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COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS

RECORDS:

1966/225

MISCELLANEOUS CHEMICAL INVESTIGATIONS CARRIED OUT IN THE GEOLOGICAL LABORATORY

JULY to DECEMBER, 1966.

Compiled by

E. Woodhead

5928/65

MISCELLANEOUS CHEMICAL INVESTIGATIONS CARRIED OUT IN THE GEOLOGICAL LABORATORY.

JULY - - DECEMBER, 1966.

Compiled by

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RECORDS 1966/225

This Record is composed of reports on minor chemical investigations carried out in the Geological Laboratory, Bureau of Mineral Resources, during the period January 1966 to December 1966. The Record is divided into two parts; the first deals with reports covering the period January to June 1966. The second part deals with reports covering the period July to December, 1966. In each part the reports are in chronological order.

MISCELLANEOUS CHEMICAL INVESTIGATIONS CARRIED OUT IN THE GEOLOGICAL LABORATORY

PART II

JANUARY - DECEMBER, 1966

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Laboratory Report No.25.

1st July, 1966.

ASSAYS ON THREE SAMPLES FROM THE ADAU RIVER T.P.N.G.

by

J.R. Beevers

The samples were submitted by H.L.Davies from the Sulphide bearing part of a shear zone in the Adau River area of T.P.N.G., co-ordinates 9°40'S, 148°40'E. The sukphide zone is about 25 feet wide and the three samples were composed of chips sampled every six inches across the zone.

Sample number and width of zone sample, measured from the Eastern wall of the Sulphide Zone.

	65520725 0 - 10'6"	65520726 10'6" - 19'0"	65520727 19'0" - 25'0"
Cu	550 p.p.m.	700 p.p.m.	1025 p.p.m.
Pb	< 50 "	< 50 "	< 50 "
Ni	1.80%	3.15%	3.20%
Co	470 p.p.m.	800 p.p.m.	900 p.p.m.
Zn	27 "	19 "	33 "
Cr	40 "	50 "	70 "
Mn	260 "	350 "	380 "

Laboratory Report No. 26

4th July, 1966.

SPECTROCHEMICAL ANALYSIS OF GEOCHEMICAL SURVEY SAMPLES FROM MOUNT ISA. QUEENSLAND.

by

A.D. Haldane

The following results were obtained for the spectrochemical analysis of auger samples collected by D.O. Zimmerman from the Northern Lease area, Mount Isa Queensland.

In addition to those elements reported, Bi, Sb, Sn, Be, As, W. P were sought but not detected, Where no value is given in the columns below, the element was sought but not detected.
All values are in parts per million.

Sample No.	Co-ords	Ni	Co	Cu	Pb	Ag	Mo	V	Zn
02 - 001	1/10.5.W.	60	30	25	10-	-	-	250	-
002	1/9.5 W	25	10	20	10-	-	-	100	-
003	1/8.5 W	8	3	4	10-	-	-	60	-
004	1/7.5 W	4	-	4	18	-	-	25	-
005	1/6.5 W	2	-	6	18	-	-	30	-
006	1/5.5 W	6	8	4	10	-	-	25	-
** 007	1/4.5 W	6	10	2	10-	-	-	40	-
009	1/3.0 W	6	8	2	10	-	-	60	-
010	1/2.5 W	10	4	4	25	-	-	40	-
012	1/2.0 W	4	2	6	25	-	-	8	180
014	1/1.5 W	6	1	18	180	-	-	60	180
016	1/1.0 W	6	3	18	100	-	-	60	180
018	1/0.5 W	2	5	25	600	0.3	-	30	-
019	1/0. W	18	1	60	1000	3	-	20	400
021	1/0.5 E	2-	-	18	180	0.6	-	6	100
022	1/1.0 E	2	-	25	300	4	-	18	-
024	1/1.5 E	4	-	25	600	1.	-	30	80
026	1/2.0 E	-	-	30	300	0.5	-	60	-
028	1/2.5 E	4	-	13	600	1	-	20	-
029	1/3.0 E	2	1	30	600	3	-	6	-
030	1/3.1 E	10	8	80	1300	13	-	80	400
031	1/3.2 E	-	-	80	1000	2.5	-	80	100
032	1/3.3 E		No result						
033	1/3.4 E	2	1-	25	1300	2.5	-	60	60
034	1/3.5 E	3	1-	40	1800	8	-	30	100
035	1/3.6 E	-	1-	40	3000	4	-	100	60
036	1/3.7 E	-	-	13	600	3	-	60	-
037	1/3.8 E	2	1	30	4000	8	-	80	-
038	1/3.9 E	-	-	25	2500	4	-	40	100
040	1/4.0 E	3	2	250	6000	25	30	10	500
041	1/4.1 E	2	-	40	4000	4	-	80	100
042	1/4.2 E	3	1	60	2500	30	-	4	130
043	1/4.3 E	2	1	18	1800	3	-	60	80
044	1/4.4 E	-	-	13	1300	3	-	40	60-
045	1/4.5 E	-	1	10	800	3	-	40	-
046	1/4.6 E	80	50	25	2500	6	-	60	4000
047	1/4.7 E	4	1-	13	1000	2.5	-	20	-
048	1/4.8 E	-	6	8	800	1.5	-	3	250
049	1/4.9 E	10	6	18	1300	2	6	30	250
051	1/5.0 E	10	13	40	2500	6	2-	25	1800
052	1/5.1 E	2	8	18	2500	4	2	20	300
053	1/5.2 E	3	-	18	1300	1.5	-	40	180
054	1/5.3 E	10	-	18	1300	2	-	30	100
055	1/5.4 E	8	6	13	800	1.5	-	40	100
056	1/5.5 E	4	1	13	2500	2	-	30	100
058	1/6.0 E	3	-	8	250	-	-	20	-
059	1/6.5 E	4	1	13	600	-	-	60	130
061	1/7.0 E	2	2	13	600	-	-	60	100
062	1/7.5 E	3	-	10	400	-	-	60	100
064	1/8.5 E	2	-	10	250	-	-	30	-
066	1/9.5 E	8	2	13	600	-	-	40	-
068	1/10.5 E	4	1	8	100	-	-	30	-
070	1/11.5 E	10	4	10	180	-	-	40	-
072	1/12.5 E	2	-	4	80	-	-	30	-
074	1/13.5 E	-	-	10	100	0.3-	-	60	-
114	3/2.0 W	-	-	10	18	-	-	60	80
116	3/1.5 W	15	-	13	130	-	-	60	180
118	3/1.0 W	-	-	10	25	-	-	60	180
120	3/0.5 W	-	-	25	180	1	-	80	250
** 008	1/3.5 W	6	10	2	10-	-	-	60	-

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Laboratory Report No.26. (Cont.)

Sample No.	Co-ords.	Ni	Co	Cu	Pb	Ag	Mo	V	Zn
02 - 122	3/0. W	-	-	25	800	0.6	-	40	100
124	3/0.5 E	-	-	30	1300	1.5	2	60	100
126	3/1.0 E	-	-	40	800	2.5	3	60	300
128	3/1.5 E	-	-	25	300	1.5	-	30	300
130	3/2.0 E	-	-	80	600	2.5	4	30	1000
132	3/2.5 E	-	No result						
134	3/3.0 E	-	-	13	300	1.	2	10	400
136	3/3.5 E	-	-	100	1300	3	20	80	1000
138	3/4.0 E	-	-	18	600	2	-	60	600
140	3/4.5 E	13	3	30	800	3	6	60	4000
142	3/5.0 E	8	2	18	1300	2	8	60	1300
144	3/5.5 E	4	1	8	1000	2	-	40	1000
146	3/6.0 E	4	4	8	600	0.6	-	20	800
148	3/6.5 E	10	6	25	400	3	20	25	2500
150	3/7.0 E	8	8	10	800	2	-	30	600
152	4/9.0 E	2	-	6	100	-	-	30	-
154	4/8.5 E	6	1	10	180	-	-	60	-
156	4/8.0 E	-	-	8	130	-	-	30	-
158	4/7.5 E	6	2	10	250	-	-	80	60
160	4/7.0 E	4	-	13	100	-	-	60	100
162	4/6.5 E	6	-	10	20	-	-	25	180
164	4/6.0 E	10	-	13	300	0.3	-	60	150
166	4/5.5 E	8	1	13	400	0.3	-	40	100
168	4/5.0 E	13	4	25	800	-	2	80	180
170	4/4.5 E	8	4	18	600	1	-	30	-
172	4/4.0 E	8	3	18	400	1	-	40	-
174	4/3.5 E	6	1	18	600	0.8	-	40	-
176	4/3.0 E	2-	-	18	300	-	-	5	-
178	4/2.5 E	3	1-	25	800	1	-	80	100
180	4/2.0 E	2	1-	10	100	-	-	10	180
182	4/1.5 E	10	8	40	1300	2	20	180	300
184	4/1.0 E	2	3	40	130	0.3	-	10	150
186	4/0.5 E	3	3	250	2500	4	10	10	300
188	4/0 E	25	-	30	1000	2	3	80	100
190	4/0.5 W	13	4	80	800	6	2	100	130
192	4/1.0 W	3	1	25	100	0.3-	-	25	-
194	5/2.0 W	10	2	30	800	1	-	60	250
196	5/1.5 W	4	1-	30	1300	2	2-	60	-
198	5/1.0 W	4	-	40	1300	1.5	-	40	-
200	5/0.5 W	4	-	13	100	1	-	30	-
202	5/0 W	2	-	25	400	0.3-	-	15	-
204	5/0.5 W	4	1	30	400	0.6	-	30	100
206	5/1.0 W	6	3	40	1300	2	4	80	180
208	5/1.5 W	8	-	60	800	2	8	80	100
210	5/2.0 W	10	4	100	800	6	15	60	130
212	5/2.5 W	6	1	18	600	1	-	80	100
214	5/3.0 W	4	3	25	800	1.5	2	60	100
216	5/3.5 W	8	1	13	1300	0.6	-	60	180
218	5/4.0 W	6	2	13	300	0.3	-	40	130
220	5/4.5 W	3	2	10	400	0.3	-	60	180
222	5/5.0 W	6	1-	10	600	0.3	-	60	-
224	5/5.5 W	8	2	13	800	0.3	-	60	-
226	5/6.0 W	10	3	18	400	0.3	-	80	100
228	5/6.5 W	4	1-	10	100	-	-	60	-
230	5/7.0 W	6	1-	13	100	-	-	80	-
232	5/7.5 W	6	2	10	100	-	-	80	-
234	5/8.0 W	8	1	10	100	-	-	60	-
236	6/7.0 E	10	2	13	180	0.3	-	60	-
238	6/6.5 E	10	2	10	130	-	-	60	180
240	6/6.0 E	10	8	4	60	-	-	40	180
242	6/5.5 E	8	1 -	13	100	-	-	60	180
244	6/5.0 E	6	2	10	300	0.3	-	60	-
246	6/4.5 E	8	1-	13	300	0.3	-	80	100
248	6/4.0 E	10	1	13	250	0.3	-	60	180
250	6/3.5 E	3	-	10	600	1	-	60	-
252	6/3.0 E	10	4	25	1800	2	-	80	400
254	6/2.5 E	2	2	13	1000	2	-	30	100
256	6/2.0 E	10	6	180	800	6	25	20	600
258	6/1.5 E	2	-	30	1000	2.5	-	60	100
260	6/1.0 E	3	-	40	2500	4	3	60	130

3..

