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THE ANVIL PROJECT
FEASIBILITY STUDY

March 6, 1967

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THE ANVIL PROJECT

Introduction

In December 1965, Anvil Mining Corporation, Limited was formed to take over the assets of a joint exploration venture between Cyprus Mines Corporation and Dynasty Explorations Limited. Exploration activities by the joint venture during 1965 resulted in the discovery of a major lead-zinc orebody and the acquisition of some twenty-four hundred mineral claims of substantial exploration potential.

The joint venture properties are all located in the Anvil Mining district approximately 135 air miles north and slightly east of Whitehorse, the capital of the Yukon Territory of Canada. Access to these properties by road was only possible during the winter months (over tote roads) when the ground was frozen and an ice bridge crossing the Pelly River was available. The distance from Whitehorse by road is 255 miles.

Project Summary

Anvil's objectives were to delineate the orebody by diamond drilling, to study the feasibility of bringing the orebody into production, and to explore mineral claim holdings adjacent to the known discovery. To accomplish these objectives, it was necessary to develop an effective organization, construct an adequate camp facility and develop year-round access to the property. These things have been accomplished.

During November of 1965, The Ralph M. Parsons Company of Canada was retained to conduct a preliminary feasibility study for the Anvil Project. This study, completed and published in April 1966, was intended to compare the economic feasibility of production of concentrates and the production of metals by various smelting techniques. Basic information available at that time was insufficient to arrive at a firm conclusion as to the future of the project. However, the results of this work did indicate an economic advantage would be gained by producing high grade selective lead and zinc concentrates rather than the production of metal by any process. Technical reasons also dictated that future plans be based on initial production of concentrates as opposed to metal production. Therefore, it was concluded that a final feasibility study based on the production of concentrates should be developed as rapidly as possible.

At this point, Anvil has confirmed an ore reserve of some 50 million tons in three deposits. The Faro No. 1 Zone contains 39 million tons mineable by open pit

methods averaging 9.8% combined lead and zinc and 1.19 oz. of silver per ton.

Metallurgical testing has been conducted by The Galigher Company on drill core samples and results indicate acceptable recoveries and concentrate grades. The resulting process flow sheet will be further confirmed by pilot plant work on bulk samples to be obtained from underground work now in progress. The pilot plant runs are scheduled for April.

A feasible transportation system has been developed and costs estimated. Miles & Sons Trucking Services have completed a study of truck haulage from plant to tidewater. Marcona has submitted proposals on Ocean Transportation. Further consideration is presently being given to alternate land transportation means which might result in both capital and operating savings.

A marine consultant, Mac Silvert, has studied and recommended sites near Haines, Alaska for tidewater facilities.

Foster Economic Consultants have conducted a study to arrive at a recommendation regarding personnel procurement, wage, benefits and townsite requirements.

The success of the Anvil Project is dependent on certain undertakings by the Canadian Government in areas of road, power, and townsite construction. Several discussions have been held with government officials which lead us to believe that the required support will be forthcoming once Anvil is prepared to proceed with the project.

A marketing plan for Anvil concentrates has been developed by Ametalco from detailed studies of present and future supply-demand-price relationships for lead and zinc. The Arthur D. Little Company was also engaged to develop long term supply, demand, and price projections. Metal prices used in the final economic study were developed from these studies.

By September 1966, sufficient data had been developed so that the final feasibility study by The Ralph M. Parsons Company could be started. Instructions were given for them to proceed with preliminary engineering in areas of mining, concentrating, non-process facilities, tidewater facilities, and townsite development. They were further instructed to develop capital and operating costs and an economic analysis of the project. The final feasibility study was completed and submitted on February 17, 1967, and forms the basis for the recommendations to be presented.

FEASIBILITY SUMMARY

The economic analysis of the proposed Anvil Project results in a DCF rate of return on initial investment of 19% with a 4.0 year payout of capital costs if sunk costs (exploration program costs) are ignored. If sunk costs are included, the DCF rate of return is 16.7% with a 4.7 year payout. These results are based on average five-year world prices for lead and zinc of 10¢ and 10.5¢ per pound respectively as projected by market studies. It has been assumed that all products would be sold to Japanese smelters on long term contracts which contain guaranteed minimum price provisions.

The initial capital required for construction is estimated to be \$52.5 million. The working capital requirement is estimated to be \$3.6 million for a total requirement of \$56.1 million. Sunk costs are estimated at \$6.2 million.

