COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

RECORDS.

1961/130

CHEMICAL INVESTIGATIONS AT THE GEOLOGICAL LABORATORY DURING THE YEAR 1959

Compiled by

J.R. Beevers.

CHEMICAL INVESTIGATIONS AT THE GEOLOGICAL LABORATORY DURING THE YEAR 1959.

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RECORDS 1961/130

INTRODUCTION

This record consists of minor reports completed by chemists of the Geological laboratory during the year 1959.

The reports are arranged in three groups:-

(a) Chemical analyses connected with the granite sampling and age determination programme.

(b) Analysis of bore waters of the A.C.T. and N.S.W.

(c) General chemical analyses.

The reports in each group are placed in chronological order, with the file number in the top right-hand corner, and the laboratory number in the bottom left corner of the report.

The officers responsible for these reports are:-

A.D.Haldane, W.J.Thomas, S. Baker, and A. McClure.

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REPORT 1

226/1

29th April, 1959

CHEMICAL ANALYSIS OF ROCK SAMPLES IN CONNECTION WITH THE GRANITE SAMPLING AND AGE DETERMINATION PROGRAMME.

by S. Baker and A. McClure.

The following are the results of chemical analyses carried out on samples collected for radioactive dating during 1959. The results are given in chronological order and also show the locality of the samples.

ANALYSIS OF FIVE GRANITES

by S. Baker

The localities of the granites were :-

I54/2/2 - 15 miles north of Olary at Binberri Hills, S.A.
H54/6/2 - Mudlawatana Creek, 7 miles N.W. of Fitton Homestead,S.A.
H54/9/2 - Yudamutana Gorge E. Bank, S.A.
F54/6/2 - Duchess, Q'ld.
G53/9/2 - Indulkana, S.A.
G53/9/4 - Ernabella, S.A.

The analyses resulted as follows :-

Sample No.	I54/2/2	H54/6/2	H54/9/2	F54/6/2	G53/9/2	G53/9/4
SiO_2	74.42	76.42	73.76	69.68	77.00	66.26
Fe_2O_3	0.39	0.44	2.00	0.71	0.30	2.10
FeO	1.03	0.71	1.67	1.37	1.01	2.00
Al_2O_3	15.00	13.48	14.00	15.40	12.63	16.96
MgO	0.30	0.55	0.35	0.83	0.47	0.95
CaO	0.41	1.25	1.47	2.38	0.81	3.38
Na_2O	4.37	3.92	3.41	5.09	1.80	3.18
K_2O	3.03	2.27	3.47	2.40	4.61	3.92
$H_2O(105^\circ)$	0.01	nil	nil	0.08	nil	0.04
H_2O(loss on ignition 1000)	0.82	0.46	0.40	1.10	0.53	0.37
TiO_2	0.08	0.07	0.12	0.12	0.08	0.30
P_2O_5	0.06	0.04	0.03	0.10	0.11	0.13
MnO	0.07	0.08	0.10	0.15	0.06	0.13
TOTAL :	99.99	99.69	100.78	99.41	99.41	99.72

59/584-586, 588, 589, 561.

REPORT 1. continued

ANALYSIS OF SIX GRANITES

by A. McClure.

The localities of the granites were :-

K15 - H/54/9/3 Blue Mine Creek, S.A.
K17 - I/53/4/1 7 miles west of Corunna, S.A.
K20 - I/53/8/2 35 miles S.W. of Whyalla, S.A.
K21 - I/53/8/3 46 miles S.W. of Whyalla, S.A.
K22 - I/53/7/1 6 miles N.E. of Darke Peak, S.A.
K23 - I/53/6/1 12 miles S.E. of Streaky, S.A.

The analyses resulted as follows :-

Sample No.	K15 H54/9/3	K17 I53/4/1	K20 I53/8/2	K21 I53/8/3	K22 I53/7/1	K23 I53/6/1
SiO_2	72.22	65.59	65.86	73.71	72.72	70.98
Al_2O_3	12.74	16.14	14.31	12.75	13.70	13.67
Fe_2O_3	1.58	2.08	3.26	0.79	0.57	1.31
FeO	1.92	1.45	2.43	1.45	1.16	1.44
MgO	1.70	0.97	1.38	0.68	0.32	0.74
CaO	0.19	2.06	3.31	1.35	0.82	1.53
Na_2O	2.48	5.06	3.18	3.26	3.88	4.02
K_2O	5.92	5.06	4.02	5.51	6.01	5.21
TiO_2	0.20	0.21	0.48	0.23	0.14	0.26
P_2O_5	0.13	0.28	0.32	0.13	0.23	0.16
MnO	0.05	0.10	0.13	0.06	0.03	0.09
Loss 108°	0.09	0.20	0.08	0.08	0.06	0.17
Loss 1000°	0.93	0.74	1.01	0.67	0.78	0.90
TOTAL	100.15	99.94	99.77	100.67	100.42	100.48

59/589-594

REPORT continued

ANALYSIS OF SIX GRANITES

by S. Baker

The localities of the granites were :-

H53/3/1 - 8 miles S.E. Edwards Creek Railway Station, S.A.
K55/5/1 - Eastern end of water race, Tasmania.

H50/13/1B - Boya Quarry, W.A.
I55/16/10 - 13 miles from Hoskinstown, N.S.W.
H54/6/3 - 7 miles N.W. of Mt. Fitton Homestead, S.A.
H54/9/1 - 1 mile from Paralana Hot Springs, S.A.

The analyses resulted as follows :-

Sample No.	H53/3/1	K55/5/1	H50/13/1B	I55/16/10	H54/6/3	H54/9/1
SiO_2	52.26	74.82	73.72	71.92	71.91	71.52
Al_2O_3	15.70	13.64	13.96	13.51	15.04	16.06
Fe_2O_3	7.29	1.30	1.60	2.07	2.87	1.58
FeO	3.07	0.46	0.20	1.66	1.03	0.28
MgO	1.85	0.12	0.25	0.35	0.25	0.28
CaO	7.83	0.62	1.25	2.63	2.00	3.07
Na_2O	4.98	2.86	3.82	2.86	2.91	4.98
K_2O	4.55	4.55	4.17	3.35	3.35	1.26
$H_2O(105^\circ)$	0.02	nil	0.02	0.08	nil	0.06
loss on ignition (1000°)	0.90	0.82	0.59	1.00	0.75	0.55
TiO_2	0.48	0.11	0.10	0.23	0.22	0.14
P_2O_5	0.30	0.20	0.10	0.18	0.10	0.10
MnO	0.30	0.09	0.07	0.13	0.10	0.05
TOTAL:	99.53	99.59	99.85	99.97	100.53	99.93

59/564-567, 597, 598.

REPORT 1 continued

226/1
17th June, 1959.

ANALYSIS OF FIVE GRANITES

by S. Baker.

The rock samples were submitted by B.P. Walpole. The localities were :-

F54/6/2	Wonga Granite, Duchess, Queensland
D53/3/1	Garnetiferous Granite, Arnhem Bay, N.T.
F54/1/3	Yaringa Area Granite, Mt. Isa, Queensland
F54/2/9	Wonga Granite, Cloncurry, Queensland
F54/2/11	Naraku Granite, Cloncurry, Queensland.

Sample No.	F54/6/2	D53/3/1	F54/1/3	F54/2/9	F54/2/11
SiO_2	72.10	71.92	68.94	70.90	72.70
Al_2O_3	13.77	15.39	15.38	13.81	14.49
Fe_2O_3	2.00	1.47	0.83	0.93	0.90
FeO	1.29	0.80	2.90	1.00	0.80
MgO	0.30	0.44	0.75	0.35	0.28
CaO	1.43	1.49	1.99	1.93	0.81
Na_2O	3.22	2.86	3.29	3.70	3.71
K_2O	6.06	4.67	4.11	6.19	5.24
$H_2O(105^\circ)$	nil	0.05	0.06	nil	0.06
loss on ignition (1000°)	nil	0.51	0.70	0.28	0.41
TiO_2	0.13	0.08	0.24	0.21	0.08
P_2O_5	0.05	0.05	0.35	0.05	0.09
MnO	0.04	0.04	0.08	0.07	0.05
TOTAL :	100.39	99.77	99.62	99.42	99.62

59/601-606

REPORT 1 continued 29th June, 1959.

ANALYSIS OF SIX GRANITES

by S. Baker

The localities of the granites were :-

F54/2/1 - Cloncurry, Q'ld.
F54/5/1 - Urandangi, Q'ld.
H53/10/1 - Wilgena, S.A.
F54/1/7 - Mt. Isa, Q'ld.
I54/13/1 - Encounter, S.A.
G53/9/1 - Indulkana, S.A.

The analyses resulted as follows :-

Sample No.	F54/2/1	F54/5/1	H53/10/1	F54/1/7	I54/13/1	G53/9/1
SiO_2	63.62	72.68	74.58	72.90	76.82	75.06
Al_2O_3	14.57	12.94	11.84	10.57	10.78	13.10
Fe_2O_3	4.19	2.56	1.26	3.65	0.10	1.27
FeO	3.30	1.52	0.80	1.52	1.50	0.48
MgO	1.61	0.66	0.12	3.92	0.93	0.26
CaO	3.82	2.57	0.81	0.10	0.50	1.60
Na_2O	3.61	4.88	4.35	4.67	2.65	5.41
K_2O	2.40	1.10	4.93	1.26	5.18	1.77
$H_2O(105^\circ)$	0.10	0.03	0.03	0.10	0.03	nil
H_2O(loss on ignition 1000°)	1.56	0.41	0.68	0.98	0.79	0.39
TiO_2	0.43	0.30	0.10	0.25	0.07	0.07
P_2O_5	0.25	0.15	0.08	0.07	0.14	0.14
MnO	0.18	0.06	0.10	0.06	0.03	0.06
TOTAL :	99.64	99.86	99.68	100.05	99.52	99.61

59/612-617

226/1

REPORT 1 continued

12th August, 1959.

