.
Lat. 83°09'S Long. 156°22'E.
Collected by G.W. Grindley.
Marker band in Nimrod Gp. Age of metamorphism.

Ref: ANT 1
GA 764

Biotite, K-Ar age 456 m.y.
K 6.96% $*Ar^{40}/K^{40}$ 0.0301
From Biotite-epidote schist
Lat. 83°08'S Long. 157°07'E.
Collected by G.W. Grindley
Nimrod Gp. Age of Metamorphism (minimum).

Ref: ANT 1
GA 765

Muscovite, K-Ar age 486 m.y.
K 7.47% $*Ar^{40}/K^{40}$ 0.0324
From muscovite-biotite-schist.
Lat. 83°08'S Long. 157°07'E.
Collected by G.W. Grindley.
Nimrod Group (adjacent to GA 764) Age of metamorphism.

Ref; ANT 1
GA 766

Biotite, K-Ar age 463 m.y.
K 7.57% $*Ar^{40}/K^{40}$ 0.0307
From Biotite-microcline granite (of Hope Granite)
Lat. 82°57'S Long. 157°40'E.
Collected by G.W. Grindley.
Minimum age of intrusion of Hope Granite into Nimrod Gp.

Ref: ANT 1
GA 767

Muscovite, K-Ar age 478 m.y.
K 8.46% $*Ar^{40}/K^{40}$ 0.0317
From quartz-muscovite-K-feldspar-tourmaline pegmatite
Lat. 83°02'S Long. 157°45'E
Collected by G.W. Grindley.
Pegmatite associated with Hope Granite.

Ref: ANT 1
GA 768

Biotite, K-Ar age 520 m.y.
K 7.60 % $*Ar^{40}/K^{40}$ 0.0350
From quartz-plagioclase-biotite orthogneiss.
Lat. 8°38'S Long. 157°09'E.
Collected by G.W. Grindley.
Upper part of Nimrod Group. Biotite has lost argon and age given is younger than age of formation.

Ref: ANT 1
GA 769

Biotite, K-Ar age 471 m.y.
K 6.94% $*Ar^{40}/K^{40}$ 0.0312
Muscovite, K-Ar age 483 m.y.
K 8.14% $*Ar^{40}/K^{40}$ 0.0322
From garnet-biotite-muscovite gneiss
Lat. 83°36'S Long. 157°12'E.
Collected by G.W. Grindley.
Upper part of Nimrod Gp; argon loss from biotite and muscovite.

Ref: ANT 1
GA 770

Biotite, K-Ar age 631 m.y.
K 7.64% $*Ar^{40}/k^{40}$ 0.0438
Biotite, K-Ar age 635 m.y.
K 7.64% $*Ar^{40}/K^{40}$ 0.0441
From quartz-plagioclase-biotite orthogneiss.
Lat. 83°34'S Long. 157°12'S.
Collected by G.W. Grindley.
Nimrod Gp; minimum age for regional metamorphism of the Nimrod Gp before intrusion of the granite.

AUSTRALIAN CAPITAL TERRITORY

Ref: ACT 1		Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I 55/16	12.	192	48.3	11.42	0.7862
S.C. 12	13.	164	22.8	20.72	0.8457
	17.	178	32.2	15.87	0.8170

Age 433 m.y. Initial Sr^{87}/Sr^{86} 0.714 (I)

From State Circle Shale.

Lat. 35°15'33"S Long 149°07'08"E Canberra

Collected by A.A. Opik and R.T. Pidgeon.

Small scatter of points about the isochron probably indicates initial Sr^{87}/Sr^{86} variance.

Ref: ACT 2		Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 290	Total Rock	168.3	161.0	3.009	0.7221
	Microcline	371.9	139.6	7.669	0.7519
	Biotite	807.8	24.4	95.23	1.2560

Age 417 m.y. Initial Sr^{87}/Sr^{86} 0.707 (I)

From Shannon's Flat Granodiorite.

Lat. 35°27'15"S Long. 148°58'59"E. Canberra

Collected by R.T. Pidgeon.

Age of intrusion

NEW SOUTH WALES

Ref: NSW 1
H 56/13/1
GA 209

Hornblende, K-Ar age 248 m.y.
K 0.0797% $*Ar^{40}/K^{40}$ 0.01550
From andesite lava of the Lower Kuttung.
Lat. 31°31'S Long. 150°49'E Tamworth
Collected by A.H. Voisey
Minimum age

Ref: NSW 1
GA 338

Biotite, K-Ar age 269 m.y.
K 7.76%, $*Ar^{40}/K^{40}$ 0.01690
From Hillgrove adamellite
Lat. 30°33'S Long. 151°55'E Dorrigo
Collected by J.F.G. Wilkinson
Minimum age.

Ref: NSW 1
GA 452

Biotite, K-Ar age 245 m.y.
K 7.52%, $*Ar^{40}/K^{40}$ 0.01527

Hornblende, K-Ar age 247 m.y.
K 0.7506% $*Ar^{40}/K^{40}$ 0.01541

Hornblende, K-Ar age 253 m.y.
K 0.7475, $*Ar^{40}/K^{40}$ 0.01582
From Inlet Monzonite.
Lat. 30°55'S Long. 150°56'E Manilla
Collected by B.W. Chappell
Age of intrusion 245-250 m.y.

Ref: NSW 1
GA 453

Biotite, K-Ar age 243 m.y.
K 6.86% $*Ar^{40}/K^{40}$ 0.01517
From Attunga Creek adamellite.
Lat. 30°53'S Long. 150°58'E Manilla
Collected by B.W. Chappell
Age of intrusion.

Ref: NSW 1
GA 454

Biotite, K-Ar age 237 m.y.
K 7.58% $*Ar^{40}/K^{40}$ 0.01476
From granite, Pubbledock
Lat. 30°21'S Long. 151°44'E Dorrigo
Collected by J.F.G. Wilkinson.
Age of intrusion

Ref: NSW 1
H56/13
GA 469

Biotite, K-Ar age 258 m.y.
K 7.32% $*Ar^{40}/K^{40}$ 0.01618
From granite, Barrington Tops.
Lat. 31°57'S Long. 151°27'E Tamworth
Collected by A.O.G.
Minimum age

Ref: NSW 1
H56/6
GA 479

Biotite, K-Ar age 34.5 m.y.
K 7.06% $*Ar^{40}/K^{40}$ 0.002037
Hornblende, K-Ar age 34.1 m.y.
K 1.395% $*Ar^{40}/K^{40}$ 0.002009
From analcite basalt, Spring Mt.
Lat. 29°48'S. Long. 151°31'E. Grafton.
Collected by J.F.G. Wilkinson.
Age of extrusion.

Ref: NSW 2
84332 B

Hornblende, K-Ar age 894±57 m.y.
K 0.45% $*Ar^{40}/K^{40}$ 0.0757
From amphibolite.
Lat. 31°51'45"S. Long. 141°20'24"E. Broken Hill
Collected by R.A. Binns.
Age of first regional metamorphism (low compared with 84336)

Ref: NSW 2
84336 B

Hornblende, K-Ar age 987±62 m.y.
K 0.70% $*Ar^{40}/K^{40}$ 0.0668
From amphibolite.
Lat. 31°55'21"S. Long. 141°23'00"E. Broken Hill
Collected by R.A. Binns.
Age of regional metamorphism M1; not reliable; M1 probably older than 1,345 m.y.

Ref: NSW 2
84368 B

Muscovite, K-Ar age 1,226±54 m.y.
K 3.53% $*Ar^{40}/K^{40}$ 0.0990
From mica schist
Lat. 31°38'56"S. Long. 141°15'36"E. Broken Hill
Collected by R.A. Binns
Age of metamorphism M2 (minimum age)

Ref: NSW 2
84367 B

Biotite, K-Ar age 762±38 m.y.
K 5.26% $*Ar^{40}/K^{40}$ 0.0549
Muscovite, K-Ar age 1233±54 m.y.
K 7.19% $*Ar^{40}/K^{40}$ 0.1017
Muscovite, K-Ar age 1345±30 m.y.
K 6.97% $*Ar^{40}/K^{40}$ 0.1146
From biotite-muscovite-quartz schist, Silver King Mine.
Lat. 31°38'35"S. Long. 141°22'45"E. Broken Hill
Collected by R.A. Binns
Age of metamorphism M3 (minimum age)

Ref: NSW 2
84359 B

Muscovite, K-Ar age 892±43 m.y.
K 6.47% $*Ar^{40}/K^{40}$ 0.0666.
Muscovite, K-Ar age 939±22 m.y.
K 6.47% $*Ar^{40}/K^{40}$ 0.0711
From fine-grained schist within tillite (Torrowangee Series).
Lat. 31°34'50"S. Long. 141°21'30"E. Broken Hill
Collected by R.A. Binns
Minimum age.

Ref: NSW 2
84365 B

Muscovite, K-Ar age 1,307±56 m.y.
K 9.90% $*Ar^{40}/K^{40}$ 0.1101
From Mundi Mundi Granite, east of Mt. Robe.
Lat. 31°36'55"S. Long. 141°23'42"E. Broken Hill
Collected by R.A. Binns.
Minimum age.

Ref: NSW 2
84393 B

Muscovite, K-Ar age 985± 38 m.y.
K 9.61% $*Ar^{40}/K^{40}$ 0.0755.
From Mundi Mundi Granite, Mundi Mundi Creek.
Lat. 31°45'22"S. Long. 141°16'30"E. Broken Hill
Collected by R.A. Binns
Age too low : indicates granite affected by M4 movements.

In addition to the above results, determined by isotope dilution, 9 results were obtained by the total volume method:

Ref: NSW 2
84348 B

Biotite, K-Ar age 965±38 m.y.
K 8.27%. $*Ar^{40}/K^{40}$ 0.0736
From gneiss.
Lat. 31°57'43"S. Long. 141°27'18"E. Broken Hill
Collected by R.A. Binns.
Gneiss a product of first regional metamorphism; age too low - probably mineral suffered argon loss.

Ref: NSW 2
84349 B

Biotite, K-Ar age 1375±49 m.y.
K 8.74%. $*Ar^{40}/K^{40}$ 0.1182
From gneiss
Lat. 31°54'03"S. Long. 141°23'00"E. Broken Hill
Collected by R.A. Binns
Minimum age.

Ref: NSW 2
84341 B

Hornblende, K-Ar age 1475±81 m.y.
K 0.89% $*Ar^{40}/K^{40}$ 0.1306.
From amphibolite.
Lat. 31°57'43"S. Long. 141°29'00"E. Broken Hill
Collected by R.A. Binns.
Minimum age.

Ref: NSW 2
84368 B

Biotite, K-Ar age 1056±41 m.y.
K 8.16% $*Ar^{40}/K^{40}$ 0.0827.
Biotite, K-Ar age 1049±40 m.y.
K 8.16% $*Ar^{40}/K^{40}$ 0.0820
Muscovite, K-Ar age 1307±47 m.y.
K 7.02% $*Ar^{40}/K^{40}$ 0.110
From mica schist, west of Mt. Robe Mine.
Lat. 31°38'56"S. Long. 141°15'36"E. Broken Hill
Collected by R.A. Binns.
Ages show that some argon has leaked from biotite lattice.

Ref: NSW 2
84367 B

Biotite, K-Ar age 924±37 m.y.
K 5.86% $*Ar^{40}/K^{40}$ 0.0696
Biotite, K-Ar age 740±36 m.y.
K 5.86% $*Ar^{40}/K^{40}$ 0.0529.
From biotite-muscovite-quartz schist; Silver King Mine
Lat. 31°38'35"S. Long. 141°22'45"E. Broken Hill
Collected by R.A. Binns
Results compared with those for muscovite indicate argon loss from biotite (see 84367 measured by isotope dilution).

Ref: NSW 2
84365 B

Muscovite, K-Ar age 1466±51 m.y.
K 10.40% $*Ar^{40}/K^{40}$ 0.1295
From Mundi Mundi Granite, east of Mt. Robe.
Lat. 31°36'55"S. Long. 141°23'42"E. Broken Hill
Collected by R.A. Binns.
Minimum age.

Ref: NSW 3
H54/15/1
GA 106

Biotite, K-Ar age 459 m.y.
K 7.43% $*Ar^{40}/K^{40}$ 0.03036.

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	1124	4.6	706.0	5.5035

Age 488 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From granodiorite gneiss (equiv. to formation No. 1, Broken Hill Mine Sequence).
Lat. 31°47'S Long. 141°36'E. Broken Hill
Collected by B.M.R.
Records metamorphic event which took place between 550 and 440 m.y. ago.

Ref: NSW 3
H54/15/2
GA 107

Biotite, K-Ar age 434 m.y.
K 6.84% $*Ar^{40}/K^{40}$ 0.02851

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	967	72.1	38.54	1.0060
"	973	74.3	37.62	1.0008

Age 546 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From Alma augen gneiss
Lat. 31°59'S. Long. 141°29'E. Broken Hill
Collected by B.M.R.
See GA106.

Ref: NSW 3
H54/15/3
GA 108

Biotite, K-Ar age 463 m.y.
K 6.94% $*Ar^{40}/K^{40}$ 0.03065

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	1587	12.7	358.6	3.4379

Age 548 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From granite gneiss
Lat. 31°54'30"S. Long. 141°33'E. Broken Hill
Collected by B.M.R.
See GA 106.

Ref: NSW 3
H54/15/4
GA 109

Biotite, K-Ar age 1059 m.y.
K 6.51% $*Ar^{40}/K^{40}$ 0.08304
Biotite, K-Ar age 1032 m.y.
K 6.51% $*Ar^{40}/K^{40}$ 0.08024

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	857	9.7	254.9	2.6109
"	851	9.4	258.9	2.6193

Age 532 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From Alma augen gneiss.
Lat. 31°59'30"S. Long. 141°28'E. Broken Hill.
Collected by B.M.R.
See GA 106. Reason for anomalously high K-Ar ages unknown.

Ref: NSW 3
H54/15/5
GA 110

Biotite, K-Ar age 581 m.y.
K 7.60% $*Ar^{40}/K^{40}$ 0.03977

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	1148	11.5	287.2	2.6432
"	1143	11.8	277.5	2.6374

Age 492 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From Mundi Mundi granite.
Lat. 31°48'20"S. Long. 141°20'20"E. Broken Hill.
Collected by B.M.R.
See GA 106. Reason for anomalously high K-Ar age unknown.

Ref: NSW 3
I54/3/1
GA 111

Biotite, K-Ar age 562 m.y.
K 6.97% $*Ar^{40}/K^{40}$ 0.03822

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	1067	34.2	89.67	1.3173
"	1027	34.8	84.71	1.3091

Age 493 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From granite or feldspathized schist.
Lat. 32°02'S. Long. 141°18'E. Menindee.
Collected by B.M.R.
See GA 106. Reason for higher K-Ar than Rb-Sr age unknown.

Ref: NSW 3
GA 312

Biotite, K-Ar age 810 m.y.
K 7.65% $*Ar^{40}/K^{40}$ 0.05908

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	1073	3.2	950.1	7.1837

Age 490 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From Potosi gneiss
Lat. 31°57'50"S. Long. 141°28'10"E. Broken Hill
Collected by Zinc Corp. Ltd.
See GA 106. Reasons for higher K-Ar than Rb-Sr age unknown.

Ref: NSW 3
GA 313

Biotite, K-Ar age 519 m.y.
K 6.77% $*Ar^{40}/K^{40}$ 0.03494
Muscovite, K-Ar age 470 m.y.
K 8.67% $*Ar^{40}/K^{40}$ 0.03115
From biotitic lode material.
Lat. 31°58'15"S. Long. 141°27'E. Broken Hill
Collected by Zinc Corp. Ltd.
See GA 106.

Ref: NSW 3
GA 314

Biotite, K-Ar age 462 m.y.
K 7.82% $*Ar^{40}/K^{40}$ 0.03057
Plagioclase, K-Ar age 518 m.y.
K 2.98% $*Ar^{40}/K^{40}$ 0.03479

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	2034	3.0	1947.5	15.1806

Age 534 m.y. Initial Sr^{87}/Sr^{86} 0.715(A)
From granitic gneiss.
Lat. 31°57'10"S. Long. 141°29'40"E. Broken Hill
Collected by Zinc Corp. Ltd.
See GA 106.

Ref: NSW 3
GA 405

Biotite (coarse) K-Ar age 476 m.y.
K 7.94% $*Ar^{40}/K^{40}$ 0.03165
Biotite (fine), K-Ar age 491 m.y.
K 7.91% $*Ar^{40}/K^{40}$ 0.03274
From Alma Augen Gneiss (same o/c as GA 107)
Lat. 31°59'S. Long. 141°29'E. Broken Hill.
Collected by Zinc Corp Ltd.,
See GA 106.

Ref: NSW 3
GA 406

Biotite, K-Ar age 434 m.y.
K 6.74% $*Ar^{40}/K^{40}$ 0.02853
From Augen Gneiss
Lat. 31°33'35"S. Long. 141°41'10"E. Broken Hill.
Collected by Zinc Corp. Ltd.,
See GA 106. Probably radiogenic argon has leaked from the biotite.

Ref: NSW 3
GA 407

Biotite, K-Ar age 487 m.y.
K 7.17% $*Ar^{40}/K^{40}$ 0.03246.
Biotite, K-Ar age 518 m.y.
K 7.70% $*Ar^{40}/K^{40}$ 0.03485
Muscovite, K-Ar age 1351 m.y.
K 8.71% $*Ar^{40}/K^{40}$ 0.11532
Muscovite, K-Ar age 1349 m.y.
K 8.71% $*Ar^{40}/K^{40}$ 0.11516
Muscovite, K-Ar age 1363 m.y.
K 8.77% $*Ar^{40}/K^{40}$ 0.11675
From Mundi Mundi Granite.
Lat. 31°45'40"S. Long. 141°16'15"E. Broken Hill.
Collected by Zinc Corp. Ltd.,
Biotite indicates age of metamorphism. Muscovites indicate age between that of intrusion and metamorphism.

Ref: NSW 3
GA 437

Biotite, K-Ar age 456 m.y.
K 7.09% $*Ar^{40}/K^{40}$ 0.03012
From gneiss boulder in tillite.
Lat. 31°31'00"S. Long. 141°40'00"E. Broken Hill.
Collected by Zinc Corp. Ltd.,
See GA 106.

Ref: NSW 3
GA 438

Biotite K-Ar age 510 m.y.
K 7.74% $*Ar^{40}/K^{40}$ 0.03109
From granitic gneiss
Lat. 32°02'S. Long. 141°15'35"E. Menindee.
Collected by Zinc Corp. Ltd.
See GA 106

Ref: NSW 3
GA 439

Biotite, K-Ar age 455 m.y.
K 7.56% $*Ar^{40}/K^{40}$ 0.03005
From Alma Augen Gneiss (approx. same point as GA 109).
Lat. 31°59'30"S. Long. 141°28'E. Broken Hill.
Collected by Zinc Corp. Ltd.,
See GA 106.

Ref: NSW 4
GA 303

Phlogopite, K-Ar age 194 m.y.
K mg/g 83.4 $*Ar^{40}/K^{40}$ 0.01190
Breccia pipe filling.

R 112

Clinopyroxene (6M), K-Ar age 167 m.y.
K mg/g 0.95 $*Ar^{40}/K^{40}$ 0.01020
Plagioclase (10M), K-Ar age 121 m.y.
K mg/g 4.93 $*Ar^{40}/K^{40}$ 0.007282
Pyroxene granulite xenolith.

R 130

Clinopyroxene (12M), K-Ar age 171 m.y.
K mg/g 0.31 $*Ar^{40}/K^{40}$ 0.01043
Garnet granulite xenolith

R 117

Hornblende (19M), K-Ar age 167 m.y.
K mg/g 7.22 $*Ar^{40}/K^{40}$ 0.01021
Clinopyroxene (8M), K-Ar age. 721 m.y. 671 m.y.
K mg/g 0.116 $*Ar^{40}/K^{40}$ 0.05132, 0.04707.
Clinopyroxene (GA218), K-Ar age 586 m.y. 911 m.y.
K mg/g 0.116 $*Ar^{40}/K^{40}$ 0.04016 0.06839
From Breccia pipe, Delegate.
Lat. 36°54'S. Long. 148°46'E. Bega.
Collected by J.F. Lovering
Phlogopite age probably indicates time of intrusion of magma which formed the breccia. R112 could have been contaminated with K as well as lost argon. R130-minimum age. R117 - high ages for clinopyroxene may result in part from slight inhomogeneities in K content (K determined by isotope dilution).

Ref: NSW 5
(WC 38)
GA 1359

Biotite, K-Ar age 252 m.y.
K 7.65% $*Ar^{40}/K^{40}$ 0.01574
From garnet-bearing marginal variant of gneissic granite.
Lat. Long. Dorrigo.
Collected by R.A. Binns
Age of metamorphism.

Ref: NSW 5
(WB 71)
GA 1360

Biotite, K-Ar age 253 m.y.
K 7.82% $*Ar^{40}/K^{40}$ 0.01584
From granitic vein in migmatite zone.
Lat. Long. Dorrigo.
Collected by R.A. Binns
Age of metamorphism.

Ref: NSW 5
WC 39
GA 1361

Biotite, K-Ar age 250 m.y.
K 7.60% $*Ar^{40}/K^{40}$ 0.01562
From psammitic schist.
Lat. Long. Dorrigo.
Collected by R.A. Binns
Age of metamorphism

Ref: NSW 5
WC 33
GA 1362

Biotite, K-Ar age 208 m.y.
K 7.63% $*Ar^{40}/K^{40}$ 0.01283
From "typical" gneissic granite.
Lat. Long. Dorrigo.
Collected by R.A. Binns
Radiogenic argon has probably leaked from the biotite; minimum age.

Ref: NSW 5
WB 166
GA 1363

Biotite, K-Ar age 244 m.y.
K 6.73% $*Ar^{40}/K^{40}$ 0.01522
From granite of the New England Batholith (nr Wards Mistake)
Lat. Long. Dorrigo.
Collected by R.A. Binns
Granite intrudes northern part of Wongwibinda Complex.
Minimum age of intrusion.

Ref: NSW 5
WC 3
GA 1364

Biotite, K-Ar age 224 m.y.
K 7.35% $*Ar^{40}/K^{40}$ 0.01388
From leucocratic granite, Snowy Range
Lat. Long. Dorrigo.
Collected by R.A. Binns
Granite intruding southern part of Wongwibinda Complex.
Minimum age of intrusion.

Ref: NSW 5
WB 123
GA 1365

Biotite, K-Ar age 259 m.y.
K 7.85% $*Ar^{40}/K^{40}$ 0.01622
From gneissic granite.
Lat. Long. Dorrigo.
Collected by R.A. Binns
Intrudes Permian greywackes and slates west of Wongwibinda Complex.
Age of intrusion or metamorphism.

Ref: NSW 6
GA 678

Hornblende, K-Ar age 61.2 m.y.
K 1.46% $*Ar^{40}/K^{40}$ 0.00363
From breccia, Umbiella Creek Pipe.
Lat. 33°00'S. Long. 150°24'E. Sydney.
Collected by J.F. Lovering.
Minimum age.

Ref: NSW 6
GA 783

Total rock, K-Ar age 179 m.y.
K 1.38% $*Ar^{40}/K^{40}$ 0.01096
From nephelinite, Umbiella Creek.
Lat. 33°00'S. Long. 150°24'E. Sydney
Collected by J.F. Lovering
Minimum age.

Esso 1

Muscovite, K-Ar age 355 ± 28 m.y.
K 0.45% $*Ar^{40}/K^{40}$ 0.0228
From banded magnetite iron formation

Esso 2

Detrital biotite, K-Ar age 468 ± 37 m.y.
K 0.33% $*Ar^{40}/K^{40}$ 0.0310
From green siliceous phyllite.

Esso A4

Muscovite, K-Ar age 330 ± 26 m.y.
K 4.33% $*Ar^{40}/K^{40}$ 0.0210

Unpublished

From veined and altered quartz diorite.
1 from 1161 ft., 2 from 1252 ft., A4 from 1785 ft. depth, Dingo Hole.
Lat. 29°06'47"S Long. 146°48'31"E. Enngonia.
Collected by Esso Mineral Company of Australia.
Age of rocks between Ordovician and Mississippian.

Unpublished
I56/1/2
GA 470

Biotite, K-Ar age 336 m.y.
K 7.20% $*Ar^{40}/K^{40}$ 0.02145
From granite, Mt View, near Cessnock.
Lat. 32°50'S. Long. 151°18'E. Singleton.
Collected by Australian Oil and Gas Corp. Ltd.
Minimum age.

Unpublished
H55/5/1
GA 594

Biotite, K-Ar age 375 m.y.
K 6.77% $*Ar^{40}/K^{40}$ 0.02424
From granite, 1157 ft depth in water bore (No. 6644)
Lat. 29°47'S. Long. 144°17'E. Yantabulla.
Collected by Water Conservation and Irrigation Commission
Minimum age.

Unpublished
H55/5/3
GA 595

Biotite, K-Ar age 381 m.y.
K 7.12% $*Ar^{40}/K^{40}$ 0.0247
From granite, 1191 ft depth in water bore (No 6644)
Lat. 29°47'S. Long. 144°17'E. Yantabulla.
Collected by Water Conservation and Irrigation Commission.
Minimum age.

Unpublished
I55/13/1
GA 596

Biotite, K-Ar age 398 m.y.
K 7.61% $*Ar^{40}/K^{40}$ 0.02586
From granite, basement of stratigraphic well.
Lat. 35°03'00"S. Long. 144°31'18"E. Deniliquin.
Collected by Woodside Oil Coy.
Minimum age.

Refs NSW 7
Mol. 1

Molybdenite, Re-Os age 330 ± 40 m.y.
Re 71.4 ppm. Os^{187} 0.239 ppm.
From molybdenite, Yetholme.
Lat. 33°27'30"S. Long. 149°49'E. Bathurst.
Collected by N.H. Fisher

Refs NSW 7
Mol. 2

Molybdenite, Re - Os age 105 ± 40 m.y.
Re 3.45 ppm. Os^{187} 0.0037 ppm.
From molybdenite, Glen Eden
Lat. 29°35'S (approx) Long. 151°43' (approx.) Grafton
Collected by N.H. Fisher

Unpublished
H56/6/7
GA 830

Plagioclase, K-Ar age 58 m.y.
K 0.25% $*Ar^{40}/K^{40}$ 0.00344
From basic sill, Clifden No. 3 Well, 7500 ft (core 24).
Lat. 29°34'08"S. Long. 152°54'57"E. Grafton.
Collected by Burma Oil Corporation.
Reliable minimum age of intrusion of basic magma into pre-Jurassic rocks.

Ref: NSW 8		Rb/μg/g	Sr/μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
C2	Total Rock	185	116.2	4.581	0.7438
	Orthoclase	244	444.1	1.582	0.7286
	"	240.9	439.8	1.577	0.7278
	Muscovite	117.5	64.22	5.266	0.7495
	"	120.7	68.40	5.080	0.7479
	Biotite	596.9	11.11	170.0	1.7135
	"	618.6	10.70	166.4	1.6760

Age 415±12 m.y. Initial Sr^{87}/Sr^{86} 0.7179±0.0005(I)

From andalusite-bearing granite.
Lat. 36°14'27"S. Long. 149°05'16"E. Bega
Collected by R.T. Pidgeon.
Age of formation of the Cooma Granite. Determinations on C2, C5, and GA 293 lie on a straight line (isochron).

Ref: NSW 8		Rb μg/g	Sr/μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
C5	Total Rock	177.5	129.0	3.960	0.7411
	"	178.0	130.1	3.942	0.7389
	Orthoclase	211.3	441.8	1.377	0.7260
	Biotite	654.6	6.61	284.9	2.2780
	"	657.2	6.56	288.4	2.3047

Age 415±12 m.y. Initial Sr^{87}/Sr^{86} 0.7179±0.0005(I)
From andalusite-bearing granite.
Lat. 36°13'50"S. Long. 149°06'23"E. Bega.
Collected by R.T. Pidgeon.
See C2.

Ref: NSW 8		Rb μg/g	Sr/μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 293	Total Rock	180.3	90.27	5.750	0.7509
	"	181.4	88.18	5.926	0.7502
	Orthoclase	448.0	152.7	8.45	0.7674
	Biotite	948.1	5.48	498.0	3.624
	"	949.9	5.51	496.6	3.582
	Muscovite	331.1	35.75	26.66	0.8725
	Plag & quartz	71.3	76.66	2.672	0.7338
	Plag & q (fine)	202.1	98.10	5.920	0.7516

Age 415±12 m.y. Initial Sr^{87}/Sr^{86} 0.7179±0.0005(I)
From granite dyke.
Lat. 36°14'27"S. Long. 149°06'07"E. Bega
Collected by R.T. Pidgeon.
See C2.

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Refs NSW8	C7 Total Rock	131.5	213.2	1.776	0.7285
C7 & C8	"	132.3	210.5	1.809	0.7293
	C8 Total Rock	256.2	92.43	7.980	0.7639
	"	256.1	90.88	8.095	0.7629

Age 402 m.y. Initial Sr^{87}/Sr^{86} 0.719(I)

From feldspar-rich band (C7), and biotite-rich band (C8).

Lat. 36°11'42"S. Long. 149°04'41"E. Bega.

Collected by R.T. Pidgeon.

Age of formation of migmatite.

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Refs NSW 8	C9 Total Rock	237.0	102.8	6.639	0.7582
C9 & C10	"	238.7	104.9	6.552	0.7600
	C10 Total Rock	210.4	199.3	3.040	0.7390
	"	207.9	194.3	3.080	0.7385

Age 411 m.y. Initial Sr^{87}/Sr^{86} 0.7215(I)

From biotite-rich band (C9), and feldspar-rich band (C10).