The average cost of producing lead or zinc metal with custom smelting at the above stated metal prices would be 7.1¢. Metal prices at which the breakeven point would be reached are 7.0¢ and 7.5¢ per pound for lead and zinc respectively. Based on available information from existing mines, Anvil would qualify as a low cost producer of lead and zinc concentrates.

Mining cost estimates are based on open pit mining at a rate of 6,400 tons of ore per day with a stripping ratio of approximately 1.57 cubic yards per ton of ore. The cost per ton of ore delivered to the concentrator for the first five years of the projected mining operation is estimated at \$0.88.

The concentrating cost estimates are based on a conventional flotation plant milling 5,500 tons per day at 94% operating efficiency. The average milling cost per ton is estimated at \$2.40 for the five years which includes all direct as well as indirect costs for administration and maintenance.

Transportation costs include contract truck haulage of concentrates to Haines, Alaska, at \$15.23 per ton and ocean freight at \$3.50 per ton to Japanese smelters. Initially 128,400 short dry tons of lead and 240,200 short dry tons of zinc concentrates will be shipped annually.

The net realization from sales at Japanese ports of entry is based on the above stated metal prices and typical Japanese smelter schedules. Other marketing areas will be considered so as to maximize Anvil's realization.

The average annual cost to Japanese ports of entry during the first 5 years is projected at \$21.7 million with sales revenue of \$30.4 million providing a gross cash flow of \$12.8 million. The average annual gross cash flow for the seventeen year life of the operation is \$10.9 million.

Detailed discussion of pertinent areas of feasibility will be presented in the sections to follow.

FEASIBILITY SUMMARY

Net Income and Cash Flow (000's)

	<u>Average Annual</u>		<u>Total Years 1-17</u>
	<u>Years 1-5</u>	<u>Years 1-17</u>	
<u>Revenue</u>	<u>\$30,380</u>	<u>\$31,723</u>	<u>\$539,300</u>
<u>Costs</u>			
Mining	\$ 1,929	\$ 2,303	\$ 39,200
Concentrating	4,808	5,510	93,700
Transportation	7,963	8,613	146,300
Others	1,837	1,689	28,800
Depreciation & Write-offs	5,211	3,638	61,900
Total	<u>\$21,748</u>	<u>\$21,753</u>	<u>\$369,900</u>
<u>Tax Provision</u>	<u>\$ 68</u>	<u>\$ 2,497</u>	<u>\$ 42,400</u>
<u>Net Income</u>	<u>\$ 8,564</u>	<u>\$ 7,473</u>	<u>\$127,000</u>
<u>Cash Flow</u>	<u>\$12,853</u>	<u>\$10,936</u>	<u>\$185,900</u>
Capital Costs		\$56,100	
Payout		4 years	
Rate of Return		19.1%	
Metal Prices			
Lead		10.0¢	
Zinc		10.5¢	
Breakeven Cost per Pound			
Cash		6.5¢	
Total		7.4¢	

GEOLOGY AND ORE RESERVES

Geology

The Faro ore zones occur on the southwest flank and just outside of a large body of granitic rock. The main mass of this intrusive near Rose Creek is about 8 miles long and 1-1/2 miles wide at the surface.

The ore occurs within a group of metamorphic rocks made up of schist, phyllite and quartzite that borders the granite body on its southwest side. These rocks, of sedimentary origin, strike NW-SE and dip to the southwest at moderate inclinations, away from the granitic core.

The principal metallic minerals in the ore are sphalerite, galena, chalcopyrite, pyrite and pyrrhotite. These occur as fine-textured aggregates to form a massive ore, as elongated streaks to make a banded ore, and as disseminations dispersed in the host rock.

The host of the ore is a quartzite, or a variety of metamorphic rock related to quartzite.

The Faro No. 1 zinc-lead-silver ore deposit appears to lie conformable with the layering of its metamorphic host. As now known it is about 3,000 feet long with a width varying from 500 to 1,500 feet. Its thickness is variable, ranging from 25 to 250 feet.

The ore zone is covered and masked by glacial sands and gravels with an average thickness of about 55 feet, under which the ore body crops out on the buried bed-rock surface. From this so-called sub-crop the Faro No. 1 deposit plunges down to the southeast under bedrock and attains a rock cover of some 500 feet depth on the far southeast.

The average dip of the Faro No. 1 is about 10 to 15 degrees to the southwest; however, on its northeast margin toward the east it locally steepens to 35 degrees as it approaches the surface. The ore body is broken on the southeast by a strong cross-fault that drops the body down on the southeast for a distance of 100 feet or more.

