DEPARTMENT OF MINES AND ENERGY

GEOLOGICAL SURVEY

SOUTH AUSTRALIA

REPORT BOOK 92/69

KANMANTOO TROUGH INVESTIGATIONS LADY JANE MINE

by

J K JANZ & B J MORRIS
Mineral Resources

NOVEMBER 1992 DME 56/88

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CONTENTS PAGE

FIGURES PLAN No

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPORT BOOK 92/69 DME 56/88

Kanmantoo Trough Investigations
Lady Jane Mine

J K JANZ & B J MORRIS

The Lady Jane Gold Mine, located eight kilometres northeast of Callington, consists of an arsenic and gold rich quartz vein lode, within the Cambrian Tapanappa Formation. Arsenopyrite was reported to be the principal ore mineral, with supergene copper in places. The gangue consists predominantly of quartz and limonite. Gold assays ranged from 0.02 to 13.9 ppm but there appears to be limited potential for large scale development. The deposit has potential as a small mining venture.

INTRODUCTION

As a part of the Mineral Resources Branch's ongoing review of Kanmantoo Trough mineralisation and at the request of a landowner, David Vincent, a brief study of the Lady Jane Gold Mine was performed by J. K. Janz and B. J. Morris.

To establish if further development of the mine is warranted a sketch plan of accessible workings was drawn and samples collected for geochemical analysis.

Base metal mineralisation is widely distributed along the length of the Kanmantoo Trough but is generally confined to the Tapanappa, Talisker Calc-siltstone and the Carrickalinga Head Formations of the Kanmantoo Group. The Tapanappa Formation hosts Cu, Pb, Zn, Ag, As and Au mineralisation mainly between Strathalbyn and Kanmantoo. Mineralisation is stratabound within garnet-andalusite-biotite schist and quartz biotite schist.

LOCATION

The Lady Jane Gold Mine is located about eight kilometres northeast of Callington in the eastern Mount Lofty Ranges (see figures 1&2). The mine lies within section 191 hundred of Monarto and is about forty-five km from Adelaide. The mine is situated on private property on the crest of a low soil covered ridge.

HISTORY

A gold reef was discovered at the Lady Jane Mine site in 1866 by Price and Faulkner and operations were immediately commenced. Work ceased within a few months but was resumed in 1869 when some rich gold bearing quartz was raised. In February 1899 Mr L R Scammell took up the mine for arsenic, gold and copper and an auriferous lode alongside the arsenic lode was worked until 1904 but no payable copper ore was found. A Murray Bridge syndicate took up the mine in 1926 and work was resumed on two of the three shafts. Assays of selected material returned arsenic grades of 23 to 36% Operations were confined to the 9 m level of the North shaft with four parcels of gold ore sent to the Mount Torrens Government Battery.

Work ceased in 1928. Panning tests from the battery revealed that the gold content was directly

Work ceased in 1928. Panning tests from the battery revealed that the gold content was directly proportional to the quantity of ferruginous material within ore.

Between 1931 and 1933 the mine was reopened and another four parcels of gold ore treated.

PREVIOUS INVESTIGATIONS

The Lady Jane Mine was examined by the Inspector of Mines in 1927 who obtained access to the 9 and 15 m levels but found the southern shaft inaccessible. His report in Mining Review No. 46 (Appendix I) found that there did not appear to be any reasonable prospect of developing a payable ore shoot by extending the workings. No work is reported to have taken place since 1933. The ground is currently held by Aberfoyle Resources under E.L 1706.

PRODUCTION

Records of mine production are somewhat incomplete, as published records were absent until the advent of Department of Mines, "Mining Reviews", in 1903.

1899	Auriferous ore treated at Dry Creek returned 133.8g gold bullion per tonne from 1.27t of ore.
	Three hundred bags (20.3t) of arsenic ore was shipped for treatment
January 1926-June 1928	A total of 29.5t of ore was treated at the battery producing 400.6g of gold bullion
January 1931-December 1933	A total of 20.3t of ore was treated at the battery producing 612.2g of gold bullion

Total known production is 1146.4g of gold bullion from 51.1t of ore

GEOLOGICAL SETTING

The Kanmantoo Group comprises an Early Cambrian, predominantly clastic succession which either rests conformably on Normanville Group or is faulted against Adelaidean sediments. Following accumulation in the Kanmantoo Trough, the sediments were deformed by the Cambrian-Ordovician Delamerian Orogeny. This event caused regional folding, faulting and metamorphism of the sediments and was accompanied by granite, pegmatite and mafic dyke intrusions.

The Lady Jane Gold Mine occurs within the dark brown and grey quartz-biotite-mica schist of the Tapanappa Formation which is exposed near the mine site. In the immediate area of mineralisation the host rock is altered and bleached to a yellow colour. The alteration extends to about half a metre from the ore zone.

Tapanappa Formation metasediments are both folded and faulted with the micaceous schist exhibiting a well developed schistosity along which mineralisation tends to accumulate.

MINE WORKINGS

The mine consists of two shafts separated by a central drive 9 m in length (Fig. 3). A 5m northwest and a 5 m northeastern drive extend from the North shaft. The South shaft was not accessible at the time of inspection but has been previously reported to be about 33 m deep (Appendix I). The workings were examined to a depth of 9 m from the surface, below which the workings are blocked with debris. A third shaft exists about 10m to the south of the mine but is also blocked with debris and previous reporting suggests that it was about 6m deep and not connected to the South shaft.