ANALYSIS OF FIVE GRANITES

by S. Baker

The localities of the granites were :-

F54/2/4 - Cloncurry, Queensland.
F54/6/4 - Duchess, Queensland.
E54/12/2 - Georgetown, Queensland
F54/6/8 - Duchess, Queensland
F54/2/8 - Cloncurry, Queensland.

The analyses resulted as follows :-

Sample No.	F54/2/4	F54/6/4	E54/12/2	F54/6/8	F54/2/8
SiO_2	71.48	72.62	68.94	70.56	72.78
Al_2O_3	15.19	14.33	15.99	14.25	12.27
Fe_2O_3	1.48	0.29	0.53	2.16	1.54
FeO	1.29	2.38	2.39	1.52	2.47
MgO	0.12	0.29	0.33	0.66	0.45
CaO	1.25	1.44	1.94	1.75	1.56
Na_2O	3.98	2.54	3.18	3.71	2.44
K_2O	4.04	5.05	5.20	4.17	5.05
$H_2O(105^\circ)$	0.04	nil	0.02	0.02	nil
H_2O (loss on ignition 1000°)	0.47	0.33	0.58	0.64	0.69
TiO_2	0.11	0.09	0.13	0.09	0.08
P_2O_5	0.10	0.08	0.10	0.13	0.11
MnO	0.07	0.07	0.09	0.07	0.05
TOTAL	99.62	99.51	99.42	99.73	99.49

59/678 - 682

226/1

REPORT 1 continued

24th August, 1959.

ANALYSIS OF SIX GRANITES

by A. McClure

The localities of the granites were :-

F54/1/5 - Mt. Isa, Q'ld.
F54/2/3 - Cloncurry, Q'ld.
F54/6/5 - Duchess, Q'ld.
F54/6/9 - " "
F54/6/11 - " "
E55/9/1 - Einasleigh, Q'ld.

The analyses resulted as follows :-

Sample No.	F54/1/5	F54/2/3	F54/6/5	F54/6/9	F54/6/11	E55/9/1
SiO_2	76.61	75.78	71.21	73.84	71.70	62.61
Al_2O_3	11.66	14.00	13.94	14.13	13.63	15.96
Fe_2O_3	0.63	0.64	0.87	0.98	2.02	1.95
FeO	1.65	0.23	2.52	1.18	1.47	4.95
MgO	0.20	0.37	0.76	0.48	0.75	2.93
CaO	0.88	0.32	2.28	0.75	1.84	4.75
Na_2O	1.40	2.38	2.88	2.40	3.81	2.90
K_2O	5.48	6.15	4.68	6.12	4.51	2.77
$H_2O(105^\circ)$	0.06	0.06	0.07	0.04	0.07	0.07
H_2O(loss on ignition 1000°)	0.46	0.86	0.77	0.67	0.48	0.84
TiO_2	0.16	0.03	0.23	0.08	0.30	0.46
P_2O_5	0.07	0.09	0.07	0.07	0.10	0.18
MnO	0.04	0.00	0.08	0.01	0.05	0.09
TOTAL :	99.30	100.91	100.36	100.75	100.73	100.46

59/668 - 673

10th September, 1959.

REPORT 1 continued

ANALYSIS OF SIX GRANITES

by S. Baker

The localities of the granites were :-

F54/6/7 - Duchess, Queensland
E55/9/6 - Einasleigh, "
E55/9/8 - " "
H56/10/2 - Dorrigo, N.S.W.
H56/6/2 - Grafton, N.S.W.
H56/9/5 - Manilla, "

The analyses resulted as follows :-

Sample No.	F54/6/7	E55/9/6	E55/9/8	H56/10/2	H56/6/2	H56/9/5
SiO_2	72.58	59.98	58.56	69.74	64.00	65.74
Al_2O_3	15.55	18.17	18.33	14.39	16.47	15.80
Fe_2O_3	0.80	3.20	3.15	1.00	2.00	2.00
FeO	0.46	2.99	4.40	2.70	2.68	1.72
MgO	0.63	3.50	2.86	1.82	2.12	2.30
CaO	1.75	6.33	6.58	2.12	3.89	3.38
Na_2O	3.62	3.29	3.30	3.30	3.92	3.82
K_2O	1.77	1.26	1.20	3.41	3.28	3.66
H_2O(105°)	0.05	0.05	0.08	0.04	nil	0.06
H_2O(loss on ignition 1000°)	0.25	0.48	0.45	0.43	0.46	0.60
TiO_2	0.12	0.30	0.30	0.30	0.28	0.30
P_2O_5	0.10	0.09	0.11	0.10	0.13	0.09
MnO	0.05	0.10	0.14	0.10	0.08	0.09
TOTAL :	99.73	99.74	99.46	99.45	99.31	100.56

59/685 - 690

REPORT 1 continued

November, 1959.

ANALYSIS OF SIX GRANITES

by S. Baker

The localities of the granites were :-

E55/9/9 - Einasleigh, Q'ld.
E54/16/4 -Gilberton, "
F54/5/2 - Urandangi, "
E54/12/7- Georgetown, "
D53/1/1 - Cooper Creek, N.T.
H54/6/1 - Moolawatana, S.A.

The analyses resulted as follows :-

Sample No.	E55/9/9	E54/16/4	F54/5/2	E54/12/7	D53/1/1	H54/6/1
SiO_2	65.42	70.58	69.44	63.56	60.42	71.84
Al_2O_3	16.70	13.80	13.50	16.10	18.20	13.04
Fe_2O_3	1.80	1.00	1.00	0.90	2.10	0.45
FeO	2.50	1.00	1.50	3.60	2.50	2.00
MgO	1.97	0.53	0.39	3.00	1.65	0.47
CaO	3.00	1.30	1.13	3.00	4.51	0.90
Na_2O	4.50	4.21	3.26	4.21	3.80	3.12
K_2O	3.26	7.37	9.60	5.32	6.96	8.39
$H_2O(105^\circ)$	nil	nil	0.06	0.05	nil	nil
H_2O(loss on ignition 1000°)	0.50	0.40	0.40	0.41	0.30	0.30
TiO_2	0.08	0.07	0.10	0.10	0.10	0.09
P_2O_5	0.05	0.05	0.05	0.05	0.05	0.04
MnO	0.10	0.06	0.06	0.05	0.07	0.06
TOTAL :	99.88	100.37	100.49	100.35	100.66	100.70

59/782 - 787

REPORT 2 45ACT/1

WATER ANALYSIS

During the year, analyses were carried out on many bore waters from the A.C.T. The analysts were W.J. Thomas and A. McClure, and the results are given here in chronological order.

A complete table is given showing the analyses of bore waters obtained from properties and stations within the Canberra 4-mile Sheet area, and includes some of the above results.

In a further report, the uranium and phosphorus content of some waters collected from bores in the A.C.T. and N.S.W. are given.

45ACT/1
13th January, 1959.

ANALYSIS OF BORE WATERS

by W. J. Thomas

Sample 1 - from C.S.I.R.O. Experimental Farm, Weetangera.A.C.T.
Sample 2 - from Gribble's Farm, Weetangera. A.C.T.

The analyses resulted as follows :-

Sample No.	1.		2.	
Total Solids (105°C)	950 ppm		799 ppm	
		m-equiv./l.		m-equiv./l.
Calcium	81.4	"or 4.07	133	"or 6.65
Magnesium	55.0	"or 4.59 "	85	"or 7.1 "
Sodium	84.5	"or 3.67 "	72	"or 3.13 "
Bicarbonate	408.0	"or 6.80 "	606	"or 10.1 "
Sulphate	37.0	"or 0.77 "	128	"or 2.66 "
Chloride	165.0	"or 4.65 "	145	"or 4.08 "
	pH 7.13		pH 6.82	

REPORT 2 continued

ANALYSES OF BORE WATERS

by W. J. Thomas

Sample 1 - from Hall Bore 3 (M.Southwell "Fairview" Hall)
Sample 2 - Paddy's River Bore No.1 (Smith, Tharwa)
Sample 3 - Woden Bore 2 (Hyle, "Hill Station" Cooma Road, A.C.T.)
Sample 4 - B.M.R./Bore at Red Hill, A.C.T.

