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COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

RECORDS:

1963/121

MISCELLANEOUS CHEMICAL, PETROGRAPHIC, AND MINERAGRAPHIC INVESTIGATIONS CARRIED OUT IN THE GEOLOGICAL LABORATORY JANUARY - JUNE, 1963.

Compiled by

W.R. Morgan

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

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Records 1963/121

INTRODUCTION

This record is composed of reports on minor chemical, petrographic, and mineragraphic investigations carried out in the Geological Laboratory, Bureau of Mineral Resources, during the period January, 1963, to June, 1963. The record is divided into two parts; the first deals with chemical work, and the second is formed of petrographic, mineragraphic, and X-ray investigations. In each part the reports are in chronological order.

The officers responsible for work in this record are W.M.B. Roberts (Senior Geologist), A.D. Haldane (Senior Chemist), J.R. Beevers (Chemist, Grade III), S.C. Goadby (Chemist, Grade III), W.R. Morgan (Geologist, Grade II), W. Oldershaw (Geologist, Grade II), S. Baker (Chemist, Grade II), J.M. Rhodes (Geologist, Grade I), and E.J. Howard (Chemist, Grade I).

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PART I: Chemical Investigations

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Report No.1. 120 PNG/7

8th January, 1963.

Analyses of some miscellaneous samples from New Guinea.

by

J.R. Beevers

The samples were submitted by D.B. Dow from the areas indicated:

Field No.	Rock description	Locality	Assay
H71	Gabbro Outcrop	Marum R.	0.06%Cu
H97	Gabbro Outcrop	Bundi Area	0.11% Cu
H102	Gabbro Boulder	Singari R.	3.45% Cu; 28.4% Fe.
H22a	Weathered Volcanic Outcrop	Mongum Area	Nickel content is only very small (1 ppm).

Report No.2 8th January, 1963.

Analysis of some miscellaneous samples from the Fenton Area located on the Tipperary 1-Mile Sheet

by

J.R. Beevers

The samples were submitted by P. Crohn.

Field No.	Assay	
199577	0.22% Cu ;	Mn trace only
199578	Cu not detected;	Mn 0.02%
199579	Cu not detected;	Mn 1.84%

Report No.3 120/Q/13

SPECTROCHEMICAL ANALYSIS OF STREAM SEDIMENT SAMPLES FROM THE INGHAM REGION, QUEENSLAND.

by

E.J. Howard.

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium, tin, molybdenum, lead and beryllium content of 240 stream sediments using the spectrograph.

The samples were submitted by F. de Keyser and were collected near Ingham, Queensland.

The following results were obtained:

Sample No.	Ni	Co	Cu	V	Sn	Mo	Pb
MG/6/5058/1 Centre	5-	5	20	20	a	a	30
MG/6/5058/2 Bank	5-	5	10	20	a	a	30
MG/6/5058/2 Centre	5-	5-	20	20	a	a	20
MG/6/5058/3 Bank	5-	5	10	30	a	a	30
MG/6/5058/3 Centre	5-	5-	10-	20	a	a	20
MG/6/5058/4 Bank	5-	5-	10	20	10	a	30
MG/6/5058/4 Centre	5-	5-	10	30	10	a	30
MG/7/5114/5 Centre	5-	20	10-	20	50	a	30
5 Bank	5-	5-	10-	30	10	a	20
6 Centre	5-	5-	10-	20	a	a	30
6 Bank	5-	5-	10	30	a	a	30
7 Centre	5-	5-	10	20	a	a	30
7 Banks	5-	5-	10	20	a	a	20
8 Centre	5	5	10	20	a	a	30
8 Bank	5-	5	10	20	a	a	20
9 Centre	5-	5-	10-	20	a	a	20
10 Centre	5-	5	10	20	a	a	50
10 Bank	5-	5	10-	20	a	a	30
11 Centre	5-	5-	10-	10	a	a	10
11 Bank	5-	10	20	20	a	a	20
MG/6/5060/12 Centre	5-	5-	10-	10	a	a	50
12 Bank	5-	5-	10-	10-	a	a	20
13 Centre	5-	5-	10-	10-	a	a	20
MG/6/5060/14 Bank	5-	5-	10-	10-	a	a	10
14 Centre	5-	5-	10-	10-	a	a	10
15 Centre	5-	5-	10-	10-	a	a	10
15 Bank	5-	5-	10-	10-	a	a	10
16 Bank	5-	5	10-	10-	a	a	10-
16 Centre	5-	5	10-	10-	a	a	10
17 Bank	5-	5-	10-	10-	a	a	10-
17 Centre	5-	5-	10-	10-	a	a	10-
MG/7/5112/18 Centre	5-	5-	10-	10	a	a	10
18 Bank	5-	5-	10-	10-	a	a	10-
18 Bank	5	5	20	10-	a	a	20
19	5-	5-	10-	10-	a	a	10-
INN/E/5/5102/20(1)	20	10	10	30	a	a	10-
20(2)	5	5	10-	20	a	a	10-
20(3)	30	10	10	10	a	a	10-
20(4)	5-	5-	10-	20	a	a	10-

Report No. 3 (Cont.)

Sample No.	Ni	Co	Cu	V	Sn	Mo	Pb
INN/E/5/5102/21	5	5	10	20	a	a	10
21 wash	20	10	20	20	a	a	20
INN/E/4/5086/22	10	5	10	10	a	a	20
INN/6/5050/101	5	10	10–	30	a	a	10–
102	5–	5	10–	50	a	a	10
MG/7/5114/9/Bank	5–	5	10	20	a	a	30
INN/6/5050/103	No result for this sample						
INN/6/5050/104	5–	5–	10–	10–	a	a	30
INN/2/5024/105	5–	5–	10–	10–	20	a	20
106	50	10	10	20	a	a	20
MC/8/5042/107 Centre	5–	10	10–	10	a	a	10
107 Bank	5–	5–	10–	10	a	a	10
108 Bank	5–	5–	10–	10	a	a	10
108 Centre	5–	5–	10–	10	a	a	10
109 Bank	5–	5–	10–	10	a	a	10
109 Centre	5–	5–	10–	10–	20	a	10
110 Bank	5–	5	10	10–	a	a	10–
110 Centre	5–	5–	10–	10–	a	a	10–
111 Bank	5–	5	10	10	a	a	10
111 Centre	5–	5–	10–	10–	a	a	10
112 Centre	5–	5–	20	10	a	a	10
MC/8/5042/112 Bank	5–	5–	10	20	a	a	10
MC/8/5042/113 Bank	5–	5–	10–	20	a	a	10
113 Centre	5	5	10–	20	a	a	10
113 Mine	5–	5	10	20	a	a	30
114 Bank	10	10	10	20	a	a	10
114 Centre	10	10	10	20	a	a	10
115 Centre	5–	5–	10–	10–	a	a	30
115 Bank	5–	5–	10–	10–	10	a	50
116 Centre	5–	5–	10–	10–	a	a	30
116 Bank	5–	5–	10–	10–	a	a	50
MC/9/5030/117 Bank	5–	5–	10–	10–	10	a	70
117 Centre	5–	5–	10–	10–	10	a	50
118 Centre	5–	5–	10–	10–	a	a	50
118 Bank	5–	5–	10–	10–	a	a	50
MC/8/5042/119 Bank	5–	5–	10–	10–	a	a	20
119 Centre	5–	5–	10–	10–	a	a	20
120 Centre	5–	5	10	50	a	a	10
120 Bank	5–	5	10	20	a	a	10
121 Centre	5–	5–	10–	10	a	a	20
121 Bank	5–	5–	10–	10	a	a	20
MC/9/5028/122 Bank	5–	5–	10–	10–	a	a	20
122 Centre	5–	5–	10–	10–	a	a	20
123 Centre	5–	5–	10–	10	a	a	10
123 Bank	5–	5–	10	10	a	a	10
124 Bank	5–	5–	10–	10	a	a	20
124 Centre	5–	5–	10–	10–	a	a	10
125 Centre	5–	5–	10–	10–	10	a	70
126 Bank	5–	5–	10–	10–	10	a	30
126 Centre	5–	5–	10–	10–	a	a	20
127 Centre	5–	5–	10–	10–	a	a	10–
127 Bank	5–	5	10–	10	50	a	10
128	5–	5–	10–	10–	a	a	20
128 Bank	5–	5–	10–	10–	70	a	20
129 Centre	5–	5–	10–	10–	a	a	20
129 Bank	5–	5–	10–	10–	10	a	30
MC/9/5028/130 Centre	5–	5–	10–	10–	2o	a	30
130 Bank	5–	5–	10–	10–	a	a	30
131 Centre	5–	5–	10–	10–	30	a	30
131 Bank	5–	5–	10–	10–	30	a	50
132	5–	5–	10–	10–	70	a	30
133 Centre	5–	5–	10–	10–	20	a	20
133 Bank	5–	5–	10–	10–	150	a	20
IN/2/5022/134 Bank	5–	5–	10–	10–	10	a	50
135 Bank	5–	5–	10–	10–	a	a	50

Report No.3 (Cont.)

Sample No.	Ni	Co	Cu	V	Sn	Mo	Pb
MC/9/5028/125 Bank	5–	5–	10–	10–	10	a	50
136 Bank	5–	5–	10–	10–	a	a	50
137 Bank	5–	5–	10–	10–	a	a	50
INN/7/5064/138 Centre	20	10	10	50	a	a	10
INN/7/5066/139	10	5	10–	30	a	a	20
140	50	20	10	30	a	a	10
INN/7/5064/141	5–	5–	10–	10	a	a	20
142	20	20	10	30	a	a	20
INN/7/5066/143	5–	10	10–	20	a	a	200
144	5–	5–	10–	10	10	a	30
INN/E/5094/ 23 Bank	5–	5–	10–	10–	a	3	50
23 Centre	5–	5–	10–	10–	a	5	30
INN/E/9/5096/24 Bank	5–	5–	10–	10–	a	7	30
INN/YM/405775	200	5–	20	10–	a	a	10–
INN/E/10/5104/25	5–	5–	10–	10–	a	10	10
E/8/5074/26	5–	5–	10–	10–	a	a	10–
27	10	5	10	10	a	a	10
28	5–	5–	10–	10–	a	a	30
E/9/5096/29	10	5	10	30	a	a	20
30	5–	5–	10–	10–	a	a	30
31	5–	5–	10–	10–	a	a	70
32	5–	5–	10–	10–	a	5	50
33	5–	5–	10–	10–	a	2	30
34	5–	5	10–	10–	a	2	70
E/3/5034/35	5–	5–	10–	10–	10	a	20
E/3/5032/36	5–	5–	10–	10–	10	a	50
E/4/5082/37	5	5	10–	20	a	a	20
E/5/5102/38	5–	5–	10–	10–	10	a	30
39	5–	5–	10–	10	20	a	50
E/9/5090/41	5–	5–	10–	10–	a	a	50
42	5–	5–	10–	10–	a	a	50
43	5–	5–	10–	10–	100	a	30
44	5–	5–	10–	10–	a	a	70
45	5–	5–	10–	10–	a	a	20
E/9/5092/46	5–	5–	10	10–	a	a	50
47	5–	5–	10–	10–	a	a	20
48	5–	5–	10–	10–	a	a	20
49	5–	5–	10–	30	a	a	20
50	5–	5–	10–	10	a	a	30
51	5–	5–	10–	10	a	a	20
52	5–	5–	10–	50	a	a	10
53	5–	5–	10–	10–	a	a	30
54	5–	5–	10–	50	a	a	20
56	5–	5–	10–	50	a	a	10
57	5–	5–	10–	10–	a	a	30
E/9/5094/58	5–	5–	10–	10–	a	a	20
59	5–	5–	10–	10–	a	a	30
60	5–	5–	10–	10–	a	a	50
61	5–	5–	10–	10–	a	a	30
E/9/5090/62	5–	5–	10–	10–	a	a	20
63	5–	5–	20	10	a	a	30
64	5–	5–	10–	10–	a	a	30
65	5–	5–	10–	10–	a	a	20
INGH/6/5010/66	5–	5–	10–	10–	10	a	50
INGH/5/5034/67	5–	5–	10–	10	a	a	20
INGH/5/5036/68	5–	5–	10–	10	a	a	10
69	5–	5–	10–	10–	a	a	10
INGH/6/5010/70	5–	5–	10–	10–	100	a	50
71	5–	5–	50	10–	1500	a	200
72	5–	5–	10–	10–	500	a	70
73	5–	5–	10–	10–	200	a	70
74	5–	5–	10–	10–	200	a	20
75	5–	5–	10–	10–	100	a	30

Report No.3 (Cont.)

Sample No.	Ni	Co	Cu	V	Sn	Mo	Pb
INGH/6/5010/76	5-	5-	10	10-	150	7	50
77	5	5-	10-	10-	5000+	a	20
78	5-	5-	10	10-	100	10	100
ING/4/5010/ 79	5-	5-	10-	10	a	a	20
5/5030/ 80	5-	5-	10-	10-	a	a	30
6/5014/ 81	5-	5-	10-	10-	a	a	30
82	5-	5-	10-	10-	150	a	30
INN/5/5100/145	20	5	10	20	a	a	10
INN/9/5096/147	5-	5-	10-	10-	a	5	20
148	5-	5-	10-	10-	a	a	30
149	5-	5-	10-	10-	a	7	10
INN/1/5104/150	5-	5-	10-	10-	a	a	150
151	5-	5-	10-	10-	a	a	100
152	5-	5-	10-	10-	a	2	100
153	5-	5-	10-	10-	a	2	50
154	5-	5-	10-	10-	a	a	50
155	5-	5-	10-	10-	a	a	10
156	5-	5-	10-	10-	a	5	70
INN/6/5048/201	50	20	10	30	a	a	10-
ING/2/5134/205	5-	5-	10-	10-	a	a	20
206	5-	5-	10-	10-	a	a	20
207	5-	5-	10-	10-	a	a	20
ING/2/5136/208	5-	5	10-	10-	a	a	10
209	5-	5-	10-	10-	a	a	30
210	5-	5-	10-	10-	a	a	50
211	5-	5-	10-	10-	a	a	30
ING/2/5138/212	5-	5-	10-	10-	a	a	50
213	5-	5-	10-	10-	a	5	50
214	5-	5-	10-	10-	a	5	20
ING/4/5122/215	5-	5-	10-	10-	a	a	30
ING/2/5136/216	5-	5-	10-	10-	a	a	20
217	5-	5-	10-	10-	a	a	30
218	5-	5	10-	10	a	a	20
219	5-	5	10-	10	a	a	30
220	5-	5-	10-	10-	a	a	10
221	5-	5-	10-	10-	a	a	30
ING/2/5136/222	5-	5-	10-	10	a	a	30
223	5-	5-	10-	10-	a	a	50
ING/7/5040 225	5-	5-	10-	10-	10	a	30
226	5-	5-	10-	10-	10	a	50
ING/8/5060/227	10	10	10	10	a	a	20
ING/9/5008/228	5-	5-	10-	10	a	a	10
229	5-	5-	10-	10	a	a	10
230	5-	5-	10-	10	a	a	10
231	5-	5-	10-	20	50	a	10
232	5-	5-	10-	10	a	a	10-
233	5-	5-	10-	20	a	a	20
ING/8/5056/234	5-	5-	10-	10-	a	a	10-
235	5-	5-	10-	10	a	a	10
236	5-	5-	10-	10-	a	a	10
ING/7/5044/236	5-	5-	10-	10-	a	a	20
ING/8/5056/237	5-	5-	10-	10	a	a	10
238	5-	5-	10-	10-	a	a	10-
ING/7/5042/239	5-	5-	10-	10-	a	a	10
240	5-	5-	10-	10-	a	a	10
241	5-	5-	10-	10	50	a	10
242	5-	5	10	20	a	a	20
243	5-	5-	10-	10	a	a	10

Report No.3 (Cont.).

Sample No.	Ni	Co	Cu	V	Sn	Mo	Pb
244	5-	5-	10-	10-	a	a	10
245	5-	5-	10	10-	a	a	10-
ING/7/5044/247	5-	5-	10-	10-	a	a	20
248	5-	5-	10-	10-	a	a	10
249	5-	5-	10-	10-	a	a	10
250	5-	5-	10-	10-	a	a	10
ING/5/5064/251	5-	5-	10	20	a	a	50
MG/8/5040 302	5-	5-	10-	10-	a	a	10
303	5-	5-	10-	10-	a	a	10-
304	5-	5-	10-	10	a	a	20
304(2)	5-	5-	10-	10-	a	a	10
305	5-	5-	10-	10-	a	a	10
INN/1/5010 306	5-	5	10	10	a	a	20
INN/8/5080 307	5-	5-	10-	10-	a	a	20
308	5-	5-	10-	10	a	a	20

All results are expressed in parts per million
10- represents "less than 10"

'a' indicates not detected.

Beryllium and phosphorus were sought but neither was detected in any sample.

Serial No. 538.

Report No. 4.

SPECTROCHEMICAL ANALYSIS OF STREAM SEDIMENT SAMPLES FROM THE MOUNT GARNET AREA, QUEENSLAND.

by

E.J. Howard

Semiquantitative estimations were made of the cobalt, nickel, copper vanadium, tin, molybdenium, lead, beryllium and phosphorus content of 128 stream sediment samples using a spectrographic technique.

The samples were collected in the Mount Garnet area of North Queensland as part of a geochemical prospecting survey. They were submitted by D.O. Zimmerman.

The following results were obtained:

Photo Code	Sample No.	Ni	Co	Cu	V	Sn	Mo	Pb	Be
E/7/5081	HGDS 146	5-	5-	10	10	a	a	20	a
	147	5-	5	10-	10	a	a	10	a
	148	5	5	10	30	a	a	20	a
	149	5-	10	10	50	a	a	10	a
	150	5-	5	10	30	a	a	10	a
	151	5-	5	10-	30	a	a	10	a
	152	5-	5-	10	20	a	a	20	a

Report No. 4.

Photo Code	Sample No.		Ni	Co	Cu	V	Sn	Mo	Pb	Be
E/4/5180	HGDS	153	20	10	30	30	a	20	70	a
		154	5	10	20	50	a	a	10–	a
E/5A/5045		155	5–	5–	10–	10–	a	a	10–	a
		156	5–	5–	10–	10	a	a	10–	a
		157	5–	5–	10–	10–	a	a	10	a
		158	5–	5–	10–	10–	a	a	10–	a
		159	5–	5	10–	10	a	a	20	a
		160	5–	5–	10–	10–	a	a	30	a
		161	5–	5–	10–	10–	a	a	10–	a
E/5/5193		162	5–	10	10–	20	a	a	10–	a
		163	5–	5	10–	10	a	a	10	a
		164	5–	5	10–	30	a	a	10	a
		165	5–	5–	10–	10–	a	a	10–	a
		166	5–	5	10–	10	a	a	10	a
		167	5–	5–	10–	10	a	a	10	a
		168	5–	5–	10–	10	a	a	10–	a
		169	5–	5–	10–	10	a	a	10–	a
		170	5–	5–	10–	10	a	a	10–	a
		171	5–	5–	10–	10–	a	a	10	a
		172	5–	5–	10–	10	a	a	10	a
		173	5–	5–	10–	20	a	a	20	a
		174	5–	5–	10–	10	a	a	10–	a
		175	5–	5–	10–	20	a	a	10–	a
		176	5–	5–	10–	10	a	a	20	a
		177	5–	5–	10–	20	a	a	10	a
E/9/5172		178	5–	5–	10–	10	a	a	10	a
E/8/5097		179	5–	5–	10–	10	a	a	20	a
		180	5–	5–	10–	10	a	a	20	a
		181	5–	5–	10	10	a	a	20	a
MG/1/19	BANKS	581	5–	5–	10–	10–	2000	5	150	a
		582	5–	5–	10–	10–	500	2	50	a
		583	5–	5–	10–	10–	200	5	50	10
		584	5–	5–	10–	10–	700	a	50	5
		585	5–	5–	10–	10–	700	2	70	5
		586	5–	5–	10–	10–	500	2	50	5
		587	5–	5–	10–	10–	100	a	30	10
		588	5–	5–	10–	10–	300	a	50	10
MG/2/53		589	5–	5–	10–	10–	100	a	150	5
		590	5–	5–	10–	10–	150	a	50	5
MG/1/19	BEDS	581	5–	5–	10–	10–	1500	5	30	7
		582	5–	5–	10–	10–	500	2	30	7
		583	5–	5–	10–	10–	300	2	30	a
		584	5–	5–	10–	10–	1000	2	50	10
		585	5–	5–	10–	10–	700	2	30	a
		586	5–	5–	10–	10–	1000	5	30	7
		587	5–	5–	10–	10–	1000	2	30	a
		588	5–	5–	10–	10–	500	a	50	10
MG/2/53	BEDS	589	5–	5–	10–	10–	1500	2	200	a
		590	5–	5–	10–	10–	200	a	300	a
		591	5–	5–	10–	10–	70	a	300	a
		592	5–	5–	10–	10–	150	a	100	7
		593	5–	5–	10–	10–	300	a	200	a
		594	5–	5–	10–	10–	1000	a	70	a
		595	5–	5–	10–	10–	500	3	70	5
		596	5–	5–	10–	10–	500	5	50	a
		597	5–	5–	10–	10–	5000+	5	50	5
		598	5–	5–	10–	10–	100	a	100	a
		599	5–	5–	10–	10–	2000	2	100	a
		600	5–	5–	10	10–	100	a	100	10

Report No.4.

Photo Code	Sample	No.	Ni	Co	Cu	V	Sn	Mo	Pb	Be
MG/2/53	BANK	591	5-	5-	10-	10-	100	2	100	a
		592	5-	5-	10-	10-	100	a	100	7
		593	5-	5-	10-	10-	300	a	200	a
		594	5-	5-	10-	10-	700	a	70	a
		595	5-	5-	10-	10-	700	2	150	5
		596	5-	5-	10-	10-	200	5	50	5
		597	5-	5-	10-	10-	2000	5	70	7
		598	5-	5-	10-	10-	70	2	100	a
		599	5-	5-	10-	10-	500	2	70	a
MG/2/51		600	5-	5-	10-	10-	500	2	70	a
		601	5-	5-	10	10-	200	2	70	10
		602	5-	5-	50	10	300	a	50	10
		603	5-	5-	50	10-	200	2	70	7
		604	5-	5-	50	10	150	5	20	10
		605	5-	5-	50	10	500	2	30	a
		606	5-	5-	10	10-	100	2	100	15
		607	5-	5-	20	10-	500	2	200	5
MG/3/91		608	5-	5-	20	10-	200	2	200	1o
		609	5-	5-	10	10-	150	2	100	5
MG/2/51	BED	601	5-	5-	10	10-	200	a	70	10
		602	5-	5-	30	10-	200	a	70	10
		603	5-	5-	50	10-	200	2	50	10
		604	5-	5-	50	10	50	2	20	5
		605	5-	5	50	10	300	2	70	a
		606	5-	5-	10	10-	150	2	150	15
		607	5-	5-	20	10-	100	2	150	15
		608	5-	5-	10	10-	150	a	200	5
MG/3/91		609	5-	5-	10	10-	500	a	200	10
MG/4/125		610	5-	5-	10-	10-	300	a	30	a
	BANK	610	5-	5-	10-	10-	200	a	50	a
		611	5-	5-	10-	10-	200	a	50	a
	BED	611	5-	5-	10-	10-	200	a	70	15
		612	5-	5-	10-	10-	700	a	50	10
	BANK	612	5-	5-	10-	10-	100	a	70	a
	BED	613	5-	5-	10	10	500	a	20	a
	BANK	613	5-	5-	50	10	1000	a	20	a
MG/5/23		255	5-	5-	20	10	70	a	70	a
		256	5-	5-	20	10	50	a	50	a
		257	5-	5-	30	20	50	a	70	a
		258	5-	5-	20	20	70	a	50	a
		259	5-	5-	20	30	100	a	100	a
		260	5-	5-	20	10	150	a	100	a
		261	5-	5-	30	10	100	a	150	a
		262	5-	5-	20	10-	70	a	30	a
MG/5/25		263	5-	5-	10-	10	300	a	30	a
		264	5-	5-	10-	10-	50	a	30	a
MG/8/114		839	5-	5-	10	10	30	a	30	a
		840	5-	5-	10	20	10	a	20	a
		841	5-	5-	10	20	50	a	20	a
	BED	842	5-	5	10	20	30	a	30	a
		843	5	5	30	30	100	a	70	a
MG/7/92	BED	844	5-	5-	10-	10-	150	a	10	a
		845	5-	5-	10-	10-	10	a	10	a
		846	5-	5-	10-	10-	10	a	30	a
		847	5-	5	10	10	10	a	30	a
		848	5-	5-	10	20	50	a	50	a
		849	5-	5-	10	10	10	a	10	a
		850	5-	5	10	10	30	a	10	a
		851	5-	5-	10-	10-	10	a	20	a
		852	5-	5-	10-	10-	200	a	20	a
		853	5-	5-	10-	10-	1500	a	20	a
		854	5-	5-	10-	10-	2000	10	100	a

Report No. 4 (Cont.).

Phosphorus was not detected in any sample.
All results are expressed in parts per million
"a" = not detected
"5-"= less than five parts per million

Lab. serial No. 560 and 561.

Report No. 5.

120/PNG/7
29th January, 1963.

Nickel Assays on some Soil Samples from New Guinea.

by

J.R. Beevers

The samples submitted by F.E. Decker, were from auger holes in the West Bismarck Range area of the Ramu district of the Territory of New Guinea.

Sample No.	%Ni.
H663	0.30
H664	0.30
H665	0.28
H666	0.29
H667	0.24
H668	0.30
H669	0.19
H670	0.59
H671	1.00
H672	0.60
H673	0.72
H674	0.83
H675	1.31
H682	0.83
H683	0.94
H684	0.63

Lab Serial No.576.

Report No. 6 45ACT/1

ANALYSIS OF BORE WATER FROM BUNGENDORE N.S.W.

by

S. Baker

Following are results for the analysis of a sample of Bore Water from "The Brians" Bungendore, submitted by E.G. Wilson.

	ppm	me/1
Chloride (Cl)	120	3.38
Sulphate (SO_4)	30	0.62
Bicarbonate (HCO_3)	170	2.79
Calcium (Ca)	32	1.60
Magnesium (Mg)	17	1.40
Sodium (Na)	86	3.74
T.D.S.	361	
Conductivity (T = 25°C)	650 mhos/cm	
pH	7.6	

Serial No. 700

Report No.7

ANALYSIS OF BORE WATER FROM KINGS PLAINS, COOKTOWN, QUEENSLAND

by

S. Baker

Following are results for the partial analysis of two small water samples from Kings Plains, Cooktown, Queensland.

	D.H. MRK 3	D.H.MRK 7
pH	7.0	7.5
Conductivity (micromhos/cm	790	1020
Chlorine (Cl)	50 ppm.	130 p.p.m.
Hardness (p.p.m. $CaCO_3$)	180	60

Serial No. 726.

