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RAZORBACK TIN MINE PROJECT

REPORT

PREPARED FOR

COMMONWEALTH DEVELOPMENT BANK

APRIL 1974

MINOPS PTY. LTD.
ZEEHAN, TASMANIA

On behalf of:

APOLLO INTERNATIONAL MINERALS NL
AMALGAMATED PETROLEUM NL

1. THE RAZORBACK TIN PROJECT

The aim and concept of the project has not altered since the completion of the "Macdonald" feasibility study in 1972, except that the "Hodges" leases which had then been held under option have now been purchased for the sum of $100,000. Production plans were held up and deferred principally because of export quota restrictions which were in vogue last year. These quotas are no longer operating, which enables the company to plan forward sales with confidence. The delay experienced was used to good advantage by further check work on the deposits, grades, metallurgy, etc. These studies further confirmed and improved the original prognosis. Taking the "Macdonald" report as the reference datum, present-day position (17th April 1974) is recorded below.

The original intention still remains, i.e. to establish a mining operation based firstly on mining the oxidised tin ore in the upper northern section of the Razorback leases. The concentrating facility so established after amortisation (included in oxide costs) will then be available (with extension and/or modification as necessary) for the subsequent exploitation of the sulphide and other ores within the area. Continuous exploration of the large unexplored and untested portions of the company's areas may provide more ore reserves for the plant complex.

2. LEASES

The five mining leases (2M/40, 3M/40, 36M/71, 37M/71, 38M/50) totalling 78 acres at Razorback, and the three (23M/52, 29M/51, 102M/66) totalling 80 acres at Grand Prize are, for convenience, registered in Minops' name. They have not yet been consolidated at either place. Minops also holds the 80 acres Oonah mining lease (35M/72). During 1973, a further 80 acres of lease (4W73) were obtained at Razorback for tailings, dams, etc. This supplements the existing 5-acre machinery lease (21W/66). Copies of the lease documents are appended.

In addition, the company has obtained Special Prospecting Licence 120 for the three square miles which were previously S.P.L. 99 (Godkin Ridge), and two square miles which were previously the southern portion of S.P.L. 27. Latterly, 1.6 square kilometers of the E.L. 7/68 area have been applied for. It is anticipated this will be granted and, together with the preceding, will give licenced exploration area completely surrounding the Razorback leases. This is shown on the accompanying plan.

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3. GEOLOGY

(Discussion is confined to Razorback geology. A compiled list of references is given in Appendix 2).

The geological understanding of the Razorback tin mineralisation has been improved and is subject to continuing research and review.

During January 1973, P.H. Frank of Frank, Layden and Associates Pty. Ltd. completed geological mapping of surface exposures and all accessible underground exposures and constructed complementary geological sections for the mine area and to the south of the mine area.

A most valuable contribution from this geological study was the hypothesis that mineralisation was distributed as massive sulphide shoots within a zone of disseminated sulphides. This concept has been supported by recent geological studies, by tin grade distributions and by geophysical surveys within the ore shoots.

Geological controls have been used in the most recent ore reserve calculations and have indicated the locations of inferred ore reserves.

Studies involving the geological aspects of mining, grade control and milling are continuing in conjunction with exploration for ore zone extensions within the mining leases and neighbouring Special Prospecting Licence areas.

4. ORE RESERVES

Since the presentation of Eoin H. Macdonald's Feasibility Study, the ore reserve of the Razorback tin mineralisation has been reviewed in accordance with additional bulk sampling data, and modified geological structural considerations.

Having accepted that mineralisation exists as higher grade ore shoots within a zone of lower grade mineralisation, ore reserves were recalculated during December 1973 and March/April 1974, employing structural controls to grade distributions and conservative estimates to lower grade zones. These most recent reserves are summarised:

Oxides	:	Indicated	250,000 tonnes at 0.704% Sn
		Inferred	43,000 tonnes at 0.674% Sn
Tailings	:		7,500 tonnes at 0.800% Sn
Eluvials	:		10,000 tonnes at 0.500% Sn
Sulphides	:	Indicated	117,000 tonnes at 0.786% Sn
		Inferred	119,190 tonnes at 1.380% Sn
			546

The following table details the ore reserves as at April 1974. (Block numbers refer to the accompanying Composite Longitudinal Section.)

