ANALYTICAL AND PETROLOGICAL DESCRIPTION OF A ROCK SAMPLE COLLECTED AT THE ATKINSON MINE, COWELL 1:50 000 SHEET

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INTRODUCTION

A rock sample, 6230/RS1, was collected at the Atkinson silver mine, 18.4 km northwest of Cowell (Figure 1). The sample was sent to Amdel for identification of a blue-white encrustation, and determine its silver content. The encrustation was identified as opaline and/or microcrystalline silica. The rock was also analysed for Cu, Pb, Zn, Au, Ba, Co, Cr, Mn, Mo, Ni and V. The results are given in Table 1.

Table 1: Results of analysis of rock sample 6230/RS1

Method of Analysis	Atomic Absorption Spectroscopy				
Element	Cu	Pb	Zn	Ag	Au
Detection Limit (ppm)	2	5	1	1	0.05
Value (ppm)	290	5	18	-	-

Method of Analysis	Emission Spectroscopy							
Element	Ba	Co	Cr	Mn	Mo	Ni	V	W
Detection Limit (ppm)	200	5	20	10	3	5	10	50
Value (ppm)	200	5	20	3000	3	80	100	50

A description of the specimen by Amdel follows.

Amdel Report No. MP4080/77

MINERALOGY OF A LIMONITIC ROCK

Sample: G12/77; TS38167; 6230/RS1

Location:
Cowell 1-mile sheet (Whyalla 4-mile sheet)

Rock Name:
Limonite (pseudomorphic after carbonate)

Hand Specimen:
A massive rock with an irregular, mottled brown to reddish brown colour. The surface has a white to locally blue coloured encrustation. The blue material was identified as opaline silica by X-ray diffraction powder photography and all of the dull white surface encrustation is believed to represent opaline and/or microcrystalline silica.

Thin Section:
In thin section this rock can be seen to consist mainly of translucent reddish brown limonite which

has a massive character but exhibits remnant cleavage traces and shapes indicating that it has replaced coarse-grained carbonate. Opaque material is also disseminated through the rock as anhedral grains up to 0.5 mm in size which most likely represent opaque iron oxide although a polished section would be required to positively identify the opaque material. Microcrystalline silica is also intergrown with the limonitic material as irregular patches and locally as narrow fillings which define remnant carbonate cleavage traces. Minor finely divided clay is locally intergrown with the carbonate but clay also forms flaky clay-rich patches within the limonite.

Well developed muscovite flakes up to 0.5 mm in size are disseminated through the rock and exhibit a random orientation. Locally the muscovite flakes exhibit somewhat broken and bent shapes although for the most part they are relatively undeformed.

This rock is comprised almost completely of secondary minerals and would represent a coarse-grained carbonate rock which has been replaced by limonite and minor microcrystalline/opaline silica under weathering conditions.

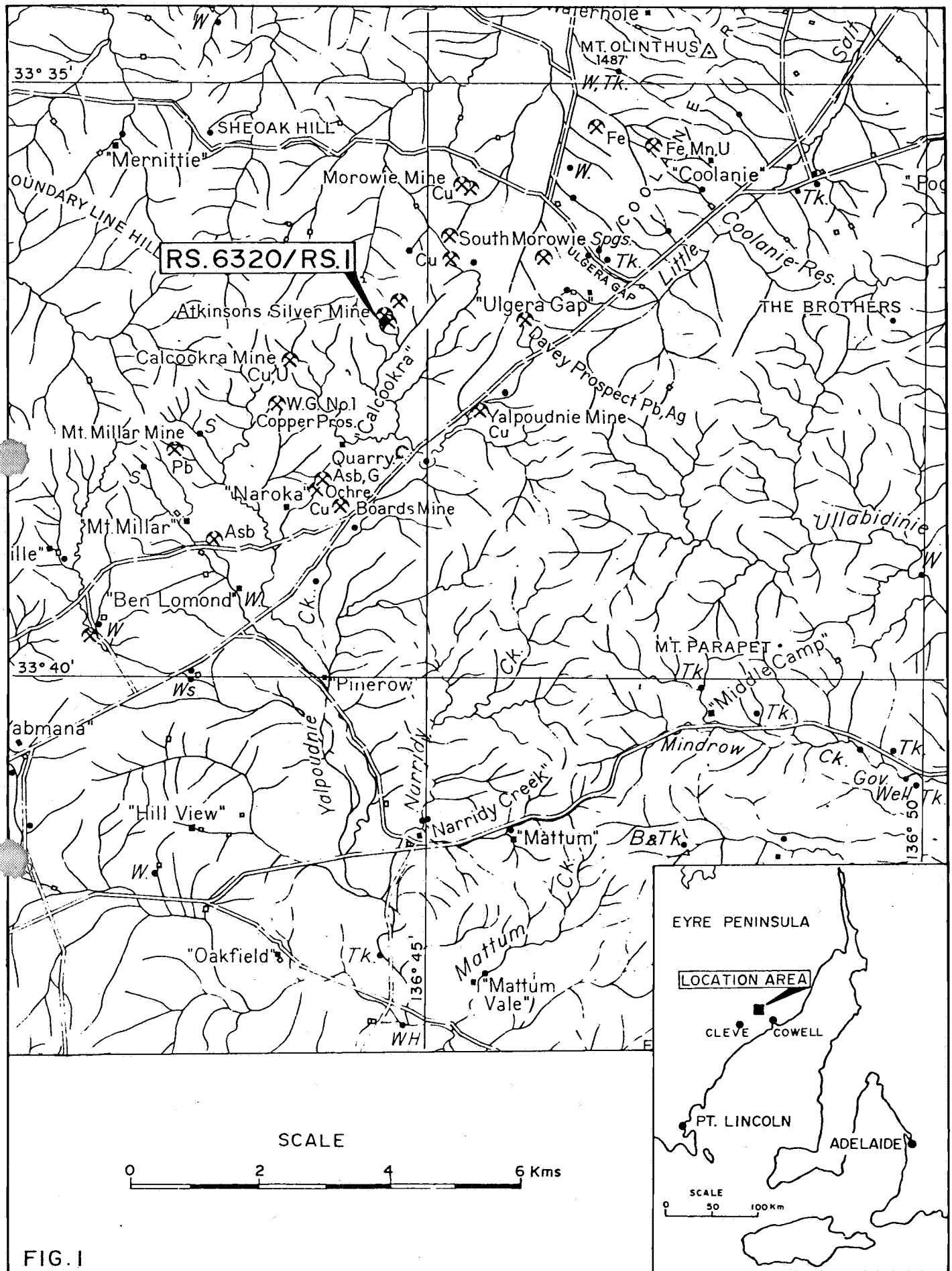

FIG. 1

	DEPARTMENT OF MINES – SOUTH AUSTRALIA	SCALE 1:80 000 1:5 500 000
COMPILED: R.P.S.	LOCATION OF SAMPLE RS. 6230/R.S 1.	DATE 29/8/77
DRN. P.D CKD.		PLAN NUMBER S 12992