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File M 225

RIO TINTO AUSTRALIAN EXPLORATION PTY. LIMITED
MELBOURNE, AUSTRALIA

PROJECT:— PRP/7/100

REPORT No. :— 1958/7

THE PRELIMINARY INVESTIGATION OF IRON DEPOSITS
IN THE HAMPSHIRE-HIGHCLERE DISTRICT
N.W. TASMANIA

by

W.J. Atkinson

FILE REFERENCE:— 8D/20U

MAP REFERENCE:—

DATE:— July, 1958.

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*Preliminary investigation of Iron Deposits in the
 Hampshire-Highclere District
 by W.J. Atkinson
 July 1958.
 (Rio Tinto Ex. Pty Ltd)*

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THE PRELIMINARY INVESTIGATION OF IRON DEPOSITS IN THE

HAMPSHIRE-HIGHCLERE DISTRICT - N.W. TASMANIA

by

W.J. Atkinson

402002

MICROFILMED

SUMMARY

The preliminary investigation of the Hampshire and Highclere magnetic iron deposits, twelve and twenty four miles from Burnie respectively, indicates that the dimensions of these ore-bodies are relatively small compared with some of the other more fully investigated Tasmanian iron deposits i.e. Savage-Rocky River and Blythe River.

However, in their favour is their easy accessibility and the high iron values indicated by random sampling of the surface oxidized zone. But these values can be expected to decrease in depth with a corresponding increase in the impurity content.

At Highclere, the principal ore-body outcrops over a length of 160 feet with a maximum width of 75 feet. The Hampshire deposits form a series of lenticular en echelon structures occurring over a distance of about 3,000 feet. It is considered that, due to the geological nature of these occurrences, in particular the Hampshire deposit, there is little possibility of ore extensions beyond the described limits.

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- (1) Introduction
- (2) Hampshire Deposits.
 - Location and Access
 - General Geology
 - Topography
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- (3) Highclere Deposit
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 - Topography
 - The Ore Bodies.
- (4) Future Investigation
- (5) B.M.R. Aerial Magnetic Survey
- (6) Conclusions

PLANS

Map No.	T.421	Fig. 1	Locality Map	
	T. 422	Fig. 2	Hampshire Iron Deposits.	Scale 200' to 1"
	T.420	Fig. 3	Highclere Iron Deposits.	Scale 200' to 1"

During the period 23rd June to 18th July the writer carried out a preliminary geological examination of the magnetic iron occurrences in the Hampshire-Highclere area in N.W. Tasmania.

These deposits had been reported on previously by the Geological Survey of Tasmania (Henderson 1936; Reid 1924) and had been covered by an aerial magnetic survey by the Bureau of Mineral Resources in October 1955 and May 1956 at the request of the Tasmanian Government.

The current examination was made as a check on previous work, mapping at scale 200' to 1" was carried out and the nature of the occurrences studied with the object of determining whether the opportunities of discovering ore extensions of worthwhile size and grade would warrant more detailed investigation.

Access to the Hampshire area includes private roads belonging to Associated Pulp and Paper Mills, Burnie and the Highclere deposits are entered through privately owned farming land. In neither case have local interests objected to entry for the purpose of examining the property.

The lack of previous prospecting work on these deposits has confined this examination to the study of natural surface features; a study which the general paucity of outcrop at Hampshire has made difficult. The following report describes the geographic and present geological knowledge of the Highclere and main Hampshire ore-bodies. A smaller ore-body occurring in the Emu River valley near Hampshire, described by MacIntosh Reid as being of contact metamorphic origin, was not located during the current examination.

The survey was hampered by wet weather, common to the area during the winter months.

(2)

HAMPSHIRE DEPOSITS

Location and Access.

Hampshire is situated eighteen miles by road from Burnie, the iron deposits occurring south-east of the township a distance of six miles. Access is readily available to vehicles by road and timber tracks.

The Emu Bay Railway Coy. line to Burnie passes through Hampshire.

