934001

70-705 S8/20 58

Copy to Mines Dept Hobart -

RECEIVED 14 APR 1971 DEPT. OF MINES

TASMINEX N. L.

MICROFILMED

REPORT ON FRANKLIN RIVER, RUTILE PROSPECT S.P.L.70 TASMANIA

HALL, RELPH & ASSOCIATES PTY. LTD.

17th MARCH, 1971

AMG REFERENCE POINTS ADDED

CONTENTS

APPENDICES

Location vague

HALL, RELPH & ASSOCIATES PTY. LTD.
GEOLOGICAL & EXPLORATION CONSULTANTS

L. R. HALL. M.Sc., M.A.A.P.G., M.Aus.I.M.M.
R. E. RELPH. B.Sc., M.Aus.I.M.M.

9TH FLOOR
36-38 CLARENCE STREET,
SYDNEY, 2000, AUSTRALIA
TEL.: 29-5631

17th March, 1971.

INTRODUCTION

Subsequent to the completion of a four wheel drive track into the prospect in late February of this year an investigation was carried out to determine the economic potential of the leased area with particular attention being given to the reported rutile occurrences.

PREVIOUS EXPLORATION

Early in 1970 an exploratory sampling programme was carried out in the southern areas of S.P.L.70 where alluvial rutile had been reported. Sampling of the creek wash and alluvial flats was concentrated in three major areas:

1. An area covering approximately 100 acres immediately north of the suspension bridge in the central western portion of S.P.L.70. The results indicate only small amounts of heavy minerals of which ilmenite was the dominant component. Rutile constituted approximately 30% of the concentrates.

2. Creeks draining the southern slopes of Mt. Maud over an area of approximately one square mile. Only small amounts of heavy minerals were detected with rutile constituting a larger fraction of the concentrates than those in the western area.

3. In the south-eastern corner of the prospect, immediately north of the Hydro Electric Commission hut over an area of approximately 100 acres. Coarse rutile was contained in all of the samples obtained from the creek wash of this area while other heavy minerals including ilmenite were present only in minor amounts. Two of the creeks draining the western side of a north-south trending ridge were panned by Mr. Foy and both creeks showed good rutile values. A sample submitted for analysis contained a grade of rutile calculated to be 31.25 lbs/cubic yard.

The two creeks mentioned above were included in an area of approximately 60 acres which was the subject of detailed examination in a recent investigation conducted in late February early March of this year.

The aims of the investigation were:

1. To determine

a) The extent and thickness of alluvial cover
b) The rutile content of creek wash and alluvial material covering the slopes and flats of adjacent areas.

2. To expose the bedrock in selected areas with a view to tracing the source of the rutile.

DISTRIBUTION OF ALLUVIAL RUTILE

The alluvial cover was found to extend over the slopes and flats in interfluvial areas and upper reaches of the creeks. The creek wash is narrow, averaging a few feet in width, and shallow, ranging from one to two feet in thickness. Samples collected from the slopes and flats contained a maximum thickness of 13 inches of coarse stony wash which was reduced in places to a single layer of quartz fragments less than 1 inch thick.

The topography of the area is not indicative of extensive and thick alluvial deposits, with only a small portion consisting of flat or gently sloping country. Where flat areas have developed, in the upper reaches of the creeks, there is only a very thin alluvial cover.

Rutile is concentrated in the creek wash, particularly in the bottom layer where coarse prismatic crystals up to 2cm in size are found. Pockets of rutile occur in suitable environments for the accumulation of heavy minerals e.g. at the intersection of two creeks where small hollows have formed in the underlying schist.

SAMPLING

A sampling programme was initiated to evaluate an area considered to be reasonably representative and a section approximately 1,200 feet by 900 feet was selected. Three east-west bulldozer lines were cut through the scrub and sample pits were dug at approximately 100 feet intervals along the lines. Individual descriptions of the profiles exposed in the sampling

pits are contained in the appendix. The pits disclosed a surface cover of clay up to 12 inches thick, underlain by quartz stony wash varying in thickness to 10 inches. Decomposed quartz-mica schist occur below the wash.

Samples of wash material equal to one five hundredth of a cubic yard were panned. The panner's concentrate samples were submitted to R. K. Newman & Co. Pty. Ltd. of Sydney for removal of silica sand and weighing of the heavy mineral obtained. Results are tabulated below:

Sample No.	Wgt. of heavy mineral	Grade of wash - ounces of heavy mineral per cubic yard
1001	0.020 ounces	1.0
1002	0.077 ounces	3.9
1003	0.011 ounces	0.5
1004	0.044 ounces	2.5
1005	0.020 ounces	1.0
1006	0.001 ounces	trace
1007	0.003 ounces	trace
1008	0.001 ounces	trace
1009	0.002 ounces	trace
1010	0.017 ounces	0.9
1011	0.011 ounces	0.5
1012	0.011 ounces	0.5
1013	0.024 ounces	1.2
1014	0.058 ounces	2.9
1015	0.003 ounces	trace

A plan included in the appendix shows the locations of the above samples. Sample points showing no results either contained insufficient wash to sample or no concentrate was obtained from panning.

R. K. Newman & Co. Pty. Ltd. advised that much of the fine grained heavy mineral was weakly magnetic and would probably be ilmenite. The occasional higher values obtained are due to the presence of small slugs of rutile.

If the market price of rutile is taken at $150.00 per ton f.o.b. the highest value obtained from sampling indicates a

grade of 1.6 cents per cubic yard.

SOURCE OF RUTILE

The coarse grain size and lack of rounding characteristic of the rutile occurring in the creek wash indicates only a short distance of transport. As outcrop was extremely poor in the area of investigation it was necessary to cut a series of shallow trenches into the creek banks to expose the bedrock. Quartz-mica schist striking north-east and dipping steeply to the north-west were found to underlie a thin cover of alluvial wash. The schist which consist predominately of muscovite contains numerous discontinuous quartz pods up to 6 inches wide, elongated parallel to the cleavage direction and extending over a strike length up to 10 feet. A number of factors indicate the quartz as a possible source of the rutile.

