CLASSIFICATION.....

DEPARTMENT OF MINES
SOUTH AUSTRALIA

BRANCH.....GEOLOGICAL SURVEY.....

REPORT No. G.S. 212
38/124
GEOPHYSICAL REPORT 7/54.

SUBJECT:—

GROUND SCINTILLOMETER SURVEY OF PORTION OF SECTION 398 OF THE HUNDRED OF WALLAROO.

D.M. 1105 / 51 SECURITY FILE.....

- by -

I. A. MUMME,
ASSISTANT GEOPHYSICIST.

20/12/54.

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D.M. 1105/51
Rept.Bk.No. 38/124
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DEPARTMENT OF MINES

SOUTH AUSTRALIA

GROUND SCINTILLOMETER SURVEY OF PORTION OF SECTION 398 OF THE HUNDRED, WALLAROO

GEOPHYSICAL REPORT 7/54

ASSOCIATED PLAN US 485

by

I. A. MUMME,

ASSISTANT GEOPHYSICIST.

INTRODUCTION:

A radioactive dump was located by the writer near the Kurilla Mines on section 398 of the Hundred of Wallaroo on 2/11/54 while carrying out a systematic survey in an adjacent area.

This shows that uranium mineralisation occurs in or adjacent to the eastern extension of Hall's lode.

GEOLOGY:

The radioactive dump material occurs near a collapsed shaft (which shows traces of malachite around its edge) and appears to have been removed from it or from a connecting level during mining operations.

The deepest workings in this area are only 150 feet whereas further west on the lode shear, mining operations were carried down to a depth of approximately 1,200 feet.

METHODS USED:

A base-line of 400 feet length was laid out bearing 56° east of magnetic north and eleven traverses 320 feet in length off-set from it in a south-easterly direction and an area of 128,000 square feet radiometrically surveyed with a hand scintillometer (Halross type 939A).

RESULTS AND INTERPRETATION:

The radioactive materials on the dump appear to be similar to the radioactive dump material discovered by A.A.W. Smith in section 152B of the Hundred of Wallaroo, and probably contains the uranium mineral Thucolite as well as uranium decomposition product.

Several specimens of radioactive material were forwarded to the departmental laboratories at Parkside for assaying and the following results obtained.

Specimen No.	Actual % U_3O_8	Equiv.% U_3O_8(gamma)
U4/6738	.04	.20
U4/6739	.42	.56
U4/6740	.1	.86

These results show that the uranium in the radioactive substances is not in equilibrium with its decomposition products and that there has been a leaching of the uranium leaving radium decomposition products which are insoluble.

However this is not surprising as the radioactive dump material was probably removed at a shallow depth in the mine workings where active leaching would take place because of the acid environment due to the oxidation of sulphide material.

Five levels of radioactivity were recognised in the area. These are shown as zones on the isorad plan where the scintillometer readings were:

(a) less than 25 counts per second.
(b) between 25 and 35 counts per second.
(c) between 35 and 50 counts per second.
(d) between 50 and 100 counts per second.
(e) greater than 100 counts per second.

The areas over which the search scintillometer registered less than 25 counts per second were travertine covered.

Readings of 25 to 35 counts per second were obtained over travertine and areas contaminated by material hauled from the prospecting shafts.

Readings of 35 to 50 counts per second were obtained over scattered rock dump material showing that the rock removed during mining operations is generally slightly radioactive.

The next level of radioactivity occurs on a dump consisting of friable yellow - earth containing sulphide fragments and small boulders of brown - black material probably containing the uranium mineral Thucolite and uranium decomposition products.

No radiometric "highs" were located near the dump which could be related to undisclosed uranium lodes. However the scattered surface debris and the surface travertine

layer may conceal such lodes.

Vertical force magnetic work carried out by the staff of Oscar Weisss Organisation on behalf of Zinc Corporation located a small magnetic anomaly of approximately 150 gammas on Traverse 28 at peg 28/17S.

This crossed the eastern extension of Hall's lode in the vicinity of the surface radioactive dump and coincides with the mineralised zone.

The magnetic anomaly may be due to -

(a) Structural changes in or adjacent to the zone of mineralisation.

(b) weakly magnetic lode material.

RECOMMENDATIONS:

It is recommended that further prospecting be carried out in the area marked on the locality plan either by drilling a number of shallow holes on a grid system or by costeaning a number of traverses across the area with a buldozer and ripper.

If drilling be carried out the holes should be geologically logged from core or cuttings, logged with radiometric bore logging equipment, and the core or cuttings microchemically tested for copper.