Sample No.		Co-ords.	Ni	Co	Cu	Pb	Ag	Mo	V	Zn
02 -	262	6/0.5 E	3	-	40	2500	2.5	-	40	-
	264	6/0. E	3	8	400	6000+	4	10	130	300
	266	6/0.5 W	2	2	180	4000	3	10	100	180
	268	6/1.0 W	8	-	60	2500	2	3	80	100
	270	6/1.5 W	4	3	25	1300	0.6	-	80	-
	272	6/2.0 W	10	3	30	1800	1	3	60	130
	276	7/9.5 W	50	25	10	10-	-	-	400	-
	274	7/8.5 W	13	4	13	100	-	-	80	-
	278	7/7.5 W	13	10	10	10-	-	-	60	-
	280	7/6.5 W	30	13	13	10-	-	-	80	-
	282	7/5.5 W	10	1	18	180	0.3	-	60	-
	284	7/4.5 W	10	1	8	60	-	-	40	-
	286	7/3.5 W	10	2	8	40	0.3	-	60	130
	288	7/3.0 W	6	3	25	1300	1	-	60	100
	290	7/2.5 W	6	2	18	300	0.6	-	60	250
	292	7/2.0 W	6	2	18	1300	1.5	2	20	400
	294	7/1.5 W	2	-	60	3000	2.5	-	30	-
	296	7/1.0 W	3	1	130	1300	8	8	20	100
	298	7/0 W	2	-	80	1300	8	-	20	100
	300	7/0.5 E	-	-	40	1800	1	-	25	-
	302	7/1.0 E	2	-	40	1800	2.5	6	80	100
	304	7/1.5 E	2	-	60	1300	2.	-	80	250
	306	7/2.0 E	2	-	30	600	2	-	15	-
	308	7/2.5 E	-	-	13	400	1.5	-	60	-
	310	7/3.0 E	3	1	18	1800	2	-	60	300
	312	7/3.5 E	2.5	1-	13	1300	0.6	-	80	-
	314	7/4.0 E	3	2	18	4000	0.6	2	80	180
	316	7/4.5 E	4	1-	13	1300	0.3	1	80	180
	318	7/5.0 E	2	-	10	800	0.3-	-	60	130
	320	7/5.5 E	3	-	8	100	-	-	30	-
	322	7/6.0 E	18	4	10	80	0.3	-	40	600
	324	7/6.5 E	13	3	10	80	0.6	-	60	800
	326	7/7.0 E	10	6	13	100	-	-	60	250
	328	7/7.5 E	6	1-	13	130	0.3-	-	60	100
	330	7/8.0 E	30	3	25	800	1	3	60	2500
	332	7/9.0 E	6	-	13	100	-	-	40	180
	334	7/10.0 E	10	6	25	250	0.6	-	100	100
	336	7/11.0 E	8	2	18	130	-	-	60	250
	338	7/12.0 E	10	3	10	60	-	-	80	250
	340	7/13.0 E	10	4	13	180	-	-	60	100
	341	7/14.0 E	8	2	10	30	-	-	40	-
	342	7/15.0 E	10	2	13	30	-	-	40	-
	343	7/16.0 E	40	10	25	60	0.3	2	40	250
	344	7/17.0 E	18	13	8	30	0.3-	-	80	300
	345	7/18.0 E	6	1	6	10	0.3-	-	60	-
	346	7/19.0 E	4	3	13	10-	-	-	40	-
	347	7/20.0 E	10	4	18	18	0.3	-	100	-
	348	7/21.0 E	25	8	13	18	0.3-	2	40	100
	349	7/22.0 E	18	6	25	10	-	1	40	-
	351	8/7.0 E	13	18	18	180	0.3	-	40	300
	353	8/6.5 E	10	2	13	130	0.3-	-	35	130
	355	8/6.0 E	13.	8	4	30	0.3-	-	40	180
	357	8/5.5. E	10	2	18	1300	0.3	-	60	300
	359	8/5.0 E	3	-	13	600	0.3-	-	60	100
	361	8/4.5 E	4	-	13	1300	0.3	2	40	180
	363	8/4.0 E	1-	2	8	1300	0.3-	-	40	100
	365	8/3.5 E	2	4	18	2500	0.6	2	80	130
	367	8/3.0 E	1-	-	13	2500	1.5	3	40	-
	369	8/2.5 E	2	1-	180	4000	4	15	20	180
	371	8/2.0 E	2	-	100	4000	2	2	40	100
	373	8/1.5 E	3	2	300	1000	2.5	20	10	300
	375	8/1.0 E	2	2	18	1000	1.5	2	80	100
	377	8/0.5 E	-	-	10	100	0.3	-	25	-
	379	8/0 E	-	-	30	1000	0.6	-	80	-
	439	8/1.5 W	3	2	130	2500	2	2	20	180
	437	8/2.0 W	13	6	40	1000	2	3	80	-
	435	8/2.5 W	8	2	30	400	0.6	2	80	130
	433	8/3.0 W	18	13	40	1800	1	-	80	250
	381	9/8.0 E	18	4	10	180	0.3-	-	40	180
	383	9/7.5 E	10	3	25	180	0.3	-	60	130
	385	9/7.0 E	10	2	8	100	-	-	40	180
	387	9/6.5 E	30	25	13	180	0.3	-	60	300
	389	9/6.0 E	18	10	18	300	0.3	-	40	250

Sample No.	Co-ords.		Ni	Co	Cu	Pb	Ag	Mo	V	Zn
02 - 391	9/5.5.	E	10	2	18	800	0.3-	-	60	180
393	9/5.0	E	13	3	18	400	-	-	30	300
395	9/4.5	E	3	-	10	1800	0.3	-	60	100
397	9/4.0	E	3	2	18	1800	1	2	60	130
399	9/3.5	E	6	2	30	2500	1.5	3	80	-
401	9/3.0	E	13	10	18	1000	2.5	-	60	1800
403	9/2.5	E	2	-	80	3000	8	6	8	130
405	9/2.0	E	8	6	600	4000	13	15	30	1000
407	9/1.5	E	-	-	18	800	1	-	40	-
409	9/1.0	E	-	-	18	1300	1.5	-	60	130
411	9/0.5	E	--	-	40	1800	2	4	100	180
413	9/0	E	2	2	250	3000	3	20	20	400
415	9/0.5	W	2	3	180	6000	10	10	10	130
417	9/1.5	W	2	13	30	2500	1.5	2	80	-
419	9/2.0	W	8	3	40	2500	1	2	60	180
421	9/2.5	W	18	10	25	180	0.6	-	60	400
423	9/3.0	W	13	10	30	300	0.6	2	60	300
425	9/3.5	W	30	80	60	3000	2.5	10	60	1000
427	9/4.0	W	13	3	13	60	0.3	-	40	-
429	9/4.5	W	13	10	18	400	0.3	-	100	180
431	9/5.0	W	25	4	10	130	0.3	-	80	180
441	10/5.0	W	25	3	18	300	0.3	-	60	100
443	10/4.5	W	13	6	13	130	0.3	-	80	180
445	10/4.0	W	18	8	25	600	0.3	-	40	250
447	10/3.5	W	18	4	18	300	0.3	-	60	180
449	10/3.0	W	18	18	25	400	0.3	-	80	400
451	10/2.5	W	10	4	100	1000	1	-	60	-
453	10/2.0	W	8	3	60	3000	2.5	4	80	180
455	10/1.5	W	25	30	800	6000	25	30	40	1800
457	10/1.0	W	13	4	400	6000	25	6	30	800
459	10/0.5	W	8	3	100	4000	8	6	60	100
461	10/0.	W	4	2	250	4000	6	25	30	100
463	10/0.5	E	4	1	300	6000	4	10	80	300
465	10/1.0	E	6	13	80	2500	4	10	130	130
467	10/1.5	E	8	1	60	1800	4	3	100	-
469	10/2.0	E	4	3	100	2500	4	6	80	180
471	10/2.5	E	2	-	25	800	1	-	80	-
473	10/3.0	E	13	4	100	3000	6	20	80	180
475	10/3.5	E	13	6	80	2500	4	13	180	180
477	10/4.0	E	10	6	30	2500	2	2	80	180
479	10/4.5	E	25	4	25	1300	1	-	80	300
481	10/5.0	E	30	40	13	250	0.6	2	80	600
483	10/5.5	E	40	6	6	180	0.6	-	100	6000
485	10/6.0	E	30	40	13	600	0.6	2	80	400
487	10/6.5	E	18	8	13	300	0.3	-	100	250
489	10/7.0	E	30	18	25	130	0.3	-	100	1300
491	11/8.0	E	25	4	10	180	0.3	-	80	400
493	11/7.5	E	13	6	10	180	0.3	-	80	250
495	11/7.0	E	25	10	18	300	0.6	-	80	800
497	11/6.5	E	10	2	3	20	-	-	60	-
499	11/6.0	E	25	13	13	180	0.6	-	80	400
501	11/5.5	E	80	13	60	300	2	2	100	1800
503	11/5.0	E	18	4	18	180	2.5	-	80	800
505	11/4.5	E	40	80	18	300	2	2	100	1000
507	11/4.0	E	18	6	25	1300	1	2	100	400
509	11/3.5	E	3	-	30	1800	1.5	-	80	250
511	11/3.0	E	2	-	40	1800	4	-	40	100
513	11/2.5	E	4	1	250	2500	6	25	25	600
515	11/2.0	E	2-	-	25	1000	1.5	-	40	-
517	11/1.5	E	2-	-	40	2500	4	-	60	-
519	11/1.0	E	2-	-	60	2500	3	3	60	-
521	11/0.5	E	2	-	60	4000	3	4	130	100
523	11/0	E	2-	-	80	6000	6	8	100	-
525	11/0.5	W	10	18	400	1800	8	80	40	1300
527	11/1.0	W	3	2	100	1800	2	2	130	-
529	11/1.5	W	18	100	600	4000	13	20	40	300
531	11/2.0	W	8	4	60	3000	1.5	6	80	-
533	11/2.5	W	10	3	25	400	0.3-	-	80	100
535	11/3.0	W	18	13	25	250	0.3	-	80	130
537	11/3.5	W	10	4	13	180	0.3	-	80	-
539	11/4.0	W	30	6	18	60	0.3-	-	80	-

5...

Sample No.	Co-ords.	Ni	Co	Cu	Pb	Ag	Mo	V	Zn	
02 - 541	11/4.5 W	13	6	10	30	0.3	-	60	-	
543	12/10.0 E	3	-	10	300	0.6	-	100	-	
545	12/9.5 E	6	3	10	800	0.3-	-	80	-	
547	12/9.0 E	3	1	10	600	0.3	-	80	-	
549	12/8.5 E	3	1	25	600	-	2	100	-	
551	12/8.0 E	8	1	13	600	0.3-	-	100	-	
553	12/7.5 E	8	2	60	400	0.3	-	60	250	
555	12/7.0 E	6	2	18	600	0.3-	-	100	250	
557	12/6.5 E	10	8	25	250	0.3	6	100	300	Sn 30.
559	12/6.0 E	25	25	25	600	0.6	2	80	800	
561	12/5.5 E	10	3	6	100	0.3-	-	40	400	
563	12/5.0 E	10	3	13	180	0.3	2	40	400	
565	12/4.5 E	10	8	18	800	0.6	6	80	1000	
567	12/4.0 E	3	-	10	1000	0.3	2	60	-	
569	12/3.5 E	4	-	30	1300	2.5	3.	60	-	
571	12/3.0 E	60	30	180	2500	3.	4	25	6000	
573	12/2.5 E	8	3	40	6000	25	8	60	-	
575	12/2.0 E	10	3	80	6000	10	10	100	100	
577	12/1.5 E	8	2	60	4000	8	8	130	180	
579	12/1.0 E	18	6	60	6000	8	10	130	180	
581	12/0.5 E	4	1	25	800	1	-	80	-	
583	12/0 E	3	1	250	6000	6	15	130	-	
585	12/0.5 W	6	3	10	800	1	-	80	-	
587	12/1.0 W	4	-	13	1000	0.3-	-	60	-	
589	12/1.5 W	6	-	25	800	-	-	80	-	
591	12/2.0 W	13	8	8	30	0.3-	-	40	-	

5000 + = Greater than 5000 p.p.m.

5 - = Less than 5 p.p.m.

Laboratory Report No.27 8th July, 1966.

ZINC ANALYSES OF MOLONGLO RIVER WATER

by

J.R. Beevers

The samples were submitted by Mr. M.Ellot of the Department of the Interior. The sampling sites are as previously described, and the samples were taken on 6th July, 1966.

Point	Total Zinc (p.p.m.)
A	< 0.02
B	87
C	53
D	20.5
E	< 0.02
F	28.5
G	3.1
H	< 0.02

Laboratory Report No. 28:

SPECTROCHEMICAL ANALYSIS OF GEOCHEMICAL SURVEY SAMPLES FROM MT. ISA, QUEENSLAND

by

A.D. Haldane

The following results were obtained for the spectrochemical analysis of auger samples collected by D.O. Zimmerman from the Dawn-Bernborough area, Mt. Isa, Queensland.

In addition to those elements reported below, Bi, Sb, Be, W and P were sought but not detected.

Where no value is given in the columns below the element was sought but not detected. All values are in parts per million.