4.1 RAZORBACK

OXIDE ORE RESERVES			
	BLOCK NO.	TONNAGE	GRADE % Sn
	1	3,935	0.611
	2	17,037	0.480
	3	29,818	0.646
	4	41,562	0.686
	5	52,175	0.711
	6	56,900	0.732
	7	22,981	0.739
	8	14,425	0.822
	9	14,675	0.860
	10	11,050	0.705
		264,558	0.704
Allowance for existing workings		14,558	
INDICATED ORE		250,000 Tonnes at	0.704% Sn
	BLOCK NO.	TONNAGE	GRADE % Sn
	11	39,075	0.712
	10% Dilution	3,925	0.300
INFERRED ORE		43,000 Tonnes at	0.674% Sn

TAILINGS
7,500 Tonnes at 0.800% Sn

ELUVIALS
10,000 Tonnes at 0.500% Sn

4.1 RAZORBACK (Cont'd.)

SULPHIDE ORE RESERVES	BLOCK NO.	TONNAGE		GRADE % Sn
	12	3,366		1.159
	13	6,090		0.100
	14	7,866		0.888
	15	442.5		0.791
	16	46,579.8		0.817
	17	891		0.700
	18	3,465		1.045
	19	20,193.2		0.790
	20	12,595.5		0.728
	21	4,857.75		0.789
		106,346.75		0.834
	10% Dilution	10,654.00		0.300
INDICATED ORE		117,000	Tonnes at	0.786% Sn
	BLOCK NO.	TONNAGE		GRADE % Sn
	22	2,418		0.971
	23	4,032		1.040
	24	12,500		0.957
	25	13,640		1.030
	26	7,560		0.750
	27	45,675		0.750
	Contact Lode	85,825		0.840
	28	10,830		5.600
	29	11,700		2.440
	No.2 Lode	22,530		3.96
	Subtotal	108,355		1.492
	10% Dilution	10,835		0.30
INFERRED ORE		119,190	Tonnes at	1.38% Sn

4.2 GRAND PRIZE

OXIDIZED ORE RESERVES

INFERRED 50,000 Tonnes at 0.750% Sn

SULPHIDE ORE RESERVES

INFERRED 40,000 Tonnes at 0.750% Sn

5. EXPLORATION

Exploration, including bulk sampling, costeaning, auger drilling, geological studies and geophysical surveys, has continued and indicates excellent prospects for firming and expanding known ore reserves.

Areas worthy of exploratory attention comprise:

a) Razorback Mining Leases;

b) Special Prospecting Licence 120:

   i) 2 square miles immediately to the north, east and west of the Razorback mine area and includes strike projections of known mineralisation.

   ii) 3 square miles situated 2 miles NE of the Razorback mine area (3 miles SE of Renison Bell), which includes known tin mineralisation and promising exploration targets.

c) Application for an S.P.L. covering 1.6 square kilometers immediately south of the Razorback mine area and includes strike projections of known mineralisation;

d) Grand Prize Mining Leases 120M/66, 23M/52, 29M/51, which include known oxide and sulphide tin ores;

e) Oonah Mining Lease 35M/72, north of Zeehan. Exploration and development at this old mine, in the least decade, has confirmed potential ore.

The aims of exploration undertakings are:

1. To consolidate and increase oxide ore reserves within the Razorback Mining Leases.

2. To assess the reserves of oxidised ore available at Grand Prize.

3. To consolidate and increase the reserves of known sulphide mineralisation at Razorback.

4. To test for additional ore shoot developments along similar geological environments.

5. To assess sulphide ore reserves at Grand Prize..

6. To test for mineralisation within the S.P.L. area along continuations of the Razorback geological environment.

7. To test and assess the tin mineralisation known within the S.P.L. 120, Godkin Ridge area, 2 miles NE of Razorback.

The programming of exploration will be primarily governed by the long-term requirements of the Razorback milling operations, i.e. oxide ore exploration will receive immediate priority. However, sulphide exploration is also receiving early attention. This must be sufficiently advanced to enable timely decisions and smooth changeover for the anticipated conversion of operations from oxide to sulphide ore.

