DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA

REPT.BK.NO. 85/41 APPRAISAL OF GOLD TAILINGS AT TARCOOLA BLOCKS MINE.

GEOLOGICAL SURVEY

by

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FRONTISPIECE:

Tarcoola Blocks Mine. View from West, May 1922. Neg. 406

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Rept.Bk.No. 85/41 D.M.E. No. 51/83 Disk No. 94

APPRAISAL OF GOLD TAILINGS AT THE TARCOOLA BLOCKS MINE

ABSTRACT

Between the commencement of crushing at Tarcoola Blocks mine battery in May 1901 and closure at the end of March 1912, 32 084 tonnes of ore yielded 1 385 436 grams of gold bullion. An indicated minimum 29 100 tonnes of tailings containing 1.88 g/t Au in two separate dumps remain on site.

These tailings also contain an average 2 g/t Ag, 70 ppm Cu, 1 200 ppm Pb, 350 ppm Zn and 80 ppm As.

The tailings have been cyanided at least once and the truck dump material has been cyanided twice. Cyanidation leach tests show that about 60% of the gold in the truck dumps (stockpiles A-D) and up to 50% of the gold in the main battery sands (stockpiles E and F) could be readily extracted with relatively low consumption of sodium cyanide and lime. For such an operation to be economic, the plant would need to process tailings at the nearby Tarcoola Government Battery as well.

Some tailings containing up to 2.72 g/t and averaging 2.00 g/t have washed out onto the flats south of the mine workings and although not representing a large tonnage, the material could be picked up and treated in conjunction with the other tailings.

INTRODUCTION

Tarcoola Blocks Battery treated ore from Tarcoola Blocks and adjacent mines on Tarcoola Goldfield between 1901 and 1912. There is no record of the grade of tailings and only limited sampling had been conducted. Since the tailings had been cyanided at least once and some dispersed onto the flats south of the mine, a survey to determine gold content and tonnage was initiated. Fifteen hand auger holes up to 4.2 m deep were drilled by the authors on the main stockpiles and seventeen holes drilled on the truck-dumped stockpiles in July 1984. Samples were collected over one metre intervals and analysed by Australian Mineral Development Laboratories (AMDEL) for gold by fire assay and copper, lead, zinc, arsenic and silver by atomic absorption spectroscopy. On completion of the analytical work, samples from holes 1-15 on the main dump and from holes TD1-TD17 on the truck dump were combined into two composite samples which were subjected to agitation cyanidation leach tests at AMDEL.

Three samples were collected from material washed out onto the flats south of the main shaft.

A stadia survey of the stockpiles, drillhole locations and lease boundaries was completed by SADME Survey Section in August 1984.

A similar program of hand auger drilling and laboratory testing has been completed at Tarcoola State Battery and Cyanide Works (Horn & Fradd).

LOCATION AND TENURE

Gold tailings at Tarcoola Blocks mine are located on land owned by the Crown approximately 3 km west of the township of Tarcoola which is on the Trans-Australian railway 400 km from Port Augusta. The land is situated within the Far North Planning Area (Fig. 1) approximately 600 km northwest of Adelaide.

Portion of the main tailings dump is contained within Mineral Lease (ML) 4844 and almost all of the truck dump material is within ML4844 and 4667. Mineral tenure at Tarcoola Goldfield is listed in Table 1.

The main tailings dump is 100 m southwest and the truck dump stockpiles are 150 m southeast of Tarcoola Blocks main shaft (Fig. 2).

		TABLE 1		
ML	Registered Holder	Area (ha)	Expires	Workings & Tailings
4650) P. & P.B. Philip-Harbutt	15.61	29.10.87	Sullivans, Ward, Welcome Home Imperial reefs.
4667	P. & P.B. Philip-Harbutt	4.49	14.01.88	Alluvial flats south of Main Shaft - portion of truck dump tailings.
4670	S.G. Dedman	12.00	4.02.88	—
4844	Batehaven Nominees P/L forfeitured in Warden's Court lease applied for by P. Phillip-Harbutt	2.64	11.04.85	Portion of main tailings stockpile and truck dump tailings.
5179	P. & P.B. Philip-Harbutt	4.68	10.01.91	Main Blocks Mine - Fabian & McKechnie reefs - portion of truck dump tailings.

GEOLOGICAL SETTING

Auriferous quartz reefs striking generally north-south cut across a sequence of interbedded slate and quartzite striking dipping 30°-40°. east-west and south at about These metasediments form a prominent east-west range of rounded hills with drainage to the north and south. On the northern slopes of the ridge, a breccia? conglomerate bed marks an unconformity between metasediments and granite. Numerous andesitic/dioritic dykes intrude the metasediments.