Sample No.	Depth	Ni	Co	Cu	Pb	Ag	Mo	V	Zn		
02-699	18/4.5W	8	30	250	10	0.3		60	130		
700	18/5.0W	8	60	300	40	0.6		60	130		
701	18/5.5W	10	25	400	130	1.5	3	60	180		
702	18/6.0W	3		180	130	0.3		60			
703	18/6.5W	8	25	1000	800	2	20	60	400		
704	18/7.0W	2	2	180	100	1.5		30	130		
705	18/7.5W	10	13	1300	800	2.5	8	30	600		
706	18/8.0W	10	25	180	400	3	8	60	300		
707	18/8.5W	8	2	60	400	1.5	4	60	300		
708	18/9.0W	10	10	400	1800	10	6	40	600		
726	20/3.0W	8	6	180	600	0.3	4	100			
727	20/3.5W	6	8	250	40	0.3		180			
728	20/4.0W	4	4	300	18	0.6		80			
729	20/4.5W	18	13	100	100	0.3		40	180		
730	20/5.0W	6	6	300	10			40			
731	20/5.5W	30	180	1000	18	2	8	80	300		
732	20/6.0W	25	130	300	130	0.6	2	60	300		
733	20/6.5W	18	100	600	60	0.6		60	250		
734	20/7.0W	18	25	1000	10	0.3		60	300		
735	20/7.5W	6	18	600	130	1	3	60	180		
736	20/8.0W	4	6	400	130	1	3	20	100		
737	20/8.5W	6	2	400	130	0.6	6	20	180		
738	20/9.0W	4	2	300	180	1	2	40	300		
739	20/9.5W	4	1	60	180	0.3	2	40	250		
740	20/10.0W	4	3	60	300	1	6	60	250		
741	21/4.5W	10	30	300	300	0.6		60	180		
677	16/7.5W	10	1	18	300	1	3	30	180	Sn	30
678	16/8.0W	10	1	30	800	1.5	2	40	180		
679	16/8.5W	8	2	18	600	2	2	60	300		
909	17/9.0W	6	2	30	300	2		100			
908	17/8.5W	4		30	300	2		80	100		
907	17/8.0W	8	2	30	180	1	4	60	300		
906	17/7.5W	10	2	250	400	1.5	6	60	400		
680	17/6.5W	10	25	800	800	6	6	60	400	As	600
681	17/6.0W	10	25	400	180	2	3	30	180		
682	17/5.5W	6	3	180	180	1	2	60			
683	17/5.0W	13	18	100	10	0.6		40	250		
684	17/4.5W	10	25	180	180	0.3		40			
685	17/4.0W	13	80	180	60	0.3		40	100		
686	17/3.5W	18	25	300	300	0.3	2	80	300		
687	17/3.0W	18	18	400	300	0.3	2	60	180		
688	17/2.5W	25	250	800	18	3	6	80	100		
689	17/2.0W	10	10	130	130	0.6		80			
690	17/1.5W	6	8	130	10	0.3		60			
691	17/1.0W	13	60	180	18	0.3		80			
692	17/0.5W	18	25	100	30	0.3		80			
693	18/1.5W	6	6	180	100	0.3		60			
694	18/2.0W	6	25	180	10-			60			
695	18/2.5W	10	8	130	10-	0.3		80			
696	18/3.0W	60	180	300	100	1	6	80	180		
697	18/3.5W	8	13	180	30	0.3	3	80			
698	18/4.0W	6	13	100	180	0.3		60			
651	15/3.5W	6	18	400	100	0.6	2	40			
652	15/3.0W	10	30	60	100	0.3		40			
653	15/2.5W	18	40	300	180	0.6		100			
654	15/2.0W	3	2	80	30	0.3		60			
655	15/1.5W	18	18	300	40	0.3		80			
656	15/1.0W	2	2	40	18	0.3		60			
657	15/0.5W	4	4	80	18	0.3		80			
658	15/0W	10	6	80	100	0.3		100			
659	15/0.5E	10	8	40	80	0.3		100			

Laboratory Report No.28:

Sample No.	Depth	Ni	Co	Cu	Pb	Ag	Mo	V	Zn		
02-660	15/1.0E	10	10	60	100	0.3		80			
661	16/0.5E	18	13	60	250	0.6		100			
662	16/0E	13	30	60	100	1		80			
663	16/0.5W	18	18	300	180	0.6		100			
664	16/1.0W	13	25	400	180	0.3		80			
665	16/1.5W	18	13	180	250	0.6	4	130	100		
666	16/2.0W	18	18	250	300	0.6	2	100	100		
667	16/2.5W	18	10	250	180	0.6		60			
668	16/3.0W	6	6	250	100	0.3	2	40			
669	16/3.5W	8	10	180	300	0.3		60			
670	16/4.0W	13	25	180	130	0.3		60			
671	16/4.5W	8	13	300	130	1		30			
672	16/5.0W	10	10	300	100	0.6	2	60			
673	16/5.5W	4	2	300	600	1	6	40			
674	16/6.0W	6	3	130	800	1	4	60			
675	16/6.5W	3	2	180	300	2	3	60			
676	16/7.0W	6	2	80	4000	3	8	100	180	Sn	400
625	14/0W	8	6	40	18	0.3		80			
626	14/0.5W	25	30	180	250	5	3	130			
627	14/1.0W	25	60	80	30	1	2	80			
628	14/1.5W	30	130	100	180	1.5	8	100			
629	14/2.0W	25	130	180	40	2	3	130			
630	14/2.5W	25	30	300	18	2	2	60			
631	14/3.0W	10	18	400	25	0.6	2	80			
632	14/3.5W	10	18	600	130	0.6	8	80			
633	14/4.0W	13	18	400	130	0.3		80			
634	14/4.5W	13	25	600	30	0.6	3	100			
635	14/5.0W	8	4	300	130	0.3	2	100			
636	14/5.5W	13	13	1000	180		10	130	180		
637	14/6.0W	3		80	180	1.5	3	100			
638	14/6.5W	6	2	400	600	4	20	60	300		
639	14/7.0W	10	4	400	2500	8	10	30	250		
640	14/7.5W	10	4	30	800	2.5	3	100	180		
641	14/8.0W	13	8	40	180	1.5		60	250		
642	15/8.0W	10	10	25	250	3	10	100	300		
643	15/7.5W	8	2	40	600	2	3	130	180		
644	15/7.0W	10	10	300	6000+	10	10	60	400		
645	15/6.5W	6	4	600	1000	4	3	60			
646	15/6.0W	6	3	300	2500	6	6	60	100		
647	15/5.5W	13	8	400	600	1	4	130			
648	15/5.0W	10	6	130	180	0.3	2	80	100		
649	15/4.5W	10	18	300	180	2	3	80	180		
650	15/4.0W	18	60	600	180	0.6	3	100	180		
742	21/5.0W	3	8	180	18	0.3		80			
743	21/5/5W	6	10	300	100	0.6		100			
744	21/6.0W	30	180	600	100	2.5		80			
745	21/6.5W	40	80	1300	10-	1	6	30	600		
746	21/7.0W	2	1	250	18	0.3	3	80			
747	21/7/5W	3	4	250	180	0.6		130			
748	21/8.0W	4	18	180	180	1	2	80	100		
749	21/8.5W	3	13	400	300	0.6	8	80	130		
750	21/9.0W	3	1	180	300	1		80			
751	21/9.5W	2		130	180	0.6	2	100			
752	21/10.0W	3	2	400	250	1.5		80	100		
753	21/10.5W	3		180	250	1.5	6	80	100		
754	21/11.0W	2	10	300	18	1	3	80	180		
774	21/11.5W			250	800	2.0	6	30	300		
778	21/12.0W			60	180		2	4			
779	21/12.5W	2		40	180	0.3		15			
781	21/13.0W	2	1	60	600	0.6	2	2-	800		
783	21/13.5W	3	1	40	1800	3	3	3	800	Sb	140
787	21/14.0W	4	3	60	1000	6	6	10	1300		
788	21/14.5W	3	8	25	600	1.5	2	20	300		
792	21/15.0W	4	18	100	1800	2.5	3	20	600		
793	21/15.5W	6	10	100	1300	3	6	60	1000		
797	21/16.0W	13	25	130	6000+	8	20	80	1800	Sb	100
800	21/16.5W	3	2	40	1800	3	3	80	400		
804	21/17.0W	25	30	40	1000	6	3	40	1800		
808	21/17.5W	25	30	25	2500	10	3	80	1300		
812	21/18.0W	8	4	60	2500	8	6	20	1300		
816	21/18.5W	25	6	80	1300	3	2	30	1800		
820	21/19.0W	4	2	40	2500	3	8	100	600		
824	21/19.5W	4		80	3000	2.5	3	80	300		
825	21/20.0W	30	10	100	1300	3	6	25	6000		
826	21/20.5W	25	10	100	1300	2.5	3	60	2500		
827	21/21.0W	4		40	3000	2	4	80	130		
828	21/21.5W	18	18	100	4000	6	25	30	1000		
829	21/22.5W	18	6	80	180	2	4	100			
830	21/23.0W	10		40	300	1.5		60			

Laboratory Report No. 28:

Sample No.	Depth	Ni	Co	Cu	Pb	Ag	Mo	V	Zn
02-831	21/23.5W	6	3	60	130	0.3		80	
832	21/24.0W	4	2	60	130	0.3		100	
833	21/24.5W	10	4	100	18	0.3		80	
834	21/25.0W	40	30	180	180	1	6	80	
835	21/25.5W	10	6	18	10-			80	
836	21/26.0W	10	13	60	10	0.3		80	
837	21/26.5W	13	10	25	10			80	100
838	21/27.0W	13	13	60	60	0.3		80	
839	21/27.5W	10	4	18	10-			80	
840	21/28.0W	13	4	18	10	0.3		100	
841	21/28.5W	13	4	13	18	0.3		60	
842	21/29.0W	13	10	25	10	0.6		80	
843	21/29.5W	10	3	8	18			60	
844	21/30.0W	10	4	6	10-			100	
845	21/30.5W	13	10	18	10			80	
846	21/31.0W	18	18	100	18			80	
847	21/31.5W	10	8	25	10			80	
848	21/32.0W	25	30	600	18		3	60	
849	21/32.5W	25	18	1300	10			80	
850	21/33.0W	10	13	1000	18			80	
851	21/33.5W	13	6	3	10-			40	
852	22/33.5W	18	13	13	10-			80	
853	22/33.0W	30	25	6	10-			80	
854	22/32.5W	18	6	13	10			80	
855	22/32.0W	30	13	2	10-			130	
856	22/31.5W	13	18	13	18			80	
857	22/31.0W	25	25	13	10-			80	
858	22/30.5W	10	13	18	10-	0.3	3	80	
859	22/30.0W	13	10	60	10		4	80	
860	22/29.5W	18	10	80	18	0.3	2	80	
861	22/29.0W	30	25	100	10	0.3	2	100	
862	22/28.5W	30	18	30	10	0.6		80	130
863	22/28.0W	13	3	100	800	2.5	3	130	250
864	22/27.5W	25	8	30	80	0.6	3	130	180
865	22/27.0W	13	6	40	30	0.6	3	100	180
866	22/26.5W	13	4	60	60	0.6		80	
867	22/26.0W	30	25	300	300	6	20	15	180
868	22/25.5W	18	6	130	18			80	
869	22/25.0W	6		80	30	0.3		60	
870	22/24.5W	6	1	40	180	1		80	
871	22/24.0W	8	2	30	180	0.3		80	
872	22/23.5W	10	6	130	180	2	3	60	
873	22/23.0W	10	8	60	60	0.6	3	100	
874	22/22.5W	6	2	80	1000	2	3	80	
875	22/22.0W	6	1	130	1300	2	6	100	250
876	22/21.5W	8	1	80	800	2	2	100	250
877	22/21.0W	10	4	40	600	2	3	100	300
878	22/20.5W	10	3	80	400	1.5		80	250
879	22/20.0W	18	6	250	2500	4	15	40	1300
880	22/19.5W	3	1-	25	1300	1.5		80	130
881	22/19.0W	8	4	80	1800	3	6	60	600
882	22/18.5W	10	4	60	1300	3	3	60	250
883	22/18.0W	3	1	30	400	1		20	180
884	22/17.5W	8	10	60	800	3	3	60	300
885	22/17.0W	6	10	80	600	3		80	800
886	22/16.5W	2		80	400	2.5		60	130
887	22/16.0W	10	13	300	600	6	4	60	600
888	22/15.5W	3	6	400	1000	6	8	80	600
889	22/15.0W	6	4	80	180	2	2	60	130
890	22/14.5W	8	3	400	300	3	20	60	400
891	22/14.0W	8	3	180	300	3	2	60	100
892	22/13.5W	4		80	1800	2.5	2	60	180
893	22/13.0W	3		130	1800	2	3	60	300
894	22/12.5W	4	8	180	3000	2.5	4	80	300
895	22/12.0W	8	2	250	1300	2.5	3	80	180
896	22/11.5W	8	10	1000	800	3	25	100	400
897	22/11.0W	18	130	300	600	3	10	100	800
898	22/10.5W	13	100	600	400	8	30	100	300
899	22/10.0W	4	1	100	400	0.6		60	
900	22/9.5W	3	8	180	180	1	6	80	180
901	22/9.0W	10	30	400	300	2.5	40	80	100
902	22/8.5W	13	13	400	1000	1.5	8	100	250
903	22/8.0W	8	3	180	300	1	3	100	
904	22/7.5W	8		100	180	0.6	3	100	
905	22/7.0W	8	2	180	180	0.3		60	100