The analyses resulted as follows :-

Sample No.	1.	2.
Total Solids (105°C)	4265 ppm	1046 ppm
	m-equiv./l.	m-equiv./l.
Calcium	243 " or 12.1	171 " or 8.5
Magnesium	459 " or 38.2 "	72 " or 6.0 "
Sodium	170 " or 7.4 "	120 " or 5.2 "
Potassium	not detected	5 " or 0.2 "
Bicarbonate	744 ppm or 12.4 "	777 " or 12.9 "
Sulphate	1510 or 31.5 "	123 " or 2.6 "
Chloride	497 or 14.0 "	162 " or 4.6 "
Nitrate	not detected	trace (less than 10 ppm)
	pH 8.1	pH 7.6

Sample No.	3.	4.
Total Solids (105°C)	961 ppm	502 ppm
	m-equiv./l.	m-equiv./l.
Calcium	117 " or 5.9	106 " or 5.3
Magnesium	34 " or 2.9 "	24 " or 2.0 "
Sodium	110 " or 4.8 "	40 " or 1.7 "
Potassium	20 " or 0.5 "	17 " or 0.4 "
Bicarbonate	348 " or 5.8 "	438 " or 7.3 "
Sulphate	102 " or 2.1 "	21 " or 0.4 "
Chloride	217 " or 6.1 "	37 " or 1.0 "
Nitrate	not detected	present (less than 100 ppm)
	pH 7.8	pH 7.4

59/570 - 573

23rd September, 1959.

REPORT 2 continued

ANALYSIS OF SOME WATER SAMPLES

by A. McClure

Sample 4 - from Lake George.

Sample 6 - from Bore No. Lanyon 2 on the property of B. Moore, "Burroburroo".

Sample 9 - from well on the property of D. Shaw, Tuggeranong.

The analyses resulted as follows :-

Sample No.	4.		6.		9.	
	p.p.m.	m-equiv./l.	p.p.m.	m-equiv./l.	p.p.m.	m-equiv./l.
Ca^{++}	24	1.2	192	9.6	7	0.35
Mg^{++}	28	2.3	108	8.9	0.2	0.02
Na^{+}	440	19.1	188.2	8.2	14	0.61
K^{+}	3.7	0.1	2.7	0.07	2.1	0.05
		22.7		26.77		1.03
Cl'	610	17.2	554	15.6	5	0.14
SO_4	72	1.5	27	0.56	not detected	
CO_3	not detct.		not detct.		" "	
HCO_3	272	4.45	628	10.3	32	0.52
		23.15		26.46		0.66
Total Solids at 180°	1406 p.p.m.		1616 p.p.m.		79 p.p.m.	
Conductivity at 20°C	2250 µmho		2340 µmho		67.6 µmho	
pH at 20°C	8.49		7.25		7.1	
NO_3	> 0.01 p.p.m.		> 0.01 p.p.m.		> 0.01 p.p.m.	

REPORT 2 contd.

ANALYSIS OF BORE WATERS 14th October, 1959.

by A. McClure

Sample 1 - from Mr. T. Gribble's property (Belconnen 5).
Sample 3 - from Bore No. Hall 5, on property of Mr. C.Southwell.

The analyses resulted as follows :-

Sample No.	1.		2.	
	p.p.m.	m-equiv./l.	p.p.m.	m-equiv./l.
Na^+	65	2.83	30	1.3
K^+	3	0.01	0.4	-
Ca^{++}	130	6.5	30	1.5
Mg^{++}	85	7.04	26	2.1
		16.4		4.9
Cl	99	2.8	38	1.1
SO_4	143	3.0	not detected	-
CO_3	not detected	--	" "	-
HCO_3	564	9.3	175	2.9
NO_3^-	0.2		1	
NO_2^-	less than 0.01		0.04	
		15.1		4.0

Conductivity at 18°C)	1224 µmhc.	422 µmho
pH " "	7.18	7.08
Total Solids at 180°C	924 p.p.m.	288 p.p.m.

B.M.R. Bore Reference Name	Bore Owner	Date sample taken	Total Solids (105°C) ppm	Analysis: Calcium ppm	Calcium meq/l	Magnesium ppm	Magnesium meq/l	Sodium ppm	Sodium meq/l	Potassium ppm	Potassium meq/l	Bicarbonate (HCO_3) ppm	Bicarbonate meq/l	Chlorine ppm	Chlorine meq/l	Sulphate (SO_4) ppm	Sulphate meq/l	pH
City 1	H.V.Fitzhardinge Jerrabomberra Ave.	22/5/58	552	68	3.4	62	5.0	94	4.1	1	-	178	3.0	301	8.5	46	1.0	6.8
City 2	G. Pinni Narrabundah Lane	16/4/58	390	47	2.4	22	1.8	33	1.4	3	0.1	260	4.3	46	1.3	N.D.		6.6
Belconnen 1	D. Tully Coppins Crossing Road	26/5/58	482	71	3.5	43	3.6	54	2.3	2		240	4.0	190	5.3	32	0.1	7.8
Belconnen 2	"	26/5/58	332	45	2.3	22	1.9	31	1.4	1		282	4.0	63	1.8	5		7.9
Belconnen 4	N. Constance Charnwood Road	?/2/58	1000*	104	5.2	75	6.2	41	1.8	10	0.3	577	9.5	106	3.0	91	1.9	6.8
Gungahlin 2	E. Cavanagh, Gundaroo Rd., Ginnindera	3/7/58	878	147	7.4	52	4.3	69	3.0			486	8.1	161	4.6	86	1.8	7.5
Gungahlin 2	"	10/4/57	730	130	6.5	55	4.5	75*	3.3*			456	7.5	184	5.2	78	1.6	7.0
Gungahlin 3	R. G. Grace Gungaderra	10/4/57	655	108	5.4	51	4.2	100*	4.3*			610	10.0	67	1.9	101	2.1	7.0
Gungahlin 5	H.E. Curran Barton Highway	26/5/58	391	70	3.5	41	3.4	33	1.5	2		302	5.0	98	2.8	29	0.5	8.3
Kowen 1	Dept. of Interior Kowen Forest	22/5/58	734	149	7.5	62	5.1	97	4.2	1		542	9.0	229	6.5	41	1.0	8.1
Hall 1	R.H. Brown, Hall	26/5/58	2242	324	16.2	202	16.9	150	6.5	3		590	9.8	709	20.0	510	10.6	7.5
Hall 1 ϕ	"	3/7/58	2025	218	10.9	146	12.1	226	10.0			646	10.8	413	11.4	490	10.9	7.3
Hall 2	C. Moore Barton Highway	4/6/58	1445	214	10.7	136	11.3	82	3.5	1		464	7.7	528	14.7	151	3.0	7.3
Hall 5	C.R.E. Southwell "Brookland" Hall	?/2/58	300	32	1.6	26	2.2	31	1.4	5	0.1	200	3.3	110	3.1	N.D.		6.4
Hall 7	J.J.Goslett, Hall	12/5/58	290	26	1.3	11	0.9	25.8	1.1	1		165	2.7	27	0.8	N.D.		7.3
Hall 9	H.C.Moore Charnwood Road	30/5/58	366	70	3.5	27	2.3	35	1.5	1		274	4.6	96	2.7	N.D.		7.8
Stromlo 4	B.K. Champion Kambah Road	21/8/58	874	100	5.0	94	7.7	59*	2.5*			598	9.8	193	5.5	N.D.		7.5
Stromlo 5	P.S. Gallagher Kambah Road	23/5/58	1100	192	9.6	99	8.2	98	4.3	2		606	10.1	461	13.0	N.D.		7.1
Stromlo 6	R. Campbell Kambah Road	23/5/58	353	62	3.1	33	2.7	34	1.5	1		268	4.5	92	2.6	N.D.		7.5
Stromlo 7	G.C. Hyles Kambah Road	?/5/58	940	81	4.0	46	3.8	173	7.5	3	0.1	396	6.5	321	9.1	N.D.		7.1
Williamsdale 2	V. McDonald "Oakvale", Williamsdale	21/3/57	328	28	1.4	22	1.9	69*	3.0*			190	3.1	30	0.9	116	2.4	5.5
Wells																		
Stromlo 1W	Dept. of Interior Ionspheric Station Mt.Stromlo	9/1/58	238	4	0.2	12	1.1	46*	2.0*			169	2.8	18	0.5	N.D.		7.1

ppm = parts per million
meq/l = milliequivalents per litre

N.D. = not detected
* = estimated value only

ϕ the sample taken on 26/5/58 was at commencement of pumping
the sample taken on 3/7/58 was at the end of a test

