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SML 690

IRON KNOB

PROGRESS REPORT TO LICENCE SURRENDER FOR THE PERIOD 20/4/1972 TO 23/7/1972

Submitted by
AOG Minerals Pty Ltd
1972

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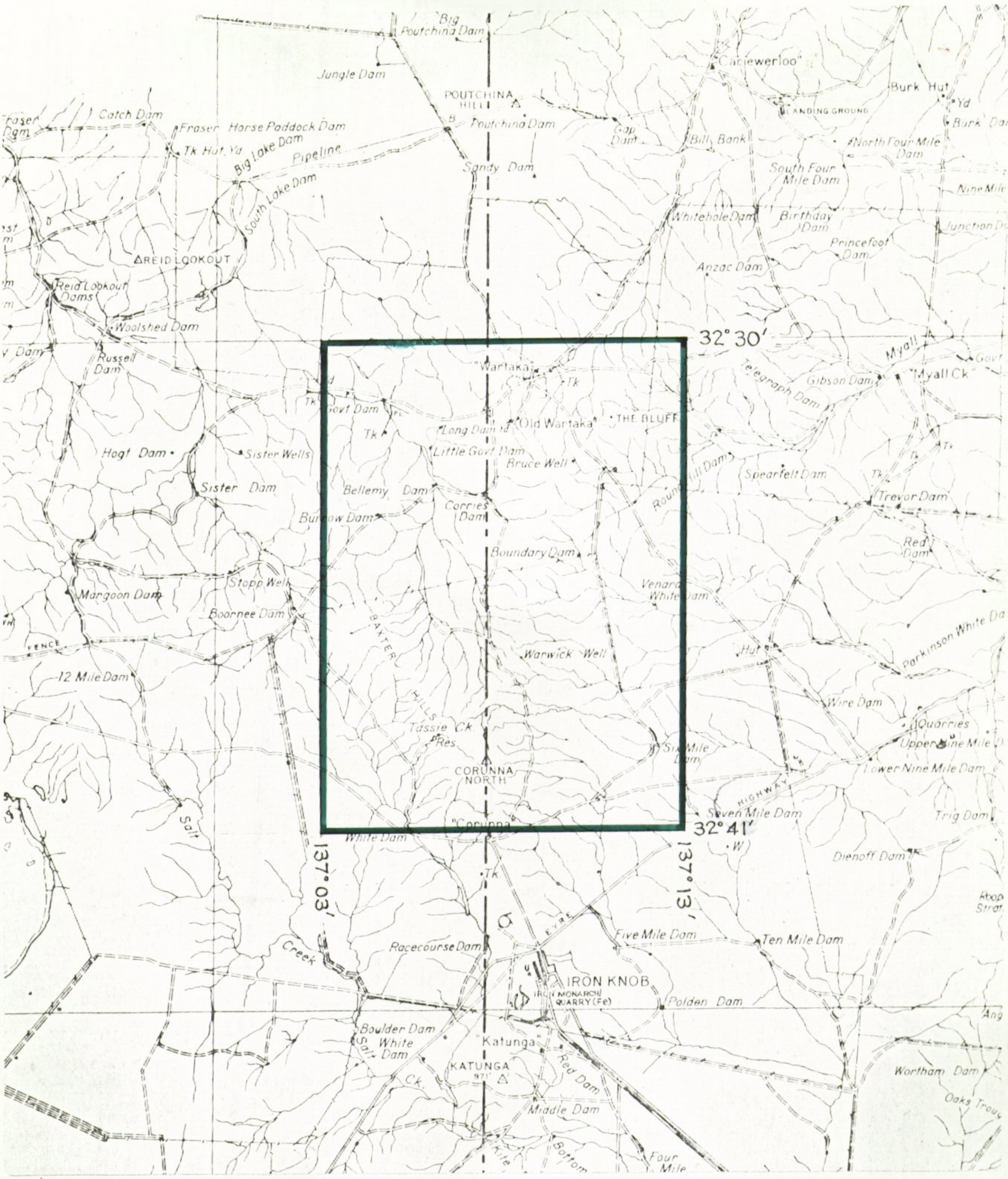
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