Lat. 36°14'27"S. Long. 149°06'07"E. Bega.

Collected by R.T. Pidgeon.

Age of formation of migmatite : initial Sr^{87}/Sr^{86} differs from that of C7 and C8.

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Refs NSW 8	Total Rock	265.5	117.1	6.525	0.7560
GA 55	"	275.0	109.1	7.254	0.7565
	"	266.4	118.6	6.470	0.7539
	Orthoclase	248.5	416.7	1.717	0.7288
	"	247.3	413.2	1.723	0.7289
	Biotite	569.8	9.213	178.1	1.0920
	"	672.7	8.490	228.1	2.0275
	"	708.1	5.600	364.2	2.7790
C4A	Total Rock	211.3	97.89	6.216	0.7547
C4B	Total Rock	249.6	153.0	4.696	0.7439
		249.9	153.8	4.677	0.7462

Age 399 ± 29 m.y. Initial Sr^{87}/Sr^{86} 0.719 ± 0.002(I)

From biotite-andalusite-orthoclase gneiss (cordierite-orthoclase zone)

Lat. 36°14'52"S. Long. 149°03'00"E. Bega.

Collected by R.T. Pidgeon.

Age of formation of migmatite (same age, to within experimental error, as that of Cooma Granite).

Ref: NSW 8		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Binjura 3					
	Total Rock B	187.3	42.66	12.64	0.7900
	D	187.7	42.69	12.65	0.7912
	E	187.7	42.69	12.65	0.7897
Binjura 9					
	Total Rock A	152.1	137.9	3.175	0.7307
	B	155.9	143.4	3.130	0.7314
Binjura 10					
	Total Rock A	174.7	58.36	8.62	0.7638
	B	177.7	58.77	8.70	0.7643
Binjura 7					
	Total Rock A	1.87	210.8	0.0255	0.7160

Age 460 ± 11 m.y. Initial Sr^{87}/Sr^{86} 0.710 ± 0.002(I)

From chlorite-muscovite schist (3), quartz-biotite schist (9), qz-musc-cord-bio schist (10), and quartz-epidote rock (7).

3 : Lat. 36°14'27"S. Long. 149°01'11"E. Bega.

7, 9, 10 : Lat. 36°11'42"S. Long. 149°01'32"E. Bega.

Collected by R.T. Pidgeon.

Isochron through 3, 9, and 10 indicates schists significantly older than Cooma Granite, also their initial Sr^{87}/Sr^{86} is significantly lower. The quartz-epidote Sr^{87}/Sr^{86} is similar to that of the Cooma Granite.

Ref: NSW 8		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
C1	Total Rock	3.280	232.0	0.0407	0.7038
	"	3.292	236.0	0.0402	0.7068

Age uncertain. Initial Sr^{87}/Sr^{86} 0.704(I)

From clinopyroxene amphibolite, inclusion in Cooma Granite.

Lat. 36°14'27"S. Long. 149°07'44"E. Bega.

Collected by R.T. Pidgeon.

Initial Sr^{87}/Sr^{86} undistinguishable from that of Tertiary basalts; indicates no appreciable mixing with Sr of Cooma Granite.

Ref: NSW 8		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 272	Orthoclase	367.7	266.4	3.97	0.7274
	"	354.2	265.1	3.84	0.7282

Age 440 ± 40 m.y. Initial Sr^{87}/Sr^{86} 0.704(A)

From Soho St. Pegmatite.

Lat. 36°14'27"S. Long. 149°07'44"E. Bega.

Collected by R.T. Pidgeon.

Sample too poorly enriched in radiogenic Sr to determine reliable age.

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Ref: NSW 8 GA 273	Muscovite	540.1	8.024	193.8	1.8258
	"	543.1	8.117	192.6	1.7777
	Microcline	473.0	91.51	14.88	0.8061
	"	472.4	89.52	15.19	0.8037
	Biotite	1462.7	26.30	160.1	1.2972
	"	1449.3	26.10	159.8	1.3011
GA 292	Muscovite	510.7	12.04	122.1	1.4206
	"	507.3	11.42	127.9	1.4520

Age 402 ± 7 m.y. Initial Sr^{87}/Sr^{86} 0.724±0.004(I).
From Spring Creek Pegmatite.
Lat. 36°11'42"S. Long. 149°04'00"E. Bega.
Collected by R.T. Pidgeon.
Age and initial Sr^{87}/Sr^{86} close to that of Cooma Granite; consistent with an origin for the pegmatite by metamorphic segregation from pre-existing sedimentary rocks.

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Ref: NSW 8 C6	Total Rock	130.8	153.1	2.46	0.7272
	"	129.5	154.1	2.42	0.7250
	Orthoclase	361.6	260.3	3.97	0.7400
	"	357.3	250.8	4.10	0.7385

Age 590 m.y. Initial Sr^{87}/Sr^{86} 0.707(I)
From leucogranite (unknown structural relationship with migmatite.)
Lat. 36°14'10"S. Long. 149°06'07"E. Bega.
Collected by R.T. Pidgeon.
Age indicated may be misleading, and total rock could have lost radiogenic strontium; orthoclase lies on Cooma Granite isochron.

Ref: NSW 9		U μg/g	Th μg/g	Pb μg/g	α $mg.^{-1}$ $hr.^{-1}$
I55/15/16	GA 48	740	330	35	282
I55/15/17	GA 49	755	310	39	295

GA 48, GA 49
Pb-α ages: (48) 310 m.y., (49) 330 m.y.
Chemical ages: (48) 290 m.y., (49) 320 m.y.
From Happy Valley Granodiorite (Tumut 1 and Tumut 2).
48 Lat. 35°57'15"S. Long. 148°19'45"E. Wagga.
49 Lat. 35°52'59"S. Long. 148°19'55"E. Wagga.
Collected by H. Berry, R. Rudowski, and G. Lafeber.
Ages too low.

Ref: NSW 9		U $\mu g/g$	Th $\mu g/g$	Pb $\mu g/g$	α mg^{-1} hr^{-1}
GA 56	I55/15/22	930	375	66	324
GA 57	I55/15/23	895	340	106	341
GA 58	I55/15/24	930	385	43	291
GA 59	I55/15/25	695	285	38	285

Pb-α age : (56) 500 m.y., (57) 750 m.y.,
(58) 370 m.y., (59) 330 m.y.

Chemical age : (56) 440 m.y., (57) 720 m.y.,
(58) 290 m.y., (59) 340 m.y.

From Boomerang Creek gneiss (Tumut 1 and Tumut 2 tunnels)

Lat. 35°55'S. (approx) Long. 148°19'E (approx.)

Wagga.

Collected by G.A. Joplin and H. Berry.

GA 56 and GA 57 may be contaminated with lead or they may be preserving a memory of pre-gneiss existence. GA 58 and GA 59 ages appear too low.

NORTHERN TERRITORY

Refs NT 1
D53/15/1
GA 752

Glauconite, K-Ar age 1523 m.y.
K 7.15% $*Ar^{40}/K^{40}$ 0.1369

Glauconite, K-Ar age 1521 m.y.
K 7.15%, $*Ar^{40}/K^{40}$ 0.1366

	Rb (ppm)	Sr(ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite A	299	4.89	175.6	4.662
B	298	3.84	224.8	5.601

Age A 1605 m.y., B 1550 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
From Rosie Creek Sandstone
Lat. 15°55'S, Long. 135°40'E. Mount Young.
Collected by H.G. Roberts.
Rosie Creek Sandstone probably equivalent to Aquarium Formation in the Tawallah Group.

Refs NT 1
E53/8/13
GA 753

Glauconite, K-Ar age 1473 m.y.
K 5.82% $*Ar^{40}/K^{40}$ 0.1304

	Rb(ppm)	Sr(ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	268	7.02	110.5	3.031

Age 1495 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
From Aquarium Formation
Lat. 17°18'S, Long. 137°22'E. Calvert Hills
Collected by H.G. Roberts.
Aquarium Formation 1200 feet below top of Tawallah Group which is oldest group of sediments in the Proterozoic.

Refs NT 1
E53/8/14
GA 754

A Glauconite, K-Ar age 1584 m.y.
K 6.52% $*Ar^{40}/K^{40}$ 0.1450

A Glauconite, K-Ar age 1555 m.y.
K 6.52% $*Ar^{40}/K^{40}$ 0.1411

B Glauconite, K-Ar age 1573 m.y.
K 6.43% $*Ar^{40}/K^{40}$ 0.1436

B Glauconite, K-Ar age 1601 m.y.
K 6.43% $*Ar^{40}/K^{40}$ 0.1473.

	Rb (ppm)	Sr(ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite (i)	288	7.87	105.9	3.089
(ii)	282	8.94	91.02	2.737

Age (i) 1600 m.y., (ii) 1585 m.y. Initial Sr^{87}/Sr^{86} 0.710(A)
From Aquarium Formation.
Lat. 17°28'S., Long. 137°39'E. Calvert Hills.
Collected by H.G. Roberts.
Part of Tawallah Group, oldest Group of Proterozoic sediments
(Fraction A washed in warm 0.1N HNO_3).

Ref: NT 2
E53/8/2
GA 125

Biotite, K-Ar age 1840 m.y.
K 7.23% $*Ar^{40}/K^{40}$ 0.1823
From Nicholson Granite.
Lat. 17°47'S. Long. 137°53'E. Calvert Hills
Collected by C. Bennett, B.H.P. Ltd.
Average of three determinations on Nicholson Granite (GA 125, 559 and 581) is 1815 m.y. This is a minimum age, but probably close to age of intrusion.

Ref: NT 2
E53/8/3
GA 483

Biotite, K-Ar age 1760 m.y.
K 5.51% $*Ar^{40}/K^{40}$ 0.1699
From Norris Granite
Lat. 17°46'S., Long. 137°47'E. Calvert Hills.
Collected by B.M.R.
Average of four determinations (GA 159, 483 and 484) is 1790 m.y.
This is a minimum age but probably close to age of intrusion.

Ref: NT 2
E53/8/5
GA 484

Biotite, K-Ar age 1780 m.y.
K 5.81% $*Ar^{40}/K^{40}$ 0.1727
From Norris Granite
Lat. 17°45'S. Long. 137°55'E. Calvert Hills.
Collected by B.M.R.
See GA 483.

Ref: NT 2
E53/8/6
GA 558

	Rb (ppm)	Sr(ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock	228	188	3.498	0.7992 (unsp.)
"	227	188	3.476	0.7982 (unsp.)
K-feldspar	434	167	7.497	0.8932 (unsp.)
"	431	173	7.223	0.8920 (unsp.)

Age 1725 m.y. Initial Sr^{87}/Sr^{86} 0.713 (I)
Sr^{88}/Sr^{86} assumed = 8.387
From Norris Granite
Lat. 17°43'S., Long. 137°57'E. Calvert Hills.
Collected by W.B. Dallwitz and J.M. Rhodes.
Compared with K-Ar data, age is young and there has probably been leakage of radiogenic strontium.

Refs NT 2
E53/8/11
GA 559

Muscovite, K-Ar age 1790 m.y.
K 8.84% $*Ar^{40}/K^{40}$ 0.1743

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock	391	24.5	46.09	1.856 (unsp.)
"	391	24.2	46.73	1.853 (unsp.)
Muscovite	1060	3.69	829.3	21.34
"	1060	4.96	618.0	16.67

Age 1770 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
Sr^{88}/Sr^{86} assumed = 8.387
From Nicholson Granite.
Lat. 17°55'S., Long. 137°13'E. Calvert Hills.
Collected by K. Yates.
See GA 125. Rb-Sr data indicate that 1770 m.y. is a maximum age.

Refs NT 2
E53/8/12
GA 581

Hornblende, K-Ar age 1815 m.y.
K 1.035% $*Ar^{40}/K^{40}$ 0.1782
From Nicholson Granite
Lat. 17°55'S., Long. 137°13'E. Calvert Hills.
Collected by K. Yates.
See GA 125.

Refs NT 2
E53/8/1
GA 159

Biotite, K-Ar age 1820 m.y.
K 5.92% $*Ar^{40}/K^{40}$ 0.1794
Biotite, K-Ar age 1830 m.y.
K 5.92% $*Ar^{40}/K^{40}$ 0.1806
From Norris Granite
Lat. 17°50'S. Long. 137°55'E. Calvert Hills.
Collected by E.K. Carter.
See GA 483.

Refs NT 2
D 53/4/6
GA 1044

Biotite, K-Ar age 1760 m.y.
K 6.09% $*Ar^{40}/K^{40}$ 0.1702

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock	330	63.8	14.93	1.104
K-feldspar	530	77.0	19.91	1.206
"	529	78.8	19.40	1.198
Biotite	1216	3.35	1050	27.69

Age 1825 ± 50 m.y. Initial Sr^{87}/Sr^{86} 0.720(A)
Sr^{88}/Sr^{86} assumed = 8.387
From Giddy Granite
Lat. 12°23'S., Long. 136°37'E. Gove.
Collected by D. Dunnet.
Probably some radiogenic argon leaked from the biotite.
1825 m.y. probably close to age of intrusion.

Ref: NT 2
D53/4/7
GA 1045

Biotite, K-Ar age 1775 m.y.
K 7.41% $*Ar^{40}/K^{40}$ 0.1722
From Bradshaw Granite.
Lat. 12°37'S., Long. 136°30'E. Gove.
Collected by D. Dunnet.
Probably 1775 m.y. records age of emplacement of Giddy and Caledon Granites, and does not indicate age of crystallization of Bradshaw Granite.

Ref: NT 2
D53/4/8
GA 1047

Muscovite, K-Ar age 1750 m.y.
K 8.73% $*Ar^{40}/K^{40}$ 0.1684.
From Caledon Granite.
Lat. 12°53'S., Long. 136°32'E. Gove.
Collected by D. Dunnet.
Muscovite thought to be not of primary origin. Minimum age; probably 1750 m.y. is younger than age of emplacement.
See GA 1044.

Ref: NT 2
E53/8/8
GA 746

	Rb (ppm)	Sr(ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock	214	45.3	13.67	0.991
"	215	44.4	14.01	1.009
"	215	43.4	14.32	1.011

Age 1520 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
Sr^{88}/Sr^{86} assumed = 8.387
From Packsaddle Microgranite
Lat. 17°4'S., Long. 137°56'E. Calvert Hills.
Collected by K. Yates.
Maximum age.

Ref: NT 2
E53/12/2
GA 1158

Glauconite, K-Ar age 1040 m.y.
K 5.19% $*Ar^{40}/K^{40}$ 0.0812

	Rb (ppm)	Sr(ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	377	23.6	45.96	1.458

Age 1160 m.y. Initial Sr^{87}/Sr^{86} 0.710(A)
From Mullera Formation
Lat. 18°18'S. Long. 137°42'E. Mount Drummond.
Collected by J.W. Smith.
Deformation present in Mullera Formation and this may be a factor in loss of argon and strontium; ages probably too young.

Ref: NT 2 Glauconite, K-Ar age 780 m.y.
D53/3/17 K 6.65% $*Ar^{40}/K^{40}$ 0.0564
GA 993 Glauconite, K-Ar age 765 m.y.
K 6.65% $*Ar^{40}/K^{40}$ 0.0592.

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	181	6.95	75.18	1.539

Age 790 m.y. Initial Sr^{87}/Sr^{86} 0.710(A)
Sr^{88}/Sr^{86} assumed = 8.387
From Elcho Island Formation, Wessel Group.
Lat. 12°01'S., Long. 135°41'E. Arnhem Bay.
Collected by P. Rix.
Minimum age; consistent with upper limit of Roper Group.

Ref: NT 2 Glauconite, K-Ar age 1140 m.y.
E53/3/14 K 5.77% $*Ar^{40}/K^{40}$ 0.0911
GA 942

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	380	22.4	49.14	1.618

Age 1315 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
Sr^{88}/Sr^{86} assumed = 8.387
From Crawford Formation, Roper Group.
Lat. 16°38'S., Long. 135°47'E. Bauhinia Downs.
Collected by J.M. Rhodes.
Top of Crawford Formation.

Ref: NT 2 Glauconite, K-Ar age 1280 m.y.
E53/3/15 K 5.56% $*Ar^{40}/K^{40}$ 0.1071
GA 943

		Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	A	481	22.6	61.86	1.846
	B	477	23.3	59.11	1.829

Age A 1310 m.y., B 1350 m.y., Initial Sr^{87}/Sr^{86} 0.710(A).
Sr^{88}/Sr^{86} assumed = 8.387
From Crawford Formation, Roper Group.
Lat. 16°34'S., Long. 135°26'E. Bauhinia Downs
Collected by J.M. Rhodes.
Minimum age; radiogenic argon and radiogenic strontium probably leaked from glauconite.
Compare Rb-Sr age on GA 944.

Ref: NT 2 Glauconite, K-Ar age 1210 m.y.
E53/3/16 K 5.35% $*Ar^{40}/K^{40}$ 0.0989
GA 944

		Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	A	441	28.5	44.68	1.574
	B	441	28.9	43.99	1.575

Age A 1380 m.y., B 1400 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
Sr^{88}/Sr^{86} assumed = 8.387
From Crawford Formation, Roper Group.

(Cont'd) Lat. 16°34'S., Long. 135°26'E. Bauhinia Downs.
Collected by J.M. Rhodes.
Minimum age 1390 ± 20 m.y., argon leakage apparent - see GA 943.

Ref: NT 2
E53/3/18
GA 945.

Glauconite, K-Ar age 1120 m.y.
K 5.40% $*Ar^{40}/K^{40}$ 0.0891

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	392	21.3	53.37	1.669

Age 1270 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
Sr^{88}/Sr^{86} assumed = 8.387.
From Crawford Formation, Roper Group.
Lat. 16°11'S., Long. 136°04'E. Bauhinia Downs
Collected by J.M. Rhodes.
Position in Crawford Formation unknown. Argon and strontium leakage apparent - see GA 943 and GA 944.

Ref: NT 2
E53/3/19
GA 946.

Glauconite, K-Ar age 1100 m.y.
K 5.14% $*Ar^{40}/K^{40}$ 0.0875.

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	364	28.2	37.47	1.389

Age 1290 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
Sr^{88}/Sr^{86} assumed = 8.387
From Crawford Formation, Roper Group
Lat. 16°11'S., Long. 136°04'E. Bauhinia Downs.
Collected by J.M. Rhodes.
Argon and strontium leakage apparent - see GA 943 and GA 944.

Ref: NT 2
D53/9/6
GA 949

Plagioclase, K-Ar age 1220 m.y.
K 1.44% $*Ar^{40}/K^{40}$ 0.1003.
From dolerite in Roper Group.
Lat. 14°30'S., Long. 133°24'E. Katherine.
Collected by J.M. Rhodes.
Minimum age; argon leakage probable - see GA 950.

Ref: NT 2
D53/9/7
GA 950

Plagioclase, K-Ar age 1280 m.y.
K 1.15% $*Ar^{40}/K^{40}$ 0.1074
Plagioclase, K-Ar age 1280 m.y.
K 1.15% $*Ar^{40}/K^{40}$ 0.1067
Pyroxene, K-Ar age 1150 m.y.
K 0.113% $*Ar^{40}/K^{40}$ 0.0923
From dolerite in Roper Group.
Lat. 14°26'S., Long. 133°30'E. Katherine.
Collected by J.M. Rhodes.
Minimum age of intrusion 1280 m.y.

Ref: NT 2
D53/9/8
GA 947

Glauconite, K-Ar age 1210 m.y.
K 5.63% $*Ar^{40}/K^{40}$ 0.0986.

	Rb (ppm)	Sr (ppm)	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Glauconite	354	12.3	83.43	2.180

Age 1255 m.y. Initial Sr^{87}/Sr^{86} 0.710(A)
Sr^{88}/Sr^{86} assumed = 8.387.
From Dook Creek Formation.
Lat. 14°31'S., Long. 135°06'E. Katherine.
Collected by J.M. Rhodes.
Glauconitic dolomite.
Loss of argon and strontium probable since overlying Roper Group rocks are older than 1300 m.y. See GA 944.

Ref: NT 2
D53/6/4
GA 848

Plagioclase, K-Ar age 1115 m.y.
K 1.43% $*Ar^{40}/K^{40}$ 0.0888
Plagioclase, K-Ar age 1095 m.y.
K 1.43% $*Ar^{40}/K^{40}$ 0.0867
Pyroxene, K-Ar age 1205 m.y.
K 0.040% $*Ar^{40}/K^{40}$ 0.0987
From dolerite in Dook Creek Formation
Lat. 13°39'S., Long. 134°21'E. Mount Marumba.
Collected by D. Dunnet and K.A. Plumb.
Minimum age.

Ref: NT 2
E53/3/7
GA 1157

Glauconite, K-Ar age 1245 m.y.
K 5.63% $*Ar^{40}/K^{40}$ 0.1030
From Crawford Formation, Roper Group
Lat. 16°17'S. Long. 135°57'E. Bauhinia Downs.
Collected by A.W. Webb.
Position within Crawford Formation unknown.
Minimum age - see GA 944.

Ref: NT 3		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 5406	Total Rock	302	69.0	12.0507	0.9567
GA 5407	"	281	73.7	10.4435	0.9183
GA 5408	"	352	117.6	8.1950	0.8747
GA 5417	"	339	90.6	10.3217	0.9162
GA 5418	"	354	101.2	9.5765	0.9031
GA 5419	"	330	84.3	10.7351	0.9301

Age 1510 ± 120 m.y. Initial Sr^{87}/Sr^{86} 0.700 ± 0.020(I)

From shales, Brunette Downs No. 1 borehole
Lat. 18°35'17"S. Long. 136°05'00"E. Brunette Downs.
Collected by The Papuan Apinaipi Petroleum Coy. Ltd.
Points lie on straight line within experimental precision.
Not certain whether figure represents age of deposition of shales, age of compaction, or age of formation of clay minerals.

Ref: NT 4 G52/7/1 GA 1057		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
	Total Rock	302.1	104.2	8.339	0.8408
	K-feldspar	537.5	134.7	11.480	0.8651
	Biotite	1447.2	4.8	862.169	7.9325
	Age (T.R.)	1190 m.y.	Initial Sr^{87}/Sr^{86}		-
	Age (Bio)	600 m.y.	" "		-

Ref: NT 4 G52/7/3 GA 1058		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
	Total Rock	429.9	24.0	51.512	1.5372
	K-feldspar	984.6	41.1	68.892	1.6940
	Biotite	2397.1	1.9	3604.028	29.2469
	Age (T.R.)	1150 m.y.	Initial Sr^{87}/Sr^{86}		-
	Age (Bio)	600 m.y.	" "		-

1057 From granitic gneiss, 2m. west of Tornpakara, Petermann Ranges.
Lat. 25°24'S. Long. 130°02'30"E. Petermann Ranges.
Collected by W. Oldershaw.

1058 From biotite granite, Armstrong Ck., Petermann Ranges.
Lat. 25°21'S. Long. 129°45'E. Petermann Ranges.
Collected by W. Oldershaw.

At least two interpretations of the data:

(i) True age of formation is apparent age of T.R. specimens i.e. 1190 m.y. and 1150 m.y. The biotite apparent age of 600 m.y. would then represent the approximate age of later metamorphism.

(ii) True age of formation of both specimens is about 670 m.y. with both rocks being formed with a very large amount of inherited radiogenic strontium.

52

Unpublished
F53/14/
GA 1059

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock	F	195.0	69.6	8.0540	0.8065
"	E	161.6	77.9	5.9630	0.7840
"	A	218.2	64.4	9.7436	0.8230

Age 760 ± 30 m.y. Initial Sr^{87}/Sr^{86} 0.720(I)

From shales, Ooraminna No. 1 Well. 42 ml. S.E. of Alice Springs.

Lat. 24°00'06"S. Long. 134°09'50"E. Alice Springs

Collected by B.M.R.

Approximate age of deposition or compaction of the sediment, or of the formation of the clay minerals.

Unpublished
G53/2/
GA 5212

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock	C3	205.6	96.2	6.1466	0.7747
	D1	130.4	109.3	3.4290	0.7437
	D5	180.8	114.5	4.5387	0.7562

Age 820 m.y. Initial Sr^{87}/Sr^{86} 0.704(I).

From dark shale, Mt. Charlotte No. 1.

Lat. 24°52'03"S. Long. 133°59'11"E. Rodinga.

Collected by Transoil.

Approximate age of deposition or compaction of the sediment.

Ref: NT 5
D52/4/1
GA 24A

Zircon ages from isotope dilution data.

$^{206}Pb/^{238}U$	$^{207}Pb/^{235}U$	$^{207}Pb/^{206}Pb$	$^{208}Pb/^{232}Th$.
0.255, (0.243);	5.28, (5.03);	0.151;	0.885, (0.885)

Age: 1480 m.y. (1410m.y.); 1890 m.y. (1850 m.y.); 2390 m.y.; 1740 m.y., (1680 m.y.)

Contin. Diffusion: 2670 m.y.; Rad. Damage : 2560 m.y.

U μg/g	Th μg/g	Pb μg/g	$\alpha\ mg^{-1}\ hr^{-1}$
805	405	196	263

Pb-α age 1600 m.y. Chemical age 1320 m.y.

From coarse granite, Rum Jungle.

Lat. 13°21'S. Long. 130°38'E. Darwin.

Collected by B.M.R.

Minimum age (Pb-Pb) of 2400 m.y. Probably records event at about 2550 m.y. (considering GA24A, GA656 and GA675).

Ref: NT 5
D52/4/25
GA 656

Zircon ages from isotope dilution data.

	$^{206}Pb/^{238}U$	$^{207}Pb/^{235}U$	$^{207}Pb/^{206}Pb$	$^{208}Pb/^{232}Th$
	0.322	6.87	0.155	0.132
Age:	1820 m.y.	2120 m.y.	2440 m.y.	2540 m.y.

Continuous diffusion: 2580 m.y. Radiation damage 2540 m.y.
From Large feldspar granite.
Lat. 12°50'30"S. Long. 130°58'30"E. Darwin.
Collected by J.R. Richards and B.P. Ruxton.
Minimum age (Pb-Pb) of 2400 m.y. - see GA 24A.

Ref: NT 5
D52/8/10
GA 675

Zircon ages from isotope dilution data.

	$^{206}Pb/^{238}U$	$^{207}Pb/^{235}U$	$^{207}Pb/^{206}Pb$	$^{208}Pb/^{232}Th$
	0.0896	1.37	0.111	0.0445
Age:	560 m.y.	890 m.y.	1840 m.y.	890 m.y.

Continuous diffusion: 3000 m.y. Radiation damage: 2600 m.y.
From leucocratic granite.
Lat. 13°00'S. Long. 131°01'30"E. Pine Creek.
Collected by J.R. Richards and B.P. Ruxton.
3000 m.y. age uncertain owing to large lead loss. See GA 24A.

Ref: NT 5
D52/8/6
GA 10

U μg/g	Th μg/g	Pb μg/g	α mg^{-1} hr^{-1}
595	90	170	222

Pb-α age 1640 m.y. Chemical age 1620 m.y.
From Hermit Hill Granite.
Lat. 14°02'S. Long. 30°33'E. Pine Creek.
Collected by O.N. Warm and E.J. Malone.
Minimum age - probably considerably below true age.

Ref: NT 5
D52/4/50(30)
GA 15

U μg/g	Th μg/g	Pb μg/g	α mg^{-1} hr^{-1}
905	1010	174	348

Pb-α age 1120 m.y. Chemical age 950 m.y.
From Mt. Bundey Syenite.
Lat. 12°54'S. Long. 131°34'E. Darwin.
Collected by E. Malone
Minimum age - probably considerably below true age.

Ref: NT 6
Z 134

Total Rock, K-Ar age 0.69 ± 0.06 m.y.
K 1.88% $*Ar^{40}/K^{40}$ 0.00004
From Tektite, Charlotte Waters.
Lat. 25°55'S. Long. 134°55'E. Charlotte Waters.
Collected by Fenner.
Minimum age.

QUEENSLAND

Ref: Q1
F54/6/4
GA 131

Biotite, K-Ar age 1420 m.y.
K 6.88% $*Ar^{40}/K^{40}$ 0.1238
From Kalkadoon Granite (? Wonga Granite).
Lat. 21°41'S. Long. 139°55'E. Duchess.
Collected by E.K. Carter.
See GA 126.

Ref: Q1, Q11, Q12
F54/6/11
GA 132

Biotite, K-Ar age 1432 m.y.
K 4.21% $*Ar^{40}/K^{40}$ 0.1253

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	139.5	200.1	2.007	0.7491 (unsp.).

Age 1530 m.y. Initial Sr^{87}/Sr^{86} 0.7043 (I).

	$^{206}Pb/^{238}U$	$^{207}Pb/^{235}U$	$^{207}Pb/^{206}Pb$	$^{208}Pb/^{232}Th$
Zircon	0.103	1.25	0.0885	0.0435
Age	635 m.y.	830 m.y.	1420 m.y.	870 m.y.

Continuous diffusion: 1900 m.y. (approx.)
Radiation damage 1670 m.y. (approx).
From Wimberu Granite
Lat. 21°13'30"S. Long. 140°25'30"E. Duchess.
Collected by E.K. Carter.
K-Ar age unreliable (biotite bleached). Rb-Sr age - see GA129
Difficult to interpret U-Pb data.