6. MINING PLAN

Initial open cutting will be in the form of a slot 230 metres long between 4650 N and 4880 N, i.e., the existing bottom and top open cuts will be at either end. Maximum depth will approach 70 metres, and width 120 metres, as indicated by the cross section 4780 N included in Appendix 4.* The shape of the cut is shown on the plan of the mine area attached. (Plan 3)

The plan and sections have been designed with berms 6 m wide and 10 m high. Better rock may permit modification in some places. The berm slopes are shown as 63° which may need reduction, as may the overall upper section slope of 42°. (This is generally 10° flatter than shown on earlier mine proposals). However, the effective slope is 46° for excavation to the 285 m level, as a final 15 m cut below the 300 m RL berm is envisaged for the last ore south of 4790 N. The buttress action of the in-situ ground to the north, together with the relatively short time to extract the ore tonnage involved, support this proposal.

The total open cut volume is around 350,000 cubic metres, including the 100,000 cubic metres (250,000 tonnes) of ore. The waste to ore ratio is thus 2.5 : 1. The haul road design is shown on the plan. Gradient is 1 in 10, length about 500 metres, and it connects with both south and north ends of the open cut.

Waste disposal will be in the gully to the north with the heap being extended eastwards as needed, at a top elevation of about 320 m RL. Exploration of the area affected is being done, whilst waste disposal will be co-ordinated with removal of eluvial ore in the area. The location is shown on the plan.

Drainage will be relatively simple in spite of the high rainfall. The natural drainage paths on the west are not broken by the cut area, and in the cut, drainage will be back to the north and south entry points. These will be lower than the pit floor, except for the last couple of metres. At that stage, drainage via a connection to a lower adit will be possible.

The planned concept has been discussed with the Department of Mines. No objections have been expressed so far. It is intended that excavation be done on day shift only by contractors. Preliminary discussions have been held with possible contractors. As it is intended to mine well ahead (even to the extent of stockpiling several months' ore), there will be a reasonable amount of flexibility possible. This will facilitate grade control and contract work.

Grade control will require:

1. a Minops mining foreman supervising open cut work, including sampling and perhaps secondary breaking;

2. the development of satisfactory sampling techniques related to time, small size or scale of the operation and of the enrichments, and the usual problem of representativity;

* For reference this includes sections of previous proposal.

3. the availability of a speedy assaying facility - an Amdel X-ray unit is intended. A person competent in tin assaying will be available on the staff.

4. the use of a relatively large stockpile, with material in perhaps three gradings; and

5. close liaison between the mill superintendent, geologist, and mining personnel (our foreman, manager and the contractor).

The relatively small scale of the operation will assist.

7. METALLURGY

7.1 Reference Data and Investigations

Reports relevant to Razorback ore dressing are listed in Appendix 5. The additional work done since late in 1972 should be noted. The development of a flow sheet has been a major item, whilst important mineragraphic work has been done.

7.2 Plant Performance

Three factors basic to successful operation are:

a) concentrate grade and purity;

b) recovery percentage; and

c) plant capacity.

Concentrate grade is now planned to be only about 60% Sn, rather than 70%, which was proposed previously. Lower unit returns are more than offset by increased income due to higher metal recovery. Penalties due to impurities should be slight, as rejection of impurities has been shown to be readily attained.

Percentage recovery adopted in the Feasibility Study has remained at 65%. Data supporting this figure are:

a) "direct" tests - Launceston Laboratory investigations 483 and 653, and that of Bartles;

b) "indirect" tests - Launceston Laboratory report 631, and our bulk sampling millings which indicate about 45% recovery in the Hodge mill, together with reports 608/1 and that of 13.9.72, which show that as much as 50% of the tin in the tailings can be recovered.

Only one report, 608/2, suggests poorer results. The opinion of our metallurgist is that 65% recovery will be attainable.