Government of South Australia
Primary Industries and Resources SA



SCALE 1:250,000

A.O.G. MINERALS PTY. LIMITED

DOCKET DM 343/72 **AREA** 123 **SQ MILES**

1:250000 PLANS . PT AUGUSTA

LOCALITY IRON KNOB

S.M.L. No. 690 **EXPIRY DATE** 19.4.73

CONTENTS ENVELOPE 1992 S.M.L. 690

TENEMENT: S.M.L. 690

TENEMENT HOLDER: A.O.G. Minerals Pty. Limited

A.O.G. MINERALS PTY. LIMITED

CC 03

TO: MANAGING DIRECTOR DATE: 18th JULY 1972

VIA: CHIEF GEOLOGIST - MINERALS FILE: 2/3/1

IRON KNOB - SOUTH AUSTRALIA
SPECIAL MINING LEASE 690
REPORT FOR THREE MONTHS ENDING 20TH JULY 1972

J. W. WHITING
SENIOR GEOLOGIST-ADMINISTRATION

J. K. ZERWICK
GEOLOGIST

DM.343/72.

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INTRODUCTION

Special Mining Lease 690 covers an area of 319 square kilometres (123 square miles) and is located in the Iron Knob area.

It was granted on 20th April 1972 for a period of twelve months.

This report outlines the work that has been completed in the three months to 20th July 1972.

A scintillometer survey has been carried out over part of the area.

Total expenditure on the Special Mining Lease during the three-month period is $1,235.83 and this sum is dissected in Appendix 1.

GEOLOGY

The oldest rocks in the lease area are the Lower Proterozoic Gneissic Complex which comprise gneiss, granitic gneiss and gneissic granite.

This sequence is intruded by the Early Carpentarian Burkitt Granite which is a red porphyritic granite.

Unconformably overlying the Burkitt Granite is the Late Carpentarian Corunna Conglomerate. The basal member of this unit contains boulders of granite, basement gneiss, jaspilite and quartzite whilst the upper sequence is composed of dolomite, red and green shales, thick quartzite and conglomerate beds and sandstone.

The Gawler Range Volcanics consisting of porphyritic rhyolitic extrusives with tuffaceous flow layers unconformably overlies the Corunna Conglomerate.

