CONTENTS ENVELOPE 1386

TENEMENT: S.M.L. 409

TENEMENT HOLDER: Serem (Aus.) Pty. Ltd.

Special Mining Lease in Lake Torrens area
No. 409 Ref. DM 388/70

STAGE I

At the beginning of June 1970, two experts of SEREM were sent in the vicinity of Lake Torrens in order to establish a work-program to be undertaken on No.409 Ref. 388/70 Special Mining Lease area.

I. Location.

The area to be approximately 230 square miles, commencing at a point being the intersection of latitude 31° 00' S and longitude 137° 10' E to longitude 137° 40' E, south to latitude 31° 10' S, west to longitude 137° 20' E, north to the point of commencement.

II. Experts' investigation.

Experts have been mainly interested in the outcrops of ironstones located on the northern bank of the Carrapateena Arm, 14 miles south of "Bosworth" homestead.

Local geology can be sum up as follows :
Shaley sandstones Pm (Arcoona quartzite member) of upper Proterozoic Age are widespread on the whole area. Black Ironstones outcrops of uncertain age occur within these sandstones.

On the 1/250.000 scale Andamooka geological map, Ironstones seem to be related to a fault system (N 45° E and N 145° E).

On Lake Torrens geological map the occurence of these Ironstones seems to be quite different. Moreover some outcrops of ironstones have not been plotted on both geological maps above-mentioned.

In order to get a better understanding of the occurrence of ironstones and complete the geological mapping a photomap study had been undertaken at the beginning of July 1970, based on the following photo-maps :

Scale 1/83000 Survey 1096 S.A. Run 1
photos No. 34 - 35 - 36 - 37 - 38.

At the present time it is difficult to ascertain relationship between faults and ironstones. Therefore the program indicated below, proposes a special research in order to clarify the matter.

III. Work Schedule

SEREM Experts propose the following schedule for a second stage work :

a) checking of the geological maps according to the indications of Stage I and photo-map study.

Received 3 Sep 1970

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b) Rock sampling of the main ironstones outcrops for assay purposes.

c) Geochemical survey of the ironstones outcrops according to a 250 m x 50 m grid.

d) Digging of a five feet deep trench in order to determine relationship between sandstones and ironstones.

The work should start at the beginning of August 1970.

Special Mining Lease in Lake Torrens area

No,409 Ref. DM 388/70

Stage II

In our quarterly report Stage I, SEREM experts have proposed the following work schedule :

a) checking of the geological map according to the indication of Stage I and photo-map study.

b) rock sampling of the main ironstone outcrops for assay purposes.

c) geochemical survey of the ironstone outcrops according to a 250m. x 50m. grid.

d) digging of a five feet deep trench in order to determine relationship between sandstones and ironstones.

This work was performed in August for the field work. Analysis and office studies were made in September.

1. Means of investigation.

A geologist and a field assistant were in charge. The equipment was mainly a four wheel drive Toyota. Geological and contour maps, aerial photographs were also used:

- geological map : a 1/250.000 scale Torrens map. Geological Survey of South Australia.

- contour map : a 1/250.000 scale Torrens map. Printed by the Commonwealth Government Canberra.

- aerial photographs.

2. Local geology.

a) stratigraphy. The stratigraphic sequence is the following :

- upper proterozoic Sandstones and quartzites make up the bulk of proterozoic sediments and mantles most of the area. Sandstones belong to the Wilpena group, quartzites to the Arcoona quartzite member.

The Wilpena group consists of white shaly sandstones, purple flaggy siltstones, purple shales passing down into finely laminated purple,

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redish brown and green shales typically micaceous and cross bedded with ripple marks and intraformational breccias.

The Arcoona quartzite member is a cross bedded flaggy quartzite with shale casts.

- quaternary. Formations of proterozoic age are overlain in place by lake and stream deposits, sand dunes and alluvium. Alluvium are mostly located at the outmouth of creeks. Stream and lake deposits mainly occur on lake banks. Sand dunes transgress over proterozoic age sediments. Numeral interdunal claypans occur in the dunal areas.