15/7/58 to 15/7/59

B.M.R. Bore reference	BORE OWNER	Date Sample taken	Total Solids (105°C)	Analysis														
				Calcium		Magnesium		Sodium		Potassium		Bicarbonate		Chloride		Sulphate		
			ppm	ppm	meq/l	ppm	meq/l	ppm	meq/l	ppm	meq/l	ppm	meq/l	ppm	meq/l	ppm	meq/l	pH
City 1	H.V.Fitzhardinge Jerrabomberra Ave.	29/8/58	293	34	1.7	20	1.7	37	1.6			216	3.6	32	0.9	18	0.4	7.8
City 3	Lessee 11 Torres St. Red Hill	5/3/59	502	106	5.3	24	2.0	40	1.7	17	0.4	438	7.3	37.3	1.0	21	0.4	7.4
Belconnen 6	C.S.I.R.O. Glebe Crossing Weetangera	6/12/58	799	81	4.1	55	4.6	85	3.7			408	6.8	165	4.7	37	0.8	7.1
Woden 2	R.G. Hyles, Hill Station, Cooma Road.	3/3/59	961	117	5.9	34	2.9	110	4.8	20	0.5	348	5.8	217	6.1	102	2.1	7.8
Lanyon 2	B. Moore, "Burraburroo" Williamsdale	19/8/58	1980	208	10.4	117	9.8	197	8.6			744	12.4	574	16.2			7.2
Stromlo 1	R.B. Tanner, Piney Creek, Uriarra	26/8/58	1470	214	10.7	99	8.3	47	2.0			660	11.0	276	7.8	169	3.5	6.7
Hall 1	R.H. Brown HALL	22/8/58	1968	262	13.1	154	12.9	146	6.3			654	10.9	390	11.0	495	10.3	7.3
Hall 3	M. Southwell, "Fairview", Hall	20/8/58	3832	527	26.3	284	23.7	130	5.7			648	10.8	500	14.1	1465	30.5	7.0
Hall 3	"	3/3/59	4265	243	12.1	459	38.2	170	7.4			744	12.4	497	14.0	1510	31.5	8.1
Hall 6	J.J. Goslett, Surveyors Hill, HALL	20/8/58	375	67	3.4	26	2.2	33	1.4			330	5.5	30	0.8	13	0.3	7.3
Hall 10	S.J. Southwell, "Wattle Park" Hall	20/8/58	1499	203	10.1	112	9.3	145	6.3			702	11.7	432	12.2	98	2.0	7.3
(Wall) ---	L. Reid, Gundaroo Road, Gundaroo	29/8/58	1230	77	3.8	65	5.4	293	12.7			600	10.0	392	11.0	65	1.4	7.3
Michelago 1	T.J. Lawler, Cooma Road, Michelago	19/8/58	1054	164	8.2	56	4.7	150	6.5			738	12.3	234	6.4	19	0.4	7.2
Michelago 2	T.A. Lawler Cooma Road, Michelago	19/8/58	765	112	5.6	60	5.0	46	2.0			504	8.4	138	3.9	11	0.2	7.8
Bungendore 1	F.N. Braund "Foxlow" Bungendore	17/7/58	272	19	1.0	12	1.0	64	2.8			90	1.5	94	2.7	33	0.7	7.2

ppm = parts per million

meq/l = milliequivalents per litre

URANIUM AND PHOSPHORUS CONTENT OF SOME BORE WATERS

by S. Baker

Below are results for the determination of Uranium and Phosphate on samples of bore water submitted by M. Reynolds. For comparison a sample of Canberra tap water is included.

	U (p.p.m.)	P_2O_5 (p.p.m.)
Morkira (Gimoochie) Bore	not detected	0.001
Springvale Bore No.1	" "	0.002
" " No.2	" "	0.001
" " No.3	" "	0.002
" " No.5	" "	not detected
" " No.6	" "	0.001
" " No.9	" "	0.002
Lucknow Bore No.3	0.002	0.002
" " No.4	not detected	not detected
" " No.5	" "	0.001
" " No.9	" "	0.001
" " No.10	" "	0.001
" " No.11	" "	not detected
" " No.18	" "	" "
Brighton Downs No.4	" "	" "
" " No.6	0.001	" "
Warra Homestead	not detected	0.002
" " No.1	0.002	0.002
" " No.2	not detected	not detected
Merrion	" "	0.001
Fish Hole (Govt.)	" "	0.002
Spring Creek "	0.001	not detected
Canary - Dingo Creek	not detected	" "
Westward Ho, Homestead	" "	" "
" " Hamilton	" "	0.001
Paton Downs - Netting	0.002	not detected
Island Bore, Nudgeacca	0.004	" "
Coorabulka No.3	not detected	" "
" No.4	" "	" "
" No.5	" "	" "
" No.8	" "	0.001
" No.9	" "	0.002
" No.10	" "	0.002
" No.12	" "	0.001
Marion Downs - King Creek	" "	not detected
Breadalbane bore	" "	" "
Bedourie Town (Govt)	0.001	0.001
Cluny No.3	not detected	not detected
Lorna Downs - Homestead	0.002	0.001
" " Canary	not detected	0.001
Prospect	" "	0.002
" No.10	" "	not detected
" East Creek	" "	0.001
Saxby Downs, Homestead	" "	0.001
" " Euthella Trust	" "	0.002
Mt. Norman Bore	" "	0.001
Etheldale	" "	not detected
" Homestead	" "	" "
Old Pia	" "	" "
Clean skin	0.002	0.001
Canberra Tap Water	not detected	not detected

840/31
13th January, 1959.

REPORT 3

COMPLETE CHEMICAL ANALYSIS OF SOME ROCKS FROM THE GRAY CREEK AREA OF NORTH QUEENSLAND.

by S. Baker

The samples were submitted by D.H. Green and were obtained from the Gray Creek area of North Queensland.

The petrological work suggests that the rock types are part of a related magma sequence. The ultramafic rocks have been divided into two genetic types with differing chemical composition (H.H. Hess, 1938. Am.J.Sc.) - the field evidence is not conclusive as to which type or types these serpentinites belong.

Specimens submitted :-

1992	Hornblende granodiorite
2355b	" diorite
1917	Gabbro
1668f	Websterite (orthopyroxene 60%, diallage 40%)
2115	Serpentinite after dunite
2131	" " pyroxenite
2144c	" " peridotite
395a	" " peridotite, partly antigeritized

The chemical analysis resulted as follows :-

Sample No.	395a	2144c	1917	1668f	2115	2131	1992	2355b
SiO_2	40.14	38.10	46.30	51.20	37.00	41.92	61.50	53.18
Al_2O_3	2.40	3.58	14.44	0.31	0.89	1.77	19.75	13.65
Fe_2O_3	4.98	5.20	9.08	10.0	11.72	6.60	4.00	4.68
FeO	1.30	1.40	7.20	1.55	0.42	0.90	2.30	5.17
MgO	37.08	37.23	7.90	24.49	35.39	35.53	3.77	9.23
CaO	0.10	0.10	11.50	5.75	trace	0.25	2.83	7.91
$H_2O_{(100^oC)}$	0.01	0.02	0.02	nil	0.01	0.02	nil	nil
loss on ignition (1000^oC)	12.83	13.40	2.51	6.60	13.90	12.09	1.0	0.40
Na_2O	0.22	0.30	<0.01	<0.01	<0.01	0.25	3.80	4.20
K_2O	0.04	0.03	<0.01	<0.01	<0.01	0.01	0.63	0.40
NiO	0.25	0.23	-	-	0.12	0.40	-	-
P_2O_5	0.03	0.05	0.08	0.06	0.04	0.07	0.15	0.20
MnO	0.12	0.09	0.18	0.08	0.17	0.12	0.20	0.10
TiO_2	0.10	0.10	0.24	-	-	0.06	0.20	0.30
Cr_2O_3	0.40	0.58	-	0.22	0.23	0.40	<0.20	<0.20
	100.00	100.41	99.45	100.26	99.89	100.39	100.13	99.42

Lab. No. 58/525,526,527,532-536.

REPORT 4 198PNG/1

13th January, 1959.

ASSAY FOR CHROMIUM AND NICKEL ON TWO ROCK SAMPLES FROM NEW GUINEA

by S. Baker

Following are results for the determination of chromium and nickel on two rock samples, submitted by J.E. Thompson.

	Pyroxenite	Serpentinite
Sample No.	P.195	P.196
Ni	0.04%	0.20%
Cr_2O_3	0.10%	0.21%

58/512, 513.

REPORT 5 14th January, 1959.

ANALYSIS OF WATERS IN CONNECTION WITH THE WAPET OIL-DRILLING PROGRAMME

by W.J. Thomas

The water samples, submitted by WAPET, were from Meda No.1 well. The analyses resulted as follows :-

Swab sample 5110 - 5130 formation fluid

Total Solids (105°C) 37,035 p.p.m.

Suspended matter filtered from decanted liquid and ignited (800°C) : 783 "

Colloidal matter precipitated by boiling : nil

	p.p.m.	milli equivalents per litre
Calcium	840	42.0
Magnesium	135	11.3
Iron	50	2.7
Aluminium	441	49.0
Sodium	12000	522.0
Potassium	20	0.5
Bicarbonate	430	7.1
Sulphate	131	2.7
Chloride	21000	592.0

pH 7.0

W.S.O. Test 4 5150 5152
46-50 stand.

Total Solids (105°C) 53,955 p.p.m.

Suspended matter filtered from decanted liquid and ignited (800°C) : 402 "

Colloidal matter precipitated by boiling: 400 p.p.m. Fe
(actual weight 373 p.p.m. Fe_2O_3)

	p.p.m.	milli equivalents per litre
Calcium	4,117	205.8
Magnesium	101	8.4
Iron	244	13.1
Aluminium	80	20.0
Sodium	10,750	467.0
Potassium	80	2.2
Bicarbonate	774	12.9
Sulphate	562	11.7
Chloride	23,100	650.0

pH 6.6

REPORT 5 contd.

DST 8A 5280 - 5310

50th Stand.

Total Solids (105°C) 50,910 p.p.m.

Suspended matter filtered from decanted liquid and ignited (800°C) : 615 "

Colloidal matter precipitated by boiling : nil

	p.p.m.	milli equivalents per litre
Calcium	2060	103
Magnesium	78	6.5
Iron	166	8.9
Aluminium	582	6.5
Sodium	5170	224.8
Potassium	100	2.6
Bicarbonate	504	8.4
Sulphate	333	6.9
Chloride	12,262	344.5

pH 6.8

DST 3 65 Stand

Total Solids (105°C) 2970 p.p.m.

Suspended matter filtered from decanted liquid and ignited(800°C) 15 "

Colloidal matter precipitated by boiling : nil

	p.p.m.	milli equivalents per litre
Calcium	343	17.1
Magnesium	-	
Iron	-	
Aluminium	18	2.0
Sodium	600	26.2
Potassium	20	0.5
Bicarbonate	504	8.4
Sulphate	272	5.7
Chloride	1064	30.0

pH 7.6

DST 6c 7594 - 7669 73rd Stand

Total Solids (105°C) 42060 p.p.m.