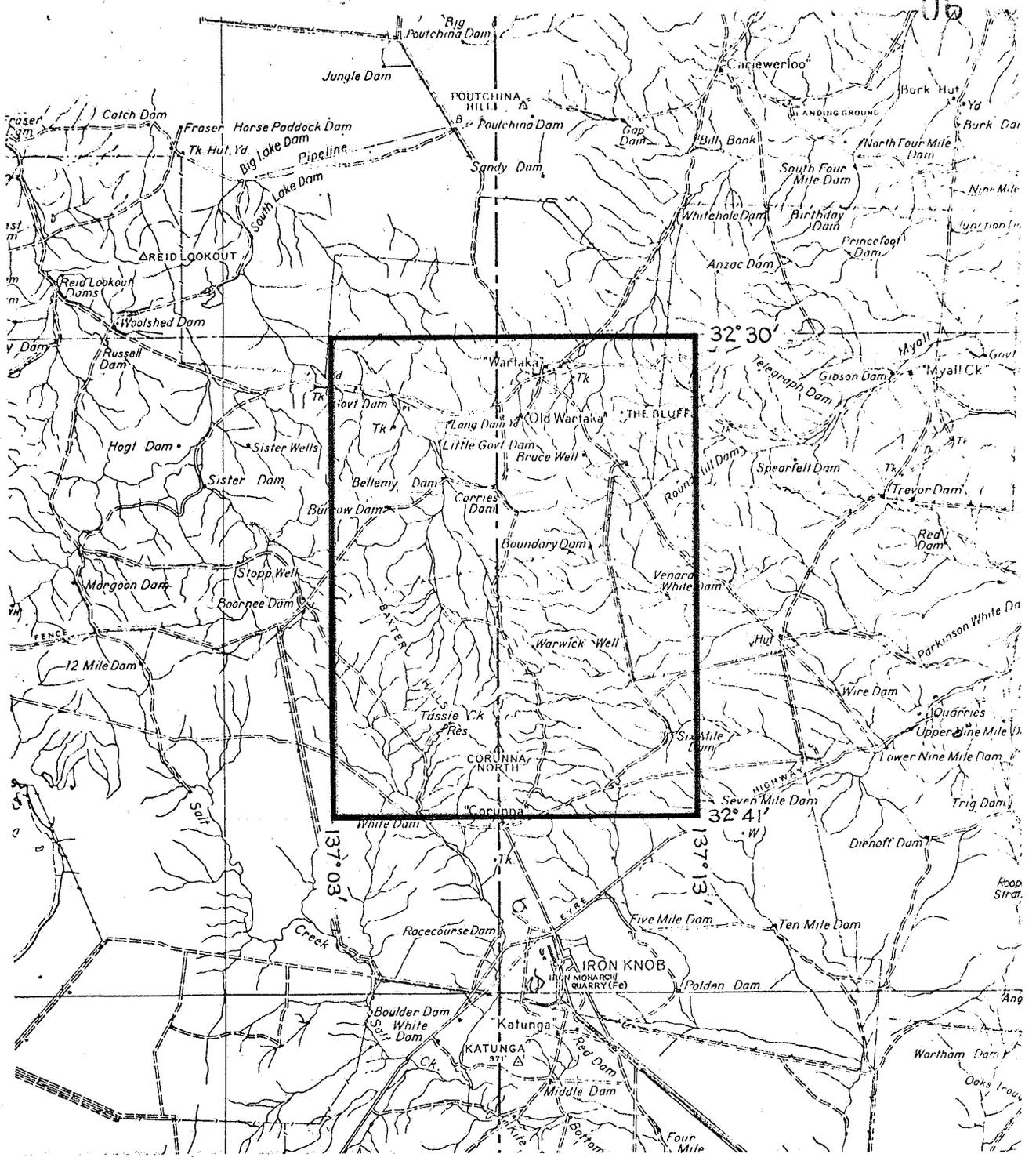
Lateritic gravel, silcrete, grit and sandstone of Tertiary Age crop out in a number of isolated areas.

By far the greatest area within the Special Mining Lease is covered by Quaternary soils and alluvium.

EXPLORATION PROGRAMME

A radiometric survey using a scintillometer was carried out mainly on the Corunna Conglomerate. Background reading was 30 counts per second.

The following traverses were made (refer to Plate 1 for sample and specimen localities).



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LOCALITY IRON KNOB

S.M.L. No. 690 EXPIRY DATE 20/4/73

FIGURE 1

Two in the Tassie Creek area, where the highest reading was 60 counts per second in the lower members of the Corunna Conglomerate (Localities 233, 234 and 235),

Gawler Range Volcanics mapped and made scintillometer readings on west spur of Corunna Homestead (Locality 236),

Abandoned silica quarries on Whyalla-Iron Knob road. Ore three miles west of Wyalla occurs in Corunna Sandstone with green staining prominent. Eighty to one hundred counts per second were obtained in a red mica siltstone (Locality 237),

East spur of Corunna Homestead (Locality 238),

An area in the West End Hill. One anomalous horizon noted 100 to 400 counts per second (Locality 239),