Ref: Q1, Q11
F54/6/1
GA 126

Biotite, K-Ar age 1364 m.y.
K 6.60% $*Ar^{40}/K^{40}$ 0.1170

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	228.9	233.9	2.817	0.7777 (unsp.)
Biotite	1119	19.45	165.7	4.131

Age 1760 m.y. Initial Sr^{87}/Sr^{86} 0.7065 (I).
From Kalkadoon Granodiorite
Lat. 21°07' S. Long. 139°38' E. Duchess.
Collected by E.K. Carter
K-Ar ages on Kalkadoon, Sybella, Wonga, Naraku, Williams, and Wimberu may be ages of metamorphism or of intrusion: results indicate only that the last recordable event occurred between 1300 and 1400 m.y. ago. Rb-Sr age from total rock isochron (with GA 172, 378, 379); biotite, assuming initial Sr^{87}/Sr^{86} of 0.7065 gives age of 1470 m.y.

Ref: Q1
F54/2/6
GA 127

Biotite, K-Ar age 1278 m.y.
K 1.26% $*Ar^{40}/K^{40}$ 0.1067
From Wonga Granite
Lat. 20°38' S. Long. 139°59'E. Cloncurry
Collected by E.K. Carter.
Strongly foliated part of heterogeneous granite which intrudes Corella Formation. Biotite chloritised; age unreliable.

Ref: Q1
F54/2/4
GA 128

Biotite, K-Ar age 1408 m.y.
K 6.63% $*Ar^{40}/K^{40}$ 0.1222
From Naraku Microadamellite, fine-grained late phase.
Lat. 20°27' S. Long. 140°19' E. Cloncurry
Collected by E.K. Carter.
See GA 126.

Ref: Q1
F54/6/7
GA 134

Biotite, K-Ar age 1399 m.y.
K 6.55% $*Ar^{40}/K^{40}$ 0.1212
From Williams Granodiorite (gneissic).
Lat. 21°36' S., Long. 140°55' E. Duchess.
Collected by E.K. Carter
See GA 126

Ref: Q1, Q12
F54/6/2
GA 135

Biotite, K-Ar age 1450 m.y.
K 7.47% $*Ar^{40}/K^{40}$ 0.1276
Zircon, $^{207}Pb/^{206}Pb$ 0.0951. Age 1560 m.y.
From Wonga Granite
Lat. 21°13' S., Long. 139°52' E. Duchess.
Collected by E.K. Carter.
Relict bedding structures in metasomatic granite.
See GA 126. Lead isotope age a minimum.

Ref: Q1, Q12
F54/2/1
GA 162

Biotite, K-Ar age 1422 m.y.
K 6.17% $*Ar^{40}/K^{40}$ 0.1240

	U µg/g	Th µg/g	Pb µg/g	α $mg^{-1}hr^{-1}$
Zircon	775	315	173	235

Pb-α age 1580 m.y. Chemical age 1250 m.y.
From Kalkadoon Granodiorite gneiss.
Lat. 20°29' S., Long. 139°48' E. Cloncurry
Collected by E.K. Carter
Part of oldest phase of Kalkadoon Granite. See GA 126.
Pb-α age represents part of a "discordant set". True age greater than 1580 m.y.

Ref: Q1
F54/2/3
GA 163

Muscovite, K-Ar age 1351 m.y.
K 9.12%, $*Ar^{40}/K^{40}$ 0.1154
From Pegmatite
Lat. 20°04' S., Long. 140°00' E. Cloncurry.
Collected by E.K. Carter.
Associated with the Wonga granite.
See GA 126.

Ref: Q1
F54/2/7
GA 164

Biotite, K-Ar age 1384 m.y.
K 6.40% $*Ar^{40}/K^{40}$ 0.1194.
From Corella schist-quartz-mica schist
Lat. 20°53'S., Long. 139°55'E. Cloncurry.
Collected by E.K. Carter
Part of Corella Formation. See GA 126.

Ref: Q1
F54/2/8
GA 165

Biotite, K-Ar age 1393 m.y.
K 5.72% $*Ar^{40}/K^{40}$ 0.1204.
From Kalkadoon Granodiorite.
Lat. 20°44'S, Long. 139°51'E. Cloncurry.
Collected by E.K. Carter.
Easternmost isolated body of granite attributed to Kalkadoon.
See GA 126.

Ref: Q1
F54/2/11
GA 166

Biotite, K-Ar age 1448 m.y.
K 6.45% $*Ar^{40}/K^{40}$ 0.1272
From Naraku microadamellite.
Lat. 20°42'S., Long. 140°29'E. Cloncurry.
Collected by E.K. Carter.
Fine-grained phase intruding coarser phase.
See GA 126.

Ref: Q1
F54/5/1
GA 167

Biotite, K-Ar age 1363 m.y.
K 7.58% $*Ar^{40}/K^{40}$ 0.1169
From Sybella Granite
Lat. 21°36'S., Long. 139°18'E. Urandangi.
Collected by E.K. Carter.
Slightly metasomatised granulite. See GA 126.

Ref: Q1
F54/5/2
GA 168

Biotite, K-Ar age 1287 m.y.
K 5.62% $*Ar^{40}/K^{40}$ 0.1078.
From Sybella Granite.
Lat. 21°05'S., Long. 139°21'E. Urandangi.
Collected by E.K. Carter
Biotite highly altered, age unreliable.

Ref: Q1, Q11
F54/6/5
GA 172

Biotite, K-Ar age 1457 m.y.
K 7.13% $*Ar^{40}/K^{40}$ 0.1284

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	192.0	211.5	2.613	0.7723 (unsp.)
Biotite	879.7	9.85	257.2	6.075.

Age (T.R.) 1760 m.y. Initial Sr^{87}/Sr^{86} 0.7065 (I)
" (Bio.) 1490 m.y. " " 0.7065 (A)
From Kalkadoon Granodiorite.
Lat. 21°31'S., Long. 139°41'E. Duchess.
Collected by E.K. Carter.
See GA 126.

Ref: Q1
F54/6/8
GA 175

Biotite, K-Ar age 1458 m.y.
K 6.29% $*Ar^{40}/K^{40}$ 0.1286.
From Williams Adamellite.
Lat. 21°48'S., Long. 140°33'E. Duchess.
Collected by E.K. Carter.
See GA 126

Ref: Q1, Q11
E54/14/2
GA 378

Biotite, K-Ar age 1312 m.y.
K 5.83% $*Ar^{40}/K^{40}$ 0.1107

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	203.5	203.2	2.883	0.7773 (unsp.)

Age 1760 m.y. Initial Sr^{87}/Sr^{86} 0.7065 (I)
From Kalkadoon Granite.
Lat. 19°46'S., Long. 139°59'E. Dobbyn.
Collected by E.K. Carter.
K-Ar age unreliable (biotite highly altered).
Rb-Sr age - see GA 126.

Ref: Q1, Q11
F54/2/2
GA 379

Biotite, K-Ar age 1448 m.y.
K 7.55% $*Ar^{40}/K^{40}$ 0.1273

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	172.0	92.1	5.374	0.8391 (unsp.)
"	170.3	92.9	5.278	0.8386 (unsp.)
Biotite	735.4	4.80	440.8	10.11

Age (T.R.) 1760 m.y. Initial Sr^{87}/Sr^{86} 0.7065 (I)
" (Bio.) 1520 m.y. " " 0.7065 (A)
From Kalkadoon Granodiorite
Lat. 20°17'S. Long. 139°48'E. Cloncurry.
Collected by E.K. Carter.
See GA 126.

Ref: Q1, Q11
198 MI (Perth)
GA 422

Muscovite, K-Ar age 1398 m.y.
K 8.62% $*Ar^{40}/K^{40}$ 0.1210

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Muscovite	2613	2.42	3109	68.45
" (A)	2511	1.48	4900	106.7

Age 1545 m.y. Initial Sr^{87}/Sr^{86} 0.712 (A)
From Sybella Pegmatite
Lat. 20°48'S. Long. 139°25'E. Mt. Isa.
Collected by E.K. Carter
Age independent of initial Sr^{87}/Sr^{86}.
Minimum age. See GA 126.

Ref: Q1, Q11
F54/1/3
GA 530

Biotite, K-Ar age 1404 m.y.
K 7.50% $*Ar^{40}/K^{40}$ 0.1218

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	183.4	183.2	2.876	0.7777 (unsp.)
"	183.5	184.3	2.865	0.7764 (unsp.)
Biotite	940.0	14.06	192.4	4.723

Age (T.R.) 1600 m.y. Initial Sr^{87}/Sr^{86} 0.712 (I)
" (Bio.) 1480 m.y. " " 0.712 (A)
From Sybella Granite
Lat. 20°47'S. Long. 139°12'E. Mt. Isa.
Collected by E.K. Carter.
Data not sufficient to group the granite as "older" or "younger"; with only two samples the age is provisional. See GA 126.

Ref: Q1
F54/1/4
GA 531

Biotite, K-Ar age 1398 m.y.
K 7.46% $*Ar^{40}/K^{40}$ 0.1210
From Sybella Granite.
Lat. 20°51'S. Long. 139°10'E. Mt. Isa.
Collected by E.K. Carter.
Intrudes Yaringa metamorphics; thought to be second oldest body in Sybella Granite; see GA 126.

Ref: Q1
F54/1/6
GA 532

Biotite, K-Ar age 1410 m.y.
K 6.77% $*Ar^{40}/K^{40}$ 0.1226
From Sybella Granite
Lat. 20°39'S. Long. 139°23'E. Mt. Isa.
Collected by E.K. Carter.
Probably belongs to second oldest granite mass.
See GA 126.

Ref: Q1
F54/2/16
GA 582

Biotite, K-Ar age 1431 m.y.
K 7.43% $*Ar^{40}/K^{40}$ 0.1251
Muscovite, K-Ar age 1456 m.y.
K 7.48% $*Ar^{40}/K^{40}$ 0.1283
Muscovite, K-Ar age 1466 m.y.
K 7.484% $*Ar^{40}/K^{40}$ 0.1296
From Soldiers Cap Schist
Lat. 20°57'S. Long. 140°41'E. Cloncurry.
Collected by E.K. Carter.
Probably near the oldest Lower Proterozoic rocks in N.W. Queensland. See GA 126.

Ref: Q1
F54/2/17
GA 583

Biotite, K-Ar age 1452 m.y.
K 7.76% $*Ar^{40}/K^{40}$ 0.1278
Muscovite, K-Ar age 1431 m.y.
K 7.83% $*Ar^{40}/K^{40}$ 0.1251
From Corella Schist
Lat. 20°50'S. Long. 139°58'E. Cloncurry.
Collected by E.K. Carter.
Sillimanite-biotite-muscovite schist in predominantly calc-silicate Corella Formation. See GA 126.

Ref: Q1, Q9 Biotite, K-Ar age 1776 m.y.
E54/14/3 K 6.79% $*Ar^{40}/K^{40}$ 0.1724
GA 584

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	469	43.7	30.99	1.491 (unsp.)
"	-	-	-	1.490
Plagioclase	38	43.1	2.52	0.8056
"	-	-	-	0.8084 (unsp.)
K-feldspar	982	71.3	39.82	1.680

Age 1780 + 20 m.y. Initial Sr^{87}/Sr^{86} 0.715 (I)
(Sr^{88}/Sr^{86} assumed to be 8.387)
From Ewen biotite adamellite (red).
Lat. 19°24'S. Long. 139°39'E. Dobbyn.
Collected by E.K. Carter.
Main part of Ewen Granite; intrudes Argylla Formation and underlies Eastern Creek Volcanics. Age of intrusion.

Ref: Q1 Biotite, K-Ar age 1772 m.y.
E54/14/6 K 6.31% $*Ar^{40}/K^{40}$ 0.1717
GA 585 From Ewen biotite adamellite (grey).
Lat. 19°27'S. Long. 139°39'E. Dobbyn.
Collected by E.K. Carter.
Intrudes Eastern Creek Volcanics. Age of intrusion.

Ref: Q1, Q11, Q12 Biotite, K-Ar age 1409 m.y.
F54/1/12 K 5.70% $*Ar^{40}/K^{40}$ 0.1223
GA 586

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total Rock:	256.4	71.18	10.37	0.9469 (unsp.)
"	255.6	71.94	10.21	0.9439 (unsp.)
"	256.6	71.65	10.30	0.9448 (unsp.)
Biotite	1370	14.11	279.3	6.646

Age (T.R.) 1600 m.y. Initial Sr^{87}/Sr^{86} 0.712 (I)
" (Bio.) 1510 m.y. " " 0.712 (A).

Zircon	$^{206}Pb/^{238}U$	$^{207}Pb/^{235}U$	$^{207}PB/^{206}Pb$	$^{208}Pb/^{232}Th$
	.149	2.00	0.0970	0.0294

Age: 910 m.y. 1130 m.y. 1590 m.y. 590 m.y.
Continuous diffusion: 1860 m.y. Radiation damage 1760 m.y.
From Sybella Granite (riebeckite-biotite granite)
Lat. 20°29'S. Long. 139°11'E. Mt. Isa.
Collected by E.K. Carter.
See GA 126. Maximum possible age (found by Rb-Sr) is 1690 m.y.; see GA 530. Zircon data indicate age of granite greater than 1760 m.y.

Ref: Q2
F54/15/1
GA 177

Biotite, K-Ar age 860 m.y.
K 7.48% $*Ar^{40}/K^{40}$ 0.06367
From Basement Granite (Ooroonoo No. 1 Bore)
Lat. 23°11'S. Long. 140°33'E. Brighton Downs.
Collected by Coronado Oil Co.
At 3,850 ft, overlain by Jurassic and Cretaceous.
Minimum age.

Ref: Q2
F55/13/1
GA 309

Biotite, K-Ar age 418 m.y.
K 2.71% $*Ar^{40}/K^{40}$ 0.02734
From Basement Granite, Longreach Oil Bore No. 1
Lat. 23°30'S., Long. 144°5'E. Longreach.
Collected by Q.G.S.
Basement granite overlain by Jurassic and Cretaceous sediments at 3,067 feet. Biotite chloritised; age unreliable.

Ref: Q2
F55/15/1
GA 399

Biotite, K-Ar age 353 m.y., 355 m.y.
K 7.09% $*Ar^{40}/K^{40}$ 0.02265, 0.02284
From Granodiorite (Retreat granite)
Lat. 23°9'S., Long. 147°38'E. Emerald.
Collected by J.J. Veevers and W.B. Dallwitz
Part of the Anakie High. Minimum age. Age reported in Q2 (334 m.y.) is wrong.

Ref: Q2
F55/15/2
GA 400

Biotite, K-Ar age 345 m.y.
K 7.10% $*Ar^{40}/K^{40}$ 0.02212
Hornblende, K-Ar age 358 m.y.
K 0.726% $*Ar^{40}/K^{40}$ .02304
From Diorite (Retreat Granite, Anakie High).
Lat. 23°18'S., Long. 147°40'E. Emerald.
Collected by J.J. Veevers and W.B. Dallwitz.
Minimum age.

Ref: Q2
F55/15/3
GA 401

Biotite, K-Ar age 366 m.y.
K 7.28% $*Ar^{40}/K^{40}$ 0.02357
Hornblende, K-Ar age 367 m.y.
K 0.734% $*Ar^{40}/K^{40}$ 0.02366
From Quartz Diorite (Retreat Granite, Anakie High)
Lat. 23° 33'S., Long. 147°43'E. Emerald.
Collected by J.J. Veevers and W.B. Dallwitz.
Minimum age.

Ref: Q2
F55/15/4
GA 402

Biotite, K-Ar age 349 m.y.
K 6.72% $*Ar^{40}/K^{40}$ 0.02238
Hornblende, K-Ar age 356 m.y.
K 0.576% $*Ar^{40}/K^{40}$ 0.02290
From Adamellite (Retreat Granite, Anakie High)
Lat. 23°14'S., Long. 147°40'E. Emerald.
Collected by J.J. Veevers and W.B. Dallwitz.
Minimum age.

Ref: Q2
F55/3/12
GA 472

Biotite, K-Ar age 271 m.y.
K 7.14% $*Ar^{40}/K^{40}$ 0.0170
Hornblende, K-Ar age 271 m.y.
K 1.42% $*Ar^{40}/K^{40}$ 0.0170
From Granodiorite (Urannah Complex)
Lat. 20°51'S., Long. 148°17'E. Bowen.
Collected by C.M. Gregory and E.J. Malone.
Relation to GA 473 and GA 474 not known. Minimum age.

Ref: Q2
F55/3/14
GA 473

Biotite, K-Ar age 270 m.y.
K 7.20% $*Ar^{40}/K^{40}$ 0.01699
From Adamellite (Urannah Complex)
Lat. 20°24'S., Long. 147°56'E. Bowen.
Collected by C.M. Gregory and E.J. Malone
Minimum age.

Ref: Q2
F55/3/15
GA 474

Biotite, K-Ar age 271 m.y.
K 7.27% $*Ar^{40}/K^{40}$ 0.01706
Biotite, K-Ar age 272 m.y.
K 7.27% $*Ar^{40}/K^{40}$ 0.01713
Hornblende, K-Ar age 258 m.y.
K 0.789% $*Ar^{40}/K^{40}$ 0.01613
From Adamellite (Urannah Complex)
Lat. 20°20'S., Long. 148°00'E. Bowen.
Collected by C.M. Gregory and E.J. Malone
Minimum age.

Ref: Q2
G55/12/2
GA 607

Biotite, K-Ar age 342 m.y.
K 6.31% $*Ar^{40}/K^{40}$ 0.02170
From Basement Adamellite, Rosewood No. 1 Bore.
Lat. 26°04'S., Long. 148°42'E. Roma.
Collected by Associated Australian Oilfields
Basement, 2074 feet; overlain by Mesozoic and Upper Permian sediments. Minimum age.

Ref: Q2
G55/12/3
GA 747

Biotite, K-Ar age 324 m.y.
K 7.08% $*Ar^{40}/K^{40}$ 0.02068
From Basement Adamellite, Pleasant Hills No. 1 Well.
Lat. 26°25'S., Long. 149°00'E. Roma.
Collected by Australian Associated Oilfields.
Basement, 3480 feet; overlain by Mesozoic sediments.
Minimum age.

Ref: Q6
Canberra Pb1

Galena, Pb age.
From coarse-grained ore, Mt. Isa.
Lat. 20°50'S., Long. 139°27'E. Mt. Isa.
Collected by Mt. Isa Mines Ltd.
Single stage model lead age (Holmes Houtermans) 1557 m.y.

Ref: Q6
Canberra Pb11

Galena Pb age
From fine-grained galena in shale, Northern leases, Mt. Isa.
Lat. 20°40'S. Long. 139°27'E. Mt. Isa.
Collected by E.K. Carter.
Single stage model lead age (H-H) 1568 m.y.

Ref: Q6
Canberra Pb17

Galena Pb age
From finely crystalline ore, Northern Leases, Mt. Isa.
Lat. 20°40'S. Long. 139°27'E. Mt. Isa.
Collected by E.M. Bennett.
Single stage model lead age (H-H) 1590 m.y.

Ref: Q6
Canberra Pb28

Galena Pb age
From lead ore, Mt. Isa mine.
Lat. 20°50'S. Long. 139°27'E (approx). Mt. Isa.
Collected by W.J. Murray.
Single stage model lead age (H-H) 1576 m.y.

Ref: Q6
Canberra Pb29

Galena Pb age.
From lead ore, Mt. Isa mine.
Lat. 20°50'S. Long. 139°27'E. (approx.) Mt. Isa.
Collected by W.J. Murray.
Single stage model lead age (H-H) 1565 m.y.

Ref: Q13
E55/13/2
GA 417

Biotite, K-Ar age 379 m.y.
K 7.43% $*Ar^{40}/K^{40}$ 0.02450.
From Dumbano Granite, 5 ml. W. of Lyndhurst H.S.
Lat. 19°13'S. Long. 144°17'E. Clarke River.
Collected by C.D. Branch.
Minimum age. See GA 418.

Ref: Q13
E55/13/6
GA 419

Biotite, K-Ar age 388 m.y.
K 6.63% $*Ar^{40}/K^{40}$ 0.0252
From Dumbano Granite, 4 ml. N. of Wando Vale H.S.
Lat. 19°37'S. Long. 144°52'E. Clarke River.
Collected by C.D. Branch.
Minimum age.

Ref: Q3
F55/7/4
GA 781

Biotite, K-Ar age 122 m.y.
K 7.08% $*Ar^{40}/K^{40}$ 0.007373
Hornblende, K-Ar age 123 m.y.
K 0.307%, $*Ar^{40}/K^{40}$ 0.007399
From Mt. Barker Granodiorite
Lat. 21°09'30"S. Long. 148°23'E. - Mt. Coolon.
Collected by E.J. Malone and A.R. Jensen.
Agreement between biotite and hornblende ages suggests that they indicate age of intrusion.

Ref: Q3
F55/7/5
GA 782

Biotite, K-Ar age 125 m.y.
K 6.78% $*Ar^{40}/K^{40}$ 0.007562
Hornblende, K-Ar age 122 m.y.
K 0.296%, $*Ar^{40}/K^{40}$ 0.007366
From Mt. Barker Granodiorite.
Lat. 21°08'30"S. Long. 148°24'E. Mt. Coolon
Collected by E.J. Malone and A.R. Jensen
Age of intrusion.

Ref: Q3
F55/8/2
GA 792

Biotite, K-Ar age 128 m.y.
K 7.10%, $*Ar^{40}/K^{40}$, 0.007730
Biotite, K-Ar age 127 m.y.
K 7.10%, $*Ar^{40}/K^{40}$ 0.007644
Hornblende, K-Ar age 125 m.y.
K 0.467% $*Ar^{40}/K^{40}$ 0.007544
From Urannah Complex
Lat. 21°8'S. Long. 148°30'30"E. Mackay.
Collected by E.J. Malone and A.R. Jensen.
Age of intrusion.

Ref: Q4
G56/6/3
GA 5295

Biotite, K-Ar age 249 m.y.
K 7.53% $*Ar^{40}/K^{40}$ 0.01558
From Mt. Perry Granite, Possum Ck
Lat. 25°15'39"S. Long. 151°30'44"E. Maryborough.
Collected by W.B. Dallwitz and P.L. Ellis
Member of group of lower U. Permian intrusions,
range 235-250 m.y.

Ref: Q4
G56/10/6
GA 5296

Biotite, K-Ar age 236 m.y.
K 6.91% $*Ar^{40}/K^{40}$ 0.01468
Hornblende, K-Ar age 245 m.y.
K 0.530% $*Ar^{40}/K^{40}$ 0.01526
From Taromeo Tonalite
Lat. 26°42'S. Long. 152°00'30"E. Gympie.
Collected by W.B. Dallwitz and R.M. Tucker.
Member of group of lower U. Permian intrusions,
range 235-250 m.y.

Ref: Q4
G56/14/8
GA 5298

Hornblende, K-Ar age 233 m.y.
K 0.371% $*Ar^{40}/K^{40}$ 0.01448
From Eskdale Complex.
Lat. 27°11'S. Long. 152°16'E. Ipswich.
Collected by W.B. Dallwitz and R.M. Tucker
Result of 233 m.y. within limits of experimental error
for an intrusion belonging to lower U. Permian group.

Ref: Q4
G56/10/7
GA 5312

Biotite, K-Ar age 238 m.y.
K 7.05% $*Ar^{40}/K^{40}$ 0.01482
From Taromeo Tonalite
Lat. 26°44'S. Long. 152°1'E. Gympie.
Collected by W.B. Dallwitz and R.M. Tucker.
Member of group of lower U. Permian intrusions, range
235-250 m.y.

Ref: Q4
G56/10/8
GA 5313

Biotite, K-Ar age 240 m.y.
K 6.99% $*Ar^{40}/K^{40}$ 0.01497
Hornblende, K-Ar age 239 m.y.
K 0.623% $*Ar^{40}/K^{40}$ 0.01487
From Stuart River, near Proston.
Lat. 26°11'S. Long. 151°33'E. Gympie.
Collected by W.B. Dallwitz and R.M. Tucker
Member of group of lower Upper Permian granites ranging
235-250 m.y. in age.

Ref: Q4
G56/6/11
GA 5322

Biotite, K-Ar age 250 m.y.
K 6.49% $*Ar^{40}/K^{40}$ 0.01561
From south of Gayndah
Lat. 25°46'S. Long. 151°31'E. Maryborough.
Collected by A.W. Webb, P.L. Ellis, and R.M. Tucker
Member of group of lower U. Permian granites ranging 235-250 m.y.

Ref: Q4
G56/14/-
GA 220

Biotite, K-Ar age 219 m.y.
K 2.35% $*Ar^{40}/K^{40}$ 0.0136.
From Enoggera Granite.
Lat. 27°27'S. Long. 152°57'30"E. Ipswich.
Collected by W.B. Dallwitz and R.M. Tucker.
Biotite probably originally deficient in potassium, age conforms with surrounding intrusions.

Ref: Q4
G56/10/1
GA 1217

Biotite, K-Ar age 223 m.y.
K 7.09% $*Ar^{40}/K^{40}$ 0.01380
From Neurum Tonalite
Lat. 26°44'S. Long. 152°43'E. Gympie.
Collected by W.B. Dallwitz and R.M. Tucker.
Member of group of U. Permian - L. Trias intrusions, range 225 - 215 m.y.

Ref: Q4
G56/14/4
GA 5297

Biotite, K-Ar age 217 m.y.
K 6.85% $*Ar^{40}/K^{40}$ 0.01346
From Mt. Samson granite
Lat. 27°18'S. Long. 152°51'E. Ipswich.
Collected by W.B. Dallwitz and R.M. Tucker.
Member of group of U. Permian - L. Trias intrusions, range 225-215 m.y.

Ref: Q4
G56/10/3
GA 5311

Biotite, K-Ar age 221 m.y.
K 6.99% $*Ar^{40}/K^{40}$ 0.01369
Hornblende, K-Ar age 218 m.y.
K 0.581% $*Ar^{40}/K^{40}$ 0.01353
From Woondum Granodiorite
Lat. 26°12'S. Long. 152°49'E. Gympie.
Collected by W.B. Dallwitz and R.M. Tucker.
Member of group of U. Permian - L. Trias intrusions, range 225-215 m.y. Weak field evidence indicated Jurassic age.

Ref: Q4
G56/6/5
GA 5314

Biotite, K-Ar age 215 m.y.
K 6.85% $*Ar^{40}/K^{40}$ 0.01331
From Mt. Biggenden
Lat. 25°32'S. Long. 151°59'E. Maryborough.
Collected by W.B. Dallwitz and P.L. Ellis.
Member of group of U. Permian - L. Trias intrusions, range 225 - 215 m.y.

Ref: Q4
G56/10/4
GA 5317

Biotite, K-Ar age 226 m.y.
K 6.14% $*Ar^{40}/K^{40}$ 0.01400
From Wonga.
Lat. 26°05'S. Long. 152°29'E. Gympie.
Collected by W.B. Dallwitz and R.M. Tucker.
Weak field evidence indicated Jurassic age; probably U. Permian.

Ref: Q4
G56/6/7
GA 5318

Biotite, K-Ar age 217 m.y.
K 5.81% $*Ar^{40}/K^{40}$ 0.01346
From Musket Flat Granite.
Lat. 25°34'S. Long. 152°25'E. Maryborough.
Collected by W.B. Dallwitz and P.L. Ellis
Member of group of U. Permian - L. Trias intrusions, range 225 - 215 m.y. Field evidence indicated that granite was younger than U. Trias.

Ref: Q4
G56/6/14
GA 5320

Biotite, K-Ar age 215 m.y.
K 5.86% $*Ar^{40}/K^{40}$ 0.01328
From Booyal granite.
Lat. 25°17'S. Long. 152°02'E. Maryborough.
Collected by A.W. Webb and P.L. Ellis.
Member of group of U. Permian - L. Trias intrusions, range 225-215 m.y.

Ref: Q4
G56/6/9
GA 5321

Biotite, K-Ar age 207 m.y.
K 7.42% $*Ar^{40}/K^{40}$ 0.01280
From Sandy Creek, south of Biggenden.
Lat. 25°45'S. Long. 152°01'E. Maryborough.
Collected by A.W. Webb and P.L. Ellis.
Age lower than that of nearby granites; possibly dyke rock intrusive into granite.

Ref: Q4
G56/6/12
GA 5325

Biotite, K-Ar age 220 m.y.
K 6.75% $*Ar^{40}/K^{40}$ 0.0136
Hornblende, K-Ar age 214 m.y.
K 0.291% $*Ar^{40}/K^{40}$ 0.0132
From Mt. Perry Granite, 10 miles N.E. of Mt. Perry.
Lat. 25°04'S. Long. 151°40'E. Maryborough.
Collected by A.W. Webb and P.L. Ellis.
Member of group of U. Permian - L. Trias intrusions, range 225 - 215 m.y.

Ref: Q4
G56/14/12
GA 5315

Hornblende, K-Ar age 213 m.y.
K 0.502% $*Ar^{40}/K^{40}$ 0.01320
From Somerset Dam Gabbro (Hornblende gabbro)
Lat. 27°07'S. Long. 152°32'E. Ipswich.
Collected by R.M. Tucker.
Gabbro intrudes Neara Volcanics which are probably lower Triassic.

Ref: Q4
G56/14/7
GA 5323

Plagioclase, K-Ar age 207 m.y.
K 0.109% $*Ar^{40}/K^{40}$ 0.01276
From Somerset Dam Gabbro (olivine gabbro)
Lat. 27°07'30" Long. 152°32'30". Ipswich.
Collected by W.B. Dallwitz and R.M. Tucker.
See comment for GA 5315.

Ref: Q5
F55/15/7
GA 777

Total Rock, K-Ar age 32.8 m.y., 32.6 m.y.
K 1.299% $*Ar^{40}/K^{40}$ 0.001934, 0.001923.
From olivine basalt.
Lat. 23°50'S. Long. 148°02'E. Emerald.
Collected by R.G. Mollan.
Age of extrusion.