The district in general, consists of undulating heavily timbered country interspersed with button-grass and scrub covered plains. In the vicinity of the ore-bodies however, timber cutters have cleared much of the area with tracks reaching most of the ore-bodies.

General Geology

The host rocks of the deposit, consisting essentially of a suite of altered ultra-basic intrusives, are considered to be the oldest rocks of the area, of similar age to the Cambrian serpentines common to western Tasmania and also represented by the "amphibolites" of Savage River.

These rocks occur as an inlier in the granitic mass surrounding the area; the structure conforming to a roof pendent of metamorphosed but unreplaced rocks included in the eroded and subsequently exposed roof of the granite body.

MacIntosh Reid (1924) describes the country rocks as "consisting largely of columnar hornblende and amphibole in lenticular masses". He also describes limestone surrounding the host rocks, garnetized and silicified by contact metamorphism during the intrusion of the granite. However, these were not evident to the author during the current examination.

To the west of the area occupied by the ore-bodies and associated country rock, an ill-defined sedimentary formation occurs, described in Fig. 2 as sandstones and quartzites. This may correspond to the calc-silicate types described by Reid as it has been subjected to the contact metamorphic effects of the granite.

The granite, presumably of Devonian age, is of a type common to North-west Tasmania. It is predominantly a medium grained, quartz and felspar rock, containing minor but visible amounts of biotite. At contact a finer grained tourmaline-granite is common and penetrating the main mass are frequent occurrences of aplite and micro-granite.

Overlying much of the surrounding country, but not occurring in proximity to the ore-bodies are basalt sheets and flows of Tertiary age.

Topography

The deposits at Hampshire occur in an area of low relief consisting of flat somewhat swampy country, the ore-bodies occupying elevations of only a few feet. The junction with the surrounding granite is marked by the commencement of more undulating country, the granite forming boulder-strewn hills dissected by north and east flowing streams.

The Ore-Bodies

Because of the highly weathered nature of the ore-bodies and enclosing rocks, it is not possible, at this stage, to give an accurate description of their surface dimensions. However, the enclosed plan (Fig. 2) shows the writer's estimates as to their size and nature of occurrence.

The deposits appear at the surface as a series of lenticular structures, trending roughly north and close to the border of the roof pendent of country rocks. Despite the lack of detail visible it is not considered that the ore-bodies will have distinct boundaries, gradations occurring from magnetite-rich country rock to actual magnetite ore-bodies. All these forms will be represented at the surface by residual magnetite deposits and only the removal of surface debris will reveal their true nature.

Magnetite appears to be the principal ore mineral, but however, intensive oxidation at the surface has capped most of the ore-bodies with a variable thickness of limonite; the quarry to the south of the area revealing this zone as greater than 13 feet. The limonite occurs as amorphous crustiform masses enclosing a nucleus of granular habit. Magnetite where visible is granular and shows some effects of re-crystallization.

Included in the ore-body intersected by the quarry are masses of barren country rock, now weathered to clays, forming horses up to 9 feet in width. It is expected that this feature will be common to all the deposits.

What effect the intrusion of the granite has had on the nature of these deposits cannot be determined conclusively at this stage.

The following table gives details of samples by A. MacIntosh Reid (1924). Presumably they consist only of grab samples and the localities are not established. However they provide some concept of the nature of the enriched surface ore.

TABLE I
A. MacIntosh Reid (1924)

Location	Fe ₂ O ₃	FeO	MnO	TiO ₂	Cr ₂ O ₃	CaO	MgO	SiO ₂	Al ₂ O ₃	P ₂ O ₅	S
Section 9066M	70.38	22.50	0.64	Trace	Nil	0.36	0.57	2.20	4.60	Trace	Nil
4 chns. from S.W. corner of 9066M	76.06	19.28	1.58	Trace	nil	Trace	0.10	2.00	1.22	Nil	Trace
Section 9065M	72.28	22.63	0.70	Trace	Nil	Trace	0.43	1.32	1.56	Trace	Nil
Selected ore 9067M	95.50	1.05	1.37	Trace	Nil	Trace	0.07	1.00	1.42	Trace	Trace
Grab Sample W.D.L. Co's. Ore-body	79.60	14.18	0.50	Trace	Nil	0.20	0.43	1.60	3.20	Trace	Nil

(3)

THE HIGHCLERE DEPOSITLocation and Access

This deposit occurs one and a half miles east of Highclere, a distance of twelve miles by road from Burnie. The Emu Bay Railway Co. line passes through Highclere.