Near Broken Hill Proprietary drillhole (Localities 240 and 241),

To the south of Warwick Dam (Localities 242 to 246),

Four areas southwest of Warwick Dam (Localities 249 to 252),

Vehicles traverse to Uno station noted a change in radioactivity in the Burkitt Granite 90 to 150 counts per second. Mapped around five diamond drillholes put down by Nissho-Iwai Co. (Australia) Pty. Ltd. (Localities 253 to 255),

Uno uranium occurrence. Width, length and intensity of mineralized horizon measured. Four metres width +250 counts per second, one metre width 1000-2000 counts per second exposed in costeans over two kilometres strike length. The occurrence is in the same stratigraphic unit as noted in the Corunna Hills. The West and East End Hill area (Localities 257 to 260),

Area between the West End Hill and Tassie Creek (Localities 261 and 262),

Eastern Range area. An increase in background count noted in coarse basal conglomerate (Localities 263 and 264),

North of Tassie Creek Canyon (east side)(Locality 265),

Between Corunna Homestead and Tassie Creek Canyon (east side)(Locality 266),

Low hills southeast of Corunna Homestead-Middleback Iron Formation (Locality 267),

Gum Creek (Locality 268),

Wartaka Homestead area. Sill noted in Gawler Range Volcanics (Locality 269),

East Range area. Lower order anomalies noted in thin basal conglomerate beds (Localities 270 to 272),

Horseshoe Bend Creek. (Locality 273),

Horseshoe Bend Creek. Two anomalies noted in red shale beds in areas of steep synclinal folding 100 to 600 counts per second (Localities 274 and 275),

Midway between Tassie Creek Canyon and Horseshoe Bend Creek (Locality 276),

Southern area of the East Range. A weak anomaly noted in alluvial/eluvial cover increased from 80 to 140 counts per second on shallow pitting (Locality 277).

A sample was selected that gave the highest scintillometer count and was submitted for mineralogical examination to Central Mineralogical Services and thence for assay by the Australian Mineral Development Laboratories (Appendix 2).

CONCLUSION

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A thin basal bed in the Corunna Conglomerate gave anomalous radioactive readings but on analysis was found too low in uranium to be of commercial interest.

APPENDIX 2

REPORT CMS 72/5/20

Sample JKZ 314

Heavy mineral separations were carried out on two portions of the sediment forwarded to C.M.S.

An examination of the heavy minerals present in the first sample provided the following information:

(a) Minerals present include abundant zircon, common anatase and opaques but only trace amounts of monazite and (?)xenotime.

(b) The abundant zircon grains are almost invariably metamict. Some are hyacynth in colour. Together they form greater than 80% of the heavy fraction. Some grains have R.I. of <1.74 but were confirmed as metamict zircon by X-ray diffraction.

(c) The metamict nature of most zircons is due to the breakdown of the structure caused by U and Th elements. Monazite and (?)xenotime may also contain radioactive elements and together they produce the weak radioactivity in hand specimen. The presence of radioactivity in many of the grains was confirmed by autoradiography.

A second heavy mineral examination on a different sample provided considerably different results. The portion crushed and separated was darker (?)greenish in colour and more radioactive than other parts of this sample, and apparently more radioactive than the zircon-rich sample described above.

(a) Minerals present in this second sample include only very minor zircon, rutile but most commonly crandallite (80% of the heavy fraction) which was confirmed by X-ray diffraction.

(b) It is the phosphate mineral, crandallite, which contains most of the radioactive elements (U and Th) in this example. In thin section (T.S. 9133) the crandallite occurred as an interstitial cement within the quartzose framework and as such is considered to be of syngenetic or diagenetic origin.

The presence of radioactive phosphate as a sedimentary component may be significant because, should the facies change into phosphatic facies, the crandallite may become economic from a phosphate as well as a U-Th source.

The mineralogy determined by C.M.S. simply confirms what is already known about these rocks. (See B.R. Boyd's report dated May 5, 1972 - File: 2/3/1.)