Ref: Q5
F55/15/20
GA 1143

Total Rock, K-Ar age 27.8 m.y., 28.0 m.y.
K 1.396% $*Ar^{40}/K^{40}$ 0.001636, 0.001649
From olivine basalt.
Lat. 23°42'S. Long. 148°05'E. Emerald.
Collected by R.G. Mollan.
May either be age of extrusion or an age younger than extrusion because of leakage of radiogenic argon.

Ref: Q5
F55/15/23
GA 5152

Total Rock, K-Ar age 26.7 m.y.
K 1.290% $*Ar^{40}/K^{40}$ 0.001569
From olivine basalt.
Lat. 23°51'30"S. Long. 148°08'E. Emerald.
Collected by A.W. Webb.
Rock may have lost radiogenic argon, or age may indicate time of extrusion.

Ref: Q5
G55/3/1
GA 1031

Total Rock, K-Ar age 26.8 m.y.
K 1.422% $*Ar^{40}/K^{40}$ 0.001579
From basalt.
Lat. 24°08'S. Long. 147°56'E. Springsure.
Collected by R.G. Mollan
Age of extrusion

Ref: Q5
G55/3/2
GA 1032

Total Rock, K-Ar age 24.0 m.y., 23.2 m.y.
K 0.69% $*Ar^{40}/K^{40}$ 0.001410, 0.001367
From basalt.
Lat. 24°08'30"S. Long. 147°55'E. Springsure.
Collected by R.G. Mollan.
Rock suspected of having lost radiogenic argon.

Ref: Q5
G55/3/3
GA 1033

Total Rock, K-Ar age 27.7 m.y.
K 1.192% $*Ar^{40}/K^{40}$ 0.001629.
From basalt, near St. Peter.
Lat. 24°01'S. Long. 148°03'E. Springsure.
Collected by R.G. Mollan
Age of extrusion.

Ref: Q5
G55/3/4
GA 1034

Total Rock, K-Ar age 26.7 m.y.
K 1.016% $*Ar^{40}/K^{40}$ 0.001569.
From basalt, near St. Peter
Lat. 24°01'S. Long. 148°03'E. Springsure.
Collected by R.G. Mollan.
Age of extrusion. Overlies GA 1033.

Ref: Q5
G55/3/5
GA 1035

Total Rock, K-Ar age 27.0 m.y.
K 3.76% $*Ar^{40}/K^{40}$ 0.001592
From basalt, Mt. Boorambool
Lat. 24°06'S. Long. 148°04'30"E. Springsure.
Collected by R.G. Mollan.
Age of extrusion.

Ref: Q5
G55/3/6
GA 1036

Total Rock, K-Ar age 27.5 m.y.
K 1.989% $*Ar^{40}/K^{40}$ 0.001618
From basalt, Mt. Boorambool.
Lat. 24°06'S. Long. 148°04'30"E. Springsure.
Collected by R.G. Mollan.
Age of extrusion. Overlies GA 1035.

Ref: Q5
F55/15/6
GA 686

A Total Rock, K-Ar age 26.9 m.y., 24 m.y.
K 5.42% $*Ar^{40}/K^{40}$ 0.001585, 0.001412

B Total Rock, K-Ar age 28.1 m.y., 27.7 m.y.
K 5.40% $*Ar^{40}/K^{40}$ 0.001651, 0.001632

C Total Rock, K-Ar age 27.8 m.y., 26.1 m.y., 26.6 m.y., 26.4 m.y.
K 5.75% $*Ar^{40}/K^{40}$ 0.001635, 0.001538, 0.001567, 0.001555.
From sanidine trachyte, Crystal Hill.
Lat. 23°58'S. Long. 148°08'E. Emerald.
Collected by R.G. Mollan.
Fractions B and C crushed finer than A (see GA 1150); reason for older age of these fractions not known.

Ref: Q5
F55/15/17
GA 1043

Total Rock, K-Ar age 26.5 m.y., 25.7 m.y.
K 6.23% $*Ar^{40}/K^{40}$ 0.001560, 0.001515.
From Springsure volcanics.
Lat. 23°59'S. Long. 148°05'E. Emerald.
Collected by R.G. Mollan
Probably age too low, incomplete extraction of Ar during fusion.

Ref: Q5
G55/3/10
GA 1149

Total Rock, K-Ar age 25.9 m.y.
K 6.22% $*Ar^{40}/K^{40}$ 0.001523.
From rhyolite
Lat. 24°02'S. Long. 148°06'E. Springsure.
Collected by R.G. Mollan.
Age of extrusion.

Ref: Q5
G55/3/11
GA 1150

A Total Rock, K-Ar age 23.2 m.y., 25.3 m.y., 24.7 m.y.
K 5.96% $*Ar^{40}/K^{40}$ 0.001363, 0.001488, 0.001452

B Total Rock, K-Ar age 26.4 m.y., 25.9 m.y., 26.7 m.y., 25.2 m.y.
K 5.97% $*Ar^{40}/K^{40}$ 0.001552, 0.001523, 0.001572, 0.001481.
From rhyolite.
Lat. 24°02'S. Long. 148°06'E. Springsure.
Collected by R.G. Mollan.
Fraction B (finer crushed sample) give ages higher than coarse fraction. See GA 686.

Ref: Q5
G55/4/3
GA 983

Total Rock, K-Ar age 24.2 m.y.
K 0.967% $*Ar^{40}/K^{40}$ 0.001424.
From basalt.
Lat. 24°55'S. Long. 149°32'E. Baralaba.
Collected by A.W. Webb.
Age of extrusion.

Ref: Q5
G55/4/4
GA 984

Total Rock, K-Ar age 23.7 m.y.
K 0.929% $*Ar^{40}/K^{40}$ 0.001395.
From basalt.
Lat. 24°51'S. Long. 149°33'E. Baralaba.
Collected by A.W. Webb.
Age of extrusion.

Ref: Q5
G55/4/5
GA 985

Total Rock, K-Ar age 21.1 m.y., 20.9 m.y.
K 1.091% $*Ar^{40}/K^{40}$ 0.001238, 0.001226.
From basalt.
Lat. 24°51'S. Long. 149°32'E. Baralaba.
Collected by A.W. Webb.
Age of extrusion.

Ref: Q5
G55/4/6
GA 986

Total Rock, K-Ar age 20.5 m.y., 20.8 m.y.
K 1.185% $*Ar^{40}/K^{40}$ 0.001201, 0.001222.
From basalt.
Lat. 24°49'S. Long. 149°31'. Baralaba.
Collected by A.W. Webb.
Age of extrusion.

Ref: Q5
G55/4/2
GA 982

Total Rock, K-Ar age 22.5 m.y.
K 0.725 $*Ar^{40}/K^{40}$ 0.001321
From olivine basalt
Lat. 24°35'S. Long. 149°16'E. Baralaba.
Collected by A.W. Webb.
Age of extrusion.

Ref: Q5
G55/3/7
GA 1037

Total Rock, K-Ar age 70.1 m.y., 69.7 m.y.
K 3.96% $*Ar^{40}/K^{40}$ 0.004171, 0.004150
From trachyte.
Lat. 24°15'30"S. Long. 149°53'E. Springsure.
Collected by A.W. Webb.
Age of intrusion.

Ref: Q5
F56/13/9
GA 5334

Total Rock, K-Ar age 69.0 m.y.
K 3.48% $*Ar^{40}/K^{40}$ 0.004108.
From trachyte
Lat. 23°12'S. Long. 150°40'E. Rockhampton.
Collected by A.W. Webb.
Age of intrusion.

Ref: Q7		Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 5409	Total Rock	160	77.1	5.6807	0.7755
GA 5410	"	61	75.5	2.2124	0.7391
GA 5411	"	302	56.3	14.7157	0.8652
GA 5412	"	233	61.1	10.4705	0.8288
GA 5413	"	165	62.9	7.2060	0.8034
GA 5414	"	157	71.0	6.0800	0.7917

Age 720 ± 130 m.y. Initial Sr^{87}/Sr^{86} 0.723(I).
From Marduroo No 1 Bore; shales.
Lat. 24°02'20"S. Long. 139°54'15"E. Machattie
Collected by French Petroleum Coy. (Aust.) Pty. Ltd.
Approximate age; the six points almost certainly do not represent one isochron.

Ref: Q8		Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 5400	Total Rock	61	214	0.9754	0.7113
GA 5401	"	143	78	5.5936	0.7814
GA 5402	"	169	101	5.0682	0.7773
GA 5403	"	165	77	5.5879	0.7884

Age 710 ± 250 m.y. Initial Sr^{87}/Sr^{86} 0.728(I)
From shales, Canary No. 1 borehole, S.E. of Boulia.
Lat. 23°15'30"S. Long. 140°22'43"E. Springvale.
Collected by Philips Petroleum Coy. - Sunray D.X. Coy.
Approximate age; points do not lie on single isochron within experimental error and geological variation is present.

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Ref: Q8 GA 5404	Total Rock	160	69	8.7017	0.8095
GA 5405	"	162	55	9.5984	0.8266

Age 710 ± 250 m.y. Initial Sr^{87}/Sr^{86} 0.728(I)
From shales, Elizabeth Springs No. 1 borehole.
Lat. 23°20'44"S. Long. 140°34'12"E. Springvale.
Collected by Phillips Petroleum Coy. - Sunray D.X. Coy.
These results combined with Canary No. 1 results to get approximate age : see Canary results.

Unpublished
F54/10/1
GA 849

Hornblende, K-Ar age 1495 m.y.
K 0.874% $*Ar^{40}/K^{40}$ 0.1333
From amphibolite, 2060 ft. depth in Beantree No. 1 Bore.
Lat. 22°42'48"S. Long. 140°06'30"E. Boulia.
Collected by Phillips Sunray Co. Ltd.
Probably age of metamorphism.

Unpublished
F54/10/2
GA 850

Biotite, K-Ar age 1444 m.y.
K 7.01% $*Ar^{40}/K^{40}$ 0.1268
From foliated adamellite, 1800 ft. depth in Beantree No. 1 Bore.
Lat. 22°42'48"S. Long. 140°06'30"E. Boulia.
Collected by Phillips Sunray Co. Ltd.
Probably close to age of metamorphism; possibly biotite has lost radiogenic argon.

Unpublished
E54/1/1
GA 409

Biotite, K - Ar age 273 m.y.
K 7.50% $*Ar^{40}/K^{40}$ 0.01718.
From granite basement, from 2750-2756 ft depth, Mornington Is. No. 1 Bore.
Lat. 16°45'S. Long. 139°20'E. Mornington Is.
Collected by Delhi Australian Petroleum Ltd.
Minimum age.

Ref: Q10
Mol. 3

Molybdenite, Re-Os age 225 ± 40 m.y.
Re 94.4 ppm. Os^{187} 0.217 ppm.
From molybdenite, Carpenter's Gully.
Lat. 28°52'S. Long. 151°43'E. Warwick
Collected by L.C. Noakes.

Ref: Q10
Mol. 4

Molybdenite, Re-Os age 210 ± 40 m.y.
Re 73.0 ppm. Os^{187} 0.156 ppm.
From molybdenite, Wonbah Mine, Mt. Perry.
Lat. 25°05'S (approx.) Long. 151°39'E (approx.) Maryborough.
Collected by L.C. Noakes.

Unpublished
G55/12/5
GA 1041

Biotite, K-Ar age 298 m.y.
K 6.98% $*Ar^{40}/K^{40}$ 0.0189
From basement granodiorite, Brucedale No. 1 well, 5248-55 ft (core 5).
Lat. 26°54'51"S. Long. 148°56'39"E. Roma.
Collected by Aust. Assoc. Oilfields.
Age consistent with known geology of well; could be age of emplacement or metamorphism of granodiorite.

Ref: Q11		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
F54/6/10	Total Rock	172.3	143.5	3.407	0.7773 (unsp.)
GA 129	"	169.5	143.7	3.394	0.7778 (unsp.)

Age 1530 m.y. Initial Sr^{87}/Sr^{86} 0.7043 (I)
From Wimberu Granite, fine grained phase which intrudes coarse grained phase (GA 132) at same locality.
Lat. 21°13'30"S. Long. 140°25'30"E. Duchess.
Collected by E.K. Carter.
Age from total rock isochron with GA 130 and GA 132.
Younger than Kalkadoon, Ewen and Sybella granites to the west.

Ref: Q11		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
F54/6/12	Total Rock	43.14	322.4	0.3851	0.7129 (unsp.)
GA 130					

Age 1530 m.y. Initial Sr^{87}/Sr^{86} 0.7043 (I)
From Wimberu Granite
Lat. 21°13'S. Long. 140°02'E. Duchess.
Collected by E.K. Carter.
See GA 129

Ref: Q13		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
E55/5	Total Rock A	266	51.3	14.93	0.770
GA 301	" B	268	51.7	14.90	0.763

Age 320 m.y. Initial Sr^{87}/Sr^{86} 0.703 (A)
From ignimbrite, Featherbed Volcanics, 10 ml. E.N.E. of Chillagoe
Lat. 17°02'S. Long. 144°37'E. Atherton
Collected by C.D. Branch
Maximum age - assumed mantle initial Sr^{87}/Sr^{86} of 0.703.

Ref: Q13		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
E55/5	Total Rock	299	30.8	27.91	0.841
GA 302	"	300	30.5	28.35	0.832
	"	294	31.2	27.14	0.835 (unsp.)
	Microcline	358	48.8	21.10	0.815
	"	358	49.4	20.89	0.812
	Biotite	1664	9.43	507.7	2.95
	"	1672	9.26	519.5	2.98

Age 315 m.y. Initial Sr^{87}/Sr^{86} 0.718 (I)
From Elizabeth Creek Granite, 10 ml. S.S.E. of Barwidgi H.S.
Lat. 17°51'S. Long. 144°35'E. Atherton
Collected by C.D. Branch
Age of intrusion

Ref: Q13		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
E55/9	Total Rock (652)	39.7	320	0.3569	0.709
GA 653	Total Rock (653)	156	39.2	11.47	0.767
E54/8/1	K-feldspar (653)	338	49.5	19.67	0.805
GA 652					

Age 377 m.y. Initial Sr^{87}/Sr^{86} 0.707 (I)
From Augite andesite (652), Rhyodacite (653), Newcastle Range
652 Lat. 17°55'S. Long. 143°46'E. Red River
653 Lat. 18°26'S. Long. 144°02'E. Einasleigh
Collected by C.D. Branch
Isochron through two Total Rock points indicates above age and initial Sr^{87}/Sr^{86}. If isochron drawn through two GA 653 points - indicated age 333 m.y. and initial Sr^{87}/Sr^{86} 0.714. Insufficient data to determine the truer age.

Ref: Q13		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
E54/12/17	Total Rock (1379)	204	98.1	6.003	0.847
GA 1380	Total Rock (1380)	301	67.3	12.88	0.988
E54/11/2					
GA 1379					

Age 1460 m.y. Initial Sr^{87}/Sr^{86} 0.724 (I)
From Croydon Volcanics, 2 ml. N. of Croydon
1379 Lat. 18°12'S. Long. 142°15'E. Croydon
1380 Lat. 18°28'S. Long. 142°30'E. Georgetown
Collected by C.D. Branch
Age may be as low as 1380 m.y., but the volcanics are definitely Precambrian.

Ref: Q13
E54/12/8
GA 410

Muscovite, K-Ar age 1116 m.y.
K 9.04% $^{*}Ar^{40}/K^{40}$ 0.08891
From Robin Hood Granite, 3 ml. N.W. of Robin Hood H.S.
Lat. 18°49'S. Long. 143°39'E. Georgetown.
Collected by C.D. Branch
Minimum age of intrusion.

Ref: Q13
E54/12/9
GA 411

Biotite, K-Ar age 381 m.y.
K 7.53% $^{*}Ar^{40}/K^{40}$ 0.02464
From Robin Hood Granite, 1 ml. N.W. of Robin Hood H.S.
Lat. 18°50'S. Long. 143°42'E. Georgetown.
Collected by C.D. Branch
Argon has probably leaked from the biotite; age too low.

Ref: Q13
E54/12/10
GA 412

Biotite, K-Ar age 368 m.y.
K 7.84% $^{*}Ar^{40}/K^{40}$ 0.02374
Muscovite, K-Ar age 482 m.y.
K 7.34% $^{*}Ar^{40}/K^{40}$ 0.03217
From Forsayth Granite, 10 ml. W. of Eveleigh H.S.
Lat. 18°13'S. Long. 143°51'E. Georgetown.
Collected by C.D. Branch
Biotite and muscovite both have leaked argon; ages too low.

Ref: Q13
E54/12/13
GA 413

Biotite, K-Ar age 387 m.y.
K 7.93% $^{*}Ar^{40}/K^{40}$ 0.02510
From Forsayth Granite, 5 ml. E. of Forsayth
Lat. 18°35'S. Long. 143°39'E. Georgetown.
Collected by C.D. Branch
Biotite has leaked argon; age too low.

Ref: Q13
E54/12/14
GA 414

Biotite, K-Ar age 475 m.y.
K 7.24% $^{*}Ar^{40}/K^{40}$ 0.03159
Muscovite, K-Ar age 804 m.y.
K 9.11% $^{*}Ar^{40}/K^{40}$ 0.05853
From Forsayth Granite, 6.5 ml. on road from
Georgetown-Croydon road to Mt. Turner H.S.
Lat. 18°13'S. Long. 143°20'E. Georgetown.
Collected by C.D. Branch
Biotite has leaked argon; muscovite age closer to true
one but is probably still too low due to argon loss.

Ref: Q13
E54/12/15
GA 415

Biotite, K-Ar age 397 m.y.
K 7.50% $^{*}Ar^{40}/K^{40}$ 0.02578
From Forsayth Granite, 5 ml. E. of Georgetown
Lat. 18°17'S. Long. 143°37'E. Georgetown
Collected by C.D. Branch
Age too low due to argon loss, caused by event in Palaeozoic.

Ref: Q13
E55/9/4
GA 416

Biotite, K-Ar age 373 m.y.
K 7.53% $^{*}Ar^{40}/K^{40}$ 0.02407
From Forsayth Granite, 10 ml. N. of Carpentaria Downs H.S.
Lat. 18°35'S. Long. 144°22'E. Einasleigh
Collected by C.D. Branch
See GA 415.

Ref: Q3
E55/13/5
GA 418

Biotite, K-Ar age 377 m.y., 391 m.y.
K 7.49% $^{*}Ar^{40}/K^{40}$ 0.02435, 0.02535
Muscovite, K-Ar age 380 m.y., 371 m.y.
K 8.84% $^{*}Ar^{40}/K^{40}$ 0.02458, 0.02393
From Dumbano Granite, 3 ml. E. of Reedy Springs H.S.
Lat. 19°57'S. Long. 144°44'E. Clarke River
Collected by C.D. Branch
Concordant ages indicate a Middle Palaeozoic intrusion slightly younger than Dido Granodiorite. See GA 430.

Ref: Q3
E54/16/8
GA 427

Biotite, K-Ar age 371 m.y.
K 6.05% $^{*}Ar^{40}/K^{40}$ 0.02393
From Dumbano Granite, 7 ml. S.W. of Glenmore H.S. towards Gorge Ck. H.S.
Lat. 19°18'S. Long. 143°54'E. Gilberton
Collected by C.D. Branch
Minimum age.

Ref: Q13
E55/5/9
GA 428

Biotite, K-Ar age 1044 m.y.
K 5.98% $^{*}Ar^{40}/K^{40}$ 0.08143
From Forsayth Granite (Dargalong), 7 ml. S.W. of Chillagoe.
Lat. 17°13'S. Long. 144°27'E. Atherton
Collected by C.D. Branch
Minimum age.

Ref: Q13
E55/9/1
GA 429

Biotite, K-Ar age 413 m.y.
K 7.16% $^{*}Ar^{40}/K^{40}$ 0.02699
From Forsayth Granite, Copperfield River crossing, 3 ml. N. of Kidston.
Lat. 18°50'S. Long. 144°10'E. Einasleigh
Collected by C.D. Branch
Age too young - see GA 415

Ref: Q13
E54/12/3
GA 441

Biotite, K-Ar age 1200 m.y.
K 6.83% $^{*}Ar^{40}/K^{40}$ 0.09798
From Forsayth Granite, Forest Home
Lat. 18°16'S. Long. 143°06'E. Georgetown
Collected by C.D. Branch
Minimum age.

Ref: Q13
E54/12/1
GA 658

Biotite, K-Ar age 515 m.y.
K 6.69% $^{*}Ar^{40}/K^{40}$ 0.03459
Muscovite, K-Ar age 701 m.y.
K 8.46% $^{*}Ar^{40}/K^{40}$ 0.04964
From Esmeralda Granite, 4 ml. N. of Esmeralda H.S.
Lat. 18°48'S. Long. 142°35'E. Georgetown
Collected by C.D. Branch
Granite older than 700 m.y.

Ref: Q13
E54/12/2
GA 659

Biotite, K-Ar age 602 m.y.
K 7.33% $^{*}Ar^{40}/K^{40}$ 0.0414
From Esmeralda Granite
Lat. 18°48'S. Long. 142°35'E. Georgetown
Collected by C.D. Branch
Argon loss from biotite; age too low. See GA 658

Ref: Q13
E54/12/12
GA 442

Biotite, K-Ar age 414 m.y.
K 6.88% $^{*}Ar^{40}/K^{40}$ 0.02704
Muscovite, K-Ar age 432 m.y.
K 8.91% $^{*}Ar^{40}/K^{40}$ 0.02704
From Pegmatite in Einasleigh Metamorphics, 8 ml. W.S.W. of Einasleigh
Lat. 18°33'S. Long. 143°58'E. Georgetown
Collected by C.D. Branch
Either minerals lost all argon during a Palaeozoic event, or the pegmatite is not Precambrian.

Ref: Q13
E55/9/6
GA 430

Biotite, K-Ar age 411 m.y.
K 7.56% $^{*}Ar^{40}/K^{40}$ 0.02684
Hornblende, K-Ar age 416 m.y.
K 0.511% $^{*}Ar^{40}/K^{40}$ 0.02722
From Dido Granodiorite, 7 ml. E.S.E. of Lynd. H.S.
Lat. 18°59'S. Long. 144°35'E. Einasleigh
Collected by C.D. Branch
Minimum age. Middle Palaeozoic intrusion probably slightly older than the Dumbano Granite. See GA 418

Ref: Q13
E55/9/8
GA 431

Biotite, K-Ar age 386 m.y.
K 7.52% $^{*}Ar^{40}/K^{40}$ 0.02502
Hornblende, K-Ar age 408 m.y.
K 0.487% $^{*}Ar^{40}/K^{40}$ 0.02673
From Dido Granodiorite, 5 ml. S. of Wyandotte H.S.
Lat. 18°50'S. Long. 144°50'E. Einasleigh
Collected by C.D. Branch
Minimum age. See GA 430

Ref: Q13
E54/16/7
GA 660

Hornblende, K-Ar age 325 m.y.
K 0.627% $^{*}Ar^{40}/K^{40}$ 0.02072
From Mt. Rous Ring Dyke, 10 ml. S.W. of Glenmore H.S.
Lat. 19°19'S. Long. 143°53'E. Gilberton
Collected by C.D. Branch
Minimum age.

Ref: Q13
E55/5/6
GA 443

Biotite, K-Ar age 292 m.y.
K 6.81% $^{*}Ar^{40}/K^{40}$ 0.01843
Hornblende, K-Ar age 302 m.y.
K 0.579% $^{*}Ar^{40}/K^{40}$ 0.01913
From Almaden Granite, 1 ml. W. of Almaden
Lat. 17°21'S. Long. 144°40'E. Atherton
Collected by C.D. Branch
Probably close to age of intrusion. Grouped with Herbert River and Ixe intrusions. See GA 445.

Ref: Q13
E55/5/7
GA 444

Biotite, K-Ar age 284 m.y.
K 6.33% $^{*}Ar^{40}/K^{40}$ 0.01788
From hybrid granite, 4 ml. S.E. of Almaden.
Lat. 17°22'S. Long. 144°42'E. Atherton
Collected by C.D. Branch
Minimum age

Ref: Q13
E55/5/8
GA 445

Biotite, K-Ar age 285 m.y.
K 5.15% $^{*}Ar^{40}/K^{40}$ 0.01799
Hornblende, K-Ar age 271 m.y.
K 0.560% $^{*}Ar^{40}/K^{40}$ 0.01703
From Herbert River Granite, 12 ml. S.W. of Chillagoe
Lat. 17°16'S. Long. 144°22'E. Atherton
Collected by C.D. Branch
Minimum age of intrusion. Grouped with Almaden and Ixe intrusions (see GA 443) - scatter of ages in this group could mean prolonged activity rather than a single intrusion. See GA 448.

Ref: Q13
E55/5/12
GA 446

Biotite, K-Ar age 267 m.y.
K 5.88% $^{*}Ar^{40}/K^{40}$ 0.01678
From Herbert River Granite (Watsonville), 1 ml. W. of Watsonville
Lat. 17°23'S. Long. 145°17'E. Atherton
Collected by C.D. Branch
Minimum age. See GA 445

Ref: Q13
E55/5/13
GA 447

Biotite, K-Ar age 278 m.y.
K 7.03% $^{*}Ar^{40}/K^{40}$ 0.01751
From Herbert River Granite (Herberton), 2 ml. S. of Herberton.
Lat. 17°25'S. Long. 145°23'E. Atherton
Collected by C.D. Branch
Minimum age. See GA 445

Ref: Q13
E55/5/22
GA 505

Biotite, K-Ar age 278 m.y.
K 6.25% $^{*}Ar^{40}/K^{40}$ 0.01749
From Herbert River Granite (Mt. Cardwell), 1.5 ml. N. of Mt. Cardwell H.S.
Lat. 17°37'S. Long. 144°57'E. Atherton.
Collected by C.D. Branch
Minimum age. See GA 445.

Ref: Q13
E55/5/39
GA 506

Biotite, K-Ar age 291 m.y.
K 6.22% $^{*}Ar^{40}/K^{40}$ 0.01838
From Herbert River Granite, 5 ml. along track Dimbulah to Wolfram Camp.
Lat. 17°09'S. Long. 145°02'E. Atherton
Collected by C.D. Branch
Minimum age. See GA 445, GA 443.

Ref: Q13
E55/5/31
GA 539

Biotite, K-Ar age 296 m.y.
K 6.04% $^{*}Ar^{40}/K^{40}$ 0.01869
From Herbert River Granite (True Blue Mine), 20 ml. N.W. of Bullock Ck. siding.
Lat. 17°36'S. Long. 144°18'E. Atherton
Collected by C.D. Branch
Oldest age determined on Herbert River Granite.
See GA 443, GA 445.

Ref: Q13
D54/12/1
GA 529

Biotite, K-Ar age 351 m.y., 360 m.y.
K 6.65% $^{*}Ar^{40}/K^{40}$ 0.02256, 0.02317
Muscovite, K-Ar age 372 m.y.
K 8.84% $^{*}Ar^{40}/K^{40}$ 0.02401
From Granite near Musgrave, Cape York
Lat. 14°40'S (approx). Long. 143°25'E (approx.).
Ebagoola
Collected by K.G. Lucas
Minimum age: tentative correlation with Devonian events of central Georgetown Inlier.

Ref: Q13
E55/9/9
GA 449

Biotite, K-Ar age 350 m.y.
K 6.91% $^{*}Ar^{40}/K^{40}$ 0.02248
From granite, Rocky Dam, 12 ml. W. of Camel Creek Station
Lat. 18°50'S. Long. 145°17'E. Einasleigh
Collected by C.D. Branch
Minimum age

Ref: Q13
E55/9/10
GA 450

Biotite, K-Ar age 315 m.y.
K 7.37% $^{*}Ar^{40}/K^{40}$ 0.02005
From granite, Perry Creek Tinfield
Lat. 18°44'S. Long. 145°20'E. Einasleigh
Collected by C.D. Branch
Minimum age.

Ref: Q13
E55/13/13
GA 544

Biotite, K-Ar age 305 m.y.
K 7.20% $^{*}Ar^{40}/K^{40}$ 0.01931
From granite, 10 ml. W. of Black Braes H.S.
Lat. 19°32'S. Long. 144°03'E. Clarke River
Collected by C.D. Branch
Minimum age

Ref: Q13
E55/5/34
GA 540

Biotite, K-Ar age 298 m.y.
K 5.81% $*Ar^{40}/K^{40}$ 0.01883
From Ixe Monzonite, 5 ml. S.W. of Bullock Creek Siding.
Lat. 17°46'S. Long. 144°27'E. Atherton
Collected by C.D. Branch
Minimum age

Ref: Q13
E55/9/3
GA 448

Biotite, K-Ar age 300 m.y.
K 7.51% $*Ar^{40}/K^{40}$ 0.01902
From Elizabeth Creek Granite, ½ ml. E. of Cumbana H.S.
Lat. 18°02'S. Long. 144°02'E. Einasleigh
Collected by C.D. Branch
Minimum age; comparable with Rb-Sr age - see GA 302.
No significant difference in ages or in scatter of ages between Elizabeth Creek, Herbert River, Almaden, and Ixe intrusions. See GA 445.

Ref: Q13
E55/5/24
GA 536

Biotite, K-Ar age 259 m.y.
K 6.96% $*Ar^{40}/K^{40}$ 0.01620
From Elizabeth Creek Granite, Hann Highway, 15 ml. S. of Sundown turnoff.
Lat. 17°58'S. Long. 144°52'E. Atherton
Collected by C.D. Branch
Minimum age; biotite has probably leaked argon.

