

642001

SORELL PENINSULA
PROJECT

MICROFILMED

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642.

Copy sent to J. Irving, DKSQ.
Wednesday, October 27, 1976.

E.L. 3/77



IMC DEVELOPMENT CORPORATION
(Incorporated in DELAWARE U.S.A.)
A Subsidiary of International Minerals & Chemical Corporation

October 25, 1976.

Mr. H. W. Fander,
Central Mineralogical Services Pty. Ltd.,
231 Magill Road,
Maylands. S.A. 5069.

SORELL PENINSULA PROJECT

Dear Walter,

I am sending the following samples to you for thin sectioning and petrological description and/or other work you think will be useful after seeing the specimens, to establish whether they are or may be associated with a carbonatite. Please let me know what you plan to do with them.

Number	Field description
.23	syenite
.26	pegmatite phase of the syenite
.31	metasomatic reaction rim at the edge of the syenite
.33	carbonate plug
.35	metasomatic reaction rim around the plug
.37	lense of Cambrian limestone or dolomite
.38	carbonate and specular hematite fault filling
.45	syenite

Please return the samples and thin sections to IMC DC when you have completed your work.

The samples come from the Varna Syenite and the Cambrian sediments it intrudes at the northern end of Varna

.../2

Bay on the Sorell Peninsula of west coast Tasmania.

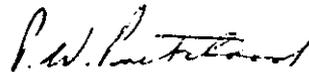
The attached maps summarise my knowledge of the geology of these rocks.

Briefly, the Varna Syenite (samples 23, 45) is exposed on the headland north of Varna Bay. The syenite contains thin (20 - 50 cm. wide) lenses (not dykes) of pegmatitic material (sample 26). At its intrusive contacts, where it shows some flow banding and where there is minor faulting, there is a thin (up to 1 metre wide) metasomatic reaction zone (sample 31) of what appears to be a carbonate rock containing clots of biotite and disseminated pyrite.

At the eastern edge of the syenite is a small plug-like body of carbonate rock (sample 33) about 5 metres across. This, too, has a thin (up to 50 cm. wide) metasomatic reaction zone (sample 35) at its margin, similar in hand specimen to the zone at the edge of the syenite described in the preceding paragraph. Banding in this zone gives the impression that the carbonate plug is intrusive. However, somewhat similar, but not as pure, carbonate lenses (sample 37) in deformed Cambrian siltstones within 20 or 30 metres of the plug show good bedding and appear to be tectonically formed lenses of sediments.

A small fault running onto the eastern edge of the carbonate plug contains a carbonate and hematite infilling (sample 38) and joints in the siltstone adjoining the fault are filled with specular hematite.