5000+ = Greater than 5000 ppm
5- = Less than 5 ppm

53

AUGER HOLE PROFILES - DAWN-BERNBOROUGH AREA

Sample No.	Co-ord	Depth	Ni	Co	Cu	Pb	Ag	V	Zn
02-768	21/8.5W	4'	2	a	100	180	1-	80	a
769		8'	2-	a	180	130	1-	80	a
770		12'	2-	2	300	100	1-	80	a
749		16'	3	13	400	300	1-	80	130
02-765	21/9.0W	4'	6	13	80	250	1-	80	a
766		8'	6	60	180	250	1-	80	a
767		12'	3	13	180	400	1-	60	a
750		16'	3	1	180	300	1-	80	a
02-762	21/9.5W	4'	10	6	100	300	1-	40	100
763		8'	3	a	80	130	1	60	100
764		12'	3	a	100	100	1	60	a
751		16'	2	a	130	180	1-	100	a
02-759	21/10.0W	4'	10	6	180	400	1	60	100
760		8'	6	10	400	180	1	80	a
761		12'	2	13	300	180	1.5	60	a
752		16'	3	2	400	250	1.5	80	100
02-756	21/10.5W	4'	13	4	60	400	1-	130	100
757		8'	4	a	60	300	1-	100	a
758		12'	3	a	100	400	1.5	100	a
753		16'	3	a	180	250	1.5	80	100
02-755	21/11.0W	4'	2	8	100	80	1-	40	180
754		10'	2	10	300	18	1	80	100
02-771	21/11.5W	4'	3	a	100	1800	1	30	180
772		8'	3	a	60	1800	1.5	40	180
773		10'	2-	a	60	1800	2	60	100
774		12'	a	a	250	800	2	30	300
02-775	21/12.0W	4'	a	a	100	800	1-	6	130
776		8'	a	a	100	1000	1-	20	100
777		12'	2	a	300	2500	1.5	30	100
778		16'	a	a	60	180	a	4	a
02-784	21/14.0W	4'	6	6	30	800	2	25	300
785		8'	6	4	30	1000	3	30	600
786		12'	3	4	30	800	2.5	20	600
787		16'	4	3	60	1000	6	10	1300
02-789	21/15.0W	4'	18	30	40	800	2	80	400
790		8'	a	4	25	180	1-	2	300
791		12'	6	(60)	100	800	3	20	1000
792		16'	4	18	100	1800	2.5	20	600
02-794	21/16.0W	4'	25	10	180	2500	6	60	1800
795		8'	18	6	180	4000	18	20	1800
796		12'	18	18	250	6000	30	25	1800
797		16'	13	25	130	6000+	8	80	1800
02-798	21/16.5W	4'	25	18	80	2500	3	100	1800
799		8'	25	10	80	2500	3	80	1300
800		12'	3	2	40	1800	3	80	400
02-801	21/17.0W	4'	40	60	30	1300	6	30	2500
802		8'	30	40	30	2500	8	40	1800
803		12'	30	60	40	2500	8	30	1800
804		16'	25	30	40	1000	6	40	1800
02-805	21/17.5W	4'	18	25	30	1300	6	80	1800
806		8'	25	30	25	1800	6	60	1000
807		12'	25	25	18	1800	8	80	1300
808		16'	25	30	25	2500	10	80	1300
02-809	21/18.0W	4'	25	6	80	1800	3	80	1000
810		8'	18	8	100	3000	6	80	1300
811		12'	25	6	60	1800	4	80	1000
812		16'	8	4	60	2500	8	20	1300
02-813	21/18.5W	4'	10	4	40	1800	3	80	250
814		8'	10	3	60	1800	4	100	600
815		12'	10	2	40	1800	2.5	80	600
816		16'	25	6	80	1300	3	30	1800
02-817	21/19.0W	4'	30	13	40	6000+	3	100	1000
818		8'	8	3	60	4000	3	80	400
819		12'	4	2	40	3000	4	100	300
820		16'	4	2	40	2500	3	100	600
02-821	21/19.5W	4'	10	4	60	800	2	80	300
822		8'	10	4	60	2500	3	100	180
823		12'	4	1	60	2500	2.5	80	250
824		16'	4	a	80	3000	2.5	80	300

a = not detected

Laboratory Report No. 29 19th July, 1966.

ANALYSIS OF AUGER DRILL SAMPLES FROM MOUNT ISA QUEENSLAND.

by

J.R. Beevers.

The samples were collected by D.O. Limmerman in 1963 from the Northern Leases area at Mount Isa. They were all weathered rock samples, and were analysed by atomic absorption spectrophotometry.

SAMPLE NO.	Zn (p.p.m.)	Pb (p.p.m.)	Cu (p.p.m.)
02 - 2340	2380	970	64
2341	5000	420	20
2342	2620	450	38
2343	3560	450	39
2344	6650	110	39
2345	1390	80	28
2346	1280	160	31
2347	486	370	24
2348	1390	240	30
2349	263	90	18
2350	188	140	25
2351	237	90	25
2352	276	50	25
2353	36	<10	5
2354	118	40	26
2355	130	50	28
2356	174	40	26
2357	38	30	13
2358	188	80	13
2359	11	<10	6
2362	8	<10	16
2363	4	<10	12
2364 A	8	<10	22
2364 B	9	<10	22
2365	8	<10	15
2366	35	20	28
2367	80	25	43
2368	40	25	30
2369	31	20	56
2370	29	40	12
2371	27	100	20
2372	143	113	34
2373	362	30	17
2374	80	30	12
2375	240	113	66
2376	108	108	20
2377	96	113	28
2378	118	148	28
2379	150	20	11
2380	87	113	20
2381	30	20	18
2382	65	<20	29
2383	87	20	39
2384	21	106	30
2385	28	25	26
2386	8	<20	15
2387	20	25	49
2388	6	<20	18

55.

SAMPLE NO.	Zn (p.p.m.)	Pb (p.p.m.)	Cu (p.p.m.)
02 - 2389	22	20	34
2390	180	113	115
2391	28	30	32
2392	29	40	38
2393	146	75	51
2394	146	280	34
2395	160	40	41
2396	59	25	41
2397	40	15	26
2398	48	45	33
2399	63	60	33
2400	65	75	37
2401	68	20	13
2402	58	25	23
2403	62	10	10
2404	10	10	15
2405	30	15	25
2406	68	15	35
2407	22	10	8
2408	31	10	19
2409	27	10	23
2410	19	15	13
2411	41	15	44
2412	27	15	12
2413	210	40	60
2414	40	45	18
2415	100	45	30
2416	23	100	10
2417	110	75	46
2418	170	60	34
2419	62	40	25
2420	42	25	33
2421	40	85	33
2422	26	25	18
2423	54	45	21
2424	93	45	20
2425	1860	595	44
2426	780	1030	75
2427	193	125	33
2428	120	110	25
2429	400	120	28
2430	160	165	22
2431	452	92	75
2432	700	382	158
2433	1000	165	23
2434	980	400	45
2435	1070	485	92
2436	880	308	34
2437	980	250	15
2438	730	595	15
2439	256	1500	21
2440	112	655	9
2441	107	1420	12
2442	2980	60	18
2443	333	90	16
2444	42	25	30
2445	83	20	10
2446	100	20	7
2447	33	45	28
2448	22	15	15
2449	15	60	124
2450	18	15	15
2451	13	15	19

SAMPLE NO.	Zn (p.p.m.)	Pb (p.p.m.)	Cu (p.p.m.)
02 - 2452	10	15	17
2453	29	25	5
2454	20	<10	23
2455	24	15	34
2456	15	15	27
2457	31	15	59
2458	757	100	10
2459	657	185	26
2460	2160	75	43
2461	1480	15	18
2462	930	1760	85
2463	2030	1100	92
2464	2080	280	85
2465	1460	218	38
2466	1160	128	20
2467	840	217	38
2468	1120	145	41
2469	52	20	20
2470	315	140	50
2471	62	20	45
2472	26	10	35
2473	90	20	35
2474	42	20	30
2475	26	20	15
2476	53	10	20
2477	26	10	30
2478	115	10	15
2479	100	20	15
2480	50	30	30
2481	36	10	15
2482	47	10	15
2483	44	10	10
2484	65	20	20
2485	51	10	15
2486	13	10	10
2487	40	10	25
2488	55	10	30
2489	65	20	35
2490	46	10	10
2491	55	10	20
2492	65	10	20
2493	65	10	20
2494	36	10	25
2495	36	20	35
2496	28	10	25
2497	54	50	20
2498	30	40	10
2499	1100	40	30
2500	90	50	15
2501	180	30	25
2502	1300	20	15
2503	1850	10	20
2504	315	10	25
2505	315	20	25
2506	1250	100	30
2507	100	10	60
2508	60	10	65
2509	65	10	70
2510	30	10	100
2511	32	20	85
2512	21	10	25

SAMPLE NO.	Zn (p.p.m.)	Pb (p.p.m.)	Cu (p.p.m.)
02 - 2513	33	20	30
2514	24	20	45
2515	27	20	35
2516	25	20	30
2517	26	10	30
2518	14	10	20
2519	17	10	35
2520	15	10	10

Laboratory Report No.30 25th July, 1966.

AVAILABLE POTASSIUM AND SODIUM IN AN ALUNITE-BEARING ROCK.

by

D. Haldane

Two samples of a rock described as quartz/alunite were submitted by I.R. Pontifex for the determination of extractable K_2O and Na_2O. Both samples were calcined at 750°C prior to leaching with (a) water (b) 5N hydrochloric acid.

Details of sample localities are:

66550001, Peak of Mount Larcom, Queensland, collected by C. Murray.

65152421, N.W. point of Pentecost Island, Queensland, collected by D.E. Clarke.

The results obtained, expressed as percent of the calcined rock were:

	Water soluble		Acid soluble	
	Na_2O	K_2O	Na_2O	K_2O
66550001	1.9	1.6	2.0	1.6
65152421	0.5	1.9	0.4	2.0

Laboratory Report No. 31

Analysis of Geochemical Survey Samples from Mt. Isa, Queensland

by

T. Ford

The following results were obtained for the analysis of 260 auger hole samples taken from the Mt. Isa Shales as part of a geochemical survey initiated by D.O. Zimmerman.

Analyses were carried out by atomic absorption spectrophotometry on aqua regia digestions, for Zn, Cu and Pb.