The ore-bodies are situated in partially cleared farming and grazing land and are easily accessible to vehicles by road and timber truck from Highclere.

Topography

The deposit occupies a low prominence rising about thirty feet above the gently undulating basalt plain to the south but falling away somewhat more steeply to the north where the country is more deeply dissected.

About 2,000 feet to the north granite outcrops form low hills dissected by north flowing streams.

General Geology

Due to the extensive soil and scree cover surrounding the main outcrop there are no indications of the actual host rocks of the ore-body. However, it appears safe to assume that this deposit is of a similar type to the magnetic iron deposits of Hampshire, Savage River etc. in which the ore-bodies occur in altered ultra-basic rocks e.g. amphibolites etc. of U. Cambrian age.

To the north a medium grained quartz-felspar-biotite granite of the type common to the north-west of Tasmania forms a large intrusive mass.

The ore-bodies form an inlier in the Tertiary basalt sheet covering much of the area and extending through to the Waratah peneplain and north to the coast at Burnie. The basalt sheet is generally thin but varying to greater depths where the flows filled old stream valleys.

The Ore-bodies

The main outcrop, irregular in shape, strikes at 35° east of north but no information as to dip is available. It is exposed over 150 feet by 70 feet at its widest section.

At the surface limonite is the principal iron mineral, locally occurring as rhombic dodecahedral pseudomorphs after magnetite. These remnant crystal structures and the magnetic disturbance of the compass over the ore-body indicate that the original ore mineral is magnetite. Beneath the surface oxidized shell granular magnetite occurs.

Within the oxidized zone few impurities are readily visible but it can be expected that the grade of iron represented by the following random samples (Henderson 1936) will decrease in depth.

Henderson Q.J. An Iron Deposit Near Highclere (1936)

Sample No.	Total Fe	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	CrO ₂	MnO	P ₂ O ₅	TiO ₂	CaO	MgO	S	Loss or Ignition	Moisture 105°C
i	66.97	2.60	0.59	91.38	2.59	Nil	0.10	0.18	0.07	0.02	0.06	0.16	2.72	0.14
ii	64.32	3.68	1.73	87.59	3.95	Nil	0.13	0.26	0.07	0.18	0.09	0.31	2.26	0.26
iii	63.72	5.64	0.45	87.5	3.49	Nil	0.13	0.26	0.18	0.06	0.10	0.19	2.38	0.22

- (i) North end main outcrop.
(ii) North end, east side, main outcrop
(iii) Southern outcrop.

There is no surface evidence to indicate that the ore-bodies exposed in outcrop are connected in depth.

(4) FUTURE INVESTIGATIONS

It is suggested that any detailed investigation of these deposits should be concentrated in the Hampshire area. At Highclere ground magnetic traverses between the main outcrop and the southern extension should suffice to indicate any connection between them. If this is not the case the small size of the ore-bodies would preclude further detailed examination.

Delineation of the Hampshire ore-bodies at the surface should be by means of costeans across their mapped locations. As a bulldozer (property A.P.P.M.) is working the area it is suggested that this may provide the quickest and most economic means of obtaining this information. Provided, of course, that suitable arrangements could be made for its use.

(5) B.M.R. AERIAL MAGNETIC SURVEY

A brief reconnaissance of aerial magnetic anomalies from the above survey in the Hampshire area did not reveal further iron deposits other than those described.

(6) CONCLUSIONS

Unless sub-surface extensions can be proved for the Highclere deposit, the ore-bodies in this area do not appear to be a sufficient size for consideration at present.

At Hampshire lack of surface detail makes even an approximation of "possible" ore reserves impossible. Assay data is also insufficient but it is not proposed to institute more detailed sampling of this deposit until trenching etc. is authorised.

