CARRARA RANGE

E.L. 4084

FINAL REPORT ON EXPLORATION ACTIVITIES

MARCH - JUNE 1983

by

A.D. BUERGER

OPEN FILE

Ref: 1:250,000 Mt. Drummond SE 53-12

ANACONDA AUSTRALIA INC.

AUGUST, 1983

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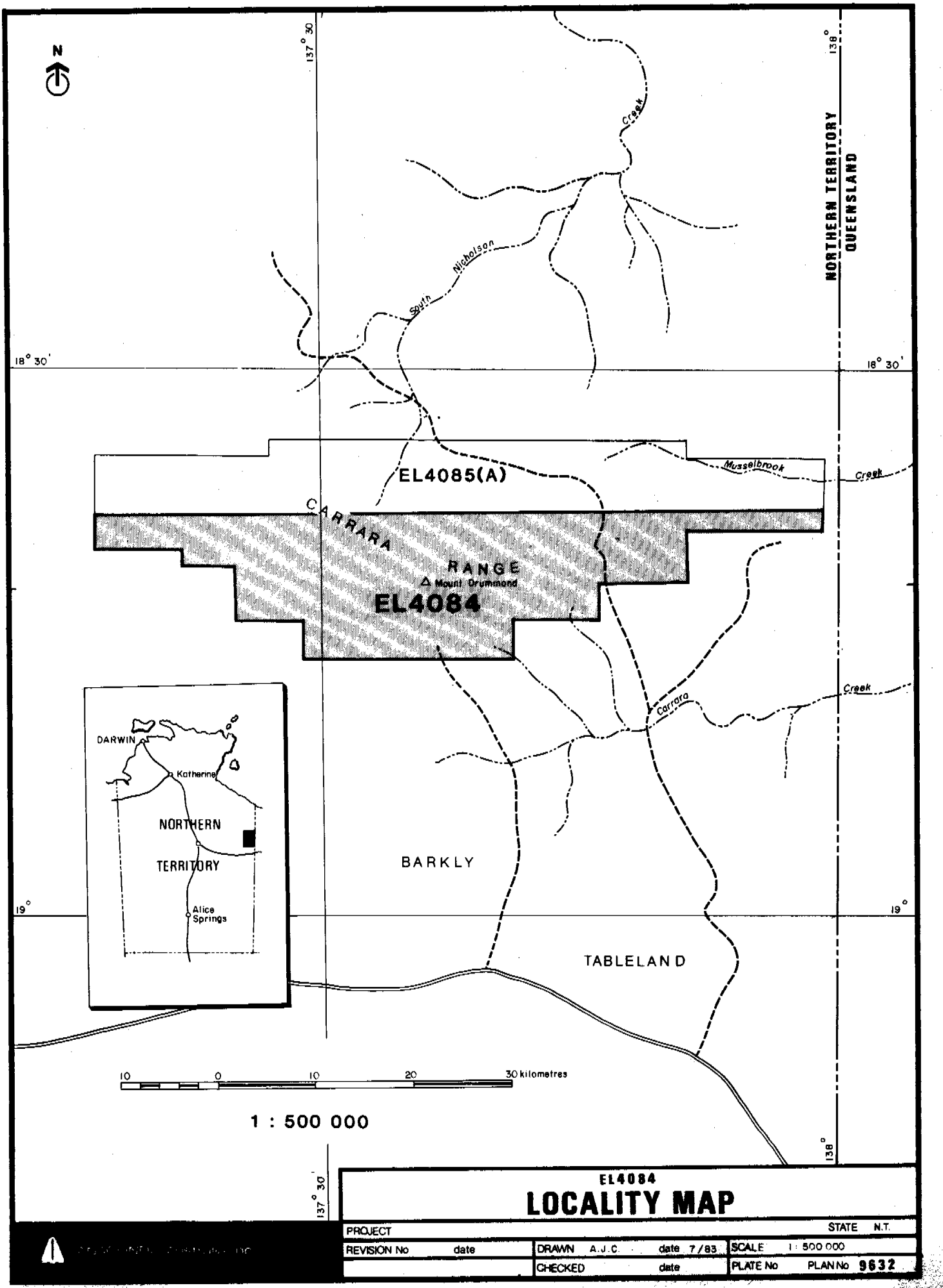