Ref: Q13
E55/5/25
GA 537

Biotite, K-Ar age 300 m.y.
K 6.62% $*Ar^{40}/K^{40}$ 0.01901
From Hybrid Granite (Sundown), 12 ml. E. of Sundown H.S.
Lat. 17°47'S. Long. 144°56'E. Atherton
Collected by C.D. Branch
Minimum age. See GA 448

Ref: Q13
E55/5/28
GA 538

Biotite, K-Ar age 297 m.y.
K 7.05% $*Ar^{40}/K^{40}$ 0.01878
From Elizabeth Creek Granite (Tate River), 3 ml. S.W. of Crystal Brook H.S.
Lat. 17°25'S. Long. 144°25'E. Atherton
Collected by C.D. Branch
See GA 448

Ref: Q13
E55/9/17
GA 541

Biotite, K-Ar age 268 m.y.
K 4.96% $^{*}Ar^{40}/K^{40}$ 0.01682
From Elizabeth Creek Granite, 5 ml. N.E. of Whitechalk H.S.
Lat. 18°00'S. Long. 144°32'E. Einasleigh.
Collected by C.D. Branch.
Age probably too low: see GA 448 and GA 542.

Ref: Q13
E55/9/18
GA 542

Muscovite, K-Ar age 269 m.y.
K 8.97% $^{*}Ar^{40}/K^{40}$ 0.01691
From Greisen lode in Elizabeth Creek Granite, near GA 541.
Lat. 18°00'S. Long. 144°32'E. Einasleigh.
Collected by C.D. Branch.
Intrusive into GA 541; possibly age of intrusion.

Ref: Q13
E55/9/19
GA 543

Biotite, K-Ar age 270 m.y.
K 7.63% $^{*}Ar^{40}/K^{40}$ 0.01696.
From Elizabeth Creek Granite (grey variety), near GA 541.
Lat. 18°00'S. Long. 144°32'E. Einasleigh.
Collected by C.D. Branch.
See GA 448.

Ref: Q13
E55/5/37
GA 666

Biotite, K-Ar age 293 m.y.
K 5.45% $^{*}Ar^{40}/K^{40}$ 0.01851.
From Elizabeth Creek Granite, 8 ml. S. of Burlington H.S.
Lat. 17°56'S. Long. 144°24'E. Atherton.
Collected by C.D. Branch.
See GA 448.

Ref: Q13
E55/5
GA 1354

Muscovite, K-Ar age 280 m.y.
K 8.69% $^{*}Ar^{40}/K^{40}$ 0.01761
From greisen-ore vein in Elizabeth Creek Granite, 12 ml. N.W. of Dimbulah.
Lat. 17°05'S. Long. 144°57'E. Atherton.
Collected by C.D. Branch.
See GA 541 and GA 542. Possibly age of vein injection.

Ref: Q13
E55/10/1
GA 5159

Biotite, K-Ar age 272 m.y.
K 7.47% $^{*}Ar^{40}/K^{40}$ 0.01708.
From biotite adamellite, 1.5 ml. S. of Mt. Fox sawmill.
Lat. 18°49'30"S. Long. 145°54'E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 445 and 448.

Ref: Q13
E55/10/3
GA 5160

Biotite, K-Ar age 277 m.y.
K 7.22% $^{*}Ar^{40}/K^{40}$ 0.01746.
From biotite adamellite, Ingham-Kangaroo Hills road, 3 ml. W. of Mt. Fox.
Lat. 18°50'S. Long. 145°46'E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 445 and 448.

Ref: Q13
E55/10/4
GA 5161

Biotite, K-Ar age 311 m.y.
K 5.35% $^{*}Ar^{40}/K^{40}$ 0.01974.
From pink biotite granite, road Ingham to Oak Hills.
Lat. 18°40'30"S. Long. 145°45'E. Ingham.
Collected by A.W. Webb and F. de Keyser.
See GA 448.

Ref: Q13
E55/10/7
GA 5164

Biotite, K-Ar age 286 m.y.
K 7.36% $^{*}Ar^{40}/K^{40}$ 0.01804.
From granodiorite, road from Kennedy to Kirrama.
Lat. 18°12'S. Long. 145°51'E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/10/8
GA 5165

Biotite, K-Ar age 284 m.y.
K 7.37% $^{*}Ar^{40}/K^{40}$ 0.01791
From adamellite, 10 ml. E. of Kirrama H.S.
Lat. 18°10'S. Long. 145°41'E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/10/9
GA 5166

Biotite, K-Ar age 287 m.y.
K 7.19% $^{*}Ar^{40}/K^{40}$ 0.01810.
From granodiorite, Kirrama H.S. to Koombooloomba track.
Lat. 18°06'S. Long. 145°35'E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/10/11
GA 5176

Biotite, K-Ar age 274 m.y.
K 5.52% $^{*}Ar^{40}/K^{40}$ 0.01724.
From granodiorite, Flagstone Creek.
Lat. 18°51'30"S. Long. 146°05'30"E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/6/10
GA 5181

Biotite, K-Ar age 276 m.y.
K 6.91% $^{*}Ar^{40}/K^{40}$ 0.01739
Hornblende, K-Ar age 290 m.y.
K 1.064% $^{*}Ar^{40}/K^{40}$ 0.01832.
From granodiorite, CREB track, 4.5 ml. from Tully River Bridge.
Lat. 17°45'S. Long. 145°39'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/6/11
GA 5182

Biotite, K-Ar age 270 m.y.
K 6.94% $^{*}Ar^{40}/K^{40}$ 0.01697
From foliated porphyritic biotite granite, CREB track, 6.3 ml. from Tully River Bridge.
Lat. 17°44'S. Long. 145°39'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/6/12
GA 5183

Biotite, K-Ar age 262 m.y.
K 7.5% $^{*}Ar^{40}/K^{40}$. 0.0164
From foliated biotite granite, CREB road, 8.5 ml. from Tully River Bridge.
Lat. 17°43'S. Long. 145°38'30"E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/6/13
GA 5184

Biotite, K-Ar age 289 m.y.
K 7.44% $^{*}Ar^{40}/K^{40}$ 0.01822.
From granodiorite, CREB road, 13.3 ml. from Tully River Bridge.
Lat. 17°40'30"S. Long. 145°39'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
Minimum age. See GA 448.

Ref: Q13
E55/6/15
GA 5186

Biotite, K-Ar age 268 m.y.
K 7.58% $^{*}Ar^{40}/K^{40}$ 0.01684.
Hornblende, K-Ar age 276 m.y.
K 0.365% $^{*}Ar^{40}/K^{40}$ 0.01737.
From diorite, 2 ml. N. of Tarzali on Millaa Millaa-Malanda road.
Lat. 17°25'S. Long. 145°36'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
Concordance of ages indicates that they are close to age of intrusion.

Ref: Q13
E55/1/5
GA 498

Biotite, K-Ar age 262 m.y.
K 6.96% $^{*}Ar^{40}/K^{40}$ 0.01640.
Muscovite, K-Ar age 265 m.y.
K 8.56% $^{*}Ar^{40}/K^{40}$ 0.01665
From Mareeba Granite, 0.5 ml. S. of Southedge H.S.
Lat. 16°50'S. Long. 145°13'E. Mossman.
Collected by F. de Keyser and K.G. Lucas.
Mareeba Granite was probably intruded into the Hodgkinson Basin in one major episode about 265-270 m.y. ago.

Ref: Q13
E55/1/6
GA 499

Biotite, K-Ar age 265 m.y.
K 7.48% $^{*}Ar^{40}/K^{40}$ 0.01661.
From Mareeba Granite, 3 ml. W. of Rumula.
Lat. 16°35'S. Long. 145°18'E. Mossman.
Collected by F. de Keyser and K.G. Lucas.
See GA 498.

Ref: Q13
E55/1/7
GA 500

Biotite, K-Ar age 266 m.y.
K 6.48% $^{*}Ar^{40}/K^{40}$ 0.01671.
From Mareeba Granite, Lighthouse Mt., 7 ml. W. of Molloy.
Lat. 16°40'S. Long. 145°14'E. Mossman.
Collected by F. de Keyser and K.G. Lucas.
See GA 498.

Ref: Q13
E55/1/9
GA 501

Biotite, K-Ar age 257 m.y.
K 6.85% $^{*}Ar^{40}/K^{40}$ 0.01611.
From Mareeba Granite, 16.1 ml. along track to Mt. Spurgeon from Mulligan Hwy. Lat. 16°26'S. Long. 145° 08'E. Mossman. Collected by F. de Keyser and K.G. Lucas. See GA 498.

Ref: Q13
E55/1/11
GA 502

Biotite, K-Ar age 269 m.y.
K 7.26% $^{*}Ar^{40}/K^{40}$ 0.01687.
From Mareeba Granite, 9 ml. W.S.W. of Curraghmore H.S.
Lat. 16°32'S. Long. 133°51'E. Mossman.
Collected by F. de Keyser and K.G. Lucas.
See GA 498.

Ref: Q13
E55/1/12
GA 503

Biotite, K-Ar age 256 m.y.
K 5.84% $^{*}Ar^{40}/K^{40}$ 0.01599.
Muscovite, K-Ar age 271 m.y.
K 8.59% $^{*}Ar^{40}/K^{40}$ 0.01702.
From Mareeba Granite, 1 ml. E. of Spring Hill H.S.
Lat. 16°24'S. Long. 144°47'E. Mossman.
Collected by F. de Keyser and K.G. Lucas.
See GA 498.

Ref: Q13
E55/6/2
GA 507

Biotite, K-Ar age 262 m.y.
K 6.93% $^{*}Ar^{40}/K^{40}$ 0.01644.
Muscovite, K-Ar age 268 m.y.
K 8.31% $^{*}Ar^{40}/K^{40}$ 0.01684.
From Mareeba Granite, 7.1 ml. W. of Little Mulgrave River on Gillies Hwy.
Lat. 17°13'S. Long. 145°42'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
See GA 498.

Ref: Q13
D55/13/7
GA 534

Biotite, K-Ar age 264 m.y.
K 7.31% $^{*}Ar^{40}/K^{40}$ 0.01657.
From Puckley Granite, 1 ml. S.E. of Battle Camp Siding.
Lat. 15°24'S. Long. 144°51'E. Cooktown.
Collected by F. de Keyser and K.G. Lucas.
Minimum age.

Ref: Q13
E55/1/10
GA 535

Biotite, K-Ar age 263 m.y.
K 7.47% $^{*}Ar^{40}/K^{40}$ 0.01646.
Muscovite, K-Ar 265 m.y.
K 7.94% $^{*}Ar^{40}/K^{40}$ 0.01660.
From Mareeba Granite, Mt. Elephant.
Lat. 16°29'S. Long. 144°55'E. Mossman.
Collected by F. de Keyser and K.G. Lucas.
See GA 498.

Ref: Q13
E55/6/4
GA 5169

Biotite, K-Ar age 271 m.y.
K 6.72% $^{*}Ar^{40}/K^{40}$ 0.01706.
Muscovite, K-Ar age 267 m.y.
K 8.88% $^{*}Ar^{40}/K^{40}$ 0.01677.
From adamellite (Mareeba), Tinaroo Falls Reservoir, 1.4 ml. from dam.
Lat. 17°09'S. Long. 145°33'30"E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
See GA 498.

Ref: Q13
E55/6/5
GA 5170

Biotite, K-Ar age 262 m.y.
K 7.20% $^{*}Ar^{40}/K^{40}$ 0.01644.
Muscovite, K-Ar age 269 m.y.
K 8.42% $^{*}Ar^{40}/K^{40}$ 0.01691.
From Mareeba Granite, quarry at Tinaroo Falls Dam.
Lat. 17°11'S. Long. 145°32'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
See GA 498.

Ref: Q13
E55/6/6
GA 5171

Muscovite, K-Ar age 257 m.y.
K 8.69% $^{*}Ar^{40}/K^{40}$ 0.01609.
Tourmaline, K-Ar age 600-320 m.y.
K 0.02-0.04% $^{*}Ar^{40}/K^{40}$ 0.0414-0.0207.
From pegmatite in Mareeba Granite, quarry, Tinaroo Falls Dam.
Lat. 17°11'S. Long. 145°32'E. Innisfail.
Collected by A.W. Webb and F. de Keyser.
Could be excess Ar in tourmaline.
See GA 498.

Ref: Q13
E55/10/12
GA 5177

Biotite, K-Ar age 251 m.y., 256 m.y.
K 6.3% $^{*}Ar^{40}/K^{40}$ 0.01566, 0.01604.
Riebeckite, K-Ar age 266 m.y.
K 0.897% $^{*}Ar^{40}/K^{40}$ 0.01666.
From riebeckite granite, Hinchinbrook Is. (southernmost inlet, W. coast).
Lat. 18°24'S. Long. 146°14'30"E. Ingham.
Collected by A.W. Webb and F. de Keyser.
Minimum age.

Ref: Q13
D55/13/1
GA 494

Biotite, K-Ar age 253 m.y.
K 7.62% $*Ar^{40}/K^{40}$ 0.01580.
Actinolite, K-Ar age 257 m.y.
K 0.449% $*Ar^{40}/K^{40}$ 0.01607.
From Trevethan Granite, ¼ ml. N. of Helenvale Junc., Mulligan Hwy.
Lat. 15°40'S. Long. 145°13'E. Cooktown.
Collected by F. de Keyser and K.G. Lucas.
Age of intrusion; a distinct, later episode than the Mareeba intrusion.

Ref: Q13
D55/13/3
GA 495

Biotite, K-Ar age 246 m.y.
K 7.56% $*Ar^{40}/K^{40}$ 0.01536.
From Trevethan Granite, 1 ml. N. of Black Gap, Mulligan Hwy.
Lat. 15°38'S. Long. 145°14'E. Cooktown.
Collected by F. de Keyser and K.G. Lucas.
Minimum age of intrusion.

Ref: Q13
D55/13/4
GA 496

Biotite, K-Ar age 246 m.y.
K 7.02% $*Ar^{40}/K^{40}$ 0.01533.
From Finlayson Granite, S. outskirts of Cooktown.
Lat. 15°29'S. Long. 145°15'E. Cooktown.
Collected by F. de Keyser and K.G. Lucas.
Minimum age; intruded at about same time as Trevethan Granite.

Ref: Q13
D55/13/5
GA 497

Biotite, K-Ar age 246 m.y.
K 6.43% $*Ar^{40}/K^{40}$ 0.01534
From Finlayson Granite, Wallaby Creek, 3 ml. W. of Rossville.
Lat. 15°44'S. Long. 145°15'E. Cooktown.
Collected by F. de Keyser and K.G. Lucas.
See GA 496.

Ref: Q13
E55/1/15
GA 504

Biotite, K-Ar age 251 m.y., 249 m.y.
K 7.31% $*Ar^{40}/K^{40}$ 0.01542, 0.01528.
Muscovite, K-Ar age 234 m.y., 241 m.y.
K 8.33% $*Ar^{40}/K^{40}$ 0.01453, 0.01502
From (?)Mareeba Granite, 1 ml. N.E. of China Camp.
Lat. 16°02'S. Long. 145°18'E. Mossman. Collected by F. de Keyser and K.G. Lucas.
Minimum age; granite may have been intruded at same time as Finlayson Granite and may not be a part of the Mareeba Granite.

Ref: Q13
D55/13/2
GA 533

Biotite, K-Ar age 238 m.y.
K 5.02% $^{*}Ar^{40}/K^{40}$ 0.01482.
From acid dyke in Trevethan Granite, Black Gap, Mulligan Hwy.
Lat. 15°39'S. Long. 145°13'E. Cooktown.
Collected by F. de Keyser and K.G. Lucas.
Minimum age of intrusion.

Ref: Q13
E55/2/1
GA 5172

Muscovite, K-Ar age 248 m.y.
K 8.67% $^{*}Ar^{40}/K^{40}$ 0.01551.
From adamellite, Rex lookout, White Cliffs, Cook Hwy.
Lat. 16°38'30"S. Long. 145°33'30"E. Cairns.
Collected by F. de Keyser and K.G. Lucas.
Minimum age.

Ref: Q13
E55/2/4
GA 5175

Biotite, K-Ar age 228 m.y.
K 7.03% $^{*}Ar^{40}/K^{40}$ 0.01419.
From biotite granite, 13 ml. from Gordonvale towards Murray Prior Range.
Lat. 16°57'S. Long. 145°48'30"E. Cairns.
Collected by F. de Keyser and K.G. Lucas.
Minimum age.

Ref: Q13
E55/6/16
GA 5187

Biotite, K-Ar age 228 m.y.
K 7.34% $^{*}Ar^{40}/K^{40}$ 0.01419.
From foliated biotite granite, track to Clamshill Falls, W. of Gordonvale.
Lat. 17°11'S. Long. 145°49'E. Innisfail.
Collected by F. de Keyser and K.G. Lucas.
Mapped as Mareeba Granite; belt of shearing close by - meaning of age uncertain.

Ref: Q13
E55/6/18
GA 5189

Biotite, K-Ar age 241 m.y.
K 7.60% $^{*}Ar^{40}/K^{40}$ 0.01502.
From biotite granite, The Boulders, 4 ml. W. of Babinda.
Lat. 17°20'30"S. Long. 145°52'E. Innisfail.
Collected by F. de Keyser and K.G. Lucas.
Minimum age.

Ref: Q13
E55/6/9
GA 5180

(A) Muscovite, K-Ar age 299 m.y., 310 m.y.
K 8.12% $^{*}Ar^{40}/K^{40}$ 0.01894, 0.01966.
(B) Muscovite, K-Ar age 352 m.y., 360 m.y.
K 8.36% $^{*}Ar^{40}/K^{40}$ 0.02258, 0.02318.
From Barnard Metamorphics, South Mission Beach, 16 ml. E. of Tully.
Lat. 17°57'30"S. Long. 146°05'E. Innisfail.
Collected by F. de Keyser and K.G. Lucas.
(A) is from a banded gneiss, (B) is from a pegmatite vein in the gneiss. Minimum age of metamorphism is 355 m.y.

Ref: Q13
E55/6/19
GA 5190

Hornblende, K-Ar age 620 m.y.
K 0.023% $^{*}Ar^{40}/K^{40}$ 0.04290.
From amphibolite, 5 ml. N.E. of Babinda.
Lat. 17°19'S. Long. 145°57'E. Innisfail.
Collected by F. de Keyser and K.G. Lucas.
Excess Ar suspected in the hornblende; age unreliable.

Unpublished
G55/12/8
GA 1219

Biotite, K-Ar age 348 m.y.
K 7.605% $^{*}Ar^{40}/K^{40}$ 0.02230.
From muscovite biotite adamellite, Mt. Hope, A.A.O. No.1, Core 1, Depth 2550 ft.
Lat. 26°24'06"S. Long. 149°05'24"E. Roma.
Collected by Australian Associated Oilfields.
Minimum age.

Unpublished
G55/12/9
GA 1220

Biotite, K-Ar age 336 m.y.
K 6.027% $^{*}Ar^{40}/K^{40}$ 0.02148.
From biotite adamellite, Sawpit Ck. No.1 (A.A.O.), Core 2, Depth 3743 ft.
Lat. 26°29'55"S. Long. 149°09'25"E. Roma.
Collected by Australian Associated Oilfields.
Minimum age.

Ref: Q14
F1

Clay minerals, K-Ar age 541 ± 14 m.y.
K 3.67% $^{*}Ar^{40}/K^{40}$ 0.0366.

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Clay minerals	238	42.5	16.0979	0.8278

Age 518 ± 22 m.y. Initial Sr^{87}/Sr^{86} 0.707(A)

Constants = $\lambda = 5.312 \times 10^{-10}\ yr^{-1}$
$\lambda_K = 1.47 \times 10^{-10}\ yr^{-1}$
$\lambda_{Rb} = 1.47 \times 10^{-10}\ yr^{-1}$

From basement schist, Fermoy No.1 Bore, 5260 ft.
Lat. 23°08'32"S. Long. 143°03'26"E. Maneroo.
Collected by Australian Aquitaine Petroleum Pty Ltd.
Age of basement about 530 m.y. Determinations were also carried out on shales above the basement in this core; the Rb-Sr results were close to the basement age, and the K-Ar results were younger but showed appreciable scatter.

Ref: Q15
(Geochron)
F 0223

Plagioclase, K-Ar age 380 ± 40 m.y.
K 0.99% $^{*}Ar^{40}/K^{40}$ 0.0248.
From welded tuff, Gumbardo No.1 Well, 10,756-10,776 ft.
Lat. 25°58'52"S. Long. 144°41'41"E. Adavale.
Collected by Phillips Petroleum Co.
Minimum age.

B.M.R. File 62/111
(Geochron)
R 0256

Mafic concentrate, K-Ar age 334 ± 30 m.y.
K 0.165% $^{*}Ar^{40}/K^{40}$ 0.0214.
From chloritized amphibole, Kogan No.1 Well, 3404 ft.
Lat. 27°05'16"S. Long. 150°47'50"E. Dalby.
Collected by Phillips-Sunray Co.
Minimum age.

SOUTH AUSTRALIA

Unpublished		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
G53/11/1	Total Rock A	223.0	35.5	18.0508	0.8833
GA 1084	" B	222.2	47.6	13.4220	0.8441
	" C	230.2	31.6	20.9653	0.9038
	" D	116.2	46.7	7.1590	0.7939

Age 580 ± 20 m.y. Initial Sr^{87}/Sr^{86} 0.735(I)

From shale, 6019-6023 ft. depth, Purnie Well Core 8.
Lat. 26°16'27"S. Long. 136°05'36"E. Dalhousie.
Collected by French Petroleum.
High initial Sr^{87}/Sr^{86} ratio may indicate a metamorphic age.

Ref: SA 1
Z130

Total Rock, K-Ar age 0.73 ± 0.05 m.y.
K 1.76% $^{*}Ar^{40}/K^{40}$. 0.000043
From Tektite, Oodnadatta.
Lat. 27°33'S. Long. 135°28'E. Oodnadatta.
Collected by Cook.
Minimum age.

Ref: SA 1
Z131

Total Rock, K-Ar age 0.73 ± 0.05 m.y.
K 1.94% $^{*}Ar^{40}/K^{40}$ 0.000043
From Tektite, Florieton.
Lat. 33°52'S. Long. 139°25'E. Burra.
Collected by Penn.
Minimum age.

Ref: SA 1
Z133

Total Rock, K-Ar age 0.76 ± 0.06 m.y.
K 1.90% $^{*}Ar^{40}/K^{40}$. 0.000044
From Tektite, Pine Creek (not known which of the 9 Pine Creeks in S.A.).
Lat. 32°-35°S. Long. 138°-141°E.
Collected by: not known.
Minimum age.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/10/1	Total Rock(1)	386	37.1	29.93	1.390
GA 350	" (2)	392	38.2	29.51	1.386
	Microcline	408	49.6	23.64	1.331

App. age (1) 1645 m.y. Initial Sr^{87}/Sr^{86} 0.700(A)
" " (2) 1655 m.y. " " "
" " (microcl.) 1900 m.y. " " "

From Pepegoona Porphyry, Mt. Painter Complex.
Lat. 30°05'S. Long. 139°36'E. Frome.
Collected by A.R. Crawford and R.P. Coats.
Microcline probably has absorbed Sr^{87} from other minerals.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/6/3	Microcline	441	79.1	16.03	1.015
GA 341					

App. age 1410 m.y. Initial Sr^{87}/Sr^{86} 0.700 (A)
From rapakivi granite, Mt. Painter Complex.
Lat. 29°56'20"S. Long. 139°37'E. Callabonna.
Collected by A.R. Crawford.
Age may be too low, need further determinations.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/12/1	Muscovite	861	2.95	839.0	18.49
GA 354					

App. age 1510 m.y. Initial Sr^{87}/Sr^{86} 0.700(A)
From Parara pegmatite, Yorke Peninsula.
Lat. 34°24'S. Long. 137°54'E. Maitland.
Collected by A.R. Crawford.
Age of intrusion.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 388	Muscovite	1315	1.74	2176	48.80

App. age 1580 m.y. Initial Sr^{87}/Sr^{86} 0.700(A)
From adamellite, Binberri Hill, Olary District.
Lat. 32°04'30"S. Long. 140°19'E. Olary.
Collected by A.R. Crawford.
Age of intrusion.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 1517	Total Rock	106	31.10	9.85	0.909

App. age 1472 m.y. Initial Sr^{87}/Sr^{86} 0.700 (A)
From Moonta Porphyry, Yorke Peninsula.
Lat. 34°04'S. Long. 137°37'E. Maitland.
Collected by A.R. Crawford.
Minimum age of intrusion.

H54/9/5		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 346	Microcline	213.0	18.2	33.7	0.919
	Total Rock	196.1	67.6	8.35	0.765
	"	193.4	67.5	8.37	0.767
	Calcite	-	-	-	0.730 (unsp.)
Ref: SA 2	Total Rock	201.7	36.1	16.11	0.819
H54/9/8	"	198.7	35.4	16.17	0.821

GA 349 Age 490 m.y. Initial Sr^{87}/Sr^{86} 0.730 (I)

GA 346 from trachyte, "Triangle" area.
Lat. 30°17'S. Long. 139°25'30"E. Copley.
GA 349 from amygdaloidal trachyte, Wooltana H.S.
Lat. 30°24'S. Long. 139°25'30"E. Copley.
Collected by A.R. Crawford.
Metamorphic age; or minimum age if microcline leaked Sr^{87}; or, could be two ages of formation of microcline.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 711	calcite	-	-	0.05	0.7322
	chlorite	296.5	56.9	14.99	0.839

App. age 500 m.y. Initial Sr^{87}/Sr^{86} 0.732.
From lava pebbles in Sturtian tillite, N. of Wooltana H.S.
Lat 30°23'30"S. Long. 139°25'E. Copley.
Collected by A.R. Crawford.
Two minerals open to diffusive Sr during Palaeozoic, though calcite demonstrably pre-tillite in age.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/9/6	albite	34.3	5.63	17.53	0.869
GA 347	"	33.7	5.71	17.00	0.870
	muscovite	1782	1.49	3438	23.03
	"	1778	1.40	3660	24.94
	total rock	430.6	12.78	97.1	1.429
	"	452.0	12.76	101.8	1.422

Age 460 m.y. Initial Sr^{87}/Sr^{86} 0.75.
From Arkaroola Creek Pegmatite.
Lat. 30°17'30"S. Long. 139°20'E. Copley.
Collected by A.R. Crawford.
Age of metamorphism of Wooltana Volcanics. Initial Sr^{87}/Sr^{86} value testifies to extreme rearrangement of Rb and Sr during Palaeozoic metamorphism.

Ref: SA 2 H54/9/4		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}	Age (m.y.). Initial Sr^{87}/Sr^{86}
GA 345	Total rock (1)	159.9	573.9	0.802	0.721	1470
	"	163.1	572.4	0.820	0.7228	1550
	(2)	159.9	480.0	0.959	0.7220(unsp)	1260
	"	158.2	494.7	0.920	0.724	1470
	(3)	142.5	596.9	0.687	0.7234(unsp)	1910
	"	143.2	601.2	0.685	0.7237	1950
	(4)	-	-	0.07	-	-
	(5)	-	-	0.08	-	-

Age 850 ± 50 m.y. Initial Sr^{87}/Sr^{86} 0.711 (I)
From basaltic lava, Arkaroola Creek.
Lat. 30°20'S. Long. 139°28'E. Copley.
Collected by A.R. Crawford.
GA samples 345, 706, 707, 708, 342, 343 and 344 are aligned; the alignment may correspond to an isochron dating extrusion or a later metamorphism at 850 ± 50 m.y. This is a reliable minimum age. Initial Sr^{87}/Sr^{86} of 0.711 indicates age is metamorphic event.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 706	Total rock	117.4	192.9	1.752	0.732

App. age 1090 m.y. Initial Sr^{87}/Sr^{86} 0.705(A).
From basalt lava, Arkaroola Creek.
Lat. 30°20'S. Long. 139°28'E. Copley.
Collected by A.R. Crawford.
See GA 345.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 707	Total rock	98.8	112.8	2.521	0.739
GA 708	"	138.4	740.1	0.538	0.728

Age (GA 707) 970 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
(GA 708) 3000 m.y.
From basalt lava, Arkaroola Creek.
Lat. 30°20'S. Long. 139°28'E. Copley.
Collected by A.R. Crawford.
See GA 345.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/9/1	Total rock(1)	58.0	147.5	1.132	0.725
GA 342	" (2)	60.6	147.0	1.188	0.724

App. age (1) 1260 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
" " (2) 1080 m.y. " "

From olivine dolerite, Merinjina Upper.
Lat. 30°26'S. Long. 139°24'E. Copley.
Collected by A.R. Crawford.
See GA 345.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/9/2	Total rock	9.29	69.1	0.387	0.723
GA 343	"	9.21	69.0	0.384	0.725

Age 3000 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
From amygdaloidal basalt, Merinjina Lower.
Lat. 30°26'S. Long. 139°24'E. Copley.
Collected by A.R. Crawford.
See GA 345.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/9/3	Total rock	56.0	129.0	1.250	0.723
GA 344					

App.age 1090 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
From basalt, Woodnamoka Well.
Lat. 30°23'S. Long. 139°27'E. Copley.
Collected by A.R. Crawford.
See GA 345.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/13/1	Total rock	47.6	85.7	1.599	0.7246 (unsp)
GA 351	Albite	65.6	109.4	1.725	0.7241 (unsp)

App. age (TR) 870 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
(Alb) 790 m.y. " 0.705(A)

From Ooraparinna trachyte, central Flinders Ranges.
Lat. 31°22'S. Long. 138°47'E. Parachilna.
Collected by A.R. Crawford.
Age between age of extrusion and age of metamorphism.
Albite age low - probably due to leak of radiogenic strontium.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/4/1	Total rock(1)	57.8	34.0	4.897	0.7553 (unsp)
GA 353	" (1A)	57.8	33.9	4.914	0.7550 (unsp)
	" (2)	51.7	31.5	4.719	0.7575 (unsp)
	Albite (3)	103.0	39.9	7.421	0.7721 (unsp)
	" (4)	103.9	39.6	7.549	0.7750 (unsp)

App. age: (1) 735 m.y.; (1A) 730 m.y.; (2) 790 m.y.; (3) 645 m.y.; (4) 665 m.y.
Initial Sr^{87}/Sr^{86}: 0.705(A).
From amygdaloidal trachyte, Depot Creek, Wilkatana.
Lat. 32°14'S. Long. 137°56'30"E. Port Augusta.
Collected by A.R. Crawford.
Ages probably younger than age of extrusion because of Palaeozoic metamorphism. Albites probably lost radiogenic strontium by diffusion.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/4/2	Total rock	206.6	64.0	9.29	0.8811 (unsp)
GA 369	Total rock	235.0	23.9	28.3	1.240 (unsp)
	Anorthoclase	-	-	27.7	1.229
I53/4/3	Total rock	266.5	31.0	24.7	1.168
GA 370		Age 1345 ± 30 m.y.		Initial Sr^{87}/Sr^{86}	0.705(I)
	Microcline	242.7	23.4	29.8	1.094

App. age 935 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
From trachyte, Old Roopena, Eyre Peninsular.
Lat. 32°43'S. Long. 137°24'E. Port Augusta.
Collected by A.R. Crawford.
Microcline fills amygdales in the trachyte.
1345 m.y. is probably true age of extrusion of lavas.
Low age of microcline probably indicates radiogenic strontium leakage.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 714	Total rock(1)	-	-	50.41	1.1049
	(2)	-	-	50.43	1.1066
	Microcline(3)	472.9	24.4	54.68	1.1461

App. age (1) 570 m.y.; (2) 570 m.y.; (3) 580 m.y.
Initial Sr^{87}/Sr^{86} 0.710 (A)
From amygdaloidal lava, Airstrip Hill, Cultana.
Lat. 32°45'S. Long. 137°48'20"E. Port Augusta.
Collected by A.R. Crawford.
Ages indicate almost complete leakage of radiogenic Sr during Palaeozoic metamorphism.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 717	Total rock	688.1	68.3	29.00	0.9416

App. age 585 m.y. Initial Sr^{87}/Sr^{86} 0.710(A)
From lava, Backy Point, Cultana.
Lat. 32°55'S. Long. 137°47'E. Port Augusta.
Collected by A.R. Crawford.
See comment for 714.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 525	Total rock	137.3	69.5	5.68	0.7630
		137.2	69.5	5.68	0.7630
GA 587-1		385	77.1	14.36	0.8160
-2		390	76.0	14.77	0.8188
-3		344	74.8	13.23	0.8098
GA 592-2		120.1	200.7	1.721	0.7253
GA 593-2		121.2	229.0	1.522	0.7214
GA 588-1		135.2	52.9	7.35	0.7782
-2		135.2	54.4	7.14	0.7737
-3		127.5	65.9	5.56	0.7610
		125.4	64.9	5.56	0.7619

Age and Initial Sr^{87}/Sr^{86}: see discussion.
From Dutton, near Truro.