Yours faithfully,



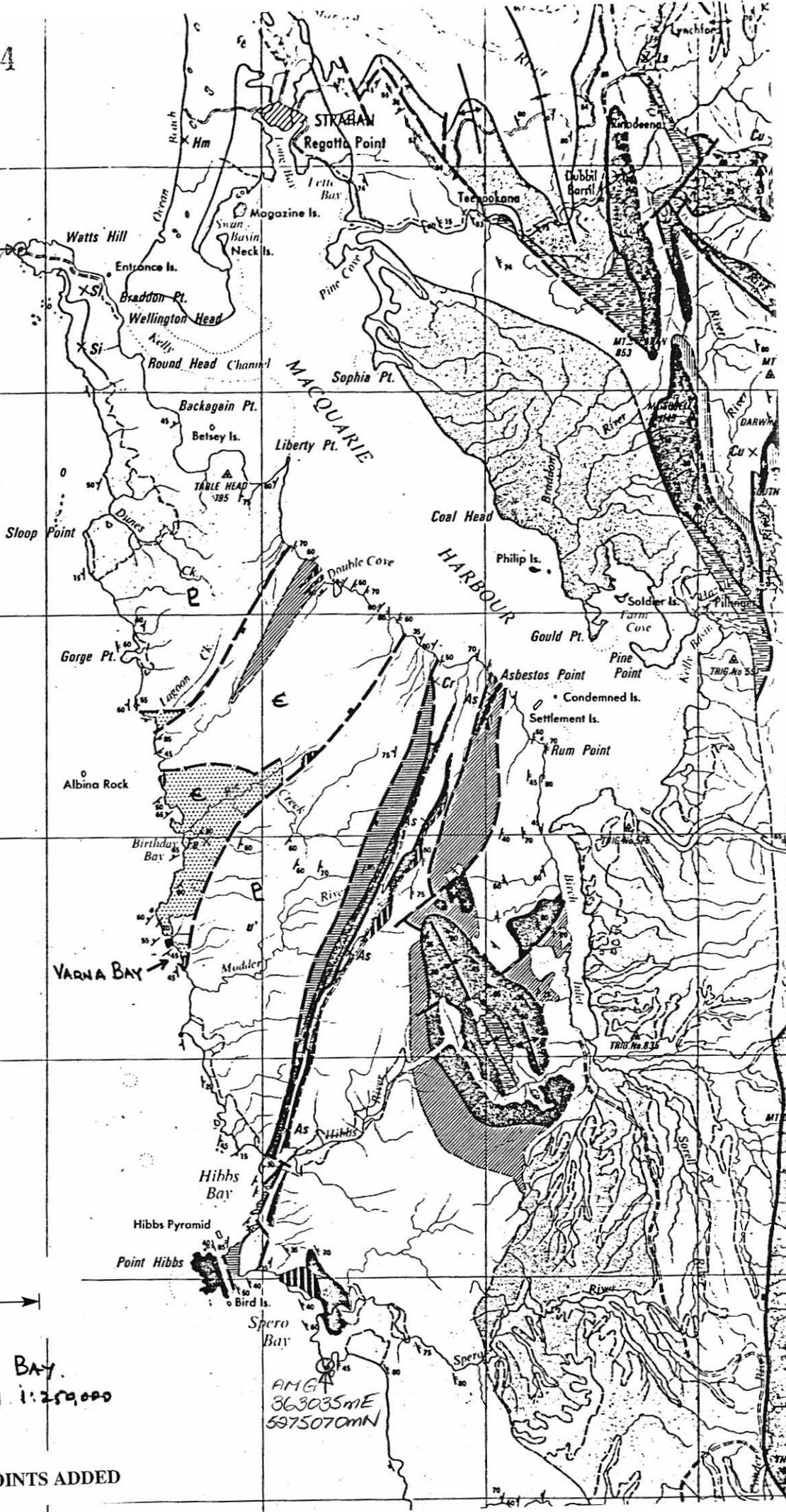
P. W. Pritchard.

Enc.

002

642004

AMG
348050ME
5326050MN



LOCATION OF VARNA BAY.
(FROM THE QUEENSTOWN 1:250,000
GEOLOGY MAP.)

