Section

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G.S. No. 2479.
D.M. 1947/62?

DEPARTMENT OF MINES
SOUTH AUSTRALIA

HARROGATE GEOCHEMICAL ANOMALY

Location: Section 1796, Hundred of Kanmantoo, One mile north-west of Harrogate.

Property Owner: R.G. Wachtel, Harrogate

Sampling & Results

Geochemical results from samples collected during regional study of the pyritic beds of the Brukunga Formation in 1960 - 1961, indicated anomalous high lead values for a gossan-like outcrop at this locality. Results: A 1198/60, 10,000 ppm Pb; A 684/61, 6,000 ppm Pb. The area was visited by D.P. Thomson and C.R.D. in June, 1961 and a sample from the exposure was submitted for partial chemical analysis. This yielded 12.1% lead, (A 277/61).

A further 54 samples were collected by hand auger and submitted for spectrographic analysis for copper, lead, zinc, cobalt and silver. The sampling was controlled by tape and compass, the datum peg comprising two 8" pegs driven together at a point 450 feet and 180° (magnetic) from the base of an isolated large gum tree. The location of the samples are given with the results in Fig. 1. A summary of the lead values for samples of bedrock (usually in a weathered condition) is given in Fig. 2.

Auger sampling indicated weathered bedrock at depths varying from two feet to five feet. Surface loam and dark clay changed to red clays between six and twelve inches. In holes near the crest of the hill a four inch thick zone of hard gossanous material was encountered at the top of the red clay. This proved to be enriched in lead and it was from this horizon that the sample A 277/61, which assayed 12.1% Pb, was taken.

At 0'N the soil profile was approximately 4'6" and the trace of the ferruginous bed was not known accurately.

Here the highest assay of 200 ppm Pb is approximately 10x the normal background value for the Brukunga Formation and other results are higher than normal by a factor of two or three. At 100'N, values range from 2.5x to 12x background. Several bedrock and red clay values at 200'N exceed 1%, and twenty results average approx. 3900 ppm, the lowest assay yielding 100 ppm Pb. At 300'N the average assay is 840 ppm lead, more than 40x normal background. At 400'N the average for both red clay and bedrock is almost 2000 ppm Pb. It is noted that bedrock values exceed those for the red clay by a mean factor of 4 times. Only in two cases do Pb values for the red clay exceed the bedrock values.

There is no very significant association of copper and zinc with the high lead values although assays for these elements are slightly higher than background. Assays for copper up to 600 ppm occur in the gossan material and one value of 900 ppm was obtained from bedrock. The highest assays for zinc in weathered bedrock are 200 ppm and in the gossan layer 350 ppm.

Geological Setting.

The bed sampled is a pyritic siltstone lens less than 10 feet thick, one of several in the lower part of the Brukunga Formation, which is largely medium bedded fine to medium-grained greywacke with the prominent Nairne Pyrite Member at the base. Thickness at this locality is less than at Brukunga, the Nairne Pyrite Member being approximately 150 feet thick compared to approximately 700 feet at the type section. Approximately one mile south of Harrogate there are three thin pyritic beds above the basal unit but these lens out to the north and are represented by the one bed 650 feet above the base of the Brukunga Formation.

The underlying Inman Hill Formation is dominantly thick-bedded cross-stratified and slumped arkosic sandstone. At the top of this unit, several hundred yards north-west of the locality sampled, a lenticular pebble conglomerate is exposed adjacent to the Bremer River. Pebbles are deformed into

sigmoidal shapes and include quartz, quartzite and pegmatitic granite.

Conclusions & Recommendations.

Sample results indicate that anomalous values for lead persist for several hundred feet along strike. The Department's Induced Polarization Equipment could be used to further test the locality assuming the deposit to be at thin bed (less than 10 feet thick), striking 160° (magnetic) and dipping between 50 and 55 degrees east. The proximity of the Nairne Pyrite Member, a 150 foot thick unit of disseminated pyrites and pyrrhotite must be considered. It is 500 feet stratigraphically below the mineralized bed and it outcrops along the Bremer River to the west.