Report No.8.

COPPER ASSAYS ON SAMPLES FROM THE NORTHERN TERRITORY

by

J.R. Beevers

The samples, all chips from outcrops in the Bloods Range, N.T., were submitted by D. Forman.

Sample No.	%Cu
BR/31	<0.1
BR/34 (1)	10.0
BR/34 (2)	4.1
BR/75/B	not detected
BR/96 (1)	49.8
BR/96 (2)	10.4
BR/96 (3)	22.9
BR/99	3.8

Lab. Serial No. 561, 562.

Report No.9 120 NT/17

SPECTROGRAPHIC EXAMINATION OF SAMPLES FROM BLOODS RANGE, NORTHERN TERRITORY

by

E.J. Howard

The following results have been obtained on eight chip samples of mineralized outcrop from Bloods Range, Lake Amadeus Basin, Northern Territory, The samples were submitted by D. Forman.

Sample No.	Description	Ni	Co	Cu	V	Pb	Remarks
B.R. 31	-	5-	5-	300	10-	20	
B.R. 34 (1)	basalt	5	5	5000+	50	50	Visible secondary Cu minerals
B.R. 34 (2)	"	10	5	5000+	50	10-	" "
B.R. 75 B	limestone	5-	5-	20	10-	10	
B.R. 96 (1)	malachite	5-	5-	5000+	10-	10-	
B.R. 96 (2)	basalt	20	30	5000+	150	70	Visible secondary Cu minerals
B.R. 96 (3)	basalt	10	10	5000+	70	50	" "
B.R. 99	quartz reef	5-	20	5000+	10-	5000+	" "

All values in parts per million
5000+= greater than ½% 5- less than 5 p.p.m.
Zn, Sn Mo Be and P were specifically sought but not detected in any sample except in B.R. 75 which contained phosphorus as a major constituent.

Silver was detected in sample B.R. 99 which also contained galena.
Laboratory Serial No. 561-562.
Spec. No. 193/386.

Report No. 10

SPECTROCHEMICAL EXAMINATION OF MARINE DEPOSITS OFF THE NEW SOUTH WALES COAST

by

E.J. Howard

45 samples of marine deposits collected off the coast of New South Wales were submitted by F. Loughlan for spectrochemical analysis for nickel, cobalt, copper, vanadium, molybdenum, tin, beryllium, lead, zinc and phosphorus. The samples consisted largely of shell fragments.

The results obtained were less than the following amounts for all samples.

Nickel	5ppm	Tin	10 ppm
cobalt	5 "	Beryllium	5 "
Copper	10 "	Lead	10 "
Vanadium	5 "	Zinc	100 "
Molybdenum	2 "	Phosphorus	1% "

Sample numbers are as follows -

2/59	G2/90/62	G3/180/62
3/59	G2/91/62	G3/201/60
4/59	G2/96/62	G3/239/60
G2/55/62	G2/97/62	G2/240/60
G2/56/62	G2/104/62	G3/266/60
G2/57/62	G2/105/62	G3/267/60
G2/58/62	G2/108/62	G3/268/60
G2/59/62	G2/109/62	G3/297/60
G2/60/62	G2/128/62	G3/298/60
G2/61/62	G3/150/62	G3/300/60
G2/62/62	G3/152/62	G3/302/60
G2/63/62	G3/160/62	
G2/67/62	G3/170/62	
G2/76/62	G3/171/62	
G2/77/62	G3/175/62	
G2/88/62	G3/176/62	
G2/89/62	G3/179/62.	

Laboratory Serial No. 727

Spec. No. 195/388, 196/390.

Report No.11. 64NT/1

SPECTROCHEMICAL EXAMINATION OF AUGER SAMPLES FROM RUM JUNGLE, NORTHERN TERRITORY

by

E.J. Howard

Samples of auger cuttings taken during the 1961 Geochemical Survey in the Rum Jungle area Northern Territory were submitted by E.K. Carter for spectrochemical examination and grading for phosphate content.

Geolsec Anomaly

Sample No.	Depth (Ft.)	P_2O_5%
F23E/18N	2-4	10-
	6-8	a
	12-14	a
	18-20	a
	24-30	10-
	37-39	10-
	41-43	10-
F25E/17.5N	2-4	10-20
	6-8	20+
	12-14	10-20
	14-16	10-
F18E/16N	2-4	a
	8-10	a
	14-16	a
	18-20	a
F20E/18N	2-4	a
	4-6	a
F22E/16N	2-4	a
	8-10	a
	12-14	a
F22E/20N	2-4	a
	8-10	a
	14-16	a
	20-22	a

Eastick's Anomaly

Sample No.	Depth (Ft.)	P_2O_5 %
F9E/20N	2-4	a
	6-8	a
	12-14	a
	16-18	a
	17-19	a
	18-20	a
	20-24	a
	24-26	a
	32-34	a
F10E/19N	2-4	a
	6-8	10-
	12-14	10-
	18-20	10-
	22-26	10-
	32-34	10-
F10E/22N	2-4	a
	6-8	a
	12-14	a
	18-20	a
	24-26	a
	30-32	
	36-38	a
F10E/24N	2-4	a
	6-8	a
	10-28	a
F10E/26N	2-4	a
	5-7	a
F10E/28N	2-4	a
	6-8	a
	10-12	a
F10E/20N	2-4	
	8-10	a

Sample No.	Depth (Ft)	P_2O_5%
F11E/17N	2-4	a
	6-8	a
	12-14	a
	18-20	a
	24-26	a
	30-32	a
F11E/20N	2-4	a
	6-8	a
	12-14	a
	18-20	
	24-26	10-
	44-46	a
F12E/19N	2-4	20+
	6-8	20+
	12-14	20+
	18-20	20+
	24-26	10-20
	26-28	10-20
	32-34	10-20
	42-44	10-20
	50-52	10-
F12E/21N	2-4	10-
	6-8	10-
	12-14	10-
	14-16	10-
	18-20	10-
F12E/21N	24-26	10-
	32-34	a
	38-40	a
F13E/18N	2-4	a
	6-8	a
	12-14	a
	16-18	a
F13E/20N	4-6	a
	6-8	a
	12-14	a
	20-22	10-20
	24-26	10-20
	32-34	10-
	38-40	a
F14E/16N	2-4	a
	6-8	a
	12-14	a
	14-18	a
	18-22	10-
	30-32	a

Sample No.	Depth (Ft)	P_2O_5%
F14E/22N	2-4	a
	6-8	a
	8-10	a
F15.75E/21N	2-4	a
	6-8	a
	10-12	a
	12-14	a
	18-20	a
	38-40	a
F16E/18N	2-4	a
	6-8	a
	12-14	a
	18-20	a
	24-26	a
F16E/23N	2-4	a
	6-8	a
	12-14	a
	18-20	a
	24-26	a
	30-32	a
	32-34	a
F18E/20N	2-4	a
	6-8	a
	10-12	a
F18E/21N	2-4	a
	6-8	a
	12-14	a
	26-28	a
F18E/22N	2-3	a

<u>AREA 4</u>

Sample No.	Depth (Ft)	P_2O_5%
F124E/14N	2-4	10-
	8-10	10-
	10-15	10-
F125E/13N	2-4	a
	8-10	a
F125E/14N	2-4	10-
	9-11	a
F126E/14N	2-4	a
	6-8	a

10- = less than 10% P_2O_5

20+ = greater than 20% P_2O_5

a - not detected approx less than 1%

Lab. Serial No.452
Spec. No.89/279 - 94/284

Report No.12 20th February, 1963.

Determination of Phosphate in the Sirius Shale, Bowen Basin, Queensland.

by

S. Baker.

Following is the result for the estimation of phosphate in the Sirius Shale, Bowen Basin, Queensland. The sample was submitted by A. Fehr.

Field No.	P_2O_5
AF 49	12.0%

Serial No. 733.

Report No. 13 20th February, 1963.

Determination of Phosphate in Tertiary Limestone, Bowen Basin, Queensland.

by

S. Baker.

Following are the results for the estimation of phosphate in three samples of Tertiary limestone submitted by J. Veevers.

Field No.	P_2O_5 percent
GAB 18 Springvale 4m.	<0.5
GAB 72 Bedourie 4m.	<0.5
GAB 114e Betoota 4m.	<0.5

Serial No. 736.

Report No. 14. 25th February, 1963.

Spectrographic Analysis of Auger Drill Samples from Tennant Creek, N.T.

by

E.J. Howard.

Spectrochemical analysis for nine trace metals was carried out on 36 auger drill samples from the Mary Lane area, Tennant Creek. The samples were submitted by P.G. Dunn.

The following are the results obtained:

Sample Co-ordinates	Depth	Ni	Co	Cu	V	Mo	Pb
6E 4S	6-22	5-	5-	10-	20	a	10-
6E 4S	22-40	5-	5-	10-	20	a	10-
6E 4S	40-58	5-	5-	10-	10	a	10-
6E 4S	58-76	5-	5-	10-	20	a	10-
6E 4S	76-94	5-	5-	10-	10	a	10-
6E 5S	6-34	5-	5-	10-	10	a	10-
6E 6S	8-22	5-	5-	10-	10	a	10-
6E 7S	6-22	5-	5-	10-	20	a	10-
6E 8S	6-22	5-	5-	10-	10	5	10-
6E 9S	6-22	5-	5-	20	10	5	10-
6E 10S	8-22	5-	5-	10-	20	2	10-
6E 11S	6-22	5-	5-	10-	20	a	10-
6E 12S	6-22	5-	5-	10-	20	5	10-
6E 13S	8-22	5-	5-	10-	10	2	10-
6E 14S	6-22	5-	5-	10-	20	2	10-
6E 15S	6-22	5-	5-	10-	10	2	10-
6E 16S	8-22	5-	5-	10-	10	a	10-
6E 17S	8-22	5-	5-	10-	20	2	10-
6E 18S	8-22	5-	5-	10-	10	2	10-
6E 19S	8-22	5-	5-	10-	10	a	10-
6E 20S	6-22	5-	5-	10-	10	a	10-
6E 21S	6-22	5-	5-	10-	10	a	10-
6E 22S	6-22	5-	5-	10-	10	2	10-
6E 23S	6-22	5-	5-	10-	20	a	10-
6E 24S	6-22	5-	5-	10-	20	a	10-
6E 25S	8-22	5-	5-	10	10	a	10-
6E 26S	6-22	5-	5-	10-	10	a	10-
6E 27S	8-22	5-	5-	10-	20	a	10-
6E 28S	8-22	5-	5-	10-	20	a	10-
6E 29S	6-22	5-	5-	10-	30	a	10-
6E 30S	8-28	5-	5-	10-	30	a	10-

Sample Co-ordinates	Depth	Ni	Co	Cu	V	Mo	Pb
6E 31S	10-28	5-	5-	10-	10	a	20
6E 32S	10-28	5-	5-	10-	20	a	10-
6E 33S	8-28	5-	5-	10-	10	a	10-
6E 34S	10-28	5-	5-	10-	10	a	10-
6E 35S	10-28	5-	5-	10-	10	a	10-

Tin, Beryllium and phosphorus were sought but were not detected in any sample.

All results are expressed in parts per million
"a" = not detected.
"5-"= less than five.

Lab. Serial No.
Plate Nos. 198 and 199.

Report No.15

106Q/4
27th February, 1963.

DETERMINATION OF PHOSPHATE IN SAND AND SILTSTONE FROM THE BOWEN BASIN

by

S.Baker

Following are results for the determination of Phosphate on various samples from the Bowen Basin, submitted by J.M. Dickins.

Sample No.	Percent P_2O_5	
Z 46	6.0	} In Catt Ck G 55/3
Z 66	0.3	}
CL 122	2.3	4 m N Logan Downs F55-11 Middle Bowen
B 270a	0.25	Pt 270 Photo 103 Run 9 in Bowen R, E of Exmoor; Top outcropping Mid. Bowen Beds F55-3
M 414	0.45	3m S of Nonnavale F55-8
SL 603	1.6	½ m N main Rd ck, ½ m N of Buckathorp F55-12
MC 802Z	0.55	8 m N Blenheim Hstd } F55-7
MC 1065	2.9	3 m NE " }
MC 957a	0.20	Ck at foot of Mt Osmar or Hillalong 1 M }

Serial No. 744-45-46.

Report No. 16

120Q/14.
11th March, 1963.

Analysis of Tin Concentrates from Kings Plains, Cooktown, Queensland.

by

A.D. Haldane and S. Baker

Following are the results for the iodometric estimation of tin on seven concentrates from B.M.R. King's Plains Reserve, submitted by W.B. Dallwitz on February 14th 1963.

Sample No.	Percent Tin (as Sn)
MRK 6	67.8
MRK 7	71.1
MRK 11	66.9
MRK 12	44.0
MRK 13	58.3
MRK 14	67.3
MRK 15	63.9

Serial No. 753.

Report No.17

ANALYSIS OF WATER FROM PADDY'S RIVER, A.C.T.

by

S. Baker

Following are results for the analysis of a sample of water from Paddy's River, A.C.T., submitted by G.M. Burton on 5th March 1963.

Chloride	(Cl)	6.6 p.p.m.
Sulphate	(SO_4)	not detected (0.3 p.p.m.)
Bicarbonate	(HCO_3)	32 p.p.m.
Sodium	(Na)	8 p.p.m.
Potassium	(K)	0.7 p.p.m.
Calcium	(Ca)	3 p.p.m.
Magnesium	(Mg)	3 p.p.m.
pH		8.3
Conductivity($25^{o}C$)		70 micromhos/cm.

Serial No. 768.

Report No. 18 120Q/14

13th March, 1963.

Estimation of Tin on a Sample of Sand
from B.M.R. King's Plain Prospect
Cooktown, Queensland.

by
S. Baker.

Following is the result for the estimation of Tin on a sample of Sand from King's Plain Prospect.

Sample No.	Percent Tin
MRK 6, 130 - 132 ft.	0.062

Report No. 19

Spectrographic analysis of Auger Samples from Mary Lane Area,
Tennant Creek, N.T.

by
E.J. Howard.

Semiquantitative estimations of the nickel, cobalt, copper, vanadium, molybdenum, tin, lead and beryllium content of 42 auger samples were made using a spectrochemical method.

The samples were submitted by P.G. Dunn as part of a geochemical survey in Tennant Creek, N.T.

The following results, expressed in parts per million, were obtained.

Sample Co-ordinates	Depth (Feet)	Ni	Co	Cu	V	Pb
00/10S	6-22	5-	5-	10-	10-	10-
00/11S	6-28	5-	5-	10-	10-	10-
00/12S	8-28	5-	5-	10-	10-	10-
00/13S	6-22	5-	5-	10-	10-	10-
00/14S	6-22	5-	5-	10-	10-	10-
00/15S	6-22	5-	5-	10-	10-	10-
00/16S	6-22	5-	5-	10-	10-	10-
00/17S	6-22	5-	5-	10-	10-	10-
00/18S	6-22	5-	5-	10	10-	10-
00/19S	6-22	5-	5-	10	10-	10-
00/20S	6-22	5-	5-	10-	10	10-
00/21S	6-22	5-	5-	10-	10-	10-
00/22S	6-22	5-	5-	10-	10	10-
00/23S	6-22	5-	5-	10-	10	10-
00/24S	6-22	5-	5-	10-	10-	10-

Report No. 19 (Cont.).

Sample Co-ordinates	Depth (Feet)	Ni	Co	Cu	V	Pb
00/25S	6–22	5–	5–	10–	10–	10–
00/26S	6–22	5–	5–	10–	10–	10–
00/27S	6–22	5–	5–	10–	10	10–
6E/3S	6–22	5–	5–	10–	10–	10–
6E/2S	6–22	5–	5–	10–	10–	10–
6E/1S	6–22	5–	5–	10–	10–	10–
6E/00	6–22	5–	5–	10–	10–	10–
6E/1N	6–22	5–	5–	10–	10–	10–
6E/2N	6–22	5–	5–	10–	10–	10–
6E/3N	6–22	5–	5–	10–	10–	10–
6E/4N	6–22	5–	5–	10–	10–	10–
6E/5N	6–22	5–	5–	10–	10–	10–
6E/6N	6–22	5–	5–	10–	10–	10–
6E/7N	6–22	5–	5–	10–	10–	10–
6E/8N	6–22	5–	5–	10–	10–	10–
6E/9N	6–22	5–	5–	10–	10–	10–
6E/10N	6–22	5–	5–	10–	10–	10–
00/00	6–22	5–	5–	10–	10–	10–
00/1S	6–22	5–	5–	10–	10–	10–
00/2S	6–22	5–	5–	10–	10–	10–
00/3S	6–22	5–	5–	10–	10–	10–
00/4S	6–22	5–	5–	10–	10–	10–
00/5S	6–22	5–	5–	10–	10–	10–
00/6S	6–22	5–	5–	10–	10–	10–
00/7S	6–22	5–	5–	10–	10–	10–
00/8S	6–22	5–	5–	10–	10–	10–
00/9S	2–9	5–	5–	10–	10–	10–

Tin, molybdenum and beryllium were sought but were not detected in any sample.

Lab. serial No. 752.

Plate Nos. 415, 416.

Report No. 20. 6X2

26th March, 1963.

DETERMINATION OF PHOSPHATES IN SAMPLES FROM RUM JUNGLE, N.T.

by

S. Baker

Following are results for the estimation of phosphates on samples from Rum Jungle, submitted by P.W. Pritchard.

D.G.3	P_2O_5
0' - 5'	10.0 percent
5' -10'	7.6 "
10' -15'	2.4 "
15' -20'	8.4 "
20' -25'	4.4 "
25' -30'	16.0 "
30' -35'	12.0 "
35' -40'	7.7 "

D.G. 4.	
0' - 5'	1.6 percent
-10'	7.6 "
+15'	8.8 "
-20'	7.7 "
-24'	2.5 "

D.G.10		
404'4"	- 406'	7.7 Percent
	- 411'6"	12.0 "
	- 415'6"	26.0 "
	- 420'	25.0 "
	- 425'	30.0 "
	- 430'	24.0 "
	- 432'10"	16.8 "
	- 437'10"	4.2 "
	- 442'	13.6 "
	- 446'	6.8 "
	- 447'	2.0 "
	- 450'	0.7 "
	- 455'	1.6 "
	- 460'	3.6 "
	- 462'	0.8 "
	- 465'	6.6 "
	- 470'	2.0 "
	- 475'7"	1.6 "
Cavity to 480	- 485'	2.4 "
	- 490'6"	2.4 "
	- 492'3"	2.5 "
	- 498'	3.2 "
	- 503'	3.1 "
	- 508'	2.4 "
	- 513'	3.1 "
	- 521'5"	3.1 "
	- 524'1"	Less than 1.0 "

Serial No. 786.

Report No.21

120NT/15.
26th March, 1963.

Analysis for Phosphate in a Sample from the Lake Amadeus Area, N.T.

by

S. Baker.

Following are results for the determination of phosphate on two samples, submitted by P.J. Cook.

Sample No.	P_2O_5
LA 203A	Less than 0.1%
ML 6	0.7%

Serial No. 797.

Report No. 22.

Spectrographic Analysis of Samples from Pinnacles Mine, Tennant Creek, Northern Territory.

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper vanadium, molybdenum and lead content of twenty-one chip, bedrock samples from Pinnacles Mine, Tennant Creek.

The samples were submitted by J. Barclay.

The following results are expressed in parts per million:

Sample	Number	Ni	Co	Cu	V	Mo	Pb
Pinnacle Porph.	1	5-	5-	10	30	2	10-
	2	5-	5-	20	30	5	10-
	3	5-	5-	50	20	3	10-
	4	5-	5-	30	10-	5	10-
	5	5-	5-	20	10-	5	10-
	6	5-	5-	20	10-	2	10-
	7	5-	5-	70	10-	5	10-
	8	5-	5-	50	10	5	10-
	9	5-	5-	50	10	2	10
	10	5-	5-	50	20	2	10-
	11	5-	5-	50	10-	2	10-
	12	5-	5-	150	10-	a	10-
	13	5-	5-	20	10-	2	10-
	14	5-	5-	70	10-	70	10-
	15	5-	5-	30	10-	2	10-
	16	5-	10	20	10-	2	10-
	17	5-	5-	70	10	30	10-

Report No. 22 (Cont.)

Sample Number	Ni	Co	Cu	V	Mo	Pb
18	5-	5-	10	10-	3	10-
19	5-	5-	10	10-	2	10-
20	5-	5-	10	10-	2	10-
21	5-	5-	10	10-	a	10-

Gold (detection limit approx. 10 p.p.m.) was not detected in any sample.

'a' = not detected

'10-' = less than 10

Lab. Serial No. 392. Plate No. 423.

Report No. 23. 64NT/1

2nd April, 1963.

ANALYSIS OF PHOSPHATE SAMPLES FROM RUM JUNGLE.

by

S. Baker

Following are results for the determination of phosphate on core samples from Rum Jungle.

D.g.11.(feet)	P_2O_5%	D.g.13.(ft.)	P_2O_5 %
0 - 10	5.6	0- 10	8.4
10 - 19'6	7.6	10- 20	10.4
19'6'- 25	7.6	20- 25	11.2
25 - 30	6.5	25- 30	10.3
30 - 35	2.7	30- 35	10.3
35 - 40	2.7	35- 40	10.3
40 - 46'6"	3.2	40- 42	12.0
46'6"-48'6"	9.8	42- 45	10.4
48'6"-55'	8.0	45- 49'6	10.4
55 - 60	6.6	49'6-35	5.8
60 - 65	7.7	55- 60	3.6
65 - 70	10.0	60-65	12.4
70 - 75	9.2	65-66'11"	4.1
75 - 80	9.1	66'11 - 69'10	4.8
80 - 85	10.0	69'10 - 75	6.8
85 - 90	9.2	75 -80	6.8
90 - 95	9.8	80- 85	8.0
95 -100	7.2	85- 87'8	8.0
100 -105	8.2	87- 90'2	2.6
105 -110	6.8	90'2 - 95	2.3
115 -117'10"	5.2	100- 102'5	less than 1.0
117'10" - 121'	less1.0)	102'5 - 107	" " 1.0
121 -126	than1.0)	107- 113'3	" " 1.0
126 -131	" 1.0)		

Serial No. 759.

Report No. 24.

45ACT/1
2nd April, 1963.

ANALYSIS OF A.C.T. WATER SAMPLES.

by

S. Baker

Following are results for the analysis for water samples, submitted by G.M. Burton.

Sample No.	Conductivity (25°C)	pH
11	70 micromhos / cm	7.0
15	70 " "	7.3
20	450 "	8.0
21	480 "	8.2
22	600 "	8.1
23	600 "	8.0
24	1110 "	8.0
25	600 "	8.4
26	840 "	8.1
41	710 "	8.4
11	890 "	8.1
Lake George 1.4.63	2550 "	

	Bredbo River	Ryries Creek
Ca	11 p.p.m.	24 p.p.m.
Mg	5 "	18 "
Na	12 "	30 "
K	1 "	0.8"
Cl	13 "	34 "
SO_4 less than	5 "	50 "
HCO_3	69 "	150 "
Conductivity	150 micro mhos/cm (25°C)	340micro mhos/cm (25°C)
pH	8.1	8.4

Serial No. 780-81-82

Report No. 25

198Q/5
2nd April, 1963.

ANALYSIS OF GOSSAN SAMPLES FROM EINASLEIGH AND ATHERTON QUEENSLAND

by

S. Baker

Following are results for the partial analysis of gossan samples submitted by D.O. Zimmerman.

Sample No.	Fe	Mn	Cu	Ni	Co
D157	39.2		0.06	0.006	less than 0.005
D158	51.7		0.01	0.03	" 0.005
D159	27.1		0.15	0.02	" "
D160A	54.8		0.01	0.05	" "
D160B	52.3		0.015	0.02	" "
D166B	28.2		0.02	0.02	" "
D166C	31.3		0.04	0.05	" "
D170	7.18	24.6	0.17	0.01	0.15
D209	15.1		0.05	0.02	" 0.005

Serial No. 558-559

Report No.26.

SPECTROGRAPHIC ANALYSIS OF AUGER DRILL SAMPLES FROM TENNANT CREEK NORTHERN TERRITORY

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium, molybdenum and lead content of nineteen auger drill samples from Explorer IX, Tennant Creek, Northern Territory.

The samples were submitted by P.G. Dunn.

The following are the results obtained, in parts per million.

Sample Co-ord.	Depth (feet)	Ni	Co	Cu	V	Mo	Pb
8W/4N	28-40	5-	5-	10	10-	a	10-
8W/5N	26-40	5-	5-	10	10-	2	10
8W/6N	26-40	5-	5-	10-	10-	a	10-
8W/6.5N	28-40	5-	5-	10	10-	a	10-
8W/6.8N	28-40	5-	5-	10	10-	a	10-
8W/7N	28-40	5-	5-	10	10-	a	10-
8W/7N	40-52	5-	5-	20	10-	a	10-
8W/7N	52-64	5-	5-	50	10-	a	10-
8W/7N	64-72	5-	5-	20	10-	a	10-
8W/7.2N	28-40	5-	5-	10-	10-	a	10-
8W/7.5N	28-40	5-	5-	20	10-	a	10-
8W/8N	28-40	5-	5-	10	10-	a	10-
8W/9N	34-46	5-	5-	10-	10-	a	10-
8W/10N	24-46	5-	5-	10-	10-	a	10-
8W/11N	28-46	5-	5-	10-	10-	a	10-
8W/12N	28-40	5-	5-	10-	10-	a	10-
8W/13N	28-40	5-	5-	10-	10-	a	10-
8W/14N	28-40	5-	5-	10-	10-	a	10-
8W/15N	28-40	5-	5-	10-	10-	a	10-

'a' = not detected
'10-' = less than ten

Lab. Serial No. 800
Spec. Plate No. 424.

Report No. 27

SPECTROGRAPHIC ANALYSIS OF AUGER SAMPLES FROM GOLDEN FORTY, TENNANT CREEK, N.T.

by

E.J. Howard

Spectrochemical analysis for trace metals was carried out on 150 auger drill samples from Golden Forty area, Tennant Creek. The samples were submitted by P.G. Dunn as part of a geochemical survey of the area.

Report No. 27. (Cont.)

The following are the results obtained, expressed in parts per million.