Plant capacity has been designed for 60,000 tpa. Confirmation that this will be achieved rests on the opinions obtained last year from the previous Chief Metallurgist at Renison Ltd., and from our metallurgist. Most equipment is of standard type with capacity range well known. Pumps and piping specifications and power requirements are being checked by the contractors' engineers.

7.3 Flowsheet

Sweco-Macdonald produced a flowsheet in February/ March 1973. This was used in specifications for the concentrator. Following criticism at that time, Austin-Anderson were commissioned to prepare a metallurgical report. This confirmed the order of capital and operating costs, besides presenting an alternative flowsheet. Opinions sought on the alternatives were variable. With amendment and modification, the Sweco flowsheet has been retained and developed. Drawing 1-600-8706 attached shows it in its latest form.

Further modification and improvement of the flowsheet will occur. Our metallurgist will be working on this shortly. Extra classification, a fixed rather than vibrating screen, and alteration of the crushing trommelling and grinding section is being considered. At this stage, such changes are still possible without affecting the basic plans. Decisions will be made on financial, operating and metallurgical considerations to give optimum results.

7.4 Mill Contract

As indicated in Section 10.3, Clyde-Carruthers Pty. Ltd. will build the mill. In December 1973, they were authorised to proceed with the completion of building specifications, and to call tenders for this work. This stage is nearly finalised, so that we are in a position to proceed without further delay. In conjunction with their consulting engineers, Haunstrup and Associates, there has been continuing liaison on plant detailing. Three relevant plans are attached for information. (Plans 5, 6 and 7).

7.5 Operational Details

Mr. J.N.R. Enraght-Moony has accepted the position of Mill Superintendent. He has several years' plant experience with Renison Ltd. and Cleveland Tin NL. When he commenced duty, he will be reviewing the flowsheet, and operating features, which will be amended as necessary. Problems in this will be minimised by the flexibility that has been an important parameter in design work so far.

At this juncture, five days - 3 shifts per day - operation is envisaged. Tin dressing will be done, however, only on day shift. This section is still being designed but is well placed for adequate security control. (Refer Plans 5, 6 and 7.) With the weekends available for maintenance it is hoped that down time will be minimal. (The not infrequent power failures have to be accepted as they occur.) Mill establishment is shown in Appendix 10. The full-time electrician and mechanic are primarily for mill maintenance.

7.6 Current Ore Dressing Studies

Investigations over the past 18 months have already been mentioned. Examples are given in Appendices 6 to 9. These have been concerned with the upgrading and removal of impurities from the concentrate. They confirm the general lack of difficulty on this task.

More recent attention is directed to improving recovery, by assessing the nature of tin losses in the tailings. (Refer Appendix 9.) It is this aspect that Mr. Moony will be considering when assessing the desirability of modifications to the flowsheet.

8. SERVICES, PERSONNEL AND LICENCING

8.1 Power Supply

The H.E.C. has almost completed the 44 kV feeder line from the Murchison Highway to the mine. The 500 kVA transformer is complete and site preparation is advanced enough to enable its installation on its plinth. The final high voltage connection will be carried out by the H.E.C. Power supply should be available within a month or so. The total cost - estimated at $20,000 - is to our account. There is space provision for a second transformer. The transformer site and incoming power line are shown on the plan.

8.2 Water Supply

A 500,000 gallon fresh water dam will be constructed to the east of the mill site in Gander Creek. A 4 sluice-head water licence, 3W/73, has been obtained to permit use of up to 600 gpm from this creek. The stream flow rate was measured as 488 gpm on 11.12.72. (W.J. Hodge has estimated a variation of from 1/3 to 5 times this.) Surplus water will be by-passed into Barker Creek to permit the lower section of Gander Creek to be used for tailings dams. The arrangement can be seen on the general plan. Pump and pipeline to deliver water to the mill head water tank have not yet been installed.

Besides the supply of fresh water, between 30 and 40 gpm of mine water is available from the Placer 1 adit. Provision is also made for the recirculation of some or all the tailings effluent. Because of the siting of the proposed pump sump, it will be possible to obtain water also from the Dundas rivulet in dry times. The Dundas still had adequate flow in the recent very dry spell, but licencing will need to be modified to use this source.