AMG REFERENCE POINTS ADDED

003

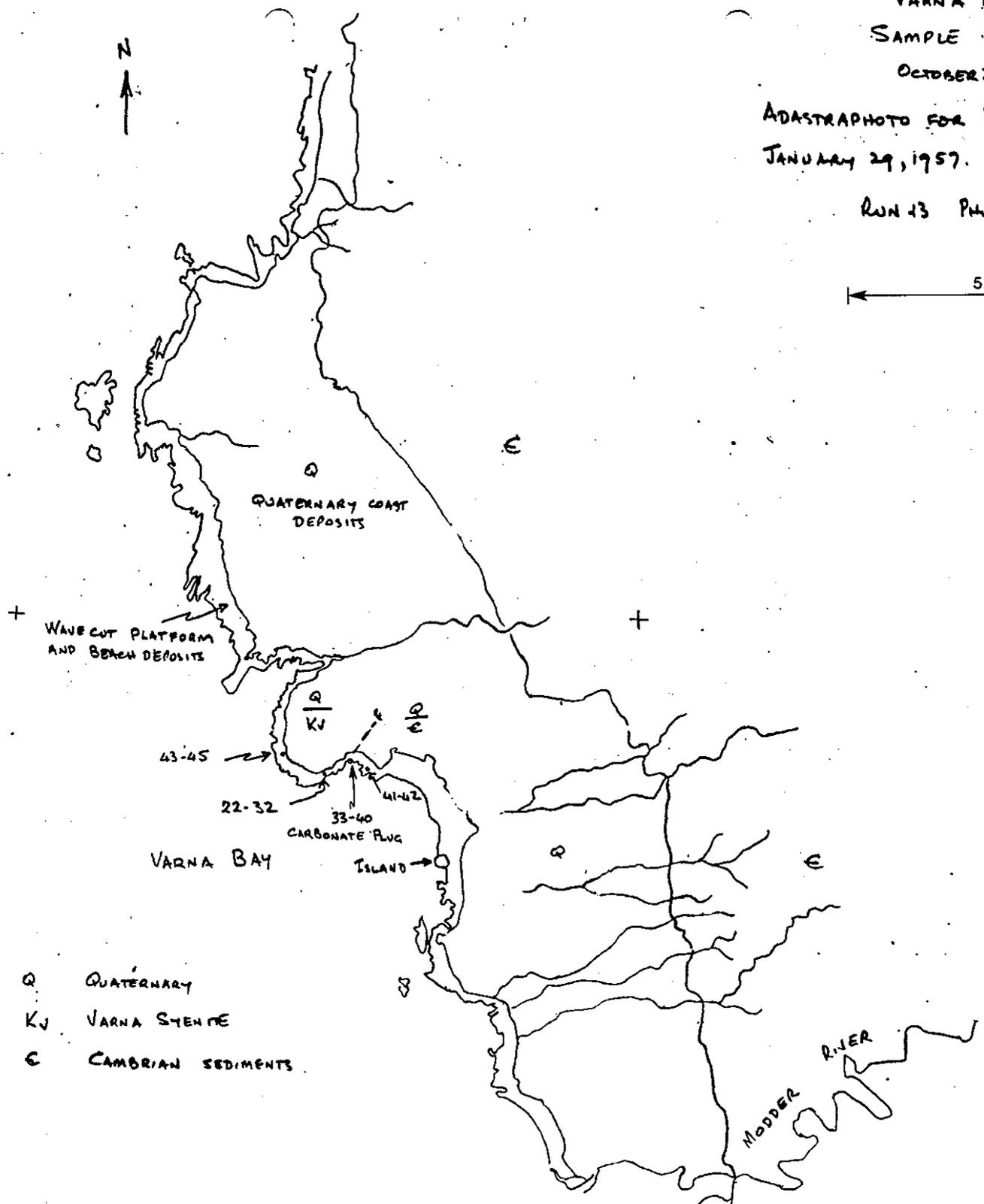
VARNA BAY
SAMPLE LOCATIONS

OCTOBER 2, 1976

ADASTRAPHOTO FOR LYELL, E-Z EXPLORATION
JANUARY 29, 1957. 8 1/4 INCH LENS, 18,500 FEET

RUN 13 PHOTO 891-3

5 cm



- Q QUATERNARY
- KV VARNA SHENTE
- C CAMBRIAN SEDIMENTS

642005

004

042500

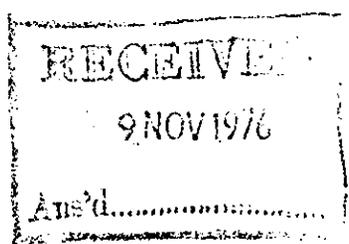
Central Mineralogical Services Pty. Ltd.



231 Magill Road
Maylands, S.A. 5069
Telephone 42 5659

5th November 1976

Mr. P.W. Pritchard,
Exploration Manager,
IMC Development Corporation,
P.O. Box 106,
DONCASTER. VIC. 3108



REPORT CMS 76/10/19

YOUR REFERENCE: Letter, P.W. Pritchard,
25th October 1976

DATE RECEIVED: 28th October 1976

SAMPLE NOS.: 23, 26, 31, 33, 35, 37,
38 and 45

SUBMITTED BY: P.W. Pritchard

WORK REQUESTED: Petrology

H.W. Fander
H.W. Fander, M.Sc.

REPORT CMS 76/10/19SORELL PENINSULA (VARNA BAY) PROJECT

Eight rocks (23, 26, 31, 33, 35, 37, 38, 45) were received for petrological study. All were thin-sectioned, and in addition a polished section was prepared of No. 37 which showed appreciable sulphides. K-stain tests were carried out, to define K-feldspar phases.

Samples 23, 26, 45

Although compositionally these rocks may broadly be referred to as syenites, their petrographic characteristics strongly suggest that they are more appropriately regarded as lamprophyres with syenitic affinities; more specifically they would be classified as minettes. The textural and mineralogical details displayed are typical of lamprophyres. There is evidence of a late-magmatic/deuteric phase of metasomatism, involving the development of actinolite and K-feldspar (?adularia).

The rocks consist of anhedral patches of albite and microcline (pink) and conspicuous, random flakes of bronzy dark biotite. This is often faintly colour-zoned (a common feature in lamprophyres). Other minerals include small crystals of hornblende, uralitised pyroxene, and very conspicuous, unusually coarsely-crystalline apatite (one crystal measured 0.5 x 4.0mm), with accessory sphene, pyrite and rare orthite.