EL4084

LOCALITY MAP

PROJECT				STATE	N.T.
REVISION No	date	DRAWN A.J.C.	date 7/83	SCALE	1 : 500 000
		CHECKED	date	PLATE No	PLAN No 9632

1. Introduction

Carrara Range is in the Northern Territory, 300 km. N.W. of Mount Isa. The area lies almost exactly midway between the major Pb-Zn-Ag deposits of Mt. Isa and McArthur River. Rocks within the area were deposited in near identical sedimentary environment and at the same time to the host rocks of these adjacent deposits.

Although there are no known mineral deposits within the area, it is remote and has not been subject to intense prospecting. Recognition of the rocks as equivalents of the Mt. Isa Group has only come about through recently-published BMR mapping so that previous company exploration has been minimal.

Anaconda Australia Inc. applied for and were granted an Exploration Licence (E.L. 4084) over the southern half of the area.

The exploration activity involved an identification of areas of interest from the 1:25,000 colour photographs, followed by a reconnaissance geology and geochemistry trip to field check these areas.

2. General Geology

The area comprises a 1,500 sq. km. inlier of Middle Proterozoic sediments unconformably overlain by younger rocks. The sediments (South Nicholson and McNamara Groups) consist of sandstone, dolomite, siltstone and stromatolitic chert; they overlie a thick basal sequence of basic and acid volcanics (Carrara Range Group). Recent BMR mapping directly correlated the rocks in age and lithology with McArthur River Group 250 km. to the N.W. and the Mt. Isa Group 300 km. to the S.E.

The most prospective rocks are considered to be the McNamara Group which may be divided into the Lawn Hill formation and the Musselbrook formation. The separation of this Group is on the presence of stromatolites in the Musselbrook formation rocks (Plan No. 9512A).

3. Reconnaissance Exploration

Base maps at 1:25,000 scale were drawn up from the colour photographs. These maps showed drainages and areas of poor drainage. Airphoto 'anomalies' were identified on 1:25,000 scale colour photographs.

The airphoto anomalies were ranked in order of priority from a high of 1 to a low of 3. The ranking was on the intensity and aerial extent of the anomaly, whether or not it was stratiform and the association with faults. A brief description and the 1:25,000 airphoto reference were given for each anomaly (Table).

Some 31 anomalies were identified. A further two areas were identified while in the field. A total of 16 rock chip samples were collected. Field observations and sample numbers were noted on the attached table (Appendix 1).

4. Results

Rock Geochemistry

The airphoto anomalies were plotted on the 1:100,000 geology plan (Plan No. 9512A). Six of the anomalies were on Carrara Range Group volcanics and the remainder were on McNamara Group rocks.

The majority of the anomalies were due to laterite which were remnants of a past geomorphic event which had been largely eroded away by the present weathering cycle.

The analytical results of rock chip, soil and stream sediment samples were appended (Appendix 2).

A summary of the anomalous rock geochemistry was presented on a 1:100,000 plan. Regionally anomalous levels for Cu +100 ppm, Zn +100 ppm, As +60 ppm and Ba +900 ppm were indicated by the appropriate chemical symbol next to the sample number.

The highest copper value was on Anomaly 25 in Sample 1031, 1200 ppm Cu., which was a laterite over a red, brown chlorite schist (Sample 1032, 124 ppm Cu.). The anomaly was on Carrara Range Group close to a fault and the schist may be altered volcanic. Sample 1031 was also anomalous in Zn and As. The elevated Cu, Zn and As values may represent a minor concentration along a fault zone and no further work is recommended.

Some rock chip samples were collected at airphoto anomalies on Musselbrook formation. The anomalous geochemical associations were As ± Cu. Sample 1013 had elevated Pb values.