Suspended matter filtered from decanted liquid and ignited (800°C) 543 p.p.m.

Colloidal matter precipitated by boiling : nil

	p.p.m.	milli equivalents per litre
Calcium	2700	135
Magnesium	-	-
Iron	-	-
Aluminium	62	7
Sodium	10,150	442
Potassium	120	3
Bicarbonate	420	7
Sulphate	393	8.2
Chloride	20,135	570

pH 8.35

REPORT 6

45ACT/1
23rd January, 1959.

ANALYSIS FOR BORON OF A WATER FROM CANBERRA

by W.J. Thomas

The result of the determination for Boron, on water submitted by E.G. Wilson, is set out below :

Location: City 1 - H.V. Fitzhardinge, Jerrabomberra Ave, (Sample taken after 5 minutes)

Determination required : Boron

Results : Less than one part per million borate (BO_3)

REPORT 7

58W/1
23rd January, 1959.

MANGANESE ASSAYS ON SOME WEST AUSTRALIAN ROCKS

by W.J. Thomas

The results of the analyses of manganese ores, from Ripon Hills, W.A. submitted by L.de la Hunty for manganese determination are as follows :

			% Manganese
48498(a)	White dolomite	Mt. Sydney	2.9 (as Mn)
98498(b)	Purple dolomite	"	2.0
1317	Manganese shale	Mt. Cooke	46.2
1323	Manganese ore	Bee Hill	40.1
1336	"	"	28.3
1341	"	"	46.3
1354	"	Mt. Sydney	47.9
1356	"		55.8
1359	Purple dolomite	"	0.8
1360	Red dolomite	"	1.5
1361	Manganese ore	Woodie Woodie	56.4
1363	? Barytic Mn ore	"	35.3
1311	Shale with Mn nodules	Mt. Cooke	10.3
1365	Basalt	"	3.7
1366	Shale with Mn pellets	"	4.0
1368	Dolomitic limestone	Ripon Hills	1.8

Repeat analyses on two previous samples gave the following results :

	98429	98430
MnO_2	53.6% (33.9% Mn)	61.5% (38.9% Mn)
Fe_2O_3	21.5	29.5
Insol.	13.0	1.5
Loss at 850°C	8.8	7.8
	96.9	100.3

151NT/1

REPORT 8

29th January, 1959.

PARTIAL ANALYSIS OF SOME LATERITES FROM JERVOIS RANGE, N.T.

by W.J. Thomas

The samples, submitted by R. Vine, were from Tent Hill, Jervois Range, reference No. F53/11/370. The analyses resulted as follows :-

Sample No.	Insoluble in HCl.	Loss on Ignition	SiO_2	Fe_2O_3	Al_2O_3
	(White clay & silica)	(950°C)			
1.	79.7%	10.3%	62.8%	2.2%	5.0%
2.	85.0%	9.5%	65.1%	3.0%	2.2%
3.	85.0%	9.0%	65.1%	0.5%	4.4%
4.	83.0%	9.0%	62.3%	5.6%	2.1%
5.	55.0%	9.5%	44.6%	32.0%	2.1%
6.	92.0%	6.0%	77.2%	1.5%	1.0%
7.	88.0%	7.8%	70.3%	1.0%	1.0%
8.	89.3%	7.8%	70.8%	0.5%	1.0%
HA22C	71.8%	8.6%	50.0%	19.0%	0.5%

59/551 - 559

REPORT 9. 30th January, 1959.

ASSAYS FOR COPPER, LEAD, ZINC, BISMUTH AND SILVER ON ORE SAMPLES FROM THE JERVOIS RANGE, N.T.

by A. McClure

The assays requested by geologist W. Robertson for some Jervois Range ore samples are tabulated below:

Sample No.	Cu%	Pb%	Zn%	Bi%	Ag. oz/long ton
JHA 20	15.10	0.6	5.2	0.01	-
21	9.10	6.2		0.06	3.0
22	4.81	4.9		0.01	3.0
23	4.82	0.5		0.05	0.5
24	10.60	0.4		0.03	1.9
25	7.51	0.3		0.01	1.9
26	4.73				1.7
27	2.72	0.4	0.3	0.01	1.0
28	1.41				0.6
29	6.07				1.1
30	7.18				2.3
31	2.36	6.7	0.1	0.05	2.3
32	1.08	6.8	<0.02	<0.005	1.0
33	7.49	5.3			2.7
34	4.22	9.9			2.2
35	9.83	1.9	<0.02	0.01	
36	3.10				<0.1
37	3.13	<0.05	0.02	0.02	0.1
38	0.52				<0.1
39	5.01				0.3
40	1.74				0.1
41	6.40				
158	3.93	<0.05	<0.02	0.01	0.3
159	0.51	<0.05	<0.02	< 0.005	
131	7.41	59.0	<0.02	0.32	6.4
132	0.31	8.3	<0.02	0.02	0.6
146	8.17	0.5	<0.02	0.23	
70	9.29				
71	3.01	<0.05	<0.02	<0.005	
72	9.35				1.2
73	1.75				
74	11.72				1.9
75	2.87				
76	1.32				
77	1.16				
78	4.73	<0.05	<0.02	0.01	0.9
79	2.68	0.1			
80	3.73				
81	6.52				
82	4.51				
83	3.58	<0.05			
84	8.49	"	<0.02	0.01	0.7
85	17.60				0.7
126	9.29	"	"	<0.005	3.3
130	16.58	"			3.1

130ACT/1

REPORT 10

6th February, 1959

ANALYSIS OF TWO BRICKS FOR LIME, CANBERRA, A.C.T.

by A. McClure

Two bricks were submitted for carbonate analysis. The results were :

Sample A.	CO_2 = 0.15%	$CaCO_3$ = 0.3%
Sample B.	CO_2 = 0.10%	$CaCO_3$ = 0.2%

163G/1

REPORT 11

9th March, 1959.

ANALYSIS OF TWO SAMPLES OF LIME

by A. McClure

Two samples of "putty lime" submitted by Mr. Kickik on behalf of the Snowy Lime Company have analysed as follows :

	1. Sample of Plasterers Lime.	2.Sample of Bricklayers Lime.
Water	48.8%	56.7%
remainder of analysis on oven dried (108°) material		
Total bases (as $Ca(OH)_2$)	91.5%	92.5%
$CaCO_3$	2.2%	4.3%
Al_2O_3	1.3%	0.8%
Fe_2O_3	0.3%	0.3%
SiO_2	0.9%	1.3%

REPORT 12 163G/1

31st March, 1959.

GERMANIUM IN COAL ASH FROM N.S.W.

by A.D. Haldane

The following results were obtained for the germanium content of 18 samples of coal ash from various power stations submitted by the Electricity Commission of New South Wales. The method of analysis was spectrochemical using a D.C. arc.

Sample		Germanium p.p.m.
1. Flue dust, No.7 boiler stack Lithgow Power Station		80
2. Dust ex base No.6 boiler stack Balmain Power Station		240
3. Left grit hopper discharge of No.6 boiler Balmain Power Station		20
4. Left cyclone discharge of No.6 boiler Balmain Power Station		50
5. No.1 grit hopper Liverpool Power Station		n.d. *
6. No.1 ducting Liverpool Power Station		"
7. Dust ex base of main stack Liverpool Power Station		10
8. No.3 grit hopper Liverpool Power Station		n.d.
9. No.3 ducting Liverpool Power Station		"
10. Dust ex No.1 boiler Wallerawang Power Station		< 5
11. C.B./1572	Sth. Brisbane Gasworks	180
12. C.B./1573		40
13. C.B./1574		2250
14. C.B./1575		770
15. C.B./1582	Queensland Glassworks	n.d.
16. C.B./1583		70
17. C.B./1584		40
18. C.B./1585		60

* n.d. = not detected; detection limit approximately 1 p.p.m.Ge.

Sample C.B./1585 (18) was contaminated with either fuel oil or kerosene, which was removed by extraction with dichlorethylene before analysis.

REPORT 13

2nd April, 1959.

ANALYSIS OF 10 SAMPLES SUBMITTED BY M. REYNOLDS FROM SPRINGVALE AREA, Q'LD.

By A. McCLURE

Sample No.	Moisture at 108°C %	Loss on ignition (1000°C) %	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	TiO_2 %	CaO %	MgO %	Na_2O %	K_2O %	TOTAL %	
W107C (1)	4.85	9.90	60.22	23.05	3.13	0.43	0.68	1.15	0.82	1.13	100.51	weathered rocks
W107C (2)	0.76	12.18	12.54	8.17	65.50	0.18	0.44	0.06	0.89	0.40	100.3[illegible]	
W108 (1)	2.75	8.83	68.82	18.45	2.22	0.23	0.59	0.07	0.08	0.35	99.64	
W108 (2)	1.27	7.19	72.53	18.43	0.59	0.38	0.45	0.03	0.15	0.56	100.3[illegible]	
W107B (1)	6.46	8.94	59.64	20.80	5.37	0.43	1.07	0.16	1.18	1.54	99.[illegible]	
W107B (2)	7.12	8.96	58.75	21.28	5.55	0.47	0.34	0.18	1.83	2.08	99.44	
G53	0.17	40.50	9.72	2.94	0.96	trace	25.20	17.90	2.20	1.17	100.59	Limestones
G142A	0.08	31.28	26.34	4.81	0,84	trace	20.20	13.02	1.43	2.74	100.66	

Sample No.	Moisture (108°C) %	Loss on ignition %	SiO_2 %	Total Al_2O_3 %	Fe_2O_3 %	Available Al_2O_3 %	
S21	0.82	9.21	47.89	22.17	8.43	20.0	Laterites
W106	1.97	10.11	56.13	24.28	9.52		

Note :- (1) All results calculated on an oven dried (108°C) basis.