In general, mining has been confined to the reefs in a horst block between two strike faults, the main fault to the north and pug seam to the south.

HISTORICAL

Alluvial gold was found in 1893 at the eastern end of Tarcoola Hill.

Fabian and Ward discovered rich surface specimens in April 1900 and Tarcoola Blocks Company was formed to acquire a number of 8 hectare blocks near the discovery.

A ten head gravity stamp battery, fed with ore broken by a rockbreaker, commenced crushing on 16 May 1901 with tailings being treated in a cyanide plant. In 1904, the battery was replaced by a twenty head with 408.6 kg stamps. Power was

supplied by a 25 H.P. engine. A new cyanide plant consisting of 3 leaching vats, 3 distributing vats and 4 solution vats was installed to treat battery sands and slimes were treated in two agitators (Plate 1).

When crushing ceased in March 1912, 32 084 tonnes of ore had yielded 1 385 436.2 grams of gold bullion, i.e. 43.18 g/t. Ore mined from then until closure of the mine in June 1918 was treated at Tarcoola Government Battery, 2.3 km to the northwest.

In 1935, Tarcoola Sands Retreatment Syndicate commenced cyanidation of the tailings using six vats of 76 tonnes capacity (Plates 2 & 5). Another group purchased the operation in 1937 and continued re-treating tailings until early in 1939. However, this production is not recorded.

Standard Mining Company N.L. took an option on the Blocks Mine in 1947. The Main Shaft was dewatered and retimbered to No. 2 level but operations ceased in 1952 after producing 4 458 tonnes for 227 366.58 grams of gold bullion (Plate 4).

Emperor Gold Mining Company (Emperor) of Fiji took an option from Inland Mining Corporation in 1973 and dewatered the main shaft to No. 3 level. Mapping and sampling of No. 3 level were completed and the mine allowed to flood to just below No. 2 level. Assay values up to 4 456.6 g/t were recorded by Emperor from samples collected on No. 3 level suggesting considerable potential for a small scale mining operation. However, Emperor withdrew from the venture due to the political and economic climate at the time.

Since 1978, gold production has been on a very small scale with the bulk of the output of 199 tonnes coming from Sullivans lode. Ore is transported to Peterborough for crushing and treatment at the State Battery.

PREVIOUS INVESTIGATIONS

Apart from retreatment of tailings in 1935-39, the only other testing of dumps was by Deloraine Mines Pty. Ltd., in 1982. Two samples, one from each of the main tailings stockpiles E and F on Fig. 2, were collected by Mike Spriggs and W. Fradd and submitted to Sampling Analytical Management Services

Laboratory (SAMS) at Kensington, S.A. Each sample was fire assayed for Au and then subjected to cyanide leach tests. Results available to the Department are listed in Table 2.

TABLE	2
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2	Raw Sample Au g/t	Cyanide leach recovered Au g/t	Residue Au g/t	Calculated Recovery %
East Dump (Stockpile E)	1.8	1.1	0.7	61.11
West Dump (Stockpile F)	1.1	1.0	0.1	90.91

DESCRIPTION OF TAILINGS

Tailings consist mainly of brown sandy silt as detailed in Appendix A. Dumps A to D inclusive are shallow truck-dumped material approximately 150 m southeast of the main shaft. Dumps E and F are 100 m west-southwest of the main shaft. Rock fragments were encountered throughout the dumps and some auger holes failed to reach the bottom of the dump. Generally, dumps are free of rubbish and old metal although screening would be required to remove rubble fragments.

Copper, lead, zinc, silver and arsenic assays are included in Appendix A. Cyanide leaching of a milled composite sample from the main dump and another from the truck dump material with head grades of 1.64 g/t Au and 2.26 g/t Au extracted 52% and 59% gold respectively after 24 hours continuous agitation and aeration with low consumption of lime and sodium cyanide. Extending leaching time showed no significant improvement in gold recovery (Appendix B).

RESERVES

Reserve and grade are summarised in Table 3. Reserves are classified as <u>indicated</u>. The estimated 29 100 tonnes of tailings confirms the recorded 32 048 tonnes treated at the Blocks Battery after allowing for some dispersion by wind and water.