1. Disseminated, subhedral rutile crystals about 6mm long occur within a quartz body uncovered in the creek near sample point A6. However it was discontinuous at depth and along strike and could only be traced over a strike length of about 9 feet.

2. A number of rutile crystals recovered from the creek wash were found adhering to quartz.

3. Several large quartz fragments, contain rutile crystals sparsely disseminated within them.

4. Alluvial rutile appears to be confined to the wash which contain quartz fragments. The clay horizon overlying the quartz rich alluvial material contains very little rutile.

It should be pointed out however that the majority of quartz bodies uncovered and examined were found to be barren of rutile mineralization and if the quartz is the only source of rutile in the area, then the grade would appear to be very low. Another possibility is the local concentration of rutile within the schist. However there is no field evidence to support this theory. Sampling and panning of the decomposed schist failed to reveal any rutile and the occasional coarse rutile crystal occurring in the alluvial cover of the flats and slopes seems to support a sparsely disseminated mode of origin. The concentration of alluvial rutile in the creek wash could be explained by a greater depth of erosion in these areas. A large proportion of the quartz

and schist particles have been washed down stream leaving a rutile rich wash with a particularly concentrated lower layer due to prolonged sorting under the effects of gravity.

CONCLUSIONS

1. Panning and analysis of the samples obtained from the alluvial cover on the slopes and flats revealed very low heavy mineral values.

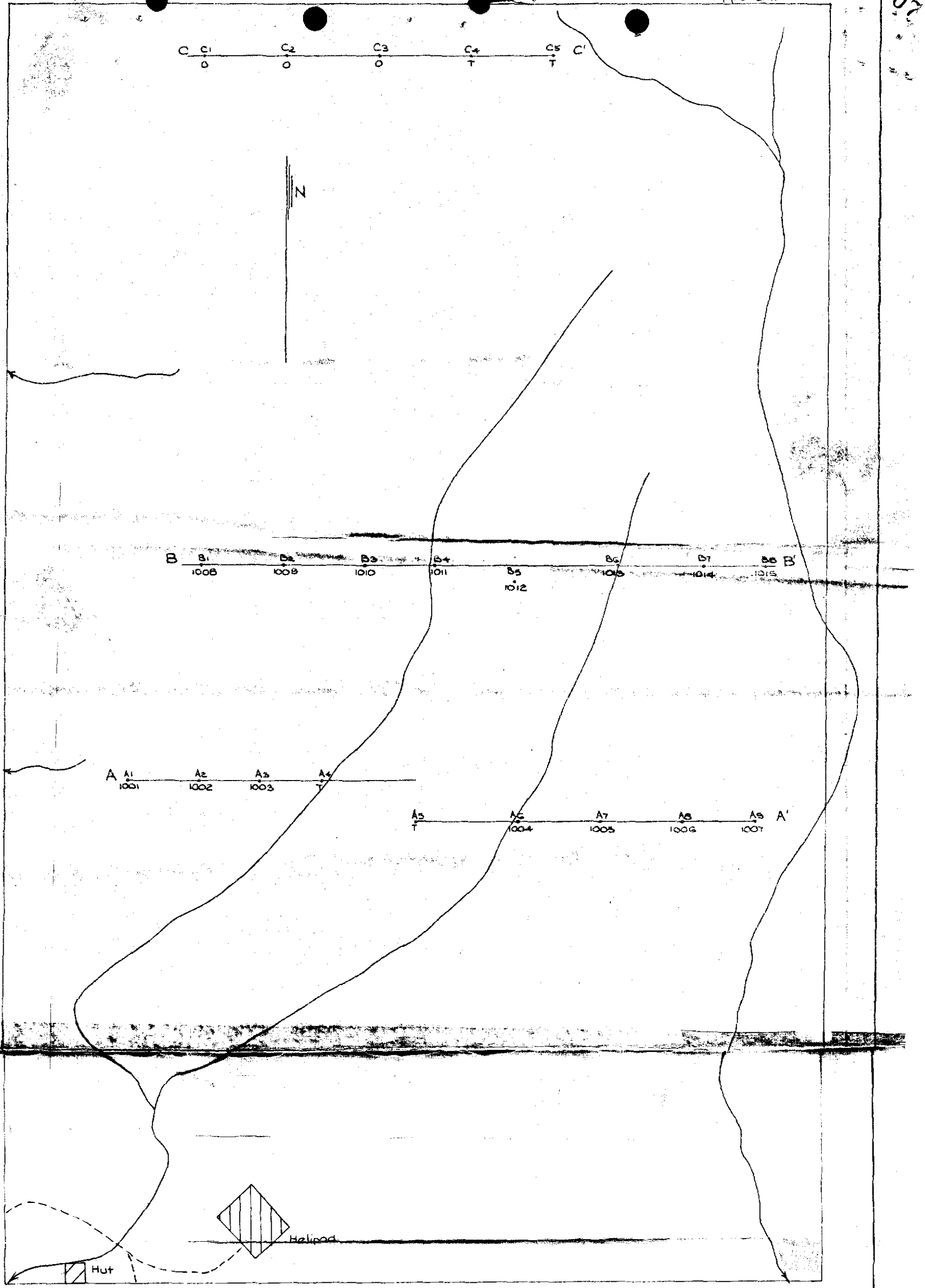
2. The creek wash, although locally concentrated in rutile is too limited to be of economic interest.

3. The quartz within the schist appears to be a source of rutile. However the sparsely disseminated nature of the rutile distribution as observed in the bedrock exposed near the surface, points to low grade source, of little economic potential.

HALL, RELPH & ASSOCIATES PTY. LTD.

B. L. Wood, D.Sc.

JP:pa



A——A' Sample Line
A2 Sample No.
1001 Panner's concentrate sample
T Trace of rutile - insufficient to analyse
0 Insufficient wash to sample
Track
Creek

5 cm

TASMINEX N.L.