Ore Reserves

The Faro No. 1 ore body has been explored by some 72 vertical diamond drill holes, most of which range in depth from 300 to 800 feet. Most of these are located at the corners of grids that are 283 feet square, although a few are located at half-intervals.

Diamond drill core recovery in the ore zone was generally satisfactory. The core was split and made up into samples for assaying at a custom assay office in Whitehorse. Checks of all samples were run by other custom assay offices, and the Whitehorse assay returns were thereby proved to be reliable.

The drill holes were plotted on vertical cross-sections and also on longitudinal sections. The ore intervals were set down and the ore blocks and their grades were determined. The ore blocks on the cross-sections were made conformable with those on the longitudinal sections where the two sets of sections intersect, and vice versa.

The ore and waste blocks on the cross-sections were measured by planimeter, and the measurements reduced by proper factors to give their sizes. The metal content of the various blocks was averaged to obtain the grades. (A factor of 8.5 cubic feet of ore in place in the ground equals 1 short ton was used.)

One of the calculations was to determine the amount of ore falling within the limits of an open pit designed for its extraction. This pit design was furnished by The Ralph M. Parsons Company and is that particular design noted as "Tentative Ultimate Pit!"

Ore Reserve Summary

	<u>Tons</u> <u>(million)</u>	<u>%</u> <u>Pb</u>	<u>%</u> <u>Zn</u>	<u>Oz/Ton</u> <u>Ag</u>
No. 1 Pit Ore Body (diluted)	38.87	3.71	6.08	1.19
No. 1 Ore Below Pit	4.51	3.37	5.67	1.24
No 2 Ore Body	3.10	3.06	5.36	1.38
No. 3 Ore Body	<u>4.30</u>	<u>2.24</u>	<u>4.29</u>	<u>1.35</u>
Total	<u>50.78</u>			

Combined Stripping Ratio
Faro No. 1 Ore Body

1.67 Cubic yards/Ton

MINING

Anvil's mining plan, which was prepared by The Ralph M. Parsons Company, is based on open pit mining of 46 million tons of ore from the Faro deposits over a seventeen year period. During the first five years, the annual ore mining rate will be 2,435,000 tons with 2,000,000 tons going to the concentrator and 435,000 tons of low grade ore going to stockpile. After five years the mining rate will be increased sufficiently to allow for a 3,000,000 ton per year concentrating rate. The ore accumulated in stockpile will make up a portion of the concentrator feed during the sixth through ninth year.

During the first five years, the grade of concentrator feed will average 12.2% combined lead-zinc (4.9% Pb and 7.3% Zn) with 1.69 oz. of silver per ton. During the following 12-year period, the concentrator feed will average approximately 9.3% combined lead-zinc (3.4% Pb and 5.9% Zn) with 1 oz. of silver per ton.

Designs have been prepared for a pre-production pit, a 5 year pit, and a 17 year pit. Pre-production stripping will remove 2,763,000 cu. yds of alluvium and 3,777,000 cu. yds of cap rock for a total of 6,543,000 cu. yds.

During the first 16 years of the milling operation, the following annual average quantities will be mined:

	<u>Stripping (cu yds)</u>				<u>Mill Feed (tons)</u>
	<u>Alluvium</u>	<u>Cap Rock</u>			
Years 1-5	4885,000	977,000	12,880,000	2,576,000	17,765
Years 6-16		577,000		3,763,000	3,000,000

$\frac{629,000 \text{ cu yds}}{10,000 \text{ tons}} = 1.7765$

The overall stripping ratio will be 1.57 cubic yards of waste to 1 ton of ore.

The major mining and stripping equipment consist of one five cubic yard diesel shovel and three 5 cubic yard electric shovels. Fifteen 65 ton capacity mine haulage trucks will be used for hauling both ore and waste. Three 9-inch rotary drills will be utilized for blast hole drilling. Alluvial stripping will require three rubber tired scrapers and two dozers. In addition, auxiliary equipment will be required which includes a secondary drill, water truck, grader, power truck, grease truck and other minor items.

A complete service facility is provided for equipment maintenance and storage which include office, mechanical and electrical shops and warehouse.