MINERALISATION

The lode is a quartz vein system striking at 345° M, dipping steeply west and intruding along a fracture zone. The vein, up to 2m wide, is discontinuous and anastomose in nature with a series of off-shoots and veinlets up to 4 cm wide.

Vein material consists of quartz, iron oxides and fine disseminations of sulphide with minor copper staining. Previous investigations found the principal ore mineral to consist of arsenopyrite. X-Ray diffraction examination of vein material showed that it consists of iron oxides and possibly jarosite (Appendix III). Jarosite is commonly found as a secondary coating on iron rich sulphide ores.

GEOCHEMICAL ANALYSES

Ten rock chip samples were taken across the lode (Fig 3) and submitted to Australian Laboratory Services P/L for geochemical analysis. The results appear in Appendix II and anomalous values were recorded for gold, copper, antimony, arsenic, sulphur, iron, chromium, platinum and palladium. No anomalous values were recorded for the chalcophile elements lead, zinc, silver and nickel.

The geochemical analyses suggest that the mineralisation is within the Cu-Fe-S-As-Cr system. The high iron, arsenic and sulphur values tend to suggest that they are bound in the arsenopyrite lattice. There appears to be a relationship between high gold values and anomalous platinum and palladium values. The geochemical consistency between samples, displayed graphically in Appendix II, suggests that there was only a single phase of mineralisation. No attempt has been made here to determine the source of the fluids.

CONCLUSIONS AND RECOMMENDATIONS

The Lady Jane Gold Mine is not considered to have significant reserves in place to warrant large scale development. The assay results show the occurrence of gold to be consistent, with values commonly greater than 500ppb.

The main vein should be checked below the 9 m level for possible extensions. Further assaying is warranted. The previous assay results (Appendix I) should be viewed cautiously. There may also be further extensions from the North shaft along a strike of 320° M.

Any northeastern extension from the North shaft is considered of low priority. It may be worth checking for extensions from the South shaft along a strike of 165° M as samples RS 256 and RS 257 both gave assays of greater than 500 ppb Au.

The landowner will need to seek the permission of the Exploration Licence holder before pegging a Mineral Claim and commencing any site work.

APPENDIX I

REPORT ON LADY JANE MINE BY J L PEARSON (INSPECTOR OF MINES)

FROM SOUTH AUSTRALIAN DEPARTMENT OF MINES

MINING REVIEW NO. 46, 1927.

SOUTH AUSTRALIA.

DEPARTMENT OF MINES.

MINING REVIEW

FOR THE

HALF-YEAR ENDED JUNE 30TH, 1927.

No. 46.

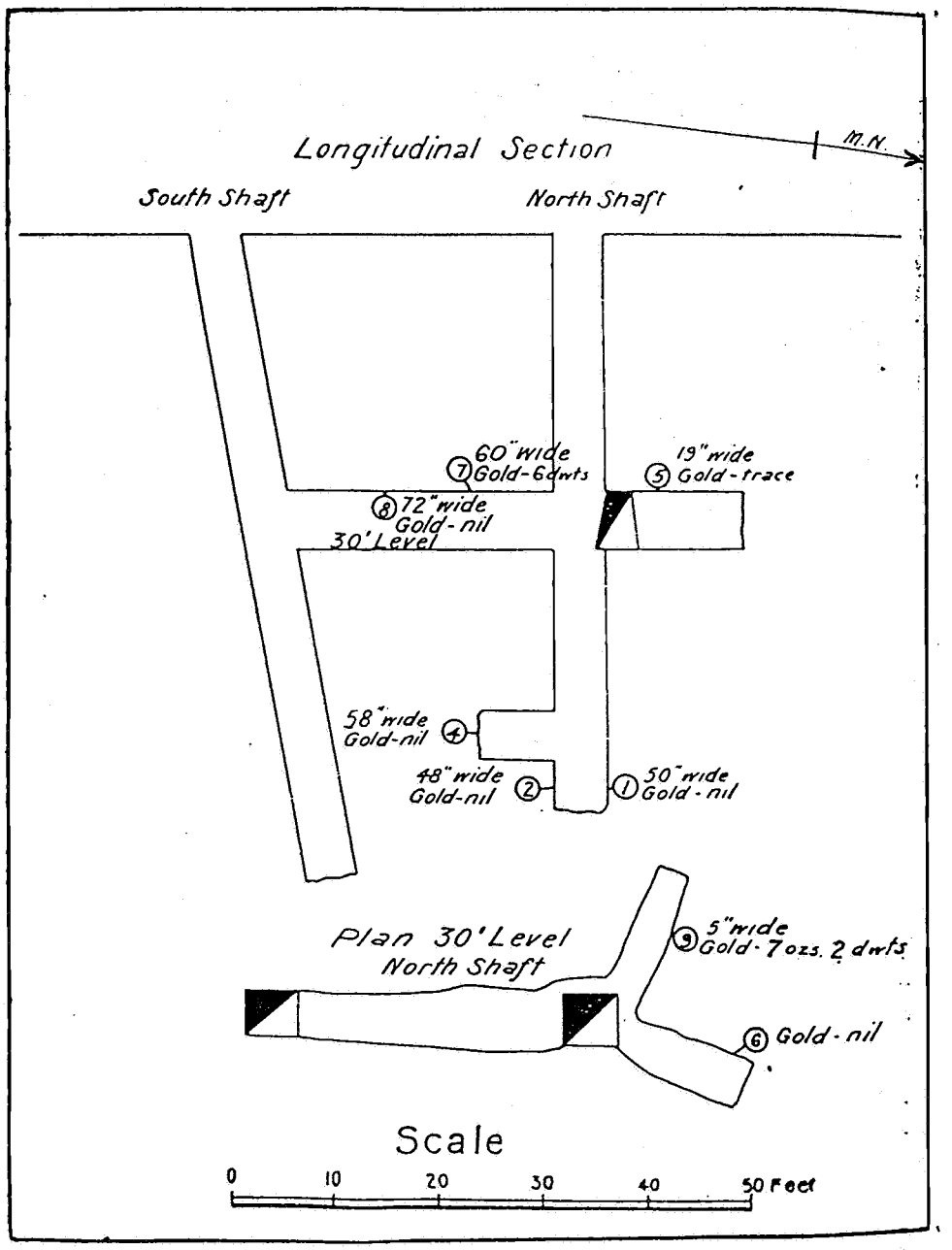
ISSUED UNDER THE AUTHORITY OF THE
HONORABLE H. TASSIE, M.L.C.,
MINISTER OF MINES.

