DEPARTMENT OF MINES
SOUTH AUSTRALIA

PRELIMINARY REPORT ON 1:250 000 SCALE PHOTOGEOLOGICAL MAPS OF KINGOONYA, GAIRDNER, YARDEA, AND CHILDARA SHEET AREAS

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INTRODUCTION

Current interest in the Gawler Range Volcanics and a lack of regional mapping in the area, resulted in preparation of these preliminary 1:250 000 sheets during January - February, 1966. Except for the general 1:1,000,000 sheet by A.R. Crawford, which shows outcrop limits, but not the degree of exposure of the volcanics, no other maps have been compiled to date. The area covered by the four sheets totals 25,060 square miles. It is mostly arid pastoral country.

The length of time allowed was approximately 11 weeks.

Surrounding maps available are:

BILLAKALINA	Plan No. 61-741	Forbes, B.G. 1961
TARCOOLA	Plan No. 59-129	Whitten, G.P. 1959
ANDAMOOKA	Geological Atlas of S.A. 1:250 000 Geol. Surv. S.Aust.	Johns, R.K. 1968
TORRENS	" "	" "

To date, little or no work has been done on KEMBA, STREAKY BAY and PORT AUGUSTA 1:250 000 sheets.

APPROACH - METHOD OF STUDY

Due to the relatively short time available, mosaics were used in the compilation, with some air photos for the more critical areas.

Grids for the standard 1:250,000 sheet areas were prepared by the drafting office and the base maps used were from aeromagnetic 1:250,000 sheets, because of the poor control on the mosaics. Existing information on published maps by Segnit, and records on the mosaics made by Survey officers, were helpful to some extent.

Preparation was carried out by outlining the areas of outcrop, alluvium and sand on the mosaics. Where more detail was required, the outcrop areas were outlined on the air photos, and then transferred from them to the mosaics. Where the outcrop limits were obscure, a more general outline was drawn so that in the field, errors will probably be encountered.

Reduction from mosaics was achieved using the camigraph, and it was here that the main difficulty arose; i.e., the setting of the geology onto the base map and matching outcrops accurately.

Information for the Older Precambrian outcrops was obtained from Brown's reports and also from the preliminary hand-coloured version of the state map.

The Gawler Range Volcanics presented little difficulty as far as outcrop pattern is concerned, as generally the mosaics were fairly clear. Similarly, the granite was fairly easy to identify and contact and extent of outcrop should be quite accurate. There is a mottled pattern associated with the granite enabling it to be distinguished from the volcanics.

Boundaries for the Adelaide System were continued from the Torrens andAndamooka 4-mile sheets and also some of the -outcrops were again taken from the preliminary state map. Also, the lighter colour enabled the units to be distinguished from other rock types.

The boundary of Cambrian units was also taken from the Andamooka 1:250 000, but other occurrences are doubtful.

Cretaceous outcrop presented most difficulties - the drainage pattern was confusing in some areas, and in general the outcrop appeared to be very poor. Because the mosaics were made from air photos, the darkness of the print in some made outcrop hard to distinguish. From the BILLAKALINA preliminary sheet, approximate outcrop boundaries were taken, but the final result is quite different.

Tertiary duricrust presented few problems. The distinction between the dune sand unit and slope deposits was difficult in areas where there was no clear pattern. Very broad generalisations were made in some of these areas.

Therefore the 1:250,000 sheets should be reasonably accurate, with the exception of KINGOONYA, where there are large areas of supposedly Cretaceous outcrop.

In areas of sand cover, low outcrops are rather obscure and in many cases may have been overlooked. In the areas such as LakeReynolds and Parakylia information for certain parts of the mapped outcrop was obtained from field observations by previous workers, these areas being examples of poorly defined outcrop.

GEOLOGY

The major rock units are:-

(a) Older Precambrian, consisting of metaquartzites and iron formations, and possibly some granite.

(b) Middle Proterozoic - coarse clastics and silts.

(c) Gawler Range Volcanics.

(d) Adelaide System - sandstone and arkosic grit.

(e) Cambrian - dolomite and limestone.

(f) Cretaceous - Kaolinitic sandstone.

(g) Tertiary duricrust and lacustrine sediments.

(h) Recent - deposits of slopes, alluviated areas and pediments and sand of dune spreads.

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REFERENCES

FORBES, B.G. 1961 A photogeological study of the Coober-Pedy - Lake Eyre Region. Rept.Bk.No. 55/142 (unpub.)

JOHNS, R.K. 1968 Geology and Mineral Resources of the Andamooka-Torrens area. Bull. Geol. Surv. S.Aust. 41

WHITTEN, G.F. 1959 Geological reconnaissance of the Tarcoola 4-mile sheet and 11 adjoining 1-mile sheets. Rept.Bk.No.50/162 (unpub.)

_____ 1959 Notes on the Tarcoola - Kingoonya area. Rept.Bk.No.62/54 (unpub.)