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A detailed study of mining costs has been made to develop direct unit cost and general pit expense. The following table summarizes the mining cost estimates:

	<u>Mining and Stripping Costs</u> *					<u>Total</u>	<u>Total Cost</u> <u>Ore to Mill</u>
	<u>Stripping (cu. yds)</u>		<u>Ore</u>	<u>Mining (tons)</u>			
	<u>Alluvium</u>	<u>Caprock</u>			<u>Gen Pit</u>		
Preproduction**	\$0.23	\$0.44	\$0.20				
1-5 years	0.18 ¹⁷⁶	0.43 ¹¹⁸⁵	0.17 ³⁴⁰	\$0.16 ³²⁰	\$0.33	\$0.88/ton	¹⁷⁶⁰
6-9 years	0.25	0.45	0.19	0.14	0.33	0.93/ton	
9-16 years	0.25	0.45	0.19	0.14	0.33	0.95/ton	
17th year			0.9	0.08	0.27	0.27/ton	

* Canadian dollars

** General Pit Expense pro-rated

The initial capital investment required for mining operations is summarized as follows:

	<u>Mine Capital Cost</u> (\$000's)		
	<u>Materials</u>	<u>Labor</u>	<u>Total</u>
Mining Equipment	\$4,276	\$ 27	\$4,303
Preproduction Stripping	<u>1,207</u>	<u>1,016</u>	<u>2,223</u>
Total:	<u>\$5,483</u>	<u>\$1,043</u>	<u>\$6,526</u>

It is planned that Anvil would carry out the pre-production stripping with its equipment and personnel. For this reason, no contractor fees have been included.

METALLURGY OF FARO ZONE 1

Bench scale flotation testing of the Faro Zone 1 was started in October 1965 and was continued through October 1966. A major portion of the flotation test work was performed by The Galigher Company in Salt Lake City.

Eight individual drill hole cores were tested. The locations of these drill holes were largely confined to that portion of Zone 1 which would be mined during the first five years of operations. Other drill holes were tested on a spot check basis over the remainder of Zone 1 to verify that the material would respond to the process developed for the first five years operation.

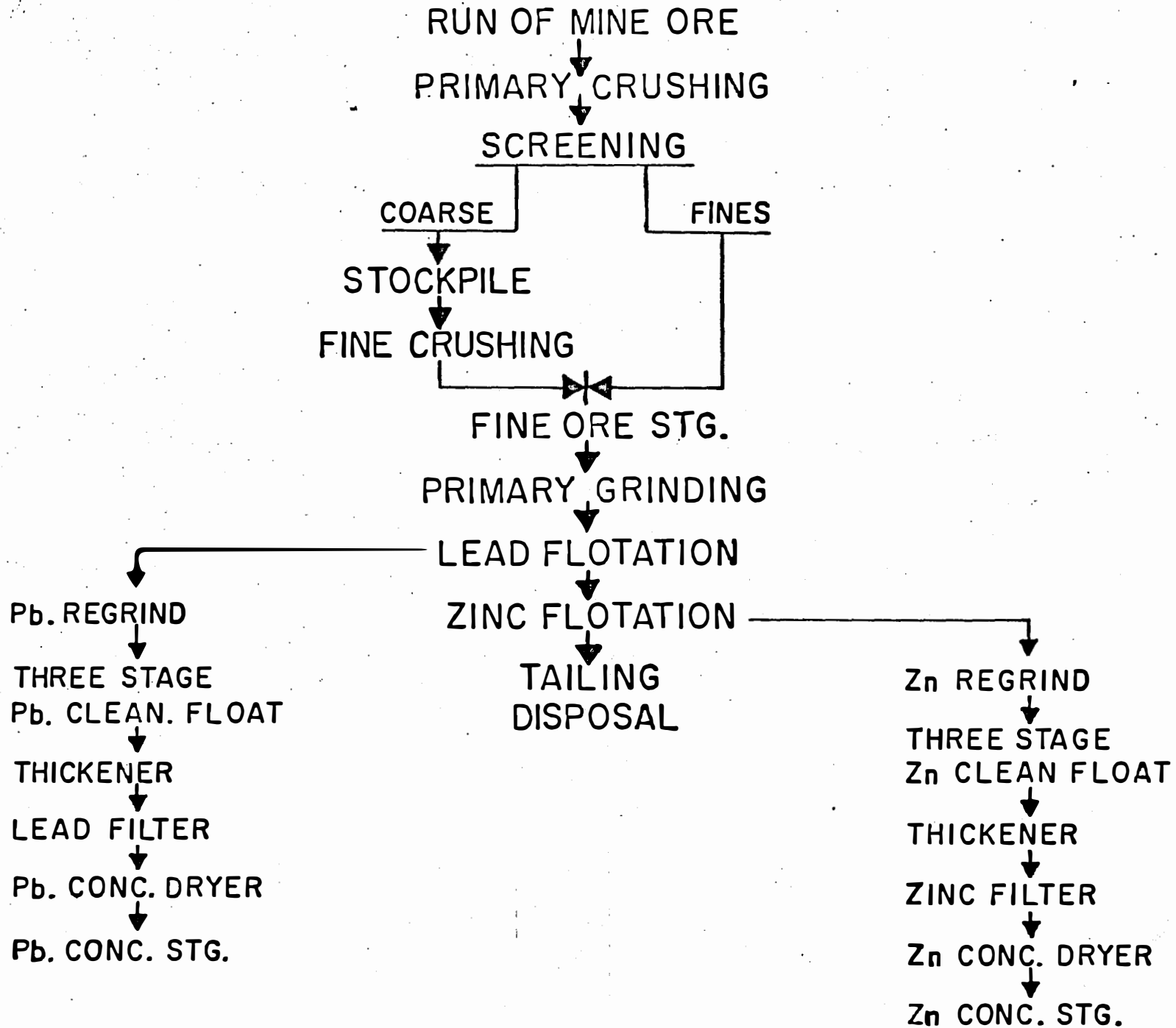
The eight drill hole core samples were split into eighteen separate samples representing vertical segments of the mineralized zone.