BIBLIOGRAPHY

- (I) Henderson, Q.J. An Iron Deposit near Highclere. Geol. Survey Report (1936).
- (II) Reid, A. MacIntosh. Preliminary Report on the Deposits of Iron Ore at Hampshire Hills. Geol. Survey Report (1924)
- (III) Reid A. MacIntosh. Rock and Mineral Resources of Tasmania. Geol. Survey Report (1923).

W.J. Atkinson,
Geologist.

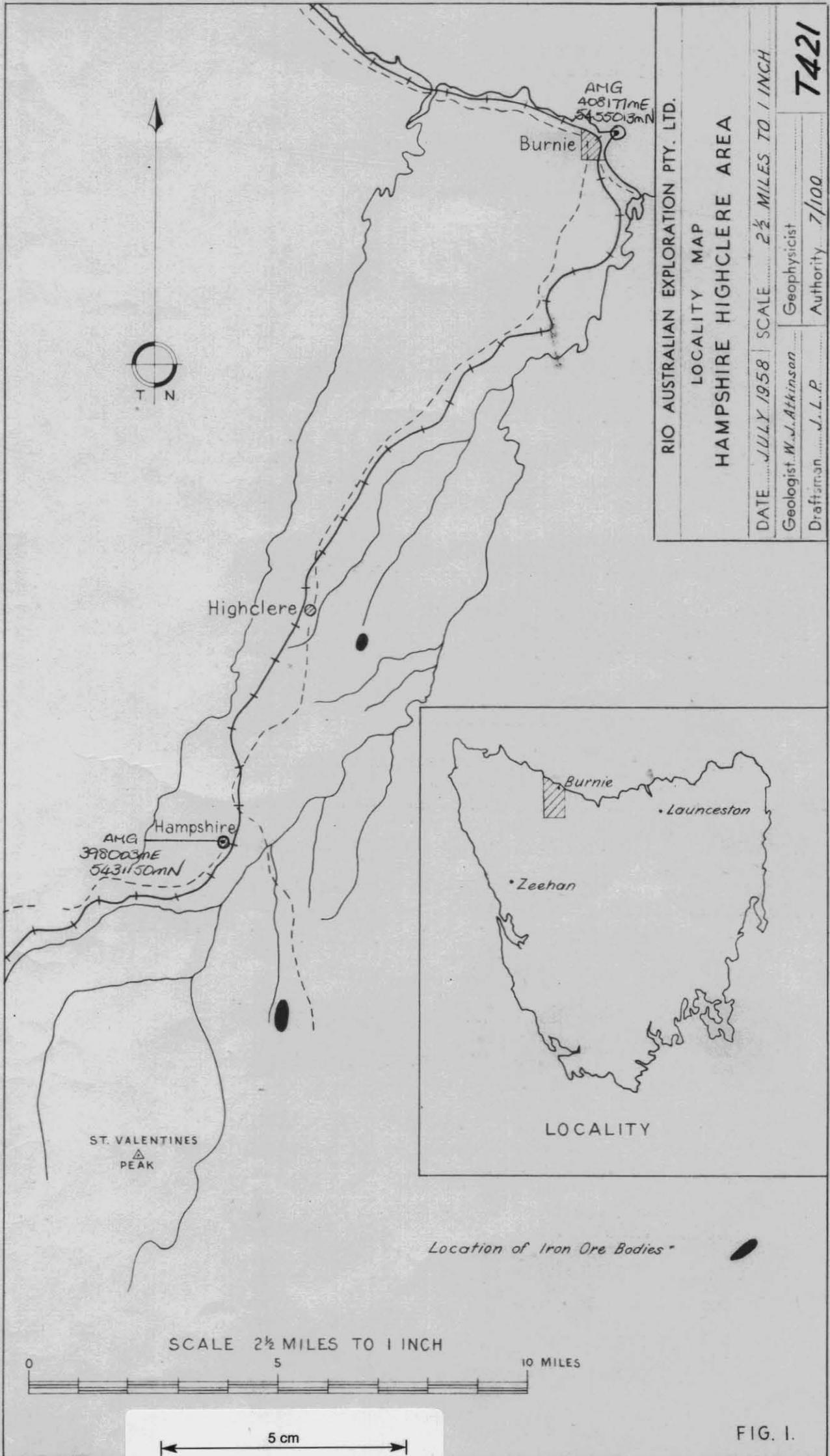
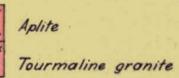


FIG. 1.