(2) Available Al_2O_3 in sample S21 calculated on basis of solubility in 50% H_2SO_4 .

59/574 - 583

151NT/1

REPORT 14

17th April, 1959.

ANALYSIS OF TWO POSSIBLE IRON-ORES, DULCIE RANGE, N.T.

by A. McClure

Two samples from the Dulcie Range, N.T. submitted by K. Smith assayed as follows :

Sample No.	Fe_2O_3%	Insolubles %	Moisture % (110°)
HA248a	39.6	43.3	0.65
HA350	25.7	53.6	0.37

106W/5.

REPORT 15

27th April, 1959.

COMPLETE ANALYSIS OF A DOLOMITE, CANNING BASIN, W.A.

by S. Baker.

Following are results for the analysis of a sample of Dolomite from Canning Basin, W.A. submitted by J. Veevers :-

SiO_2	3.54%	MgO	20.36%
$Fe_2O_3 + Al_2O_3$	0.98%	CO_2	44.10%
CaO	28.07%	H_2O + organic material	2.80%

Spectrographic examination of the sample by A.D. Haldane indicated the presence of the following elements (traces only):-

Na, K, Li, Ba, Sr, Cr, Mn, Ti, Cu.

59/595

63PNG/1

REPORT 16

5th May, 1959.

PARTIAL ANALYSIS OF TWO POSSIBLE IRON ORES

FROM FERGUSSON ISLAND, PAPUA.

by S. Baker.

Following are the results for the partial analysis of two samples from Fergusson Island, Papua, submitted by J.E. Thompson.

	P396	P398
Iron (as Fe)	14.74%	22.8%
Chromium (as Cr)	0.48%	1.51%
Nickel (as Ni)	0.20%	0.25%
Copper	trace	trace

59/568, 569.

94W/1

REPORT 17

15th May, 1959.

ANALYSIS OF TWO SAMPLES OF IRON ORE FROM PORT HEDLAND, W.A.

by S. Baker

Following are results for the analysis of two iron ore samples, from near Port Hedland, W.A., submitted by J.Veevers:

Samples (dried to constant weight at 105°C)	PH 1a	PH 1b
Fe_2O_3	74.90%	78.20%
SiO_2	7.23%	4.35%
Al_2O_3	2.80%	1.70%
Loss on ignition	12.94%	15.50%

59/599

106W/5

REPORT 18

27th May, 1959.

FULL ANALYSES ON THREE RADIOLARITES FROM W.A. AND N.T.

by S. Baker

Following are results for the analysis of samples of Radiolarite submitted by Miss I. Crespin.

Locality : 1 and 2 - Windelia Hill, Winning Station, Carnarvon Basin, Western Australia.

3 - Katherine-Darwin Area, N.T. (L.C. Noakes not sure of exact locality.)

SiO_2 (percent)	94.44	87.90	72.28
Fe_2O_3 "	0.94	0.45	0.66
Al_2O_3 "	1.79	7.01	19.04
Na_2O "	0.06	0.14	0.21
K_2O "	0.29	0.24	1.23
loss on ignition (1000°C)	1.99	3.72	6.74
CaO	not detected	trace	not detected
Cl	trace	trace	" "

All results refer to samples dried to constant weight at 105°C.

59/600

REPORT 19 2nd July, 1959.

TITANIUM ASSAYS ON SOME VARIED ROCK TYPES FROM CLONCURRY AREA, Q'LD.

by S. Baker

Specimen No.	Rock Type	Locality	4-mile Sheet	TiO_2
2770	Banded calc-silicate rock	Cleanskin Ck, N.W.Queensland	Cloncurry	1.8
2771	" " "	"	"	0.70
2636	" " "	"	"	0.96
J601	Para-amphibolite	near Rosebud Cu mine	"	1.4
2171	" "	Duchess	Duchess	
2169	" "	"	"	0.73
2183	" "	3 miles S.W. Duchess	"	0.86
2164	" "	5 " " "	"	1.3
4002	" "	¼ " E. "	"	0.63
9528	Calc-silicate rock	near Rosebud Cu mine	Cloncurry	0.36
7987	Ortho-amphibolite	Duchess	Duchess	2.9
2114	" "	¾ mile W. Duchess	"	1.0
4001	" "	¼ " E. "	"	2.7
2173a	" "	3 miles S.W. "	"	2.2
2173b	" "	3 " " "	"	1.7
4033	Metadolerite	20 miles S.S.E. Cloncurry	Cloncurry	1.0
2170	Dolerite	Duchess	Duchess	0.72
J204	Microgabbro	May Downs N.W. Queensland	Mt. Isa	1.7
4003a	Dolerite	2½ miles S.S.W. Duchess	Duchess	0.42
7902	Metadolerite	20 miles S.S.E. Cloncurry	Cloncurry	1.2
7911	Dolerite	Kuridala	Duchess	1.2
8000	Metadolerite	Duchess	"	0.60
2004	Ortho-amphibolite	"	"	0.63
1712	Para-amphibolite	"	"	0.83
1772	Calc-silicate rock	Cleanskin Ck.	Cloncurry	0.70

REPORT 20 9th July, 1959.

ANALYSIS OF BAUXITE SAMPLES FROM NEW GUINEA.

by A. McClure

The samples were submitted by J.E. Thompson.

	Sample Nos.				
	3	4a	4b	5b	7
Moisture in air-dry sample at 110°C	2.70%	10.40%	6.74%	7.76%	2.26%
SiO_2	22.03%	38.03%	34.72%	31.47%	7.90%
Available Al_2O_3	20.07%	30.73%	27.85%	28.43%	41.72%
Fe_2O_3	42.07%	14.87%	21.19%	24.20%	24.74%
TiO_2	1.13%	1.94%	1.84%	1.42%	1.88%
Loss on ignition at 1000°	14.11%	13.63%	14.14%	14.48%	23.17%
TOTAL	99.41	99.20	99.74	100.00	99.41

Results are calculated on a moisture free basis, so that summation does not include moisture in air-dry sample.

59/634-638

REPORT 21 106W/4-d
23rd July, 1959.

FULL ANALYSIS OF A ROCK CORE, GIRALIA, W.A.

by S. Baker

Following are results for the analysis of Core No.5, 500 feet, B.M.R. No.5 Bore, Giralia, W.A., submitted by M. A. Condon :-

SiO_2	28.12%
Al_2O_3	6.48%
Fe_2O_3	9.86%
FeO	20.18%
MgO	3.80%
CaO	2.50%
Na_2O	0.62%
K_2O	1.00%
TiO_2	0.48%
P_2O_5	0.90%
MnO	0.35%
Loss on ignition (H_2O, CO_2)	22.68%
Correction for O_2	2.25%
TOTAL	99.22%

Qualitative tests indicated the presence of carbonates.

59/619

206PNG/98

REPORT 22

29th July, 1959.

DETERMINATION OF WATER SOLUBLE MATERIAL IN A VOLCANIC ASH FROM NEW GUINEA

by S. Baker

Following are results for the analysis of water soluble material on samples submitted by G.A. Taylor.

Sample No.	Locality
MS/1	Manam. Dry ash from flow, south side of SE valley
MS/2	Nuge. SE valley 25/1/58
MS/3	Waris. Ash fall on Waris. 16/2/58

The water soluble material was obtained by digesting 10g of the powdered sample for approximately fourteen hours with 150 m.l. of water at about 70°C.

	MS/1	MS/2	MS/3
Cl^- percent	0.015	0.017	0.043
SO_4^{--} "	not detected	0.18	0.64
Na^+ "	0.006	0.016	0.0430
K^+ "	0.002	0.002	0.005
Ca^{++} "	0.017	0.057	0.23
Mg^{++} "	0.004	not detected	0.043

59/627

REPORT 23 206PNG/8

29th July, 1959.

ANALYSIS OF VOLCANIC MATERIALS FROM MANAM VOLCANO, NEW GUINEA

by S. Baker and A. McClure

The nature of the materials and the sampling positions are given, followed by the chemical analyses on page 33.