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16.10.62

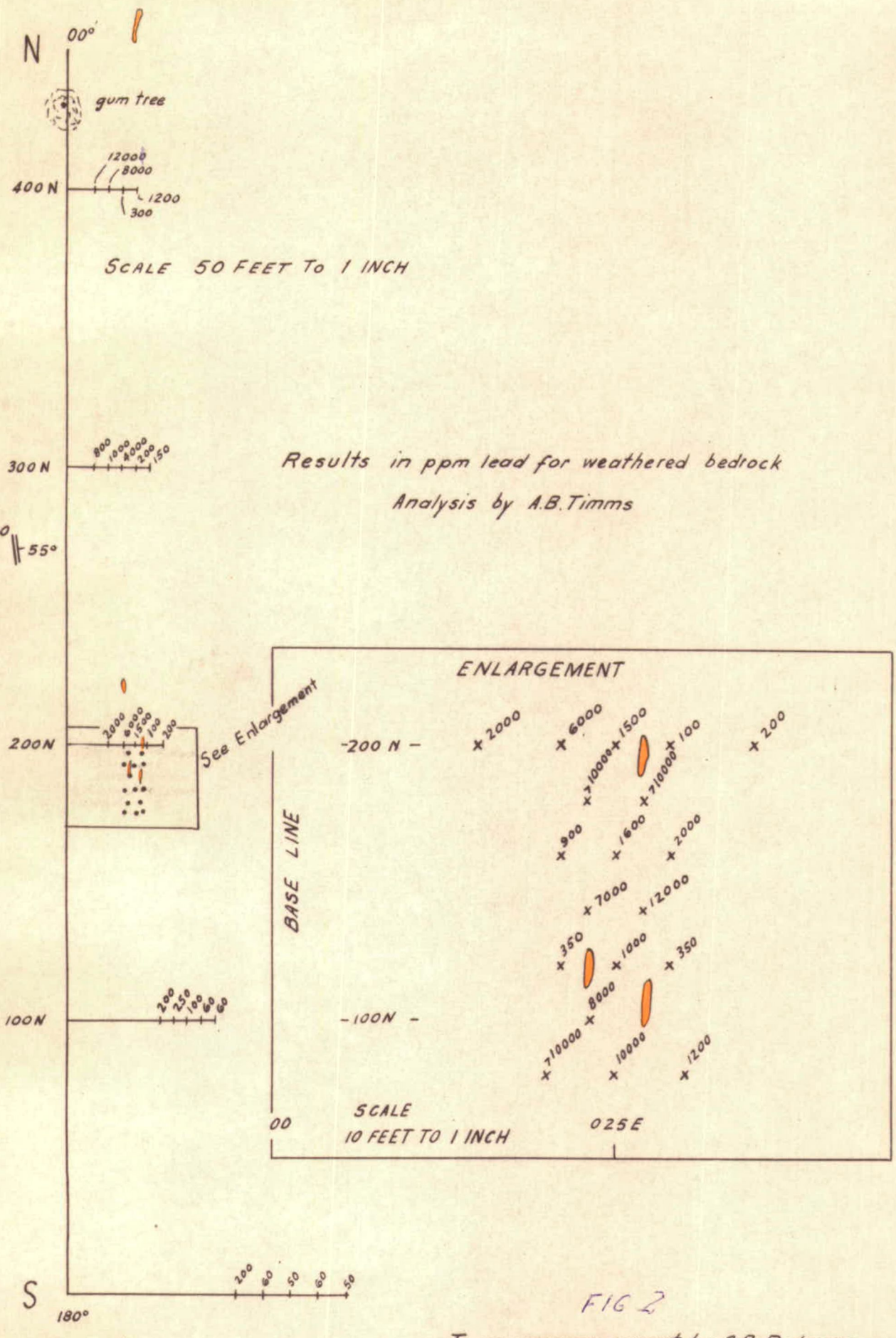

FIG 2

To accompany report by C.R. Dalgarno

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	HARROGATE LEAD ANOMALY SEC. 1796 Ho. KANMANTOO	D.M.	Scale As shown
		Tcd. A.W.		Req.	53040
		Ckd. R.R.			H66
Director		Exd.			Date 22-2-62

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