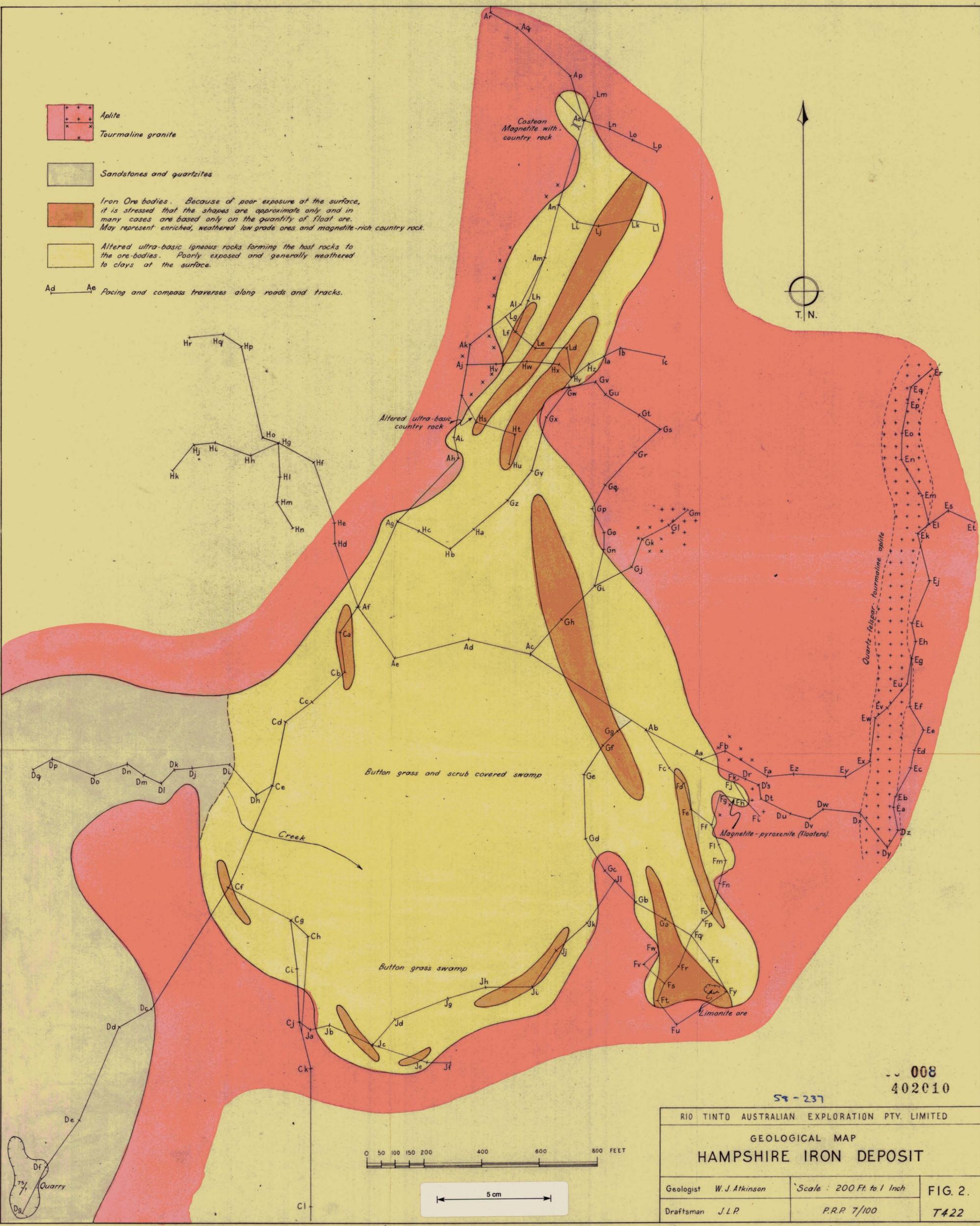
 Aplite
 Tourmaline granite

 Sandstones and quartzites

 Iron Ore bodies. Because of poor exposure of the surface, it is stressed that the shapes are approximate only and in many cases are based only on the quantity of float ore. May represent enriched, weathered low grade ores and magnetite-rich country rock.