Sample Co-ordinates	Depth (feet)	Ni	Co	Cu	V	Mo	Pb
00/0	6-45	5-	5-	10	10	a	10-
00/.5S	6-14	5-	5-	10	20	a	10-
00/13	6-12	5-	5-	10-	10	a	10-
00/1.5S	6-36	5-	5-	10	10	a	10-
00/2S	6-52	5-	5-	10	10-	a	10-
00/2.5S	6-52	5-	5-	10-	10-	a	10-
00/3.0S	6-52	5-	5-	10-	10-	a	10-
00/3.5S	6-40	5-	5-	10	10-	a	10-
00/4S	6-28	5-	5-	10	10-	a	10-
00/4.5S	6-40	5-	5-	10-	10-	5	10-
00/5S	6-22	5-	5-	10	10-	a	10-
00/5.5S	6-16	5-	5-	10	10-	a	20
00/6S	4-10	5-	5-	10	10-	3	70
00/6.5S	6-52	5-	5-	10	10-	a	70
00/7S	6-52	5-	5-	10	10-	a	70
00/7.5S	6-62	5-	5-	20	10-	a	200
00/8S	6-44	5-	5-	10	10-	a	300
00/8.5S	6-52	5-	5-	10-	10-	a	70
00/9S	6-52	5-	5-	10-	10-	a	100
00/9.5S	6-52	5-	5-	10	10-	a	70
00/10S	6-52	5-	5-	10	10-	a	50
00/10.5S	6-44	5-	5-	10-	10-	a	50
00/11S	6-40	5-	5-	10-	10-	a	10-
00/11.5S	6-39	5-	5-	10-	10-	a	10-
00/12S	6-52	5-	5-	10-	10-	a	10
2W/8S	6-46	5-	5-	10	10-	a	100
2W/8.5S	6-51	5-	5-	10	10-	a	100
2W/9S	6-52	5-	5-	10-	10-	a	100
2W/9.5S	6-52	5-	5-	10-	10-	a	70
2W/10S	6-46	5-	5-	10-	10-	a	70
2W/10.5S	6-40	5-	5-	10	10	a	30
2W/11S	6-40	5-	5-	30	10	a	20
2W/11.5S	6-44	5-	5-	20	10-	a	10
2W/12S	4-16	5-	5-	10	10	a	10-
2W/00	6-52	5-	5-	10-	10	a	10-
2W/0.5S	0-4	5-	5-	10	10-	10	10-
2W/1S	6-16	5-	5-	10-	10	a	10-
2W/1.5S	4-10	5-	5-	10-	10	a	10-

Report No. 27 (Cont.)

Sample Co-ordinates	Depth Feet	Ni	Co	Cu	V	Mo	Pb
2W/2S	6-22	5-	5-	10-	10-	a	10-
2W/2.5S	6-22	5-	5-	30	10	a	10-
2W/3S	6-40	5-	5-	20	10	a	10-
2W/3.5S	6-46	5-	5-	30	10	a	10-
2W/4S	6-52	5-	5-	10	10	a	10-
2W/4.5S	6-39	5-	5-	20	10	3	10-
2W/5S	6-34	5-	5-	30	10	2	10-
2W/5.5S	4-16	5-	5-	30	10	2	10
2W/6S	6-22	5-	20	50	10-	3	500
2W/6.5S	6-52	5-	5-	20	10	a	300
2W/7S	6-40	5-	5-	10	10	a	700
2W/7.5S	6-52	5-	5-	10	10	a	200
4W/00	6-52	5-	5-	10-	10	a	10-
4W/1S	6-52	5-	5-	10-	10-	a	10-
4W/1.5S	6-40	5-	5-	10-	10-	a	10-
4W/0.5S	6-52	5-	5-	10-	10-	a	10-
4W/2S	6-22	5-	5-	10-	10	a	10-
4W/2.5S	4-10	5-	5-	10-	10	a	10-
4W/3S	6-22	5-	5-	10	10	a	10-
4W/3.5W	6-22	5-	5-	10	10	a	10-
4W/4S	6-28	5-	5-	10-	10-	a	10-
4W/4.5	6-28	5-	5-	10-	10-	a	10-
4W/5S	6-28	5-	5-	10	10-	a	10-
4W/5.5S	6-16	5-	5-	10	10-	a	10-
4W/6S	6-28	5-	5-	10-	10-	a	10
4W/6.5S	8-46	5-	5-	10	10	a	20
4W/7S	6-46	5-	5-	10	10	a	150
4W/7.5S	6-52	5-	5-	10-	10-	a	200
4W/8S	6-34	5-	5-	10-	10	a	200
4W/8.5S	6-40	5-	5-	10-	10-	a	200
4W/9S	6-52	5-	5-	10-	10-	a	100
4W/9.5S	6-24	5-	5-	10-	10-	a	50
4W/10S	6-40	5-	5-	10-	10-	a	70
4W/10.5S	6-38	5-	5-	10-	10-	a	30
4W/11S	6-28	5-	5-	10-	10-	a	50
4W/11.5S	6-40	5-	5-	10	10-	a	50
4W/12S	6-40	5-	5-	10-	10-	a	30
6W/00	8-52	5-	5-	10-	10-	a	10-
6W/.5S	6-52	5-	5-	10-	10-	a	10-
6W/1S	6-52	5-	5-	10-	10-	a	10-
6W/1.5S	6-52	5-	5-	10-	10	a	10-

Report No. 27 (Cont.)

Sample Co-ordinates	Depth Feet	Ni	Co	Cu	V	Mo	Pb
6W/2S	6-40	5-	5-	10-	10	a	10-
6W/2.5S	6-28	5-	5-	10-	10	a	10-
6W/3S	6-46	5-	5-	10-	10	a	10-
6W/3.5S	6-18	5-	5-	10-	20	a	10-
6W/4S	6-16	5-	5-	10	20	a	10-
6W/4.5S	6-12	5-	5-	10-	20	a	10-
6W/5S	6-22	5-	5-	20	10-	a	10-
6W/5.5S	6-40	5-	5-	20	10	a	10-
6W/6S	6-16	5-	5-	20	10-	a	10-
6W/6.5S	6-22	5-	5-	10-	10	a	10-
6W/7S	6-16	5-	5-	10	20	a	10-
6W/7/5S	6-28	5-	5-	20	10-	a	10-
6W/8S	6-22	5-	5-	10	20	a	50
6W/8.5S	6-34	5-	5-	10	20	a	70
6W/9S	6-40	5-	5-	10	20	a	70
6W/9.5S	6-52	5-	5-	10	10	a	50
6W/10S	6-26	5-	5-	10-	20	a	10
6W/10.5S	6-44	5-	5-	10	10	a	20
6W/11S	6-34	5-	5-	10-	10-	a	20
6W/11.5S	6-40	5-	5-	10-	10	3	50
6W/12S	6-40	5-	5-	10-	10	a	30
8W/00	6-52	5-	5-	20	10	a	10-
8W/0.5S	8-52	5-	5-	10-	10-	a	10
8W/1S	10-52	5-	5-	10-	10	a	10
8W/1.5S	10-52	5-	5-	10-	10	a	10-
8W/2S	12-46	5-	5-	10-	10	a	10-
8W/2.5S	6-28	5-	5-	10-	10	a	10-
8W/3S	6-16	5-	5-	10-	10-	a	10-
8W/3.5S	6-22	5-	5-	10-	10	a	10-
8W/4S	6-16	5-	5-	10-	10	a	10-
8W/4.5S	6-22	5-	5-	10	10	a	10-
8W/5S	6-40	5-	5-	30	10	a	10-
8W/5.5S	6-28	5-	5-	10-	10	a	10-
8W/6S	6-34	5-	5-	10	10-	a	10-
8W/6/5S	6-28	5-	5-	10	10-	a	10-
8W/7S	6-34	5-	5-	10-	10-	a	10-
8W/7.5S	6-28	5-	5-	10-	10-	a	10-
8W/8S	6-34	5-	5-	10-	10	a	10-
8W/8.5S	6-16	5-	5-	10-	10-	a	50
8W/9S	6-28	5-	5-	10-	10-	a	70
8W/9.5S	6-16	5-	5-	10-	10-	a	10

Report No. 27 (Cont.)

Sample Co-ordinates	Depth (feet)	Ni	Co	Cu	V	Mo	Pb
8W/10S	6-28	5-	5-	10	10-	a	20
8W/10.5S	6-34	5-	5-	10-	10-	a	10
8W/11S	6-46	5-	5-	10-	10-	a	10
8W/11.5S	6-40	5-	5-	10-	10-	a	30
8W/12S	6-40	5-	5-	10-	10-	a	10-
10W/00	8-52	5-	5-	10	10-	a	10
10W/0.5S	10-52	5-	5-	20	10	a	10-
10W/1S	12.52	5-	5-	10-	10	a	10-
10W/1.5S	6-52	5-	5-	10-	20	a	10-
10W/2S	10-46	5-	5-	10-	10	a	10-
10W/2.5S	8-40	5-	5-	10-	10	a	10-
10W/3S	6-22	5-	5-	10-	20	a	10-
10W/3.5S	6-28	5-	5-	10-	20	a	10-
10W/4S	6-22	5-	5-	10-	20	a	10-
10W/4.5S	6-39	5-	5-	10-	10	a	10-
10W/5S	4-16	5-	5-	10-	10	a	10-
10W/5.5S	6-14	5-	5-	10	10	a	10-
10W/6S	6-28	5-	5-	50	10	a	10-
10W/6.5S	6-28	5-	5-	20	10	a	10-
10W/7S	6-40	5-	5-	10	20	a	10-
10W/7.5S	6-34	5-	5-	10-	20	a	10-
10W/8S	6-22	5-	5-	10-	10	a	10-
10W/8.5S	6-39	5-	5-	10-	10	a	20
10W/9S	6-40	5-	5-	10-	20	a	70
10W/9.5S	6-28	5-	5-	10-	10	a	20
10W/10S	6-28	5-	5-	10-	20	a	10-
10W/10.5S	6-22	5-	5-	20	10-	a	10-
10W/11S	6-40	5-	5-	10-	10-	a	10-
10W/11.5S	6-46	5-	5-	10	10-	a	20
10W/12S	6-46	5-	5-	10	10	a	10-

Tin, beryllium and phosphorus were sought but were not detected in any sample.

'a' = not detected

'10-'= less than 10.

Laboratory serial Nos. 766, 771, 783, 787

Plate Nos. 416-422.

Report No. 28 84NT/1

29th March, 1963.

SPECTROGRAPHIC ANALYSIS OF AUGER SAMPLES FROM RUM JUNGLE N.T.

by

E.J. Howard

The results attached are from spectrographic analysis of auger samples from Castlemaine South, Rum Jungle N.T.

The samples were submitted by B.P. Ruxton as part of a geochemical survey of the area.

All results are expressed in parts per million.

Grid Co-ordinates	Depth feet.	Ni	Co	Cu	V	Mo	Pb
140E/6N	2-14	30	10	30	150	5	20
	14-39	5	5-	10	10	2	30
140E/40	2-12	100	20	100	300	10	30
	12-25	70	5	70	300	a	30
140E/2N	2-12	150	30	70	300	7	30
	12-40	150	20	70	200	10	30
140E/0N	2-10	70	20	150	100	7	50
	10-40	100	30	70	150	7	50
140E/2S	2-10	70	50	50	200	a	10-
	10-14	5	20	20	70	a	10-
14CE/4S	2-10	70	20	50	150	5	50
	10-39	50	10	30	200	2	50
140E/6S	2-10	50	10	70	200	7	50
	10-40	10	5-	50	70	a	30
140E/8S	2-10	30	10	30	300	15	30
	10-40	20	5-	20	70	2	50
140E/10S	2-4	30	70	30	100	2	30
	4-40	50	50	30	150	a	20
140E/12S	2-6	20	5-	20	100	2	150
	6-40	50	5	30	150	a	200
140E/14S	2-6	70	30	50	200	2	30
	6-40	70	20	20	300	5	10
140E/16S	2-12	50	20	30	200	2	200
	12-40	70	50	500	500	7	2000
140E/18S	2-4	100	30	70	300	7	200
	4-40	70	20	20	100	a	50
138E/6N	2-36	50	10	50	150	5	20
	36-40	5-	5-	10	70	a	10-

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet.	Ni	Co	Cu	V	Mo	Pb
138E/4N	2-24	50	10	50	150	7	20
	24-40	5	5-	10	50	2	10
138E/2N	2-10	50	20	30	300	5	20
	10-40	5	10	10	70	a	10-
138E/00N	2-8	70	30	20	100	5	10-
	8-46	150	50	10	150	a	10-
138E/2S	2-8	30	20	30	150	a	10-
	8-40	70	50	20	100	a	10-
138E/4S	2-4	150	100	100	70	7	30
	8-40	100	70	100	200	5	30
138E/6S	2-6	50	20	50	200	7	30
	6-30	20	5-	20	70	2	20
138E/8S	2-4	200	70	300	200	10	30
	4-34	200	50	300	300	10	30
138E/10S	2.4	20	70	30	100	2	70
	4-40	10	20	30	70	2	20
138E/12S	2-8	70	20	70	200	5	1500
	8-40	70	20	200	150	2	300
138E/14S	2-8	70	10	30	100	5	30
	8-40	30	10	20	150	5	30
138E/16S	2-6	50	20	20	150	2	100
	6-40	70	30	300	150	2	1000
138E/18S	2-14	5-	5-	30	300	15	100
	14-32	30	5	30	150	a	70
137E/5S	2-6	20	5-	30	100	2	20
	6-23	70	5	70	150	a	10
137E/6S	2-6	70	10	70	150	5	100
	6-33	100	5	100	150	a	50
137E/7S	2-12	150	50	200	200	15	100
	12-40	70	10	100	100	2	50
136E/6N	2-22	70	20	70	200	7	20
		No Sample					
136E/4N	2-10	20	5	50	150	5	30
	10-30	10	5-	10	100	2	30
136E/2N	2-12	20	5	70	150	5	20
	12-40	200	70	100	150	a	10
136E/00	2-14	100	50	50	70	7	30
	14-33	100	50	70	150	7	20
136E/2S	2-4	50	30	70	300	5	20
	4-12	30	30	10	300	a	10

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet.	Ni	Co	Cu	V	Mo	Pb
136E/4S	2-4	50	20	50	70	2	10
	4-40	150	150	100	150	5	20
136E/5S	2-10	50	10	70	150	2	30
	10-13	50	5	20	100	a	30
136E/6S	2-6	100	30	100	150	15	50
	6-40	150	20	150	150	10	50
136E/7S	2-20	70	50	100	300	15	70
	20-40	100	30	100	200	10	50
136E/8S	2-22	50	20	150	200	10	150
	22-38	50	5	150	200	5	50
136E/10S	2-16	50	5	30	150	5	70
	16-40	50	5	30	100	2	20
136E/12S	2-10	20	20	30	300	7	100
	10-40	30	10	50	150	5	70
136E/14S	2-10	70	20	50	100	5	30
	10-40	30	10	30	150	5	50
136E/16S	2-10	20	10	30	150	5	50
	10-40	20	10	20	100	a	30
136E/18S	2-10	50	20	20	150	2	150
	10-32	30	10	20	150	5	1000
135E/7S	2-6	70	20	200	300	10	70
	6-13	50	5	100	200	a	30
134E/6N	0-20	70	20	70	300	7	30
	20-40	70	20	100	150	7	30
134E/4N	0-16	70	20	50	200	7	30
	16-40	5	5-	10	100	a	30
134E/2N	0-10	100	30	50	300	10	20
	10-26	5-	5-	10-	20	a	10
134E/00	2-8	70	100	30	200	7	50
	8-40	150	70	30	150	5	20
134E/2S	2-10	30	20	50	150	2	10
	10-34	20	30	30	150	a	10-
134E/4S	2-4		No result				
	4-33	70	30	20	200	7	10
134E/6S	2-10	50	10	70	150	5	50
	10-40	150	70	200	150	5	70
134E/8S	2-14	70	10	50	150	5	150
	14-40	50	30	100	300	5	2000
134E/10S	2-8	30	5-	70	200	5	200
	8-40	70	5	30	100	a	30

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet.	Ni	Co	Cu	V	Mo	Pb
134E/14S	2-10	150	20	30	150	5	70
		No sample					
134E/16S	2-10	70	10	20	200	a	30
	10-40	50	20	30	300	a	100
134E/18S	2-12	70	50	50	100	2	50
	12-40	70	20	20	70	a	50
132E/6N	2-8	50	10	30	150	5	50
	8-40	10	5-	10	70	a	50
132E/4N	2-14	70	20	30	300	7	50
	14-40	200	70	50	300	2	30
132E/2N	2-16	150	30	30	300	20	50
	16-40	20	5	10-	150	a	30
132E/00	2-4	150	50	20	100	10	10
	4-28	100	50	10	100	7	10
132E/2S	2-16	10	20	30	150	a	10-
	16-40	5	20	30	100	a	10-
132E/4S	0-8	No result					
	8-10	100	100	50	100	5	10
132E/6S	2-20	70	50	150	200	5	50
	20-40	150	150	150	200	7	30
132E/8S	2-24	5-	5	10	50	a	10
	24-40	50	50	50	100	2	20
132E/10S	2-10	50	10	50	150	5	70
	10-40	30	20	50	150	a	50
132E/12S	2-10	50	10	300	200	5	150
	10-40	70	70	1500	200	5	100
132E/14S	2-12	30	10	50	200	5	200
	12-40	70	50	2000	200	5	1000
132E/16S	2-10	50	5	30	300	7	100
	10-40	30	5	30	150	2	150
132E/18S	2-10	30	5	30	150	7	150
	10-33	30	20	30	100	a	30
130E/6N	2-8	50	10	10	100	7	30
	8-24	5	5-	10	50	2	50
130E/4N	2-10	No Result					
	10-17	No Result					
130E/2N	2-16	No Result					
		No sample					
130E/00	2-6	100	50	50	200	50	50
	6-40	300	150	10	200	10	50

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet.	Ni	Co	Cu	V	Mo	Pb
130E/2S	2-16	5	20	10	100	a	10
	16-40	5-	20	10-	150	a	10
130E/4S	2-10	150	70	30	150	7	30
	10-40	200	100	30	150	a	20
130E/6S	2-10	70	20	30	200	30	70
	10-40	50	5	20	200	5	100
130E/8S	2-10	150	30	100	200	5	100
	10-26	150	30	200	200	7	70
130E/10S	2-10	30	5	200	200	7	100
	10-40	30	20	700	200	2	70
130E/12S	0-10	50	10	70	100	a	100
	10-40	50	100	200	150	50	500
130E/14S	2-10	70	10	30	150	5	70
	10-36	50	10	50	100	2	500
130E/16S	2-6	50	5	70	300	10	700
	6-40	70	20	50	200	5	1500
130E/18S	2-10	30	5	50	200	20	200
	10-29	50	20	30	150	7	300
129.5E/2N	0-22	150	70	10	200	10	10-
	22-40	200	100	10	200	7	10-
128E/6N	2-14	10	5	10	10	a	10
	14-30	30	5-	20	70	a	70
128E/4N	0-20	100	50	30	100	7	20
	20-40	70	100	10-	150	7	10-
128E/2N	2-10	150	50	20	200	7	10
	10-40	70	30	10-	150	5	10
128E/00	2-8	150	20	200	150	30	70
	8-40	50	5	20	150	10	50
128E/2S	2-4	70	20	200	150	10	30
	4-40	70	30	50	200	20	100
128E/4S	2-4	70	20	50	300	10	30
	4-40	5	5	30	150	2	50
128E/6S	2-10	100	30	70	200	10	70
	10-40	70	10	20	100	a	10-
128E/8S	2-12	20	30	30	150	10	100
	12-40	30	10	20	150	a	50
128E/10S	2-14	50	5	100	200	10	700
	14-40	50	20	200	150	2	700
128E/12S	2-6	30	5	50	150	50	150
	6-10	50	10	30	100	5	30

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet	Ni	Co	Cu	V	Mo	Pb
128E/14S	2–4	50	5	50	500	20	100
	4–26	30	20	30	100	5	100
128E/16S	2–12	30	5	50	150	10	200
	12–40	50	20	70	150	2	700
128E/18S	2–4	20	5	50	200	10	100
	4–40	20	20	10	100	a	10
126E/6N	0–4	70	10	30	70	2	50
	4–32	5	5–	10–	20	a	200
126E/4N	2–16	150	30	10–	100	7	10
		No sample					
126E/00	2–4	100	50	200	100	20	100
	4–40	50	10	70	150	10	50
126E/2S	2–6	70	50	30	200	15	70
	6–40	50	50	300	200	2	50
126E/4S	2–10	50	10	50	150	10	70
	10–40	30	10	70	150	7	100
126E/6S	2–12	70	50	200	200	10	100
	12–42	30	20	20	150	5	100
126E/8S	2–10	50	10	200	100	7	150
	10–40	50	30	300	200	2	100
126E/10S	2–6	50	10	70	150	10	100
	6–40	30	20	50	150	2	50
126E/12S	2–6	70	10	100	200	10	500
	6–40	100	50	70	150	5	200
126E/14S	2–16	70	5	70	200	15	200
	16–40	100	30	50	100	2	300
126E/16S	2–6	50	10	50	300	20	150
	6–40	50	20	50	50	a	10–
126E/18S	2–10	20	30	50	100	5	50
	10–40	5	20	50	150	a	10–
124E/6N	2–14	200	100	30	70	5	10–
	14–40	No result					
124E/4N	2–6	150	100	30	150	5	10–
	6–40	No result					
124E/2N	2–6	150	50	50	150	15	70
	6–40	50	10	70	100	20	50
124E/00	2–8	50	10	50	300	15	30
	8–40	50	50	30	100	a	20
124E/2S	2–16	30	20	30	200	10	30
	16–40	50	70	30	200	7	20

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet	Ni	Co	Cu	V	Mo	Pb
124E/4S	2-6	30	10	20	300	10	50
	6-40	70	30	70	150	5	20
124E/6S	2-12	70	20	100	150	7	100
	12-40	100	30	70	200	2	100
124E/8S	2-10	70	10	500	150	5	200
	10-40	50	20	500	150	2	300
124E/10S	2-8	70	10	150	200	10	150
	8-40	50	30	100	200	2	50
124E/12S	2-8	70	5	100	200	20	150
	8-40	50	20	70	150	5	50
124E/14S	2-8	50	5	70	300	20	100
	8-40	50	20	50	100	a	30
124E/16S	2-4	50	10	50	500	15	100
	4-40	30	10	20	100	a	10-
124E/18S	2-10	20	30	70	200	5	50
	10-40	10	30	20	150	a	10-
122E/6N	2-6	200	150	30	50	7	10
	6-40	200	150	10	70	5	10
122E/4N	2-16	300	200	20	70	7	20
	16-17	200	200	10	70	7	10
122E/2N	2-8	150	200	500	200	15	50
	8-40	70	70	300	150	10	70
122E/00	2-6	70	100	70	300	20	50
	6-40	60	50	30	150	2	20
122E/2S	2-8	50	20	70	300	10	50
	8-40	30	50	50	200	7	20
122E/4S	2-4	70	20	30	150	20	100
	4-14	20	10	20	150	a	50
122E/6S	2-8	70	20	70	200	10	100
	8-40	20	10	70	150	2	100
122E/8S	2-8	70	10	200	300	10	200
	8-40	50	10	100	200	a	150
122E/10S	2-10	50	10	100	200	10	100
	10-40	50	20	150	150	2	150
122E/12S	2-6	20	5	70	150	10	100
	6-40	30	20	50	70	a	70
122E/14S	2-10	30	10	50	200	10	100
	10-40	20	20	10	50	a	20
122E/16S	2-4	10	10	50	200	5	50
	4-40	100	20	20	70	a	10-

Report No. 28 (Cont.)

Grid Co-ordinates	Depth feet	Ni	Co	Cu	V	Mo	Pb
122E/18S	2-8	5	20	50	100	2	20
	8-40	5	20	20	100	a	10-
120E/6N	2-4	200	200	20	100	5	10
	4-40	200	150	10-	50	5	10-
120E/4N	2-6	300	150	50	70	10	10
	6-12	150	70	50	50	7	10
120E/2N	2-6	150	100	50	300	10	50
	6-40	50	30	50	200	a	20
120E/00	2-6	100	50	50	300	15	50
	6-40	50	30	50	150	2	30
120E/2S	2-6	50	50	70	500	15	70
	6-40	50	20	30	500	a	20
120E/4S	2-4	50	10	50	100	7	50
	4-40	20	10	30	200	a	30
120E/6S	2-8	50	10	70	300	5	150
	8-40	30	5	30	300	5	50
118E/8N	2-10	200	150	30	100	5	10-
	10-40	100	70	10-	10	5	10-
118E/6N	2-12	150	100	20	70	5	20
	12-40	150	70	10	70	2	10-
118E/4N	2-18	200	100	30	300	7	20
	18-40	150	20	20	100	a	20
118E/2N	2-12	150	70	100	200	10	50
	12-40	100	150	200	200	a	30
118E/00	2-18	50	10	300	150	10	300
	18-40	70	10	200	150	2	700
118E/2S	2-4	70	30	70	200	10	100
	4-40	70	50	50	300	2	100
118E/4S	2-6	150	100	1000	200	7	200
	6-40	70	50	70	150	2	200
118E/6S	2-8	30	30	70	100	7	200
	8-40	30	20	70	100	a	100
116E/12N	2-6	150	70	50	100	7	10
	6-12	150	100	30	150	5	10
116E/10N	2-4	200	70	70	100	5	20
	4-40	200	70	20	100	7	10
116E/8N	2-6	300	150	20	150	7	10
		No Sample					
116E/6N	2-16	200	150	30	200	7	20
	16-40	200	100	50	200	2	10-

Report No.28 (Cont.)

Grid Co-ordinates	Depth feet	Ni	Co	Cu	V	Mo	Pb
116E/4N	2-12	200	100	70	200	7	30
	12-40	300	100	200	70	2	70
116E/2N	2-14	150	50	200	200	10	300
	14-40	150	50	500	150	5	500
116E/00	2-6	70	10	70	100	5	150
	6-40	200	70	10	150	7	10
116E/2S	2-6	100	10	50	200	2	200
	6-40	30	10	10	200	2	100
116E/4S	2-6	100	70	200	300	10	100
	6-40	20	10	30	100	[illegible]	20
116E/6S	2-8	70	10	200	150	5	300
	8-40	70	50	150	150	2	700
114E/10N	2-14	100	50	30	150	5	30
	14-22	200	150	30	200	7	20
114E/8N	2-16	150	70	30	300	7	50
	16-40	150	150	10	50	5	10-
114E/6N	2-8	200	100	50	200	5	30
	8-36	300	150	100	200	2	200
114E/4N	2-14	500	150	30	300	7	50
	14-40	20	20	30	150	a	30
114E/2N	2-8	150	30	50	200	10	200
	8-40	100	20	50	200	2	70
114E/4S	2-10	100	20	500	150	2	500
	10-40	70	30	300	200	5	150
114E/6S	2-8	70	50	150	300	10	150
	8-40	50	10	30	200	2	70

'a' = not detected

'10-' = less than ten.

Report No. 29

SPECTROGRAPHIC ANALYSIS OF ROCK SAMPLES FROM DIXON RANGE AREA KIMBERLY RANGES, W.A.

by

E.J. Howard.