- uncertain age. Ironstones of uncertain age occur within the sandstones. They are small in extent and sporadic in occurrence.

b) structure. The proterozoic sediments are almost flatlying. This group of rocks doesn't show structure at regional scale. Faulting was not seen during investigation on this area, but the photo map study shows some faults. All these faults are located far from the ironstones outcrops.

c) geomorphology. The area as a whole is a dissected tableland with gently undulating hills of low relief. The drainage pattern tends to be dentritic On air photographs, quartzites stand out clearly from the underlying sandstones, the breakaway scarps being conspicüous. The slopes of Lake Torrens' shore are made up of shaly sandstones.

3. Air photo study. (See annexe)

As mentioned in the above program, an air photo study has been undertaken. A 1/83.000 scale geological map has been compiled. The compilation is based on the following air photographs :

Survey	1096
Run 1	34 - 35 - 36 - 37 - 38.
Run 2	62 - 63 - 64.

Nothing new, but faults & ironstone outcrops, can be recognized on the air photographs from which the 1/250.000 geological map was made.

We suggest two main fault systems, N.S. and E.W. We did not notice such faults during field work, but their occurrence in flatlying sandstones or quartzites make them difficult to identify.

One more ironstone outcrop has been located 400m. South of John Beavis dam.

The outline of proterozoic sandstones is underlain by a breakaway in the overlying quartzites. The outlines of lake Torrens' banks are difficult

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to determine with accuracy. The lake sediments showed a continuation of stream deposits.

4. Prospecting works and results.

We were performing the following work :

- Rock sampling of the outcropping ironstones
- Geochemical sampling along profiles accross the areas of outcropping ironstones
- Gold pans in small gully draining ironstone outcrops
- One trench.

Rock samples were analysed for Copper, Lead, Zinc and Gold. All the results are completely negative.

Geochemical samples analysed by atomic absorption do not show any significant anomaly. Results can be summarized as follows :

	Cu.	Pb.	Zn.
Mean Value	18	29	54
Standard Deviation	4.2	4.9	11.5
Threshold	26	39	77
Cut off between possible and probable anomaly	43	58	123
Possible anomalous value	Nil	Nil	Nil
Probable anomalous value	Nil	Nil	Nil

- Washing of gravel from a small gully did not show any useful mineral among the heavy minerals. Heavy minerals are mainly composed of various iron oxydes.
- A five-foot deep trench has been dug at the top of the site A ironstone outcrop (See annexe 5). The section shows from the top :
  - a one foot thick red soil with pebbles of hematite and massive limonite
  - a two-foot thick red clay layer with scattered pebbles of hematite
  - a two-foot thick white clay layer.

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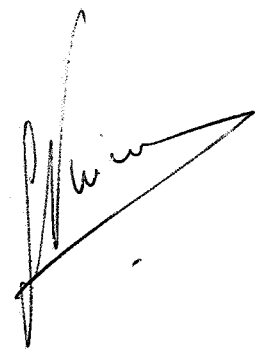
The aim of this digging was to check if the sub-outcropping ironstones have any roots or not.