 Altered ultra-basic igneous rocks forming the host rocks to the ore-bodies. Poorly exposed and generally weathered to clays at the surface.

Ad — Ae Pacing and compass traverses along roads and tracks.



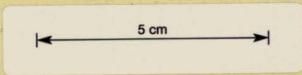
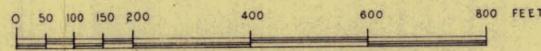
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RIO TINTO AUSTRALIAN EXPLORATION PTY. LIMITED

GEOLOGICAL MAP
HAMPSHIRE IRON DEPOSIT

Geologist W. J. Atkinson	Scale: 200 Ft. to 1 Inch	FIG. 2. T422
Draftsman J. L. P.	P.R.P. 7/100	

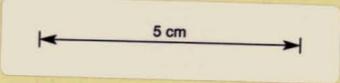


Quarry

- Legend
-  Traverses
 -  Creeks
 -  Roads
 -  Granite (Devonian)
 -  Iron ore outcrop
 -  Iron scree and soil
 -  Iron scree and basalt residuals - mixed
 -  Basalt



402011



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RIO TINTO AUSTRALIAN EXPLORATION PTY. LIMITED

HIGHCLERE IRON DEPOSIT

009

Date: June, 1958	Geologist: W.J. Atkinson	Fig. 3
Scale: 200 feet to 1 inch	P.R.P/7/100	Plan No T 420

402012

010

ASSAY RESULTS OF HAMPSHIRE PROSPECT



COMALCO LIMITED

Incorporated in Victoria

Basic Resources
& International Group 1st July, 1971.

The Secretary,
The McClarm Prospecting Syndicate N.L.
Arcade House,
P.O. Box 265,
DEVONPORT, TAS, 7310.

Dear Sir,

Thank you for your letter of 23rd June, regarding the Hampshire prospect. I am writing on behalf of Mr. I.D. Picken who is still interstate.

Official notification of the assay results has just come to hand. I have compiled them for your information on the attached sheet. We too were disappointed with the results.

While this particular prospect has proved unsuccessful, we would be only to pleased to examine any other fluorite occurrence that you may come across. Please do not hesitate to contact us.

Thank you again for referring this prospect to us.

Yours faithfully,

A.J. Marshall

A.J. MARSHALL
Geologist-Exploration

95 Collins St. Melbourne Australia Tel 6544211
GPO Box 2773Y Melbourne 3001
Telegraphic 'Forcomal' Telex 30108

REF No.	REMARKS	ANALYSIS F%
HAMP 01	Original Samples	
02	Left at Bell	9.8
03	Bay	0.58
04	End of R.H. Drive	9.2
05	Wallrock R.H. Drive	0.11
06	Wallrock R.H. Drive	0.14
07	Fluorite Vug R.H. Drive	1.06
08	Fluorite Vug R.H. Drive	16.2
09	Fluorite Seam L.H. Drive	44.0
10	Sandy Floor L.H. Drive	42.8
11	Granite Near Fl. Seam L.H. Drive	31.5
12	Mineralized Limestone	0.33
13	Mine Dump West Side of Emur	0.22
14	Mineralized Limestone	0.52
15	Mineralized Limestone	0.15
		0.19
HAMP		
015	Floor Wash R.H. Drive	0.22
016	Qtz. Porphyry	0.04
017	Limestone	0.15
018	Fluorite	40.00
019	Qtz. Intrusive	2.42
020	Gangue	0.28
021	Granite 200 yds N.E. of Mine	0.06
022	Chert Ridge Above Mine	0.05
023	Siliceous Material 20 yds Upstream	0.72
024	Siliceous Material with Purite	0.11
025	Mine Dump	0.26
026	Limestone Ck	0.06
027	Limestone Ck	0.11
028	Limestone Ck	0.12
HAMP		F. PPM
1001	Water Sample R.H. Drive	11.6
1002	Water Sample R.H. Drive	2.4
1003	Water Sample L.H. Drive	20.3
1004	Water Sample Emu R.	1.1
1005	Water Sample Limestone Ck.	0.7