All results are expressed in parts per million

Sample No.	Depth	Zn	Cu	Pb
022521		39	20	20
2522		18	7	10
2523		21	5	10
2524		38	10	10
2525		8	20	10
2526		8	18	10
2527		52	5	10
2528		47	32	20
2529		18	10	20
2530		6	13	10
2531		14	13	10
2532		63	67	30
2533		125	37	30
2534		355	17	85
2535		165	27	80
2536		31	12	30
2537		210	31	40
2538		700	20	40
2539		180	18	160
2540		140	18	70
2541		205	18	70
2542		905	15	570
2543		1500	13	115
2544		600	10	70
2545		700	14	135
2546		1000	20	340
2547		280	45	255
2548		54	15	15
2549		19	13	30
2550		75	27	15
2551		17	10	15
2552		8	10	10
2553		150	34	15
2554		115	35	15
2555		75	37	10
2556		15	20	15
2557		72	15	15
2558		37	27	15
2559		190	65	85
2560		345	15	135
2561		66	17	35
2562		205	27	35
2563		80	28	35
2564		41	24	15

Sample No.	Depth	Zn	Cu	Pb
022565		65	24	30
2566		80	31	35
2567		58	22	35
2568		62	27	30
2569		1350	45	65
2570		100	22	30
2571		275	57	35
2572		1150	53	35
2573		1250	31	30
2574		200	112	60
2575		22	13	30
2576		75	32	20
2577		88	58	45
2578		140	63	75
2579		27	32	20
2580		75	118	20
2581		19	32	10
2582		30	15	10
2583		13	28	45
2584		35	57	20
2585		10	18	20
2586		75	52	30
2587		15	16	10
2588		66	23	20
2589		50	28	20
2590		55	28	20
2591		53	28	10
2592		38	28	10
2593		40	28	20
2594		31	17	45
2595		49	23	45
2596		31	23	20
2597		88	23	75
2598		88	23	185
2599		1400	23	45
2600		175	23	20
2601		75	47	185
2602		25	23	30
2603		49	40	20
2604		12	8	20
2605		22	12	20
2606		25	13	20
2607		30	36	60
2608		55	18	10
2609		43	27	10
2610		46	29	10
2611		27	27	20
2612		18	27	10
2613		26	24	20
2614		26	23	10
2615		18	13	10
2616		33	23	10
2617		40	27	10
2618		45	32	10
2619		51	18	20
2620		39	27	10
2621		45	27	10
2622		42	27	10
2623		67	27	20
2624		175	73	30
2625		75	75	50
2626		177	89	125
2627		90	22	365
2628		44	34	20
2629		49	30	1070
2630		100	22	115

61.

Sample No.	Depth	Zn	Cu	Pb
022631		108	27	150
2632		65	68	50
2633		100	25	35
2634		32	42	10
2635		100	46	40
2636		55	53	20
2637		64	83	35
2638		54	62	10
2639		22	58	10
2640		39	62	20
2641		30	58	35
2642		27	23	10
2643		21	22	10
2644		22	25	10
2645		16	17	10
2646		40	25	10
2647		31	17	10
2648		40	17	10
2649		41	23	20
2650		34	23	10
2651		20	20	10
2652		20	17	10
2653		13	13	10
2654		17	17	10
2655		15	25	10
2656		18	22	10
2657		28	27	10
2658		27	30	10
2662		290	23	70
2663		157	16	40
2664		233	26	35
2665		177	27	40
2666		195	26	15
2667		210	36	95
2668		62	38	35
2669		295	26	35
2670		174	17	40
2671		283	26	70
2672		290	25	20
2673		300	13	35
2674		20	13	25
2675		300	17	50
2676		16	11	35
2677		11	10	35
2678		14	10	40
2679		26	22	20
2680		46	13	180
2681		550	17	25
2682		245	24	230
2683		402	13	65
2684		995	12	65
2685		342	24	20
2686		490	17	105
2687		550	24	40
2688		332	32	20
2689		135	24	20
2690		274	24	25
2691		153	27	20
2692		147	21	55
2693		153	24	10
2694		103	18	10
2695		28	16	65

Sample No.	Depth	Zn	Cu	Pb
022696		233	24	25
2697		38	32	20
2698		36	18	10
2699		69	54	25
2700		219	13	60
2701		10	26	10
2702		8	5	10
2703		11	24	20
2704		9	5	25
2705		9	66	10
2706		8	63	10
2707		13	7	10
2708		22	12	10
2709		15	10	10
2710		22	14	10
2711		28	108	10
2712		195	17	75
2713		178	24	55
2714		500	24	95
2715		400	27	145
2716		44	17	20
2717		147	22	65
2718		51	10	25
2719		37	14	25
2720		33	12	20
2721		10	10	25
2722		15	27	75
2723		28	24	65
2724		21	15	20
2725		77	22	35
2726		24	14	20
2727		157	17	75
2728		73	24	65
2729		23	12	75
2730		316	17	25
2731		425	24	105
2732		400	17	45
2733		115	12	125
2734		88	11	45
2735		99	14	50
2736		225	7	340
2737		65	12	80
2738		96	12	80
2739		142	12	50
2740		172	14	210
2741		27	14	25
2742		50	20	10
2743		11	32	10
2744		6	7	10
2745		17	22	10
2746		39	8	10
2747		87	33	10
2748		50	14	10
2749		27	11	10
2750		35	17	10
2751		13	7	10
2752		12	7	10
2753		18	11	10
2754		18	24	10
2755		165	68	10
2756		25	40	10
2757		9	12	10

Sample No.	Depth	Zn	Cu	Pb
022758		5	7	10
2759		46	8	10
2760		20	25	10
2761		37	32	10
2762		46	20	10
2763		46	14	10
2764		6	5	10
2765		19	17	10
2766		184	24	10
2767		11	7	10
2768		333	30	25
2769		340	10	65
2770		252	7	55
2771		25	5	10
2772		31	22	10
2773		59	7	10
2774		38	10	10
2775		69	13	25
2776		13	7	25
2777		13	5	10
2778		52	20	10
2779		7	7	10
2780		16	15	10
2781		3	5	10
2782		8	12	10
2783		28	26	10

Laboratory Report No. 32:

ANALYSIS OF GEOCHEMICAL SURVEY SAMPLES FROM MT. ISA, QUEENSLAND.

by

T. de B. Ford

The following results were obtained for the analysis of 260 auger hole samples taken from the Mt. Isa shales as part of a geochemical survey initiated by D.O. Zimmerman.

Analyses were carried out by atomic absorption spectrophotometry on aqua regia digestions, for Zn, Cu and Pb.

All results are expressed in parts per million.

Sample No.	Zn	Cu	Pb	Sample No.	Zn	Cu	Pb
022784	25	8	30	022825	36	24	20
2785	48	10	20	2826	26	24	20
2786	21	15	30	2827	36	27	20
2787	13	8	10	2828	35	27	20
2788	15	20	20	2929	33	27	20
2789	15	14	70	2830	63	32	20
2790	11	8	70	2831	64	27	20
2791	68	12	50	2832	800	17	30
2792	34	15	30	2833	165	32	30
2793	15	5	50	2834	1250	17	120
2794	64	58	80	2835	1000	22	50
2795	83	20	40	2836	1400	27	50
2796	86	17	50	2837	950	27	60
2797	205	24	20	2838	120	17	30
2798	41	11	20	2839	57	5	30
2799	285	15	90	2840	105	14	50
2800	51	12	40	2841	79	20	60
2801	38	11	30	2842	37	15	30
2802	38	12	30	2843	21	8	50
2803	600	9	20	2844	47	8	30
2804	70	20	20	2845	37	16	30
2805	1350	26	50	2846	49	39	30
2806	165	11	100	2847	46	17	30
2807	290	17	40	2848	42	23	50
2808	37	11	50	2849	92	38	30
2809	180	78	150	2850	36	30	50
2810	82	24	120	2851	110	36	30
2811	205	19	80	2852	79	36	30
2812	140	17	40	2853	125	41	30
2813	215	17	100	2854	55	41	50
2814	525	27	30	2855	100	27	30
2815	315	15	50	2856	51	26	30
2816	33	27	20	2857	98	29	30
2817	39	12	20	2858	57	20	50
2818	72	19	30	2859	125	23	50
2819	180	24	20	2860	380	20	50
2820	210	26	20	2861	117	25	30
2821	37	20	70	2862	11	27	70
2822	165	17	30	2863	68	30	50
2823	265	17	30	2864	64	23	50
2824	38	26	20	2865	150	33	70

Sample No.	Zn	Cu	Pb
022866	210	63	50
2867	125	27	50
2868	430	27	50
2869	165	37	50
2870	39	8	70
2871	30	27	130
2872	97	23	50
2873	145	35	130
2874	70	14	50
2875	90	32	30
2876	365	17	50
2877	285	30	50
2878	245	15	160
2879	310	23	210
2880	270	30	70
2881	64	30	70
2882	320	35	70
2883	510	35	50
2884	160	35	110
2885	42	14	30
2886	39	26	30
2887	51	23	100
2888	21	19	30
2889	155	33	70
2890	180	19	30
2891	205	20	10
2892	600	20	10
2893	98	20	10
2894	50	18	70
2895	27	11	10
2896	53	27	10
2897	39	27	10
2898	41	20	10
2899	185	27	10
2900	125	45	50
2901	27	19	10
2902	54	29	10
2903	19	15	10
2904	16	14	10
2905	20	13	10
2906	54	33	10
2907	28	19	10
2908	25	18	10
2909	27	11	10
2910	10	8	10
2911	54	30	30
2912	40	24	30
2913	50	28	30
2914	51	27	50
2915	43	20	30
2916	14	11	130
2917	19	10	170
2918	25	15	90
2919	32	11	70
2920	79	16	90
2921	112	11	50
2922	135	8	50
2923	240	11	50
2924	57	11	130
2925	39	8	90
2926	38	8	240
2927	36	8	110
2928	21	8	70
2929	24	8	110

Sample No.	Zn	Cu	Pb
022930	100	27	110
2931	114	30	30
2932	52	8	50
2933	165	19	50
2934	107	11	50
2935	800	19	30
2936	155	18	10
2937	69	11	30
2938	230	14	600
2939	510	31	50
2940	700	60	280
2941	240	22	30
2942	255	22	30
2943	450	20	30
2944	1000	14	30
2945	170	20	80
2946	117	11	30
2947	650	20	290
2948	450	14	410
2949	330	30	60
2950	360	8	60
2951	45	33	80
2952	52	12	280
2953	37	20	30
2954	100	22	10
2955	88	39	30
2956	73	18	60
2957	700	16	30
2958	39	39	10
2959	185	33	90
2960	195	9	10
2961	19	9	10
2962	90	54	230
2963	30	20	30
2964	11	8	30
2965	10	8	10
2966	78	50	30
2967	60	22	10
2968	63	14	10
2969	52	15	10
2970	28	37	10
2971	14	9	10
2972	61	9	10
2973	12	9	10
2974	190	32	10
2975	47	26	30
2976	71	22	30
2977	290	35	30
2978	220	22	30
2979	125	14	10
2980	97	15	30
2981	275	31	80
2982	380	12	30
2983	99	12	30
2984	180	12	30
2985	69	30	60
2986	50	16	60
2987	125	16	60
2988	255	16	10
2989	370	20	120
2990	250	22	80
2991	500	30	120
2992	490	34	90
2993	455	42	70

Sample No.	Zn	Cu	Pb
022994	385	14	70
2995	395	31	190
2996	515	31	70
2997	315	40	70
2998	430	40	70
2999	48	26	90
3000	400	22	180
3001	510	83	70
3002	33	22	30
3003	23	26	160
3004	28	22	50
3005	18	10	30
3006	51	33	30
3007	26	10	50
3008	24	20	30
3009	13	10	50
3010	86	33	70
3011	23	50	90
3012	19	36	70
3013	19	36	110
3014	16	22	90
3015	11	10	90
3016	17	22	90
3017	13	14	90
3018	26	26	30
3019	12	14	10
3020	14	14	10
3021	37	18	10
3022	22	18	30
3023	130	30	70
3024	102	36	30
3025	62	52	30
3026	50	56	30
3027	48	52	30
3028	41	40	30
3029	37	14	70
3030	235	31	50
3031	1000	31	50
3032	53	18	50
3033	23	25	50
3034	52	22	180
3035	53	22	250
3036	110	52	270
3037	120	44	110
3038	490	18	70
3039	72	14	50
3040	125	18	270
3041	61	14	90
3042	53	13	90
3043	45	36	110

Laboratory Report No. 33:

ANALYSIS OF GEOCHEMICAL SURVEY SAMPLES FROM MOUNT ISA, QUEENSLAND.

by

T. FORD

The following results were obtained for the analysis of 260 auger hole samples taken from the Mount Isa shales as part of a geochemical survey initiated by D.O. Zimmerman.

Analyses were carried out by atomic absorption spectrophotometry on aqua regia digestions, for Zn, Cu and Pb.

All results are expressed in parts per million.