Та	ь1	е	- 3

		R	eserve	s of Tai	lings St	ockpile	s - Tar	coola B	locks M	line				
		То	nnes	Cu (ppm)	Pb (ppm)	Zn (ppm)	As (ppm)	Ag (ppm)	Au (g/t)	Au	Content (g)	Extractable Au (g)		lue \$)
	896	1	520	63	1 180	280	81	1.2	1.08	1	641.6	984.96	12	706
	838	1	420	67	1 020	330	67	2.7	3.04	4	316.8	2 590.08	33	412
1	222	2	080	65	1 125	330	70	1.3	1.97	4	097.6	2,458.56	31	715
1	580	2	690	62	1 300	310	90	1.8	1.71	4	599.9	2 759.94	35	603
5	460	9	280	86	1 232	414	78	3.0	2.14	19	859,2	9 929.60	128	092
7	123	12	110	65	1 243	349	89	1.8	1.67	20	223.7	10 111.85	130	443
17	119	29	100	68	1 183	336	79	2.0	1.88	54	738.8	28 834.99	371	971
	(1 1 1 5 7		Volume (m ³) To 896 1 838 1 1 222 2 1 580 2 5 460 9 7 123 12	Volume (m ³) Tonnes 896 1 520 838 1 420 1 222 2 080 1 580 2 690 5 460 9 280 7 123 12 110	Volume (m ³) Tonnes Cu (ppm) 896 1 520 63 838 1 420 67 1 222 2 080 65 1 580 2 690 62 5 460 9 280 86 7 123 12 110 65	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) 896 1 520 63 1 180 838 1 420 67 1 020 1 222 2 080 65 1 125 1 580 2 690 62 1 300 5 460 9 280 86 1 232 7 123 12 110 65 1 243	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) 896 1 520 63 1 180 280 838 1 420 67 1 020 330 1 222 2 080 65 1 125 330 1 580 2 690 62 1 300 310 5 460 9 280 86 1 232 414 7 123 12 110 65 1 243 349	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) As (ppm) 896 1 520 63 1 180 280 81 838 1 420 67 1 020 330 67 1 222 2 080 65 1 125 330 70 1 580 2 690 62 1 300 310 90 5 460 9 280 86 1 232 414 78 7 123 12 110 65 1 243 349 89	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) As (ppm) Ag (ppm) 896 1 520 63 1 180 280 81 1.2 838 1 420 67 1 020 330 67 2.7 1 222 2 080 65 1 125 330 70 1.3 1 580 2 690 62 1 300 310 90 1.8 5 460 9 280 86 1 232 414 78 3.0 7 123 12 110 65 1 243 349 89 1.8	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) As (ppm) Ag (ppm) Au (ppm) Au (ppm) Au (ppm) Au (ppm) <	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) As (ppm) Ag (ppm) Au (g/t) Au Au 896 1 520 63 1 180 280 81 1.2 1.08 1 838 1 420 67 1 020 330 67 2.7 3.04 4 1 222 2 080 65 1 125 330 70 1.3 1.97 4 1 580 2 690 62 1 300 310 90 1.8 1.71 4 5 460 9 280 86 1 232 414 78 3.0 2.14 19 7 123 12 110 65 1 243 349 89 1.8 1.67 20	(m ³) (ppm) (g) (g) 896 1 520 63 1 180 280 81 1.2 1.08 1 641.6 838 1 420 67 1 020 330 67 2.7 3.04 4 316.8 1 222 2 080 65 1 125 330 70 1.3 1.97 4 097.6 1 580 2 690 62 1 300 310 90 1.8 1.71 4 599.9 5 460 9 280 86 1 232 414 78 3.0 2.14 19 859.2 7 123 12 110 65 1 243 349 89 1.8 1.67 20 223.7	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) As (ppm) Ag (ppm) Au (g/t) Au Content (g) Extractable Au (g) 896 1 520 63 1 180 280 81 1.2 1.08 1 641.6 984.96 838 1 420 67 1 020 330 67 2.7 3.04 4 316.8 2 590.08 1 222 2 080 65 1 125 330 70 1.3 1.97 4 097.6 2 458.56 1 580 2 690 62 1 300 310 90 1.8 1.71 4 599.9 2 759.94 5 460 9 280 86 1 232 414 78 3.0 2.14 19 859.2 9 929.60 7 123 12 110 65 1 243 349 89 1.8 1.67 20 223.7 10 111.85	Volume (m ³) Tonnes Cu (ppm) Pb (ppm) Zn (ppm) As (ppm) Ag (ppm) Au (g) Au Content (g) Extractable Au (g) Va (g) 896 1 520 63 1 180 280 81 1.2 1.08 1 641.6 984.96 12 838 1 420 67 1 020 330 67 2.7 3.04 4 316.8 2 590.08 33 1 222 2 080 65 1 125 330 70 1.3 1.97 4 097.6 2 458.56 31 1 580 2 690 62 1 300 310 90 1.8 1.71 4 599.9 2 759.94 35 5 460 9 280 86 1 232 414 78 3.0 2.14 19 859.2 9 929.60 128 7 123 12 110 65 1 243 349 89 1.8 1.67 20 223.7 10 111.85 130