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium and lead content of 89 rock samples from the Dixon Range area, W.A.

The samples were submitted by J.W. Smith.

The following results are expressed in parts per million.

Sample No.	Ni	Co	Cu	V	Pb
10	200	20	50	10-	10-
12	5-	50	30	700	10-
16	70	70	10-	50	10-
18	No Result				
21	5-	20	10-	70	10-
22	50	50	20	200	10-
23	20	20	20	30	10-
25	5-	5-	10	20	10-
26	10	5	10-	20	10-
27	5	5	10-	20	10-
30	10	5	10	50	10-
33	100	50	20	70	10-
34	50	10	20	50	10-
36	No Result				
38	100	30	20	70	10-
41	150	70	10	150	10-
42	100	30	30	50	10-
45	150	30	20	50	10-
46	150	30	20	10-	10-
47	100	30	20	10-	10-
50	100	50	20	20	10-
51	150	50	20	70	10-
52	No Result				
49	No Result				
53	200	70	20	100	10-
54	150	30	20	20	10-
56	150	70	30	20	10-
60	150	50	10-	20	10-
63	300	70	50	30	10-
64	200	50	10	100	10-
65	150	70	20	150	10-
66	150	20	20	100	10-

Report No. 29 (Cont.)

Sample No	Ni	Co	Cu	V	Pb
67	200	70	30	70	10-
68	200	70	20	100	10-
69	150	50	20	30	10-
70	150	50	20	70	10-
71	150	30	30	50	10-
72	100	30	20	30	10-
75	150	30	20	10	10-
76	200	70	30	30	10-
77	150	30	20	20	10-
79	150	50	10	10	10-
80	100	50	30	10	10-
81	150	70	20	20	10-
85	150	50	20	10	10-
92	150	50	20	20	10-
93	100	50	10	30	10-
95	150	20	20	50	10-
96	50	20	10	10-	10-
99	100	30	10	10-	10-
104	100	50	10	10	10
106	100	30	20	10	10-
DD11-72.1	50	20	20	30	10-
11-72.3	100	30	10	70	10-
DD11-72.4	20	20	10	50	10-
11-72.5	20	10	20	50	10-
DD11-72.9	No Result				
11-72.10	70	30	10	20	10-
11-72.27	5-	5-	10-	10	20
11-72.37	5-	5-	10	10-	10
11-72-46	20	10	10-	20	10-
DD11-72-47	20	10	20	10	10-
11-72-54	100	20	10	10-	10-
11-72-55	70	20	10	70	10-
11-72-62	20	10	10	70	10-
11-72-63A	5-	5-	10-	10-	20
DD11-72-63B	50	20	10-	10-	10-
11-72-63D	100	30	10	10	10-
11-72-63E	70	20	20	10	10-
11-72-63F	100	50	10	20	10-
11-72-63I	50	20	10	20	10-
11-72-64B	70	50	10	50	10-

Report No.29 (Cont.)

Sample No.	Ni	Co	Cu	V	Pb
11-72-64E	5-	5	10-	20	10-
11-72-64G	5-	5	10	50	10-
12-22-20	150	70	30	50	10-
12-22-22	50	30	20	50	10-
12-22-42B	150	50	30	100	10-
13-56-18	50	30	20	70	10-
13-56-24	150	30	50	100	10-
13-56-26	500	30	10	10-	10-
13-56-30	150	30	10	10-	10-
13-56-32	20	5	10-	50	10-
13-56-33	10	5-	10-	10-	10-
13-56-35	100	30	10	10-	10-
DD13-56-35	70	20	10	10-	10-
13-56-38	30	20	10	70	10-
13-56-44(1)	100	30	20	10-	10-
13-56-44(2)		No Result			

'10-' = less than 10

Lab. serial No. 731
Plate No. 395-398

Report No. 30 50NT/1

8th April, 1963.

SPECTROGRAPHIC ANALYSIS OF AUGER SAMPLES FROM TENNANT CREEK N.T.

by

E.G. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium, molybdenum and lead content of 52 auger samples from Tennant Creek, N.T.

The samples were submitted by P.G. Dunn as part of a geochemical prospecting survey.

The following results are expressed in parts per million.

MARY LANE AREA:

Sample Co-ordinates	Depth Feet	Ni	Co	Cu	V	Mo	Pb
00/4N	6-22	5-	5-	10-	10	a	10-
00/8N	6-22	5-	5-	10-	10	a	10-
00/12N	4-8	5-	5-	10-	10	a	10-
00/16N	6-22	5-	5-	10-	10	a	10-

Report No. 30.(Cont.)

Sample Co-ordinates	Depth Feet	Ni	Co	Cu	V	Mo	Pb
00/20N	6-22	5-	5-	10-	10	a	10-
00/24N	6-22	5-	5-	10-	10-	a	10-
00/28N	8-22	5-	5-	10-	10-	a	10-
00/32N	8-22	5-	5-	10-	20	a	10-
00/35N	6-22	5	5-	10-	20	a	10-
6W/00	6-22	5-	5-	10-	20	a	10-
6W/4N	6-22	5-	5-	10-	20	a	10-
6W/8N	6-16	5-	5-	10-	10	a	10-
6W/12N	0-3	5-	5-	10-	10	a	10-
6W/16N	6-22	5-	5-	10-	10	a	10-
6W/20N	6-22	5-	5-	10-	10	a	10-
6W/20S	6-22	5-	5-	10-	10-	a	10-
6W/16S	6-22	5-	5-	10-	10	a	10-
6W/12S	6-22	5-	5-	10-	10-	a	10-
6W/8S	6-22	5	5	10-	10	a	10-
6W/4S	6-22	5-	5-	10-	10	a	10-
<u>EXPLORER IX</u>							
4W/4N	20-40	5-	5-	20	10-	3	10-
4W/5N	26-40	5-	5-	10	10	a	10-
4W/6N	24-40	5-	5-	10-	10-	a	10-
4W/6-5N	22-40	5-	5-	10-	10-	a	10-
4W/7N	22-40	5-	5-	10-	10-	a	10-
4W/7.5N	22-40	5-	5-	50	10	a	10-
4W/8N	22-40	5-	5-	20	10-	7	10-
4W/9N	26-40	5-	5-	10-	10-	a	10-
4W/10N	28-40	5-	5-	10-	10-	a	10-
4W/11N	26-40	5-	5-	10-	10	a	10-
4W/12N	24-40	5-	5-	10-	10-	a	10-
8W/16N	26-40	5-	5-	10-	10-	a	10
12W/4N	20-40	5-	5-	30	10	5	10-
12W/5N	20-28	5-	5-	10-	10-	a	10-
12W/6N	24-40	5-	5-	10-	10	a	10-
12W/7N	28-40	5-	5-	20	10-	a	70
12W/7.5N	28-40	5-	5-	10	10-	a	200
12W/8N	28-40	5-	5-	50	10	a	10-
12W/8.5N	28-40	5-	5-	10-	10	a	10-
12W/9N	32-40	5-	5-	10-	10-	a	10
12W/10N	36-46	5-	5-	10-	10-	a	10-
12W/11N	22-28	5-	5-	10-	10-	a	10
12W/12N	20-28	5-	5-	10-	10-	a	10-

Report No. 30 (Cont.)

EXPLORER XIII

Sample Co-ordinates	Depth feet	Ni	Co	Cu	V	Mo	Pb
24W/4N	22-34	5	5	10-	10-	a	10-
24W/5N	24-40	70	70	20	20	a	20
24W/6N	20-40	50	50	30	20	a	10
24W/7N	24-40	70	30	100	10	a	10
24W/8N	22-40	5	5	50	10-	a	10-
24W/9N	22-34	5	10	50	10	a	20
24W/10N	22-34	5-	5-	20	30	a	10-
24W/11N	22-40	5-	5	20	20	a	10-
24W/12N	20-40	5-	5-	30	20	a	10-

5- = less than five

(a) = not detected

Beryllium, tin and phosphorus were also sought but were not detected in any sample.

Lab. serial Nos. 801, 849

Plate Nos. 427, 428, 429.

REPORT NO. 31

106Q/17
9th April, 1963

ANALYSIS OF LATERITIC MINERALS FROM THE RICHMOND 1:250,000 AREA, QUEENSLAND

by

S. Baker

Following are results of the partial analysis of three samples, described as lateritic minerals, submitted by R.R. Vine.

Sample No.	SiO_2	Fe_2O_3	Al_2O_3	TiO_2	Loss on ignition
GAB 868, Richmond Photo 5/5019, pt. 341	54.7	26.5	8.8	0.60	8.10
GAB 1011, Richmond Photo 4/5187 pt. 56	51.3	25.2	13.0	0.50	8.20
GAB 1036A, Richmond Photo 2/5103, Pt. 57	39.7	35.3	16.9	0.55	7.55

Serial No. 562

REPORT NO. 32

50 NT/1
18th April, 1963

SPECTROGRAPHIC ANALYSIS OF AUGER SAMPLES FROM TENNANT CREEK, N.T.

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium, molybdenum and lead content of 78 auger samples from Mary Lane 'B', Tennant Creek, N.T.

The samples were submitted by P.G. Dunn as part of a geochemical survey.

The following results are expressed in parts per million.

Sample Co-ords.	Depth(ft)	Ni	Co	Cu	V	Mo	Pb
150E/15S	6-22	5-	5-	10-	10	a	10-
150E/14S	6-22	5-	5-	10-	10	a	10-
150E/13S	6-22	5-	5-	10-	20	a	10-
150E/12S	6-22	5-	5-	10-	10	a	10-
150E/11S	6-22	5-	5-	10-	10	a	10-
150E/10S	6-22	5-	10	300	10	7	700
150E/9S	6-22	5-	5-	10-	10	a	10-
150E/8S	6-22	5-	5-	10-	10-	a	10-
150E/7S	6-22	5-	5-	10-	10	a	10-
150E/6S	6-22	5-	5-	10-	20	a	10-
150E/5S	6-22	5-	5-	10-	10-	a	10-
150E/4S	6-22	5-	5-	10-	10	a	10-

Sample Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
150E/3S	6-22	5-	5-	10-	10	a	10-
150E/2S	6-22	5-	5-	10-	10	a	10-
150E/1S	6-22	5-	5-	10-	10	a	10-
150E/00	6-22	20	5-	30	70	a	10-
150E/1N	6-22	5-	5-	10-	30	a	10-
150E/2N	6-22	5-	5-	10-	30	a	10-
150E/3N	6-22	5-	5-	10-	30	a	10-
150E/4N	6-22	5-	5-	10-	10	a	10-
150E/5N	6-22	5-	5-	10-	20	a	10-
150E/6N	6-22	50	5-	20	30	a	70
150E/7N	6-22	200	100	20	20	a	100
150E/8N	6-22	50	5-	10	30	a	70
150E/9N	6-22	10	5-	10	10-	a	100
150E/10N	6-22	10	5-	10	10	a	50
160E/15S	6-22	5	5-	10-	10	a	10
160E/14S	6-22	5	5-	10	10	a	100
160E/13S	6-22	5-	5-	10-	10	a	10
160E/12S	6-22	5	5-	100	10	a	20
160E/11S	6-22	5-	5-	200	10-	a	10-
160E/10S	6-22	5-	5-	10-	10-	a	10-
160E/9S	6-22	5-	5-	10-	10-	a	10-
160E/8S	6-22	5-	5-	10-	10-	a	10-
160E/7S	6-22	5-	5-	10-	10-	a	10-
160E/6S	6-22	5-	5-	10-	10-	a	10-
160E/5S	6-22	5-	5-	10-	10-	a	10-
160E/4S	6-22	5-	5-	10-	10-	a	10-
160E/3S	6-22	5-	5-	10-	10	a	10-
160E/2S	6-22	5-	5-	10-	10-	a	10-
160E/1S	6-22	70	10	10	10	a	20
170E/1N	6-16	5-	5-	10-	20	a	10-
170E/2N	6-22	5-	5-	10-	10	a	10-
170E/3N	outcrop	5-	5-	10	10-	a	10-
170E/4N	outcrop	5-	5-	20	10-	a	10-
170E/5N	outcrop	5-	5-	10-	10	a	10-
170E/6N	6-22	30	20	20	10	a	200
170E/7N	6-22	70	30	20	10	a	70
170E/8N	6-22	70	5	20	30	a	70
170E/9N	6-22	5-	5-	10-	30	a	10-
170E/10N	6-22	5-	5-	10-	30	a	10-
170E/15S	6-22	20	10	10	20	a	20
170E/14S	6-22	30	30	10-	10	a	10
170E/13S	6-22	30	20	10-	20	a	10-
170E/12S	6-22	150	30	10	70	a	10
170E/11S	6-22	20	5	10-	10	a	10

Sample Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
170E/10S	6-22	150	10	20	50	a	200
170E/9S	6-22	30	5	20	30	a	150
170E/8S	6-22	150	70	20	30	a	10-
170E/7S	6-22	20	5-	10	20	a	10-
170E/6S	6-18	50	5	10	20	a	10-
170E/5S	6-22	5-	5-	10	10	a	20
170E/4S	6-22	5-	5-	10	30	a	50
170E/3S	6-22	5-	5-	10-	20	a	10-
170E/2S	6-22	5-	50	10	10-	5	10-
170E/1S	6-22	10	5-	10-	20	a	10-
170E/00	6-16	200	70	20	50	a	10-
160E/00	8-22	30	70	30	30	a	10-
160E/1N	6-22	5-	5-	10-	20	a	10-
160E/2N	6-18	10	50	10-	10-	a	10-
160E/3N	6-22	5	5-	10-	10	a	10-
160E/4N	6-22	5	5-	10-	10	a	10-
160E/5N	6-22	5-	5-	10-	30	a	10-
160E/6N	6-22	5-	5-	10-	20	a	10-
160E/7N	6-22	5-	5-	10-	30	a	10-
160E/8N	6-22	5-	5-	10-	10	a	10-
160E/9N	6-22	5-	5-	10-	20	a	10-
160E/10N	6-22	10	5-	10-	20	a	10-

Tin, berryllium and phosphorous were sought but were not detected in any sample.

'a' - not detected
'10-' - less than 10.

Lab. Serial No. 858

Plate Nos. 435, 436, 437, 438.

REPORT NO. 33

106G/13/143
26th April, 1963.

DETERMINATIONS OF IRON IN A CORE SAMPLE FROM MORESTONE NO.1, CAMOOWEAL 1:250,000 AREA, QUEENSLAND

by

S. Baker

Following is the result of the estimation of iron on a core sample from Morestone No.1 - Core 4, 1266 feet, submitted by J. Casey.

Iron (as Fe) 5.56 percent.

Lab.Serial No. 864.

REPORT NO. 34 112NT/ 15

26th April, 1963

SPECTROGRAPHIC ANALYSIS OF ROCK SAMPLES FROM MOUNT LIEBIG AND MOUNT RENNIE, NORTHERN TERRITORY

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium and lead content of 24 rock samples from Mount Liebig and Mount Rennie, Northern Territory.

The samples were submitted by A. Wells.

The following are the results obtained - expressed in parts per million:

Sample No.	Ni	Co	Cu	V	Pb
ML6	5-	5-	10-	10-	10
ML14	5-	5-	10-	10-	10-
ML19	5-	5-	10-	10-	10-
ML30D	5-	5-	10-	10-	10-
ML36	5-	5-	10-	50	10-
ML41	5-	5-	10-	10-	10-
ML42	5-	5-	10-	10-	20
ML49	5-	5-	10-	10-	10-
ML71 a	5-	5	500	10-	200
ML71 b	5-	5	5000+	10-	300
M71 c	5-	5-	10-	10-	10
M71 d	5-	5-	10-	10-	100
ML71 e	5-	5-	5000+	10-	1000
ML72	5-	5-	10-	10-	10
ML101	5-	5-	10-	10-	10-
ML106	5-	5-	10	20	10-
ML120	5-	5-	10-	10-	10-
ML156	5-	5-	10-	10-	10
ML160	5-	5-	10-	10-	10-
ML132 (iv)	5-	5-	10-	10-	10
MR23 a	5-	5-	10-	10-	10-
MR23 b	5-	5-	10-	10-	10-
MR26	5-	5-	10-	10-	10-
Mt.BEADELL	5-	5-	10-	10-	10.

Tin, beryllium and phosphorus were not detected in any sample. Silver was just detectable in ML71a, 71b and 71c.

Lab Serial No.862.
Plate No.442.

REPORT NO.35

SPECTROCHEMICAL ANALYSIS OF ROCK SAMPLES FROM THE TERRITORY OF NEW GUINEA

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium, molybdenum, tin and lead content of 55 rock samples from Ramu area, T.N.T.

The samples were submitted by F.E. Dekker.

Sample No.	Ni	Co	Cu	V	Mo	Pb	Rock type
H28 'A'	5-	5-	10-	30	3	70	sandstone
H28 'B'	5-	5-	10-	10-	a	10-	sandstone (indurated)
H28 'C'	5-	5-	10	70	a	30	red tuffaceous mudstone
H30	20	20	20	100	a	10-	basalt
H33	5-	5-	10	30	a	50	red mudstone
H37 'A'	5-	10	20	150	a	10-	crystal tuff
H37'B'	5	5-	10	30	a	10	greywacke
H38	30	10	30	70	a	10-	vesicular basalt
H51	5-	5-	70	70	a	10-	indurated sandstone
H60	5-	5-	70	70	a	10	granodiorite
H63 'A'	5-	5-	10	70	a	10	granodiorite
H63 'B'	5-	5-	70	50	a	10	granodiorite
H72	5-	10	70	200	a	10-	gabbro
H73	10	5	50	70	a	10	mudstone
H75	5-	5	10	150	a	30	phyllitic mudstone
H85	150	50	10-	300	a	10-	gabbro pegmatite
H117	100	30	10-	70	a	10-	gabbro
H142	50	10	20	30	a	10-	talcose phyllite
H143	5-	5-	10-	10-	a	10-	phyllitic volc.
H144	200	30	50	100	a	10-	Cr. volc.
H165	5-	10	30	150	a	10-	phyllitic volc.
H210A	5	5	30	70	a	10-	phyllitic shale
H210B	20	10	20	100	a	10-	sandstone
H212	10	10	10-	50	a	10-	Qt. sandstone
H214A	5	5-	20	70	a	10-	siltstone schist
H214B	30	10	20	100	a	10-	volc. aggl.
H216A	10	5	30	150	3	10-	green basalt
H216B	20	10	20	150	a	10-	green basalt
H227	20	20	30	150	a	10-	basaltic tuff
H502	5-	10	10	150	a	10-	volc. aggl.
H516B	5-	20	20	150	a	10-	basaltic aggl.

Sample No.	Ni	Co	Cu	V	Mo	Pb	Rock type
H525	5	5-	10-	50	a	10-	greywacke
H537	20	5	20	50	a	30	talcose shale
H544	10	5	20	50	a	10-	shale
H551	5	5-	10	10	a	10-	greywacke
H553	10	10	10-	30	a	30	greywacke
H615	5-	10	10	150	a	10-	green greywacke
H627A	5	5	20	50	a	10-	phyllitic shale
H647	5-	5-	10	50	a	10-	gabbro
H655	1000	100	10-	10-	a	10-	dunite
H656	200	50	10-	70	a	10-	peridotite
H662A	300	70	10-	150	5	10-	gabbro
H662B	150	70	10-	150	5	10-	gabbro
H687	700	50	10-	10-	a	10-	serpentinite
H752	5-	5-	10-	10	a	10-	gabbro
H763	5-	20	10	100	10	10-	gabbro
H764	300	70	20	10	a	10-	gabbro
H786	70	50	70	150	a	10-	gabbro
H795	200	50	10-	150	a	10-	phyllitic shale
H839A	30	10	20	150	a	10	pyroxenite
H839B	5-	5	10	100	7	10-	gabbro
H839C	5-	5-	10-	10-	a	10-	gabbro
H842	1000	100	10	10-	a	10-	dunite
X	5-	5-	10-	70	5	100	gabbro
Y	5-	5	20	150	a	10-	gabbro

Tin and beryllium were sought but not detected in any sample. All results are expressed in parts per million.

Lab. serial Nos. 838 - 848.

Plate Nos. 429, 430, 431.

REPORT NO. 36

SPECTROCHEMICAL ESTIMATION OF PHOSPHATE IN BORE SAMPLES FROM JULIA CREEK, QLD.

by

E.J. Howard

Fifty-six samples of a core were submitted by W. Jauncey for analysis for presence of phosphate. All samples contained less than 5% P_2O_5.

The samples were from St. Andrews Bore, Julia Creek area Qld. and were from the following footages:-

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 130, 140, 150, 160, 170, 180, 188, 198, 220, 240, 260, 280, 300, 320, 340, 360, 380, 400, 420, 440, 460, 480, 503, 518, 540, 560, 580, 600, 620, 640, 660, 680, 700, 720, 740, 760, 780, 800, 820, 840, 860, 880, 900, 907.

Lab.Serial No.859
Plate Nos. 438, 439, 440.

REPORT NO. 37

84NT/10
29th April, 1963

SPECTROGRAPHIC ANALYSIS OF BRECCIA & GOSSAN SAMPLES FROM FERGUSSON RIVER, N.T.

by

E.J. Howard

Four samples were submitted by B.P. Ruxton for spectrochemical analysis for trace metals. The samples were breccia or gossan and were collected from Lewin Springs, Fergusson River, N.T.

The following results are expressed in parts per million.

Sample No.	Ni	Co	Cu	V	Pb
196219	5-	5-	200	10-	150
196220	5-	10	5000+	50	10-
196221	5-	5-	50	10-	20
196222	5-	5-	20	10	20

'5' - less than 5 ppm.

Lab. serial No. 729

Plate No. 444.

REPORT NO. 38

50NT/1
1st May, 1963

SPECTROGRAPHIC ANALYSIS OF AUGER DRILL SAMPLES FROM MARY LANE 'C'. TENNANT CREEK, N.T.

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt copper, vanadium and lead content of 35 auger drill samples from Mary Lane 'C', Tennant Creek, Northern Territory.

The samples were submitted by P.G. Dunn, as part of a geochemical prospecting survey of the area.

The following results are expressed in parts per million.

Sample	Co-ords.	Depth (feet)	Ni	Co	Cu	V	Pb
100W/	1S	22-40	5-	5-	10-	20	10-
	2S	20-40	5-	5-	10-	20	10-
	3S	18-40	5-	5-	10-	10	10-
	4S	18-40	5-	5-	10-	20	10-
	5S	16-34	5-	5-	10-	10	10-
	6S	16-40	5-	5-	10-	10	10-
	7S	16-40	5-	5-	10-	10	10-
	8S	16-40	5-	5-	10-	10	10-
	9S	14-40	5-	5-	10-	10	10-
	10S	18-40	5-	5-	10	20	10-
	11S	20-26	5-	5-	10-	20	10-
	12S	24-40	5-	5-	10	10	10-
	13S	20-28	5-	5-	10-	10	10-
	14S	20-40	5-	5-	10-	20	10-
	15S	20-40	5-	5-	10-	30	10-
	16S	30-46	5-	5-	10-	30	10-
	17S	16-21	5-	5-	10-	30	10-
	18S	20-40	5-	5-	10-	20	10-
	19S	16-40	5-	5-	10-	50	10-
	20S	20-40	5-	5-	10-	20	10-
	21S	22-40	5-	5-	10-	20	10-
	22S	18-40	5-	5-	10-	50	20
	23S	20-40	5-	5-	10-	50	10-
	24S	20-40	5-	5-	10-	10	10-
	25S	22-40	5-	30	10-	20	10-
	26S	20-34	5-	5-	10-	50	10-
	27S	18-40	5-	5-	10-	30	10-
	28S	20-40	5-	5-	10-	30	10-
	29S	18-40	5-	5-	10-	10-	10-
	30S	20-28	5-	5-	10-	20	10-

Sample	Co-ords.	Depth (feet)	Ni	Co	Cu	V	Pb
100W/	00	22-40	5-	5-	10-	20	10-
	1N	22-40	5-	5-	10-	50	10-
	2N	16-34	5-	5-	10-	30	10-
	3N	20-34	5-	5-	10-	20	10-
	4N	16-34	5-	5-	10-	10	10-

Molybdenum, tin berryllium and phosphorus were also sought but were not detected in any sample.

Lab. serial No. 865.
Plate Nos. 445, 446.

REPORT NO. 39

SPECTROGRAPHIC ANALYSIS OF AUGER SAMPLES FROM THE NEW BLOOD LEASE, TENNANT CREEK, N.T.

by

E.J. Howard

Semiquantative estimations were made of the nickel, cobalt, copper, vanadium and lead content of 16 samples from Explorer VI and 15 samples from New Blood Lease, Tennant Creek N.T.

The samples were submitted by P.G. Dunn as part of a geochemical survey of the area.

The following results are expressed as parts per million.

Explorer VI

Sample Co-ords	Depth ft.	Ni	Co	Cu	V	Pb
6W/6S	18-28	5-	5-	10-	20	10-
6W/5S	22-30	5-	5-	10-	50	10-
6W/5S	30-40	5-	5-	10-	50	10-
6W/4S	30-40	5-	5-	10-	50	10-
6W/3S	30-40	5-	5-	10-	10	10-
6W/3S	22-30	5-	5-	10-	30	10-
6W/2S	30-40	5-	5-	10-	30	10-
6W/1.5S	28-40	5-	5-	10-	10	10-
6W/1.0S	26-36	5-	5-	10-	30	10-
6W/00	22-28	5-	5-	10-	50	10
6W/0.5S	28-38	5-	5-	10-	50	10
6W/1N	20-30	5-	5-	10-	50	10
6W/2N	24-34	5-	5-	10-	50	10
6W/3N	30-40	5-	5-	10-	10	10-
6W/4N	34-44	5-	5-	10-	10	10-
6W/4N	22-34	5-	5-	10-	20	10-

New Blood Lease

Sample No.	Depth	Ni	Co	Cu	V	Pb
1	6-22	5-	5-	10-	20	20
2	6-22	5-	5-	30	20	70
3	6-22	10	10	50	10	10
4	6-22	5	5-	20	10	30
5	6-22	5-	5-	10-	20	10
6	6-22	5	5	20	30	200
7	6-22	5-	5	30	20	70
8	6-22	5-	5	30	20	50
9	6-22	5-	5-	10-	30	10
10	6-22	5-	5-	10	20	20
11	6-22	5-	5-	10	20	20
12	6-22	5-	5-	10-	30	30
13	6-22	5-	5-	10-	30	10-
14	6-22	5-	5-	10-	30	10-
15	6-22	5-	5-	10-	30	10-

Tin Beryllium and phosphorus were sought but were not detected in any sample.

Lab. serial No. 881
Plate Nos. 447, 448.