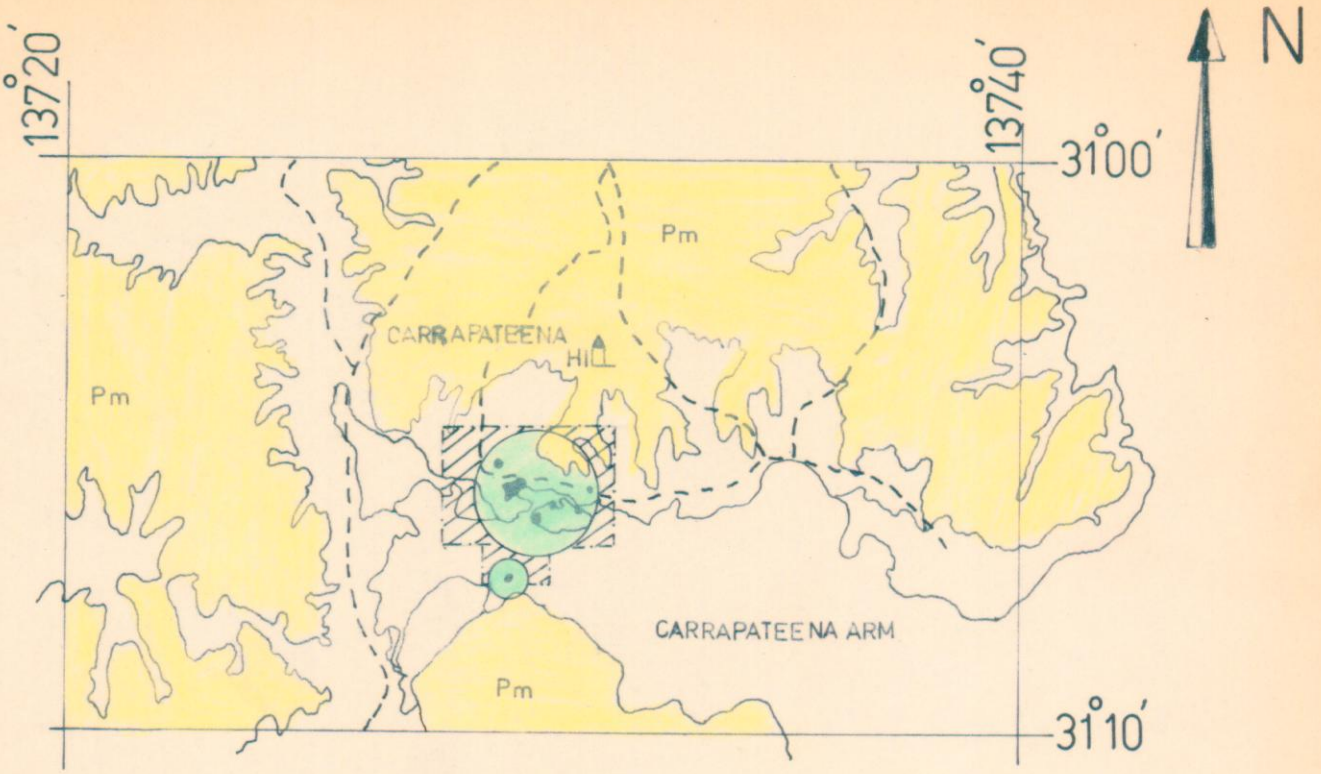
According to the section of the trench, ironstones do not seem to be related to a fault system.

Conclusion.

On SML 409, as on SML 408, ironstones do not appear to be of hydrothermal origin. More likely they result from a ferricrust of lateritic type and so have no extension at depth.

All the analytical results are completely negative. This stage of prospecting do not reveal any particular point worth while of further follow up.