NOTES

 Assumed value of \$12.90 per gramme (approx. \$400 per troy ounce).
 Gold extraction of 60% used for stockpiles A-D inclusive and 50% for stockpiles E and P.

3. Average gold content for each stockpile area was calculated as a weighted average from drillhole data.

4. Average copper, lead, zinc, silver and arsenic values was calculated as an arithmetic average from drillhole data.

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CONCLUSIONS

Tailings remaining on site at the Tarcoola Blocks mine are containing estimated at 29 100 tonnes 1.88 g/t Au with significant concentrations of lead, zine and silver. Head grade of the two stockpiles calculated from the cyanide leach tests are 1.79 g/t Au for the main dump and 1.83 g/t Au for the truck dump and correlate with the grade calculated from the sampling program.

The slight difference between calculated tonnage of material remaining and recorded production is due to dispersion by wind and water. Material washed onto the flats south of the main shaft contains an average 2.00 g/t Au.

Cyanidation leach tests indicate that the tailings are suitable for cyanidation with an anticipated 60% gold extraction and relatively low consumption of sodium cyanide and lime.

Grade is probably too low for either Carbon-in-pulp or C.I.L. methods but heap leaching may be feasible particularly if the operation includes 29 250 tonnes of tailings with 2.18 g/t at Tarcoola Government Battery tailings (Horn and Fradd, 1985).

Portion of stockpile F is outside mineral leases and within Exploration Licence 1055 held jointly by Afmeco Pty. Ltd. and Aberfoyle Exploration Pty. Ltd. and due to expire of 18 October 1985.

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APPENDIX A

Geological Logs and Assays of Hand Auger Samples -(Assay Results from AMDEL Report AC287/85)

TARCOOLA GOLDFIELD Tarcoola Blocks Mine Tailings Hand Auger Geological Logs and Assay Results

Hole No.	Sample No.	Sample Interval(m)	Description	Au ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	As ppm
1	A1242/84	0-1	Brown silty sand.	1.56	86	1300	380	2	80
	A1243/84	1-2	As above.	1.18	130	1300	550	1	80
	A1244/84	2-2.6	As above, at 2.4 m fine brown clay (slimes).	1.72	96	1400	610	5	60
2	A1245/84	0-1	Brown silty sand.	1.86	70	1200	340	2	40
	A1246/84	1-2	As above.	1,92	96	1400	530	3	60
	A1247/84	2-2.6	As above - struck rock - not bottom of tailings.	2.62	70	1200	430	2	70
3	A1248/84	0-1	Brown sand.	2,94	80	1200	340	4	90
	A1249/84	1-2	As above.	1.54	66	1100	330	2	70
	A1250/84	2-3	Paler brown silty sand with silt layers.	1.48	70	1100	360	2	80
	A1251/84	3-4	Brown sandy - silt bands toward bottom.	1.70	86	1300	440	4	60
	A1252/84	4-4.2	As above - red sand at bottom.	6.42	96	1200	340	5	90
4	A1253/84	0–1	Reddish-brown sandy becoming lighter brown silty sand - gravelly 0 0.4-0.5 m.	3.44	76	1300	370	3	80
	A1254/84	1-2	Brown sandy silt - struck rock at 2 m - not bottom - at least 4 m thick.	2.10	70	1300	350	2	80
5	A1255/84	0-1	Brown sandy silt - struck rocks at 1.2 m - not bottom of dump.	3.92	70	1100	360	3	100
6 ·	A1256/84	0-1 1-1.3	Compacted silty sand - minor silt layers. No sample - struck rock - not bottom of dump.	3.50	76	1200	380	, 3	70
7	A1257/84	0-1	Brown sandy silt.	1.24	90	1100	450	2	90
	A1258/84	1-2	As above.	1.00	120	1200	550	1	110
	A1259/84	2-2.65	As above. Becomes silty @ 2.2 m. Bottom of hole in red-brown sandy loam.	2.64	120	1500	430	7	100
8	A1260/84	0-0,9	Brown sandy silt. Bottom of hole in red-brown sandy loam.	2.04	60	1000	320	. 3	70
9	A1261/84	0-1	Brown sandy silt. Bottom of hole in red-brown sandy loam.	1.36	50	870	290	2	100
10	A1262/84	0-1	Brown sandy silt.	0.92	56	980	240	. 1	60
11	A1263/84	0-1	Reddish-brown becoming greyish-brown sandy silt.	1.90	80	1 300	390	1	80
	A1264/84	1-2	Greyish-brown sandy silt.	0.88	50	1000	320	1	90
	A1265/84	2-2.65	As above.	1.26	46	890	330	2	100
·12	A1266/84	0-1	Reddish-brown sandy silt.	1.88	66	1200	330	2	100
	A1267/84	1-1.3	Greyish-brown sandy silt - struck rock - not bottom of dump.	1,26	66	1200	340	2	70
			Gold Assays by Fire Assay. Other Assays by Atomic Absorption.	(0.1)	(2)	(5) Detectio	(2) n Limits.	(1)	(20)