ADELAIDE:
HARRISON WEIR, GOVERNMENT PRINTER, NORTH TERRACE.

1927.

LADY JANE MINE, SECTION 191, HUNDRED OF MONARTO.

The above property is situated about five miles distant in a north-westerly direction from Monarto South Station on the Adelaide-Murray Bridge railway line, and about three-quarters of a mile from the old Preamimma Mine. The workings are on private property with the mineral rights alienated from the Crown, and the mine was originally operated about 1902 or earlier. It has lately been re-opened by a syndicate with headquarters at Murray Bridge, under an arrangement with the owner, giving them the mining rights over the section. The workings are situated on the crest of a low soil-covered ridge and consist of two shafts 35ft. apart at surface, known respectively as the North and South Shafts. The latter, which is reputed to be 110ft. deep and to show a strong lode of arsenic ore near the bottom, was not accessible at the time of inspection. The northern shaft workings were examined to 55ft. from surface, where it is blocked with debris. At a depth of 30ft. there are drives extending north 13ft. and south 25ft., the latter connecting with the southern shaft, while at 50ft. a distance of 7ft. has been opened in a southerly direction. The vein exposed in these workings has a north and south strike, and a slight underlie to the west. It ranges from 19in. to 72in. in width, and consists of quartz with small patches of ferruginous material and some arsenical pyrites. At the 30ft. level a narrow vein with a course practically at right angles to the main vein has been opened in a westerly direction for a length of 13ft. from the shaft. As exposed, this consists of ferruginous quartz averaging 5in. in thickness, from which a representative sample systematically taken over the length of the drive assayed 7ozs. 2dwts. per ton. The country rock is micaceous schist.



The Lady Jane Gold Mine, Monarto.

Samples taken from various parts of the workings and assayed by the Departmental Analyst yielded the following results :—

Number of Sample.	Location.	Class of Material.	Width Sampled.	Gold.	Arsenic.
			In.	Ozs. dwts.	%
1	From South end of North shaft at 57ft. from surface	Quartz	50	Nil	—
2	From North end of North shaft at 57ft.	Quartz and micaceous schist	48	Nil	—
3	From ends of shaft at 57ft. (including casing of quartz vein)	Quartz and micaceous schist	—	Trace	—
4	From end of South drive at 50ft. from surface	Quartz	58	Nil	—
5	From back of North drive 30ft. level 5ft. from shaft	Quartz	19	Trace	—
6	From side of North drive 30ft. level 10ft. from shaft	Biotite schist	—	Nil	—
7	From back of South drive 30ft. level 8ft. from shaft	Quartz	60	0 6	—
8	From back of South drive 30ft. level 16ft. from shaft	Quartz and schist	72	Nil	—
9	From back of oblique (W. drive 30ft. level. Sample taken over full length 13ft.)	Ferruginous quartz	5	7 2	—
10	From surface pit on outcrop 100ft. South of South shaft	Quartz	—	Trace	—
11	From small pile of selected arsenical ore at North shaft	Arseno-pyrite and quartz	—	0 7	36·8

A sample obtained by a representative of the syndicate from an outcrop about one mile further south and approximately in line with the mine workings, assayed 23·4 per cent. for arsenic, but contained no gold. The operations of the syndicate have been confined to the 30ft. level from the north shaft, where ore has been broken from several places on the main vein. From the material raised, three parcels have been sent to the Government battery at Mount Torrens for treatment. At these works 26·55 tons produced 11ozs. 4dwts. 8grs. of gold, valued at £40 19s. 10d., or equivalent to an average return of £1 10s. 10½d. per ton of ore treated. This return covers four separate parcels, which gave yields ranging from 3dwts. up to 10dwts. of gold per ton.

From panning tests made at the works the gold contents are reported to vary in proportion to the quantity of ferruginous material associated with the quartz.

Conclusions.—From the assay results the distribution of values in the main vein is erratic, and the proportion of barren material so great that there does not appear to be any reasonable prospect of developing a payable ore shoot by extensions from the present workings.