Sample No.	Zn	Cu	Pb
023044	500	12	30
3045	47	10	10
3046	135	20	80
3047	315	21	90
3048	28	8	50
3049	61	12	30
3050	120	20	30
3051	131	17	90
3052	64	12	30
3053	29	21	30
3054	51	6	30
3055	52	15	90
3056	2600	58	890
3057	230	12	30
3058	415	28	50
3059	505	12	50
3060	131	4	50
3061	125	6	30
3062	235	15	30
3063	380	8	90
3064	485	20	50
3065	215	49	30
3066	1650	32	290
3067	600	8	1540
3068	97	2	30
3069	290	8	50
3070	600	23	30
3071	125	8	10
3072	130	8	400
3073	35	15	30
3074	180	21	100
3075	250	23	180
3076	155	34	50
3077	180	20	10
3078	455	23	10
3079	505	23	90
3080	735	8	10
3081	290	30	10
3082	91	14	10
3083	29	21	10
3084	27	8	10

Sample No.	Zn	Cu	Pb
023085	17	4	10
3086	12	6	10
3087	9	6	10
3088	20	34	10
3089	7	38	10
3090	10	27	10
3091	17	36	10
3092	14	32	10
3093	9	23	10
3094	11	12	10
3095	9	4	10
3096	17	12	10
3097	17	4	10
3098	26	6	10
3099	21	17	10
3100	12	6	10
3101	10	20	10
3102	12	8	10
3103	17	8	10
3104	29	20	10
3105	16	17	10
3106	24	63	10
3107	15	59	10
3108	15	63	10
3109	23	84	10
3110	21	81	10
3111	20	81	10
3112	16	81	10
3113	11	95	10
3114	17	66	10
3115	20	70	10
3116	19	70	10
3117	21	86	10
3118	18	68	10
3119	16	74	10
3120	18	74	10
3121	22	68	10
3122	21	52	10
3123	32	18	10
3124	43	17	10
3125	40	13	10

Sample No.	Zn	Cu	Pb
023126	14	8	10
3127	24	12	10
3128	48	20	10
3129	700	17	110
3130	190	13	10
3131	117	17	10
3132	140	15	10
3133	290	21	10
3134	245	23	10
3135	500	21	40
3136	87	39	40
3137	505	33	140
3138	165	15	100
3139	61	20	150
3140	67	34	120
3141	77	39	180
3142	320	54	430
3143	405	200	550
3144	315	86	5000
3145	122	58	500
3146	70	39	500
3147	360	37	460
3148	115	142	70
3149	55	123	40
3150	27	50	40
3151	48	33	40
3152	27	47	40
3153	17	44	20
3154	45	121	60
3155	32	37	30
3156	49	34	20
3157	34	19	20
3158	36	27	50
3159	19	16	40
3160	43	30	40
3161	43	23	30
3162	220	16	20
3163	37	18	20
3164	125	37	40
3165	9	8	20
3166	47	26	40
3167	66	16	40
3168	69	12	270
3169	81	20	60
3170	69	19	90
3171	505	24	120
3172	435	29	220
3173	600	20	100
3174	92	24	90
3175	600	29	130
3176	950	23	80
3177	365	19	90
3178	255	12	100
3179	345	24	70
3180	34	18	40
3181	170	12	30
3182	255	20	40
3183	480	16	30
3184	205	23	40
3185	73	29	50
3186	130	20	40
3187	35	14	50
3188	65	23	50
3189	105	19	40

Sample No.	Zn	Cu	Pb
023190	33	12	40
3191	230	14	30
3192	260	29	30
3193	225	16	30
3194	185	14	20
3195	205	27	50
3196	215	18	50
3197	265	30	40
3198	10	19	10
3199	5	13	10
3200	19	74	30
3201	11	42	30
3202	10	49	30
3203	15	71	30
3204	19	50	30
3205	12	30	30
3206	13	38	30
3207	34	30	30
3208	10	17	30
3209	12	195	30
3210	10	200	30
3211	10	188	30
3212	16	125	30
3213	12	105	30
3214	17	68	30
3215	16	75	30
3216	12	300	30
3217	14	360	30
3218	14	92	30
3219	10	45	30
3220	10	13	30
3221	12	200	30
3222	10	34	30
3223	32	30	30
3224	10	13	30
3225	22	14	30
3226	25	17	30
3227	20	17	30
3228	13	46	30
3229	16	30	30
3230	30	54	30
3231	47	104	30
3232	20	910	30
3233	23	52	30
3234	14	50	30
3235	18	126	30
3236	23	42	30
3237	13	36	30
3238	31	188	30
3239	23	840	30
3240	68	410	30
3241	26	680	30
3242	44	1060	30
3243	19	600	30
3244	67	1410	30
3245	43	38	30
3246	22	200	60
3247	34	300	30
3248	63	98	30
3249	57	79	30
3250	280	370	200
3251	59	65	30
3252	75	172	40
3253	230	300	40

Sample No.	Zn	Cu	Pb
023254	78	62	40
3255	120	98	90
3256	37	24	40
3257	17	40	280
3258	24	200	40
3259	162	38	40
3260	16	14	20
3261	10	10	20
3262	113	27	20
3263	10	20	20
3264	41	1270	20
3265	265	300	90
3266	208	40	20
3267	63	33	20
3268	10	10	20
3269	11	16	20
3270	10	10	20
3271	68	30	20
3272	121	24	20
3273	41	24	20
3274	50	11	20
3275	90	34	20
3276	10	16	20
3277	13	20	20
3278	63	40	20

Sample No.	Zn	Cu	Pb
023279	24	24	20
3280	50	10	20
3281	64	10	20
3282	66	50	20
3283	21	50	60
3284	14	30	20
3285	13	14	20
3286	17	14	20
3287	22	10	20
3288	19	10	20
3289	27	14	20
3290	17	14	20
3291	45	30	300
3292	480	69	190
3293	465	38	40
3294	360	54	40
3295	55	177	40
3296	45	86	60
3297	49	27	40
3298	29	20	40
3299	56	20	260
3300	81	30	60
3301	46	54	60
3302	500	27	60
3303	355	30	60

Laboratory Report No. 34 9th September, 1966.

Analysis of Geochemical Survey Samples from Mount Isa, Queensland

by

T. Ford

The following results were obtained for the analysis of 130 auger hole samples taken from the Mount Isa shales as part of a geochemical survey initiated by D.O. Zimmerman.

Analyses were carried out by atomic absorption spectrophotometry on aqua regia digestions, for Zn, Cu and Pb.

All results are expressed in parts per million.

Sample No.	Zn	Cu	Pb	Sample No.	Zn	Cu	Pb
023304	150	32	10	023348	22	194	10
3305	393	47	20	3349	53	215	10
3306	130	26	10	3350	16	300	10
3307	10	16	10	3351	12	220	10
3308	17	20	10	3352	11	146	10
3309	27	36	10	3353	17	230	10
3310	23	24	10	3354	10	22	10
3311	42	36	10	3355	10	26	10
3312	39	45	10	3356	10	44	10
3313	23	36	10	3357	10	38	10
3314	29	22	10	3358	10	122	10
3315 090	45	24	10	3359	10	380	10
3316	11	14	10	3360	23	520	20
3317	90	25	10	3361	26	132	20
3318	11	16	10	3362	16	43	20
3319	19	36	10	3363	27	50	20
3320	62	36	60	3364	28	24	20
3321	39	30	10	3365	33	21	10
3322	90	53	10	3366	10	10	10
3323	94	32	15	3367	20	10	10
3324 065	43	14	10	3368	97	121	100
3325	15	14	10	3369	45	24	10
3326	53	49	80	3370	80	12	10
3327	17	18	10	3371	90	14	10
3328	15	40	10	3372	54	14	10
3329	30	58	10	3373	87	28	20
3330	11	56	10	3374	39	12	20
3331	25	36	10	3375	40	50	80
3332	21	36	10	3376	75	22	10
3333	13	156	10	3377	84	60	10
3334	27	3000	10	3378	16	40	10
3335	18	58	10	3379	85	43	10
3336	35	40	10	3380	16	10	10
3337	19	36	10	3381	29	28	10
3338	10	18	10	3382	25	21	140
3339	20	62	10	3383	15	12	100
3340	27	66	10	3384	39	37	100
3341	49	56	10	3385	20	12	20
3342	47	66	10	3386	55	28	100
3343	10	25	10	3387	26	40	20
3344	10	119	10	3388	117	43	80
3345	14	62	10	3389	208	37	100
3346	14	132	10	3390	12	10	10
3347	11	119	10	3391	12	10	10

Sample No.	Zn	Cu	Pb
023382	25	21	140
3383	15	12	100
3384	39	37	100
3385	20	12	20
3386	55	28	100
3387	26	40	20
3388	117	43	80
3389	208	37	100
3390	12	10	10
3391	12	10	10
3392	36	16	10
3393	10	10	10
3394	29	21	10
3395	110	18	10
3396	63	30	20
3397	52	24	20
3398	51	28	20
3399	65	28	20
3400	51	34	20
3401	70	25	20
3402	64	33	40
3403	40	26	20
3404	70	20	20
3405	27	34	20
3406	37	28	40
3407	27	24	40
3408	29	23	10
3409	21	10	10
3410	19	10	10
3411	10	10	10
3412	19	18	10
3413	37	40	10
3414	72	12	10
3415	104	14	10
3416	94	14	10
3417	100	14	10
3418	87	14	10
3419	26	12	10
3420	109	34	10
3421	125	18	10
3422	114	21	10
3423	66	21	10
3424	93	21	10
3425	121	21	10
3426	63	18	10
3427	51	18	10
3428	73	18	10
3429	121	30	10
3430	97	12	20
3431	102	18	20
3432	111	34	10
3433	104	86	10

Laboratory Report No. 35:

TRACE ELEMENT ANALYSIS OF SAMPLES FROM PETERMAN RANGES, N.T.

by

A.D. Haldane and J.R. Beevers

The following results were obtained for the determination of Cu, Pb, Zn, Ni, Co, Cd, Ag and Au on twenty samples from Butler's Dome, Chernside Creek, and Stevenson Peak, Peterman Ranges, N.T. Samples were collected and submitted by J.F. Ivanac.

Trace metals were extracted by digestion with hydrochloric/nitric acid followed by determination by atomic absorption spectrophotometry.

All results are expressed in parts per million.

	Cu	Pb	Zn	Co	Ni	Cd	Ag
Butler's Dome							
G1A	66	60	50	37	46	<1	<2
G1B	70	60	170	240	86	2	3
G1C	15	20	17	9	12	1	<2
G1D	<2	<10	1	<5	<5	<1	<2
G1E	175	20	79	25	49	<1	<2
G1F	51	25	180	140	52	1	<2
G1G	120	15	640	980	120	4	6
G1H	32	20	500	170	125	2	2
G1I	41	40	29	25	22	<1	<2
G1J	53	25	55	43	43	<1	<2
G1K	62	25	140	31	46	<1	<2
G1L	200	25	110	21	46	<1	<2
G1M	350	15	64	25	26	<1	<2
G1N	150	15	77	15	45	<1	<2
G1O	290	20	100	27	62	<1	<2
G1P	3	<10	2	<5	<5	<1	<2
G1Q	<2	<10	2	<5	<5	<1	<2
G1R	57	<10	33	10	18	<1	<2
Stevenson's Peak							
G41	28	25	470	1300	100	7	<2
Chernside Creek							
G51	3	25	25	12	14	<1	<2

All digestions were analysed for Au by solvent extraction/AAS. Au was not detected at a limit of 1 ppm for all samples.

Laboratory Report No.36 27th September, 1966.

ZINC CONTENT OF THE MOLONGLO RIVER WATER

by

J.R. Beevers

The following analyses were carried out on waters submitted by Mr. M. Elliot of the Department of the Interior. The sampling points are as described in a previous report. All the zinc values reported are in parts per million (p.p.m.).

Sampling Point	Date Sampled 8/8/66	Date Sampled 15/9/66
A	< 0.05	< 0.05
B	70.0	32.8
C	33.6	12.7
D	18.0	9.9
E	< 0.05	< 0.05
F	18.0	4.63
G	2.13	0.66
H	0.05	0.30

Laboratory Report No.37 6th October, 1966.