Pm ARCOONA QUARTZITE MEMBER

IRONSTONE

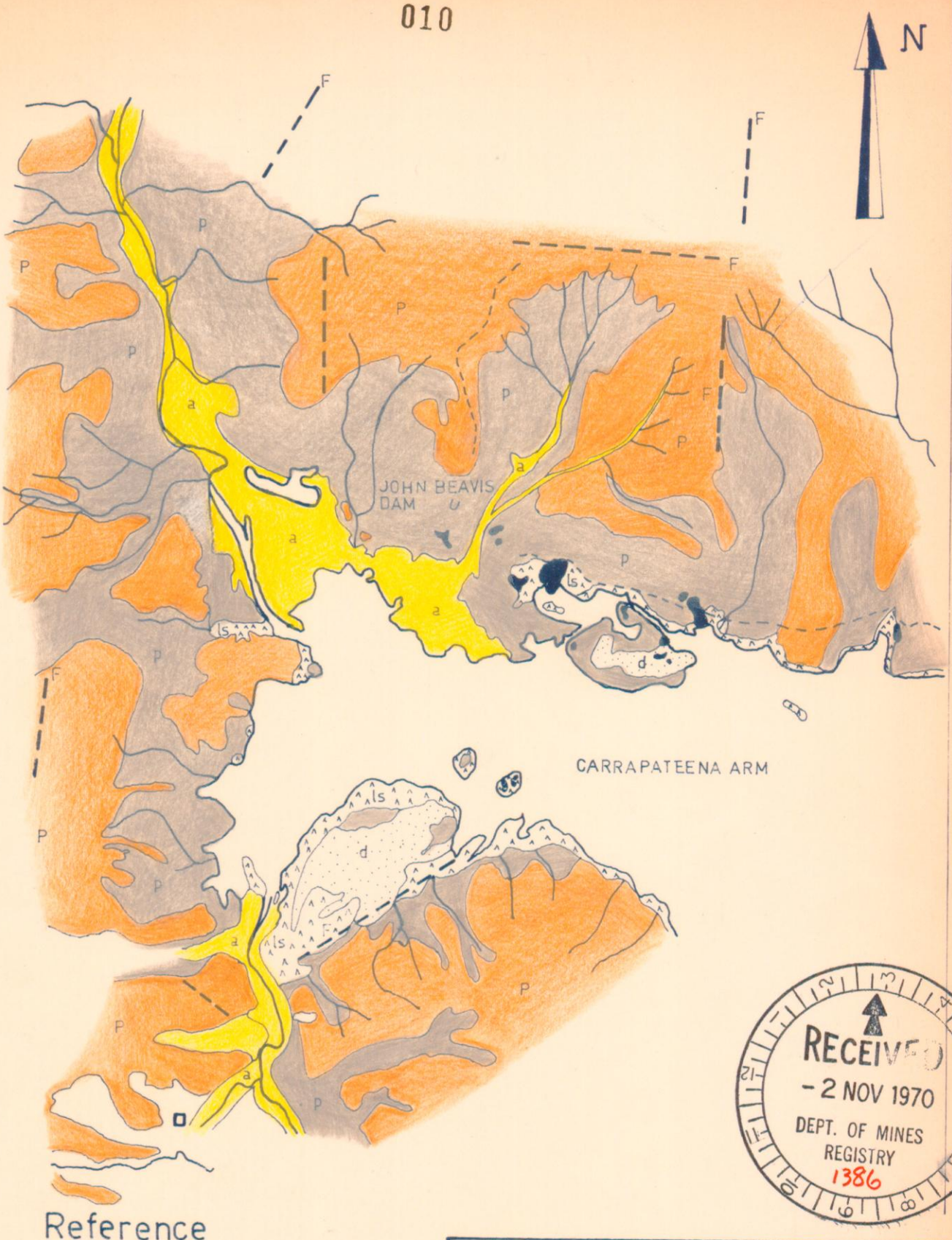
PHOTO MAP STUDY

GEOCHIMICAL SURVEY

SEREM

LAKE TORRENS
SPECIAL MINING LEASE
N° 409

Scale 1/250.000 REF/388 70



Reference

- a — ALLUVIUM: GRAVELS & SILTS
- d — SAND DUNES
- ls — LAKE & STREAM DEPOSITS
- IRONSTONE
- P — ARCOONA QUARTZITE MEMBER
- p — WHITE SHALEY SANDSTONE
- F---- FAULT

SEREM

Carrapateena arm

Special mining lease 409

PHOTO MAP STUDY

ECH: 1/83000 | ANNEXE: 4

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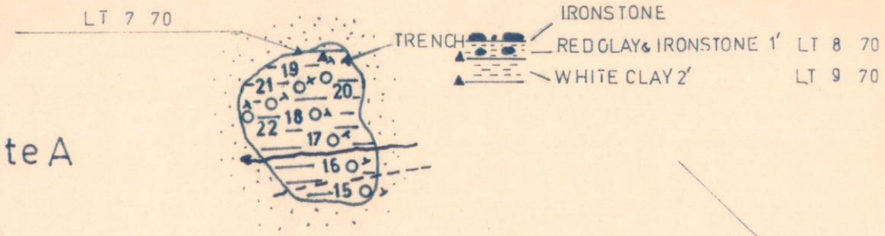
CARRAPATEENA ARM

Site A



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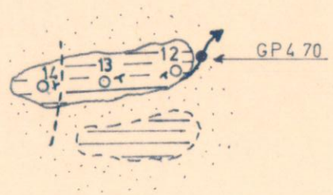

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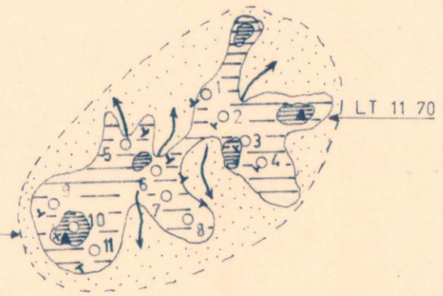

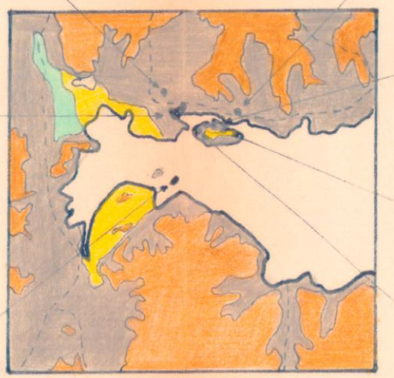

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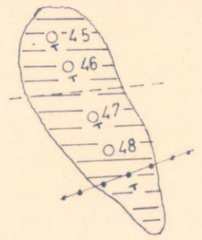
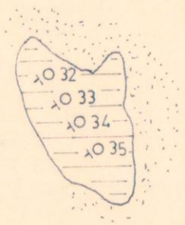