The high gold contents shown by the small vein or leader exposed in the 30ft. level oblique drive, warrant its being further tested to ascertain if it continues vertically and longitudinally. The chief drawback is the limited size of the vein, which, as at present exposed, only averages 5in. in width, and its successful exploitation depends on the high grade ore shoot being extensive enough to justify systematic working. Further, that the formation is suitable for selective mining, so that the rich ore can be broken without becoming mixed with waste rock. If

these conditions obtain the high mining cost involved in working such a narrow vein will be largely counterbalanced by low treatment and transport charges on the actual metal contents.

As regards the mining of arsenical ore, for which it is stated the syndicate has been offered a favorable tariff for material containing 30 per cent. or more of arsenic, there is no ore of this class available in the workings from the North shaft, but as there is some evidence of arsenical ore having been obtained from the deeper portions of the South shaft, the offer justifies provision for a systematic examination of those workings to ascertain the character of the lode material exposed in them. 4-10-27

APPENDIX II

GEOCHEMICAL ANALYSES

(AUSTRALIAN LABORATORY SERVICES REPORT ST 3917-0)

TABLE

GEOCHEMICAL RESULTS

Sample No RS	Cu	Pb	Zn	Ag	As	Sb	S
255	240	5	15	<1	2150	<5	880
256	240	10	10	<1	10600	<5	1800
257	370	10	10	<1	7050	<5	1550
258	25	<5	5	<1	420	<5	160
259	820	10	5	<1	3550	<5	3800
260	80	5	10	<1	3350	<5	440
261	460	10	2.5	<1	45400	15	15200
262	1150	10	10	<1	6050	<5	7700
263	85	5	5	<1	830	<5	530
264	310	5	10	<1	1550	<5	8000

RS	Cr	Ni	Fe	Co	Pt	Pd	Au
255	590	25	2.35	20	<1	<1	0.16
256	460	10	3.13	5	<1	2	0.56
257	480	15	8.50	10	<1	1	0.68
258	540	5	0.68	<5	<1	<1	0.02
259	650	25	9.01	15	2	2	0.55
260	590	10	1.37	<5	<1	<1	2.85
261	500	20	7.87	115	1	4	13.9
262	650	35	17.3	20	<10	<10	1.30
263	540	10	2.11	<5	<1	<1	0.16
264	570	10	6.32	10	<1	<1	0.22

Fe in %
Pt and Pd in ppb
All other measurements in ppm
All RS numbers prefixed by 6727

AUSTRALIAN LABORATORY SERVICES P/L
A.C.N. 009 936 029

Brisbane Head Office and Laboratory
32 Shand Street, Stafford, Q. 4053
P.O. Box 66, Everton Park, Q. 4053
Telephone: (07) 352 5577
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ANALYTICAL REPORT

CLIENT: DEPARTMENT MINES & ENERGY
ADDRESS: P O BOX 151
EASTWOOD
SA 5063

CONTACT: MS J JANZ

LABORATORY: STAFFORD
BATCH NUMBER: ST3917-0

No. of SAMPLES: 10
DATE RECEIVED: 29/06/92
DATE COMPLETED: 16/07/92

ORDER No: EX1232 SAMPLE TYPE: ROCK CHIP PROJECT No:

SAMPLE NUMBER	ELEMENT UNIT METHOD	Cu ppm IC586	Pb ppm IC586	Zn ppm IC586	Ag ppm IC586	As ppm IC586
6727RS255		240	5	15	<1	2150
6727RS256		240	10	10	<1	1.06
6727RS257		370	10	10	<1	7050
6727RS258		25	<5	5	<1	420
6727RS259		820	10	5	<1	3550
6727RS260		80	5	10	<1	3350
6727RS261		460	10	<5	<1	4.54
6727RS262		1150	10	10	<1	6050
6727RS263		85	5	5	<1	830
6727RS264		310	5	10	<1	1550
DETECTION LIMIT:		5	5	5	1	1

COMMENTS: *** DUPLICATE ASSAYS.
Due to limited sample weight for sample 6727RS262, detection limit for Au, Pt and Pd is 10ppb.

All pages of this report have been checked and approved for release.

Signed

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Kalgoorlie Laboratory
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SAMPLE NUMBER	ELEMENT UNIT METHOD	Fe % IC586	Co ppm IC586	Cr ppm IC586	Mn ppm IC586	Ni ppm IC586
6727RS255		2.35	20	590	50	25
6727RS256		3.13	5	460	30	10
6727RS257		8.50	10	480	30	15
6727RS258		0.68	<5	540	30	5
6727RS259		9.01	15	650	40	25
6727RS260		1.37	<5	590	40	10
6727RS261		7.87	115	500	30	20
6727RS262		17.3	20	650	40	35
6727RS263		2.11	<5	540	40	10
6727RS264		6.32	10	570	40	10
DETECTION LIMIT:		0.01	5	10	10	5

COMMENTS:

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ORDER No: EX1232 SAMPLE TYPE: ROCK CHIP PROJECT No:

SAMPLE NUMBER	ELEMENT UNIT METHOD	S ppm IC586	Sb ppm IC586	Pt ppb PM217M	Pd ppb PM217M	Au ppb PM217
6727RS255		880	<5	<1	<1	160
6727RS256		1800	<5	<1	2	560
6727RS257		1550	<5	<1	1	680
6727RS258		160	<5	<1	<1	20
6727RS259		3800	<5	2	2	550
6727RS260		440	<5	<1	<1	2850
6727RS261		1.52%	15	1	4	13.9
6727RS262		7700	<5	<10	<10	1300
6727RS263		530	<5	<1	<1	160
6727RS264		8000	<5	<1	<1	220
DETECTION LIMIT:		10	5	1	1	1