HAMPSHIRE MINE
EMU RIVER
P 36

McLARM

58-237

To Dr. Ingles.

ATOMIC EMISSION SPECTROGRAPHIC ANALYSIS

(as parts per million, unless stated otherwise)

Sample No.: 5766 (a) (b) and (c)

Date: 7/4/71.

Basis reported on: As received.

How arced: (1:1) (Sample: graphite) 40mg in 105-D electrodes.

Description: large crystal, slightly greenish with brown stains.

	(a)	(b)	(c)		(a)	(b)	(c)
Ag	n1	n1	n1	Ni	n1	n	n
* Al	n	+ very faint	+ very faint	Ps	n	n	n
As	n3000	n	n	P	n800	n	n
Au	n	n	n	Pb	n10	n	n
B	n10	n	n	Pd	n	n	n
Ba	n400	n	n	Pt	n	n	n
Be	n6	n	n	Rb	-	-	-
Bi	n60	n	n	Re	n	n	n
Ca	Major	Major	Major	Rh	n	n	n
Cd	-	-	-	Ru	n	n	n
Co	n8	n	n	Sb	n300	n	n
Cr	n10	n	n	Sc	n10	n	n
Cs	-	-	-	Se	-	-	-
Cu	n1	n	n	SiO ₂	++	++	++
F	-	-	-	Sn	n20	n	n
Fe	n100	n200	n250	Sr	n300	n	n
Ga	n1	n	n	Ta	n	n	n
Ge	n10	n	n	Te	-	-	-
Hf	n	n	n	Th	n300	n	n
Hg	n	n	n	Ti	n10	n	n
In	n10	n	n	Tl	n60	n	n
Ir	n	n	n	U	n	n	n
K	n3%	n	n	V	n	n	n
La	n80	n	n	W	n80	n	n
Li	n300	n	n	Y	>1000 >x	>1000 >x	>1000 >x
Mg	<100	<100	<100	Yb	n	n	n
Mn	15	15	20	Zn	n300	n	n
Mo	n1	n1	n1	Zr	n10	n	n
Na	n100	n100	n100	Ce	n	n	n
Nb	n	n	n				