PLAN OF AREA SAMPLED

FRANKLIN RIVER RUTILE PROSPECT

S.P.L. 70, TASMANIA

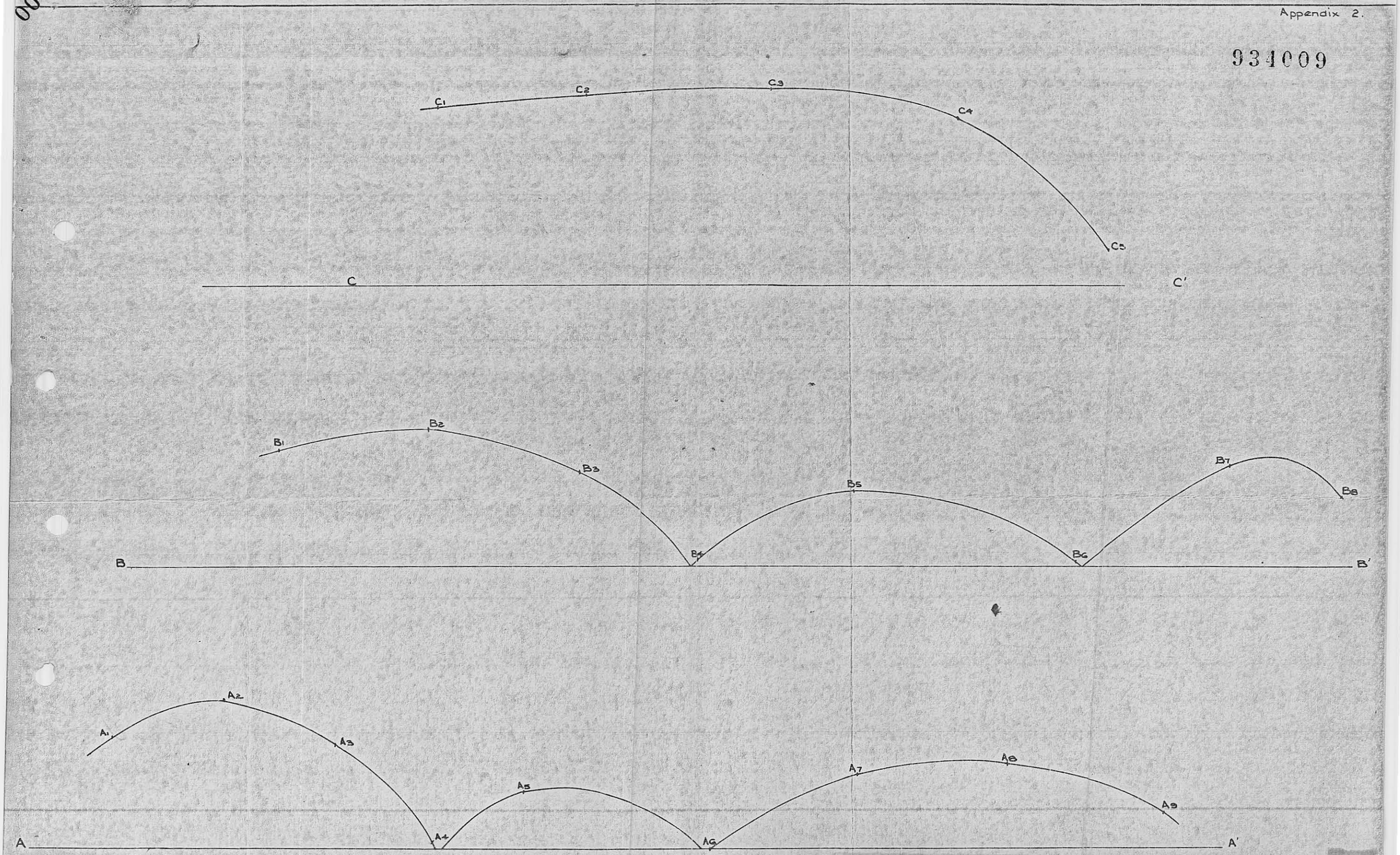
0 150 300 450
FEET

HALL, RELPH & ASSOCIATES PTY. LTD.

008

Appendix 2.

934009



5 cm

TASMINEX N.L.

TOPOGPAPHICAL PROFILES OF SAMPLING LINES

FRANKLIN RIVER RUTILE PROSPECT

S. P. L 70, TASMANIA

Vertical Scale 0 75 150 225 FEET

Horizontal Scale 0 75 150 225 FEET

HALL, RELPH & ASSOCIATES PTY. LTD.

009

APPENDIX 3

934010

R. K. NEWMAN & CO. PTY. LTD.

PUBLIC ANALYSTS : CONSULTING CHEMISTS

BH/NG

DIRECTORS:
R. K. NEWMAN, B.SC., A.R.A.C.I.
R. FISHER, D.SC., A.R.A.C.I.
B. C. HUGHES
J. D. SEAMONS

PARKER HOUSE
17-23 PARKER STREET
SYDNEY, N.S.W. 2000
TELEPHONE: 211-4543

The Manager,
Hall, Relph & Associates Pty.Ltd.,
9th Floor, 36-38 Clarence Street,
SYDNEY. N.S.W. 2000.

15th March, 1971.

Dear Sir:

Attention Mr. M. Moore

Following are the results of our determinations of the heavy mineral contents of the fifteen panners' concentrate samples submitted by you on 8/3/71:-

Sample No.	Total Heavy Minerals
A1001	0.585 gms.
A1002	2.194 gms.
A1003	0.322 gms.
A1004	1.399 gms.
A1005	0.575 gms.
A1006	0.033 gms.
A1007	0.091 gms.
A1008	0.024 gms.
A1009	0.068 gms.
A1010	0.473 gms.
A1011	0.306 gms.
A1012	0.306 gms.
A1013	0.682 gms.
A1014	1.655 gms.
A1015	0.095 gms.

It was noted that the fine black grains in all the samples were weakly magnetic, indicating that they were in

fact Ilmenite. The coarser grains were not magnetic.

The separated heavy minerals are being returned under separate cover.

Yours faithfully,

R. K. Newman & Co. Pty.Ltd.

Per: B. Hughes

B. B. C. Hughes

APPENDIX 4

SAMPLE DESCRIPTIONS

ft in-ft in

A1 0'0" - 0'8" - Black clay and peat.
0'8" - 0'11"- Coarse stony wash. Angular quartz fragments up to 6 inches long.
Decomposed yellow-brown quartz-mica schist underlies the wash layer.