Site E

Site F



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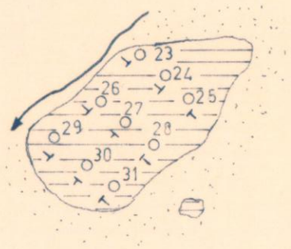


Scale 1/250000

- ALLUVIUM GRAVELS SILTS
- SAND DUNES
- IRONSTONE
- ARCOONA QUARTZITE MEMBER
- WHITE SHALEY SANDSTONE

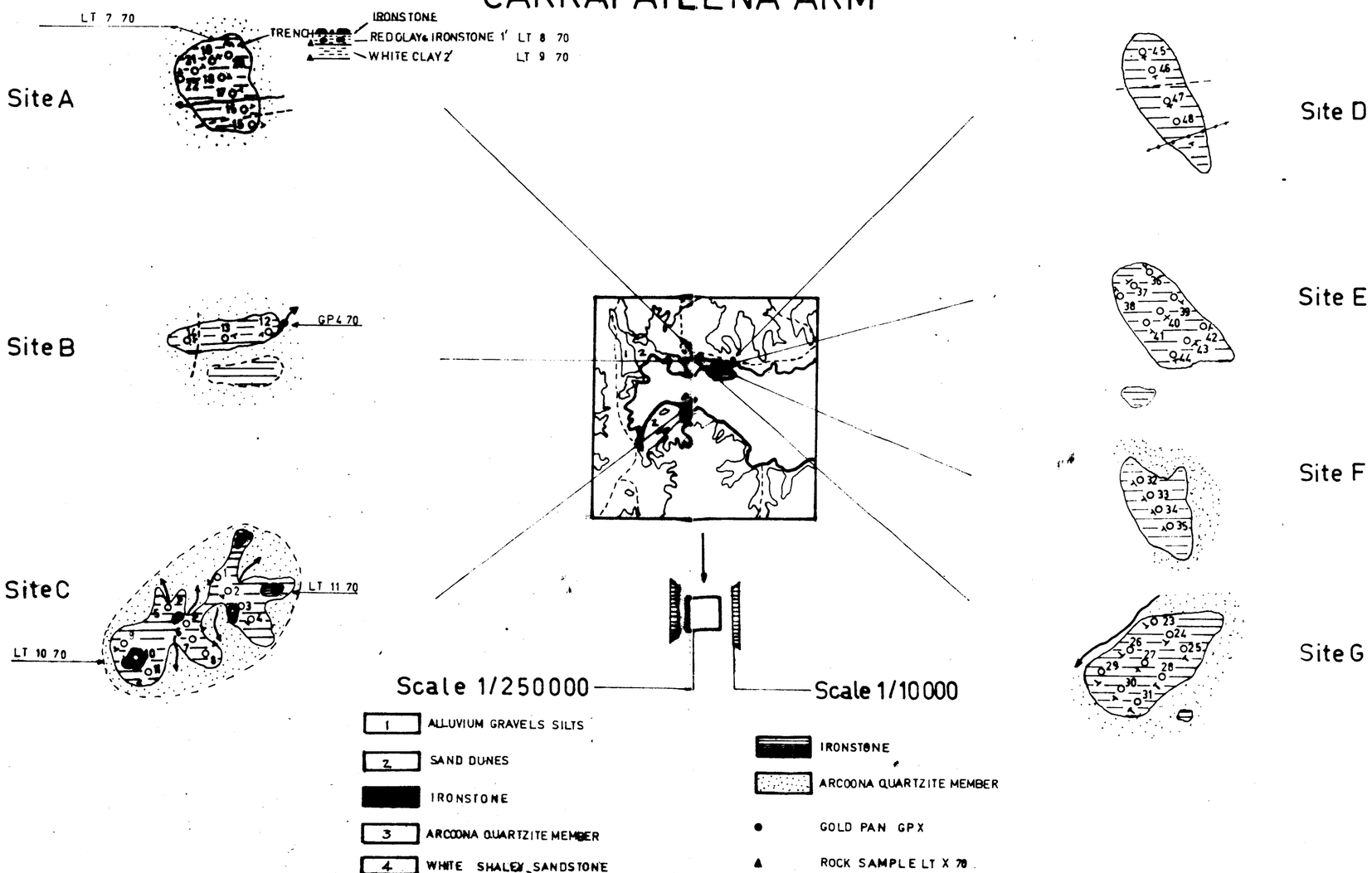
Scale 1/10000