Anomaly 39 was thought to be the site of a possible malachite occurrance report by the BMR and the area was extensively traversed. There was a clean quartzite stromatolitic in part, bounded to the south by a fault with some limonitic breccia developed along it. Anomaly 39 was due to laterite found to the south of the fault. No malachite was found and rock chip samples 1015 and 1016 were not anomalous in base metals.

No further work is recommended on the Musselbrook formation.

5. Conclusions and Recommendations

The follow-up investigation of airphoto anomalies in the area shows the majority of these to be due to laterite remnants. The laterite is the remnant of a past geomorphic event which has been largely eroded away by the present weathering cycle.

Sampling over the Musselbrook formation shows elevated arsenic and copper values.

The highest copper value (1200 ppm) is found in a laterite sample over Carrara Range volcanics close to a fault. This probably reflects remobilisation in a fault zone.

No further work is recommended over the Musselbrook formation and the Carrara Range Group. E.L. 4084 should be relinquished.

TABLE

APPENDIX I

CARRARA RANGE RECONNAISSANCE
AIR PHOTO ANOMALIES

Anomaly	1:25,000 Colour Run/Photo	Description	Rank	Field Observation	Sample Description	Sample No.
7	4/5026	Small dk. o/c below ridge	3			
8	4/5026	Strong strike continuous o/c in sharp ridge. (May be shadow).	2-1			
9	4/5026	Small dk. o/c adjacent to fault.	3			
10	4/5024	Oval area reddish soil. Probable laterite.	3			
11	4/5024	As for Anom. 10.	3			
14	5/5078	Prominent Fe stone knob.	2	No landing. Laterite developed.		
15	5/5078	Dk. scree from stratiform o/c adjacent fault.	2			
16	5/5078	Fe stone cap on dk. stratiform o/c.	2			
17	5/5078	Small Fe stone hills in valley. May represent Fe-rich units. Location of Fe stone recorded by BMR. Associated with N.W. fault zone. May correlate with 7 & 9.	1-2	Laterite developed.	Sandy. Ferruginous. Manganese.	8610- 210 1011 210 1012 210 1013

Anomaly	1:25,000 Colour Run/Photo	Description	Rank	Field Observation	Sample Description	Sample No.
18	5/5080	As for Anom. 17.	1-2	Ferruginous o/c.	Ferruginous. Yellow brown.	8610-210 1014
19	5/5080	As for Anom. 17.	1-2	No landing. Laterite as for Anom. 17.		
20	5/5080	Circular zones of reddish soil with dense tree patches. Cross cutting stratigraphy.	2	No landing. Reddish soil no o/c. ? drainage phenomenon.		
21	5/5082	As for Anom. 19.	2	As for Anom. 19.		
22	6/5024	Small stratiform Fe-rich o/c in well bedded s.st.	2-3	No landing. Laterite on fracture zones.		
23	6/5022	Extensive oval areas. Dk/soil (? o/c). Stratiform - Probable basalt o/c.	3	No landing. No outcrop. Lateritic soil developed.		
24	6/5022	As for Anom 23.	3	As for Anom. 23.		
25	6/5018	Dk. o/c within Murphy metamorphics. Possibly gossan described.	2	Small laterite caps over chlorite schist.	Laterite Red brown chlorite schist.	8610-210 1031 8610-210 1032
26	7/5022	Very small dk. o/c. Lies on major E.N.E. fault.	3-			