TRACE ELEMENT CONTENT OF SOME SULPHIDES FROM MOUNT ISA. Q'ld.

by J.R.Beevers

The samples were collected and submitted for analysis by Dr. J.A. McDonald of the Baas Becking Geobiological Research Group. They were taken across a fold structure in the Mount Isa field, as part of a study of mineral and trace element migration during deformation. The elements requested were Ag, As, Bi, Co, Ni, Cr, Cd, Cu, Mn and Sb. All the twenty four samples submitted contained Bi, Co, Ni and Cr below the detection limit using A.A.S.

Bi $<$ 50 ppm. Co $<$ 10 ppm. Ni $<$ 10 ppm. Cr $<$ 25 ppm.

Silver was determined by A.A.S. using the method of Rawling, Amos and Greaves; the silver is determined from 4N HCl. Antimony was also determined from 4N HCl following attack of the sulphide material with concentrated HCl.

Arsenic was determined using A.A.S. and the air/hydrogen flame following a sample attack of perchloric acid taken to fuming in the final stages. There was probably some loss of arsenic by this method and the results reported are therefore of only a tentative nature.

Cadmium, copper and manganese were determined by A.A.S.,using four different sample attacks.

(a) Conc. HNO_3 - analysis made from 3N HNO_3

(b) Conc. HCl + HNO_3 - analysis made from 4N HCl

(c) Conc. $HClO_4$ - analysis made from 2N $HClO_4$

(d) Conc. $HClO_4$ + HCl - analysis made from 2N $HClO_4$

Results for Cd, Cu and Mn obtained using attack (c) or (d) are the preferred ones. Results given are all in parts per million.

Sample No.	As (c)	Ag (b)	Sb (b)	Cu (a)	Cu (b)	Cu (c)	Cu (d)
1	100	1300	1700	155	155	180	180
2	100	1570	1750	100	100	110	105
3	450	1080	1200	55	60	65	60
4	200	1380	1600	130	140	150	140
5	350	1170	1350	40	45	45	35
6	200	1440	1600	85	95	105	90
7	350	1130	1350	140	140	145	145
8	200	1100	1000	70	75	75	75
9	300	1000	1100	110	115	130	120
10	450	1000	1200	40	50	55	45
11	550	890	1350	80	85	110	90
12	400	1040	1250	145	150	160	170
13	250	910	1000	105	100	110	110
14	650	1120	850	180	175	190	195
15	450	910	1100	120	140	150	140
16	350	1090	1350	55	60	65	60
17	800	1040	950	120	130	135	130
18	550	690	850	95	100	115	105
19	600	1090	1100	70	70	80	70
20	850	280	400	65	70	75	75
21	450	940	950	120	140	135	130
22	400	1150	1550	40	45	50	50
23	300	1610	1700	60	60	60	65
24	200	210	200	90	95	105	100

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In parts per million.

Cd

Sample No.	(a)	(b)	(c)	(d)
1	148	145	147	140
2	65	60	56	55
3	252	240	260	240
4	153	150	160	140
5.	220	216	230	225
6	95	78	90	85
7	140	133	130	125
8	127	115	118	115
9	222	225	230	215
10	182	175	188	175
11	252	267	268	260
12	390	378	400	370
13	428	437	452	355
14	377	342	350	340
15	403	382	400	350
16	370	352	380	360
17	403	395	408	390
18	443	430	454	430
19	157	154	162	140
20	850	852	830	870
21	460	414	456	410
22	190	172	176	180
23	68	64	63	60
24	564	620	600	600

Mn

Sample No.	(a)	(b)	(c)	(d)
1	1350	1400	1500	1550
2	1050	1150	1200	1250
3	1250	1300	1400	1450
4	1050	1050	1150	1200
5	1000	1000	1100	1150
6	700	700	800	850
7	1350	1450	1550	1600
8	1400	1450	1600	1650
9	2100	2250	2400	2300
10	2800	3100	3150	3150
11	2050	2300	2350	2350
12	1800	1850	1850	1950
13	2150	2200	2150	2300
14	1550	1500	1450	1600
15	1750	1700	1750	1850
16	1550	1550	1600	1600
17 b	1700	1700	1800	1750
18	1550	1450	1500	1550
19	1500	1450	1600	1500
20	1000	1050	1150	1200
21	1850	1750	1900	1850
22	1550	1450	1450	1500
23	900	900	900	950
24	3650	4150	4150	3800

ANALYSIS OF GEOCHEMICAL SURVEY SAMPLES FROM PENTECOST ISLAND, QUEENSLAND.

by

J.R. Beevers

The following results were obtained for the analysis of 22 samples taken from Pentecost Island, Proserpine 1:250,000 Sheet area by A.G.L. Paine. All results are expressed in parts per million.

Analyses by T. Ford showed that Au and Ag were less than 0.1 ppm in all samples and Mo was less than 0.2 ppm.

All values reported are in parts per million.

The K and Na values represent the amount leached by cold water after ignition of the sample at 750°C for 4 hours.

Sample No.	Cu	Pb	Zn	Cd	K	Na
P1	525	70	15	-	<100	100
P2A	<10	80	6	-	400	200
P3A	15	300	1570	10	800	170
P4	55	180	8	-	16,000	3,400
P5	<10	20	8	-	300	300
P6	<10	25	11	-	240	240
P7	<10	25	40	-	120	170
P8	<10	25	75	-	<100	150
P9	<10	20	45	-	200	200
P10	<10	30	37	-	200	210
P11	30	40	7	-	1,200	350
P12	<10	50	45	-	120	220
P13	<10	60	30	-	200	270
P15	210	60	7	-	<100	160
P16	20	280	180	-	<100	100
P17	<10	70	4	-	<100	100
P18	15	80	19	-	200	480
P20	10	80	12	-	200	260
P21	30	50	4	-	300	260
P22	75	50	4	-	200	200
P23	<10	40	28	-	120	160
P24	10	60	18	-	120	140

Laboratory Report No.39. 6th October, 1966.

ANALYSIS OF NICKELIFEROUS SULPHIDE FROM THE ADAU RIVER. T.P.N.G.

by

D.A. Haldane

A small specimen of a sulphide rich rock (No.65520727A) collected from a shear zone exposed in a tributary of the Adau River was submitted by D. Dow for analysis for nickel content.

The following results were obtained.

(a) Total sample as received:

Ni	4.09%	Pb	15 ppm.
Co	0.11%	Zn	17 ppm.
Cu	0.15%	Cd	< 2 ppm.

(b) Sulphide phase only

Ni	19.6%
Co	0.62%
Cu	0.36%
Zn	< 0.02%

Sample No. 65520727A.

File 65/6277 refers.

See also Laboratory Report No.25, 1966.

Laboratory Report No.40. 12th October, 1966.

AMOSITE FROM THE MOUNT RAMSAY 1:250,000 SHEET AREA.

by

C.D. Branch

A specimen of a tough, green, fibrous mineral associated with magnetite lenses up to one quarter of an inch wide and two inches long, was collected from a vein in an ultrabasic body by D.B. Dow. The location is longitude 127°18'30"E, latitude 18°29'S, on the Mount Ramsay 1:250,000 Sheet area, Western Australia. The site is approximately four miles N.N.W. of Lamboo Homestead.

The vein material was crushed to 100 mesh size and the magnetite removed with a small magnet. The remaining material was crushed to minus 150 mesh size, and scanned on the Philips 1010 X-ray diffractometer using the following conditions: Cu radiation; 40Kv, 20 ma; rate meter 32; time constant 2 x 1; E.H.T. 1600 volt; 0.1° scatter slit; 1° receiving slit; and scintillation counter plus discriminator.

Prominent peaks at 7.02 A, 3.56 A, and 2.49 A, prove that the green mineral is AMOSITE $(Mg\ Fe^{+2})_7(Si_8O_{22})\ (OH)_2$, a fibrous variety of Cummingtonite.

Amosite is used for felted insulation in blanket form for high-temperature service to 900°F; a loosely compacted form is applied as a covering for marine turbines and jet engines; and it is used in a light-weight, fire-resistant marine partition board. The only commercial supply is obtained from the Union of South Africa who exported 70,000 tons of amosite in 1958. It is stockpiled in the U.S. National Stockpile. (Information from: Bureau of Mines, 1960 - Mineral facts and problems U.S.Bur. Mines, Bull. 585.).

Laboratory Report No.41. 17th October, 1966.

LIME CONTENT OF THE MOLONGLO RIVER WATER

by

J.R. Beevers

The samples were submitted by Mr.M. Elliot of the Department of the Interior. The sample location points are as previously described. All the results are given in parts per million.

Sampling Point	Zinc (p.p.m.)
A	< 0.05
B	36.0
C	25.6
D	9.8
E	< 0.05
F	4.1
G	0.43
H	0.22

Laboratory Report No. 42. 1st November, 1966.

ANALYSIS OF SOIL SAMPLES FROM SEWA BAY, T.P.N.G. FOR NICKEL

by

A.D.Haldane.

At the request of A. Renwick, Senior Resident Geologist, T.P.N.G., two samples of soil were analysed for nickel. The samples were originally submitted by J.D. Wilkinson, Sewa Bay, Territory of Papua and New Guinea, and described as coming from a locality one and a half miles inland from Sewa Bay.

The following results were obtained:

Sample No.	Ni
1	0.036%
2	0.013%

Lab. Serial No. 2349.

Laboratory Report No. 43: 11th November, 1966.

ZINC CONTENT OF MOLONGLO RIVER

by

J.R. Beevers

The samples were taken on 3rd November and submitted by Mr. M. Elliot of the Department of the Interior.

The sampling points are as previously described. All results are expressed as p.p.m.

Sample Locality	Total Zinc (p.p.m.)
Point A	$<$ 0.05
B	36.0
C	10.0
D	9.9
E	$<$ 0.05
F	3.53
G	0.43
H	0.20

Laboratory Report No.44. 6th December, 1966.

POTASSIUM ANALYSES OF SOME KYANITE ROCKS FROM THE WEST KIMBERLEY AREA, W.A.

by

J.R. Beevers

The three rock samples, submitted by G.M. Derrick, were from a location about two miles east of the headwaters of Alexander Creek. They are all part of the Halls Creek group rock unit. The analyses resulted as follows:

Sample No.	% K
66161010	0.82
66161011	2.44
66161012	0.19

Lab. Report No.45.

ZINC CONTENT OF THE MOLONGLO RIVER.

by

J.R. Beevers

The samples were collected and submitted by Mr. M. Elliot, of the Department of the Interior, on 6th December, 1966. The sample locations are as previously described.

Location	Zinc (p.p.m.)
A	$\leqslant$ 0.2
B	132.5
C	25.0
D	10.9
E	$\leqslant$ 0.2
F	1.0
G	0.65
H	$\leqslant$ 0.2

12th December, 1966.

Laboratory Report No.46. 20th December, 1966.

NOTE ON PLASTIC "CLAY" FROM KASSAM - KAINANTU ROAD, MILE 40. EASTERN HIGHLANDS, NEW GUINEA.

by

C. Newbigin

A sample of plastic clay was submitted by J.P. MacGregor on 20th October, for an X-ray determination of the constituent clay minerals. Diffractometer patterns showed that the clay fraction, (i.e. particles of size less than six microns) is predominantly kaolinite, with poorly crystallized mica, and mixed-layer clays - mainly smectite (montmorillonite - type clay).

It is unlikely that the plasticity of the material is due to the clay fraction. Microscopic examination revealed that diatoms make 60% to 80% of the material. They were identified by T. Nicholas as Melosira. Naturally occurring diatomaceous earths can absorb from 10% to more than 60% by weight of free water; they have an apparent dry density of 20 - 40 lbs. per cubic foot.

Diatomite can be used as a filtration agent, a mild abrasive, a source of reactive silica in the preparation of alkali earth silicates, as light weight aggregate, and as a pozzolan for cement mixtures.

Reference:

Industrial Minerals and Rocks 1960, Ed. J.L. Gillson in the Seely, W. Mudd Series, published by the American Institute of Mining, Metallurgical and Petroleum Engineers.

Laboratory Report No.47. 20th December, 1966.

PETROGRAPHIC DESCRIPTION OF SOME ROCKS FROM THE UPPER RAMU HYDRO-ELECTRIC SCHEME AREA.

by

C. Newbigin

66370002 - Fine black siltstone, from drillhole DD21 at 550-foot depth.

The siltstone appears in thin section to consist of sub-angular, subhedral to anhedral grains of quartz 10%, feldspar-plagioclase and potash feldspar - 20%, and biotite 2-3%, set in a groundmass composed of intergrown flakes of chlorite, micaceous and clay minerals and granules of opaque material (mainly carbonaceous).