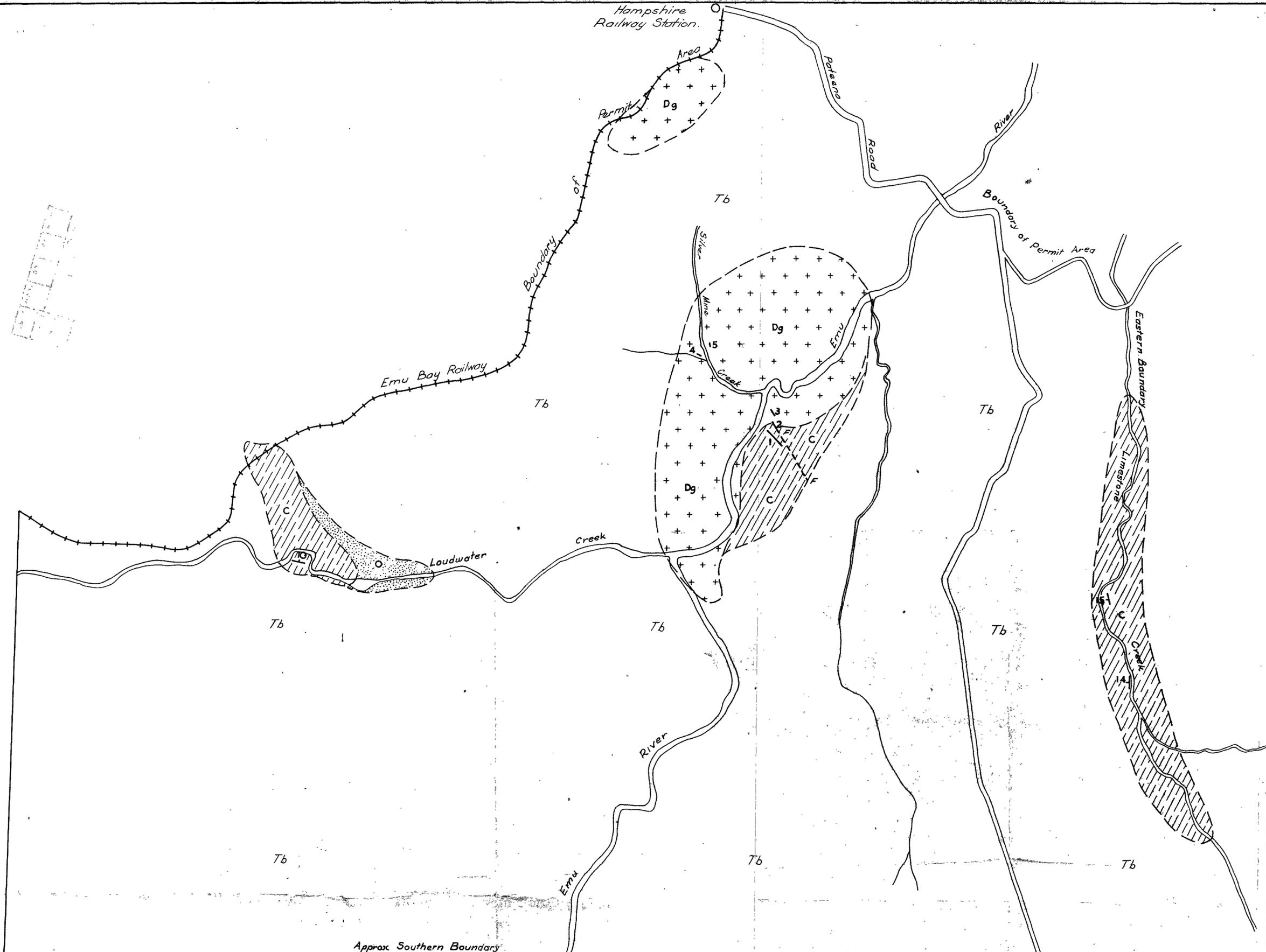
- not sought. n no lines seen. + faint line. ++ medium line.
- +++ strong line (i.e. major constituent).
- nx no lines seen - value is less than our detectability (x ppm).
- < x lines seen, but value is less than our lowest standard (x ppm).
- > x line stronger than line for our highest standard (x ppm).

Comments: The sample was divided into 3 parts (a) clearer crystal (b) crystal with brown stain (c) slightly green in crystal + brown stain. The spectra of all three samples were very similar so that any difference would be only very minor.

* Sample wrapped in Al foil.

Suggest sample may be Yttrifluorite.

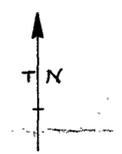
M. Morgan.



LEGEND

- TERTIARY **Tb** Basalt
Predominantly aluminous basalt
- DEVONIAN **Dg** Houselop Granite
Generally coarse-grained biotite-rich granite with fine-grained patches
- ORDOVICIAN **O** Basal conglomerates
- CAMBRIAN **C** Quartzites, cherts, limestones & sandstones
These units are generally metamorphosed & outcrop as hornfels & skarns

- Inferred geological boundary
- Strike & dip of bedding
- Location & number of adit
- Fault



402014

Alan H. McConnick

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THE McCLARM PROSPECTING SYND.
HAMPSHIRE SILVER MINE PROSPECT, N.W. TASMANIA

10 0 10 20
Scale in chains (approx)

5 cm