Anomaly	1:25,000 Colour Run/Photo	Description	Rank	Field Observation	Sample Description	Sample No.
31	4E/5040	Drainage defined circular structure.	2-3	Low circular hill. Outcrop is qtzte, often Fe O spotted, chert (silicified shale?), limonitic siltstone & sandstone & Fe cement chert & qtz. breccia (2%?)	Ferruginous shale. Ferruginous quartzite. Qtz. chert sandstone bx with ferruginous matrix (2%?).	8610-210 1021 8610-210 1022 8610-210 1023
32	4E/5040	Extensive area of dark soil. ? Basalt.	3	No landing. Dk. soil no o/c.		
34	4E/5034	Small dk. o/c. Dk. scree On fault. ? laterite.	3	No landing. Laterite capped mica.		
35	4E/5030	Fe rich remnant hills (? laterite) over Fe-rich zone.	2-1	Selectively lateritized beds - dolomites siltst. and sandstones. Southern o/c is laterite residual.	Limonitic qtz sandstone Chert breccia. Ferruginous qtz grit-sandstone	8610-210 1026 8610-210 1027 8610-210 1028
36	4E/5030	Strike cont. of Fe strat. zone of 35.	2-1	Selectively lateritized beds. Outcrops highly ferruginous sandstone with MnO on surface and joint planes.	Rock as per description	8610-210 1029
37	5E/5076	Flat topped Fe-rich residual (laterite?) over Fe-rich seds?	2-3	No landing. Laterite capped mesa.		

Anomaly	1:25,000 Colour Run/Photo	Description	Rank	Field Observation	Sample Description	Sample No.
38	5E/5076	Strati. Fe-rich o/c. Adjacent fault.	3	No landing. Ferruginous s.stone - siltst. sequence.		
39	5E/5074	Broad strat. zone dk. o/c outlining feld rose. Possible malachite ex-BMR	1-2	Area traversed extensively. No mal. found.	Limonitic chert breccia. Laterite.	8610-210 1016 8610-210 1015
40	6E/5026	Small dk. knoll in valley with dk. soil/scree.	2	No landing. Lateritic soil.		
41	6E/5026	Extensive/strong o/c / linear Fe st. in fault. Adj. laterite.	2	No landing. Laterite.		
42	6E/5026	Strong o/c. Fe-rich. Probable fault related.	2-3	No landing. Laterite.		
43	6E/5028	Broad poorly defined strat. zone. Dk. red soil. ? fault related.	3-2			
44	6E/5028	Dk. o/c / strat./poorly defined.	3			
un-numbered	4E/5034	Identified while in field		Manganiferous flaggy sandstone forms prominent dk. outcrops.	Manganiferous flaggy sandstone.	8610-210 1025
un-numbered				Basic volcanic outcrop.	Oxidised fine grained basic volcanic.	8610-210 1033

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*     PROJECT ASSAY REPORT 2 (SAMPLE DETAIL SCAN)     *
*                                                     *
*           PROJECT ID  8610                          *
*                                                     *
*      APPENDIX 2: EL4084 GEOCHEMICAL RESULTS         *
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REPORT SELECTION
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Geologist : 210 A.D.BUERGER.

Samples 1011 to 1016
Samples 1021 to 1023
Samples 1025 to 1029
Samples 1031 to 1033