TARCOOLA GOLDFIELD Tarcoola Blocks Mine Tailings Hand Auger Geological Logs and Assay Results

NO.	Sample No.	Sample Interval(m)	Description	Au ppm	Cu ppm	Pb ppm	2n ppm	Ag ppm	As ppm
13	A1268/84	0-1	Reddish-brown sandy silt - becoming greyish- brown - few pebbles.	2.34	76	1300	370	3	80
	A1269/84	1-2	Greyish-brown sandy silt.	1.34	60	1300	350	2	100
	A1270/84	2-3	Brown sandy silt.	1.78	66	1200	470	2	70
	A1271/84	3-3.8	As above - bottom of hole red-brown sandy loam last 5 cm.	2.42	66	1200	370	2	80
4	A1272/84	0-1	Brown sandy silt – some minor silty layers – becomes light brown.	2.56	66	1400	350	2	90
٠	A1273/84	1-1.35	Light brown sandy silt - struck rock - not bottom of dump.	2.10	100	2100	390	1	100
.5	A1274/84	0-1	Red-brown to light brown sandy silt.	1.46	60	1300	370	2	100
	A1275/84	1-1.85	Light brown to greyish-brown sandy silt.	1.40	60	1400	320	2	110
			Gold Assays by Fire Assay. Other Assays by Atomic Absorption.	(0.1)	(2)		(2) n Limits.	(1)	(20)

TARCOOLA GOLDFIELD Tarcoola Blocks Mine Tailings - Truck Dumps Hand Auger Geological Logs and Assay Results

Hole No.	Sample No.	Sample Interval(m)	Description	Au ppm	Cu ppm	Pb ppm	2n ppm	Ag ppm	As ppm
TD.1	A1194/84	0-0,85	Light brown silty sand.	0.80	60	1200	260	1	80
TD.2	A1195/84	0-0.75	As above.	1.44	60	1100	290	2	120
TD.3	A1196/84	0-0.75	As above.	1.20	66	1200	310	1	100
TD.4	A1197/84	0-0.75	As above.	1.28	70	1200	290	1	90
TD.5	A1198/84	0-0.85	As above.	0.78	60	1200	250	1	ቆ <20
TD.6	A1199/84	0-0,90	Pale brown silty sand - red-brown sandy loam at bottom.	2.94	70	1100	340	3	30
TD.7	A1200/84	0-0.70	Red-brown silty sand.	2.72	66	980	350	2	90
TD.8	A1201/84	0-0.90	As above.	3.38	66	980	300	3	80
TD.9	A1202/84	0-0,55	Pale brown silty sand - some silty and gravel patches - struck rock - not bottom of hole.	2.90	80	1200	390	1	70
TD.10	A1203/84	0-0.80	Pale brown silty sand - silty layers throughout - red-brown sandy loam at bottom.	2,76	70	. 1100	340	2	80
TD.11	A1204/84	0-0.85	Pale brown silty sand.	1.40	48	1000	270	1	50
TD.12	A1205/84	0-0.85	As above.	1.18	60	1200	320	ī	80
TD.13	A1206/84	0-0.65	As above.	1.14	60	1400	370	ī	90
TD.14	A1207/84	0-0.85	As above - red-brown sandy loam at bottom.	1.40	50	1300	260	2	130
TD.15	A1208/84	0-0.60	Pale brown silty sand.	1.60	66	1200	360	1	80
TD.16	A1209/84	0-0.75	As above - red-brown sandy loam @ bottom.	1.26	46	1000	240	ī	70
TD.17	A1210/84	0-0.85	As above.	2.90	86	1600	320	4	80
TD.18	A1211/84	0-0.30	Red-brown sandy loam - flats south of main shaft.	1.76	60	790	200	1	80
TD.19	A1212/84	-	As above - creek drainage channel.	1.80	44	560	160	ī	40
TD.20	A1213/84	0-0.30	Red-brown sandy loam - flats south of main shaft - on south boundary of M.L.4667.	2.72	80	1100	250	ī	60
			Gold Assays by Fire Assay. Other Assays by Atomic Absorption.	(0.1)	(2)	(5) Detection	(2) Limits.	(1)	(20)

