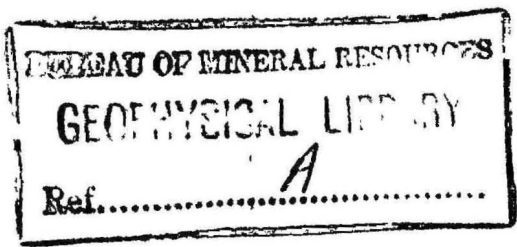


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First Report on Geophysical
Survey Operations at Ediacara
S.A.

L.A. Richardson /

BUREAU OF GEOLOGY, GEOPHYSICS AND
MINERAL RESOURCES.

FIRST REPORT ON GEOPHYSICAL SURVEY
OPERATIONS AT EDIACARA.

Report No. 1945/23.

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Operations were commenced on 4th June and this report describes briefly the work completed up to 19th June, when the writer departed for Canberra, leaving Mr. C.H. Zelman in charge of the survey.

On arrival at the field the project was discussed with Mr. E. Broadhurst, Geologist, South Australian Mines Department, and his reports and plans were studied. Mr. Broadhurst advised that for a test under known conditions, the area containing the Southern Workings seemed to be the most favourable because the known orebody was of greater thickness than those at Greenwoods, and the stoping of the orebody seemed to be less extensive in the southern workings. Mr. Broadhurst also drew attention to the gossan outcrops in the south-east and south-west parts of the field and expressed much interest in their possibilities at depth.

Geophysical work was commenced with an electromagnetic layout embracing the stoped part of the Southern orebody (Layout 1). Traverses were placed in the east-west direction because the stoping suggested a north-south elongation of the ore-shoot. The results on this layout were completely negative.

The base line and layout were then continued to the north and Layout 2 was completed embracing the south-east gossan outcrops between 5000S and 7000S. Two weak electromagnetic anomalies were obtained. No. 1 anomaly, found on Traverses 5400S to 6200S, appears to be closely related to the trend of the gossan zone. No. 2 anomaly, found on Traverses 6600S, 6800S and 7000S is of similar trend but is stepped back westerly about 200'.

Layout 3 was then completed to trace any southerly extension of No. 2 anomaly. No such extension was found.

Layout 4 was then completed to test the gossan line to the north and extended from 5000S to 4000S. No clear indications were obtained.

An S.P. survey was made over the south-east gossan line between 5200S and 7000S and from 400S to 1200S on each traverse. The profiles are very disturbed and it is considered that the results cannot be interpreted with any satisfaction.

A magnetic survey was then made over the south-east gossan area in an effort to detect the subsurface trend of the gossan bodies i.e. to determine the pitch of any separate shoots that may occur. It was found that the anomalies produced by the gossan were very small and of no diagnostic value.

Operations were then suspended on the south-east gossan area for the time being and an S.P. survey was commenced on the Black Eagle area where gossan material occurs in the lode. This work was in progress at the time of the writer's departure. The Greenwoods area was inspected and the position for an electromagnetic layout was fixed. A programme of work was outlined for Mr. Zelman's guidance and it included the following:-

- (1) Complete the S.P. survey over the Black Eagle area.
- (2) Complete an electromagnetic survey over the limestone adjacent to Greenwood's workings with the cable line bearing 58 degrees and passing through Station 8.
- (3) If anomalies are obtained over Greenwood's area additional electromagnetic work should probably be completed where required on that area.
- (4) Complete an electromagnetic survey over the south-west gossan area concentrating at first on the southern half.
- (5) Complete S.P. survey along a few of the traverses on the south-west gossan area and if results are promising extend this method throughout the whole length of the south-west gossan area.

CONCLUSIONS.

The work to date and the programme outlined above concerns only the fringes of the ore-bearing zone. It is believed that these parts should be covered and any promising indications tested by drilling before attempting the detection of shoots in the deeper parts of the basin.

Although the tests are incomplete, the absence of any electromagnetic anomaly over the southern workings and the unfavourable nature of the exposed lodes in Greenwood's workings (narrow width, dryness and low sulphide content) appear to detract from the chances of success in detecting repetitions of these ore shoots.

In the case of the gossan bodies, however, we already have two electromagnetic anomalies. The south-east gossan area is to be mapped in detail this week by Mr. Broadhurst, and it is felt that when his map is studied it will be concluded that these anomalies are closely related to the gossan occurrence and it is believed that a drilling recommendation will be possible for one or both of the anomalies.

As previously mentioned Mr. Broadhurst is much interested in the gossan and proposes to test them by drilling at an early stage in the drilling campaign. Moreover, it is understood from discussions with Mr. Dickinson in Adelaide on 22nd inst., that following the recent visit to the field of Mr. Playford, B.A. Premier and Mr. Dickinson, these gossan bodies are now regarded more favourably than formerly.

Should the testing of anomalies on the gossan areas be favourable, it would seem advisable to extend the geophysical survey over the plateau between the south-east and south-west gossan areas using various methods. The area involved would be about 6000' x 3000' and the survey would occupy a few months in the first instance.

The attached plan will illustrate most of the matters discussed in this report.

MELBOURNE.
24th June, 1946.

L.A. Richardson,
Geophysicist.

PLAN TO ACCOMPANY INTERIM REPORT
- ON -
EDIACARA AREA, S.A.

SHOWING AREAS COVERED BY GEOPHYSICAL SURVEY

- Reference -
-  Sand dunes & talus
 -  Limestone
 -  Transition Beds
 -  Sandstone
 -  Limestone
 -  Quartz
 -  Silicified limestone
- Geology taken from plan by
E. Broadhurst.

0 500 1000 1500
Electro-magnetic Indications
Areas surveyed

SOUTH-WESTERN
GOSSANS

SOUTHERN
WORKINGS

SOUTH-EASTERN
GOSSANS

BLACK EAGLE

MORISH'S
ADIT

GREENWOOD'S
SHAFT

Track

Track