Comment - No heavy mineral was present in the decomposed schists sampled.

The sample obtained from the wash contained only fine rutile. The panner's concentrate was designated No.1001 (see analytical results).

A2 0'0" - 0'10" - Black, grey clay and organic matter.
0'10"- 1'6" - Stony wash containing angular quartz fragments up to 2 inches long.
Decomposed quartz-mica schist underlies the wash.

Comment - A trace of very fine heavy mineral was detected in the schist sample.

The sample obtained from the wash contained one subhedral rutile crystal approximately 8mm long plus a number of finer grains. The panner's concentrate was designated No.1002 (see analytical results).

A3 0'0" - 0'6" - Black clay and organic soil.
0'6" - 1'1" - Stony wash containing quartz fragments up to 1 inch long.

Extremely decomposed schist underlies the wash.

Comment - No rutile was detected in the schist sample.
A small amount of fine heavy mineral occurred in the wash sample. The panner's concentrate was designated No.1003 (see analytical results).

A4 0'0" - 1'0" - Clay and peat layer.

1'0" - 1'4" - Coarse stony wash containing angular quartz fragments and undecomposed schist fragments up to 4 inches long. The schist particles constitute about 50% of the wash.

Quartz-mica schist, partially decomposed, underlies the wash layer.

Comment - Only a trace of very fine heavy mineral was contained in the wash - insufficient for analysis.

A5 0'0" - 0'7" - Dark clay and peat layer.

Occasional wash stones up to 2 inches long form an irregular layer between the surface clay cover and the decomposed schists.

Comment - No rutile was contained in the schist sample.

There was insufficient wash material to sample.

A6 0'0" - 0'6" - Dark grey, black clay with a surface peat layer
0'6" - 1'4" - Coarse stony wash containing quartz fragments up to 6 inches long.

Decomposed quartz mica schist was exposed below the wash containing numerous discontinuous quartz layers up to 1 inch wide striking on a bearing of 70° and dipping steeply to the north west.

Comment - Several rutile fragments about 6mm long occurred in the wash sample. One crystal adhered to quartz. The panner's concentrate was designated No. 1004 (see analytical results).

Rutile crystals about 6-7mm long occurred within one quartz layer exposed in the creek bottom in the near vicinity of the sample point.

A7 0'0" - 0'10" - Black clay, peat layer.
0'10" - 1'6" - Stony wash containing quartz fragments up to 1 inch long.

Extremely decomposed quartz-mica schist underlies the wash.

Comment - No rutile was contained in the decomposed schist sample.

The stony wash contained one rutile crystal about 6mm long with a number of finer grains. The panner's concentrate was designated No.1005 (see analytical results).

A8 0'0" - 0'6" - Black clay and peat layer.
0'6" - 1'10"- Abandoned drainage feature containing coarse stony wash with quartz fragments up to 5 inches long.
Decomposed quartz-mica schist underlies the wash.

Comment - The wash sample contained one small rutile crystal about 2mm long with a very small quantity of fine rutile. The panner's concentrate was designated No.1006 (see analytical results).

A9 0'0" - 1'0" - Dark clay and organic soil.
1'0" - 1'5" - Coarse stony wash containing quartz fragments up to 6 inches long.
Extremely decomposed quartz-mica schist underlies the wash layer.

Comment - No rutile was contained in the decomposed schist sample. Fine rutile occurred in the wash and the panner's concentrate was designated No.1007 (see analytical results).

B1 0'0" - 0'6" - Dark grey, black clay with a peat horizon.
0'6" - 1'1" - Stony wash containing angular quartz fragments up to 3 inches long.
Decomposed quartz-mica schist underlies the wash.

Comment - A small quantity of fine heavy mineral occurred in the wash. The panner's concentrate was designated No.1008 (see analytical results).

No heavy mineral was detected in the decomposed schist.

B2 0'0" - 1'1" - Black clay and peat layer.
1'1" - 1'1" - Stony wash containing quartz fragments up to 2 inches long.
Decomposed quartz-mica schist containing a number of discontinuous quartz layers up to 1 inch wide.

Comment - No rutile occurred in the sample taken from the decomposed schist.
A small quantity of fine heavy mineral occurred within the wash. The panner's concentrate was designated No1009 (see analytical results).

B3 0'0" - 0'8" - Black clay and organic soil cover.
0'8" - 1'6" - Coarse stony wash containing quartz fragments up to 5 inches long.
Partially decomposed quartz-mica schist underlies the wash.

Comment - A few small rutile fragments about 1-2mm occurred within the stony wash. The panner's concentrate was designated No.1010 (see analytical results)

B4 0'0" - 0'6" - Clay - peat layer.
0'6" - 0'10"- Coarse stony wash containing fragments of quartz up to 4 inches long.
Partially decomposed quartz-mica schist underlies the wash.

Comment - Only fine rutile was detected in the sample taken from the wash. The panner's concentrate was designated No.1011 (see analytical results).

No rutile was detected in the schist.

B5 0'0" - 0'6" - Dark grey and black clay and surface peat.
0'6" - 1'0" - Stony wash containing quartz fragments up to 1 inch long.
Decomposed schist underlies the wash.

Comment - The sample obtained from the wash contained fine rutile. The panner's concentrate was designated No.1012 (see analytical results).

The sample obtained from the schist contained no heavy mineral.

B6 0'0" - 0'9" - Dark clay and surface peat.
0'9" - 1'5" - Coarse stony wash with quartz fragments up to 5 inches long.
Decomposed biotite rich quartz-mica schist underlies the wash.

Comment - The sample obtained from the wash contained one rutile crystal 6mm long together with a number of finer grains. The panner's concentrate was designated No.1013 (see analytical results).

No heavy mineral was obtained from the schist.

B7 0'0" - 0'6" - Dark clay and peat cover.
0'6" - 0'9" - Stony wash containing quartz fragments up to 1 inch long.
Decomposed quartz-mica schist containing discontinuous quartz layers up to 2 inches wide underlies the stony wash.