I.F. Scott, M.Sc.

Sample JKZ 314 contained two large rock samples. These were called "A" and "B" and after crushing and separation of the heavy fractions, these heavies were forwarded to AMDEL for U and Th analyses.

Sample "A" is the greyish quartzose sediment (conglomerate) described in CMS Report 72/5/20 as the one bearing crandallite.

Sample "B" is the second reddish sample in which the heavy fraction was dominantly zircon.

The heavy fraction samples were very small and I have asked them to carry out the U and Th analyses by the most suitable method.

Virtually all of each sample has been crushed and sample "A" contained only 0.31 gms of heavies, while sample "B" contained 0.07 gms of heavy minerals.

The % H.F. are A = 0.096% (i.e. 0.31 gm H.F. in 337 gms total)
B = 0.027% (i.e. 0.07 gm H.F. in 260 gms total)
The total amount of sample separated in TBE was approximately 600 gms.

The chemical results will be sent direct from AMDEL to your Sydney and Adelaide addresses.

I.F. Scott, M.Sc.

amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

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Please address all correspondence to the Director
In reply quote: AN3/519/0 - 5618/72

20 June 1972

The Manager
A.O.G. Limited
261 George Street
SYDNEY NSW 2000

REPORT AN5618/72

YOUR REFERENCE: Application dated 30/5/72, Order 4557

IDENTIFICATION: A and B

DATE RECEIVED: 31/5/72

ANALYSIS

%

Sample Mark	Uranium U	Thorium Th
A	<0.05	7.0
B	<0.1	1.25

Enquiries quoting AN5618/72 to Officer in Charge please.

Analysis by: R.L. Bruce

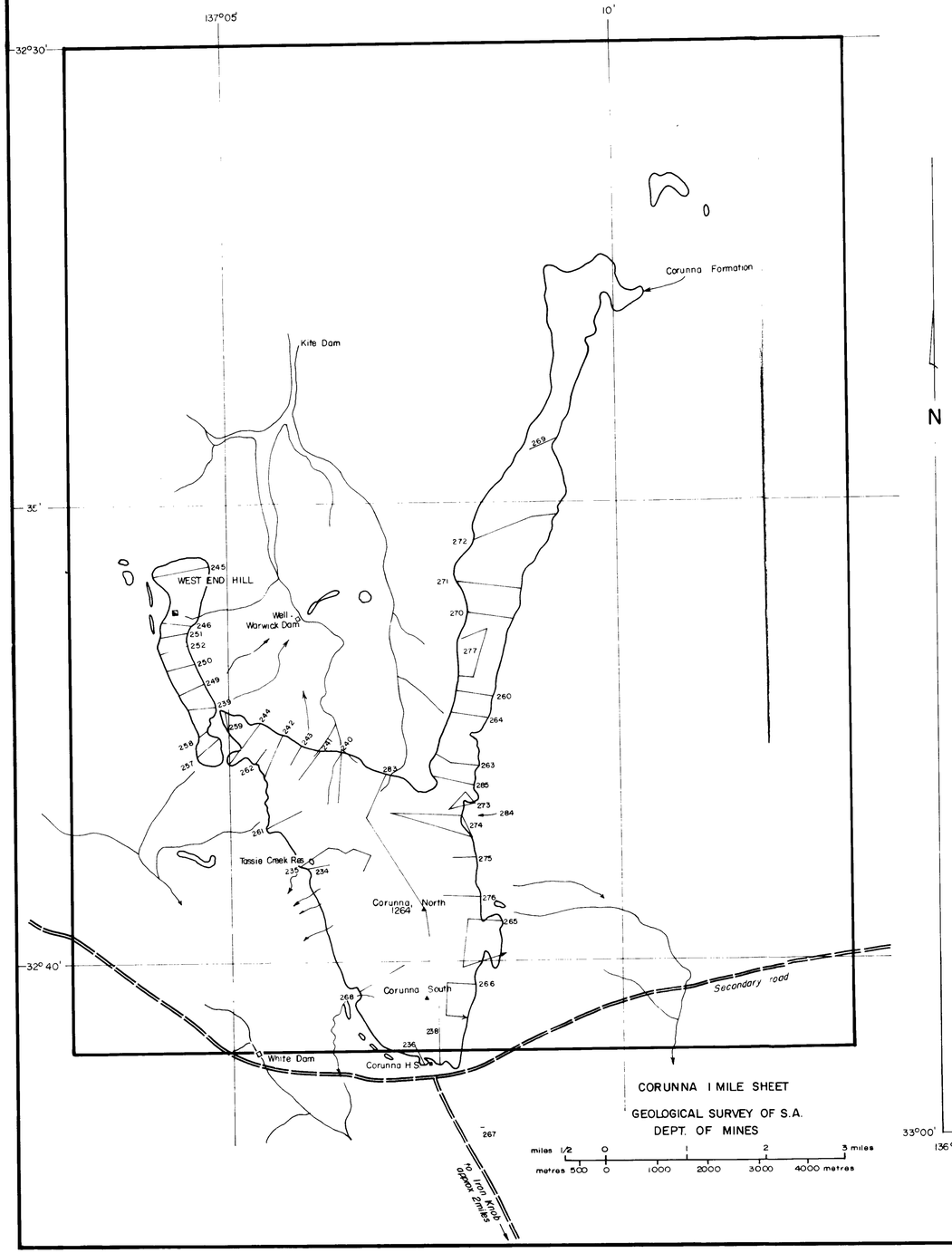
Officer in Charge, Analytical Section: A.B. Timms