APPENDIX 2: EL4084 GEOCHEMICAL RESULTS

PROJECT ASSAY REPORT 2 : Project 8610
(SAMPLE DETAIL SCAN) SDF # H00662

	SAMPLE ID	DESC	Au (CONF)	Cu (CONF)	Pb (CONF)	Zn (CONF)	As (CONF)	Ni (CONF)
	210 1011	ANOM 17 SANDY FERRUGINOUS	<0.010	100	45	20	75	42
	210 1012	ANOM 17 SANDY FERRUGINOUS	<0.010	28	42	8	53	30
	210 1013	EAST OF ANOM 17	<0.010	45	91	72	45	73
	210 1014	ANOM 18 YELLOW BROWN FERRUG. D.C.	<0.010	24	40	41	29	67
	210 1015	ANOM 39 LATERITE	<0.010	18	36	17	27	49
	210 1016	ANOM 39 LIMONITIC CHERT	<0.010	17	26	12	24	23
	210 1021	FERRUGINOUS SHALE ANOM 31	<0.010	8	22	9	11	21
	210 1022	FERRUGINOUS QUARTZITE ANOM 31	<0.010	<5	35	<5	8	43
	210 1023	QTZ CHERT SST.2% FERRUG.MATRIX?2 ANOM31	<0.010	34	66	11	12	34
	210 1025	MANGANIFEROUS FLAGGY S.ST.UNMED.ANOM 4E	<0.010	16	48	89	11	29
	210 1026	LIMONITIC QTZ SANDSTONE ANOM 35	<0.010	37	17	12	10	12
	210 1027	CHERT BRECCIA ANOM 35	<0.010	33	50	85	12	13
	210 1028	FERRUG.QTZ GRIT-SANDSTONE ANOM 35	<0.010	379	33	57	79	66
	210 1029	FERRUG.S.STONE c MnO ANOM 36	<0.010	49	49	70	92	93
→	210 1031	LATERITE ANOM 25	<0.010	1200	43	165	99	301
	210 1032	RED/BROWN CHLORITE CHERT ANOM 25	<0.010	124	35	25	13	63
	210 1033	BASIC VOLCANIC REDDISH BROWN ANOM 25	<0.010	26	41	60	2	100

APPENDIX 2: EL4084 GEOCHEMICAL RESULTS

PROJECT ASSAY REPORT 2 : Project 8610
(SAMPLE DETAIL SCAN) SDF # H00662

	SAMPLE ID	DESC	Co (CONF)	Mn (CONF)	Cr (CONF)	Ag (CONF)	V (CONF)	Fe (CONF)
	210 1011	ANOM 17 SANDY FERRUGINOUS	30	433	80	<1	67	18.3%
	210 1012	ANOM 17 SANDY FERRUGINOUS	20	475	115	<1	254	14.8%
→	210 1013	EAST OF ANOM 17	968	41.2%	67	<1	285	1.28%
	210 1014	ANOM 18 YELLOW BROWN FERRUG. O.C.	51	1510	50	<1	54	25.6%
	210 1015	ANOM 39 LATERITE	45	3780	41	<1	22	26.0%
	210 1016	ANOM 39 LIMONITIC CHERT	12	422	140	1	99	7.29%
	210 1021	FERRUGINOUS SHALE ANOM 31	10	297	64	<1	25	4.96%
	210 1022	FERRUGINOUS QUARTZITE ANOM 31	7	104	92	<1	19	3.16%
	210 1023	QTZ CHERT SST.BX FERRUG.MATRIX?? ANOM31	10	49	118	<1	39	6.12%
→	210 1025	MANGANIFEROUS FLAGGY S.ST.UNMED.ANOM 4E	143	13.3%	56	<1	116	2.71%
	210 1026	LIMONITIC QTZ SANDSTONE ANOM 35	5	257	104	<1	45	2.72%
	210 1027	CHERT BRECCIA ANOM 35	7	348	107	<1	21	1.60%
	210 1028	FERRUG.QTZ GRIT-SANDSTONE ANOM 35	60	1160	93	1	131	13.3%
	210 1029	FERRUG.S.STONE c MnO ANOM 36	93	1610	33	<1	82	36.2%
	210 1031	LATERITE ANOM 25	84	215	59	<1	99	25.5%
	210 1032	RED/BROWN CHLORITE CHERT ANOM 25	20	64	75	<1	72	9.61%
	210 1033	BASIC VOLCANIC REDDISH BROWN ANOM 25	60	599	46	<1	331	7.00%