REPORT NO. 40 1980/5

PARTIAL ANALYSIS OF MISCELLANEOUS ROCK SAMPLES FROM NORTH QUEENSLAND

by

S. Baker

Following are the results for the partial analysis of 12 rock samples submitted by D. Zimmerman.

Sample No.	K_2O	Na_2O	Li_2O	Sr O
J60C	3.38	<0.05	<0.04	<0.01
J118A	5.66	2.12	0.09	0.02
J187	7.90	<0.05	0.25	0.02
J189	8.88	<0.05	0.19	0.03
R14242	10.32	1.20	0.19	0.02
R14505	2.81	<0.05	<0.04	<0.01
R13717	3.66	0.10	<0.04	0.01
R13718	3.54	<0.05	<0.04	0.01
R14243	8.65	0.20	0.15	0.03
R14244	8.08	0.10	0.11	0.02
R14245	7.07	<0.05	0.06	0.02
R14247	4.12	<0.05	<0.04	0.01

Serial No. 855-56-57.

REPORT NO. 41

SPECTROGRAPHIC ANALYSIS OF AUGER SAMPLES FROM THE JAYDEE EMDEE, AND EXPLORER 18 AREAS OF TENNANT CREEK, N.T.

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium and lead content of 59 auger drill samples from the Jaydee, Emdee and Explorer 18 areas of Tennant Creek, N.T.

P.G. Dunn submitted the samples as part of a geochemical survey of the ore.

The following results are expressed in parts per million.

Emdee/Jaydee

Sample Co-ords.	Depth (ft)	Ni	Co	Cu	V	Pb
29E/48S	28-46	5-	5-	10-	30	10
24E/49S	26-46	5-	5-	10-	10	10-
24E/50S	20-40	5-	5-	10-	30	10-
24E/51S	20-40	5-	5-	10-	30	10-
24E/52S	24-46	5-	5-	10-	20	10
24E/53S	6-22	5-	5-	10-	20	10-
24E/54S	6-18	5-	5-	10-	10	10
24E/55S	6-16	5-	5-	10-	20	10
24E/56S	18-34	5-	5-	10-	10	10-
24E/57S	16-40	5-	5-	10-	10	10-
24E/58S	16-32	5-	5-	10-	10	10
24E/59S	14-24	5-	5-	10-	20	10
24E/60S	12-40	5-	5-	10-	30	10-
32E/60S	20-40	5-	70	10-	10-	10-
32E/59S	6-18	5-	5-	10-	10	10-
32E/58S	20-40	5-	5-	10-	10	10
32E/57S	6-20	5-	5-	10-	20	10-
32E/56S	22-40	5-	5-	10-	20	10-
32E/55S	6-18	5-	5-	10-	30	10
32E/54S	22-40	5-	5-	10-	10	10-
32E/53S	22-34	5-	5-	10-	30	10-
32E/52S	6-22	5-	5-	10-	20	10-
32E/51S	24-34	5-	5-	10-	20	10-
32E/50S	22-40	5-	5-	10-	20	10
Sample Co-ords						
32E/49S	20-40	5-	5-	10-	20	10
32E/48S	22-40	5-	5-	10-	30	20
40E/48S	16-34	5-	5-	10-	30	10
40E/49S	10-22	5-	5-	10-	30	10

Sample Co-ords	Depth (ft)	Ni	Co	Cu	V	Pb
40E/50S	12-28	5-	5-	10-	30	10-
40E/51S	10-15	5-	5-	10-	30	10-
40E/52S	10-28	5-	5-	10-	30	10-
40E/53S	14-22	5-	5-	10-	30	10-
40E/54S	10-28	5-	5-	10-	50	10-
40E/55S	10-22	5-	5-	10-	50	10-
40E/56S	10-22	5-	5-	10-	30	10-
40E/57S	10-22	5-	5-	10-	30	10-
40E/58S	10-22	5-	5-	10-	30	10-
40E/59S	10-22	5-	5-	10-	30	10-
40E/60S	10-28	5-	5-	10-	30	10-
Explorer 18						
Sample Co-ords						
00/4S	14.26	5-	5-	10-	30	10-
00/3S	12-28	5-	5-	10-	20	10-
00/2S	10-26	5-	5-	10-	30	10-
00/1S	2-25	5-	5-	10-	50	10-
00/0.5S	12-24	5-	5-	10-	30	10-
00/00	12-23	5-	5-	10-	20	10-
00/1N	12-24	5-	5-	10-	20	10-
00/0.5N	12-25	5-	5-	10-	20	10-
00/2N	14-28	5-	5-	10-	30	10-
00/3N	14-27	5-	5-	10-	70	10-
00/4N	14-26	5-	5-	10-	50	10
12E/2N	14-34	5-	5-	10	50	10
12E/3N	12-34	5-	5-	10	50	10
12E/4N	12-34	5-	5-	10-	30	10-
12E/5N	10-34	5-	5-	10-	50	10-
12E/5.5N	14-34	5-	5-	10-	50	10-
12E/6N	10-34	5-	5-	10-	30	10-
12E/6.5N	10-34	5-	5-	10-	30	10-
12E/7N	10-34	5-	5-	10-	30	10-
12E/8N	12-33	5-	5-	10-	50	10-

"5-" - less than 5 p.p.m.

Tin, beryllium and phosphorus were sought but were not detected in any sample.

Lab. serial Nos. 892, 893.
Plate Nos. 449, 450, 451.

REPORT NO. 42

SPECTROCHEMICAL ANALYSIS OF SAMPLES FROM THE RED BLUFF, EXPLORER XVI, AND GOLDEN FORTY AREAS, TENNANT CREEK, N.T.

by

E.J. Howard

Semiquantitative estimations were made of nickel, cobalt, copper, vanadium and lead content of 83 samples from Tennant Creek, N.T. The samples are from Red Bluff, Explorer XVI and Golden Forty areas and were taken from auger cuttings or a diamond drill hole.

P.G. Dunn submitted the samples as part of a geochemical survey of the area.

The following results are expressed in parts per million.

Red Bluff

Sample Co-ord.	Depth (ft)	Ni	Co	Cu	V	Pb
340W/236S	16-32	5-	5-	10-	10-	10-
340W/237S	12-18	5-	5-	10-	10-	10-
340W/238S	12-30	5-	5-	10-	10-	10-
340W/239S	12-34	5-	5-	10-	10-	10-
340W/240S	12-36	5-	5-	10-	10-	10-
340W/241S	12-25	5-	5-	10-	10-	10-
340W/242S	10-20	5-	5-	10-	10-	10-
340W/243S	10-18	5-	5-	10-	10-	10-
340W/244S	12-20	5-	5-	10-	10-	10-
340W/245S	10-15	5-	5-	10-	10-	10-
340W/246S	10-14	5-	5-	10-	10	10
340W/247S	8-15	5-	5-	10-	20	10-
340W/248S	10-15	5-	5-	10-	10-	10-
340W/249S	8-14	5-	5-	10-	10	10-
340W/250S	8-16	5-	5-	10-	10	10-
340W/251S	9ft bottom	5-	5-	10-	10	10-
340W/252S	8-16	5-	5-	10-	10-	10-
340W/253S	10-15	5-	5-	10-	10-	10-
340W/254S	8-16	5-	5-	10-	10-	10-
340W/255S	6-10	5-	5-	10-	20	10
340W/256S	6-16	5-	5-	10-	10-	10-
340W/257S	6-16	5-	5-	10-	10-	10-
340W/258S	6-16	5-	5-	10-	10-	10-
340W/259S	8-16	5-	5-	10-	10	10-
340W/260S	6-16	5-	5-	10-	10-	10-
Explorer XVI						
10W/00	26-40	5-	5-	10	20	10
10W/1N	26-40	5-	5-	10	20	10-
10W/2N	26-34	5-	5-	10-	10	10-
10W/3N	24-40	5-	5-	10-	10-	10-

Explorer XVI

Sample Co-Ord.	Depth (ft)	Ni	Co	Cu	V	Pb
10W/4N	20-40	5-	5-	10-	10-	10-
10W/4.5N	20-34	5-	5-	10-	20	10-
10W/5N	24-40	5-	5-	10-	50	10-
10W/5.5N	24-40	5-	5-	10-	20	10-
10W/6N	16-18	5-	5-	10	70	10
10W/7N	22-27	5-	5-	10-	20	10-
10W/8N	22-28	5-	5-	10-	10-	10-

Golden Forty

16W/4S	4-10	5-	5-	10-	10	10-
16W/5S	6-14	5-	5-	10-	10	10-
16W/6S	6-16	5-	5-	10-	20	10-
16W/6.5S	6-16	5-	5-	10-	10	10-
16W/7S	6-16	5-	5-	10-	10	10-
16W/8S	6-16	5-	5-	10-	20	10-
16W/8.5S	6-16	5-	5-	10-	10	10-
16W/9S	6-16	5-	5-	10-	10	10-
16W/9.5S	6-16	5-	5-	10-	10	10
16W/10S	6-16	5-	5-	10-	10	10
16W/10.5S	6-16	5-	5-	10-	20	10-
16W/11S	6-16	5-	5-	10-	10	10-
16W/11.5S	6-16	5-	5-	10-	10	10-
16W/12S	6-16	5-	5-	10-	10	10-
16W/13S	6-16	5-	5-	10-	20	10-
16W/14S	6-16	5-	5-	10-	10	10-
20W/4S	2- 5	5-	5-	10-	10	10-
20W/5S	2' bottom	5-	5-	10-	10	10-
20W/6S	6-16	5-	5-	10-	20	10-
20W/6.5S	6-16	5-	5-	10-	20	10-
20W/7S	6-16	5-	5-	10-	10	10-
20W/7.5S	6-16	5-	5-	10-	10	10-
20W/8S	6-16	5-	5-	10-	10	10-
20W/8.5S	6-16	5-	5-	10-	20	10-
20W/9S	6-16	5-	5-	10-	30	10-
20W/9.5S	6-16	5-	5-	10-	20	10-
20W/10S	6-16	5-	5-	10-	20	10-
20W/10.5S	6-16	5-	5-	10-	30	10-
20W/11S	6-16	5-	5-	10-	20	10-
20W/11.5S	6-16	5-	5-	10-	30	10-
20W/12S	6-16	5-	5-	10-	30	10-
20W/13S	6-16	5-	5-	10	20	10
20W/14S	6-16	5-	5-	10-	20	10

Red Bluff - Diamond Drill Hole 167

Depth (ft)	Ni	Co	Cu	V	Pb
16-20	5-	5-	10-	10-	10-
36-40	5-	5-	10-	20	10-
56-60	5-	5-	10-	20	10-
76-80	5-	5-	10-	10	10-
96-100	5-	5-	10-	10	10-
116-120	5-	5-	10-	10	10-
136-140	5-	5-	10-	20	10-
160	5-	5-	10-	10	10-
180	5-	5-	10-	20	10-
200	5-	5-	10-	10	10-
220	5-	5-	10-	10	10-
240	5-	5-	10-	20	10-
260	5-	5-	10-	20	10-

Beryllium and phosphorus were sought but not detected in any sample. Tin was detected in two samples; Ex.XVI/10W/3N/24-40 contains 20 p.p.m., Ex.XVI/10W/4N.20-40 contains 100 p.p.m., both figures from two determinations.

Lab. serial Nos. 897, 898.

Spectrographic plate Nos., 452, 453, 454, 455.

REPORT NO. 43

SPECTROGRAPHIC ANALYSIS OF SAMPLES FROM THE COPPER SKIPPER AND EXPLORER XV AREAS, TENNANT CREEK, N.T.

by

E.J. Howard

Semiquantitative estimations were made of the nickel, cobalt, copper, vanadium and lead content of 26 auger samples from the Copper Skipper and Explorer XV areas, Tennant Creek N.T.

The samples were submitted by P.G. Dunn as part of a geochemical survey of the area.

The following results are all expressed in parts per million:

Copper Skipper

Sample Co-ords	Depth (ft)	Ni	Co	Cu	V	Pb
25W/00	8-22	5-	5-	10-	10-	10-
25W/0.5S	14-28	5-	5-	10-	10	10-
25W/1.0S	12-28	5-	5-	10-	10-	10-
25W/1.5S	14-28	5-	5-	10-	10-	10-
25W/2S	12-28	5-	5-	10-	10	10-
25W/2.5S	4-10	5-	5-	10-	20	10-
25W/3S	12-22	5-	10	10-	10-	10-
30W/3.2S	18-34	5-	5-	10-	10	10-
30W/3.7S	16-28	5-	5-	10-	10	10-

Copper Skipper

Sample Co-ords.	Depth (ft)	Ni	Co	Cu	V	Pb
30W/4.2S	16-28	5-	5-	10-	10	10-
30W/4.7S	16-28	5-	5-	10-	10-	10-
30W/5.2S	18-28	5-	5-	10-	10-	10-
30W/5.7S	12-22	5-	5-	10-	10	10-
30W/6.2S	14-28	5-	5-	10-	10	10-
Explorer XV						
00/00	4-13	5-	5-	10-	10	10-
00/4W	6- 8	5-	5-	10-	20	10-
00/8W	10-16	5-	5-	10-	10-	10-
00/12W	6-12	5-	5-	10-	10	10-
00/16W	6-16	5-	5-	10	50	10
00/20W	8-22	5-	5-	10	20	10-
00/24W	10-22	5-	5-	10-	10	10-
00/28W	8-16	5-	5-	10-	10	10-
00/4E	6-16	5-	5-	10-	20	10-
2N/00	6-14	5-	5-	10-	10	10-
4N/00	12-21	5-	5-	10-	50	10-
8N/00	6-15	5-	5-	10-	100	10-

Tin, Beryllium and Phosphorus were also sought but were not detected in any sample.

Lab. Serial No. 900
Plate No. - 456.

REPORT NO. 44 184NT/4A

SPECTROCHEMICAL ANALYSIS OF AUGER SAMPLES FROM RUM JUNGLE, NORTHERN TERRITORY.

by

E.J. Howard

Semiquantitative estimation of the nickel, cobalt, copper, vanadium, molybdenum and lead content of auger samples from areas 55W and 55WW were made using the routine spectrographic technique. The samples were submitted by B.P. Ruxton as part of the geochemical prospecting survey of Rum Jungle, N.T.

The following are the results obtained. All values are expressed in parts per million:

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
8S/38W		10	5-	30	50	10	100
		5	10	30	30	2	50
8S/40W		10	10	30	70	7	50
		30	20	10	70	2	100
8S/42W	2 - 6	20	5	70	70	7	70
		5-	5-	20	10	a	50
8S/44W	2 - 6	50	20	50	70	15	100
	6 -40	5	5-	10	10	a	20

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
10S/34W		10	20	70	20	7	50
		10	10	70	20	5	20
10S/36W		5-	10	50	30	10	15
		5-	5-	30	10	2	100
10S/40W		20	20	50	50	10	150
		5-	5	10	10-	2	20
10S/42W		150	20	500	150	30	100
		150	20	500	200	2	20
10S/44W		20	10	100	70	10	100
		10	5	20	10	2	30
10S/46W		70	10	50	150	20	150
		70	10	100	50	7	200
10S/48W		20	10	100	100	10	150
		10	10	50	20	5	20
10S/50W		10	10	20	20	20	50
		5	10	10	20	a	10
10S/52W		5	10	30	100	10	70
		5	10	20	20	2	50
12S/34W		No sample					
		5-	5-	10	10	20	50
12S/36W		5-	5-	30	20	7	50
		5-	10	50	20	5	50
12S/38W		5	10	30	70	20	50
		5-	5-	30	30	7	30
12S/40W		10	5-	100	100	10	70
		10	10	20	10-	10	100
12S/42W		150	20	300	200	30	100
		100	30	300	70	7	20
12S/44W		150	20	100	70	10	70
		100	10	30	20	10	70
12S/46W		100	10	50	100	30	100
		50	5	150	70	10	150
12S/48W		50	10	20	200	30	100
		No sample					
12S/50W		10	5	20	100	10	100
		5	5	50	70	20	50
12S/52W		10	10	100	70	2	70
		5	10	10	50	2	30
12.5S/54W		5	10	10	20	2	50
		5	10	10	20	2	50
13S/39W		5-	5-	100	50	7	30
		5-	5-	20	10-	2	30
13S/40W		20	5-	100	50	20	150
		10	5	50	50	7	50
13S/41W		150	20	200	150	30	100
		150	10	200	150	2	20
13S/42W		200	20	300	100	30	70
		200	50	300	50	2	20
13S/43W		300	150	300	300	10	70
		500	70	200	200	7	100
14S/34W		10	5-	30	50	15	20
		5	10	20	10	10	10

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
14S/36W		5-	5-	30	70	10	50
		5-	5	20	10	7	10
14S/38W		10	10	30	100	20	100
		10	10	50	20	20	70
14S/39W		5-	5-	70	50	10	100
		5-	5-	50	10	5	30
14S/40W		No sample					
		5	10	20	20	5	30
14S/41W		150	20	100	100	50	100
		100	20	150	20	5	70
14S/42W		100	20	200	100	50	100
		150	20	200	200	70	150
14S/43W		150	10	100	200	30	100
		300	50	70	100	3	70
14S/44W		150	10	100	100	10	100
		100	10	70	20	15	150
14S/46W		50	20	100	100	20	150
		50	20	70	70	20	150
14S/48W		150	70	50	700	50	30
		300	100	200	150	10	20
14S/50W		10	5	150	200	20	50
		5	10	200	200	50	50
14S/52W		20	10	100	100	10	200
		10	5	50	150	10	50
14S/54W		20	10	30	200	20	100
		5	5	50	200	20	70
14S/58W	2 - 8	5	5	10	10	20	10
	8 -28	5	5	20	20	10	20
15S/39W		10	5-	50	70	20	70
		10	20	50	50	7	20
15S/40W		50	50	200	150	50	1000
		20	20	50	100	2	500
15S/41W		200	20	150	150	50	50
		300	70	50	100	7	50
15S/42W		200	100	200	400	30	50
		700	150	400	300	10	20
15S/43W		300	50	150	200	30	100
		300	70	150	150	10	70
16S/34W		10	5-	20	50	7	20
		5-	5-	10	20	5	10
16S/36W		5	20	20	70	15	100
		5	10	20	20	5	20
16S/38W		5-	5-	30	50	30	50
		5-	10	50	50	7	30
16S/39W		5-	5-	50	70	10	50
		5-	5	20	10	5	10
16S/40W		No result					
		200	20	700	50	20	100
16S/41W		150	20	200	150	70	50
		200	30	100	150	2	50
16S/42W		200	20	200	150	50	100
		150	20	30	70	5	50
16S/43W		200	50	50	150	50	50
		200	20	50	50	2	50

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
16S/45W		200	50	150	200	15	100
		200	50	50	100	10	700
16S/46W		200	20	200	100	7	30
		300	100	150	150	a	10-
16S/48W		300	20	150	100	20	
		200	10	150	10	2	10-
16S/50W		100	20	150	50	50	150
		70	10	200	50	20	150
16S/52W		70	50	50	200	2	150
		20	10	100	200	2	50
16S/54W		50	50	50	150	10	70
		50	30	50	100	a	10
16S/56W		5	5	20	50	a	30
		70	20	50	100	20	150
16S/58W		5	10	20	30	2	20
		5	5	20	20	2	30
17S/39W		5-	5-	100	70	a	50
		5-	5-	150	70	2	20
17S/40W		150	70	700	150	50	50
		100	20	500	200	2	50
17S/41W		150	70	300	200	50	100
		200	30	50	70	2	20
17S/42W		200	50	300	150	20	150
		100	20	30	70	2	50
17S/43W		100	20	150	50	10	150
		100	20	50	70	2	20
17S/44W		150	20	100	70	5	200
		100	20	20	70	5	20
17S/45W		200	20	150	100	10	100
		200	20	70	70	a	70
17S/46W		150	20	50	150	10	70
		150	10	50	70	2	50
17S/47W		300	70	100	200	30	200
		500	100	100	150	2	10-
18S/38W		No sample					
		5-	5	20	20	10	20
18S/39W		200	50	500	100	30	30
		700	50	5000	50	a	20
18S/40W		200	100	1000	100	70	70
		20	5	70	150	10	30
18S/41W		150	30	500	200	50	70
		500	30	200	100	20	50
18S/42W		200	150	300	200	30	300
		200	10	50	100	20	50
18S/44W		150	50	300	200	50	70
		200	30	200	70	10	10-
18S/45W		70	20	50	70	10	100
		20	10	30	70	a	10
18S/47W		300	70	100	100	10	150
		200	70	70	100	a	10-
18S/50W		200	70	150	200	20	20
		500	70	50	100	2	10-
18S/52W		150	70	50	150	10	50
		200	70	30	100	2	10

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
18S/54W		10	10	50	20	10	10-
				No sample			
18S/56W		70	20	50	70	2	100
				No sample			
18S/58W		5	10	10	20	a	20
		10	10	10	30	a	50
18S/60W	2 -26	5-	5-	10-	10	a	10
	16 -62	70	50	50	50	2	200
19S/39W		200	30	1000	10	20	50
				No result			
19S/40W		200	70	700	100	100	150
		200	20	1500	20	30	30
19S/41W		150	30	500	100	20	150
				No sample			
19S/45W		150	50	150	150	20	200
		150	50	70	70	5	20
19S/46W		100	50	30	70	2	100
		5-	20	30	70	a	10
19S/47W		200	30	50	150	2	70
		200	30	50	100	3	100
19.5S/44W		100	20	200	70	10	300
				No sample			
20S/34W				No sample			
		20	20	100	10	7	10
20S/36W		5	5	20	100	10	100
		5-	5-	10	10-	5	50
20S/38W				No sample			
		5-	5	70	50	7	20
20S/39W		20	10	100	50	10	50
		200	20	500	20	5	10-
20S/40W		100	10	150	150	30	100
		150	50	700	100	20	100
20S/41W		150	100	500	200	30	100
		70	20	500	100	20	70
20S/42W		200	150	400	150	50	700
		200	70	1000	100	15	50
20S/46W		150	20	50	150	20	150
		70	30	30	70	a	10
20S/48W		300	200	100	100	10	50
		200	50	100	70	2	10-
20S/50W		100	30	50	150	10	70
		30	30	20	50	2	20
20S/52W		100	50	70	70	2	50
		30	30	30	50	2	10
20S/54W		100	50	50	100	2	50
		5	20	20	50	2	10-
20S/56W		20	30	50	20	a	50
		50	30	30	50	2	50
20S/58W		10	10	20	30	10	20
		10	10	20	30	10	30
20S/59W	2 -34	10	5	10	20	a	20
				No sample			
20S/60W	2 -26	5-	5-	10-	20	a	20
				No sample			

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
20S/61W	2 -22	5-	5-	10-	10	a	20
	22 -67	70	10	20	70	a	10
21S/40W		100	30	200	100	15	50
		100	10	150	10-	2	20
22S/36W				No sample			
		5-	5-	20	50	10	50
22S/38W		10	5-	150	50	10	50
				No sample			
22S/40W				No sample			
		300	70	200	30	5	10
22S/42W		100	50	200	70	15	50
		300	150	1000	150	30	100
22S/44W		150	30	200	70	20	400
		200	70	500	70	30	50
22S/46W		200	70	300	150	20	70
		150	20	1500	100	7	70
22S/48W		100	10	200	100	10	30
		70	5	200	300	50	50
22S/50W		100	20	150	70	2	100
		200	50	70	70	20	30
22S/52W		150	70	700	100	20	70
		200	70	700	100	20	30
22S/54W		100	20	50	100	2	50
		100	30	100	70	10	50
22S/56W		20	30	50	20	2	50
		70	30	100	50	20	50
22S/58W		10	10	20	20	10	20
		70	30	50	100	a	10
22S/60W	2 -26	10	10	10	20	a	30
	26 -	70	30	20	70	a	100
24S/34W				No sample			
		70	20	100	100	10	20
24S/36W		10	5-	30	50	20	50
		50	20	50	70	20	20
24S/38W		10	5-	150	70	7	150
		10	5-	70	20	5	100
24S/40W		70	20	150	100	20	70
		300	50	700	10	5	10-
24S/42W		20	5	100	100	20	30
		5-	5-	50	70	10	20
24S/44W		100	20	150	70	10	50
		150	50	70	20	7	10
24S/46W				No sample			
		500	100	200	100	20	10
24S/48W		150	20	200	150	20	50
		50	10	100	100	15	70
24S/50W		100	20	200	100	10	70
		100	50	200	150	20	100
24S/52W		100	50	70	70	10	50
		150	100	1000	100	10	50
24S/54W		70	30	100	50	2	50
				No sample			
24S/56W		70	10	150	50	2	20
		400	100	200	70	30	50

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
24S/58W		70	50	50	70	10	50
		200	70	300	100	20	100
24S/60W	2 - 8	20	10	20	30	a	30
	8 -82	150	20	30	70	2	10
26S/34W				No result			
		100	20	150	100	20	100
26S/36W		50	10	70	100	30	50
				No sample			
26S/38W		10	10	50	70	30	50
		5-	20	20	10	2	10
26S/40W		20	10	50	70	15	30
		20	5	100	70	20	20
26S/42W				No sample			
		5-	5-	50	100	20	20
26S/44W		150	70	200	70	30	50
		150	100	150	50	20	50
26S/46W		200	150	150	150	20	100
		200	50	100	100	15	10-
26S/48W		20	20	150	70	5	30
				No sample			
26S/50W				No sample			
		70	50	100	70	10	50
26S/52W				No sample			
		150	70	50	50	2	20
26S/54W		150	70	150	70	2	70
		100	50	500	100	10	70
26S/56W		200	150	200	150	10	50
				No result			
26S/58W		100	50	50	150	20	50
		150	70	30	50	10	30
26S/60W.	2 - 8	100	30	100	70	5	50
	8 -47	200	100	700	150	30	150
28S/54W		200	100	200	150	10	70
		150	100	700	100	10	30
28S/58W		300	200	70	100	20	50
		300	200	50	100	10	50
28S/60W	2 -10	300	50	70	70	7	20
	10 -67	150	20	700	50	2	10
4N/262W	2 -34	20	10	20	70	2	50
	34 -40	50	10	50	150	10	30
4.25N/260W	2 -50	5-	5	10	20	a	20
	50 -56	70	20	20	70	a	20
4.6N/258W	2 -34	5-	5	10-	20	a	20
	34 -82	70	20	20	70	a	20
5N.259W	0 -12	5-	5	10	20	a	30
	12 -80	50	10	10	50	a	20
5N/261W	0 -18	5-	5	10-	30	a	30
	18 -69	100	30	30	70	2	30
5N/257W	2 -40	5-	5-	10-	20	a	30
	40 -82	70	30	10	70	a	20
6N/262W	2 -23	5	5-	10	20	a	20
				No sample			
6N/260W	2 -20	10	10	20	30	2	30
				No sample			