Comment - One large rutile crystal approximately 8mm long together with a number of finer grains was found in the wash. The panner's concentrate was designated No.1014 (see analytical results).

B8 0'0" - 0'6" - Dark clay and peat cover.
0'6" - 1'2" - Stony wash containing quartz fragments up to 3 inches long.
Decomposed brown-yellow quartz mica schist underlies the wash.

Comment - A small quantity of fine rutile occurred in the sample taken from the wash. The panner's concentrate was designated No.1015 (see analytical results).

C1 0'0" - 1'0" - Organic soil underlain by dark clay.
1'0" - 1'1" - Irregular layer of quartz rubble up to 1 inch long.
Decomposed quartz-mica schist underlies the wash.

Comment - There was insufficient material in the wash to warrant sampling.

A sample taken from the schist contained no heavy mineral.

C2 0'0" - 1'0" - Dark clay and peat horizon.
A thin irregular layer of quartz pebble occurred between the clay and the decomposed schist.

Comment - No wash sample was taken as there was insufficient material.

A sample of the decomposed schist contained no heavy mineral.

C3 0'0" - 0'6" - Black and grey clay with surface organic layer.
Occasional pebbles up to 1 inch long form an irregular layer between the surface clay and the decomposed schist.

Comment - There was insufficient wash material to warrant sampling.

No rutile was found in the decomposed schist.

C4 0'0" - 0'6" - Clay and peat overburden.
0'6" - 1'2" - Stony wash containing quartz fragments up to 1 inch long.
Decomposed quartz-mica schist underlies the wash.

Comment - The wash contained only a trace of fine heavy mineral. No rutile was contained in a sample taken from the schist.

C5 0'0" - 0'6" - Clay and peat overburden.
0'6" - 0'11"- Coarse stony wash containing quartz fragments up to 6 inches long.
Decomposed quartz-mica schist underlies the wash.

Comment - A trace of heavy mineral was detected in the wash.

HALL, RELPH & ASSOCIATES PTY. LTD.
GEOLOGICAL & EXPLORATION CONSULTANTS

L. R. HALL. M.Sc., M.A.A.P.G., M.Aus.I.M.M.
R. E. RELPH. B.Sc., M.Aus.I.M.M.

934018 MINES DEPT.

9TH FLOOR
36-38 CLARENCE STREET,
SYDNEY, 2000, AUSTRALIA
TEL.: 29-5631

SPL 70 D. M. LEWIS
QUAD 58

2nd March, 1970

TASMINEX N.L.

FRANKLIN RIVER RUTILE PROSPECT

A preliminary examination of the Franklin River rutile prospect, in the vicinity of Frenchman's Cap, was carried out during December, 1969. It is understood that this area is held under Special Prospecting Licence No. 70 of 11.5 square miles by Mr. D. M. Lewis and that this property is under option to Tasminex. This preliminary examination was necessarily brief as access can only be obtained by helicopter, and aircraft availability was limited.

Two small creeks draining the western side of a north-south trending ridge, consisting of quartz sericite schists, were inspected and panned for rutile. Both creeks showed good rutile values in a limited volume of creek wash. The rutile occurs as large crystal fragments with little rounding. Usually the size is about 8 mm but pieces up to 2 cm have been found. The coarse size and lack of rounding indicates only a short distance of transport. Some quartz and sericite schist were found adhering to individual crystals.

A composite sample resulting from the panning of four half dishes from the main creek was submitted to AMDEL for heavy mineral analysis. A copy of AMDEL's report No. MP2645-70 is attached. The sample indicated that the creek wash could be expected to yield at the rate of 31.25 lbs of TiO_2 to the cubic yard.

While the wash examined in these creeks is narrow, only averaging a few feet in width, and shallow, only

averaging a few inches in depth, air reconnaissance showed several large flats in the upper reaches of the creeks. These upper flats could, if the grade is sustained and if they are sufficiently deep, contain enough material to justify a mining operation.

It is recommended that the alluvial flats in the upper sections of these creeks be examined by auger drilling and panning. It is also recommended that a reconnaissance be undertaken over the area to determine the extent of this alluvial rutile and that an attempt be made to trace it to the source rocks. If the source rocks appear to contain sufficient rutile to justify a hard rock mining operation, a programme of testing should be initiated.

Calculation of Grade

Wt. of sample		219.03 g
Wt. of concentrate		134.72 g
	87.4% of	134.72 g
Wt. of TiO_2		114.75 g
	i.e.	114.75 lbs = 0.25 lbs
		454

Allowing 500 half dishes to the cubic yard

$$\frac{0.25 \times 500}{4}$$

i.e. 31.25 lbs/cubic yard

The loss during panning appeared to be 10-20% of the heavies present.

HALL, RELPH & ASSOCIATES PTY. LTD.

MF:rc

CONYNGHAM ST. FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'AMDEL' ADELAIDE

033

934020

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: MP 3/414/0

YOUR REFERENCE:

13th February, 1970.

The Geologist in Charge,
Hall Relph and Associates Pty Ltd,
9th Floor,
36-38 Clarence Street,
SYDNEY, N.S.W. 2000

REPORT MP 2645-70

YOUR REFERENCE:	Letter dated 23/1/70.
MATERIAL:	Gravel.
IDENTIFICATION:	Sample No. 307.
DATE RECEIVED:	27/1/70
WORK REQUIRED:	Heavy mineral separation, identification, and spectrographic scan, together with assay for Ti, Cr, Fe and Mn.

Investigation and Report by: M.J.W. Larrett.

Analysis by: J. Powell and R. Robinson.

Services Manager: Dr A.H. Spry.

for N. Draper
Director.

Telephone - Head Dept.

HEAVY MINERAL ANALYSIS

One sample of gravel (number 307), was submitted for heavy mineral analysis.

The whole sample was oven-dried, weighed, and subjected to a heavy mineral separation using TBE, (tetrabromoethane SG 2.96), as the separating medium; and this resulted in a value of 61.5 weight percent heavy minerals.