No.	Nature of Specimen
MC/1	Lava flow from main crater 10/1/58
MC/2	" " " " " 16/1/58
MC/3	" " " southern " 6/3/58
MC/4	Sample from nuee deposit which descended 18/10/57
MC/5	" " " " " " 26/12/57
MC/6	Composite sample of nuee deposits from eruption of 25/1/58
MC/7	Bomb-like boulders which were a conspicuous feature of the nuee deposits
MC/8	Cob lava forming a special type of nuee deposit
MC/9	Liquid lava bomb produced after the eruption in March, 1958.
MC/10	Scoriacous lapilli from Zogari eruption 25/1/58
MC/11	Fine ash which fell on Waris 16/2/58
MC/12	Ash which fell on the mainland 25/1/58

Analysis of Volcanic Materials from Manam Volcano, New Guinea

SAMPLE	SiO_2	Al_2O_3	Fe_2O_3	FeO	CaO	MgO	Na_2O	K_2O	MnO	TiO_2	P_2O_5	Loss 105°C	Loss 1000°C	TOTAL
MC/1	51.74	16.68	5.20	3.65	11.10	8.71	1.80	0.72	0.18	0.32	0.18	nil	nil	100.28
MC/2	52.16	16.62	6.23	2.73	10.96	8.45	1.80	0.70	0.16	0.30	0.22	nil	nil	100.33
MC/3	53.05	13.90	6.07	3.99	10.68	8.60	2.57	0.90	0.16	0.35	0.25	nil	nil	100.52
MC/4	53.08	14.84	5.96	3.81	10.70	7.37	2.61	0.83	0.16	0.35	0.19	0.03	0.07	100.00
MC/5	51.52	16.18	5.75	3.16	10.90	8.37	2.32	0.71	0.12	0.30	0.20	nil	nil	99.53
MC/6	53.20	14.39	6.11	3.60	10.93	8.30	2.44	0.74	0.15	0.33	0.22	0.03	nil	100.44
MC/7	52.79	14.28	4.90	4.75	11.08	8.66	2.46	0.79	0.16	0.34	0.17	0.02	nil	100.49
MC/8	51.45	14.56	5.01	4.43	10.99	8.64	2.48	0.91	0.16	0.35	0.15	0.02	nil	99.15
MC/9	51.74	15.84	6.33	2.99	11.15	8.42	1.26	0.72	0.13	0.31	0.20	nil	nil	99.09
MC/10	51.76	16.01	5.87	3.25	11.00	8.45	1.44	0.70	0.14	0.31	0.20	nil	nil	99.13
MC/11	51.76	16.29	5.20	3.02	11.10	8.31	2.10	0.74	0.14	0.32	0.18	nil	nil	99.16
MC/12	51.80	14.19	6.18	4.02	10.58	8.73	2.50	0.83	0.15	0.33	0.19	0.08	0.13	99.71

59/620 - 625, 628 - 633.

151NT/1

REPORT 24

30th July, 1959.

ANALYSIS OF RADIOLARITES, N.T. & NORTH-WEST Q'LD.

by S. Baker.

Following are results of the analyses of Radiolarite specimens for silica content submitted by Miss I. Crespin.

Sample No.	Locality	SiO_2 (percent)
118	Between West Point and Delissa Mission, N.T.	86.04
23A	Rumbalara, N.T.	83.46
S.28	Springvale 4-mile Sheet	7.64
G.134	Glenormiston 4-mile Sheet	94.54
B.160	Boulia 4-mile Sheet	74.28
G.526	Glenormiston 4-mile Sheet	72.68

Sample S.28 contains substantial amounts of aluminium, phosphate, magnesium and combined water.

59/626

45ACT/1

REPORT 25

17th August, 1959.

PARTIAL ANALYSIS OF MAGNETITES, PADDYS RIVER, A.C.T.

by A. McClure

Results are for magnetites from Paddys River, A.C.T., submitted for analysis by geologist D.E. Gardner.

Specimen	SiO_2 %	S —	Fe —	Fe_3O_4 %	Moisture at 110° %
1	5.0	nil	64.4	89.1	0.21
2	7.7	nil	63.5	87.5	0.16
3	2.8	nil	69.8	96.5	0.10
4	4.2	nil	64.3	88.8	0.28

Descriptions:

Specimen 1 - "Finely granular and massive magnetite with some (?)hematite and silicates. Central part of deposit"

2 - "Fine-grained magnetite and (?) hematite. A little porous possibly from weathering of earlier gangue minerals."

3 - "Massive magnetite. Central part of deposit."

4 - "Granular magnetite and (?)hematite. Mainly from upper part of ferruginous deposit."

59/674-677

COMPLETE ANALYSIS OF A SELECTION OF NORTH QUEENSLAND ROCKS

by A. McClure

The specimens were from various members of the Bagstowe Ring Dyke complex, Lockaber Granite and Butlers Igneous Complex, North Queensland. They were submitted by C. Branch. The analyses resulted as follows:-

SAMPLE No.	4-mile Ref. Localities	SiO_2	Al_2O_3	Fe_2O_3	FeO	CaO	MgO	Na_2O	K_2O	MnO	TiO_2	P_2O_5	loss 110°C	loss 1000°C	TOTAL
138 granite	E54/16. 1¾ miles N.E. of Bagstowe Homestead.	71.68	14.72	1.01	1.39	1.16	0.54	3.62	4.76	0.06	0.28	0.08	0.24	0.58	100.12
241 "	E55/13. 4 miles S.E. of Glenmore Homestead.	71.58	14.55	1.04	1.28	1.26	0.51	4.31	4.88	0.06	0.18	0.14	0.13	0.63	100.55
80 "	E55/13. 1½ miles S.E. of Bagstowe Homestead	77.58	12.59	1.14	0.02	0.29	0.10	2.58	4.60	0.06	0.11	0.04	0.33	0.34	99.78
287 "	E55/13. 4¾ miles E.N.E. of Glen-more Homestead	76.58	12.41	0.57	0.64	0.54	0.18	3.54	4.90	0.04	0.07	0.07	0.11	0.39	100.04
270 "	E55/13. 9 miles E.S.E. of Glen-more Homestead	73.06	13.77	1.10	1.12	1.45	0.35	2.92	5.99	0.03	0.13	0.05	0.05	0.58	100.60
299A "	E55/9. 10 miles E. of Ballymore Homestead.	76.84	12.78	0.73	0.28	0.32	0.03	3.75	4.84	0.03	0.04	0.04	0.18	0.66	100.52

REPORT 26 - continued

SAMPLE No.	4-mile Ref. Localities	SiO_2	Al_2O_3	Fe_2O_3	FeO	CaO	MgO	Na_2O	K_2O	MnO	TiO_2	P_2O_5	loss 110°C	loss 1000°C	TOTAL
300A granite	E55/9 10 miles E. of Ballymore Homestead.	76.35	12.07	1.04	0.64	0.54	0.00	3.23	5.29	0.06	0.02	0.02	0.14	1.08	100.48
214 "	E54/16 4½ miles S. of Glenmore Homestead	75.44	12.79	0.77	0.49	0.72	0.24	3.60	5.55	0.04	0.07	0.11	0.24	0.61	100.67
273B granod-iorite	E55/13. 7 miles E. of Glenmore Homestead	69.32	14.90	1.46	1.97	2.74	1.07	3.25	3.57	0.12	0.49	0.12	0.13	0.42	99.56
280 "	E55/13 5¾ miles E. of Glenmore Homestead	67.37	15.27	1.79	1.99	2.94	1.16	3.84	3.44	0.14	0.58	0.15	0.06	0.52	99.25
102 Rhyolite	E54/16 3 miles S.W. of Glenmore Homestead	73.50	14.15	0.90	0.84	0.64	0.23	4.21	4.70	0.05	0.17	0.10	0.08	0.55	100.12
127 "	E54/16 6½ miles SSW of Glenmore Homestead	63.59	16.27	3.39	1.19	3.36	0.47	2.54	4.20	0.19	0.64	0.22	0.22	3.72 *	100.00
													* 1.84% CO_2		
208 "	E54/16 3½ miles S. of Glenmore Homestead	76.93	13.13	0.75	0.14	0.14	0.14	2.88	5.20	0.00	0.12	0.03	0.24	0.49	100.19
19 Rhyolite Porphyry	E54/16 9¼ miles SSE of Glenmore Homestead	76.98	12.43	0.62	0.61	0.58	0.00	3.88	4.96	0.03	0.04	0.03	0.02	0.42	100.60

SAMPLE No.	4-mile Localities	SiO_2	Al_2O_3	Fe_2O_3	FeO	CaO	MgO	Na_2O	K_2O	MnO	TiO_2	P_2O_5	loss 110°C	loss 1000°C	TOTAL
20 Rhyolite Porphyry	E54/16 9¼ miles SSE of Glenmore Homestead	70.85	14.35	1.13	1.43	1.81	0.84	3.64	4.10	0.05	0.15	0.09	0.01	1.40	99.85
46A "	E54/16 1½ miles SSE of Glenmore Homestead	72.55	14.63	0.92	1.18	2.01	0.36	3.32	4.11	0.04	0.08	0.29	0.01	0.38	99.88
48 "	E55/13 1¾ miles SE of Glenmore Homestead	72.36	13.89	1.03	1.06	1.91	0.56	2.96	4.82	0.02	0.08	0.28	0.03	0.80	99.80
120A "	E54/16 1 mile SSE of Glenmore Homestead	74.09	13.71	1.02	0.86	1.96	0.31	3.21	4.25	0.03	0.07	0.21	0.03	0.70	100.45
120D "	E54/16 ditto	73.60	13.52	1.37	1.00	1.71	0.40	3.50	4.65	0.04	0.07	0.25	0.02	0.55	100.68
256 "	E55/9 4½ miles S.of Kidston Township	77.20	12.63	0.89	0.12	0.20	0.00	3.50	4.74	0.01	0.05	0.05	0.14	0.58	100.11
255 "	E55/9 7 miles NNE of Ballymore Homestead	76.46	12.88	0.52	0.69	0.49	0.06	3.67	4.65	0.06	0.05	0.08	0.07	0.66	100.34
468 Andesite	E54/16 1½ miles SSE of Glenmore Homestead	68.08	15.88	1.54	1.60	2.60	0.90	4.22	4.55	0.13	0.48	0.09	0.16	0.46	100.69
53Augite Andesite	E54/16 2miles WNW of Glenmore Homestead	61.97	17.03	2.64	2.52	5.16	1.80	2.98	2.98	0.19	0.81	0.14	0.10	1.03	99.35
125quartz Diorite	E54/16 6½miles SSW of Glenmore Homestead	64.79	16.38	2.17	2.46	4.11	1.78	4.32	2.82	0.07	0.36	0.17	0.13	0.86	100.42
300B Vein Rock	E55/9 10 miles E. of Ballymore Homestead	83.38	6.94	0.96	3.59	1.07	0.00	0.20	1.12	0.28	0.01	0.06	0.04	1.62	99.27
254 Trachyte	E55/9 6½ miles NNE of Ballymore Hs.	62.75	16.21	2.28	3.82	4.54	2.19	3.00	2.90	0.21	1.18	0.05	0.13	0.93	100.19
252 granite	E55/9 6¾ miles NNE of Ballymore Hs.	71.26	14.01	1.06	1.70	1.57	0.83	2.80	5.05	0.02	0.44	0.09	0.21	0.77	99.81

REPORT 27

84Q/2

24th August, 1959.