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
6N/258W	2 -46	10	10	10	50	2	30
	46 -73	100	20	20	70	5	50
6N/256W	2 -46	5-	5-	10-	20	a	20
	46 -82	50	20	20	70	a	30
7N/255W	2 -44	20	10	10	30	a	20
	44 -80	200	50	20	70	a	10-
8N/262W	0 -18	5-	10	10	30	a	30
	18 -40	5	5	10-	30	a	30
8N/260W	2 -16	5	5-	10	30	2	30
	16 -40	50	5	50	150	10	150
8N/258W	2 -22	5-	5-	10-	20	2	20
	22 -40	150	30	70	70	a	20
8N/256W	0 -14	5-	5-	10	10	a	20
	14 -82	5-	10	10-	70	a	30
8N/254W	0 -68	70	20	20	70	a	10
	68 -70	150	30	20	200	10	10-
9N/253W	0 -51	30	10	10	30	a	30
	51 -52	150	50	10	150	a	10-
10N/262W	0 -16	5-	5-	10	20	a	30
	16 -18	5-	5	20	10	a	20
10N/260W	2 -22	5	10	10	30	2	100
	22 -40	10	5	10	20	2	700
10N/258W	2 -17	10	10	10	20	a	30
	No sample						
10N/256W	2 -12	10	5	10	50	2	30
	No sample						
10N/254W	2 - 8	5	10	10-	20	a	30
	8 -40	50	20	10	50	a	20
10N/252W	0 -30	5	5	10	20	a	100
	30 -58	150	50	50	100	a	150
10N/251W	0 -10	5	5	10	30	a	50
	10 -60	10	10	10	10	a	100
10N/250W	0 -18	5	10	20	50	2	50
	18 -58	20	10	20	100	10	500
10N/248W	2 -34	10	10	10	20	2	30
	34 -76	10	10	10	50	2	10
10N/246W	2 -18	5	5-	10-	20	a	30
	18 -70	5	10	10	20	a	50
11N/262W	2 -20	5	5	10	20	a	30
	20 -40	5-	5	10	10	a	30
11N/251W	0 -18	20	10	20	30	2	100
	18 -80	20	10	20	150	10	100
12N/262W	0 -14	5	10	20	30	a	50
	14 -40	5	5	10	10	a	30
12N/260W	2 -16	5	10	10	50	a	30
	16 -40	5-	5	10	10	a	10
12N/258W	2 -16	10	10	20	30	a	50
	16 -40	10	10	30	100	10	50
12N/256W	2 -36	10	20	20	30	2	150
	No sample						
12N/254W	2 - 6	10	10	70	50	2	2000
	6 -40	70	20	30	20	2	1000

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
12N/252W	2 - 4	10	10	30	50	5	500
	4 -40	5	10	20	70	2	200
12N/250W	2 - 4	10	10	20	20	a	30
	4 -53	10	30	30	20	2	100
12N/248W	2 - 6	10	5-	10	30	2	100
	6 -40	10	10	10	20	a	30
13N/262W	2 -12	5-	5-	10	20	a	30
	26 -40	5-	5-	10	10	a	20
13N/249W	2 - 4	5-	20	10	20	2	200
	4 -70	5	5	20	20	a	100
14N/262W	2 -14	5-	5	10	30	a	50
				No sample			
14N/260W	2 -16	5-	10	10	20	a	30
	16 -40	5-	10	10-	20	a	20
14N/258W	2 -24	10	10	10	20	2	200
	14 -40	5-	10	10	20	2	150
14N/256W	2 - 6	5-	5-	70	50	5	2000
	16 -40	5-	5-	10	200	30	200
14N/254W	2 - 6	5-	5-	10	20	2	300
	6 -40	5-	5-	20	20	a	200
14N/252W	2 - 4	5-	5-	20	20	2	150
	4 -40	5-	5-	20	20	2	700
14N/250W	2 - 4	5-	5-	20	50	5	200
	4 -40	5	5	10	20	2	200
14N/248W	2 - 4	70	5-	20	70	7	100
	4 -76	10	10	20	20	a	50
15N/254W	2 - 6	5-	5	10	20	a	1500
	6 -46	5-	5-	10	10	a	200
15N/253W	2 -16	5-	5-	10	10	2	300
	16 -46	5-	5-	10	20	a	150
15N/252W	2 - 4	5	5	10	30	2	100
	4 -46	5	5	10	20	2	100
16N/262W	2 -16	5-	5	10	50	a	50
	16 -40	5-	5-	10-	10	a	50
16N/260W	2 -20	5-	10	10-	30	a	30
	20 -40	5-	5-	10-	10	a	50
16N/258W	2 -24	5-	10	10	20	a	200
	24 -40	5-	5	10-	10	a	30
16N/256W	2 -12	5	5	10	30	3	500
	12 -40	5	5-	10-	20	2	200
16N/254W	2 - 4	20	20	10-	10	a	200
	4 -34	5	5-	10	10	a	700
16N/253W	2 - 4	20	10	70	10	a	1500
	4 -52	5	5	200	10	a	3000
16N/252W	2 - 4	5-	5	30	10	2	1000
	4 -46	5	5	10	10	a	1000
16N/250W	2 - 4	5-	5-	10	50	5	150
	4 -40	5-	5-	10	10	2	150
16N/248W	2 - 4	10	5-	20	70	7	70
	4 -40	5-	5-	10-	10-	a	50
17N/254W	2 - 6	5-	5-	30	10	3	500
	6 -38	5-	5-	10	20	a	500

Grid Co-ords.	Depth (ft)	Ni	Co	Cu	V	Mo	Pb
17N/253W	2 - 8	5-	5-	10-	50	2	300
	8 -40	5-	5-	10-	20	a	200
17N/252W	2 - 6	5-	5	20	30	5	1000
	6 -46	5-	5-	20	10	2	700
18N/262W	2 -20	5	5	10	20	a	20
	20 -40	5	5-	10-	20	a	10
18N/260W	2 -14	30	20	50	70	a	150
	14 -40	30	20	30	70	a	200
18N/258W	0 - 6	5	5-	10	20	2	100
	6 -40	5-	5-	10-	10	a	30
18N/256W	0 - 8	5	10	10-	10	a	200
	8 -40	10	10	20	20	a	100
18N/254W	0 - 8	5-	5-	10	20	2	150
	8 -40	5-	5-	10	10	a	100
18N/252W	0 - 8	5-	5-	10	10	2	200
	8 -40	5-	5-	10-	10	a	100
18N/250W	0 - 4	5	5-	10-	20	a	50
	4 -40	5	5-	10-	20	a	100
18N/248W	0 - 6	5-	5-	10	30	2	50
	6 -40	5	5	10	20	a	30
20N/262W	2 - 6	5	20	20	50	2	150
	6 -40	5	10	20	20	2	100
20N/260W	2 -10	5-	10	10	20	a	100
	10 -40	5-	5	10	10	a	30
20N/258W	2 - 4	5	5	20	30	a	70
	4 -33	5-	5	20	20	2	150
20N/256W	0 -12	10	5	20	70	5	150
	12 -40	30	30	30	100	a	100
20N/254W	0 - 6	5	5-	20	50	7	200
	6 -29	5	5-	10-	10	a	70
20N/252W	0 - 6	5-	5-	10	50	5	100
	6 -40	5-	5	10	10	a	50
20N/250W	0 - 6	5	5-	10	50	a	30
	6 -40	5	5	10	10	a	20
20N/248W	0 - 8	10	5-	10	30	a	100
	8 -40	5	5-	10-	20	a	50
22N/262W	2 - 6	10	20	30	70	5	70
	6 -40	5	10	20	20	2	100
22N/260W	2 - 8	10	20	20	70	5	150
	8 -40	5	5-	10	10	a	30
22N/258W	2 - 6	10	20	20	30	2	200
	6 -40	5	5	10-	10	a	20
22N/256W	2 - 6	10	5-	50	50	7	200
	6 -40	10	5	30	20	a	150
22N/254W	2 - 4	5-	5	10	50	7	100
	4 -40	5-	5-	10-	20	a	30
22N/252W	2 - 8	5	5-	30	50	2	200
	8 -40	5	5	20	20	a	150
22N/250W	2 - 4	5	5-	10	150	10	100
	4 -40	5-	5-	10-	10	a	20
22N/248W	0 - 6	5	5-	20	50	5	100
	6 -40	5	5	10	20	a	20

a - not detected.

Phosphorus was detected only in those samples from, 58W/24S: 43W/17S: 43W/16S: 42W/17S.

Lab. Serial Nos. 378, 415, 471.

REPORT NO. 45 — 26th June, 1963

ANALYSIS OF BRINE SAMPLES FROM ANTARCTICA

by

S. Baker

Following are results for the analysis of Brine Samples from Vestfold Hills, taken during August 1962 and January 1963.

The results obtained for the composition of the brines are similar to those in previous years, except for the potassium and magnesium content of Deep and Club Lakes which are somewhat higher than in previous years.

	Cl	SO_4	HCO_3	Br	Ca	Mg	Na	K	Sr	T.D.S.
Lake Dingle: 27.8.62										
Surface	137	2.86	0.30	0.42	2.22	9.41	66.6	2.61	0.04	221.0
22 feet	139	2.91	0.30	0.42	2.24	9.84	69.3	2.70	0.05	227.1
45 feet	140	2.91	0.03	0.43	2.24	9.87	70.6	2.70	0.05	229.1
Surface 21.1.63	125	2.98	0.30	0.38	1.99	8.56	67.0	2.61	0.04	209.0
17 feet	143	2.93	0.30	0.41	2.26	9.86	71.0	2.70	0.05	232.0
34 feet	145	2.93	0.30	0.43	2.27	9.85	71.5	2.70	0.05	235.7
Lake Stinear: 27.8.62										
Surface	148	2.62	0.25	0.43	2.10	10.10	78.6	2.61	0.04	245.0
7 feet	151	2.64	0.25	0.43	2.18	10.60	78.6	2.61	0.04	249.0
15 feet	152	2.70	0.25	0.45	2.14	10.50	78.6	2.62	0.04	248.7
Surface 21.1.63	148	2.78	0.25	0.43	2.06	10.05	78.6	2.62	0.04	245.1
22 feet	151	2.61	0.20	0.45	2.14	10.45	78.6	2.62	0.04	248.6
44 feet	153	2.67	0.30	0.44	2.18	10.50	78.6	2.62	0.04	251.0
Deep Lake: 21.8.62										
I (edge)	169	2.26	0.30	0.69	2.28	14.79	78.8	4.71	0.08	273.0
II (edge)	169	2.17	0.30	0.70	2.27	14.98	78.8	4.71	0.08	273.0
III (edge)	169	2.30	0.30	0.73	2.30	14.95	78.8	4.71	0.08	273.3
Surface 21.1.63	169	2.47	0.30	0.84	2.28	14.95	78.8	4.71	0.08	273.0
25 feet	169	2.47	0.30	0.70	2.28	14.98	78.8	4.71	0.08	273.3
50 feet	169	2.55	0.30	0.84	2.28	14.95	78.8	4.71	0.08	273.4

	Cl	SO_4	HCO_3	Br	Ca	Mg	Na	K	Sr	T.D.S.
Club Lake: 21.8.62										
I (Edge)	170	2.31	0.30	0.81	2.12	15.0	78.7	4.71	0.08	273.0
II (Edge)	170	2.31	0.20	0.68	2.16	14.61	78.7	4.71	0.08	274.1
III (edge)	170	2.28	0.30	0.69	2.12	14.88	78.8	4.71	0.08	275.7

Note 1. Results are expressed in gram per litre.

2. Conductivity:

Lake Dingle - Lake Stinear: $1.7x10^5$ - $1.9x10^5$ micro mhos/cm

3. Apparent pH: 6.6 - 7.1

Lab. No. 63/899

REPORT NO. 46

SPECTROGRAPHIC ANALYSIS OF GEOCHEMICAL SAMPLES FROM INGHAM AREA, QUEENSLAND

by

E.J. Howard

Semiquantitative estimations of the nickel, cobalt, copper, vanadium, tin and lead content of 50 geochemical samples from the Ingham area, Queensland were made using a spectrographic technique.

The samples were submitted by R. Fardon as part of a geochemical survey in the area.

The following results are all expressed in parts per million.

Photo Code	Sample No.	Ni	Co	Cu	V	Sn	Pb
ING/9/5010	302	5-	5-	10-	10-	150	50
ING/9/5006	400	5-	5-	10	10	a	10
ING/8/5058	401	5-	5-	10-	10	200	10
ING/8/5058	402	5-	5-	10	10-	a	20
	403	5-	5	10	10-	10	20
	404	5-	5-	10	20	a	10
	405	5-	5-	10	20	a	20
	406	5-	5	10	10	20	10
	407	5-	5-	10-	10	a	10
	408	5-	5-	30	10	10	10
	409	5-	5	10	20	10	20
ING/8/5056	410	5-	5-	10-	10	a	10
ING/9/5008	411	5-	5-	10-	10	a	10

Photo Code	Sample No.	Ni	Co	Cu	V	Sn	Pb
	412	5-	5-	10	10-	a	10
ING/9/5006	413	5-	5-	10	10	a	10
	414	5-	5-	10-	10	a	10
	415	5-	5-	10-	10-	a	10
	416	5-	5	10	10	a	10
	417	5-	5-	10-	10-	a	10-
	418	5-	5-	10-	10-	a	10
	419	5-	5-	10-	10-	a	10-
ING/4/5012	421	5-	5-	10-	20	a	10
	422	5-	5-	10-	10-	a	30
ING/8/5060	423	5-	5-	10	50	a	10
	424	5-	5-	10-	10-	30	20
	425	5-	5-	10-	10-	a	20
	426	5-	5-	10	20	20	10
ING/8/5010	439	5-	5-	10-	10-	50	30
ING/4/5010	501	5-	5-	10-	10-	10	50
ING/5/5030	502	5-	5-	10-	10-	50	50
	503	5-	5-	10-	10-	a	70
ING/5/5030	502	5-	5-	10-	10-	50	50
	503	5-	5-	10-	10-	a	70
ING/5/5028	504	5-	5-	10-	10-	a	70
	505	5-	5-	10-	10-	a	50
ING/5/5208	506	5-	5-	10-	10-	10	50
ING/6/5012	507	5-	5-	10-	10-	a	70
	508	5-	5-	10-	10-	10	50
ING/4/5014	509	5-	5-	10-	10-	a	20
	510	5-	5-	10-	10-	a	20
ING/5/5028	511	5-	5-	10-	10-	a	20
ING/3/5152	513	5-	5-	10-	10-	a	10
	516	5-	5-	10-	10-	a	20
	517	5-	5-	10-	10-	a	30
ING/3/5154	518	5-	5-	10-	10-	a	20
	519	5-	5-	10-	10-	a	20
ING/3/5152	520	5-	5-	10-	10-	10	20
ING/4/5010	525	5-	5-	10-	10-	50	50
	526	5-	5-	10-	150	10-	20
	527	5-	5-	10-	50	10-	20
ING/5/5032	528	5-	5-	10-	10	10	30
ING/4/5012	529	5-	5-	10-	10-	10-	10-

"5-" - less than 5 ppm.

"a" -not detected.

Beryllium and phosphorus were sought but not detected in any sample.

Plate Nos. 458, 459, 460.
Lab. serial No. 924.

PART II, PETROGRAPHIC, MINERAGRAPHIC, AND X-RAY INVESTIGATIONS

REPORT No. 1 — 10th January, 1963.

EXAMINATION OF CORE FROM THE LAKE NASH NO.1. BORE HOLE, ~~(QUEENSLAND)~~ N.T.

by

J.M. Rhodes

Several pieces of core were submitted for petrographic examination by K.A. Wolf of Amalgamated Petrol N.L. on the 24th December. The sample was obtained from the Lake Nash No. 1 well, Queensland, at a depth of 1012-1027'.

The purpose of the examination was to determine if the rock has been subjected to metamorphism or hydrothermal alteration, and whether it may form part of the local basement.

Petrography

Fine to coarse-grained unsorted silicified quartz sandstone, with rounded to subangular grains ranging from about 0.1 to 0.6 mm. in diameter. The rock consists predominantly of quartz grains, with some siltstone fragments, kaolin, pyrite, sericite and hydrated iron oxide.

Thin, straight veins of a sulphide mineral, identified by W.M.B. Roberts as pyrite, together with kaolin and fine grained siliceous material fill fractures in the rock.

Quartz - rounded to subangular grains, 0.1 to 0.6 mm. in diameter, forming about 80-90% of the rock. Most grains are surrounded and cemented by well developed secondary silica rims in optical continuity with the grains. This silica cement is responsible for the hardness of the rock, the fracturing across grains, and the recrystallised appearance in hand specimen. Strain effects and recrystallisation textures other than those present in the grains prior to sedimentation are lacking.

Siltstone Fragments - rounded fragments of very fine grained siltstone composed of kaolin and sericite. Many of these siltstone fragments contain abundant small euhedral pyrite crystals, and accumulation of pyrite.

Kaolin - Occurs both in the siltstone fragments and in irregular, disseminated patches between quartz grains. The irregular patches may have formed from the weathering of either siltstone fragments or feldspar grains.

Sericite - occurs mostly within the siltstone fragments, but a few small flakes occur between quartz grains.

Pyrite - the bulk of the disseminated pyrite in the rock occurs as small euhedral grains and accumulations within the siltstone fragments. Pyrite grains not included in siltstone fragments have probably been derived from the siltstone during sedimentation.

Hydrated iron oxide - occurs as thin smears around some of the grains and is probably formed by oxidation of pyrite.

Conclusions

The rock is a silicified quartz sandstone. There is no textural evidence of strain or recrystallisation due to either regional or thermal metamorphism. Formation of secondary silica rims around detrital grains is usually indicative of ground water circulation.

Kaolin is indicative of hydrothermal activity, very low grade metamorphism or diagenesis. In this case the kaolin appears to have formed diagenetically from siltstone fragments and to have been redistributed throughout the rock, notably along fractures by solution, during silicification.

The bulk of the disseminated pyrite in the rock occurs within the siltstone fragments and is therefore unlikely to be of hydrothermal origin. The pyrite found along fractures, together with kaolin has probably formed by redistribution of pyrite within the rock during silicification.

The rock has not been metamorphosed or hydrothermally altered, but whether it forms part of the basement in the area, must be evaluated in light of the knowledge of local stratigraphy.

REPORT NO. 2 25th January, 1963

THE PETROGRAPHY OF FOUR SPECIMENS FROM THE BREDBO AREA, N.S.W.

by

W. Oldershaw

Photo Michelago 10/5079. Sp. 10 R.13833 Slide 10197

The handspecimen is a pale green rock crowded with unusual angularly shaped phenocrysts of quartz up to 5 mm. across. Two quartz phenocrysts are corroded bipyramids, the typical high temperature habit.

Under the microscope the rock is seen to consist of corroded phenocrysts of quartz and plagioclase with a few mafics set in a matrix of minute intergrown granular quartz and minute flakes of green chlorite.

The quartz phenocrysts are not strained or broken. They have generally rounded outlines except for deep embayments filled with groundmass matrix.

The plagioclase phenocrysts have generally rounded outlines. Some are completely sericitised and some are sericitised in zones.

The mafic minerals consists of cubes of pyrite and a chloritised (penninite) well-cleaved mineral, probably originally biotite or hornblende.

The rock is a slightly altered porphyritic dacite flow.

Photo Michelago 9/5107. Sp. 71 R.13832 Slide 10198

The handspecimen is a green, homogeneous fine-grained hard, siliceous rock with a conchoidal fracture.

Under the microscope the rock is seen to consist of a few scattered phenocrysts (0.1 mm. across) set in a mosaic of minute diffuse intergrown quartz crystals. There is a well marked parallel orientation of small diffuse pods of limonite dust.

The phenocrysts consist of irregularly shaped patches of felted sericite, some of it ironstained, and are probably altered felspar crystals.

Under high magnification (x800) the groundmass is seen to be sieved with minute needles of a colourless to pale blue mineral with high relief; probably rutile or apatite.

There are a few small crystals of zircon.

Acicular microlites of apatite are regarded as typical of rapidly quenced flows (Wyllie et al. 1962. Habit of Apatite in synthetic systems and Igneous Rocks. J.Pet. V3 pt 2) and thus the rock may be a recrystallised or devitrified acid lava flow.

The presence of such a large quantity of minute apatite needles is of interest and it may be worthwhile to crush part of the specimen, or to obtain samples of soil derived from the rock, and to extract the apatite for further study.

Photo Michelago 11/5021 Sp. 173 R.13758 Slide 10150

The handspecimen is a brown, porous homogeneous granular sandstone composed of rounded grains of quartz (1 mm. across) set in a siliceous matrix.

Under the microscope the quartz grains are seen to be well-rounded and to range from 1 mm. to 0.1 mm. across. The quartz grains show little fracturing and few strain shadows.

The quartz grains are cemented together by a fine-grained mosaic of quartz grains and sericite flakes. In some places the quartz grains are elongated and orientated parallel to each other. In some areas the elongated quartz crystals in the matrix have grown onto the large rounded grains and are in optical continuity with them, thus giving them a ragged fringe of orientated quartz.

There are some limonite grains and stains in the matrix.

The rock is a silicified sandstone. From its occurrence near a limestone reef the sandstone may be a silicified de-calcified beach sand.

Photo Michelago 95107 Sp. 134 R.13759 Slide 10151

The handspecimen is a pale-grey, fine-grained homogeneous siltstone.

Under the microscope the rock is seen to consist of irregularly and angularly shaped grains of quartz of widely different sizes, plagioclase and an unidentified felspar, accessory grains of hematite and zircon and interstitial flakes of biotite.

The quartz fragments range up to 0.3 diameter. They show no signs of deformation such as strain shadows or suturing. The grains differ widely in grainsize and degree of angularity, but none are rounded.

The grains of felspar are quite fresh and the plagioclase is well twinned.

The biotite is mainly interstitial and occurs as minute fresh flakes, pleochroic in green and with a high birefringence.

The rock resembles a fine-grained siltstone; but the angularity and poor sorting of the grains and the freshness of the felspars are unusual. From the angularity and poor degree of sorting and the presence of fresh felspars the rock appears to be a fine-grained crystal tuff.

REPORT No.3

106Q/4/1
25th January, 1963

X-RAY POWDER DIFFRACTION ANALYSIS OF HERCYNITE FROM EINASLEIGH, QUEENSLAND

by

S.C. Goadby

A mineral sample picked up on the surface 1 mile south of Einasleigh township was submitted for identification by D.A. White (on behalf of M. Limkin, prospector). X-ray powder diffraction shows this to be HERCYNITE.

REPORT NO. 4

79N/1
6th February, 1963

X-RAY DIFFRACTION ANALYSIS OF TWO CLAY SAMPLES FROM THE CANOWINDRA AREA OF NEW SOUTH WALES

by

S.C. Goadby

Two surface samples (registered Nos. R13830 and R13831) of clay from the vicinity of the township of Canowindra, New South Wales, were submitted by J. Barclay for identification.

X-ray powder diffraction shows both samples to be Kaolinite.

REPORT NO. 5

11/11
7th February, 1963

THE PETROGRAPHY OF MEREENIE SANDSTONE FROM BOREHOLE 44Z50, ALICE SPRINGS, N.T.

by

W. Oldershaw

R.13303 Slide 10176 — Depth 58' - 68

pale brown sandstone

The sample consists of small chips of a pale brown, porous, friable, fine-grained sandstone. The sandstone is a well packed rock of variable grainsize with the smaller grains filling the interstices between the larger grains. The larger grains are rounded and have a minutely pitted (or frosted) surface. This suggests that they are sand blasted aeolian grains.

A thin section of the sandstone chips shows that they consist of closely packed, rounded grains of quartz ranging down from 1 mm. diameter. There are a few rounded grains of quartzite, epidote, and zircon. The smaller grains fill the interstices between the larger grains, thus the rock is well packed and not very porous. The rock appears to be weakly cemented by a thin pellicle of limonite around each grain. There is no sign of any other cementing material.

The rock contains aeolian sand grains but the poor degree of sorting suggests that it is a shallow water sandstone, probably lacustine or deltaic, deposited in or near a desert.

R. 13306 Slide 10179 Depth 258 ft.

pale buff coloured sandstone

The sample consists of small friable chips of a pale buff coloured sandstone containing large rounded grains of quartz, with thin pellicles of brown limonite, set in a matrix of smaller white quartz grains.

A thin section shows the rock to consist entirely of grains of quartz whose diameters range from 1 mm. down to a few microns and whose degree of rounding decreases with the decrease in grainsize. The sandstone is poorly sorted and well packed. The smaller and more angular chips fill the interstices between the larger and more rounded grains. Thus the porosity is very low.

No cement was visible except for a thin pellicle of brown limonite around most of the larger grains. The smaller grains are probably cemented together by a form of "contact welding" i.e. slight solution and re-precipitation of silica along the contacts of contiguous quartz grains.

The rock is probably a deltaic sandstone containing aeolian sand grains.

R. 13304 Slide 10177 Depth 306

white aeolian sandstone

The sample consists of chips of a friable white quartz sandstone composed of rounded grains of clear glassy quartz. The sandstone is well graded and has an average grainsize of 0.5 mm. The quartz grains have minutely pitted surfaces and some have polished flattened facets. The sandstone is very poorly packed and very porous. There is little interstitial material and no cement.

Only a small part of the thin-section was useable. This part showed the rock to consist of loosely packed, similar sized, rounded grains of quartz. No interstitial material or cement was visible in the pore spaces between the grains. This pore space had been invaded by the transparent plastic cement used to bind the chips into a block for sectioning.

The rock is a very porous, well graded aeolian sandstone.

R. 13305 Slide 10178 Depth 375

white sandstone

The samples are chips of a white sandstone composed of large rounded grains of quartz (the grains have a minutely pitted surface) set in a matrix of smaller rounded clear glassy quartz grains.

The thin-section shows the sandstone to consist of large rounded grains of clear quartz (up to 0.5 mm. across) set in a matrix of minute sub-rounded and angular chips of quartz.

The rock is a poorly sorted, well packed sandstone with a low porosity. Although the rock is quite hard and compact, there is no cementing material visible. The small chips and grains in the matrix are probably weakly welded together by slight solution and re-precipitation of quartz along the contacts of contiguous grains; but no outgrowths of silica or interpenetrant grains are visible.

The rock appears to be a deltaic sandstone containing aeolian sand grains.

REPORT NO. 6

64NT/2
20th February, 1963

THE PETROGRAPHY AND MODAL ANALYSES OF BOREHOLE SAMPLES OF APATITE ROCK FROM RUM JUNGLE, N.T.

by

W.R. Morgan

The report contains the results of a detailed petrographic examination of four samples of apatite rock collected in the Rum Jungle area, N.T. The specimens examined are:-

R.10792 - D.D.H. 555, at 92 feet.

R.12824 - D.D.H. D.G.1, at 119 feet, 4 inches.