The mill water balance is incomplete, but a total requirement of about 630 gpm is needed. An early estimate indicated that 2/3 of this preferably should be fresh water. This requirement will be readily attained except in very dry periods, which normally are of short duration. In any case, new environment control legislation will probably require that the standard of tailings effluent is such that a high percentage of recirculation back to the mill will be practical.

8.3 Telephone

The PMG have already installed the cable to the mine site.

8.4 Road

The Dundas road has been closely checked recently, in connection with a submission to the Minister for Lands & Works. The road alignment and bridges are just adequate for loads envisaged during mill construction and normal operation. However, upgrading is obviously desirable. The pessimistic view has been adopted that initially at least, most of any cost and effort will probably be borne by the Company. Provided agreement can be obtained on permitted alterations, work can be undertaken as and when possible.

8.5 Labour

The operating establishment envisaged is set out in Appendix 10. Hopefully, the mill labour can be reduced, or perhaps include females for assay work. We have two houses already, two more are planned for Zeehan and another two for Dundas. An accommodation unit (caravan) is available. This caters for a third of the requirement, or more if one of the units is used for accommodating single men. It is confidently expected that at least ten more employees-to-be already reside in Zeehan. It is also expected a few employees may be caravan-dwellers. Suitable provision for this type of accommodation at Dundas may be needed, and is being kept in mind. It is concluded that the accommodation position will be tight but not critical.

The Company is a member of the Australian Mines and Metals Association. Recommendations and advice have been obtained from the Association on industrial matters. It is hoped with this assistance, the advantage of being a small organisation, and attention to personnel relations, that a harmonious working unit can be maintained.

8.6 Licencing

The situation with Department of Mines requirements is generally in order and satisfactory. Approval of the tailings and fresh water dam proposals has been obtained. Mill building plans have not yet been submitted for inspection. The new Department of the Environment has licencing requirements which are being formulated at present. It is intended to contact the Department at an early date.

9. OPERATING COSTS

9.1 Summary

Updated estimates now total $7.50 per tonne of ore treated, as the cost to produce concentrate. The cost of concentrate containers and shipment is an extra $35 per tonne of concentrate.

	per tonne ore	per annum
Mining (inc. waste removal)	$ 2.45	$ 147,000
Milling	3.55	213,000
Exploration	.65	39,000
Administration	.85	51,000
TOTAL	$ 7.50	$ 450,000

9.2 Mining

The cost per tonne of ore delivered to the mill stockpile is based on actual costs for 1972 and 1973, obtained from Renison Ltd. and Mount Lyell M. & R. Co. Ltd.. For each tonne of ore there will be one cubic metre of waste moved.

In tailings dam construction, Renison have had completed contracts (for around 50,000 cubic yards) which cost just on $1 per cubic yard. This involved excavation and placement (including compaction) of argillite at up to 1,000 feet lead. This is equivalent to $1.40 per cubic metre. An extra 10¢ is added for inflation to give an average figure of $1.50 per cubic metre of over-burden removed.

At Mt. Lyell, open cutting costs per ton of ore were $1.59 in 1971-72, with roughly 1 : 1 waste to ore, and all hard material; and $2.60 in 1972-73 for 3½ : 1 with some overburden weathered. Allowing on the one hand, for the shorter haul and softer ore at Razorback, and on the other for inflation and the smaller tonnage, 70 cents is adopted as the estimated cost for excavation and transport of a tonne of ore.

Finally, an allowance is made for Minops personnel involved in supervision, sampling and perhaps secondary breaking. This is $15,000 per annum, equivalent to 25 cents per tonne of ore.

9.3 Milling

A new budget cost has been derived partly based on the previous estimates by Macdonald and Austin-Anderson. The tabulation shows the comparison. New calculations for power and stores have not been made, but an allowance has been made for inflation.

	Macdonald	Austin-A.	Current
Establishment	16	21	19
Salaries/Wages	$ 108,500	$131,800	$140,000
Power Cost	21,080	18,790	25,000
Stores	35,200	42,500	48,000
Total Cost p.a.	$164,780	$193,090	$213,000
Cost per tonne	$2.75	$3.22	$3.55

9.4 Other Costs

Exploration is budgetted for at $39,000 per year. This covers the geologist and one other, with limited funds of about $20,000 for exploration by drilling, exploratory development, etc..