	Lat.	Long.	
GA 525	34°24'S.	139°12'30"E.	Adelaide.
587	34°24'S.	139°12'E.	Adelaide.
592	35°22'S.	138°28'E.	Barker.
593	35°22'S.	138°28'E.	Barker.
588	34°24'S.	139°12'E.	Adelaide.

Collected by B.P. Thomson.

Model 1: Group 587 with 592 and 593-age 530 m.y., and initial Sr^{87}/Sr^{86} 0.711(I). Implies other samples had high Sr^{87}/Sr^{86} initially or were open chemical systems.

Model 2: Group 587 with 524 and since these samples are mica schists, they should give a metamorphic isochron-age 465 m.y.
Agrees with Palaeozoic metamorphism in N. Flinders Ranges. Max. age for deposition found if group remaining samples: 690 m.y., initial Sr^{87}/Sr^{86} 0.707(I).

Ref: SA 2

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 589-1	114.2	44.8	7.32	0.7934
-2	113.8	35.7	9.17	0.8004
-3	121.1	31.3	11.13	0.8148

Age 465 m.y. Initial Sr^{87}/Sr^{86} 0.710(A).
From Saddleworth Formation, Riverton.
Lat. 34°10'S. Long. 138°49'E. Adelaide.
Collected by B.P. Thomson.
Age of Palaeozoic metamorphism.

Ref: SA 2

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 591 -1	112.5	40.1	8.08	0.7828
-2	111.5	37.1	8.63	0.7864
-3	108.7	36.5	8.56	0.7859

Age 850 m.y. Initial Sr^{87}/Sr^{86} 0.707(A).
From Saddleworth Formation, Riverton.
Lat. 34°23'S. Long. 138°53'E. Adelaide.
Collected by B.P. Thomson.
Maximum and minimum ages of deposition of 850 and 600 m.y. obtained by assuming initial Sr^{87}/Sr^{86} 0.707 and 0.715 respectively.
Combine 591(1) and 589(3) with initial ratio 0.707 to get reasonable age of about 700 m.y.

Ref: SA 2

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 704 -1	125.7	81.9	4.41	0.7655
-4	119.5	108.3	3.17	0.7498
I (fines)	118.8	120.3	2.67	0.7520
I (fines)	115.5	121.1	2.65	0.7516
II (fines)	112.1	119.3	2.70	0.7520
GA 705-1	100.0	99.3	2.90	0.7556
-4	99.5	163.7	1.75	0.7424
(fines)	129.1	84.3	4.40	0.7636

Age 1200 m.y. Initial Sr^{87}/Sr^{86} 0.707(A)
From Willouran Shale, (overlying GA 342).
Lat. 30°26'S. Long. 139°24'E. Copley.
Collected by B.P. Thomson.
Isochron fitted to all data points indicates metamorphic age of 465 m.y. Age of formation of shales assuming initial Sr^{87}/Sr^{86} of 0.707 is 1200 m.y.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 813B	Total rock	240.2	9.46	7.31	0.8835

App. age 1800 m.y. Initial Sr^{87}/Sr^{86} 0.70(A).
From gneiss, Wertigo Rockhole.
Lat. 33°04'30"S. Long. 137°20'30"E. Whyalla.
Collected by B.P. Thomson.
Age strongly dependent on assumed initial Sr^{87}/Sr^{86}; if initial ratio 0.720, age would be 1600 m.y.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/4/5	Total rock	280.8	409.4	1.974	0.7510
GA 480	Apatite	6.25	285.2	0.063	0.7095

App. age 1550 ± 70 m.y. Initial Sr^{87}/Sr^{86} 0.707(I).
From Burkitt Granite, Corunna, Eyre Peninsula.
Lat. 32°41'S. Long. 137°1'E. Port Augusta.
Collected by A.R. Crawford.
Age of intrusion.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/8/1	Total rock	357.6	121.6	8.46	0.8890
GA 481	"	359.1	118.6	8.71	0.8930
	Biotite	1457	11.12	377.4	9.141
	"	1454	11.71	357.3	8.714
	Apatite	8.44	78.8	0.308	0.7067

App. age 1590 ± 30 m.y. Initial Sr^{87}/Sr^{86} 0.700(I).
From Charleston Granite, Pine Hill.
Lat. 33°21'20"S. Long. 137°5'E. Whyalla.
Collected by A.R. Crawford.
Age of intrusion.

Ref: SA 2		Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/8/2	(1) Total rock	183.8	211.8	2.51	0.7640
GA 387	(1) K-feldspar	374.8	250.5	4.31	0.8018
	"	380.8	246.4	4.45	0.8019
	(2) Total rock	-	-	1.971	0.7528

App. age = (1)TR: 1800 m.y. (1) K-f: 1680 m.y., 1630 m.y.
(2) TR: 1900 m.y. Initial Sr^{87}/Sr^{86} 0.705(A)
From Moonabie Porphyry, Eyre Peninsula.
Lat. 33°18'S. Long. 137°12'E. Whyalla.
Collected by A.R. Crawford.
Age depends on assumed initial Sr^{87}/Sr^{86}; evident that K feldspar has lost radiogenic Sr.

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Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 716	Total rock	557.6	19.85	80.8	2.176
	"	553.6	19.86	80.2	2.180
	Microcline	1082	33.8	92.0	2.429
	Plagioclase	71.7	8.77	23.6	1.315
	"	73.4	8.64	24.4	1.330

App. age = TR. 1300 m.y., 1310 m.y. Initial Sr^{87}/Sr^{86} 0.706(A).

M. 1335 m.y.

P. 1840 m.y., 1830 m.y.

From Cultana Granite, 15 ml. N.E. of Whyalla.
Lat. 32°52'S. Long. 137°45'E. Port Augusta.
Collected by A.R. Crawford.
Minimum age; high radiogenic Sr in plagioclase may indicate that the total rock has lost part of its Sr^{87}.

Ref: SA 2

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 599	K-feldspar	240.9	118.5	3.49	0.7824
	Plagioclase	268.2	220.9	5.85	0.8325
I53/3/1	Total rock	225.9	100.6	6.47	0.8447
GA 366	"	226.5	103.9	6.28	0.8398
	Plagioclase	263.7	73.3	10.35	0.9307
I53/3/2	Total rock	209.8	135.1	4.47	0.800
GA 367	Plagioclase	100.1	364.6	0.93	0.7275
I53/3/3	Total rock	189.6	133.7	4.08	0.7935
GA 368	Sanidine	223.2	255.6	2.51	0.7609
H53/15/1	Total rock	197.5	193.2	2.94	0.7690
GA 374	Plagioclase	113.6	403.8	0.81	0.7235

Apparent age 1535 ± 25 m.y. Initial Sr^{87}/Sr^{86} 0.706(I)

GA 599 from porphyritic trachyte, Wartaka, Corunna Hills.
Lat 32°33'S. Long. 137°09'25"E. Port Augusta.

GA 366 from porphyritic rhyolite, Coralbignie, Gawler Ranges.
Lat. 32°37'S. Long. 136°20'E. Yardea.

GA 367 from porphyritic rhyolite, Kolendo, Gawler Ranges.
Lat. 32°19'S. Long. 136°13'E. Yardea.

GA 368 from porphyritic rhyolite, Kundery, Gawler Ranges.
Lat. 32°20'S. Long. 135°50'E. Yardea.

GA 374 from sodic rhyolite, Camel Hump Tanks, Gawler Ranges.
Lat. 31°28'S. Long. 135°23'E. Gairdner.
Collected by A.R. Crawford.
Points lie on single straight line to within experimental precision.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I53/4/4	Total rock	256.2	76.3	9.67	0.9060
GA 371	"	254.9	77.3	9.49	0.9064
	Plagioclase	265.5	76.0	10.06	0.9080

App. age = TR. 1480 m.y., 1510 m.y.
Initial Sr^{87}/Sr^{86} 0.706(A)
P. 1440 m.y.
From granophyre, Corunna, Eyre Peninsula.
Lat. 32°40'S. Long. 137°4'E. Port Augusta.
Collected by A.R. Crawford.
Age may be too young (radiogenic Sr leakage), but possible that it is a later intrusion than much of Gawler Range material.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 1159	Total rock	340.1	41.3	23.7	1.219
	Illite	507.0	64.9	22.5	1.185
	Illite (magnetic)	429.0	49.0	25.2	1.234

Age and initial ratio: see discussion.
From Corunna Conglomerate.
Lat. 32°37'47"S. Long. 137°08'38"E. Port Augusta.
Collected by B.P. Thomson.
Maximum age 1535 ± 20 m.y. using initial ratio of 0.70. If initial Sr^{87}/Sr^{86} is 0.71, age is 1500 ± 20 m.y.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 598	Total rock	277.5	28.1	28.44	1.393
	"	310.2	30.6	29.20	4.416
	Plagioclase	51.3	16.2	9.14	0.927

App. age 1730 m.y. Initial Sr^{87}/Sr^{86} 0.710(I)
From Hiltaba Granite.
Lat. 32°09'S. Long. 135°05'E. Yardea.
Collected by A.R. Crawford.
Hiltaba granite intrudes acid volcanics which therefore cannot be Gawler Range (1535 m.y.) equivalents in age.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H53/11/2	Total rock	115.0	386.0	0.858	0.7297
GA 668	Orthoclase	258.6	433.0	1.719	0.7530

App. age 1930 ± 200 m.y. Initial Sr^{87}/Sr^{86} 0.707 (I).
From Glenloth Granite.
Lat. 31°05'S. Long. 135°09'E. Gairdner.
Collected by A.R. Crawford.
Uncertainty in age due to small enrichment in radiogenic strontium.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H53/10/1	Biotite	1664	18.1	264.0	6.625
GA 386	"	1653	17.7	268.1	6.770

App. age 1600 m.y. Initial Sr^{87}/Sr^{86} 0.710 (A).
From Wilgena Granite, Tarcoola.
Lat. 30°50'S. Long. 134°53'E. Tarcoola.
Collected by A.R. Crawford.
Minimum age.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I54/2/4	Total rock	139.8	140.0	2.874	0.7251
GA 357	Plagioclase	15.5	125.3	0.357	0.7079
	"	16.2	128.1	0.364	0.7071
	Microcline	437.5	121.9	10.33	0.7715
	Biotite	889.8	10.2	250.6	2.358

App. age 473 ± 3 m.y. Initial Sr^{87}/Sr^{86} 0.705(I).
From Anabama Granite.
Lat. 32°47'S. Long. 140°03'. Olary.
Collected by A.R. Crawford.
Probably true age of intrusion.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 518	Total rock	41.4	659.4	0.181	0.7116
	Biotite	733.3	22.48		1.204
	"	732.4	21.78	96.8	1.209

App. age 375 ± 10 m.y. Initial Sr^{87}/Sr^{86} 0.710(I).
From granodiorite, Mt. Painter Complex.
Lat. 30°10'20"S. Long. 139°26'40"E. Copley.
Collected by A.R. Crawford.
Probably a minimum age.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I54/2/2	Total rock	266.2	479.5	1.598	0.7246
GA 355	Biotite	515.9	67.3	22.08	0.8495
	Plagioclase	125.4	920.0	0.392	0.7178

App. age 435 ± 55 m.y. Initial Sr^{87}/Sr^{86} 0.715(I).
From microtonalite.
Lat. 32°47'S. Long. 140°03'E. Olary.
Collected by A.R. Crawford.
Minimum age of metamorphism if not emplacement.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/6/1	Total rock	45.7	376.9	0.349	0.7067 (unsp)
GA 339	Biotite	692.8	7.90	252.3	2.220
	Microcline	274.1	413.0	1.910	0.7172

App. age 431 ± 7 m.y. Initial Sr^{87}/Sr^{86} 0.706 (I).
From Mundawatana Granodiorite.
Lat. 29°53'S. Long. 138°34'E. Callabonna.
Collected by A.R. Crawford.
Age of metamorphism or emplacement.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
H54/9/7	Total rock	42.9	21.74	5.68	0.7553
GA 348	"	44.9	23.65	5.46	0.7555

App. age 700 m.y., 730 m.y. Initial Sr^{87}/Sr^{86} 0.700(A).
From soda leucogranite.
Lat. 30°15'30"S. Long. 139°13'E. Copley.
Collected by A.R. Crawford.
Maximum age.

Ref: SA 2		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
I54/9/3	Total rock	4.45	82.3	0.156	0.7040 (unsp)
GA 471	Microcline	189.4	207.1	2.633	0.7205 (unsp)
	"	192.5	208.1	2.663	0.7210 (unsp)
	Albite	28.8	95.7	0.866	0.7101 (unsp)
	"	28.7	-		0.7101 (unsp)

App. age 455 m.y. Initial Sr^{87}/Sr^{86} 0.704 (I).
From Dutton lavas.
Lat. 34°18'S. Long. 139°10'E. Adelaide.
Collected by A.R. Crawford.
Probably minimum age because lavas contain microcline which is likely to have leaked radiogenic strontium.

Ref: SA 3
(Geochron)
R 0456

Total Rock, K-Ar age 435 ± 25 m.y.
K 2.49% $^{*}Ar^{40}/K^{40}$ 0.0286.
From siltstone, Poonarunna No.1 Well, Core 7, 5556 ft.
Lat. 27°54'20"S. Long. 137°54'50"E. Noolyeanna.
Collected by French Petroleum Co. (Australia).
Unknown amount of detrital minerals; age may not be that of sedimentation.

TASMANIA

Ref: TAS 1
GA 613

Biotite, K-Ar age 373 m.y.
K 7.49% $*Ar^{40}/K^{40}$ 0.02412.
Hornblende, K-Ar age 364 m.y., 361 m.y.
K 0.592% $*Ar^{40}/K^{40}$ 0.02343, 0.02325.
From granodiorite, Bridport, Scottsdale Batholith.
Lat. 40°59'07"S. Long. 147°23'08"E. Launceston.
Collected by I. McDougall.
Probably age of emplacement, results within experimental error.

Ref: TAS 1
GA 485

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	107.6	302.8	1.021	0.7118
"	-	-	-	0.7111 (unsp)
K-feldspar	251.1	275.0	2.625	0.7213
"	-	-	-	0.7191 (unsp)
Biotite	535.8	9.3	166.6	1.6067
"	543.0	9.3	167.5	1.6156

Age 387 m.y. Initial Sr^{87}/Sr^{86} 0.706 ± 0.001 (I).
Biotite, K-Ar age 376 m.y.
K 6.94% $*Ar^{40}/K^{40}$ 0.02428
Hornblende, K-Ar age 371 m.y.
K 0.463% $*Ar^{40}/K^{40}$ 0.02393.
From granodiorite, Bridport, Scottsdale Batholith.
Lat. 40°59'07"S. Long. 147°23'08"E. Launceston.
Collected by I. McDougall.
Probably age of emplacement, results with experimental error. Initial Sr^{87}/Sr^{86} ratio suggests that granites not formed from remelted sialic material.

Ref: TAS 1
GA 486

Biotite, K-Ar age 375 m.y.
K 7.64% $*Ar^{40}/K^{40}$ 0.02422.
Hornblende, K-Ar age 370 m.y.
K 0.513% $*Ar^{40}/K^{40}$ 0.02390
From xenolith in granodiorite, Bridport, Scottsdale Batholith.
Lat. 40°59'07"S. Long. 147°23'08"E. Launceston.
Collected by I. McDougall.
Probably age of emplacement of the granodiorite.

Ref: TAS 1
GA 621

Biotite, K-Ar age 364 m.y.
K 5.20% $^{*}Ar^{40}/K^{40}$ 0.02346.
From adamellite, Mt. Stronach, S.E. of Scottsdale.
Lat. 41°09'27"S. Long. 147°34'28"E. Launceston.
Collected by K.G. Lucas.
Probably age of emplacement.

Ref: TAS 1
GA 487

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	172.4	164.0	3.025	0.7229
"	-	-	-	0.7211 (unsp)
K-feldspar	431.4	97.7	12.71	0.7776
Biotite	819.0	6.3	372.9	2.6461

Age 373 m.y. Initial Sr^{87}/Sr^{86} 0.708 ± .001 (I).
Biotite, K-Ar age 374 m.y.
K 6.81% $^{*}Ar^{40}/K^{40}$ 0.02418.
From adamellite, Scottsdale Batholith.
Lat. 41°09'27"S. Long. 147°42'20"E. Launceston.
Collected by I. McDougall.
Probably age of emplacement.

Ref: TAS 1
GA 620

Biotite, K-Ar age 377 m.y.
K 7.60% $^{*}Ar^{40}/K^{40}$ 0.02423.
Hornblende, K-Ar age 373 m.y.
K 0.614% $^{*}Ar^{40}/K^{40}$ 0.02406.
From granodiorite, Mt. Barrow, Scottsdale Batholith.
Lat. 41°22'58"S. Long. 147°26'34"E. Launceston.
Collected by K.G. Lucas.
Probably age of emplacement.

Ref: TAS 1
GA 627

Biotite, K-Ar age 364 m.y., 361 m.y.
K 7.28% $^{*}Ar^{40}/K^{40}$ 0.02349, 0.02327.
Hornblende, K-Ar age 365 m.y.
K 0.567% $^{*}Ar^{40}/K^{40}$ 0.02350.
From granodiorite, Ben Lomond, Scottsdale Batholith.
Lat. 41°26'12"S. Long. 147°40'27"E. Launceston.
Collected by K.G. Lucas.
Probably age of emplacement.

Ref: TAS 1
GA 614

Biotite, K-Ar age 369 m.y.
K 6.84% $^{*}Ar^{40}/K^{40}$ 0.02379.
From adamellite, Mt. Cameron, Blue Tier Batholith.
Lat. 40°59'52"S. Long. 148°00'54"E. Launceston.
Collected by K.G. Lucas.
Probable age of intrusion, though possibly some argon loss.

Ref: TAS 1
GA 623

Biotite, K-Ar age 363 m.y.
K 6.34% $^{*}Ar^{40}/K^{40}$ 0.02341.
From adamellite, Blue Tier Batholith.
Lat. 41°15'23"S. Long. 148°6'26"E. Launceston.
Collected by K.G. Lucas.
Probable age of intrusion, though possibly some argon loss.

Ref: TAS 1
GA 624

Biotite, K-Ar age 367 m.y.
K 7.42% $^{*}Ar^{40}/K^{40}$ 0.02365.
From adamellite, Blue Tier Batholith.
Lat. 41°16'33"S. Long. 148°08'45"E. Launceston.
Collected by K.G. Lucas.
Probable age of intrusion, though possibly some argon loss.

Ref: TAS 1
GA 488

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	211.6	135.7	4.489	0.7325
K-feldspar	459.3	174.9	7.558	0.7493
Biotite	962.2	20.2	136.9	1.4556
"	966.4	19.6	141.8	1.5040

Age 389 m.y. Initial Sr^{87}/Sr^{86} 0.708 ± 0.001 (I)
Biotite, K-Ar age 375 m.y.
K 7.15% $^{*}Ar^{40}/K^{40}$ 0.02425
From adamellite, Blue Tier Batholith.
Lat. 41°17'14"S. Long. 148°17'20"E. Launceston.
Collected by I. McDougall.
Rb-Sr age older than K-Ar age - significance of this is doubtful because of uncertainties in decay constants; may mean that some argon loss has occurred. Age and initial Sr^{87}/Sr^{86} very similar to that of Scottsdale Batholith.

Ref: TAS 1
GA 489

Biotite, K-Ar age 368 m.y.
K 6.88% $^{*}Ar^{40}/K^{40}$ 0.02376.
From adamellite, Blue Tier Batholith.
Lat. 41°22'42"S. Long. 148°17'20"E. Launceston.
Collected by I. McDougall.
Probable age of intrusion, though there may have been some argon loss.

Ref: TAS 1
GA 490

Biotite, K-Ar age 377 m.y.
K 6.96% $^{*}Ar^{40}/K^{40}$ 0.02440.
From St.Mary's Porphyrite.
Lat. 41°32'16"S. Long. 148°14'28"E. Launceston.
Collected by I. McDougall.
Probably age of emplacement.

Ref: TAS 1
GA 491

Biotite, K-Ar age 374 m.y.
K 6.59% $^{*}Ar^{40}/K^{40}$ 0.02413.
From St. Mary's Porphyrite.
Lat. 41°33'10"S. Long. 148°13'35"E. Launceston.
Collected by I. McDougall.
Probable age of emplacement.

Ref: TAS 1
GA 626

Biotite, K-Ar age 371 m.y.
K 7.02% $^{*}Ar^{40}/K^{40}$ 0.02393.
From adamellite, Piccaninny Creek. (S.S.E. of St. Mary's Porphyrite).
Lat. 41°39'48"S. Long. 148°17'20"E. Launceston.
Collected by K.G. Lucas.
Probable age of emplacement.

Ref: TAS 1
GA 493

Biotite, K-Ar age 358 m.y.
K 6.99% $^{*}Ar^{40}/K^{40}$ 0.02306.
Muscovite, K-Ar age 362 m.y.
K 7.22% $^{*}Ar^{40}/K^{40}$ 0.02334
From granite, S. of Bicheno.
Lat. 41°53'20"S. Long. 148°17'18"E. Oatlands.
Collected by I. McDougall.
Probable age of emplacement.

Ref: TAS 1
GA 628

Muscovite, K-Ar age 360 m.y.
K 8.37% $^{*}Ar^{40}/K^{40}$ 0.02319
From granite 1 ml. S. of Bicheno.
Lat. 41°53'53"S. Long. 148°17'18"E. Oatlands.
Collected by K.G. Lucas.
Probable age of emplacement.

Ref: TAS 1
GA 629

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	765.1	4.8	457.5	2.8814
"	758.0	5.1	423.6	2.8753
"	844.8	5.9	412.2	2.8235
K-feldspar	1698.8	4.6	1028.2	5.795
"	1688.2	4.7	1038.5	5.877
Plagioclase	107.6	7.1	43.48	0.9742
"	107.5	7.1	43.66	0.9784
Biotite	5446	0.9	17,250	90.4912
"	5242	0.8	19,520	103.708

Age (T.R., K-f, P.) 353 m.y. Initial Sr^{87}/Sr^{86} 0.754(I)
(Biotite) 375 m.y. " " 0.754(A)
Biotite, K-Ar age 347 m.y., 355 m.y.
K 6.95% $^{*}Ar^{40}/K^{40}$ 0.02257, 0.02280.
From granite, Coles Bay (Coles Bay Granite)
Lat. 42°08'54"S. Long. 148°16'34"E. Oatlands.
Collected by K.G. Lucas.
Minimum age of crystallization is 375 m.y. Diffusion of Rb and Sr, both between K-feldspar and plagioclase, and out of the total rock, probably took place 353 m.y. ago.

Ref: TAS 1
GA 335

Muscovite, K-Ar age 342 m.y.
K 8.81% $^{*}Ar^{40}/K^{40}$ 0.02189.
From aplite, Aberfoyle Tin Mine, Rossarden (Ben Lomond Granite).
Lat. 41°30'S. Long. 147°30'E. Launceston.
Collected by Aberfoyle Tin Co.
Minimum age, possibly argon loss has occurred.

Ref: TAS 1		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 625	Total rock	664.2	16.6	115.0	1.3093
	"	661.2	16.5	115.0	1.3098
	K-feldspar	1498.3	37.7	114.3	1.3239
	"	1512.2	37.3	116.4	1.3430
	"	1510.7	-	-	1.3413 (unsp)
	Plagioclase	177.2	20.5	24.79	0.8686

Age 370 m.y. Initial Sr^{87}/Sr^{86} 0.730(I).
Muscovite, K-Ar age 352 m.y.
K 8.63% $*Ar^{40}/K^{40}$ 0.02263.
From adamellite, Storeys Creek (Ben Lomond Granite).
Lat 41°39'43"S. Long. 147°41'44"E. Launceston.
Collected by K.G. Lucas.
Minimum age 350 m.y., probably true age is close to 370 m.y. Internal rearrangement of Rb and Sr has probably taken place and argon may have been lost.

Ref: TAS 1
GA 828

Hornblende, K-Ar age 528 m.y., 504 m.y., 512 m.y.
K 0.539% $*Ar^{40}/K^{40}$ 0.03574, 0.03376, 0.03435.
From adamellite, Murchison River (Murchison River Granite).
Lat. 41°46'07"S. Long. 145°16'57"E. Queenstown.
Collected by C. Brooks.
Minimum age.

Ref: TAS 1
GA 616

Hornblende, K-Ar age 454 m.y.
K 0.732% $*Ar^{40}/K^{40}$ 0.02996.
From granodiorite, Mersey River (Dove Granite).
Lat. 41°35'30"S. Long. 146°13'39"E. Burnie.
Collected by K.G. Lucas.
Minimum age.

Ref: TAS 1		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 617	Total rock	179.0	245.2	2.101	0.7381
	K-feldspar	387.2	340.8	3.270	0.7443
	Biotite	553.6	8.5	187.7	1.9760

Age 487 m.y. Initial Sr^{87}/Sr^{86} 0.706(A)
Biotite, K-Ar age 465 m.y.
K 6.93% $*Ar^{40}/K^{40}$ 0.03078.
Hornblende, K-Ar age 474 m.y.
K 0.584% $*Ar^{40}/K^{40}$ 0.03146
From granodiorite, Mersey River.
Lat. 41°34'57"S. Long. 146°13'39"E. Burnie.
Collected by K.G. Lucas.
Argon loss from biotite probably took place; minimum age of intrusion is 485 m.y.

Ref: TAS 1
GA 1123

Biotite, K-Ar age 480 m.y.
K 6.59% $^{*}Ar^{40}/K^{40}$ 0.03191.
Hornblende, K-Ar age 474 m.y.
K 0.601% $^{*}Ar^{40}/K^{40}$ 0.03153.
From adamellite, Mersey River.
Lat. 41°34'57"S. Long. 146°13'39"E. Burnie.
Collected by I. McDougall.
Minimum age.

Ref: TAS 1
GA 1120

Biotite, K-Ar age 465 m.y.
K 6.40% $^{*}Ar^{40}/K^{40}$ 0.03079.
Hornblende, K-Ar age 467 m.y.
K 0.569% $^{*}Ar^{40}/K^{40}$ 0.03094.
From adamellite, Dove River Granite.
Lat. 41°34'10"S. Long. 146°04'28"E. Burnie.
Collected by I. McDougall.
Minimum age; argon loss has probably taken place.

Ref: TAS 1
GA 1121

Biotite, K-Ar age 454 m.y., 465 m.y.
K 7.27% $^{*}Ar^{40}/K^{40}$ 0.03001, 0.03078.
Hornblende, K-Ar age 483 m.y., 480 m.y.
K 0.585% $^{*}Ar^{40}/K^{40}$ 0.03213, 0.03192.
From adamellite, Dove River Granite.
Lat. 41°34'10"S. Long. 146°04'16"E. Burnie.
Collected by I. McDougall.
Typical argon loss pattern; minimum age.