- IRONSTONE
- ARCOONA QUARTZITE MEMBER
- GOLD PAN GPX
- ROCK SAMPLE LT X 70

GEOCHEMICAL SVY.

ENV.

CARRAPATEENA ARM



SEREM

CARRAPATEENA ARM

GEOCHEMICAL SURVEY

SPECIAL MINING LEASE 409

ANNEXE

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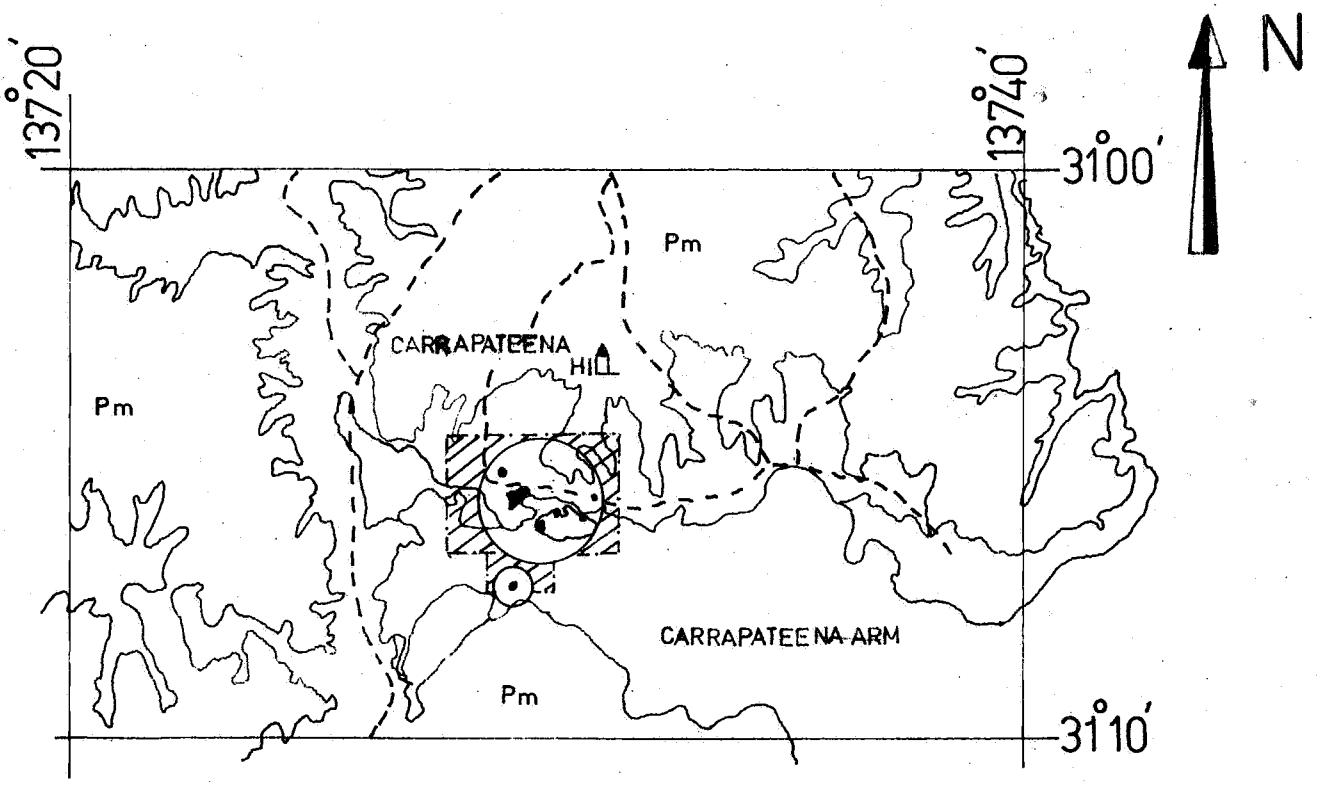