R.12825 - D.D.H. D.G.1, at 31 feet, 5 inches.

R.12826 - D.D.H. D.G.1, at 86 feet, 6 inches.

Generalized descriptions of R.12824 to R.12826 can be found in an earlier report (No.53, page 115, Laboratory Chemical, Petrographic and Mineral Investigations July to December, 1962. Bur.Min.Resour.Aust.Records 1963/55). Specimen R.10792 consists mostly of a mosaic of fine apatite crystals together with granules and flakes of hematite; the hematite is enclosed within apatite crystals, and is not interstitial. Small areas of heavily ferruginized argillaceous material are surrounded by the fine apatite. The rock is cut by very irregular veins that are filled with calcite, subordinate chlorite, and small amounts of coarse apatite and opaque iron oxide. In these veins, the opaque iron minerals form crystals discrete from the coarse apatite.

The table shows the grain-sizes and modal analyses of the specimens. The modal analyses should be regarded as inaccurate for two main reasons. Firstly, because of the extremely fine-grained nature of the rocks; the grain-sizes are smaller than the thickness of the rock slice (0.03 mm.). Secondly, the effect of the hematite; much of it is too fine-grained to be seen properly during point-counting, resulting in an under-estimation of the amount present. However, what can be seen and counted during modal analysis will be over-estimated because of the "Holmes Effect" (Chayes, 1956). Taking these two effects of hematite into account, it is hard to judge whether the ultimate results are over-estimates or under-estimates.

Other minerals are:- R.10792: calcite, subordinate quartz; R.12824: quartz, ferruginous argillaceous material, and some sericite; R.12825: ferruginous slate, silty slate, siltstone, and quartzite; R.12826: quartz and mica.

In all specimens, hematite is enclosed within apatite crystals, and not interstitial to them; this statement applies particularly to the finer-grained apatite, although some hematite is enclosed in the coarser apatite.

Specimen R.12824 is the one most free of hematite. The total amount of apatite present is reduced to 62% if the vugs (represented by holes in the slide) are taken into account. Some of the vugs are filled by quartz, and may be more completely filled in other parts of the rock at this horizon.

Reference

Chayes, F., 1956 - The Holmes Effect and the Lower Limit of Modal Analysis. Miner. Mag., 31, 276-281.

TABLE

	Grains Sizes and B.S. Sieve Apertures						Modal Analyses (Percentages)			
	Apatite				Hematite		Apatite		Hematite	Others
	Coarse		Fine		grain-size	B.S. Aperture	Coarse	Fine		
	Grain-size	B.S. Aperture	grain-size	B.S. Aperture						
R.10792	0.13 mm.	100	0.018 to 0.045 mm.	<300	0.0001 to 0.027 mm.	<300	5	34	20	41
R.12824	0.02 to 0.1 mm.	300 to 150	0.004 to 0.012 mm.	<300	0.0005 to 0.007 mm.	<300	67	25	3	4
R.12825	-	-	0.12 to 0.036	<300	0.0005 to 0.013 mm.	<300	-	38	17	45
R.12826	0.06 to 0.3 mm.	300 to 45	0.012	<300	0.005 to 0.018 mm.	<300	37	31	20	12

REPORT NO.7

50/N/18
186/ACT/1
22nd February, 1963

A STUDY OF TWO SEDIMENTS FROM PRIMROSE VALLEY, CANBERRA 1:250,000 AREA.

by

W. Oldershaw

R.13728 Sl. 10147 Field No. 316

A reworked plagioclase crystal tuff.

The hand-specimen is a medium-grained granular grey rock composed of grains of clear quartz, pale grey felspar, white felspar and schlieren of minute chlorite flakes; faint foliation, due to either cleavage or bedding is apparent. There are no fragments of shale or any other rock; therefore the specimen is not a lithic tuff.

A thin-section shows the rock to consist of angular and sub-rounded fragments of plagioclase (60%) and quartz, ranging from 1 mm. to 0.1 mm. across, set in matrix of minute angular fragments and granules of quartz.

The plagioclase is oligoclase, grains of which are fresh; a few are strained and are granulated around their margins.

The quartz shows some strain shadows and a few grains are granulated around their margins. About two percent of the rock consists of streaked out sheaves and schlieren of minute chlorite (penninite) flakes which contain small irregularly shaped fragments of hematite.

The presence of four sub-rounded grains of zircon is of interest, this mineral is rare in acid volcanics and then only as minute crystallites. These subrounded zircons were probably derived from terrestrial deposits formed by the weathering of a granitic area and were deposited in the crystal tuff as it was being washed off its original site, reworked and deposited elsewhere.

The rock has been slightly stressed; it has a faint foliation, the chlorite has been sheared out, schlieren and many of the larger crystals have been strained and some have been granulated around their margins.

R.13727 Sl. 1046 Field No. 313

Fine-grained reworked crystal tuff or greywacke

The handspecimen is a faintly foliated, fine-grained, granular, grey rock composed of small grains of glassy quartz, white felspar and schlieren of chlorite.

A thin-section shows the rock to consist of irregularly shaped granulated grains of quartz up to 1mm. across set in a matrix of minute quartz granules with folded masses and scattered flakes of sericite and chlorite.

The large subrounded grains of quartz are strained and their margins are granulated. There are some patches and trails of granulated quartz.

Grains of fresh plagioclase and altered orthoclase form about 5% of the rock.

Chlorite (penninite), clear fresh sericite and iron stained sericite and biotite occur as minute isolated flakes as irregularly shaped felted masses and as streaked out schlieren through the rock.

Numerous rounded detrital grains of zircon, tourmaline apatite, orthite and epidote were found associated with the micaceous minerals.

The rock consists of about 20% of micaceous minerals; the presence of fresh plagioclase suggests that these micaceous minerals do not pseudomorph felspar but are the altered shaly matrix. The rock also contains a high proportion of detrital heavy minerals. It is probably a greywacke or possibly a reworked crystal tuff which has undergone considerable transport and picked up a suite of heavy minerals characteristic of granitic terrain. The rock was extensively sheared, granulated, then subjected to mild metamorphism resulting in the development of chlorite, sericite and biotite.

A Camparison of R13728 and R13727

Both rocks are similar to some of the coarse-grained sediments in the Captains Flat Formation at Captains Flat. The reworked crystal tuff (R.13728) differs however from the fine-grained greywacke (R.13727) in that it consists mainly of feldspar (60%) with subordinate quartz (40%) whereas R.13727 consists mainly of quartz (about 70%) with only about 5% of felspar and much more micaceous material (25%). The presence of fresh felspar in R.13727 suggests that the micaceous material is not altered felspar but is altered clayey matrix. R.13727 is more intensely sheared than R.13738.

REPORT NO. 8 — 18th March, 1963

A PETROGRAPHIC EXAMINATION OF A SERIES OF FIVE SILURIAN VOLCANICS FROM THE GOODRADIGBEE AREA.

by

W. Oldershaw

R 14109 TSR 10261 — Sp 2137A

DACITE

The specimen is a very fine-grained rock containing a few deeply corroded euhedral quartz crystals, up to 2 mm across, several euhedral rectangular crystals and laths of plagioclase and some patches of chlorite.

The felspar phenocrysts consist of large tabular crystals of plagioclase 3-4 mm across, aggregates of small tabular oligoclase crystals and small lths of oligoclase.

Chlorite occurs as irregular masses of penninite flakes replacing some mafic mineral.

The groundmass forms 70-80% of the rock and consists of minute laths of plagioclase, granules of sub-amoeboid quartz, chlorite flakes and radiating spherulites of quartz and felspar.

The rock is a fine-grained dacite flow or minor intrusion.

R 14110 TSR 10262 Sp 2137B

FINE-GRAINED DACITE

The thin-section shows the rock to consist of a fine-grained inequigranular mosaic of intergrown quartz and plagioclase. In some parts the groundmass contains minute interpenetrant granules of quartz and plagioclase. In other parts the quartz and plagioclase form large distinct but irregularly shaped crystals. The plagioclase is poorly twinned.

The rock appears to be a recrystallised glassy dacite.

R 14111 TSR 10263 Sp 2137C

DEVITRIFIED AND RECRYSTALLISED DACITE

The thin-section consists of a mosaic of recrystallised, irregularly shaped, interpenetrant quartz and plagioclase crystals. Part of the thin-section consists of minute intergrown quartz and plagioclase crystals but there are zones, or bands of coarser-grained intergrown quartz and plagioclase crystals. There are a few regularly shaped phenocrysts of plagioclase up to one mm. across and some chlorite flakes.

The rock is a devitrified and recrystallised dacite flow.

R 14112 TSR 10264 Sp 2137D

PORPHYRITIC DACITE FLOW

The rock consists of euhedral phenocrysts of sericitised plagioclase 1-10 mm across, and a few corroded phenocrysts of quartz set in a fine-grained quartz-plagioclase matrix comprising 60% of the rock. There are a few irregularly shaped masses of chlorite (penninite) with granules of epidote and hematite. Small grains of hematite, zircon and apatite are accessory.

The matrix consists of small laths of plagioclase 0.1 mm long and flakes of chlorite set in a groundmass of granular quartz and felspar, irregular intergrowths of quartz and felspar and a few radial intergrowths of quartz and felspar.

The rock is a porphyritic dacite flow.

R 14113 TSR 10265 Sp 2138

WYORA PORPHYRY

The specimen consists of corroded phenocrysts of quartz and sericitised plagioclase set in a fine-grained matrix of granular and intergrown quartz, felspar, and chlorite. Areas of chlorite, epidote and hematite probably represent some altered mafic mineral. Accessory grains of apatite, epidote zircon and hematite occur in the matrix.

Parts of the matrix have a most unusual structure which is apparently due to the recrystallisation of the glassy matrix being initiated along curved and concentric cooling cracks (perlitic structure).

The rock is a quartz-felspar porphyry.

REPORT NO. 9

84NT/10
20th March, 1963

THE PETROGRAPHY OF A SPECIMEN FROM THE FERGUSSON RIVER 1:250,000 SHEET AREA, N.T.

by

W.R. Morgan

The petrographical description is of specimen 196223, collected from a locality 1½ miles S.W. of Cullen Siding, in the Fergusson River 1:250,000 Sheet area, Northern Territory.

The hand specimen (R14012) is dark red, mottled with black and yellowish green. Bundles of sub-radiating, acicular tourmaline crystals, and black crystals of a magnetic mineral are enclosed in a fine-grained dark red to green matrix.

In thin section (10202), fairly fine colourless flakes of sericite (identified by x-ray powder diffraction photography) enclose poikiloblastic crystals of gray to dark smoky blue tourmaline and octahedral to xenoblastic crystals of opaque iron oxide. Subordinate chalcedony is present, and fine hematite dust occurs along the cleavage planes of the sericite. A polished section examined by W.M.B. Roberts showed the opaque mineral to be magnetic hematite pseudomorphing magnetite. The specimen is a hematite - tourmaline - sericite rock.

Lab. form 729

REPORT NO. 10

84NT/1
21st March, 1963

X-RAY DIFFRACTION ANALYSIS OF TWO CLAY SAMPLES FROM THE RUM JUNGLE AREA

by

S.C. Goadby

Two samples (D.G. 13: 32'6" to 33' and 96'6" to 97') were submitted by the Rum Jungle Phosphate party for identification of the clay mineral present.

X-ray diffraction shows that in both samples this is kaolinite with some apatite (carbonate or fluorapatite).

REPORT NO. 11

186ACT/1
1st April, 1963

PETROGRAPHIC DESCRIPTIONS OF FIVE VOLCANICS FROM THE GOODRADIGBEE AREA.

by

W. Oldershaw

R 14103   TSR 10256

Agglomerate

The specimen consists of angular fragments 1 to 50 mm across of fine-grained lava set in a sparse pale green matrix.

Under the microscope the rock is seen to consist of fragments of devitrified volcanic glass, quartz and grains of hematite set in a sparse fine-grained quartz-sericite matrix comprising about 5% of the rock.

The fragments of volcanic glass vary in their colour, content of limonite dust, flow banding, degree of devitrification and grainsize. One large fragment of dark brown flow-banded glass contains trails of limonite dust and small quartz crystallites set in an irregular matrix of minute shadowy intergrown quartz crystals. The fragment has perlitic cracks. One fragment with perlitic structure and limonite dust consists of irregular shaped and interpenetrant crystals of quartz which are independent of the perlitic structure and limonite dust.

The rock is a volcanic agglomerate composed of fragments of devitrified volcanic glass.

R 14104 TSR 10257

Acid lithic Tuff

The specimen is a porous granular friable pink rock.

Under the microscope it is seen to consist of small irregular shaped fragments of devitrified volcanic glass set in a very sparse matrix of minute quartz granules and sericite flakes. There are a few patches of minute biotite flakes. The fragments of glass vary in colour, content of limonite dust, flow banding degree of devitrification and grainsize. The rock is similar to R 14103 but is finer grained and not so strongly lithified.

The rock is an acid lithic tuff.

R 14105 TSR 10258

Alkali Rhyolite

The specimen is a compact fine-grained rock containing a few small phenocrysts 0.5 - 2 mm. across of felspar and mafics.

Under the microscope the rock is seen to consist of a few smoothed rectangular phenocrysts of sericitised plagioclase and a few rounded phenocrysts of quartz set in a fine-grained matrix comprising 70% of the rock. The matrix consists of minute granules of micrographic intergrowths of quartz and albite.

The mafic minerals form clots of minute biotite flakes, epidote, apatite, hematite and zircon.

The rock is porphritic alkali rhyolite.

R 14106 TSR 10259

Hornblende Basalt

The specimen is a blue-grey, dense, fine-grained rock. Under the microscope it is seen to consist of a few phenocrysts of sericitized plagioclase 2 mm. across and aggregates of inequigranular irregularly shaped crystals of hornblende set in a fine grained matrix of plagioclase laths, hornblende crystals and grains of hematite. There are a few poikilitic crystals of quartz in the matrix.

The rock is a hornblende basalt.

R 14107 TSR 10260

Weathered Augite Andesite

The specimen is a fine-grained granular dark grey rock.

Under the microscope it is seen to consist of sercitised tabular phenocrysts of plagioclase (andesine), irregularly shaped phenocrysts of augite and patches of penninite up to 1 mm.across set in a sparse matrix of minute plagioclase laths, sericite, chlorite, limonite dust and interstitial quartz.

The augite phenocrysts have very irregular shapes and some have been altered to masses of penninite with subordinate epidote. Accessory apatite and ilmenite occur.

The rock is a weathered augite andesite.

REPORT NO. 12

198PNG/1

2nd April, 1963

THE PETROGRAPHY OF SPECIMENS FROM THE BARKERS CAMPS AREA, OBULU, T.P.N.G.

by

W.R. Morgan

Three specimens of porphyritic igneous rock were submitted by M. Plane for petrographical examination. The specimens are listed with their Registered Numbers and localities:-

FIELD NO.	REGISTERED NO.	LOCALITY
B.4	R.14498	Morgaru Creek, below Gogumbagu Village
B.13	R.14499	Morgaru Creek.
B.29	R.14500	Costeaned area above Barker's Camps.

All specimens were collected from the Obulu 1-mile sheet area, and are located on aerial photograph CAJ, Run 4, photo 5073 using the field numbers as point numbers.

According to Mr. Plane, R.14498 is a porphyry intruding granodiorite; no field information is given for the other two specimens.

R.14498 Silicified biotite - hornblende microgranodiorite or microdiorite porphyry.

The hand specimen has a greyish-black, flinty groundmass that encloses tabular phenocrysts ranging up to about 5 mm. across. A fine grained sulphide mineral is finely disseminated through the rock, and can also be seen associated with exceedingly thin veins of a white mineral.

In thin section (10294), the rock is seen to be seriate porphyritic, with grain-sizes ranging from 0.005 mm. in the groundmass to phenocrysts 5.0 mm across. A faint flow-texture is present.

The phenocrysts consist of plagioclase and hornblende. Plagioclase is fresh, and shows oscillatory zoning; it has a composition of about An_{50} zoned to An_{25}. Hornblende forms pale olive-green prismatic crystals that are slight chloritized.

The groundmass is composed of fine plagioclase laths, hornblende prisms, biotite flakes, and a few clear quartz grains; all these are enclosed in a mosaic of fine quartz grains crowded with inclusions of sericite and chlorite. This quartz and its inclusions appears to be secondary, and possibly results from devitrification and silicification of glass. Accessory minerals present are euhedral sphene, acicular apatite, and octahedral block iron oxide.

A rough estimate of the percentages of minerals present is:- plagioclase: 60, hornblende and biotite: 5-10%, primary quartz: less than 1, secondary quartz: 30.

The thin veins cutting the rock are filled with hematite, chlorite, and sphene. The sulphide mineral noted in hand specimen was identified in polished section by W.M.B. Roberts as pyrite.

R.14499. Microgranodiorite porphyry.

The hand specimen is mottled grey and white, and has an aphanitic groundmass enclosing phenocrysts of feldspar, quartz, and ferromagnesian minerals.

In thin section (10295) the rock is seriate porphyritic, and has grain-sizes ranging from 0.01 mm in the groundmass to phenocrysts 4.0 mm in diameter.

The phenocrysts consist of plagioclase, quartz, and chloritized ferromagnesian minerals. Plagioclase forms tabular, sometimes embayed crystals that commonly show oscillatory zoning; it is zoned from An_{50} to oligoclase. Quartz occurs as rounded and embayed crystals that are only slightly strained. Subhedral to euhedral phenocrysts of biotite and amphibole are pseudomorphed by penninite. The groundmass consists of granular quartz and sodic plagioclase, together with a few chlorite flakes. Some amygdale - like cavities are filled with sub-radiating flakes of penninite. Accessory minerals are prismatic apatite and granular black iron ore.

A rough estimate of the percentages of minerals present is:- plagioclase: 70, quartz: 25, and chlorite: 5.

R.14550. Strongly altered microgranodiorite porphyry.

The hand specimen has a dark grey aphanitic groundmass enclosing phenocrysts of feldspar, quartz and ferromagnesian minerals. The felspar is coloured pale green, due to its alteration products. Some clots of yellow-green epidote are present.

The thin section (10296) shows that the specimen is mineralogically and texturally similar to R14499. The main difference is that it is strongly altered. Much of the plagioclase is replaced by kaolin, epidote, and fine chlorite, and the ferromagnesian minerals by chlorite and epidote. No copper minerals were observed.

Laboratory Form 770.

REPORT NO. 13 84NT/1

4th April, 1963

X-RAY SPECTROCHEMICAL ANALYSIS OF DRILL SAMPLES FROM RUM JUNGLE AREA, N.T.

by

S.C. Goadby

Twenty-five samples, reference D.G.11, taken from 0 to 131'3" depth were submitted by P.W. Pritchard for determination of the uranium content.

All samples to a depth of 85 feet contain a trace of uranium. The sample from depth 85 - 90 feet contains 280 p.p.m U_3O_8. Samples from 90' to 126' contain a trace of uranium. Samples from 121' to 131'3" contain no uranium.

REPORT NO. 14 8th April, 1963

THE PETROGRAPHY OF 3 SPECIMENS FROM THE MICHELAGO AREA, N.S.W.

by

W. Oldershaw

R.14253 TSR 10286 Specimen 371

Hornblende Dacite Flow

The rock consists of corroded, irregularly shaped and angular fragments of quartz (1-4mm across), rectangular crystals of plagioclase (0.5 - 1 mm across) and fragments of hornblende, set in a very sparse fine-grained matrix comprising less than 10% of the rock. The feldspar is highly sericitised and the hornblende has been altered to aggregates of epidote-chlorite and calcite.

The groundmass consists mainly of minute intergrown crystals of quartz and feldspar and flakes of chlorite. Some parts of the groundmass consist of minute radial spherulites of quartz.

R.14252 TSR 10285 Specimen 383

Biotite Dacite Flow or Tuff

The rock consists of corroded rounded crystals and angular fragments of quartz measuring up to 3 mm. across, and rounded irregularly shaped fragments of sericitised plagioclase set in a fine-grained matrix of intergrown quartz and feldspar comprising about 10% of the rock.

The matrix contains flakes of chloritised biotite with epidote - granules of hematite and a few rounded zircons.

The main characteristics of the rock are - angular fragments and rounded grains of quartz, chloritised flakes of biotite and a sparse matrix. The rock could be either a tuff or a flow.

R.14251 TSR 10284 Specimen 390

Biotite Dacite Flow or Tuff

The rock consists of corroded and rounded crystals, as well as angular fragments of quartz, 0.5 to 3 mm. across, and irregularly shaped sub-rounded crystals of heavily sericitised feldspars, 1 - 2 mm. across. These are set in a sparse fine-grained quartz-feldspar matrix comprising 10 - 20% of the rock. The matrix contains numerous chloritised and epidotised biotite flakes, apatite, aggregates of hematite crystals and a few patches of calcite.

The main characteristics of the rock are - granular chips and rounded corroded grains of quartz, chloritised flakes of biotite and a sparse matrix. The rock could be either a tuff or a flow.

REPORT NO.15

EXAMINATION OF A DRILL CORE FROM LAKE NASH NORTHERN TERRITORY

by

W.M.B. Roberts

The following examination is an attempt to find whether or not two dissimilar lithologies in a drill core from Lake Nash represent a break in the depositional sequence.

The upper portion of the core is a dolomitic fossiliferous rock of early Middle Cambrian age, and the lower is an arenaceous sequence, devoid of fossils, thought to belong to an earlier part of the Cambrian, or late pre-Cambrian epoch.

Both the upper and lower parts of the core are pyritised; the upper portion mainly as infillings in worm burrows and as replacements of fossil parts; in the lower portion pyrite forms along fractures where it is associated with glauconite.

It was thought that an examination might show some fundamental differences in these pyrites, which, if present could lend support to the argument for an interrupted deposition between the two lithological types.

Four portions of the lower, arenaceous sequence were selected; these were from Core 4 and the footages are 1014, 1018, 1022 and 1024.

The polished sections showed that what appears to be pyrite, in all four sections is actually a mixture of marcasite and pyrite, although the perfect development of the pyritohedral (012) habit (Plate 1), shows clearly that all of the mineral was originally pyrite.

Pyritized sections of the upper portion of the core were also examined in polished section; these were 595', 594'2", 589', 592' and 594.

None of these sections showed any alteration to marcasite.

Pyrite was separated from sections 1024' and 1022' from the lower end 589' and 594' from the upper sequences. The pyrite was analysed by X-ray spectrography and were found to be identical in their contained trace elements, these are:

V, Ni, Co, Zn, Cu, As, Pb, Sr and Mo.

The cell edges of the two pyrites from the upper and the two from the lower were measured by X-Ray diffraction, in the belief that any significant differences between pyrites of the different levels could be taken as a result of some change in the conditions of emplacement or origin.

No significant difference in the cell edges could be found, they are:

594'2"	-	5.417	Å
592'	-	5.414	"
1022'	-	5.41	"
1024'	-	5.413	"

CONCLUSION

No evidence could be obtained from the measurements of the cell edges or from the trace element distribution in the pyrites. However, the alteration of the pyrite in the lower sequence, but not the upper, gives rise to three possibilities:

1. The core represents an unbroken depositional sequence and pyrite was deposited in the lower arenaceous portion first, and altered to marcasite. Pyrite was then deposited in the upper portion at some later time.

2. The core either represents an unbroken depositional sequence, or a sequence where a break has occurred between the arenaceous and the dolomitic portion, and pyrite deposited throughout at the same time, but only the lower portion altered.

3. Pyrite was deposited in the lower sequence and altered before the deposition of the upper portion.

Case 1 is improbable, as there is no apparent reason why the pyrite would be only deposited in the arenaceous section and not be deposited in the more suitable dolomitic environment. Had any pyrite been deposited in the upper sequence at the same time as the lower it would also show some alteration to marcasite.

The same argument used in Case 1, applies in Case 2. Considering that the formation of marcasite is more probable in an acidic environment, there is no reason whey the upper pyrite should not be altered in the same way as the lower.

Therefore Case 3 offers the most probable solution, that the pyrite was actually deposited in the lower sequence and altered before the upper sequence was deposited. Consequently a depositional break may be postulated.

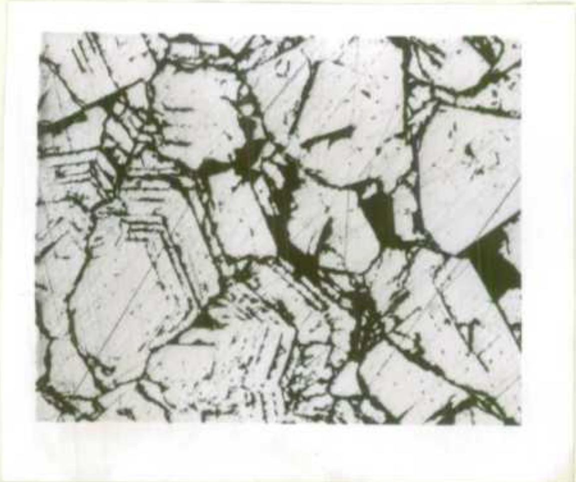

Plate 1 X10: Showing development of the pyritohedron in pyrite from the lower sequence.

REPORT NO.16 — 198NT/1

24th April, 1963

SAND SAMPLE FROM BORE HOLE W.R.B. 44Z 50, ALICE SPRINGS, N.T.

by

W.R. Morgan

The sample was obtained from a depth of 510 feet in the bore hole, and was submitted by I.P. Youles, Resident Geologist at Alice Springs, N.T. No details of the locality of the bore hole were given.

The sample was split into light and heavy fractions by bromoform separation. The heavy fraction consists of abundant zircon, brown tourmaline, and ilmenite, together with smaller amounts of magnetite and leucoxene; minor quantities of monazite, epidote, rutile, hornblende, and garnet were also observed. The light fraction consists of quartz. Neither the light or the heavy fractions showed any radio-activity when tested on the Austronii B.G.R.I. ratemeter.

REPORT NO. 17 — 94NT/1

8th May, 1963

THE PETROGRAPHY OF SPECIMENS FROM D.D.H. 11, PRITCHARD'S LODE, MT. BUNDEY AREA, N.T.

by

W.R. Morgan

Introduction

The samples were submitted to the petrological laboratory for examination by P.G. Dunn, and are listed as follows:-

Field No.	Registered No.	Depth
199742	R. 13317	198 feet
199743	R. 13319	165 feet
199744	R. 13318	159 feet
199745	R. 13320	158 feet

Samples 199742, 199743, and 199745 were etched and stained with sodium cobaltinitrite in order to detect potash feldspar. The report is divided into two parts; firstly, a description of the petrography of the specimens, and secondly, a brief summary and discussion of the results of the examination.