Ref: TAS 1
GA 1537

Biotite, K-Ar age 498 m.y.
K 7.35% $^{*}Ar^{40}/K^{40}$ 0.03330.
From granodiorite, Forth River.
Lat. 41°32'19"S. Long. 146°07'41"E. Burnie.
Collected by C. Gee.
Minimum age of intrusion.

Ref: TAS 1
GA 1538

Biotite, K-Ar age 469 m.y.
K 5.79% $^{*}Ar^{40}/K^{40}$ 0.03108.
From adamellite, Forth River.
Lat 41°32'28"S. Long. 146°07'40"E. Burnie.
Collected by C. Gee.
Rock strained; probably argon loss from biotite, minimum age.

Ref: TAS 1
GA 1423

Biotite, K-Ar age 407 m.y.
K 7.03% $^{*}Ar^{40}/K^{40}$ 0.02652.
From adamellite, Elliott Bay.
Lat. 42°58'12"S. Long. 145°30'46"E. Port Davey.
Collected by B. Scott.
Minimum age.

Ref: TAS 1
GA 744

	Rb µg/g	Sr µg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	273.3	33.4	23.55	0.8350
"	278.1	32.2	24.79	0.8368
"	-	-	-	0.8319 (unsp)
K-feldspar	586.8	40.4	41.79	0.9206
Biotite	965.4	1.7	1627	9.5042
"	988.1	1.7	1626	9.0331
"	990.3	1.8	1540	8.8330

Age 375 ± 10 m.y. Initial Sr^{87}/Sr^{86} 0.710 ± 0.002(I).
Biotite, K-Ar age 364 m.y., 360 m.y.
K 7.53% $^{*}Ar^{40}/K^{40}$ 0.02344, 0.02316.
From adamellite, Housetop Granite.
Lat. 41°10'17"S. Long. 145°55'00"E. Burnie.
Collected by J.C. Briden.
Rb-Sr data are concordant; initial Sr^{87}/Sr^{86} ratio within range normally found for granitic rocks and age is probably that of intrusion.

Ref: TAS 1
GA 748

Biotite, K-Ar age 345 m.y.
K 6.76% $^{*}Ar^{40}/K^{40}$ 0.02209.
From adamellite, Trial Harbour (Heemskirk Granite)
Lat. 41°54'43"S. Long. 145°0828"E. Queenstown.
Collected by T. Green.
Minimum age of intrusion 340 ± 5 m.y. (from average of GA 748, 814, 818, and 819).

Ref: TAS 1
GA 814

Biotite, K-Ar age 341 m.y.
K 5.81% $^{*}Ar^{40}/K^{40}$ 0.02187.
From tourmaline adamellite (Heemskirk Granite)
Lat. 41°54'45"S. Long. 145°08'30"E. Queenstown.
Collected by C. Brooks.
See GA 748.

Ref: TAS 1
GA 818

Biotite, K-Ar age 338 m.y.
K 6.85% $^{*}Ar^{40}/K^{40}$ 0.02165.
Muscovite, K-Ar age 336 m.y.
K 8.30% $^{*}Ar^{40}/K^{40}$ 0.02145.
From adamellite, North Mt. Heemskirk (Heemskirk Granite).
Lat. 41°50'00"S. Long. 145°03'51"E. Queenstown.
Collected by C. Brooks.
See GA 748.

Ref: TAS 1
GA 819

Biotite, K-Ar age 326 m.y.
K 6.90% $^{*}Ar^{40}/K^{40}$ 0.02078.
From adamellite, North Tasman Creek (Heemskirk Granite).
Lat. 41°49'27"S. Long. 145°03'55"E. Queenstown.
Collected by C. Brooks.
See GA 748.

Ref: TAS 1
GA 615

Biotite, K-Ar age 349 m.y.
K 6.31% $^{*}Ar^{40}/K^{40}$ 0.02240.
From porphyritic microadamellite, Meredith Granite.
Lat. 41°28'37"S. Long. 145°29'39"E. Burnie.
Collected by K.G. Lucas.
Minimum age.

Ref: TAS 1
GA 619

Biotite, K-Ar age 347 m.y.
K 7.42% $^{*}Ar^{40}/K^{40}$ 0.0224.
From adamellite, Housetop Granite.
Lat. 41°10'17"S. Long. 145°55'00"E. Burnie.
Collected by K.G. Lucas.
Minimum age; probably argon loss took place (c.f.GA744).

Ref: TAS 1
GA 1139

Biotite, K-Ar age 355 m.y., 358 m.y.
K 5.97% $^{*}Ar^{40}/K^{40}$ 0.02281, 0.02302.
Muscovite, K-Ar age 349 m.y., 348 m.y.
K 8.36% $^{*}Ar^{40}/K^{40}$ 0.02242, 0.02230.
From granite Granite Tor.
Lat. 41°43'37"S. Long. 145°45'11"E. Burnie.
Collected by J. Noldart and R. Jack.
Minimum age of intrusion.

q.b.

Ref: TAS 1
GA 1140

Muscovite, K-Ar age 359 m.y.
K 8.35% $^{*}Ar^{40}/K^{40}$ 0.02308.
From granite, Granite Tor.
Lat. 41°43'20"S. Long. 145°45'21"E. Burnie.
Collected by J. Noldart and R. Jack.
Minimum age of intrusion.

Ref: TAS 1
GA 1122

Biotite, K-Ar age 345 m.y.
K 7.41% $^{*}Ar^{40}/K^{40}$ 0.02209.
From leucogranite, Dolcoath Granite.
Lat. 41°28'45"S. Long. 146°07'19"E. Burnie.
Collected by I. McDougall.
Minimum age of intrusion.

Ref: TAS 1
GA 1422

Biotite, K-Ar age 336 m.y.
K 7.73% $^{*}Ar^{40}/K^{40}$ 0.02150.
Muscovite, K-Ar age 335 m.y.
K 8.62% $^{*}Ar^{40}/K^{40}$ 0.02138.
From adamellite, Three Hummock Island.
Lat. 40°25'42"S. Long. 144°58'13"E. King Island.
Collected by I. McDougall.
Probably true age of emplacement.

Ref: TAS 1
GA 1358

Biotite, K-Ar age 342 m.y.
K 7.23% $^{*}Ar^{40}/K^{40}$ 0.02187.
From adamellite, S.E. coast of King Island.
Lat. 40°05'00"S. Long. 144°03'56"E. King Island.
Collected by I. McDougall.
Probably true age of emplacement of granite 345 $\pm$ 5 m.y.
(average of GA 1358, 1118, and 1119).

Ref: TAS 1
GA 1118

Biotite, K-Ar age 345 m.y.
K 7.48% $^{*}Ar^{40}/K^{40}$ 0.02211.
From adamellite, S.E. coast King Island.
Lat. 40°04'27"S. Long. 144°03'56"E. King Island.
Collected by I. McDougall.
See GA 1358.

Ref: TAS 1
GA 1119

Biotite, K-Ar age 348 m.y.
K 7.37% $^{*}Ar^{40}/K^{40}$ 0.02232.
Hornblende, K-Ar age 349 m.y.
K 0.465% $^{*}Ar^{40}/K^{40}$ 0.02243.
From microadamellite dyke, King Island Scheelite Mine, Level 10, Sec. 12. Lat. 40°04'00"S. Long. 144°03'56"E. King Island. Collected by I. McDougall. See GA 1358.

Ref: TAS 1
GA 1432

Biotite, K-Ar age 338 m.y.
K 7.44% $^{*}Ar^{40}/K^{40}$ 0.02163.
From granodiorite, Sea Elephant Granite, King Island.
Lat. 39°48'37"S. Long. 144°05'32"E. King Island.
Collected by I. McDougall.
Minimum age of intrusion.

Ref: TAS 1
GA 1439

Biotite, K-Ar age 137 m.y.
K 7.07% $^{*}Ar^{40}/K^{40}$ 0.00828.
From lamprophyre dyke, King Island.
Lat. 39°58'53"S. Long. 144°08'13"E. King Island.
Collected by H. Bartlett.
Minimum age; probably close to age of intrusion.

Ref: TAS 1

GA 1433	Total rock	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
		263.1	104.0	7.275	0.8053

Age 835 ± 60 m.y. Initial Sr^{87}/Sr^{86} 0.720 ± 0.005(I).
Biotite, K-Ar age 442 m.y.
K 7.70% $^{*}Ar^{40}/K^{40}$ 0.02910.
From granodiorite, Cataraque Pt., King Island.
Lat. 40°04'10"S. Long. 143°52'19"E. King Island.
Collected by I. McDougall.
Massive granodiorite, not much evidence of deformation (similar to GA 1238); biotite age greater than from most granites of the west coast. See GA 1434.

Ref: TAS 1

GA 1419	Muscovite(1)	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
	" (2)	1484	1.17	3706	39.661
		1491	1.19	3667	39.178

Age (1) 753 m.y., (2) 751 m.y. Initial Sr^{87}/Sr^{86} 0.720(A).
Muscovite, K-Ar age 717 m.y., 712 m.y.
K 7.75% $^{*}Ar^{40}/K^{40}$ 0.05095, 0.05050.
From pegmatite, Ettrick River, W. coast of King Island.
Lat. 39°59'02"S. Long. 143°53'13"E. King Island.
Collected by I. McDougall.
Believed that all granitic rocks of west coast are consanguinous and that 715 m.y. is minimum age of emplacement. West coast rocks are all deformed and have probably lost variable amounts of argon.
See also GA 1434.

Ref: TAS 1

GA 1238 Total rock

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
	265.4	98.9	7.714	0.8116

With GA 1433, 1434, 1457 and 1355, isochron age is 835 ± 60 m.y. Initial Sr^{87}/Sr^{86} 0.720 ± 0.005 (I).

Biotite, K-Ar age 450 m.y., 449 m.y.

K 7.64% $^{*}Ar^{40}/K^{40}$ 0.02976, 0.02960.

From adamellite, Currie, W. coast of King Island.

Lat. 39°56'00"S. Long. 143°50'54"E. King Island.

Collected by I. McDougall.

See GA 1433 and 1434.

Ref: TAS 1

GA 1357

Biotite, K-Ar age 348 m.y.

K 7.35% $^{*}Ar^{40}/K^{40}$ 0.02297.

From leucocratic adamellite, Porky Creek, W. coast of King Island.

Lat. 39°52'05"S. Long. 143°51'47"E. King Island.

Collected by I. McDougall.

See GA 1419.

Ref: TAS 1

GA 1436

Biotite, K-Ar age 346 m.y.

K 7.63% $^{*}Ar^{40}/K^{40}$ 0.02219.

From adamellite, Porky Creek, W. coast of King Island.

Lat. 39°52'05"S. Long. 143°51'47"E. King Island.

Collected by I. McDougall.

See GA 1419.

Ref: TAS 1

GA 1355

Biotite, K-Ar age 340 m.y.

K 7.39% $^{*}Ar^{40}/K^{40}$ 0.02180

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	274.2	85.1	9.268	0.8336

With GA 1238, 1433, 1434 and 1457, isochron, age is 835 ± 60 m.y. Initial Sr^{87}/Sr^{86} 0.720 ± 0.005(I).

From porphyritic adamellite, Porky Creek, W. coast of King Island.

Lat. 39°51'57"S. Long. 143°51'47"E. King Island.

Collected by I. McDougall.

See GA 1434.

Ref: TAS 1

GA 1117

Biotite, K-Ar age 391 m.y., 399 m.y.

K 7.66% $^{*}Ar^{40}/K^{40}$ 0.02535, 0.02598.

From adamellite, Porky Creek, W. coast King Island.

Lat. 39°51'57"S. Long. 143°51'48"E. King Island.

Collected by I. McDougall.

See GA 1419.

Ref: TAS 1
GA 1356

Biotite, K-Ar age 403 m.y.
K 7.84% $^{*}Ar^{40}/K^{40}$ 0.02625.
From xenolith in adamellite, Porky Creek, W. coast King Island.
Lat. 39°51'57"S. Long. 143°51'48"E. King Island.
Collected by I. McDougall.
See GA 1419.

Ref: TAS 1
GA 1437

Biotite, K-Ar age 377 m.y.
K 7.72% $^{*}Ar^{40}/K^{40}$ 0.02440.
From granodiorite, Whistler Point, W. coast King Island.
Lat. 39°43'37"S. Long. 143°51'26"E. King Island.
Collected by I. McDougall.
See GA 1419.

Ref: TAS 1

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 1434	Total rock	314.3	48.5	18.65	0.9441
	Muscovite	886	4.22	612.7	7.106
	"	895	4.64	626.3	7.205

With GA 1238, 1355, 1433 and 1457, isochron, age is (TR) 835 ± 60 m.y. Initial Sr^{87}/Sr^{86} 0.720 ± 0.005(I).
(Musc.) 746 m.y., 742 m.y. Initial Sr^{87}/Sr^{86} 0.720(A).
Biotite, K-Ar age 413 m.y., 405 m.y.
K 7.51% $^{*}Ar^{40}/K^{40}$ 0.02698, 0.02638.
Muscovite, K-Ar age 571 m.y., 561 m.y.
K 8.79% $^{*}Ar^{40}/K^{40}$ 0.03899, 0.03825.
From adamellite, Cape Wickham Lighthouse Quarry, King Island.
Lat. 39°35'33"S. Long. 143°57'30"E. King Island.
Collected by I. McDougall.
Rb-Sr muscovite age very close to that of GA 1419 - thought to approximate closely the true age of emplacement. Data from Total rock samples GA 1238, 1355, 1433 and 1457, when plotted as an isochron indicate age of 835 ± 60 m.y. Statistical analysis indicates that scatter from isochron is greater than could be expected from experimental error. It is probable that geological factors, such as different initial Sr^{87}/Sr^{86} ratios or shearing which may make the rocks open chemical systems, have caused the scatter.

Ref: TAS 1
GA 1438

Biotite, K-Ar age 392 m.y.
K 7.99% $^{*}Ar^{40}/K^{40}$ 0.02544
From biotite-quartz-plagioclase hornfels, Cape Wickham, King Island.
Lat. 39°35'16"S. Long. 143°57'09"E. King Island.
Collected by I. McDougall.
See GA 1419.

Ref: TAS 1
GA 1457

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	352.5	47.7	21.25	0.9676
Apatite	-	-	-	0.7684 (unsp)

With GA 1238, 1355, 1433 and 1434, isochron age is 835 ± 60 m.y. Initial Sr^{87}/Sr^{86} 0.720 ± 0.005 (I).
Muscovite, K-Ar age 490 m.y.
K 8.76% $^{*}Ar^{40}/K^{40}$ 0.03276.
From adamellite, Cape Wickham, King Island.
Lat. 39°35'24"S. Long. 143°57'51"E. King Island.
Collected by I. McDougall.
See GA 1434. Sr^{87}/Sr^{86} ratio of apatite is anomalously high and indicates that redistribution of Sr isotopes took place, probably during the deformation.

Ref: TAS 1
GA 1435

Biotite, K-Ar age 390 m.y.
K 7.63% $^{*}Ar^{40}/K^{40}$ 0.02520.
From adamellite, E. of Cape Wickham, King Island.
Lat. 39°35'33"S. Long. 143°58'13"E. King Island.
Collected by I. McDougall.
See GA 1419.

Ref: TAS 1
GA 1421

Biotite, K-Ar age 365 m.y.
K 7.37% $^{*}Ar^{40}/K^{40}$ 0.02346.
From pegmatite E. of Cape Wickham, King Island.
Lat. 39°35'33"S. Long. 143°58'13"E. King Island.
Collected by I. McDougall.
See GA 1419.

Ref: TAS 1
GA 1420

Muscovite, K-Ar age 600 m.y.
K 8.73% $^{*}Ar^{40}/K^{40}$ 0.04126.
From muscovite pegmatite, King Island.
Lat. 39°35'33"S. Long. 143°58'13"E. King Island.
Collected by I. McDougall.
See GA 1419.

Ref: TAS 1
GA 304

Biotite, K-Ar age 702 m.y.
K 6.75% $^{*}Ar^{40}/K^{40}$ 0.04966
From dolerite, Burnie.
Lat. 41°02'30"S. Long. 145°53'34"E. Burnie.
Collected by A. Spry.
Minimum age.

Ref: TAS 1
GA 305

Muscovite, K-Ar age 448 m.y.
K 7.13% $^{*}Ar^{40}/K^{40}$ 0.02954.
From quartz-mica schist, Howell Group, Mersey River.
Lat. 41°43'28"S. Long. 146°12'00"E. Burnie.
Collected by A. Spry.
Precambrian rock showing argon loss pattern, possibly due to reheating in the Jukesian and Tabberabberan Orogenies.

Ref: TAS 1
GA 440

Mica, K-Ar age 489 m.y., 507 m.y.
K 5.98% $^{*}Ar^{40}/K^{40}$ 0.03258, 0.03399.
From eclogite, Franklin Gp., 17 mls. E. of Queenstown.
Collected by A. Spry.
See GA 305.

Ref: TAS 1
GA 618

Hornblende, K-Ar age 484 m.y.
K 0.596% $^{*}Ar^{40}/K^{40}$ 0.03223.
Muscovite, K-Ar age 486 m.y.
K 8.19% $^{*}Ar^{40}/K^{40}$ 0.03235.
From garnetiferous amphibolite, Rocky Cape Gp.
Lat. 41°14'27"S. Long. 146°14'39"E. Burnie.
Collected by K.G. Lucas.
Precambrian rock; see GA 305.

Ref: TAS 1
GA 870
GA 871

Biotite, K-Ar age 468 m.y.
K 7.17% $^{*}Ar^{40}/K^{40}$ 0.03105.
Biotite, K-Ar age 491 m.y.
K 6.25% $^{*}Ar^{40}/K^{40}$ 0.03279.
From biotite schist, Settlers Metamorphosed Greywacke, Beaconsfield.
Lat. 41°11'23"S. Long. 146°46'04"E. Launceston.
Collected by D.H. Green.
Metamorphic age; Cambrian sediments altered during Jukesian Movements.

Ref: TAS 1
GA 235

Hornblende, K-Ar age 95 m.y.
K 1.367% $^{*}Ar^{40}/K^{40}$ 0.00568.
From alkali syenite, Port Cygnet.
Lat. 43°11'36"S. Long. 147°06'30"E. Hobart.
Collected by W.A. Robertson.
Age of emplacement 98 ± 3 m.y. (taking account of earlier results and GA 630).

Ref: TAS 1
GA 630

Hornblende, K-Ar age 98 m.y.
K 1.35% $^{*}Ar^{40}/K^{40}$ 0.00588.
From alkali syenite, 1 ml. N. of Petcheys Bay.
Lat. 43°10'17"S. Long. 147°01'26"E. Hobart.
Collected by K.G. Lucas.
Age of emplacement. (See GA 235).

TERRITORY OF PAPUA AND NEW GUINEA

Unpublished
B54/15/1
GA 451

Biotite, K-Ar age 236 m.y.
K 4.99% $^{*}Ar^{40}/K^{40}$ 0.01470.
From biotite granite (basement, Aramia No.1 well, 8100 ft.).
Lat. 7°40'S. Long 142°15'E.
Collected by Australian Petroleum Co.
Not known whether this is age of intrusion or metamorphism.

Ref: PNG 1

		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
B55/5/2	Total rock	48.0	76.2	0.1810	0.7018
GA 981	Biotite	549.0	4.75	332.4	1.6039

Age 195 m.y. Initial Sr^{87}/Sr^{86} 0.701 (I).
From granodiorite.
Lat. 5°45'S. Long. 145°11'E.
Collected by M. Plane.
Minimum age.

Unpublished
C55/8/2
GA 1414

Total rock, K-Ar age 28.0 m.y.
K 0.196% $^{*}Ar^{40}/K^{40}$ 0.001646.
From Cape Vogel Basics.
Lat. 9°35'S. Long. 149°50'E. Tufi.
Collected by J.E. Thompson.
Minimum age.

Ref: PNG 2
B55/14
KA 1257

Plagioclase, K-Ar age 7.6 m.y.
K 0.282% $^{*}Ar^{40}/K^{40}$. 0.000445
From tuff, Otibanda Formation.
Lat. 7°04'S. Long. 146°37'E.
Collected by R.A. Stirton.
Average of KA 1257 and KA 1260 results is probably close to true age.

Ref: PNG 2
B55/14
KA 1260

Plagioclase, K-Ar age 6.1 m.y.
K 0.261% $^{*}Ar^{40}/K^{40}$. 0.00036
From tuff, Otibanda Formation.
Lat. 7°04'S. Long. 146°37'E.
Collected by R.A. Stirton.
See KA 1257.

VICTORIA

Ref: VIC 1
KA 332
GA 119

Biotite, K-Ar age 344 m.y.
K 6.20% $^{*}Ar^{40}/K^{40}$ 0.0220.
From biotite rhyolite.
Lat. 37°19'48"S. Long. 145°53'53"E. Warburton.
Collected by E. Irving.
Minimum age.

Ref: VIC 2
GA 1512

Total rock, K-Ar age 120 ± 10 m.y.
K 1.29% $^{*}Ar^{40}/K^{40}$ 0.00730.
From olivine basalt, core 20 (depth 7858 ft), Casterton No.1 Well.
Lat. 37°36'54"S. Long. 141°20'06"E. Hamilton.
Collected by Planet Exploration Co Pty Ltd.
Basalt quite strongly altered; about 10% intersertal glass present; reliable minimum age.

Ref: VIC 2
Geochron R0508

Total rock, K-Ar age 153 ± 5 m.y.
K 1.25% $^{*}Ar^{40}/K^{40}$ 0.00935.
From basalt, core 20 (depth 7858-62 ft), Casterton No.1 Well.
Lat. 37°36'54"S. Long. 141°20'06"E. Hamilton.
Collected by Planet Exploration Co Pty Ltd.
Probably minimum age.

Ref: VIC 3		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
J55/6/C3	Total rock	133	203	1.90	0.7155
GA 213	"	134	202	1.92	0.7178
	"	-	-	-	0.7220 (unsp)
Ref: VIC 3	Total rock	137	200	1.970	0.7214
J55/6/3	"	-	-	-	0.7193 (unsp)
GA 214	"	138	203	1.966	0.7207
	"	-	-	-	0.7205 (unsp)
	K-feldspar	163	233	2.022	0.7210
	"	-	-	-	0.7209 (unsp)
	Plagioclase	11.8	435	0.079	0.7086
	"	-	-	-	0.7108 (unsp)

Ref: VIC 3	Total rock	178	17.4	2.98	0.7210
J55/6/6	"	180	17.2	3.02	0.7272
GA 216					0.7263 (unsp)

Age 365 ± 90 m.y. Initial Sr^{87}/Sr^{86} 0.710 ± 0.002(I).
From biotite rhyodacite, Cerberean Volcanics.
213 Lat. 37°18'23"S. Long. 145°53'23"E. Warburton.
214 Lat. 37°18'41"S. Long. 145°53'37"E. Warburton.
216 Lat. 37°17'52"S. Long. 145°53'01"E. Warburton.
Collected by J.F. Evernden and E. Irving.
T.R. samples 213 and 214 have nearly the same Rb^{87}/Sr^{86} but different Sr^{87}/Sr^{86}; this indicates geological variance, probably a difference in initial Sr^{87}/Sr^{86}, is present. Validity of equating regression line through the data with an isochron is doubtful.

Ref: VIC 3		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}	Age m.y.
J55/6/C3	Biotite	636	15.7	116.9	1.3165	352
GA 213	"	655	15.5	122.5	1.3472	353
	"	659	16.3	116.8	1.3180	354
	"	658	16.1	117.7	1.3187	351

Initial Sr^{87}/Sr^{86} 0.710 (A)
See data above for total rock and feldspar samples, and justification for use of initial Sr^{87}/Sr^{86} ratio of 0.710.
Biotite ages probably close to age of extrusion of rhyodacite.

Ref: VIC 3		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
J55/6/7	Total rock	213	57.7	10.66	0.7680
GA 217	"	210	57.0	10.67	0.7676
	K-feldspar	313			0.7752
	"	308	75.8	11.74	0.7749
	"	314	77.2	11.74	0.7762
	Plagioclase	184	65.5	8.11	0.7453
	"	182	66.1	7.98	0.7507
	"	178	65.5	7.87	0.7540
	"	-	-	-	0.7497 (unsp)
	Biotite	642	4.63	400.1	2.806

Age (T.R., K-f, P) 359 ± 15 m.y. Initial Sr^{87}/Sr^{86} 0.710 ± 0.005 (I)
Age (Biotite) 355 m.y. Initial Sr^{87}/Sr^{86} 0.710 (A)

From nevadite, Cerberean Volcanics.
Lat. 37°17'24"S. Long. 145°52'46"E. Warburton.
Collected by J.F. Evernden and E. Irving.
GA 217 combined with GA samples 840 and 841 lie on 359 m.y. isochron. Biotite age is not significantly less than isochron age and conclude that there has been no leak of radiogenic strontium from this mineral.

Ref: VIC 3		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 838	Total rock	535	30.4	50.86	0.9806
	K-feldspar	730	34.4	61.39	1.0347
	Plagioclase	8.1	23.5	35.10	0.8942
Ref: VIC 3	Total rock	288	17.2	48.37	0.9643
GA 877	K-feldspar	361	17.9	58.18	1.0207

Age 367 ± 22 m.y. Initial Sr^{87}/Sr^{86} 0.704 ± 0.015.
From Basal Rhyolite, Snobs Creek Volcanics.
838 = Lat. 37°20'S. Long. 145°48'12"E. Warburton.
877 = Lat. 37°16'24"S. Long. 145°52'18"E. Warburton.
Collected by I. McDougall.
Data fit straight line to within experimental error; probable age of extrusion of rhyolite.

Ref: VIC 3
GA 840
Biotite, K-Ar age 362 m.y., 356 m.y.
K 7.34%, $*Ar^{40}/K^{40}$ 0.0233, 0.0229.

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	274	17.3	45.7	0.9501
"	278	17.2	46.6	0.9497
Biotite	1070	1.42	2178	12.207

Age 359 ± 15 m.y. Initial Sr^{87}/Sr^{86} 0.710 ± 0.005. (I)
From cordierite nevadite, Cerberean Volcanics.
Lat. 37°20'35"S. Long. 145°48'04"E. Warburton.
Collected by I. McDougall.
K-Ar and Rb-Sr ages agree well.

Ref: VIC 3
GA 839
Biotite, K-Ar age 346 m.y.
K 7.07% $*Ar^{40}/K^{40}$ 0.0222.
From cordierite nevadite, Cerberean Volcanics.
Lat. 37°20'26"S. Long. 145°48'15"E. Warburton.
Collected by I. McDougall.
Compared with GA 840, low age indicates leakage of Ar from biotite.

Ref: VIC 3
GA 837

Biotite, K-Ar age 345 m.y.
K 7.25% $^{*}Ar^{40}/K^{40}$ 0.0221.
From cordierite nevadite (same quarry as GA 217), Cerberean Volcanics.
Lat. 37°17'23"S. Long. 145°52'48"E. Warburton.
Collected by I. McDougall.
GA 837 and GA 835 agree well with age of biotite GA 217 determined previously.

Ref: VIC 3
GA 835

Biotite, K-Ar age 348 m.y.
K 6.90% $^{*}Ar^{40}/K^{40}$ 0.0223.
From cordierite nevadite (same quarry as GA 217), Cerberean Volcanics.
Lat. 37°17'23"S. Long. 145°52'48"E. Warburton.
Collected by I. McDougall.
See GA 837.

Ref: VIC 3
GA 843

Biotite, K-Ar age 364 m.y., 358 m.y.
K 7.23% $^{*}Ar^{40}/K^{40}$ 0.0234, 0.0230.
From biotite rhyodacite, Cerberean Volcanics.
Lat. 37°21'50"S. Long. 145°48'E. Warburton.
Collected by I. McDougall.
See GA 876.

Ref: VIC 3
GA 842

Biotite, K-Ar age 365 m.y., 362 m.y.
K 7.32% $^{*}Ar^{40}/K^{40}$ 0.0235, 0.0233.

	Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Biotite	694	4.37	459	3.049

Age 346 m.y. Initial Sr^{87}/Sr^{86}
From biotite rhyodacite, Cerberean Volcanics.
Lat. 37°21'10"S. Long. 145°48'17"E. Warburton.
Collected by I. McDougall.
See GA 876.

Ref: VIC 3
GA 841

Biotite, K-Ar age 340 m.y., 344 m.y.
K 7.20% $^{*}Ar^{40}/K^{40}$ 0.0217, 0.0221.

	Rb $\mu g/g$	Sr $\mu g/g$	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	304	16.5	53.3	0.9921
"	298	16.4	52.4	0.9926
K-feldspar	461	23.4	57.4	1.0129

Age 359 ± 15 m.y. Initial Sr^{87}/Sr^{86} 0.710 ± 0.005(I).
From cordierite nevadite, Cerberean Volcanics. Lat. 37°20'39"S. Long. 145°48'07"E. Warburton. Collected by I. McDougall. Low K-Ar age (compared with GA 840, and with Rb-Sr age) indicates leakage of Ar from biotite. GA 841 combined with GA 840 and GA 217 gives isochron age of 359 ± 15 m.y.

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Ref: VIC 3
GA 876

Biotite, K-Ar age 365 m.y.
K 7.27% $^{*}Ar^{40}/K^{40}$ 0.0235.
From biotite rhyodacite (same lava as GA 875), Cerberean Volcanics.
Lat. 37°31'18"S. Long. 145°51'09"E. Warburton.
Collected by I. McDougall.
GA samples 876, 875, 868, 867, 843, and 842 indicate age of 362 ± 6 m.y. for rhyodacite; there may have been argon loss from the biotites and this is a minimum age.