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APPENDIX B

Cyanidation Leaching Tests of Gold Tailings Extracted from AMDEL Report ODT 6006 by R.J. Allen

1. INTRODUCTION

Mr. R. Horn of the South Australian Department of Mines & Energy submitted auger samples from the tailings dumps of the Tarcoola Blocks mine for analysis and cyanide leaching to determine the extractability of the gold content.

2. EXPERIMENTAL PROCEDURE

Two composite samples were blended from the balance of 20 samples from the Blocks mine tailings dump south of the main shaft (Samples TD1-Al194/84 - TD20-Al213/84) and 34 samples from the main tailings dump at the Blocks mine (Samples 1/1-A 1242/84 - 15/2-A 1275/84).

Representative sub samples of each composite were stage ground to 80% passing 75/m (200 mesh BSS).

Each composite was slurried and sodium cyanide (1.00 g) added, the slurry being continuously agitated and aerated at a pH of 11. Samples were periodically collected of the solution to determine free cyanide concentration, dissolved gold content and pH level.

After 48 hours total leaching time, the slurries were filtered and the filter cakes washed, dried and representative samples assayed for residual gold.

3. RESULTS AND DISCUSSION

Results are shown in Table 1.

Gold extraction was about 60% in the first hour of leaching for composite sample TD1-20 and extending the leaching time showed no significant improvement in gold recovery.

A slow increase in gold extraction efficiency from 34% at one hour to 52% after 24 hours was recorded for sample 1/1-15/2 and no worthwhile improvement was achieved in the second 24 hours.

Lime and sodium cyanide consumptions were relatively low.

TABLE 1 Cyanide Leaching (48 hours at ambient temperature 10-20°C)

	<u>TD1-20</u>	1/1-15/2
Head Assay		
Au (g/t)	2.26	1.64
Residue Assay		
Au (g/t)	0.72	0.88
Calculated Head Assay		
Au (g/t)	. 1.83	1.79
Au Extraction (%)		
l hour	62	34
4 hours	58	44
24 hours	59	52
48 hours	61	51
NaCN Consumption (kg/t)		
l hour	0.32	0.19
4 hours	0.40	0.37
24 hours	0.88	0.98
48 hours	1.48	1.71
CaO Addition (kg/t)	0 50	0.50
Initial	0.50 grams	0.56 grams
1 hour	1.05	1.18
4 hours	1.05	1.18
24 hours	1.05	1.18
48 hours	1.05	1.18