A brief optical examination of a representative portion of the heavy fraction in standard RI oil-mounts and by binocular microscope, showed it to be practically mono-minerallic, consisting predominantly of fairly coarse lustreous grey, stumpy prismatic crystal fragments, a few of which are composite with quartz fragments; together with traces of garnet and tourmaline in the finest fractions.

The general morphology of the dominant phase, namely lustre, colour, form, and prominent striations, suggested rutile as the probable identity of the material, and a subsequent x-ray powder diffraction photograph prepared of some of the material confirmed this diagnosis. A representative sample was sent for a spectrographic scan, the results of which are attached, and a further portion was assayed for Ti, Fe, Cr, and Mn; and these results are shown below.

	%
TiO_2	87.4
FeO	2.25
Cr_2O_3	0.02
MnO	0.05

As can be seen from the analysis, some 10% of the composition is unaccounted for, and it was thus decided to prepare a polished section (PS 13059), in order to examine the mineral for any inclusions etc. which might account for this amount. Careful mineragraphic examination failed to reveal any such inclusions; but several of the rutile grains were observed to have attached quartz fragments up to 4 mm diameter.

It is considered that the quartz, possibly with a little ferric iron, is responsible for the outstanding 10% of composition, and that removal of this silica by crushing

and heavy media processes would probably yield a fairly pure rutile concentrate which could then be resubmitted for analysis. This line of investigation will be expedited upon receipt of your authorization.

jjp.2

AMDEL ANALYTICAL SERVICE

036

JOB: 2672/79

Semi-Quantitative Spectrographic Analysis Schemes A1, A2, A3, A4, A5 & A6 BATCH .....

Results in ppm unless otherwise stated. Detection limits in brackets

Sample No.	307
A1	
Co (5)	200
Ni (5)	X
Cr (20)	200
V (10)	150
W (50)	500.
Mo (3)	X
Mn (10)	600
Ta (100)	X
Nb (20)	X
Be (1)	X
Th (100)	X
Pt (10)	X
Pd (10)	X
Os (10)	X
Ir (2)	X
Rh (2)	X
Ru (2)	X
A2	
Cu (0.5)	50
Pb (1)	30
Zn (20)	1000
Sn (1)	40
Cd (3)	X
Bi (1)	X
Ag (0.1)	X
Au (3)	X
Ga (1)	

Sample No.	307
A2 Contd.	
Ge (1)	X
As (50)	1500
Sb (30)	X
A3	
Te (20)	
Tl (1)	
P (100)	
A4	
Na (50)	
Li (1)	
A5	
K (5)	
Rb (10)	
Cs (30)	
A6	
Ba (50)	
Sr (10)	
Y (10)	
La (100)	
Ce (300)	
Nd (300)	
Pr (100)	
Ti (100)	
Er (100)	
Sc (50)	
Eu (50)	

Results are semi-quantitative. Elements apparently present in concentrations of economic interest should be redetermined by an appropriate accurate analytical technique X - Not detected at limit

9340023

1 x 29 = 29

023

934024

HALL, RELPH & ASSOCIATES PTY. LTD.
GEOLOGICAL & EXPLORATION CONSULTANTS

L. R. HALL, M.Sc., M.A.A.P.G., M.Aus.I.M.M.
R. E. RELPH, B.Sc., M.Aus.I.M.M.

9TH FLOOR
36-38 CLARENCE STREET
SYDNEY, 2000, AUSTRALIA
TEL.: 29-5631

- Photostats
all Board members
- Sent 8/6
Geol File SPL 70

16 June, 1970

The Manager,
Tasminex N.L.,
93 York Street,
LAUNCESTON. 7250

Dear Sir,

re: Franklin River Rutile Prospect

Further to our report dated 2 March, 1970, additional testing of the concentrate sample submitted to AMDEL has shown that a relatively pure concentrate, 94% TiO_2, can be prepared from this material. Investigations into arsenic as a possible contaminent have shown no arsenic to be present. A copy of AMDEL's report number MP 3381 - 70 dated 8 June, 1970 is attached.

This report indicates that a marketable TiO_2 concentrate can be produced from the Franklin River material and further investigations into the grade, quantity and feasibility of this area are warranted when weather permits.

Yours faithfully,
HALL, RELPH & ASSOCIATES PTY. LTD.,

[signature]

MF:mlc
Encl.

024

934025

CONYNGHAM ST. FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'AMDEL' ADELAIDE

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: MP 3/414/0

YOUR REFERENCE:

8th June, 1970.

Hall Relph and Associates,
9th Floor,
36-38 Clarence Street,
SYDNEY, N.S.W. 2000

RECEIVED
11 JUN 1970
Ans'd.....

ATTENTION: Mr Whiting.

REPORT MP 3381-70

YOUR REFERENCE:	Letter dated 16/3/70.
MATERIAL:	One rutile concentrate.
IDENTIFICATION:	Sample No. 307.
DATE RECEIVED:	19/3/70
WORK REQUIRED:	Crushing and heavy media separation to remove contaminant, and TiO_2 assay of the resulting concentrate. Investigate the source and occurrence of arsenic detected in this sample.

Investigation and Report by: M.J.W. Larrett.

Analysis by: G.R. Holden and M.R. Hanckel.

Officer in Charge, Mineralogy/Petrology Section: Dr K.J. Henley.

K. J. Henley

for N. Draper
Director.

025

COPY

RUTILE CONCENTRATE

934026

The rutile concentrate obtained during processing of Sample 307, Report MP 2645-70, was crushed to liberate the minor amounts of quartz present, and a representative portion of the -100 + 200 mesh fraction was subjected to a heavy mineral separation in tetrabromoethane, TBE SG 2.96. The results are shown below:

Specific Gravity.	Wt %
<2.96	11.0
>2.96	89.0
	100.0

A representative portion of the resultant heavy fraction was submitted for chemical analysis and returned the following values:

	%
TiO_2	94.0
FeO	2.75
Fe_2O_3	0.50
SiO_2	0.62
Loss on Ignition (1100°C)	0.57

In order to investigate the source and occurrence of the arsenic, detected earlier by spectrographic analysis, polished section number 13059 was exhaustively examined at high magnification in an attempt to locate any inclusions, exsolution phenomena, or grains of arsenic-bearing minerals such as arsenopyrite, which might account for the presence of this element. This optical examination resulted only in the detection of a few minute exsolution lamellae of ilmenite.