APPENDIX 2: EL4084 GEOCHEMICAL RESULTS

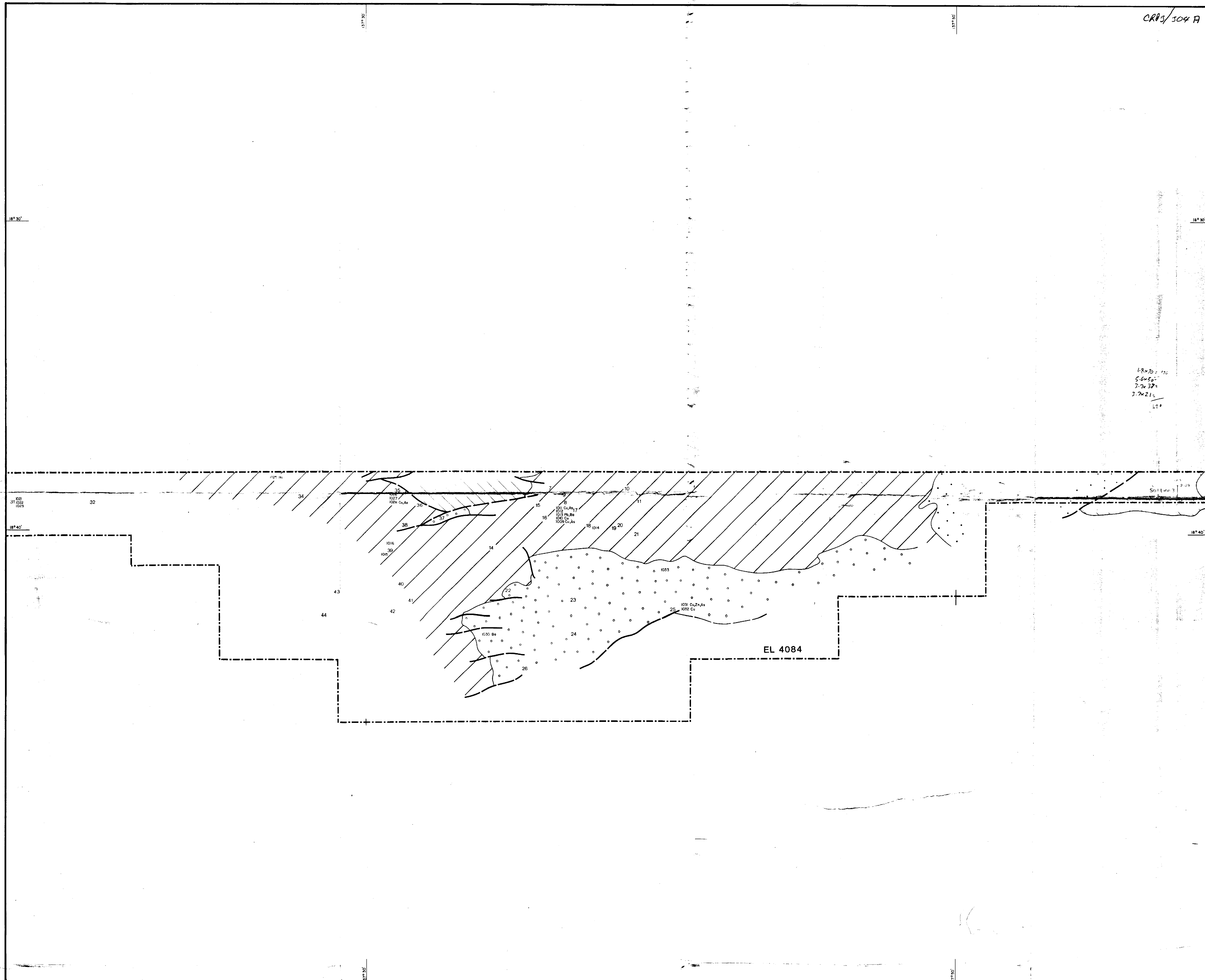
PROJECT ASSAY REPORT 2 : Project 8610
(SAMPLE DETAIL SCAN) SDF # H00662