APPENDIX C

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Reserve Calculations

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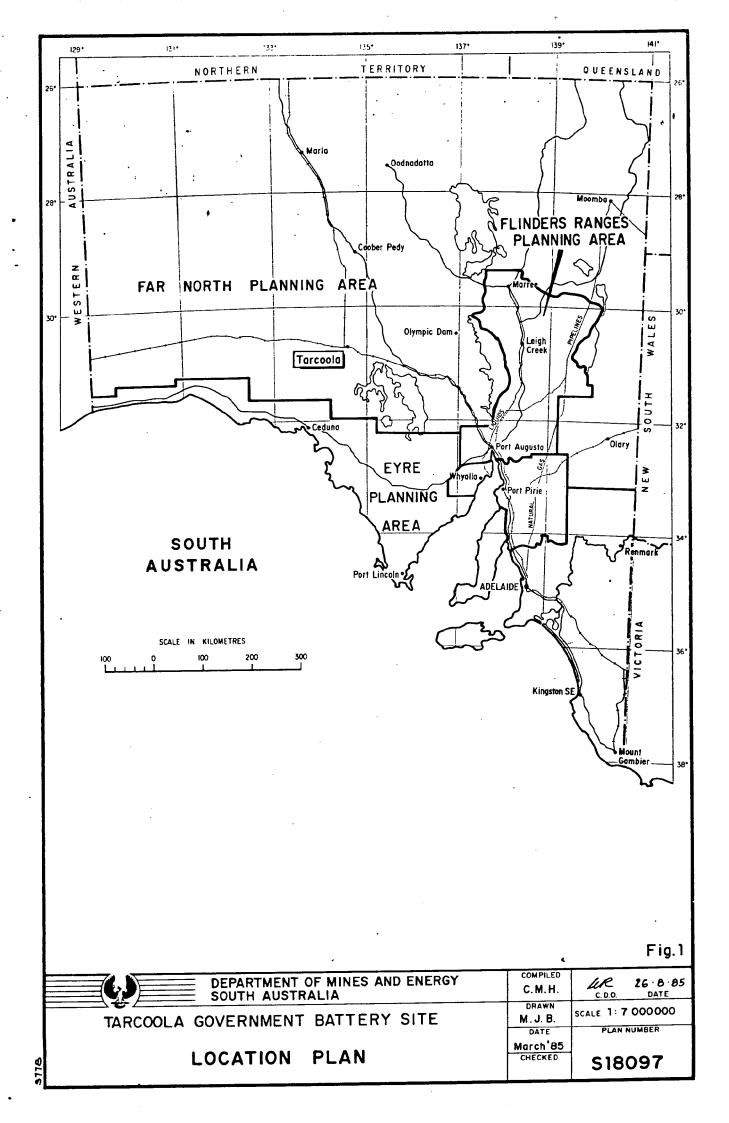
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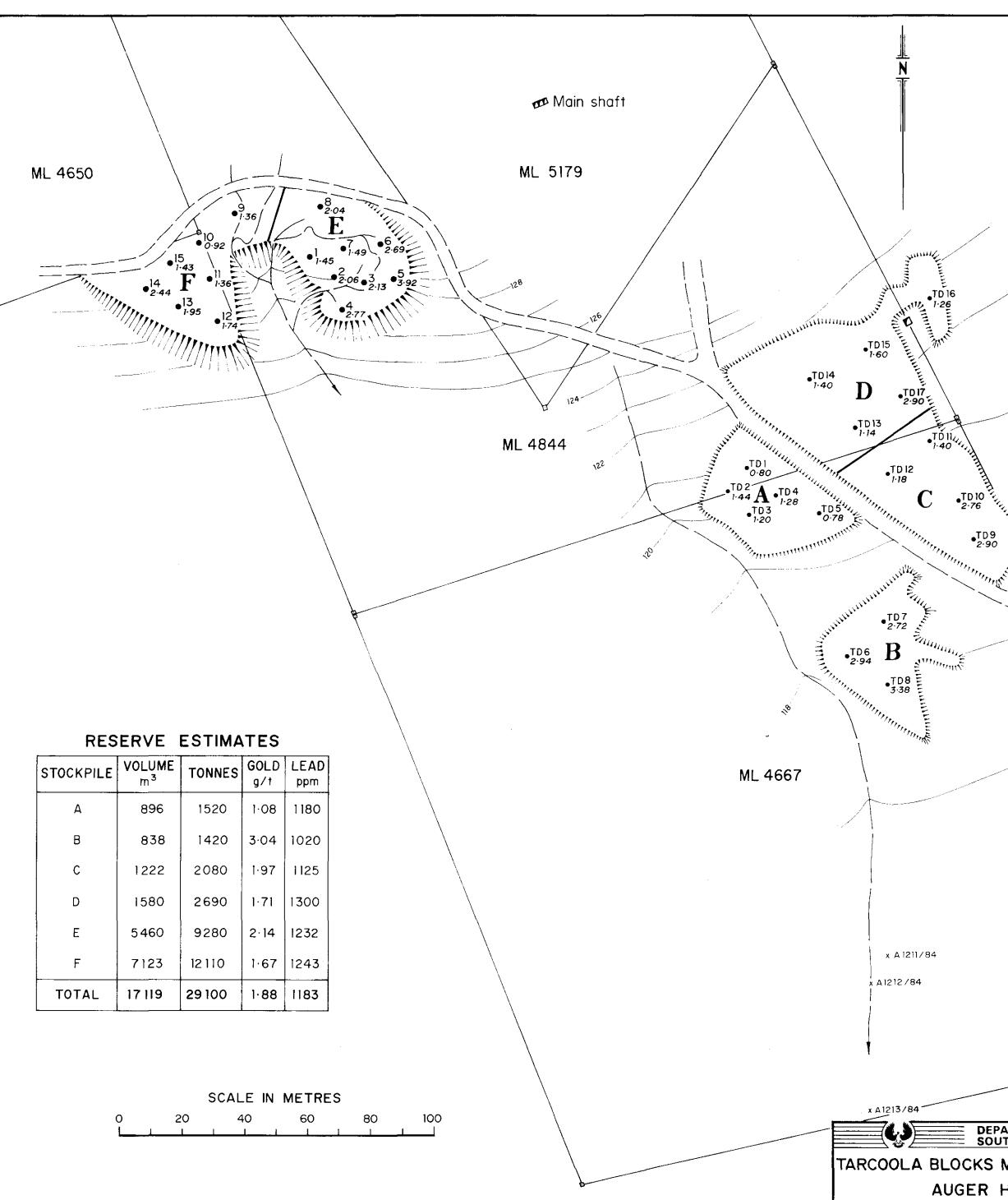
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Stockpile	Av. Depth	Area	Volume	Tonnes	Au Grade
Area	(m)	(m ²)	(m ³)	· .	g/t
A	0.80	1120	896	1 520	1.08
В	0.80	1048	838	1 420	3.04
С	0.80	1527	1 222	2 080	1.97
D	0.70	2257	1 580	2 690	1.71
E Batter	3.50 3.50	1290 270	4 515 945 5 460	9 280	2.14
F Batter Total F	3.50 3.50	1735 300	$ \begin{array}{r} 6 & 073 \\ 1 & 050 \\ \hline 7 & 123 \end{array} $	<u>12 110</u>	1.67
OVERALL '	TOTAL			29 100	1.88