All evidence at this stage pointed to the presence of arsenic in solid solution in the rutile, and as this situation was considered extremely doubtful, it was decided to run a check analysis for arsenic by x-ray fluorescence. This analysis resulted in a value of <0.01% arsenic, and a subsequent check of the original spectrographic data showed that an error both for arsenic and zinc values had been made, due largely to the presence of weak titanium lines extremely close, (0.9 Å° in one case), to those for arsenic and zinc.

It should be noted that, even after crushing and heavy liquid separation, minoramounts of quartz (0.62%SiO_2) were still present as composite grains with rutile. In addition some ilmenite was also present and accounted for 2.75% FeO, and probably part of the 0.60% Fe_2O_3 shown by chemical analysis. Apologies are made for the unfortunate analytical error, and of course no charges will be made for the mineralogical search for the non-existent As.

jjp.2

FROM Department of Mines Laboratory, Launceston, Tasmania. TO Tasminex N.L., Burnie.

S.P.L. 70

Samples 702532, 702533, 702534, 702539 and 702550 were treated on the magnetic separator to produce magnetic and non-magnetic fractions. The large stone in sample 702550 was excluded from treatment and subsequent assays. Very clean ilmenite was produced in the magnetic fractions except for sample 702539 which contained other magnetic minerals including garnet.

The results of these samples can be summarised as follows:

702532	Sample 3	40.0% TiO_2	with 32.0% occuring as ilmenite,	8.0% occuring as rutile.
702533	Sample 4	44.5% TiO_2	with 35.0% occuring as ilmenite,	9.5% occuring as rutile.
702534	Sample 5	40.7% TiO_2	with 32.2% occuring as ilmenite,	8.5% occuring as rutile.
702539	Sample 10	23.6% TiO_2	with 8.4% occuring as ilmenite,	15.2% occuring as rutile.
702550	Sample 22	37.6% TiO_2	with 17.8% occuring as ilmenite,	19.8% occuring as rutile.

Samples 702554 to 702565 were screened prior to magnetic separation. Sample 702554 was screened on a 10 mesh screen. The remaining samples were screened on a 7 mesh screen. No further concentration was made on the screen oversize. The oversize fractions from each sample contained large pieces of rutile plus some quartz.

Magnetic separation was carried out on the screen undersize. The magnetic fractions contained other minerals beside ilmenite including a black mineral (not identified but possibly tourmaline or spinel). Some particles that appeared to be rutile were picked up by the magnet and would account for the high TiO_2 assays of some of the magnetic fractions.

The results from these samples can be summarised as follows:

702554	Sample 29	70.1% TiO_2	with 4.2% occuring as ilmenite,	65.9% occuring as rutile.
702555	Sample 30	57.5% TiO_2	with 2.2% occuring as ilmenite,	55.3% occuring as rutile.
702556	Sample 31	86.5% TiO_2	with 2.8% occuring as ilmenite,	83.7% occuring as rutile.
702557	Sample 32	66.3% TiO_2	with 0.8% occuring as ilmenite,	65.5% occuring as rutile.
702558	Sample 33	35.3% TiO_2	with 1.8% occuring as ilmenite,	33.5% occuring as rutile.

(Contd.)

FROM Department of Mines Laboratory, Launceston, Tasmania. TO Tasminex N.L., Burnie.

702559	Sample 34	22.3% TiO_2 with	2.1% occuring as ilmenite, 20.2% occuring as rutile.
702560	Sample 35	31.6% TiO_2 with	14.7% occuring as ilmenite, 16.9% occuring as rutile.
702561	Sample 36	66.2% TiO_2 with	2.8% occuring as ilmenite, 63.4% occuring as rutile.
702562	Sample 37	72.9% TiO_2 with	2.3% occuring as ilmenite, 70.6% occuring as rutile.
702563	Sample 38	68.4% TiO_2 with	6.8% occuring as ilmenite, 61.6% occuring as rutile.
702564	Sample 39	74.7% TiO_2 with	2.2% occuring as ilmenite, 72.5% occuring as rutile.
702565	Sample 40	74.8% TiO_2 with	2.1% occuring as ilmenite, 72.7% occuring as rutile.

Zircon was not detected visually and therefore was not assayed.

As the volumes from which the concentrates were made have not been given to us it is impossible for us to calculate the heavy mineral per cubic yard as you request.

We still await your instructions regarding the remaining samples which were too small to magnetically separate.

The following are the detailed results of the magnetic separations and TiO_2 assays of the fractions.

Reg. No.	Sample No.		%Wght.	$\%TiO_2$
702532	3	M	60.0	53.4
		N	40.0	19.9
		H	100.0	(40.0)
702533	4	M	63.0	55.6
		N	37.0	25.8
		H	100.0	(44.5)
702534	5	M	60.0	53.7
		N	40.0	21.3
		H	100.0	(40.7)
702539	10	M	27.7	30.3
		N	72.3	21.0
		H	100.0	(23.6)

028

13506

934029

Sheet No. 3.

FROM Department of Mines Laboratory, Launceston, Tasmania. **TO** Tasminex N.L., Burnie.

Reg. No.	Sample No.			% Wght.	% TiO_2
702550	22		M	34.3	52.0
			N	65.7	30.1
			H	100.0	(37.6)
702554	29	-10#	M	8.4	49.9
		-10#	N	28.9	17.3
		+10#		62.7	97.2
			H	100.0	(70.1)
702555	30	-7 #	M	3.8	59.1
		-7 #	N	25.6	25.9
		+7 #		70.6	69.0
			H	100.0	(57.5)
702556	31	-7 #	M	4.3	65.7
		-7 #	N	36.4	67.1
		+7 #		59.3	100.0
			H	100.0	(86.5)
702557	32	-7 #	M	1.3	59.5
		-7 #	N	28.8	49.9
		+7 #		69.9	73.1
			H	100.0	(66.3)
702558	33	-7 #	M	3.9	45.8
		-7 #	N	49.6	12.8
		+7 #		46.5	58.5
			H	100.0	(35.3)
702559	34	-7 #	M	7.1	29.4
		-7 #	N	80.5	15.3
		+7 #		12.4	63.5
			H	100.0	(22.3)

13506

934030

Sheet No 4.