COMMENTS:

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ORDER No: EX1232 SAMPLE TYPE: ROCK CHIP PROJECT No:

SAMPLE NUMBER	ELEMENT UNIT METHOD	Au PM217M ppb CHECKS				
6727RS255						
6727RS256		580				
6727RS257		630				
6727RS258						
6727RS259						
6727RS260		3050				
6727RS261		15.7ppm				
6727RS262		1300				
6727RS263						
6727RS264						
DETECTION LIMIT:		1				

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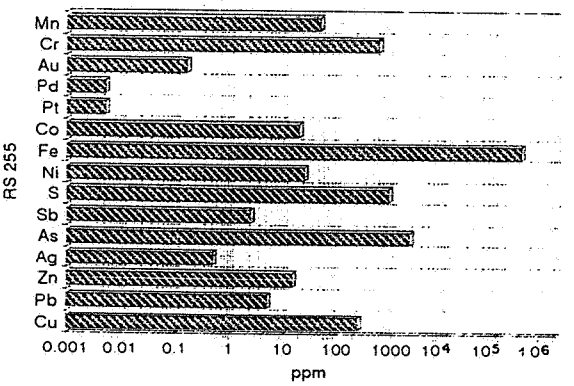
Lady Jane



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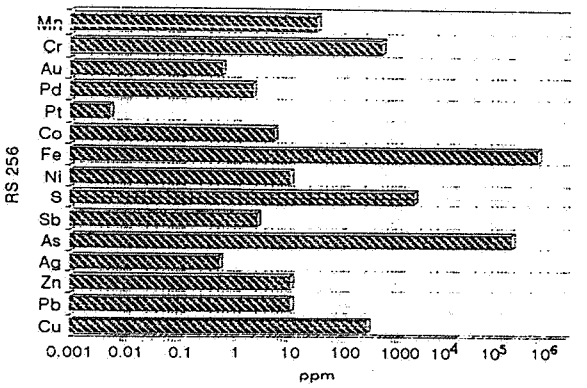

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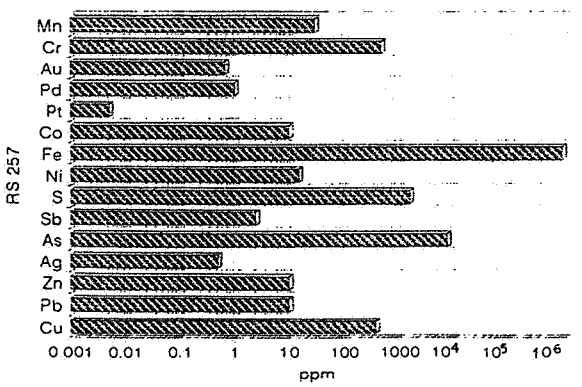

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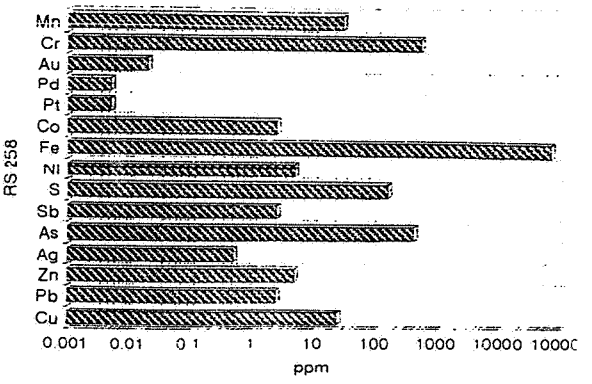

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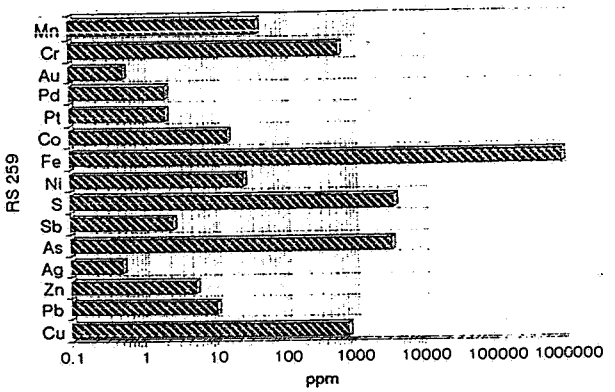

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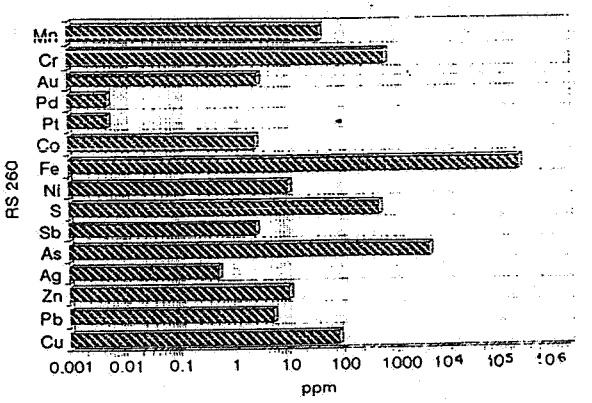