Local administration costs for clerical work, management and overheads are budgetted at $31,000 p.a., whilst head office charges are estimated at $20,000 p.a.

9.5 Components

The estimated wages and salary component for up to 25 or 26 local Minops personnel is $200,000. Mining contract payments is budgetted at $132,000, mill power and stores $73,000, with overheads and other allowances totalling $45,000.

10. PROJECT COMMENCEMENT COST

10.1 Summary

	$	$
Vendor Price	100,000	
Other Expenses to date	188,000	
Add'l Cost during 1974	32,000	320,000
Mill building & equipment	600,000	
Assay equipment	15,000	
Workshop, offices, etc.	30,000	
Power & water supply (part)	25,000	
Front end loader	32,000	
Earthworks ($3,575 to date)	82,000	
Housing ($17,838 to date)	66,000	850,000
Working Capital		70,000
Mining development & stock piling cost		60,000
TOTAL		$1,300,000

10.2 Project Initiation & Exploration Expenses

These amount to an estimated $320,000. One third of this was the amount paid to W.J. Hodge for the acquisition of the mining leases. The payment was completed in October, 1973.

Other running expenses incurred since early 1972, when the option was arranged, are detailed in Appendix 11 Further expense from now until say, January 1975 start-up, is estimated at about $3,000 per month.

10.3 Capital Costs

Two tenders were received in May 1973 for the Razorback Concentrator. The tender submitted by Clyde-Carruthers Pty. Ltd. was accepted pending the outcome of the tin quota matter. A letter of intent was sent to them on 30th May 1973. A copy of the tender is enclosed for your inspection. The quotation was for $490,523. Some items, notably the tin dressing section, were excluded. Allowing for inflation and additional items, a total of $600,000 is estimated for the mill cost.

Quotation, May 1973	$490,523
Allowance for inflation (6%)	29,477
Crushers and trommel	28,000
Samplers	10,000
Mill extension NE corner	4,500
Site drainage and accesses	1,500
Tin dressing section (35' x 18')	8,000
Tailings, line & pumps	5,000
Mill head tank	6,000
Instrumentation extra	3,000
Additional classification	4,000
Assay equipment	10,000
TOTAL MILL AND EQUIPMENT	$600,000

Additional to the above, provision for workshops, storage, and office space is to be provided on the south east corner. (Refer plan CP 380/016 74-10 attached.) A ground area of 28' x 18' will have workshop and store below, with offices, crib room and change room above. $30,000 has been allowed for the construction and equipment. Extra storage space will be available in the 5 squares extension of the mill building in the north east corner.

Power supply costs involve the following:

Power line, order 1016, March 1973, HEC estimate	$8,720
Transformer, order 1551, Jan. 1973 Baldwin quote	$5,800
Installation, order 1048, Nov. 1973, HEC estimate	$2,700
Installation, Minops works, estimate	$1,000

Allowing for inflation, total cost for power supply is estimated as $20,000. (If a second transformer is needed this will cost a further $7,500.) For water supply, the fresh water dam cost of about $6,000 is included in the earthworks, and a mill head water tank in the mill total. A further $5,000 is allowed for pump and piping for getting water from the dam. Thus the total allocation for water supply is $17,000.

Budget estimates from trade suppliers have been used for the allowance for the front end loader needed to feed the mill from the stock pile.

The earthworks specifications were put out for tender in early 1973. The successful tenderer was L.B. Jeffries Ltd. for a total cost of $68,520. Items were:

a)	spillway and tailrace	$2,000
b)	Gander Ck dam	3,600
c)	tailings dam	20,700
d)	" "	17,820
e)	sump	3,000
f)	haul road	8,000
g)	mill site	6,400
h)	stockpile	7,000

Allowing for inflation and the piping and weir boxes already purchased ($3,575) and extra for culverts, the budget allowance is set at $82,000.