SILICA DETERMINATION IN PORCELLANITE FROM W.A.

by S. Baker

Following are results for silica determination on samples of porcellanite submitted by J. Veevers:-

Sample No.	Locality	SiO_2 (percent)
M17	F51/16 Morris W.A.	6.64 *
M13	" "	86.06
M1/A	" "	92.68
M1/B	" "	91.40
Ru 37	F51/15 Runton W.A.	89.36
Ru 38	" "	90.74

* This sample also contains aluminium, sodium, sulphate and phosphate.

59/683

REPORT 28

63PNG/1

27th August, 1959.

ANALYSIS OF NEW GUINEA SOILS

by S. Baker

Following are results for partial analysis of reddish clay soils from Cape Nelson, Papua, submitted by J.E. Thompson :-

Sample Nos.	54027	54028	54038	54039
Fe_2O_3	10.6	10.6	8.8	8.6
Al_2O_3	28.2	27.1	33.8	29.2
Moisture (105°C)	3.7	3.3	4.8	4.4
Loss on ignition (1000°C)	13.98	13.1	12.35	11.96

59/685

REPORT 29 15th September, 1959.

ANALYSIS OF TWO LIMESTONES FROM GAZELLE PENINSULA, NEW BRITAIN

by A.D. Haldane

Limestone from Kleanwater Plantation, Gazelle Peninsula, New Britain.

Field Nos.	B1	B4
SiO_2	0.31	0.34
Al_2O_3	0.15	0.17
Fe_2O_3	0.17	0.17
CaO	55.47	55.26
MgO	0.26	0.30
Loss at 1000°C (includes CO_2)	43.03	43.21
Loss at 110°C	0.06	0.06
	99.45	99.51

59/639-640

45NT/2

REPORT 30 23rd September, 1959.

ANALYSIS OF A WATER SAMPLE FROM THE NORTHERN TERRITORY

by A. McClure

FS3-14

Results below are for the analysis of a water sample from Bitter Springs, Northern Territory.:-

Conductivity at 20°C	1960	µmho			
pH at 20°C	7.11				
Total Solids at 180°C	18.26	p.p.m.			
					m-equiv./l.
Ca^{++}	320	"	or	16	m.e.
Mg^{++}	87	"	or	17.15	"
Na^{+}	79	"	or	3.44	"
K^{+}	28	"	or	0.72	"
				27.31	
Cl	132	"	or	3.72	"
SO_4	872	"	or	18.2	"
CO_3	not detected				
HCO_3	306	p.p.m	or	5	"
				26.92	"

B_2O_3 less than 0.1 p.p.m.
NO_3 " " 0.01 "

59/691

REPORT 31

153G/1

2nd October, 1959.

ESTIMATION OF COPPER, ZINC AND LEAD IN TWO IRON MINERALS FROM IRON BLOW MINE, NORTHERN TERRITORY

by A. McClure

Geologist D. Corbett submitted two geochemical samples from Iron Blow Mine, near Margaret River, Grove Hill, N.T. Results of analyses are :-

Sample 1 Pyrite		Sample 2 Ironstone	
Cu	160 p.p.m.	Cu	1400 p.p.m.
Zn	600 "	Zn	5500 "
Pb	2000 "	Pb	2400 "

59/695, 696.

REPORT 32

84Q/2

2nd October, 1959.

ANALYSIS OF SOME PORCELLANITES FROM W.A.

by S. Baker

Results are for the analysis of various porcellanites submitted by Miss I. Crespin and J. Veevers.

Sample Nos. M.17, M.1A and M.13 are from locality F51/16 Morris, Western Australia and Sample Ru 37 is from locality F51/15 Runton, Western Australia.

	M.17	M.1A	M.13	Ru 37
SiO_2	6.64	92.68	86.06	89.36
SO_3	34.03			
Fe_2O_3	0.73	0.16	0.29	0.13
Al_2O_3	30.71	0.24	2.75	0.43
Na_2O	1.06	0.13	0.10	0.10
K_2O	7.73	0.16	0.12	0.11
P_2O_5	2.10			
H_2O (105°C)	0.8	0.70	0.65	0.50
H_2O (1000°C)	Remainder	5.12	9.92	9.42
Total		99.19	99.89	100.05

59/683

84Q/31

REPORT 33

14th October, 1959.

ANALYSIS OF A GRANITE AND AN ALBITITE FOR THE ALKALI METALS, CLONCURRY AREA, N.W. QUEENSLAND.

by A. McClure

K. Walker requested the analysis of a granite and an albitite for the alkalis. Results are below :-

1.	Granite	from Will's Creek Duchess - Dajarra Rd. Queensland.	2.78%	Na_2O
			4.77%	K_2O
2.	Albitite	" Soldiers Cap, Cloncurry, Q'ld.	7.65%	Na_2O
			0.20%	K_2O

59/699,700

REPORT 34

64G/1

25th November, 1959.

PHOSPHATE ANALYSIS, SOUTH AUSTRALIA

by S. Baker

Following are results for the determination of acid-soluble phosphate on nine samples submitted by Dr.Fisher.

Sample No.	Percent P_2O_5
B 1	0.1
B 2	0.1
B 3	0.8
B 4	16.0
B 5	0.1
G 1	0.1
G 2	less than 0.1
Christies Beach, S.A.	0.1
Maslin Beach, S.A.	nil *

* Total P_2O_5

59/797-805

84Q/31

REPORT 35

25th November, 1959.

ANALYSIS OF A PARTLY FERRUGINISED SILTSTONE FROM NORTH-WEST QUEENSLAND

by S. Baker

Below are results for the analysis of sample S28 submitted by Miss I. Crespin.

The sample was collected in 1958 by John Casey south of Pigeongah Waterhole on Corrabulka Station. The rock weathers as white concretions up to about 4 inches wide from weathered and partly ferruginised siltstones.

	%
P_2O_5	16.6
SO_3	8.1
BaO	6.6
SrO	8.1
PbO	0.2
Al_2O_3	36.5
SiO_2	7.64
Fe_2O_3	0.54
H_2O (100°C)	0.80
H_2O (950°C)	13.1
Spec. gravity	2.34

Spectrographic analysis by A.D. Haldane indicated the presence of the following additional elements :

K, Ca, Na, Ga, Mg.

59/788

206G/1

REPORT 36

11th December, 1959.

COMPLETE ANALYSIS OF SOME LAVAS FROM THE NEW HEBRIDES

by S. Baker

The samples were submitted by Dr. Fisher. The locality and analyses of the samples are given below :-

No.1 Lava from southern flank of Marum Crater, New Hebrides.
2 " " interior of Benbow Crater, Ambrym," "
3 " " 8 m. depth on submarine crater, Karua," "
4 } " " Summit of Lopevi, Central New Hebrides Islands,
5 } $16^{\circ}30'$S., $168^{\circ}21'$ E.
6 " " Yasour, Tanna
7 " " Karua - $19^{\circ}31'$S., $169^{\circ}25\frac{1}{2}'$E.
8 Pumice " Yasour, Tanna, rim of crater.

	1	2	3	4	5	6	7	8
SiO_2	49.70	48.74	54.92	59.88	58.82	54.24	53.50	53.36
Al_2O_3	19.06	17.0	19.60	17.66	17.00	20.58	22.05	19.50
Fe_2O_3	11.56	13.32	7.47	6.96	7.31	7.25	5.65	7.95
MgO	4.20	5.00	3.00	3.10	3.00	3.40	3.80	4.10
CaO	7.40	7.50	6.72	5.04	6.05	6.03	5.60	5.65
Na_2O	4.77	4.67	5.09	5.09	5.08	5.51	6.36	6.58
K_2O	1.89	1.77	1.39	1.64	1.63	2.40	2.27	2.40
H_2O (105°C)	0.28	0.25	0.22	0.37	0.29	0.24	0.29	0.28
TiO_2	0.36	0.36	0.30	0.30	0.30	0.30	0.30	0.30
P_2O_5	1.0	1.0	0.2	0.2	0.2	0.2	0.2	0.2
MnO	0.24	0.21	0.20	0.21	0.22	0.22	0.22	0.21
SrO	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
S	tr	tr	tr	tr	tr	-	-	-
Cl	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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