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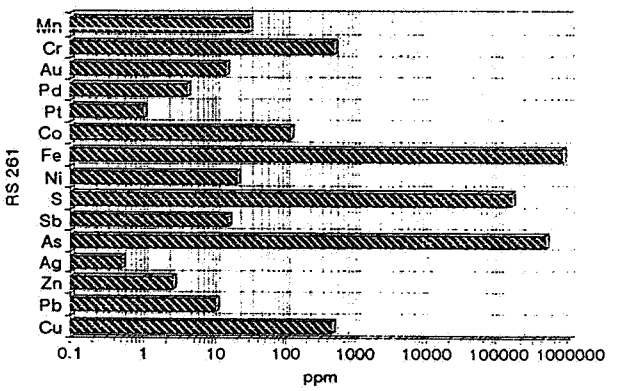

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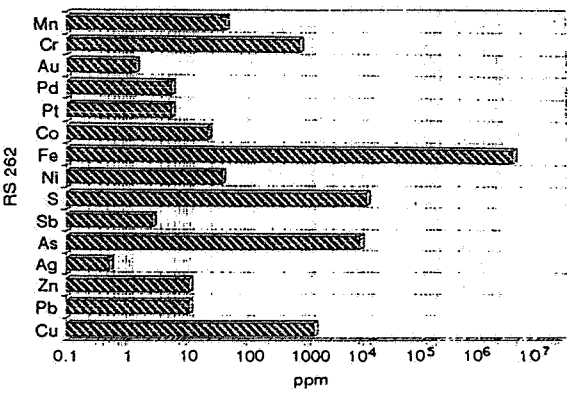

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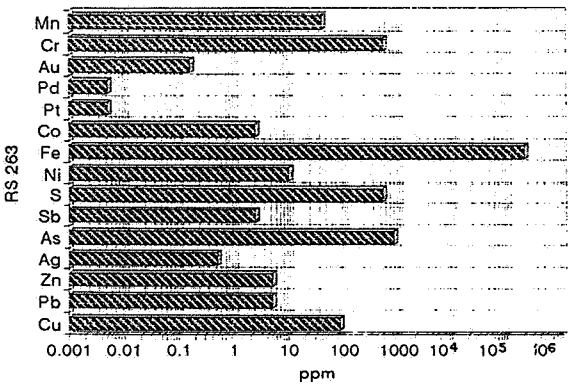

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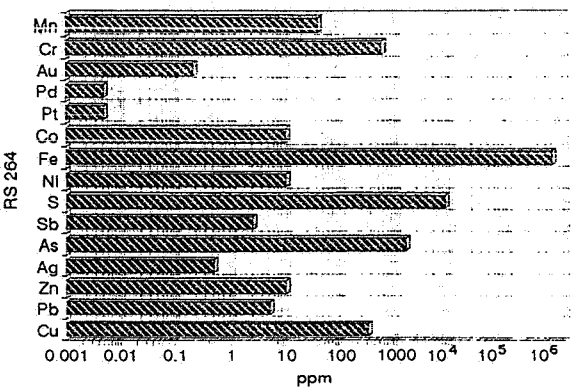

APPENDIX III

XRD EXAMINATION

(ANALABS MINERALS REPORT 105000.10.35.08339)

ANALABS
MINERALS

Inchcape
Testing
Services

CC/ll

26 August 1992

The Manager
Department of Mines & Energy
P.O Box 151
EASTWOOD SA 5063

OUR REF : 105000.10.35.08339
YOUR REF : 12/03/524
ATTENTION : MS J JANZ

Dear Ms Janz

Herewith results of the XRD examination of your samples as per your request. I do apologise for the delay in getting results to you, however interpretation of these traces has been very difficult due to the complex nature of the samples.

Sample 259	Sample 261	Sample 264
This sample is predominantly **Quartz** with **Mica, Iron Oxides** and a possible trace of **Jarosite.**	This sample is predominantly **Quartz,** with **Mica, Iron Oxides, Pyrite?, Jarosite?** and possible **Amphibole.**	This sample is predominantly **Quartz** with **Mica, Iron Oxides,** and **Jarosite.**

Yours sincerely
ANALABS - A Division of
Inchcape Testing Services Pty Ltd

C P CHAMBERS
Production Controller - (XRF)