If costeaning be undertaken, then the costeans should be radiometrically traversed and test-samples taken at short intervals along the costeans for microchemical testing for copper.

Apart from possibly locating uraniferous lodes this would aid in preparing a structural plan and determining the factors which controlled the deposition of the uraniferous matter.

REFERENCE:

Jack R.L. "The Geology of the Moonta and Wallaroo Mining District" Geological Survey of South Australia Bull. 6. 1971. 1917

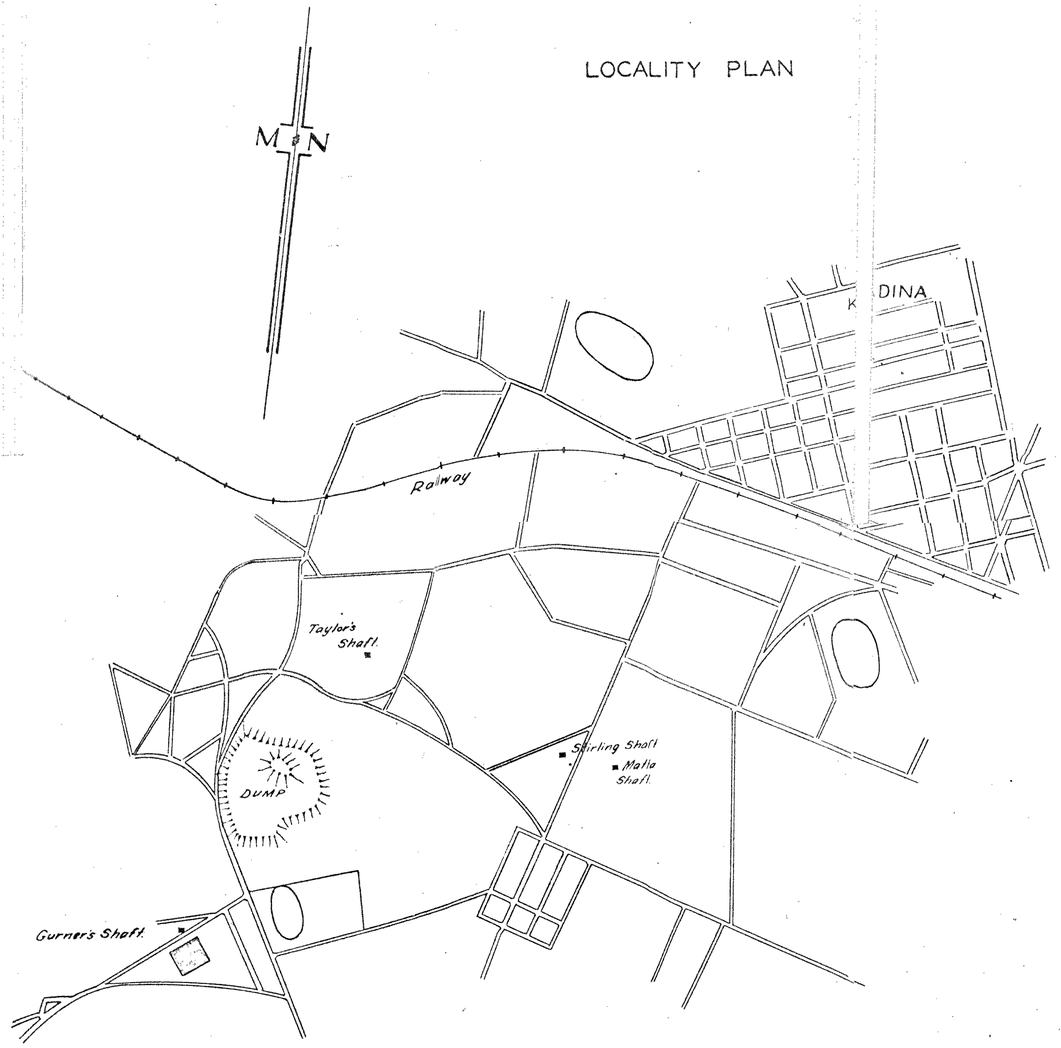
Associated Plan. US 485

I.A. MUMME

ASSISTANT GEOPHYSICIST

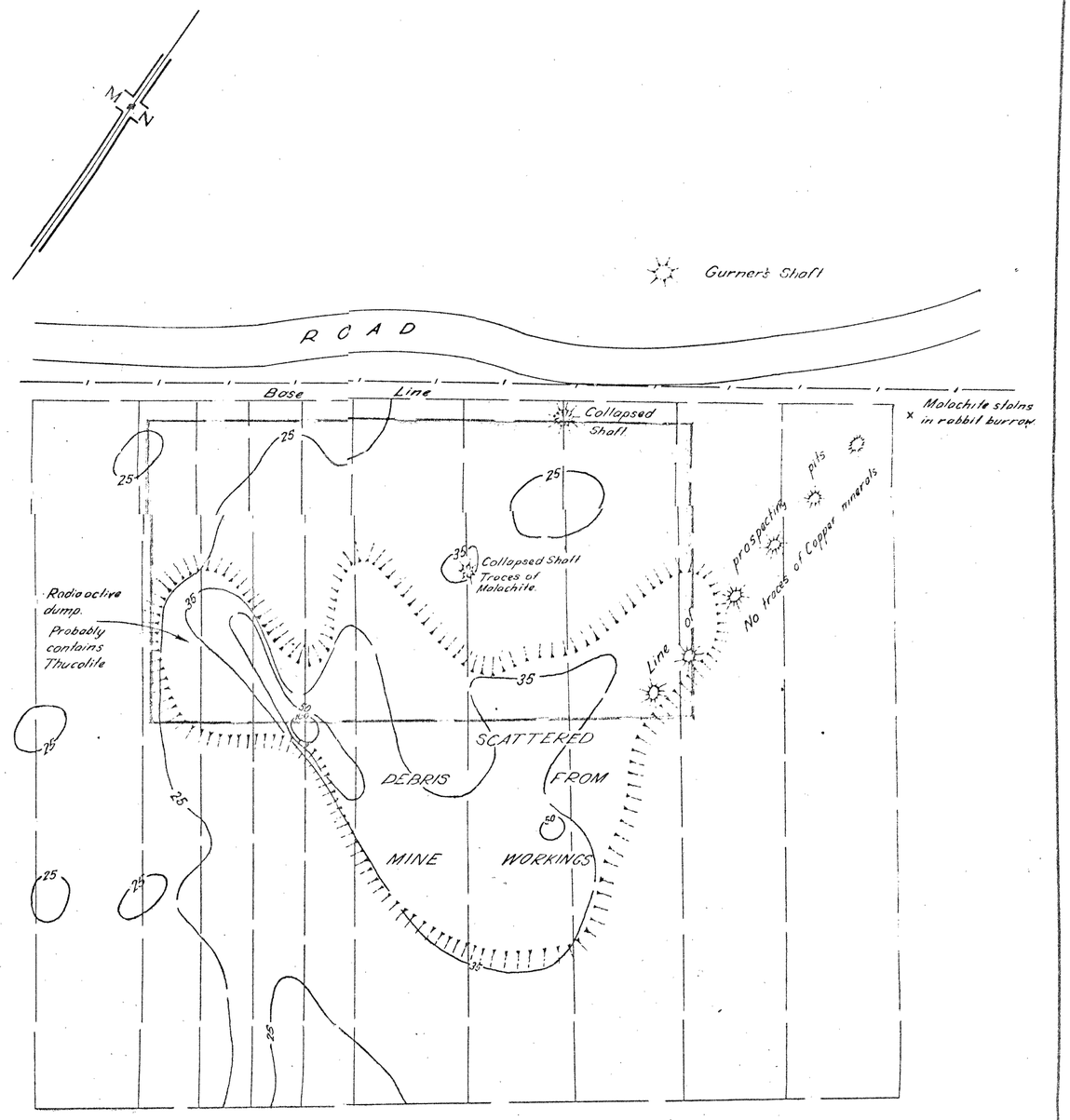
IAM:BK
15/12/54

LOCALITY PLAN



Area Investigated. ---------- [ ]

Scale: 1000 feet to 1 Inch.



SCINTILLOMETER READINGS

Less than 25 counts per second.
Greater than 25 and less than 35 counts per second.
Greater than 35 and less than 50 counts per second.
Greater than 50 and less than 100 counts per second.
Greater than 100 counts per second.

Area recommended for costeaning or drilling on grid system.

To accompany report by I. A Mumme.

Associated Drawing	No.	No.	Amendment	Exd.	Date

Req. No.
D.M.
Compiled from

S. A. DEPT. OF MINES

KADINA AREA
HD. WALLAROO

URANIUM PROSPECT NEAR KURILLA MINES

Approved	Passed
Director of Mines	

Drn.
Tcd. P.J.B.
Chd.
Exd. R.R.

Scale 40 ' to 1 Inch.

US – 485 Copy 2.

Date 20.12.54