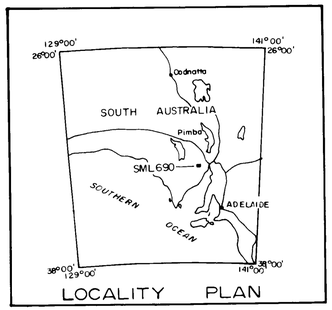
for F.R. Hartley
Director

jw

c.c. Mr B.R. Boyd
55 Knightsbridge Avenue
VALLEY VIEW SA 5093

23-6-72

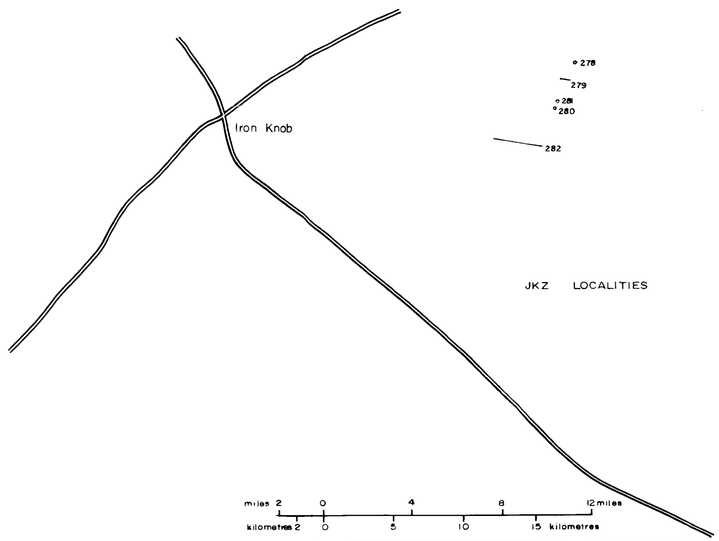




A.O.G. MINERALS PTY. LIMITED

RADIOMETRIC SURVEY
Corunna Area, S.A.
S.M.L. 690

GEOLOGIST:	J. Zerwick	DATE:	June 1972
DRAWN BY:	J. Connor	REVISED:	
SCALE:	As shown	APPROVED:	



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