C. P. Chambers

Inchcape Testing Services (Australia) Pty. Ltd. – Analabs
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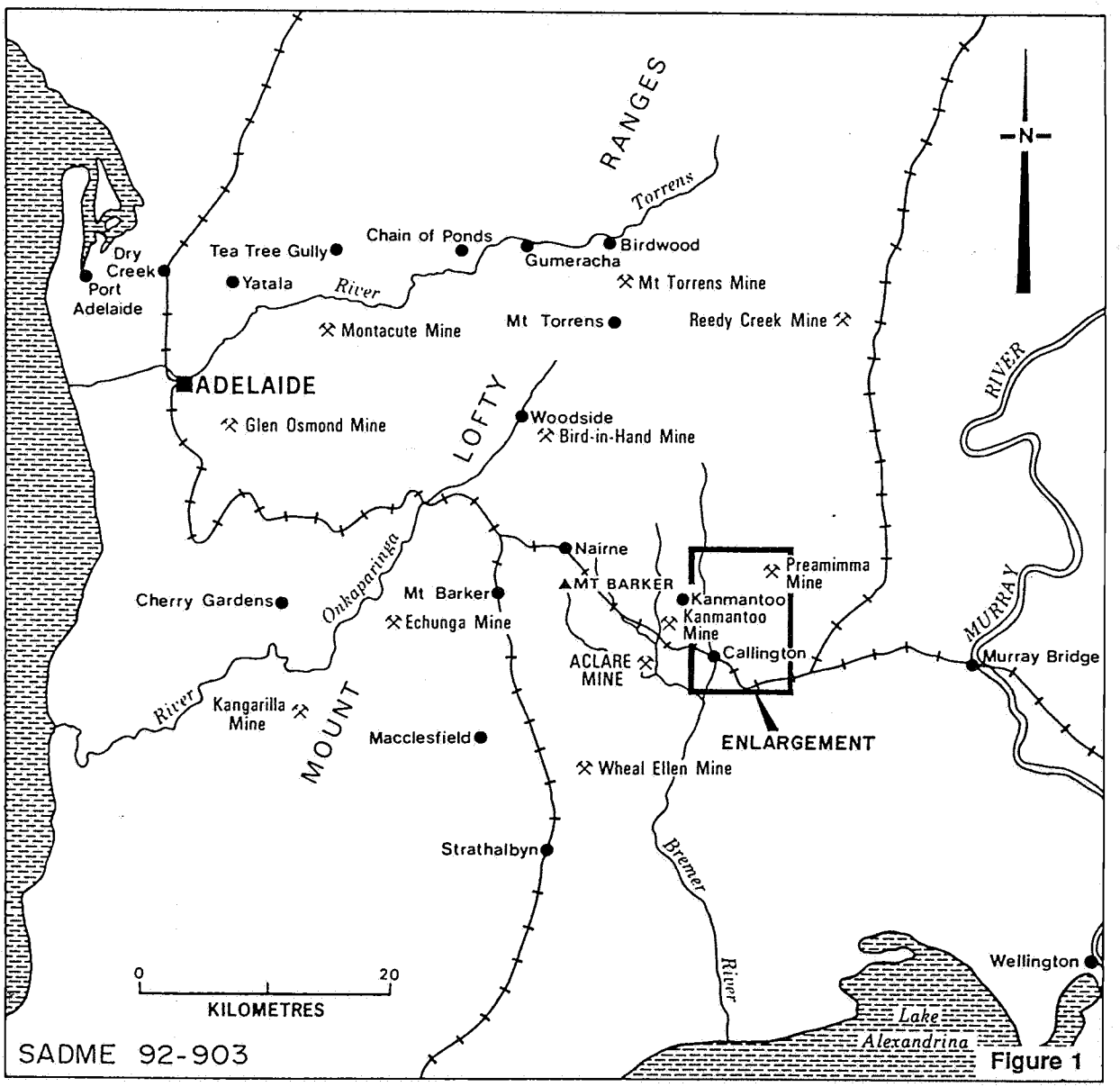
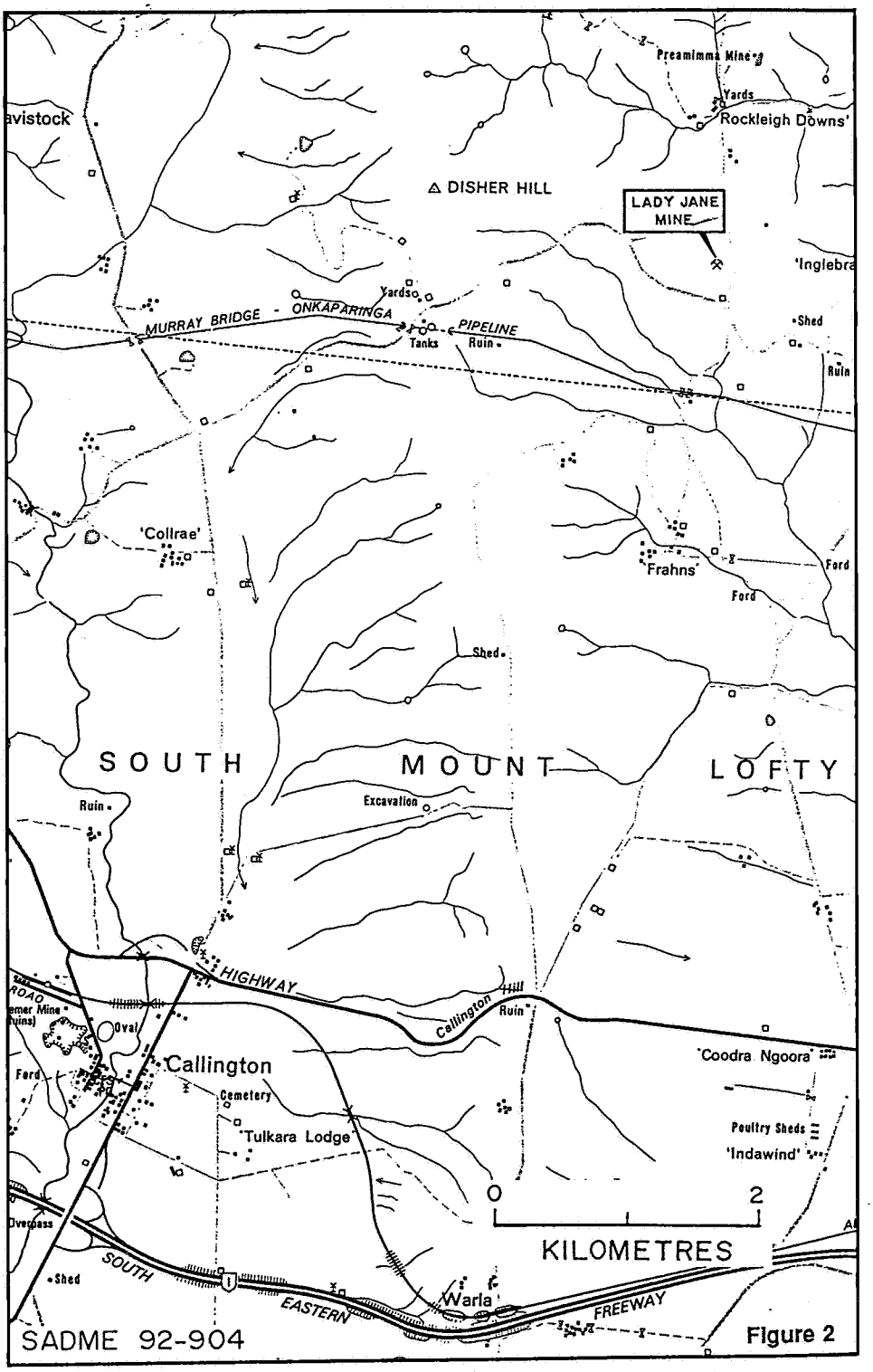