Whilst some of the feldspar is occasionally coarse and poikilitic, the rocks on the whole are medium-grained and thus probably represent a minor or subjacent intrusion.

Small subradiating aggregates and fibrous crystals of actinolite have developed throughout, often as overgrowths over darker, primary hornblende (though this mineral is relatively pale). Fibrous fine secondary K-feldspar has developed sporadically around primary crystals.

The "pegmatitic" phase - No. 26 - is in the nature of a granophyre, consisting of coarse K-feldspar crystals graphically intergrown with quartz, occasional very large (but thin) biotite flakes, and interstitial quartz. Secondary and deuteric minerals have developed, and include actinolite, chlorite, carbonate and sericite. Accessory (primary) minerals are apatite needles and sphene. This rock is obviously genetically related to the lamprophyre, representing a more felsic segregation.

Sample No. 31

This metasomatic rock consists of an assemblage of pneumatolytic-metasomatic minerals. There are large conspicuous patches of porphyroblastic dravite tourmaline (Mg-tourmaline), dark brown in hand specimen, intergrown with quartz, shreds of pale chlorite, patches of carbonate, with finely dispersed rutile needles, biotite flakes, and pyrite. It is believed that the original rock was a clastic sediment, suggested by the presence of very occasional detrital zircon grains, but metasomatism was intense and obliterated virtually all sedimentary features.

Sample No. 33

This is a medium-grained dolomite rock or dolomite marble. It is composed of small (0.1 - 0.6mm) interlocking subhedral dolomite crystals only; no other minerals were detected. The total absence of other minerals strongly suggests a sedimentary origin for this rock. Although it lacks distinctive characteristics enabling it to be correlated with other rocks, and making comparisons rather meaningless, this rock is very similar to the dolomite marbles in the Crimson Creek formation near granite intrusives. When taken in conjunction with 35, 37 and 38, it may well be a sequence of Crimson Creek sediments locally metamorphosed. This situation could have potential interest in relation to tin mineralisation of a pyrometasomatic style as is common in areas to the north of Zeehan.

Sample No. 35

A thoroughly metasomatised rock; relict, rather vague fabrics suggest that it may have been a breccia, composed of lithic fragments including carbonate rocks, siltstone and sandstone.

The rock is extensively feldspathised and dolomitised; some lithic fragments were selectively K-feldspathised and pyritised. The matrix consists of a medium-grained intergrowth of albite laths, zoned quartz crystals, dolomite patches and euhedral pyrite crystals ranging from 5 μ to 300 μ in size with occasional larger clusters.

It would seem that this rock is a thoroughly metasomatised fault breccia originally composed of a variety of sediments.

007

Sample No. 37

In hand specimen this rock is very finely bedded or laminated; it is pale, fine-grained, with conspicuous fine pyrite. The potash stain test was strongly positive.

In thin section the rock is seen to consist of microgranular K-feldspar, with numerous small, subparallel ragged crystals of colourless tourmaline (elbaite, a soda-tourmaline) and pyrite euhedra. The rock is cut by veins of quartz, K-feldspar and thin veinlets (or fracture-fillings) composed of minute rutile needles. It is evident that this represents a completely feldspathised and tourmalinised, finely-laminated sediment, in which only the laminar structure is preserved. The original rock was probably a shale.

Some portions are much more pyritic than others, perhaps due to differences in grainsize/porosity or some similar original factor. The fabric also suggests that the sediment was slumped or had turbidite features.

Sample No. 38

This is a breccia, composed of deformed, "squeezed" fragments of siltstone and shale, quartz and ?chert, cemented by quartz-albite mosaics, with extensive areas of dolomite and bladed, specular hematite. The shale fragments are recrystallised, and could be termed sericite schists, probably due to the faulting.

Summary

The igneous rocks examined are lamprophyres rather than syenites. They contain conspicuous amounts (perhaps up to 1-2%) of generally coarse apatite.

There is evidence of widespread and intensive metasomatism, involving mainly alkali feldspars and pale tourmaline, with pyrite and small but significant amounts of rutile. In addition, a deuteric phase of secondary minerals is seen in the lamprophyre.

The sediments represented are very low-grade metasediments, mainly shales, siltstones, carbonates.