The housing allocation is $66,000. One house has been built and final cost will be just on $18,100. A second house has been purchased - cost will be $6,000. The remaining $42,000 is for the erection of two houses (or a pair of flats) in Zeehan, and two (ex HEC Gowrie Park) at Dundas. The former is estimated to cost up to $30,000 and the latter up to $12,000.

10.4 Start-up Costs

Mining development and stockpiling of ore prior to the commencement of milling is budgetted at $60,000. This will enable approximately 6 months excavation work to be undertaken.

Working capital is nominated as about 8 weeks operating costs, until sufficient return is obtained from concentrate sales to cover costs. The amount allocated is $70,000, since operating costs have been estimated at $450,000 p.a.

10.5 Future Capital Cost Expenditure

The conversion of milling from the treatment of oxidised ore to sulphide ore is envisaged in several years' time. Apart from modification to the concentrator, there will be capital expenditure needed on other items. Both the underground development, and equipment, will be expensive. Also there will be an increased work force and work facilities, services and housing might need to be expanded. Estimates of these costs have not been made. Basically, the matter of conversion to the underground mining of sulphide ore will require a feasibility study with much more data than is presently available.

11. PROFIT PROJECTION

11.1 Reserves

286,100 tonnes of oxide ore and 197,000 tonnes of sulphide ore are used in the projection. This is derived by adding 20% of inferred oxide ore to indicated total and 50% of inferred sulphide ore to indicated sulphide total.

11.2 Sales Price of Concentrates

Current A.T.S. quotes (1.4.74) approximately $50 per unit for 70% Sn conc. The projection is based on a price of $40 per unit in 1975 appreciating thereafter at the rate of 7% per annum.

1975		Unit Price $	Per Tonne $
70% Sn		40.00	2,800
Less deduction for below 70%		0.90	
		39.10	
Assay 60% (60 x 39.10)			2,346.00
PENALTIES FOR IMPURITIES			
As	0.19%	8.00	
Fe	1.48%	No penalty	
Pb	0.025%	No penalty	
S	0.32%	5.00 per tonne	
		13.00	
Contingencies		20.00	33.00
			2,313.00
Freight		25.73	
Packaging		8.00	33.73
Net Value of concentrates FOB Razorback			$2,279.27

11.3 Mining and Administration Costs

Projected costs for 1975, $450,000, increased by 10% per annum until 1980 when mining of the sulphide orebody should commence. The increase in 1980 is calculated at $190,000 and the costs thereafter have been increased by 10% per annum.

11.4 Tax

It is estimated that a total of $500,000 capital expenditure will be allowable as a deduction from income in the first two years with an additional $150,000 allowable in 1979, and $200,000 in 1980.

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RAZORBACK MINE TASMANIA

PROFIT PROJECTION

NOTES		1975	1976	1977	1978	1979	1980	1981	1982
1	Tonnes of ore mined per year	60,000	60,000	60,000	60,000	60,000	60,000	60,000	63,100
	Head grade of ore (%)	0.7	0.7	0.7	0.7	0.7	0.92	0.92	0.92
	Recovery rate (%)	65	65	65	65	65	65	65	65
	Concentrate grade (%)	60	60	60	60	60	60	60	60
	Tonnes of concentrate per year	455	455	455	455	455	598	598	629
		$	$	$	$	$	$	$	$
2	Sales price per tonne of concentrate	2,279	2,439	2,609	2,792	2,987	3,196	3,420	3,660
	Gross revenue	1,036,945	1,109,745	1,234,057	1,320,616	1,412,851	1,911,208	2,045,160	2,302,140
3	Mining and administration costs	450,000	495,000	544,500	598,950	658,845	848,845	933,729	1,027,102
	Interest on loan	50,000	40,000	20,000					
	Net profit before tax	536,945	574,745	669,557	721,666	754,006	1,062,363	1,111,431	1,275,038
4	Tax (47.5%)	-	147,957	318,039	342,791	286,902	409,622	527,929	605,643
	Net profit after tax	536,945	426,788	351,518	378,875	467,104	652,741	583,502	669,395
	Loan	500,000	400,000	200,000					
	Loan repayment	100,000	200,000	200,000					
	Net cash flow	436,945	226,788	151,518	378,875	467,104	652,741	583,502	669,395

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