Pm ARCOONA QUARTZITE MEMBER

IRONSTONE

PHOTO MAP STUDY

GEOCHIMICAL SURVEY

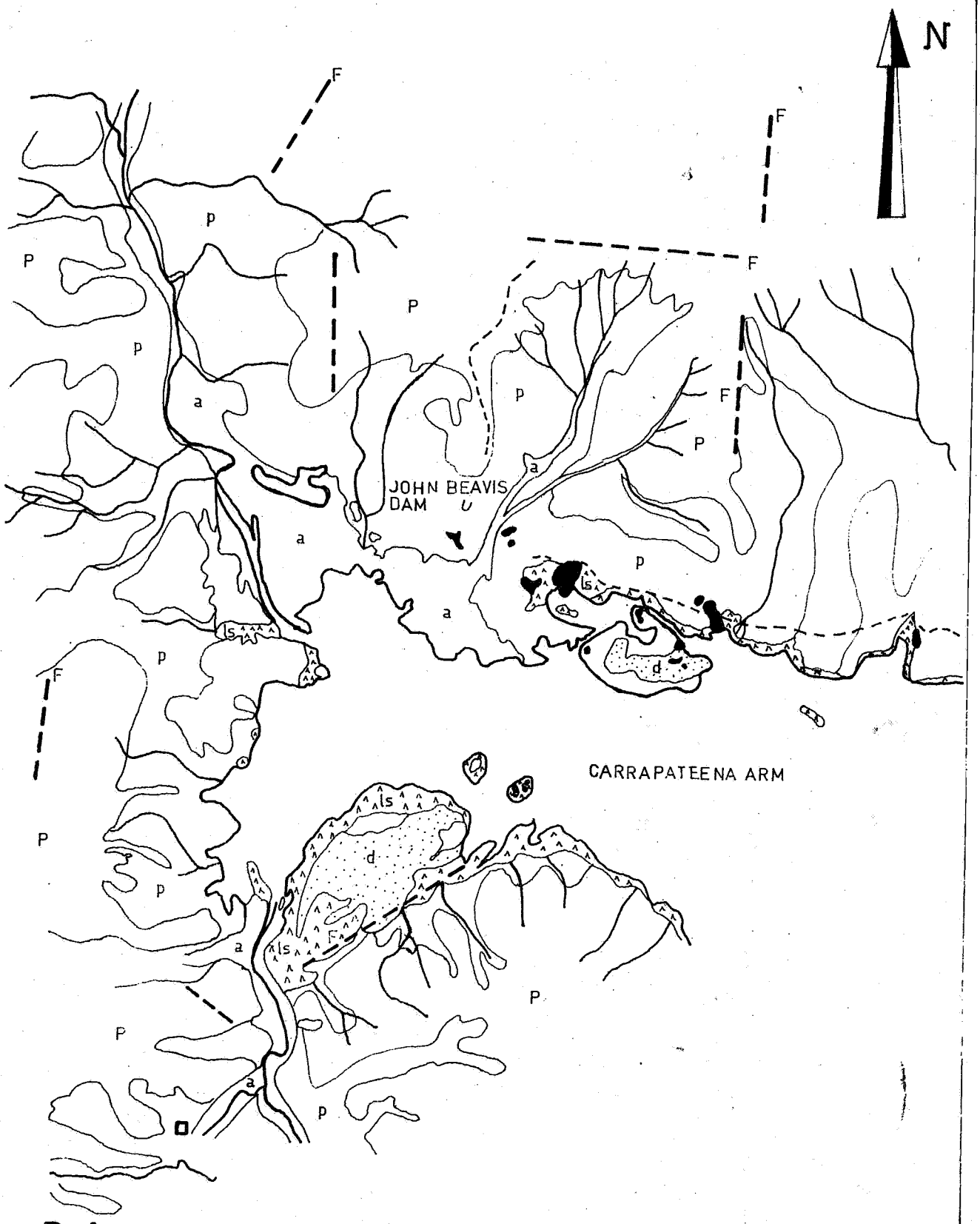
SEREM

LAKE TORRENS

SPECIAL MINING LEASE N°409

Scale 1/250.000 REF/388 70

ENV. 1356



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SEREM

Carrapateena arm

Special mining lease 409

PHOTO MAP STUDY

ECH: 1/83000 | ANNEXE: 4