003

It is significant that apatite is absent in the metasomatised rocks. There is no evidence of a true carbonatite (ie. of "igneous" origin); the marble (No. 33) is exceptionally pure, devoid of the minerals commonly found in carbonatites. There is a conspicuous absence of associated feldspathoidal igneous rocks, and there is no evidence of fenitisation (as distinct from the metasomatism described).

Whilst there are some features resembling those of a syenite-carbonate situation, these are regarded as superficial. However, they are based on a very restricted study of only eight rocks, and thus the interpretation must be treated with some caution.

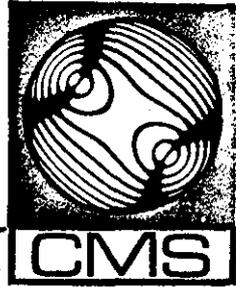
Carbonatites generally contain significant amounts of Ba, Sr, Nb, Ti, P, and rare earths; thus a check analysis for some of these elements would be helpful.

H.W. Fander, M.Sc.

009

642011

Copy to: J. IRVING.
Feb 14/77.



Central Mineralogical Services Pty. Ltd.

231 Magill Road
Maylands, S.A. 5069
Telephone 42 5659

1st December 1976

Mr. P.W. Pritchard,
Exploration Manager,
I.M.C. Development Corporation,
P.O. Box 106,
DONCASTER VICTORIA. 3108

Dear Peter,

The geochemical (emission spectrographic) results are now to hand; the assay report is enclosed.

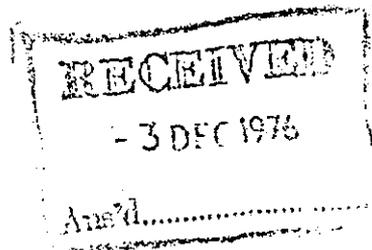
None of the figures are particularly startling or significant, as far as I am able to determine. The dolomite rock (No. 33) is devoid of key elements; the composite lamprophyre sample (23, 26, 45), made up of about equal proportions of each, is also rather barren. Lamprophyres are generally regarded as containing a variety of minor and accessory minerals because of their unusual composition; the relatively high Ba content is probably due to barite introduced during the deuteritic, metasomatic phase described in the report.

Thus the results support the previous conclusions that "igneous" carbonatites are unlikely.

Kind regards,

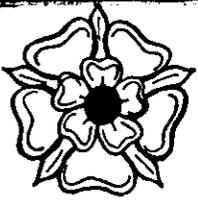
Walter Fander

Walter Fander



Enc.

010



ADELAIDE

SYDNEY

642012

GEOCHEMICAL RESULTS

A.C.S. Laboratories Pty. Ltd.

P.O. BOX 3

MUNLEY, S.A. 5061

PHONE: 272 2412, 272 2518

TELEX: AA82623

SEMI-QUANTITATIVE EMISSION SPECTROSCOPY

All Values in ppm

RECEIVED
3 DEC 1976

Samples from:

C.M.S. Pty Ltd.

Area:

Samples of:

Rocks.

Batch No.: A

1782

(Your O/N 30)

Sheet No.: 1.

Date: 29.11.76.

GROUP	SAMPLE IDENTIFICATION							
	33	23,26,45						
ES 1	Be (1)							
	Co (5)							
	Cr (20)							
	Ir (2)							
	Mn (5)							
	Mo (3)							
	Nb (20)	<20	<20					
	Ni (3)							
	Os (10)							
	Pd (10)							
	Pt (10)							
	Re (10)							
	V (10)							
	W (50)							
	Ta (100)	<100	<100					
	Th (100)							
ES 2	Ag (0.1)							
	As (50)							
	Au (3)							
	Bi (1)							
	Cd (3)							
	Cu (0.5)							
	Ge (1)							
	In (5)							
	Pb (1)							
	Sb (30)							
	Sn (1)							
	Tl (1)							
	Zn (20)							
ES 3	Ba (30)	300	2000					
	Ca (20)							
	Ce (300)	<300	<300					
	La (100)	100	300					
	Sc (50)	<50	<50					
	Sr (30)	<30	<30					
	Ti (100)							
	Y (10)	30	300					
	Zr (100)							
ES 4	Hg (30)							
	P (100)							
	Te (20)							
ES 5	K (5)							
	Li (1)							
	Na (50)							
	Cs (30)							
	Rb (10)							
ES 6	B (10)							

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED



Preparation: Crushed & pulverised.

Distribution: C.M.S. Pty Ltd.

Signed: *K. Beiner*

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