Ref: VIC 3
GA 875

Biotite, K-Ar age 366 m.y.
K 7.39% $^{*}Ar^{40}/K^{40}$ 0.0236.
From biotite rhyodacite (probably same as GA 842), Cerberean Volcanics.
Lat. 37°31'04"S. Long. 145°52'28"E. Warburton.
Collected by I. McDougall.
See GA 876.

Ref: VIC 3
GA 868

Biotite, K-Ar age 356 m.y., 355 m.y.
K 7.13% $^{*}Ar^{40}/K^{40}$ 0.0229, 0.0228.
From biotite rhyodacite, (strat. between GA 842 and GA 843), Cerberean Volcanics.
Lat. 37°21'24"S. Long. 145°48'17"E. Warburton.
Collected by I. McDougall.
See GA 876.

Ref: VIC 3
GA 867

Biotite, K-Ar age 362 m.y.
K 7.42% $^{*}Ar^{40}/K^{40}$ 0.0233.
From biotite rhyodacite, Cerberean Volcanics.
Lat. 37°20'39"S. Long. 145°52'18"E. Warburton.
Collected by I. McDougall.
See GA 876.

Ref: VIC 3
GA 881

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Total rock	292	7.78	108.4	1.2801
"	292	7.77	108.7	1.289
K-feldspar	267	13.3	79.8	1.1501

Age 368 m.y. Initial Sr^{87}/Sr^{86} 0.704 (A).
From Ryans Creek Rhyolite.
Lat. 36°47'34"S. Long. 146°16'12"E. Wangaratta.
Collected by I. McDougall.
Age nearly independent of initial Sr^{87}/Sr^{86}.

Ref: VIC 3		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
GA 883	Total rock	237	60.6	11.32	0.7680
	K-feldspar	432	81.4	15.33	0.7869
	Plagioclase	46	38.3	3.46	0.7269
Ref: VIC 3	Total rock	344	26.2	37.93	0.9138
GA 884	K-feldspar	600	41.9	41.42	0.9324

Age 369 ± 11 m.y. Initial Sr^{87}/Sr^{86} 0.706 ± 0.003 (I).
From Barjarg Granite.
883- Lat. 36°55'00"S. Long. 146°54'E. Wangaratta.
884- Lat. 36°55'18"S. Long. 146°54'E. Wangaratta.
Collected by I. McDougall.
Statistical treatment of results indicates that there was a uniform initial Sr^{87}/Sr^{86} in the granite and that the granite has remained a chemically closed system.

Ref: VIC 4
GA 1141
Total Rock, K-Ar age 4.35 m.y.
K 0.717% $^{*}Ar^{40}/K^{40}$ 0.0002545.
From basalt.
Lat. 37°46'S.(approx). Long 142°00'E. (approx). Hamilton.
Collected by E.L. Lundelius.
Reliable minimum age.

J54/11/1
GA 5199
Biotite, K-Ar age 17.1 m.y.
K 6.80% $^{*}Ar^{40}/K^{40}$ 0.00100.
From lamprophyre, Portland No.3 water bore, 5625-38 ft.
Lat. 38°20'44"S. Long. 141°35'25"E. Portland.
Collected by Victorian Mines Department.
Minimum age of intrusion.

WESTERN AUSTRALIA

Ref: WA 1		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
R255	Total rock	114.7	6.77	48.75	2.129
GA 996	"	114.1	6.73	48.81	2.142
R259	Total rock	91.9	87.6	3.024	0.807
GA 938	"	92.9	85.5	3.128	0.811
R258	Total rock	170.3	40.18	12.20	1.096
GA 997	"	170.4	40.21	12.20	1.093
R656	Total rock	107.0	30.58	10.07	0.995
GA 888	"	108.6	34.69	9.02	0.960
	"	105.9	34.45	8.85	0.961

Age 2100 m.y. Initial Sr^{87}/Sr^{86} 0.700 - 0.719 (I).
From Woongarra Volcanics, Hamersley Group.
R255 Lat. 22°18'30"S. Long. 116°39'E. Wyloo.
R258,R259 Lat. 22°26'30"S. Long. 117°01'E. Mount Bruce.
R656 Lat. 22°33'S. Long. 116°48'E. Wyloo.
Collected by W.N. McLeod and others, G.S.W.A.
Dacitic and rhyolitic igneous and pyroclastic rocks near the top of the Hamersley Group.
Insufficient data to determine age and initial Sr^{87}/Sr^{86} ratios accurately; likely that rocks were formed with different initial Sr^{87}/Sr^{86} ratios.

Ref: WA 1		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
R659	Total rock	75.30	20.09	10.79	0.977
GA 936	"	74.7	19.55	11.00	0.978

Age 1850 m.y. if Initial Sr^{87}/Sr^{86} 0.700 (A)
or Age 1720 m.y. if Initial Sr^{87}/Sr^{86} 0.720 (A).
From tuffaceous siltstone, volcanic facies, Wyloo Group.
Lat. 22°27'S. Long. 116°10'E. Wyloo.
Collected by W.N. McLeod and others, G.S.W.A.
1850 m.y. is a maximum age; 1720 m.y. is a minimum age since this is the indicated age for the intrusive Boolaloo Granite.

Ref: WA 1		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
R241	Total rock	199.7	89.9	6.39	0.872
GA 937					
R657	Total rock	211.1	91.9	6.53	0.876
GA 889	K-feldspar	215.0	55.9	11.06	0.981
	"	216.2	56.1	11.07	0.980
	"	215.6	-	-	-
R657	Biotite	659.7	11.4	166.4	4.733
GA 889					

Age 1720 m.y. Initial Sr^{87}/Sr^{86} 0.720 (I).
From Boolaloo Granite.
Lat. 22°27'S. Long. 116°02'E. Wyloo.
Collected by W.N. McLeod and others, G.S.W.A.
Boolaloo Granite intrudes the Wyloo Group and is overlain by the Bangemall Group. The high initial Sr^{87}/Sr^{86} is probably an original feature of the rock, but in principle the complete internal mixing of radiogenic with common strontium in the granites' constituent minerals may also produce a linear arrangement of data-points, giving a high value for "initial" Sr^{87}/Sr^{86}. Thus 1720 m.y. is a minimum age.

Ref: WA 1		Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
R670	Total rock	211.8	239.7	2.540	0.810
GA 1052	"	210.5	238.7	2.538	0.810
	K-feldspar	584.3	256.0	6.563	0.939
	"	586.9	253.6	6.664	0.943

Age 2290 m.y. Initial Sr^{87}/Sr^{86} 0.728 (I).
From Pilbara System Granite.
Lat. 21°14'S. Long. 117°52'E. Pyramid.
Collected by W.N. McLeod and others, G.S.W.A.
If post-emplacement rearrangement of radiogenic strontium has occurred the value of 2290 m.y. should be viewed as a minimum age. A maximum age of 3040 m.y. may be calculated if the initial Sr^{87}/Sr^{86} is assumed to be 0.700.

Unpublished
E51/6/1
GA 718

(A) Plagioclase, K-Ar age 570 m.y.
K 0.449% $^{*}Ar^{40}/K^{40}$ 0.03888.
(B) Pyroxene, K-Ar age 196 m.y.
K 0.0807% $^{*}Ar^{40}/K^{40}$ 0.01210.
Plagioclase from chips of dolerite and sedimentary rock, pyroxene probably comes entirely from the dolerite; Barlee No.1 well, 7830 to 7850 ft. and 7866 to 7870 ft.
Lat. 17°48'25"S. Long. 122°42'40"E. Broome.
Collected by W.A.P.E.T.
Pyroxene age is a minimum for the age of intrusion of the dolerite, and the plagioclase age is a minimum for the age of the source rocks from which the sediments were derived.

Ref: WA 2
I51/5/1 Zircon
GA 773

$^{206}Pb/^{238}U$	$^{207}Pb/^{235}U$	$^{207}Pb/^{206}Pb$	$^{208}Pb/^{232}Th$.
0.350	8.73	0.181	0.00855
1950 m.y.	2340 m.y.	2700 m.y.	174 m.y.

Continuous diffusion: 2900 m.y. Radiation damage 2840 m.y.
From gneiss, Oldfield River.
Lat. 34°25'S. Long. 120°43'E. Ravensthorpe.
Collected by E.J. Malone.
Approx. age 2800 m.y. - age of metamorphism (and of pegmatite injection at Cattlin Creek).

Ref: WA 3
Cardup 1-5

	Rb μg/g	Sr μg/g	Rb^{87}/Sr^{86}	Sr^{87}/Sr^{86}
Comp. white shale	1. 246	187	37.85	1.212
Dark band	2. 184	173	30.70	1.12
White band	3. 194	182	30.75	1.211
Black shale	4. 283	144	56.3	1.295
Black shale	5. 166	136	35.2	1.099

Age 660 m.y.(approx). Initial Sr^{87}/Sr^{86} 0.735 or higher.
From Cardup Shale, Darling Scarp, near Perth.
Lat. Long. Pinjarra.
Collected by R.T. Pidgeon.
Wide scatter in initial Sr^{87}/Sr^{86} due to detrital micas. Age not accurately measured.

Ref: WA 4
Z132

Total Rock, K-Ar age 0.75 ± 0.06 m.y.
K 1.99% $^{*}Ar^{40}/K^{40}$. 0.000044
From Tektite, Wiluna.
Lat. 26°36'S. Long. 120°13'E. Wiluna.
Collected by Cook.
Minimum age.

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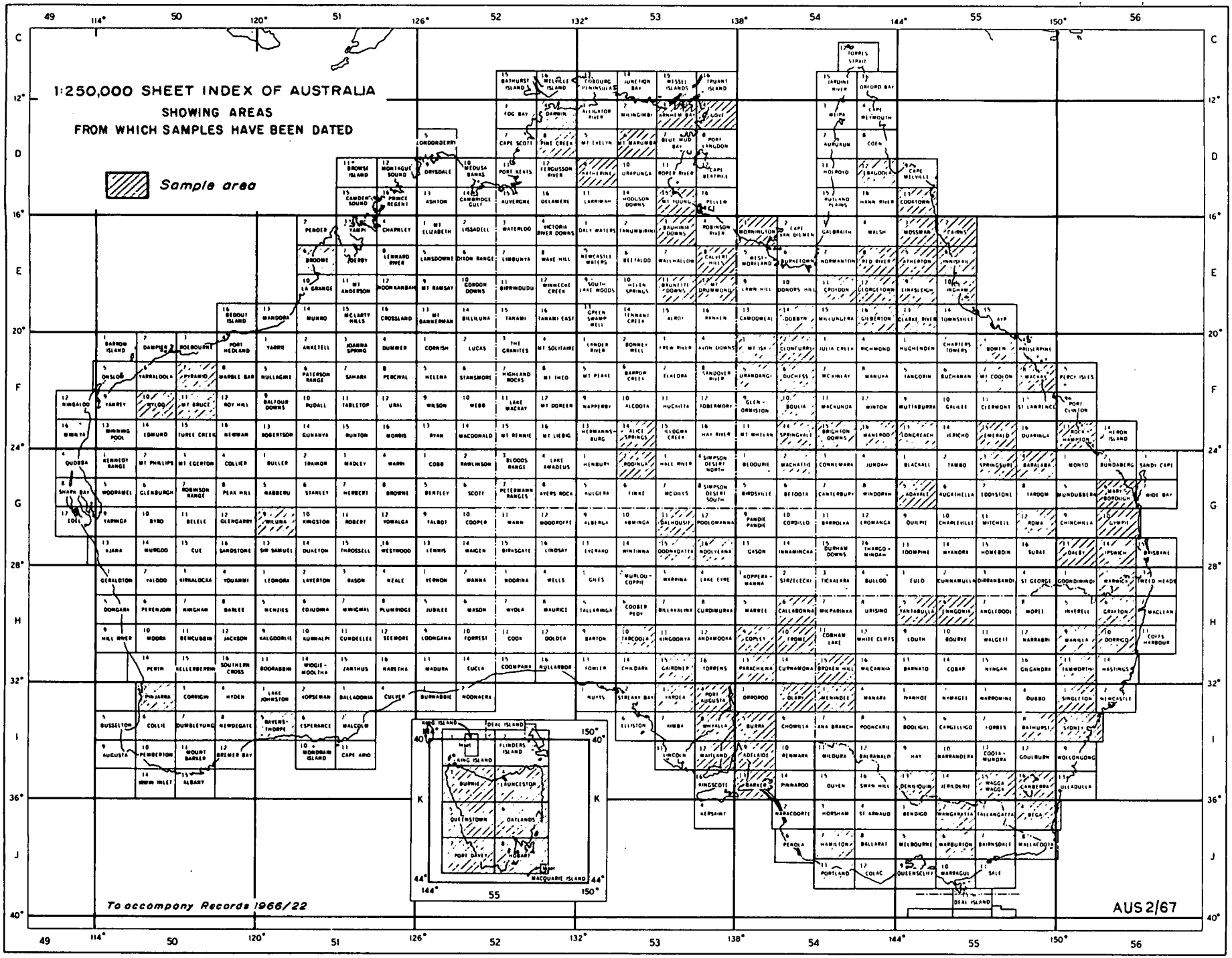
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FROM WHICH SAMPLES HAVE BEEN DATED
Sample area
To accompany Records 1966/22
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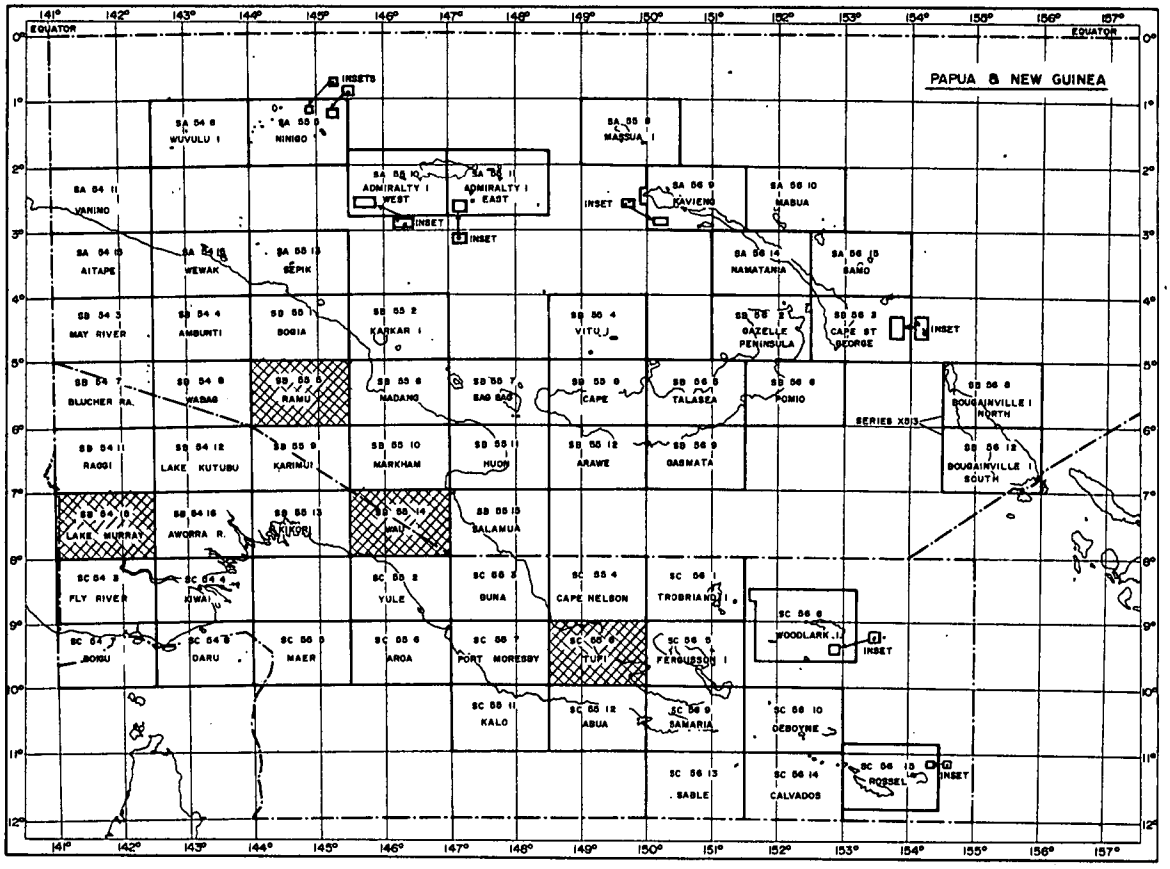
1:250,000 SHEET INDEX OF PAPUA & NEW GUINEA AND ANTARCTICA

SHOWING AREAS FROM WHICH SAMPLES HAVE BEEN DATED



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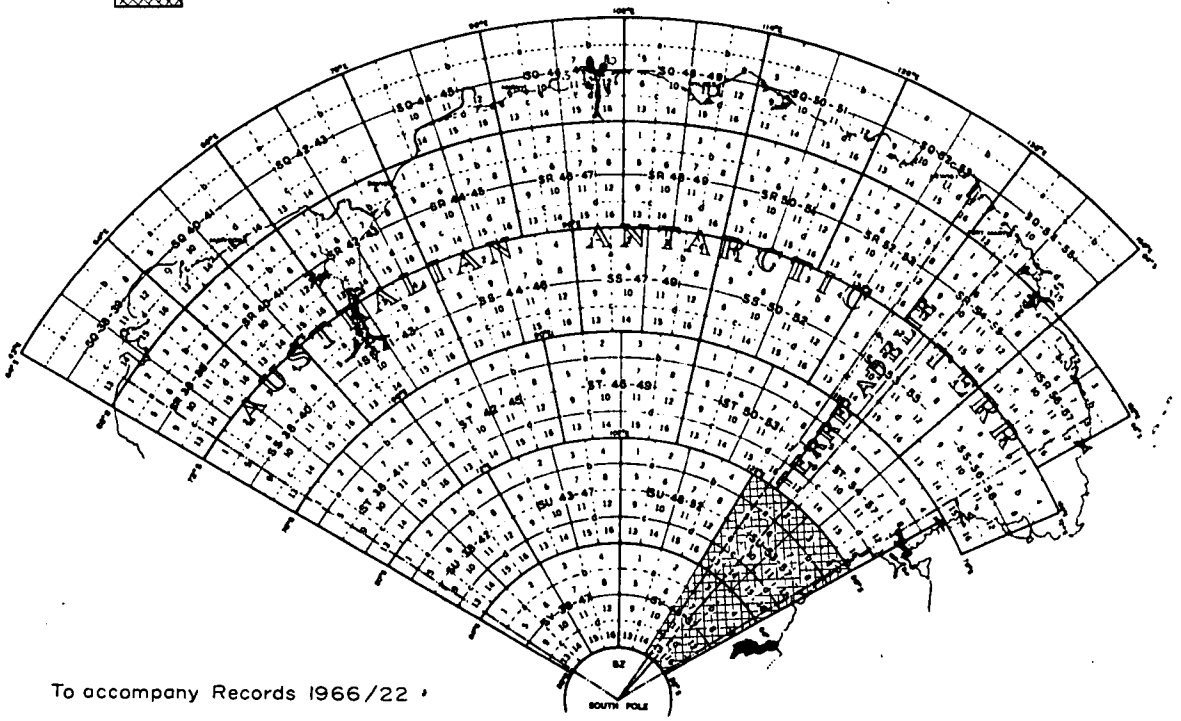

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F56/13/9	5334	51
G54/2	5409	51
G55/3/1	1031	48
2	1032	48
3	1033	48
4	1034	48
5	1035	49
6	1036	49
7	1037	51
10	1149	49
11	1150	50
G55/4/2	982	51
G55/4/3	983	50
4	984	50
5	985	50
6	986	50
G55/5	F0223	71
G55/12/2	607	41
3	747	42
5	1041	53
8	1219	70
9	1220	70
G56/6/3	5295	44
5	5314	46
7	5318	46
9	5321	46
11	5322	45
12	5325	47
14	5320	46
G56/6	Mol. 4	52
G56/10/1	1217	45
3	5311	45
4	5317	46
6	5296	44
7	5312	44
8	5313	44
G56/13	R0256	71
G56/14/4	5297	45
7	5323	47
8	5298	44
12	5315	47
G56/14	220	45
H56/2	Mol. 3	52
SOUTH AUSTRALIA		
G53/11/1	1084	72
G53/15	Z 130	72
G53/16	R0456	85
H53/10/1	386	83
H53/11/2	668	83
H53/15/1	374	81
H54/6/1	339	84
3	341	73
H54/9/1	342	76
2	343	76
3	344	76
4	345	75
5	346	74
6	347	74
7	348	84
8	349	74
H54/9	518	83
"	704	79
"	705	79
"	706	75
"	707	75
"	708	75
"	711	74
H54/10/1	350	73
H54/13/1	351	76
I53/3/1	366	81
2	367	81
3	368	81
I53/3	598	82
I53/4/1	353	77
2	369	77
3	370	77
4	371	82
5	480	80
I53/4	599	81
"	714	77
"	716	81
"	717	78
"	1159	82
I53/8/1	481	80
I53/8/2	387	80
I53/8	813 B	80
I53/12/1	354	73
I53/12	1517	73
I54/2/2	355	84
4	357	83
I54/2	388	73

1:250,000 SHEET NUMBER	GA OR SAMPLE NO.	PAGE
I54/5	Z 131	72
I54/9/3	471	84
I54/9	524	78
"	587	78
"	588	78
"	589	79
"	591	79
I54/13	592	78
"	593	78
-	Z 133	72
TASMANIA		
K55/1	1422	95
"	1358	95
"	1118	95
"	1119	95
"	1432	96
"	1439	96
"	1433	96
"	1419	96
"	1238	97
"	1357	97
"	1436	97
"	1355	97
"	1117	97
"	1356	98
"	1437	98
"	1434	98
"	1438	99
"	1457	99
"	1435	99
"	1421	99
"	1420	99
K55/3	616	91
"	617	91
"	1123	92
"	1120	92
"	1121	92
"	1537	92
"	1538	92
"	744	93
"	615	94
"	619	94
"	1139	94
"	1140	95
"	1122	95
"	304	100
"	305	100
"	618	100
K55/4	613	86
"	485	86
"	486	86
"	621	87
"	487	87
"	620	87
"	627	87
"	614	88
"	623	88
"	624	88
"	488	88
"	489	89
"	490	89
"	491	89

1:250,000 SHEET NUMBER	GA OR SAMPLE NO.	PAGE
K54/4	626	89
"	335	90
"	625	91
"	870	100
"	871	100
K55/5	828	91
"	748	93
"	814	93
"	818	94
"	819	94
"	440	100
K55/6	493	89
"	628	90
"	629	90
K55/7	1423	93
K55/8	235	101
"	630	101
PAPUA & NEW GUINEA		
B54/15/1	451	102
B55/5/2	981	102
B55/14	KA1257	102
"	KA1260	102
C55/8/2	1414	102
VICTORIA		
J54/7	1141	108
"	1512	103
"	RO508	103
J54/11/1	5199	108
J55/2	881	107
"	883	108
"	884	108
J55/6/C3	213	103
3	214	103
6	216	104
7	217	104
J55/6	835	106
"	837	106
"	838	105
"	839	105
"	840	105
"	841	106
"	842	106
"	843	106
"	867	107
"	868	107
"	875	107
"	876	107
"	877	105
"	119	103
WESTERN AUSTRALIA		
E51/6/1	718	111
F50/7	1052	110
F50/10	888	109
"	889	110
"	936	109
"	937	110
"	996	109
F50/11	938	109
"	997	109
G51/9	Z132	112
I50/2	Cardup.	111
I51/5/1	773	111

INDEX II

GA AND SAMPLE NUMBERS IN NUMERICAL AND ALPHABETICAL ORDER

TABLE 1 GA NUMBERS OR SAMPLE NUMBERS OF SPECIMENS DATED FROM AUSTRALIAN TERRITORY (1962-1965) TABLE 1

ERA	PERIOD	AGE OF BASE, m.y.	ANTARCTICA	NEW SOUTH WALES AND A.C.T.	NORTHERN TERRITORY	QUEENSLAND	SOUTH AUSTRALIA	TASMANIA	PAPUA & NEW GUINEA	VICTORIA	WESTERN AUSTRALIA	AGE OF BASE, my.	PERIOD	ERA
CAINOZOIC	QUAT.	2			Z134		Z130, Z131, Z133.				Z132	2	QUAT.	CAINOZOIC
	TERT.	65		479, 678, 830.		686, 777, 982, 983, 984, 985, 986, 1031, 1032, 1033, 1034, 1035, 1036, 1043, 1143, 1149, 1150, 5152, 5158.			1414, KA1257, KA1260.	1141, 5199.		65	TERT.	
MESOZOIC	CRET.	136		Mol. 2.		781, 782, 792, 1037, 5334.		235, 630.		1512		136	CRET.	MESOZOIC
	JUR.	192		R112, R130, R117, 783.				1439.		R0508 (GEOCHRON)		192	JUR.	
	TRIAS	225		303, 1362, 1364.		220, 1217, 5297, 5311, 5314, 5315, 5318, 5320, 5321, 5323, 5325, Mol. 3, Mol. 4.			981.		718(B).	225	TRIAS	
PALAEOZOIC	PERM.	280		209, 338, 452, 453, 454, 469, 1359, 1360, 1361, 1363, 1365.		472, 473, 474, 5295, 5296, 5298, 5312, 5313, 5317, 5322, 409, 446, 447, 505, 536, 541, 542, 543, 1354, 5159, 5160, 5176, 5182, 5183, 5186, 498, 499, 500, 501, 502, 503, 507, 534, 535, 5169, 5170, 5171, 5177, 494, 495, 496, 497, 504, 533, 5172, 5175, 5187, 5189.			451.			280	PERM.	PALAEOZOIC
	CARB.	345		Esso A4, 470, Mol. 1, 48, 49, 59.		399, 607, 747, 1041, 301, 302, 450, 544, 660, 443, 444, 445, 506, 539, 540, 448, 537, 538, 666, 5161, 5164, 5165, 5166, 5181, 5184, 1220, R0256.		335, 748, 814, 818, 819, 1118, 1122, 1358, 1422, 1432.		837, 119.		345	CARB.	
	DEV.	395		Esso 1, 594, 595, 58.		400, 401, 402, 652, 653, 411, 413, 416, 417, 418, 419, 427, 529, 449, 5180, 1219, F0223.	518.	485, 486, 487, 488, 489, 490, 491, 493, 613, 614, 615, 619, 620, 621, 623, 624, 625, 626, 627, 628, 629, 744, 1119, 1139, 1140, 1357, 1421, 1435, 1436, 1437, 1438.		213, 214, 216, 217, 835, 838, 839, 840, 841, 842, 843, 867, 868, 875, 876, 877, 881, 883, 884.		395	DEV.	
	SIL.	435		406, 596, SC12, 290, 273, 292, 55, C4, C7, C9, C2, C5, 293.		309, 415, 429, 442, 430, 431.	339, 355, R0456.	1117, 1356, 1423,				435	SIL.	
	ORD.	500	762, 763, 764, 765, 766, 767, 769.	106, 405, 437, 439, Esso 2, 272, 56, Binjura (3, 7, 9, 10).		412.	346, 347, 349, 357, 471, 524, 587, 589, 705, 711.	305, 616, 617, 618, 870, 871, 1120. 1121, 1123, 1537, 1538.				500	ORD.	
	CAMB.	570	768.	107, 108, 111, 313, 314, 438.		F1		440, 828.			718(A).	570	CAMB.	
PROTEROZOIC	ADEL.	800	770.	110, C6, 57.	993, 1059.	659, 5190, 5409, 5400, 5404, 658.	588, 592, 593, 714, 717, 1084, 348, 353.	304, 1419, 1420.			Cardup(1-5)	800	ADEL.	PROTEROZOIC
		1000		84391B, 84332B, 84336B, 84359B, 84348B, 312.	5212.	177, 414.	345, 351, 591, 707.	1238, 1355, 1433, 1434, 1457.				1000		
		1200		109.	848, 15, 1057, 1058, 1158.	410, 428, 441.	706, 344, 704.					1200		
		1400		84368B, 407, 84367B, 84365B, 84349B.	945, 946, 947, 949, 950, 1157, 942, 943, 944.	127, 168, 134, 163, 164, 165, 167, 531.	342, 369, 370, 716.					1400		
	CARP.	1600		84341B.	753, 746, 5406.	128, 129, 130, 131, 132, 135, 162, 166, 175, 422, 530, 532, 582, 583, 586, 849, 850, 1379, C-Pb(1, 11, 17, 28, 29)	341, 354, 388, 599, 1517, 480, 481, 366, 367, 368, 374, 371, 1159, 386.					1600	CARP.	
		1800			752, 754, 10, 483, 484, 558, 559, 1045, 1047.	126, 135, 172, 378, 379, 584, 585.	350, 598, 813B.				889, 937.	1800		
	LOWER PROT.	2000			125, 159, 581, 1044.		387, 668.				936.	2000	LOWER PROT.	
		2500									888, 938, 996, 997, 1052.	2500		
ARCHAEAN		3100			24, 656, 675.		343, 708.				773.	3100	ARCHAEAN	

Division of Precambrian time into arbitrary periods. Division of Phanerozoic time after "The Phanerozoic Time-scale" (1964). Where two ages are listed in the text for one specimen, the GA no. of the specimen is tabulated under the older age.

All numbers are GA numbers (on file, Dept. of Geophysics & Geochemistry, Australian National University, Canberra, A.C.T.), except those with letter prefixes or suffixes. Consult INDEX II for text of above numbers.

Bureau of Mineral Resources, Geology & Geophysics

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