RESERVE CALCULATIONS

- Area of each portion of the stockpile was determined by planimeter by A.J. Smith (Field Assistant).
- Average depth of each area of the stockpile was determined from hand auger holes and survey data.
- Volume of batters was calculated as; ½ batter width x average depth of stockpile area x length of batter.
- Average specific gravity (S.G.) of tailings was assumed to be
 1.7.
- Average gold content of each area of the stockpile was calculated as a weighted average from drillhole assays.
- Average gold content of total tailings was computed as a weighted average.
- Copper, lead, zinc, silver and arsenic average values have been calculated arithmetically.





Stadia survey by A.B. Hack and N.H. Edwards 1984

		Tailings dump
		Track
		Shaft
	126	Topographic contour-interval 1m (Datum AHD)
		Drainage channel
	x A1211/84	Miscellaneous sample — approximate location
/		Main tailings stockpile auger hole
	●5 <i>3.92</i>	Gold value in parts per million
	•TD 14 1-40	Truck dump auger hole Gold value in parts per million
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-		MINERAL TENEMENTS
	Г	]
		ML 4670 ML 5179
		ML 4650 Main shaft ML 4844
		ML 4667 Tarcoola RESERVE
		RAILWAY
		0 500m
	L	
	_	Figure 2
PARTMENT O	F MINES A	

DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA	COMPILED C. M. Horn	UR 26 8 85 C.D.O DATE
S MINE - TAILINGS STOCKPILES	DRAWN A. F.	SCALE 1:1000
R HOLE LOCATIONS	DATE 7 - 5 - 85 CHECKED	PLAN NUMBER
	CHECKED	00 201



PLATE 1. Tarcoola Blocks battery, 1915. Neg. No. 5237



PLATE 2. Tarcoola Blocks Mine, 1935 Tailings Retreatment Operations Plant. View Looking East. Neg. No. 4411



PLATE 3. Tarcoola Blocks (Fabian). Main Shaft, June 1948 - view looking south. Truck Dump tailings stockpiles A-D extend both sides of Battery Shed. Neg. No. 2953



PLATE 4. Tarcoola Blocks Mine, March 1950. General View Standard Mining Company. Neg. No. 6807



PLATE 5. Tarcoola Blocks Mine, 1935. Sand Vats and Plant For Tailings Retreatment Operations. View Looking West From Main Shaft. Neg. No. 4414



PLATE 6. Tarcoola Blocks Mine. Similar View to Above -March 1980. Looking West from Main Shaft Towards Sullivans Mine. Slide No. 25028



PLATE 7. Tarcoola Blocks Mine, March 1980. Tailings Stockpile Area E Centre Right. Truck Dump Stockpile Area B Visible to Right of Main Shaft. Slide No. 25029



PLATE 8. Tarcoola Blocks Mine, May 1984. View North Toward Main Shaft. Note Truck Dumps and Main Tailings Dumps Centre foreground and Centre Left respectively. Slide No. 25030