SAMPLE ID	DESC	Ca (CONF)	Mg (CONF)	Al (CONF)	Ti (CONF)	Ba (CONF)	Sr (CONF)
210 1011	ANOM 17 SANDY FERRUGINOUS	249	339	1.20%	254	40	8
210 1012	ANOM 17 SANDY FERRUGINOUS	197	140	1.43%	494	56	10
210 1013	EAST OF ANOM 17	963	240	8550	185	1.16%	445
210 1014	ANOM 18 YELLOW BROWN FERRUG. O.C.	672	2470	2.33%	887	259	23
210 1015	ANOM 39 LATERITE	515	514	1.61%	616	174	11
210 1016	ANOM 39 LIMONITIC CHERT	680	725	1.23%	339	270	50
210 1021	FERRUGINOUS SHALE ANOM 31	832	623	1.92%	1050	153	33
210 1022	FERRUGINOUS QUARTZITE ANOM 31	224	180	8870	561	69	62
210 1023	QTZ CHERT SST.BX FERRUG.MATRIX?2 ANOM31	121	74	6890	371	17	33
210 1025	MANGANIFEROUS FLAGGY S.ST.UNMED.ANOM 4E	308	175	1.92%	292	1780	89
210 1026	LIMONITIC QTZ SANDSTONE ANOM 35	164	92	4460	139	163	63
210 1027	CHERT BRECCIA ANOM 35	240	72	2940	59	74	16
210 1028	FERRUG.QTZ GRIT-SANDSTONE ANOM 35	360	256	6480	277	162	16
210 1029	FERRUG.S.STONE c MnO ANOM 36	896	528	7520	332	81	40
210 1031	LATERITE ANOM 25	285	218	1.61%	582	63	22
210 1032	RED/BROWN CHLORITE CHERT ANOM 25	197	2580	4.79%	1990	381	9
210 1033	BASIC VOLCANIC REDDISH BROWN ANOM 25	2240	2.36%	6.42%	9780	671	14

APPENDIX 2: EL4084 GEOCHEMICAL RESULTS

PROJECT ASSAY REPORT 2 : Project B610
(SAMPLE DETAIL SCAN) SDF # H00662

SAMPLE ID	DESC	Mo (CONF)	U (CONF)
210 1011	ANOM 17 SANDY FERRUGINOUS	<10	<15
210 1012	ANOM 17 SANDY FERRUGINOUS	<10	<15
210 1013	EAST OF ANOM 17	<10	<15
210 1014	ANOM 18 YELLOW BROWN FERRUG. O.C.	<10	<15
210 1015	ANOM 39 LATERITE	<10	<15
210 1016	ANOM 39 LIMONITIC CHERT	<10	<15
210 1021	FERRUGINOUS SHALE ANOM 31	<10	<15
210 1022	FERRUGINOUS QUARTZITE ANOM 31	<10	<15
210 1023	QTZ CHERT SST.BX FERRUG.MATRIX?Z ANOM31	<10	<15
210 1025	MANGANIFEROUS FLAGGY S.ST.UNMED.ANOM 4E	<10	<15
210 1026	LIMONITIC QTZ SANDSTONE ANOM 35	<10	<15
210 1027	CHERT BRECCIA ANOM 35	<10	<15
210 1028	FERRUG.@TZ GRIT-SANDSTONE ANOM 35	<10	<15
210 1029	FERRUG.S.STONE c MnO ANOM 36	<10	<15
210 1031	LATERITE ANOM 25	<10	<15
210 1032	RED/BROWN CHLORITE CHERT ANOM 25	<10	<15
210 1033	BASIC VOLCANIC REDDISH BROWN ANOM 25	<10	<15



ANACONDA Australia Inc.

Northern Territory

GENERAL GEOLOGY-
AIRPHOTO ANOMALIES-
RECONNAISSANCE
GEOCHEMISTRY

PROJECT CARRARA RANGE	
GEOLOGIST A.D.B.	SCALE 1: 100.000
CHECKED date	DRAWN C.P.
REVISION date	DATE June 1982
REVISION date	PLATE No 1
REVISION date	PLAN No 9512A

LEGEND

- South Nicholson Group
- Lawn Hill Formation } McNamara Group
- Musselbrook Formation } McNamara Group
- Carrara Range

35 Airphoto Anomaly

1024 Geochemical Sample Number (Prefixed 8610 210, 1000's Rockchips 2000's Soil and Stream seds.

Cu > 100ppm
Pb > 70
Zn > 100
As > 60
Ba > 900