Figure 1

LADY JANE MINE
REGIONAL LOCALITY PLAN



LADY JANE MINE
LOCALITY PLAN

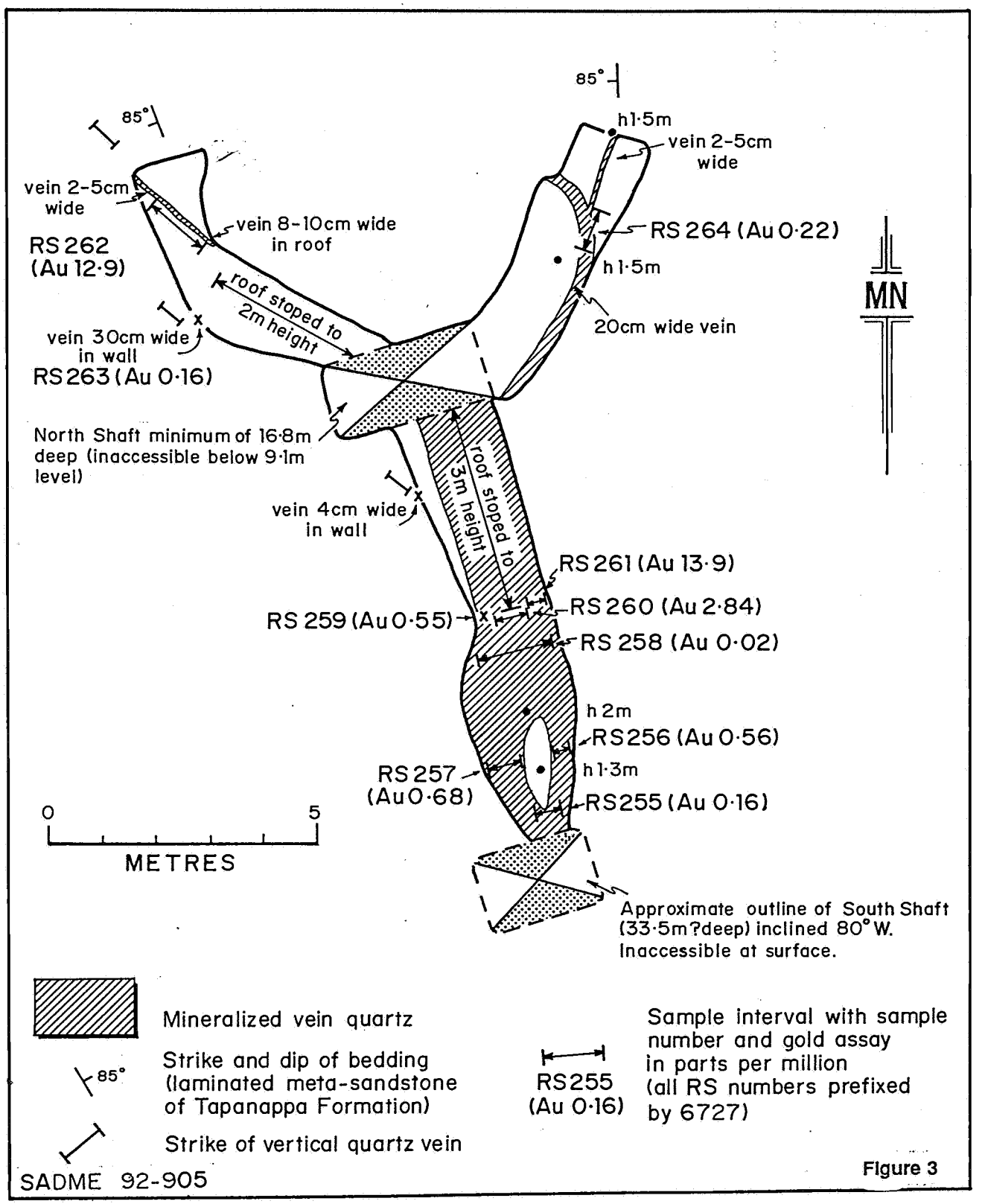


Figure 3

LADY JANE MINE
SKETCH PLAN OF 9.1m LEVEL