Petrography

199742. Actinolite quartz micro-syenite.

In thin section (10180) the specimen is seen to consist mostly of subhedral to tabular crystals of moderately kaolinized orthoclase perthite (85%). Quartz (about 3%) is interstitial. The few crystals of moderately sericitized sodic plagioclase (about 7%) are tabular. Some clusters of pale green, fibro-prismatic crystals of actinolite are present. Accessory minerals are fairly abundant, and consist of granular sphene and clinozoisite, together with euhedral prismatic crystals of apatite. The rock has an average grain-size of 0.4 mm.

The specimen is cut by veins containing calcite, quartz, and small amounts of chlorite. Other veins consist mostly of fine chlorite, epidote, and some quartz. Clusters of intergrown granular epidote and sphene form vein-like strings. Calcite and chlorite is introduced into the rock in some areas adjacent to the veins.

199743. Veined amphibolite

Prior to metasomatism this rock may have been a breccia, although it is difficult to tell. The thin section (10181) shows two or three areas apart from the veins, which have differing grain-sizes and somewhat different mineral compositions. The presence of the veins does not make it possible to see the relationships between the areas.

Part of the rock has an average grain-size of 0.05 mm., and consists of chlorite flakes, fibro-prismatic actinolite, some quartz, granular sphene, tabular apatitie, poikiloblastic pyrite, granular epidote, and some biotite flakes. Another area has a grain-size of 0.1 mm., and contains fibro-prismatic actinolite enclosed in quartz; small amounts of sphene, epidote, and apatite are present. A third area has a grain-size of 0.1 mm., and consists mostly of somewhat intergrown bluish-green actinolite crystals together with some granular epidote, calcite, quartz, and pyrite.

The rock is cut by three types of vein. Firstly, is a vein 4 to 5 mm. thick, containing coarse-grained scapolite, some magnetite and pyrite, together with minor amounts of partly chloritized biotite. The scapolite has a birefringence of 0.022 to 0.024; this shows it to be mizzonite, containing about 50% of the meionite molecule (Marialite: $Na_4Cl\ Si_9Al_3O_{24}$; Mieonite: $Ca_4CO_3Si_6Al_6O_{24}$). On either side of the vein scapolite and pyrite have been introduced into the rock in a zone about 4mm. thick.

The second type of vein was probably introduced at the same time as the scapolite. It contains pyrite concentrated into a zone of poikiloblastic grains.

The third type of vein contains coarse crystals of potash feldspar with inclusions of amphibole. The potash feldspar cuts the scapolite vein, and encloses embayed grains of scapolite. Close to this vein the adjacent rock has been partly replaced by a fine granular mosaic of potash feldspar grains.

199744

In thin section (10182) the specimen is seen to consist of almost entirely of an opaque mineral; this is cut by veins of green epidote and calcite. A polished section examined by W.M.B. Roberts showed the opaque mineral to be magnetite.

199745. Feldpathized and chloritized amphibolite.

In thin section (10183), an irregular vein-like area consisting mostly of potash feldspar is emplaced in rock apparently composed of amphibole.

The vein-like area mostly contains a granular mosaic of potash feldspar grains, 0.08 mm. diameter, together with small amounts of actinolite, biotite, sphene, pyrite, and epidote. The margins of the vein are irregular, and embay the material that forms the remainder of the rock as though replacement has taken place.

At low magnification the material around the vein is seen to be apparently composed of very coarse, somewhat intergrown prismatic and randomly oriently crystals of some ferromagnesian mineral, possible amphibole. High magnification shows that this mineral has been completely replaced by equal amounts of fine-grained chlorite and granular potash feldspar. The chlorite tends to form areas elongated parallel to the original mineral's cleavage. Small amounts of sericite, epidote, and sphene are present.

Summary and Discussion

Several phases of hydrothermal activity appear to have produced these rocks. Firstly, metamorphism and, possibly metasomatism was responsible for the formation of the amphibolite represented by 199743. In this rock, there is no parallel orientation of the minerals, suggesting that thermal, and not regional metamorphism was responsible.

This metamorphism was followed by the emplacement of the scapolite and sulphide veins. The magnetite represented by 199744 was possibly emplaced at this time, because small amounts of this mineral are associated with the scapolite vein.

Subsequently, veins containing potash feldspar were emplaced; at the same time, presumably, feldspathization took place. The veins and the feldspathization are probably related to the micro-syenite represented by 199742.

The youngest veins are found in 199742; these contain calcite, chlorite, and epidote.

REPORT NO. 18

SPECIMEN FROM D.D.H. 363, DEPTH 120 FT. RUM JUNGLE T.E.P. LTD.

by

W. Oldershaw

The specimen consists of a patchily reddened pale grey rock packed with disorientated white lath shaped phenocrysts up to 1 mm. long. The rock has a roughly conchoidal fracture and a very soapy feel and breaks up rapidly in water.

There are three main components visible under the microscope. The main component, forming about 50% of the rock, consists of the white barely translucent lath shaped phenocrysts which are most probably kaolinised felspars. The second component consists of anhedral to euhedral leucoxene pseudomorphs after ilmenite, containing veinlets and patches of opaque red iron oxide. The third component is the matrix in the interstices between the above components. It consists of opaque, brown-stained, and colourless minute fibres having a low Refractive Index, moderate Birefringence and straight extinction. These fibres appear to be one of the clay minerals - probably one of the montorillonite or saponite **groups**.

Colourless tremolite laths up to 2 mm. long were found. These crystals are fresh and bigger than any other crystall in the rock and appear so out of context with the fabric that they are most probably due to later metamorphism.

The rock appears to be a very altered hypabyssal basic or intermediate rock such as dolerite, trachyte or andesite. One unusual feature is the high proportion of ilmenite in the rock. If the rock were originally a dolerite, then some traces of the ophitic pyroxenes would be expected, such as chlorite pseudomorphs containing trails of black iron oxide marking the original cleavages. If the original rock were a trachyte, some traces of the mafic minerals characteristic of trachytes would be expected. The groundmass would consist of trachytic glass or minute felspars which on alteration could produce the clay minerals found in the slide. The rock could be a fine-grained andesite, but andesites are characterised by large zoned plagioclase phenocrysts and only small amounts of black iron oxide.

The rock is so altered that none of the original minerals can be seen. The present fabric may be composed of direct pseudomorphs of the original minerals or there may have been some re-organisation of the fabric.

REPORT NO. 19 8th May, 1963

THE PETROGRAPHY OF THIRTEEN SPECIMENS COLLECTED IN THE GIBSON DESERT, N.T.

by

W. Oldershaw

R 13112 TSR 9992 LA 577

Epidotised Conglomerate or Agglomerate

The rock is a conglomerate or agglomerate containing rounded fragments 1 - 5 cm across of amphibolite, basalt and granite set in a granular matrix of angular fragments 0.2 - 2 mm. across that consist of quartz-albite intergrowths, devitrified glass, fresh microcline, orthoclase, perthite, plagioclase, quartz and augite. The interstices are filled with fine-grained granular epidote. This epidote cement could be due to regional metamorphism affecting only the fine-grained cement of the rock or it could be hydrothermal or volcanic origin. However the surrounding felspars show very little alteration.

R 14019 TSR 9958 BE 2 A

Amphibolite

The specimen is a dense fine-grained foliated black rock. Under the microscope it is seen to consist of an equigranular mosaic of quartz and hornblende crystals approx 0.2 mm. across. There are a few irregularly shaped crystals of augite rimmed with granular hornblende. Apatite and sphene are accessory.

R 14021 TSR 9960 BE 1

Amphibolite

The handspecimen is a fine-grained granular black rock with a few irregularly shaped patches of white felspar and quartz.

Under the microscope the rock is seen to consist of an equigranular mosaic of quartz, oligoclase and hornblende granules 0.2 - 0.5 mm. across. Epidote occurs as irregularly shaped patches and as rounded grains. Apatite and zircon are accessory.

R 14026 TSR 9965 BE 4E

Amphibolite

The specimen is a black granular rock. Under the microscope it is seen to consist of a mosaic of irregularly shaped crystals of hornblende, from 1 - 2 mm. across containing randomly oriented inclusions of plagioclase,grains of hematite and crystals of apatite and some grains of scapolite.

The hornblende consists of aggregates of fibrous hornblende and limonite dust. The hornblende is pleochroic from green to blue-green indicating that it is a sodic hornblende. The plagioclase is poorly twinned and appears to be andesine. Its relationship with the enclosing hornblende is similar to the ophitic texture between plagioclase and augite characteristic of dolerites. Thus the rock may be an altered, or uralitised, dolerite.

R 14023 TSR 9962 BE 4B

Amphibolite

The specimen is a fine-grained granular black rock. Under the microscope it is seen to consist of interpenetrant, disorientated, irregularly shaped prisms, and fibrous aggregates of hornblende crystals of apatite, sphene epidote and porphyroblasts of scapolite.

The hornblende was an unusual blue green to green pleochroism suggesting that it is sodic form. The scapolite (colourless, uniaxial -ve, RI = 1.56) forms irregularly shaped porphyroblasts 1 mm. across. Some could be amygdule fillings.

The rock is an amphibolite, probably a regionally metamorphosed basalt.

R 14028 TSR 9967 BE 5

Porphyritic Micro-granite

The handspecimen is a granular pink rock. Under the microscope it is seen to consist of large irregularly shaped crystals cysts 2 mm. across of orthoclase and aggregates of strained quartz crystals set in a matrix of small fresh and unstrained crystals of quartz and microcline. Accessory muscovite hematite, biotite and epidote occur.

The fine-grained granular quartz-microcline matrix is unusual. Some parts consist of symplectic intergrowths. The matrix may be a rapidly crystallised granitic residuum or it may be a later aplitic injection.

R 14020 TSR 9959 BE 2B

Altered Gabbro

The handspecimen is a coarse-grained black and white rock consisting of large crystals of hornblende, up to 2 cms. long, set in a matrix of white felspar.

Under the microscope the rock is seen to consist of approximately equal proportions of tabular labradorite, masses of granular scapolite and irregularly shaped crystals of augite rimmed with hornblende.

The crystals of augite have very irregular shapes and are rimmed with and invaded by granular hornblende. The augite close to areas of scapolite is crowded with small grains of sphene. The labradorite is well shaped except in contact with scapolite, where it is very irregularly shaped and is margined by a network of minute needles of epidote. The scapolite comprises large areas of granular scapolite some of which shows the prismatic cleavage and first order yellow birefringence.

The rock appears to be a pneumatolytically altered gabbro in which the augite has been partly altered to hornblende and part of the plagioclase altered to scapolite.

R 14022 TSR 9961 BE 4A

Porphyritic Rhyolite

The handspecimen is a dark fine-grained rock with a conchoidal fracture containing a few pink felspar phenocrysts. Under the microscope the rock is seen to consist of euhedral phenocrysts 1-2 mm. across of orthoclase and some plagioclase surrounded by radiating irregularly shaped crystals of felspar set in a matrix of fine-grained granular quartz, orthoclase and hematite. Accessory minerals are epidote, zircon, hematite and pyrite.

The rock appears to have cooled rapidly and the felspar phenocrysts formed loci upon which radial outgrowths, or possibly radial recrystallisation, of felspar occurred.

R 14025 TSR 9964 BE 4D

Porphyritic rhyodacite

The specimen is a black glassy rock with a conchoidal fracture. It contains small white phenocrysts up to 1 mm. across.

Under the microscope the rock is seen to consist of euhedral phenocrysts of orthoclase, anorthoclase and plagioclase and a few anhedral phenocrysts of quartz set in a devitrified flow banded matrix comprising 70-80% of the rock.

The feldspar phenocrysts are crowded with minute inclusions of biotite, chlorite, apatitie and magnetitie. The anorthoclase shows well developed polysynthetic twinning.

The matrix shows good flow banding with trails of minute magnetite octahedra, limonite dust and chlorite flakes in a groundmass of minute amoeboid quartz crystals.

The rock is a porphyritic rhyodacite or soda rhyolite.

R 14024 TSR 9963 BE 4C

Porphyritic Alkali Rhyolite

The handspecimen consists of a granular pink rock with white phenocrysts and black specks. Under the microscope the white phenocrysts are seen to consist of euhedral microcline and poorly twinned plagioclase 0.5 - 2 mm. across. Irregular aggregates of small biotite crystals and hematite grains occur and are surrounded by granular quartz and plagioclase. The rest of the rock consists of irregularly shaped masses of graphically intergrown quartz and felspar radiating out from the felspar phenocrysts and mafic clots.

The rock is a porphyritic alkali rhyolite.

R 14027 TSR 9966 H 4

Weathered Porphyry

The handspecimen is a porous grey rock containing irregularly shaped white phenocrysts 1-5 mm. across.

Under the microscope, the white phenocrysts are seen to be opaque aggregates of fine-grained grey clay minerals; probably after altered felspar. Much of the rock matrix disintegrated during the preparation of the thin section but the remnant consists of spherulitic devitrified glass, aggregates of sericite and limonite dust and an usually large amount of magnetite granules comprising 10% of the matrix. Half of the magnetite granules have a cubic shape and cleavage and have developed a reddish brown porous skin of geothite or limonite.

The rock is a deeply weathered magnetite rich felspar porphyry.

R.13093 TSR 9973

Fuchsite Greisen

The hand specimen is a granular quartzite rock containing small plates of pale green mica.

Under the microscope the rock is seen to consist of large grains of quartz which form 90% of the rock, as well as plates of fresh muscovite and trails of magnetite, epidote, zircon and tourmaline grains.

The grains forms large strained sutured crystals up to 2 mm. across. The mica occurs as parallel fresh flakes of slightly pleochroic pale green muscovite:- probably the chromium muscovite Fuchsite. Qualitative X-Ray spectrographic analysis by S.C. Goadby of a sample of the mica indicated the presence of chromium. A few thin bands of rounded grains of magnetite, epidote, tourmaline and zircon cross the rock independently of the boundaries of the quartz grains. These bands could be layers of detrital heavy minerals which occur in many sediments. There are also thin irregular bands of limonite dust which ramify through the quartz grains. These are probably old grain boundaries.

The sutured margins, strain shadows, irregular shapes and relict grain boundaries show that the rock has been extensively reconstituted. The bands of rounded detrital heavy minerals suggest that the rock was proably originally a sediment. Thus the rock may be a greisenised sandstone.

R 13094 TSR 9974 B6

Glauconitic Sandstone

The rock is a pale brown well packed, well graded glauconitic sandstone containing 60-70% glauconite.

The glauconite occurs as rounded grains 0.05 - 0.1 mm.

across of aggregates of minutely granular glauconite. Some pellets contain curved septra and are probably casts of foraminifera. 10% of the quartz grains are large rounded grains 0.1 - 0.2 mm. across; but the rest consists of minute angular chips less than 0.05 mm. across.

The grains are cemented together by a sparse colourless isotropic matrix which is probably chalcedony. The thin dark brown layers in the rock contain a lot of hematite both as detrital grains and as interstitial cement.

There are a few flakes of fresh muscovite 0.1 mm. across, a few grains of epidote and some calcite.

REPORT NO. 20

ACT186/1

8th May, 1963

A MARBLE FROM PRIMROSE VALLEY, NEAR CAPTAINS FLAT, N.S.W.

by

W. Oldershaw

The specimen (R.14671) is a compact granular white rock with a few pale brown and pale grey bands from 5 to 20 mm, thick.

The specific gravity if 2.7. The hardness is 3 on Mohs' scale and is constant over the whole specimen. A sample digested in dilute hydrochloric acid yielded only 2.25% of its weight of insoluble residue which consisted of sericite (70%), limonite stained sericite (20%), hematite grains and limonite dust.

The sample was examined under both reflecting and polarising microscopes and was found to consist of equigranular interlocking grains of calcite 0.3 - 0.5 mm. across. The calcite grains show pressure twinning. The brown bands were found to consist of bands of fine-grained calcite with an admixture of clear sericite, limonite stained sericite and limonite dust. The grey bands were found to contain a few scattered grains of hematite.

The specimen is a marble consisting of 98% $CaCO_3$. It contains no sulphides whose breakdown products on weathering would discolour the rock. The hardness appeared to be constant over the whole sample.

The rock is as durable as any other marble and would be similarly susceptible to acid atmospheres if used as an external facing stone. However, this would not be critical in Canberra if the atmosphere remains as acid-free as it is at present. The durability and soundness should be more than adequate for internal use.

Other limestones near Captains Flat break up into small blocks 1-2 feet across on quarrying; therefore a major factor in the exploitation of the deposit would be the maximum size of the blocks which could be extracted.

REPORT NO. 21

186/1/ACT
1966A

8th May, 1963

THE PETROGRAPHY OF AN AMPHIBOLITE FROM BUNGENDORE, N.S.W.

by

W. Oldershaw

R 14658 TSR 10437

Amphibolite

The sample was collected from a locality 2½ miles east of Bungendore, on the Braidwood road, in the area of the Canberra 1:250,000 Sheet.

The specimen is a granular rock consisting of black hornblende and white feldspar crystals.

Under the microscope the rock is seen to consist of interpenetrant irregularly shaped crystals of hornblende, plagioclase and quartz about 0.5 to 1 mm. across, and small grains of apatite, sphene and epidote.

Hornblende comprises about 30% of the rock and occurs as irregularly shaped interpenetrant crystals.

A few of the plagioclase crystals are tabular, but the majority are irregularly shaped. The plagioclase appears to be andesine but the crystals are zoned and poorly twinned. A few crystals are intergrowths of andesine and albite and contain inclusions of apatite sphene and epidote.

Quartz occurs as groups of strained granules and as irregularly shaped interstitial crystals.

The rock is an amphibolite.

REPORT NO. 22

58/ACT/1

14th May, 1963

X-RAY SPECTROGRAPHIC ANALYSIS OF BLACK SOIL DRILL RESIDUE FROM TREASURY BUILDING FOUNDATIONS, A.C.T.

by

S.C. Goadby

A sample of black drill residue from Treasury Building foundations, Canberra (ref. 139406) was submitted by G.M. Burton for qualitative manganese determination. X-ray spectrographic analysis showed absence of manganese but presence of iron.

REPORT NO. 23 17th May, 1963

THE PETROGRAPHY OF DOLERITE FROM OORAMINNA NO. 1 WELL, NORTHERN TERRITORY.

by

W.R. Morgan

The specimen was obtained from 4654 feet in the well. The thin section showed it to be an albite dolerite, and to contain plagioclase, clinopyroxene, magnetite, chlorite, actinolite, hydrated iron oxide, quartz, and devitrified glass, together with accessory apatite, sphene, and sulphide. Texturally, the rock is medium- to fine-grained, and ophitic.

The plagioclase is albite, however, it is fairly strongly sericitized. It forms randomly oriented laths about 0.37 mm. long by 0.08 mm. wide. The clinopyroxene occurs as ophitic grains ranging up to 1.0 mm. across. It is a colourless augite that is zoned sharply on crystal margins to probable ferro-augite. The marginal (?) ferro-augite contains small amounts of fine-grained opaque reddish dust (possibly hematite) on its cleavage planes. Clinopyroxene grains are commonly rimmed by pale green actinolite, and are, in places, partly or completely replaced by green chlorite and hydrated iron oxide. Black iron oxide grains are octahedral to interstitial and are partly replaced by hematite. Masses of fine green chlorite flakes are interstitial, and also fill amygdaloidal cavities that measure up to 1.4 mm. across. The small amounts of quartz and glass present are interstitial. The glass is faintly anisotropic, suggesting that it is devitrified; it is pale brownish-orange in colour, due to inclusions of extremely fine-grained iron oxide dust. Accessory apatite forms tabular prismatic crystals and very fine-grained acicular needles; sphene occurs as granular crystals associated with pseudomorphed augite. Pyrite appears to be interstitial.

No olivine was observed in this specimen. Some of the augite grains replaced by chlorite and hydrated iron oxide give an impression of being pseudomorphed olivine; the hydrated iron oxide forms thin, somewhat irregular vein-like areas in the pseudomorphs. However, some partly replaced augite crystals were closely examined, and it was seen that the hydrated iron oxide "veins" in fact correspond to cracks in the original augite crystals.

The specimen has been fairly strongly altered - the plagioclase is partly replaced by sericite, and the clinopyroxene by chlorite and hydrated iron oxide. The alteration is due to late-stage igneous activity, probably at the time of intrusion, and not to metamorphism.

A specimen of dolerite (R.10146) collected by J.W. Smith from near the Hale River in the area of the Hale River 1:250,000 Sheet was described by W.R. McCarthy at the Australian Mineral Development Laboratory, Adelaide (B.M.R. file 166A, Part 2, folio 59), in March, 1962. Mr. McCarthy's report (AMDL thin section No. 9057) is quoted:-

"This is an altered igneous rock. Before alteration it was composed of pyroxene, plagioclase, probable olivine, opaque and perhaps also a little hornblende. The rock had diabasic texture and it is medium to coarse-grained - some of the pyroxene is larger than 1 mm. in diameter. From petrographic evidence then, the rock is classified as a dolerite; however, if field evidence indicates that the rock is a lava, it would then be termed a medium-grained basalt.

"The 'dolerite', in addition to pyrogenic minerals, now contains hornblende, epidote, chlorite, calcite, quartz, and goethite. Portions of the pyroxene (which is probably clinoenstatite) have retrograded to form hornblende. Epidote has formed by alteration of plagioclase and pyroxene. Aggregates of chlorite, presumably pseudomorphic after olivine, and containing goethite along fractures form about 5% of the specimen".

McCarthy's description is not sufficiently detailed for a comparison to be made between the Ooraminna No. 1 specimen and the Hale River rock; generally speaking, the two rocks seem to be fairly similar, except that the specimen he describes seems to have undergone stronger alteration. Also, he records the presence of pseudomorphed olivine in the Hale River specimen.

REPORT NO. 24 198PNG/1

22nd May, 1963

THE PETROGRAPHY OF SPECIMENS COLLECTED IN THE MUSGRAVE RIVER, NEAR JANARERE, PAPUA

by

W. Oldershaw

R 13729 TSR 10184 Sp LH 41

Fine-grained Greywacke

The rock is a fine-grained greywacke consisting of small rounded grains of quartz and serricitised feldspar set in a very fine-grained ironstained matrix of quartz grains, sericite flakes and limonite dust.

The rock is roughly foliated, but there is no shattering or straining of the minerals and there is no sign of metamorphism beyond lithiation and the development of sericite.

R 13730 TSR 10185 Sp LH 39

Feldspathic Grit

The rock is a fine-grained fragment of rock composed of angular fragments up to 1 mm. across of quartz (70%), poorly twinned plagioclase 10%, biotite shale, granophyre, quartzite and flow banded trachyte. Two spheres 0.5 mm. across of radial intergrowths of quartz and albite were found; these were probably derived from a spherilitic obsidian. The interstitial matrix of the rock consists of minute flakes of sericite, penninite and biotite.

The presence of fragments of volcanics in the grit suggests that the grit may even be a tuff or was derived from a tuff. There is little sign of metamorphism.

R 13731 TSR 10186 Sp 8/62/U67

Calcareous Conglomerate

The conglomerate (or agglomerate) consists of subrounded fragments of siltstone and granophyre cut by calcite veins, set in a matrix composed of subrounded grains of quartz set in a calcite matrix. There is a little detrital epidote.

The calcite crystals in the matrix show signs of gliding and pressure twinning.

R 13732 TSR 10187 Field No. 8/62U68

Andesite

The rock is a weathered andesite consisting of tabular phenocrysts of zoned and altered andesine and tabular masses of chlorite, probably after augite, set in a fine-grained matrix of minute laths of plagioclase, flakes of chlorite needles of apatite and grains of magnetite.

The rock has been altered by weathering or by mild metamorphism. The andesine phenocrysts have been selectively altered along growth zones and converted into masses of minute serricite, chlorite and calcite. The mafic mineral has been altered into chlorite and iron oxide. Small patches of calcite occur in the matrix. Small crystals of pyrite occur along the fracture planes.

R 13733 TSR 10188 Sp 8/62 U 69

Greywacke

About 20% of the greywacke consists of rounded grains of quartz, quartzite, plagioclase, serricitised felspars and shale. The rest of the rock consists of a matrix of minute parallel orientated flakes of serricite and grains of limonite.

The rock is foliated, or cleaved, but there is no granulation or staining of the larger grains and there is no sign of extensive dynamic or regional metamorphism.

R 13734 TSR 10189 Sp 8/62 U611

Breccia or Agglomerate

The rock consists of closely packed, irregularly shaped fragments up to 2 mm. across of quartz, foliated shale (some contorted), siltstone - quartz-felspar intergrowths and plagioclase. There is a sparse interstitial matrix of minute crystals of sericite and quartz. The rock is similar to LH 39 but is coarser-grained.

The only metamorphism was a slight recrystallisation of the groundmass and the growth of sericite.

REPORT NO. 25 4th June, 1963

THE PETROGRAPHY OF SOME RIVER SANDS FROM THE AUSTRALIAN CAPITAL TERRITORY

by

W. Oldershaw

The following descriptions are for three samples of river sand - collected by D.E. Gardner in the Australian Capital Territory.

R 10247 TSR 7879 Sample No. 685

This sample was collected from the Murrumbidgee River at a point 1,500 feet downstream from Tharwa Bridge.

It contains subrounded grains and angular chips of minerals 1 to 4 mm. across, and rounded rock fragments. About 40% of the sample is quartz, (some corroded crystals were derived from porphyrics); 20% fragments of epidote, orthoclase, microcline, sericitised plagioclase and augite; 30% fragments of quartzite and siltstone, and the remainder consists of rounded fragments of rhyolite or dacite iron-stained sericite shale and flakes of biotite.

R 10248 TSR 7899 Sample No. 686

This sample was collected from Jerrabomberra Creek at its junction with Woden Creek. It consists of subrounded grains and angular fragments, from 1 to 2 mm. across, of quartz, corroded quartz in a rhyolitic matrix, fragments of devitrified rhyolite or dacite and a few fragments of siltstone. The sand appears to have been formed by the breakdown of porphyritic rhyolites or dacites.

R 10249 TSR 7900 Sample No. 687

The sample was collected from the Molonglo River, half a mile upstream from Duntroon Bridge. About 50% consists of subrounded and angular fragments 1 to 2 mm. across, of quartz (some of which are corroded grains derived from porphyries), 10% consists of angular fragments of quartzite and siltstone, 10% of fragments of porphyritic rhyolite or dacite, and the rest consists of grains of orthoclase, microcline perthite, oligoclase (some saussuritised and sericitised), biotite, epidote and hornblende. There are a few rounded fragments of ironstained sericite shale.

REPORT NO. 26

84NT/1

14th June, 1963

X-RAY SPECTROGRAPHIC ANALYSIS OF A ROCK SAMPLE FROM MOUNT SHOEBRIDGE MINE, N.T.

by

S.C. Goadby

A sample of rock from a dump at Mount Shoebridge Mine (Pine Creek 4-mile Sheet) was submitted by the Resident Geologist, Darwin for qualitative lead and zinc determination.

X-ray spectrographic analysis shows the presence of lead but the absence of zinc.