FROM Department of Mines Laboratory, Launceston, Tasmania. **TO** Tasminex N.L., Burnie.

Reg. No.	Sample No.			% Wght.	% TiO_2
702560	35	-7 #	M	28.5	51.6
		-7 #	N	67.0	22.3
		+7 #		4.5	45.5
			H	100.0	(31.6)
702561	36	-7 #	M	4.7	59.2
		-7 #	N	24.3	51.9
		+7 #		71.0	71.6
			H	100.0	(66.2)
702562	37	-7 #	M	4.4	52.8
		-7 #	N	25.3	39.5
		+7 #		70.3	86.2
			H	100.0	(72.9)
702563	38	-7 #	M	12.0	56.5
		-7 #	N	55.0	55.2
		+7 #		33.0	94.4
			H	100.0	(68.4)
702564	39	-7 #	M	5.3	41.9
		-7 #	N	31.9	44.3
		+7 #		62.8	93.0
			H	100.0	(74.7)
702565	40	-7 #	M	5.3	39.0
		-7 #	N	32.3	36.2
		+7 #		62.4	97.7
			H	100.0	(74.8)

Senior Metallurgist

Chief Chemist & Metallurgist.

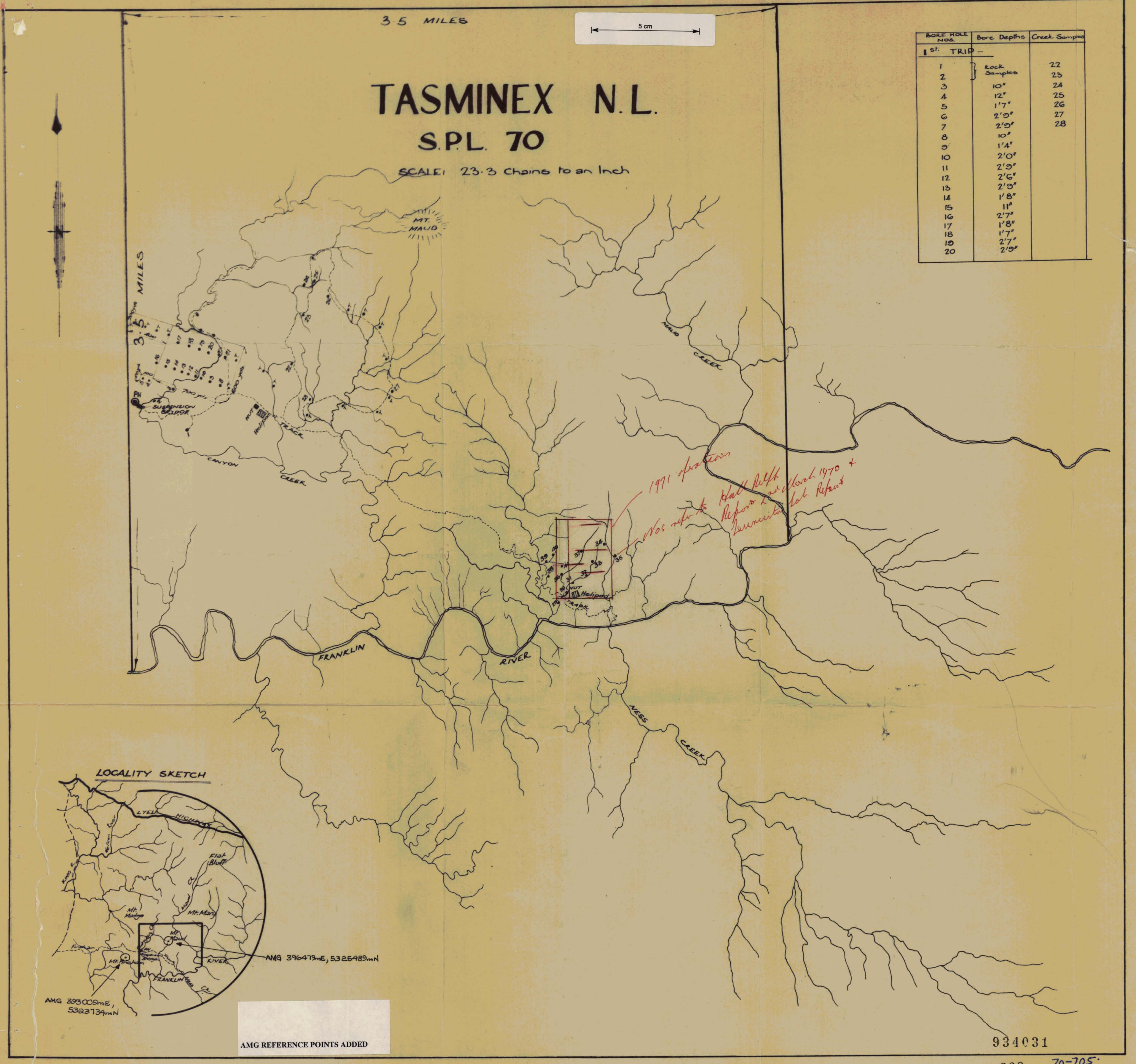
Fee: $80.00

TASMINEX N.L.

S.P.L. 70

SCALE: 23.3 Chains to an Inch

BORE HOLE NOS.	Bore Depths	Creek Samples
1st. TRIP –		
1	Rock Samples	22
2		23
3	10"	24
4	12"	25
5	1'7"	26
6	2'9"	27
7	2'9"	28
8	10"	
9	1'4"	
10	2'0"	
11	2'9"	
12	2'6"	
13	2'9"	
14	1'8"	
15	11"	
16	2'7"	
17	1'8"	
18	1'7"	
19	2'7"	
20	2'9"	



AMG REFERENCE POINTS ADDED

934031

030

70-705.