The feldspars have been altered to sericite and clay and incipient prehnitization of the groundmass is noticeable . Veins of zeolites cut the slide. The composition of these zeolites has not been determined.

Engineering properties

Bedding is not apparent in either the thin section or the hand specimen; no marked alignment of the very fine grained platy minerals is evident. Therefore there appears to be no inherent plane of weakness in the rock. Behaviour under normal stress and in unsupported underground openings would be determined by features such as joints, faults, and megascopically recognizable poorly bonded bedding planes, or cleavage planes.

As the rock contains clays, although probably not swelling clays, and zeolites, it may possibly be unsatisfactory as aggregate. If such a use is contemplated the material should be subjected to standard acceptance tests, including reactivity.

66370003 - Metamorphosed lithic arenite, from drillhole DD21 at 229-foot depth.

The rock is well cemented and poorly sorted, with angular to sub-angular altered mineral and rock fragments.

The fragments comprise 10% quartz generally unaltered and including both igneous and hydrothermal quartz; 20-25% feldspar of albite composition altered to clay minerals, prehnite and chlorite, less than 1% augite in fresh rounded grains. The rock fragments, which make up 20% of the rock, are varied in composition; 10% volcanic fragments containing clay minerals, derived from the feldspar laths and devitrified groundmass, 5% chert fragments, 5% fragments of a quartz-biotite schist. The remainder of the rock - 45% - consists of cement and possible matrix completely altered to intergrown chlorite, actinolite, authigenic clay minerals and prehnite. Alteration was probably affected during late stage diagenesis.

Engineering properties.

As this rock is believed to contain minerals which would make it unstable as an aggregate,e.g. devitrified volcanic fragments and chert fragment, it would be advisable to test it for resistivity. Should this test show no deleterious reactions the rock is probably sound enough for aggregate.

There is no evidence of bedding or alignment of platy minerals and the same comments regarding strength under stress apply to this rock as to 66370002.

66370004 - Metamorphosed (?)lithic arenite, from Drillhole DD21 at 384-foot depth.

The rock has an average grain size of 0.6 mm and consists of altered rock and mineral fragments cemented by a largely reconstituted matrix and cement. The mineral fragments include 20 - 25% quartz grains, embayed and altered by calcite and the minerals of the groundmass; 20% feldspar grains were recognized but originally there were probably many more that are now completely altered. Many grains show alteration to zeolites, amphiboles or calcite while others are altered to sericite and clay and contain opaque minerals. The opaque material is largely carbonaceous; it occurs also in the groundmass and constitutes about 20% of the slide. Only about 5% of the slide can be recognized as rock fragments; highly altered volcanic fragments contain amphibole, epidote and chlorite, while others consist mainly of derived clay.

The groundmass, 30 - 35% of the rock, consists largely of a fibrous sodic amphibole, with minor development of epidote and calcite. Veins of zeolites, chlorite and calcite transect the rock; they presumably were formed at a late stage. Generally the rock has been metamorphosed to a level equivalent to the upper greenschist facies.

The same comment on engineering properties applies to this rock as to 66370003.

66370005 - Marble, from drillhole DD21, at 959-foot depth.

The marble consists of fine even-sized grains of calcite, which show a slight preferred elongation. A few larger grains of quartz and altered feldspar disturb the otherwise uniform fabric.

Parallel to the direction of preferred orientation in the slide are two or three narrow lenses where the calcite grains have been sheared. These are presumably due to movement within the rock.

Engineering properties.

The slight preferred orientation of this rock may yield a preferred direction of fracture but this would not be strongly developed. The small shears, some of which have been healed by calcite, would possibly provide passages for water.

The rock should be examined for larger shears, joints and planes of slip as these will determine the behaviour of the marble in unsupported underground openings.

The rock does not appear to contain any deleterious minerals which would prevent its use as concrete aggregate.

66370006 - Metasomatic tremolite talc rock, from drillhole DD21 at 105-foot. depth.

The rock is igneous in origin but has been almost entirely reconstituted so that it now consists of large anhedral grains of primary augite, with altered rims, small irregular grains of secondary hornblende, rimmed by an altered groundmass and in some cases containing relict augite grains, irregular altered biotite laths and large pseudomorphs consisting of radiating aggregates of tremolite. Some of these aggregates have cores, with either mesh or spiral structures, that consist of uralite, calcite, muscovite, and finely divided opaque material.

The former groundmass has been reconstituted as fine-grained intergrown laths of talc with minor veins of actinolite and veinlets of uralite. Opaque material is scattered through the groundmass in small irregular veins.

Engineering Properties.

The rock does not have a greasy texture but sawn surface polish readily. The talc forms about 35% of the rock but is interground with the groundmass in which are set large grains of other minerals. Sound rock of this type is therefore unlikely to have an adverse effect on the stability of any openings in which it may occur, Any sheared bodies of tremolite talc rock encountered, however., could provide lubricated surfaces along which blocks of unsupported rock could move.

If encountered in underground openings this rock should be carefully examined for shears or greasy joints along which movement could occur. Its use as concrete aggregate should be avoided.

66370007 - Marble from Drillhole DD19, at 927-foot depth .

This rock is very similar to 66370005; it displays a saccharoidal fabric showing slight preferred elongation of grains and consists almost entirely of calcite with some small grains of quartz and streaks of intergrown chlorite and mica. There is no sign in the slide of the granulation noted in 66370005.

Engineering Properties.

The engineering properties are very similar to 66370005 and the same comments apply. There is possibly a faint preferred direction of fracture but the main cause of any lack of strength would br macroscopic features such as joints, faults and bedding planes.

The hand specimen shows that the marble has a variety of textures; it may therefore be differentially soluble. The slide does not show any deleterious minerals.

66370008 (1-4) - Shale and siltstone from drillhole DD21.

These slides represent shale and siltstone from drillhole DD21. Generally the fabric shows grains of fine sand size included in a matrix of silt-sized or clay-sized particles. The percentage of mineral detritus ranges from 50% in 66370008 (4) to 15% in 66370008 (2). For the composition of the rocks, see the attached table.

Engineering properties.

Although the shale contains clays X-ray work has shown that they are probably not swelling clays and that they are not present in larger quantities than is normal for shale. 66370008 (2) contains zeolites and should be submitted for reactivity tests if use as aggregate is contemplated.

Preferred orientation in the grains is only poorly developed. Bedding as seen in the slides ranges from transitional, with no erosional break, to sharp clearly-defined breaks where cohesion may be poor. The main causes of weakness however, will be macroscopic features such as the joints, coated with pyrite, calcite and zeolite which are apparent in hand specimen.

66370009 (2) - Foliated quartz mica schist, from upper Yonki Creek.

The rock exhibits a saccharoidal texture superposed on a fabric of small irregular mesoscopic folds and crenulations in a metamorphic layering. The rock consists of grains of various sizes, mainly fine-grained quartz, muscovite, biotite, and a few large poikilitic grains of cordierite, with finely divided opaque material present throughout.

The minerals are fresh with only minor alteration of muscovite to chlorite and cordierite to pinite. The layering is defined by the segregations of minerals as a result of deformation. Quartz is concentrated in the crests of folds and fine-grained quartz and mica flakes are concentrated in the limbs; other layers are composed entirely of quartz.

The rock has undergone two stages of metamorphism, the first regional and the second contact thermal in affect. The rock is equivalent in metamorphic grade to the albite-epidote-hornfels facies.

Engineering Properties.

The rock contains no minerals which are considered undesirable in aggregate. The interlocking nature of the fabric may make the rock very tough and expensive to crush, however, the metamorphic layering in some cases forms an irregular preferred cleavage direction. This has not been sufficiently developed in the hand specimen to form a schistosity cleavage and it is probable that when considering the behaviour of the rock in unsupported underground openings, any significant planes of weakness will be megascopic, e.g., joints or faults.

66370009(1)-Foliated quartz mica schist.

This rock is very similar to 66370009(2). The metamorphic layering is well developed, but the saccharoidal texture is less evident. These features could be the result of the attitude of the thin section.

The rock consists of quzrtz, biotite, muscovite, and cordierite (again present in poikilitic grains and altered to pinite). Opaque minerals are finely disseminated in the rock. A few grains of hornblende are present.

The engineering properties are similar to those of 66370009(2).

66370010(3) - Dolerite - boulder from Creek on north flank of Yonki Dome.

The rock consists of large euhedral grains of augite and both fresh and altered grains of olivine, all in a groundmass of interlocking irregular laths of plagioclase, the composition of which is estimated as more calcic than An65. Chromite is found as irregular, resorbed, and commonly interstitial grains.

The rock is fairly fresh; the plagioclase shows minor veining by sericite. Both augite and olivine show inclusions; the augite contains some grains of brown amphibole and clouds of minute inclusions. The olivine contains plagioclase grains and opaque material, possibly chromite, included along cracks and within the grains.

Engineering Properties:

The rock contains no minerals recognized as deleterious in concrete aggregate. Owing to the interlocking grains the rock is very tough and would probably be expensive to crush.

66370010(1) - Dolerite.

This rock is very similar in composition to 66370010(3). It consists of strongly resorbed grains of augite olivine, with included interstitial biotite and chromite, and a groundmass of plagioclase (approximately Au 60 - 65%) slightly less altered than the previous slide.

Overall, the minerals are more altered than 66370010(3). The pyroxene is generally fresh, and contains many inclusions of feldspar, biotite and chromite. The olivine also contains chromite as well as a considerable amount of the alteration product uralite. The plagioclase of the groundmass shows minor alteration to a fibrous amphibole. The grains of the groundmass have developed a vague coarse saccharoidal texture with diffusions of twin lamellae in the plagioclase.

The engineering properties are similar to those of 66370010(3).

COMPOSITIONS OF SPECIMENS 66370008 (1-4), FROM DRILLHOLE DD21.

	Shale (1) 166'7" depth	Quartz siltstone (3) 295' depth.	Quartz siltstone (4) 357'6" depth	Shale (2) 390' depth
	Average grain size 0.15 mm	Average grain size 0.07 mm.	Average grain size 0.1-0.2 mm.	Average grain size 0.1 mm.
Quartz	20% - in the coarser laminae - fresh angular	15-25% -altered by authigenic cement	30% - fresh angular grains	5 to 10% - fresh angular grains.
Feldspar	10% - slightly altered grains; fine laminae contain 10% quartz and feldspar. Average grain size 0.08 mm.	10% - minor sericitization, otherwise grains fresh	15 to 20% - angular grains, many sericitized and altered to clay minerals.	45% - fresh angular grains.
Opaque material	2-3% pyrite: 8-10% carbonaceous material	2-3% pyrite: 10% carbonaceous material.	Negligible	Less than 1% pyrite,
Mafic minerals	4% - pyroxene-fresh	-	2-3% biotite-bleached ragged grains	-
Matrix and Cement	65%- brownish fibrous chlorite.	15 to 20% - minor clay minerals, mainly brownish chlorite with minor intergrown green chlorite.	40% - fine clay minerals intergrown with secondary minerals.	70% - fine grained micaceous material and considerable carbonaceous material.
Authigenic material	The matrix and cement are altered to prehnite and brownish chlorite.	35-47% reconstituted grains- (i) chlorite intergrown with prehnite. (ii) brownish phyllosilicate (chlorite?). The latter is mainly found in the cement.	(i) green cement-intergrown prehnite and illite. (ii) brown cement-intergrown brownish clay minerals, probably illite.	Minor and patchy alteration to prehnite. Chlorite, prehnite and in some places zeolites; fill foram shells. The slide is cut by veins of unidentified zeolites, chlorite and calcite.
Fossil remains	-	-	-	5-10% forams and foram fragments,

66370010(2) - Peridotite.

The rock appears in thin section to have an interlocking fabric of coarse rounded euhedral-anhedral grains, of augite (60%) and an iron-rich olivine (40%). Both minerals have been altered to uralite, particularly at pyroxene-olivine interfaces, and a pale blue green amphibole has developed in some grains of pyroxene. Magnetite is present as inclusions in the rim of many smaller grains of olivine.

Engineering Properties

The rock shows a coarsely interlocking texture, and a homogenous rock mass shows clean slightly platy fracturing. It is not known if any of the alteration minerals would react with cement; it is therefore advised that the material be tested with high alkali cement, if it is to be used as concrete aggregate.