In developing the metallurgical flowsheet, it was found that the minerals occur largely in two types of grain structures, namely medium grained material in which the iron sulfide is largely as pyrite and fine grained material in which the iron sulfides occur as pyrrhotite and pyrite. The flowsheet development indicated that the ore requires a nominal 65 mesh grind prior to lead and zinc rougher flotation with subsequent regrinding of each of the rougher concentrate products preceding the cleaner flotation operations. The regrinding necessary to produce the higher grade flotation concentrates of lead and zinc is more severe for the fine grained materials than for the medium grained materials. For the fine grained materials the regrind product required is all minus 44 microns (325 mesh) with an indicated median particle size in the range of 10 microns.

The laboratory flotation testing has indicated that the lead concentrate will assay approximately 70 percent lead containing approximately 88-90 percent of the lead and approximately 75-80 percent of the silver values. The zinc concentrates produced in the laboratory indicate that the commercial plant zinc concentrate will assay approximately 54 percent zinc and contain approximately 85-88 percent of the zinc. The assays of cadmium and silver in the zinc concentrates are indicated to be lower than the minimum for smelter payment schedules.

A pilot plant operation is projected on the Faro Zone 1 material at Hazen Research, Inc. when the adit, presently being driven into the zone, has produced sufficient material for the operations. It is planned that the materials mined in the adit will be segregated into fine grained and medium grained ore with separate pilot plant operations on these materials and an operation on the mixed fine and medium grained materials. The pilot plant operations will verify the flowsheet assumptions developed in the laboratory and will provide bulk samples for obtaining design data on regrinding, filtering and drying equipment sizing. In addition, the pilot plant operations should provide some additional data relative to reagent combinations and quantity requirements.

ANVIL UNIT OPERATIONS FLOWSHEET



PLANT FACILITIES AND OPERATING COSTS

PROCESS FACILITIES

The general concentrator flowsheet and metallurgical data have been presented in the previous Metallurgy section.

Initially, the processing facility is sized to treat 2.0 million tons of ore per year at an average daily rate of 5,500 D.S.T. assaying 7.3 percent zinc, 4.9 percent lead and 1.69 ounces per ton of silver. Following the first five years of operation, it is anticipated that the concentrator will be expanded to process 3.0 million tons of ore per year at an average daily rate of 8,250 D.S.T. which will average 5.9 percent zinc, 3.4 percent lead and 1.01 ounces of silver per ton.

The crushing plant will consist of conventional three stage crushing to reduce run-of-mine ore to minus 1/2 inch. Intermediate crusher product and fine ore storage have been provided.

The primary grinding circuits are the conventional open circuit rod mills and ball mills in closed circuit with hydrocyclone classifiers. Two grinding circuits are adequate for the initial plant capacity with an additional grinding circuit required subsequent to the first five years of operation. Grinding tests on Anvil fine and medium grained ores have indicated energy requirements for the primary grind are slightly less than 8 kilowatt hours per ton.

The lead flotation circuit contains sufficient flotation cells to provide retention times as follows:

- Roughing and scavenging at 8 minutes
- First lead cleaners at 6 minutes
- Second lead cleaners at 5 minutes
- Third lead cleaners at 5 minutes

The zinc flotation circuit contains sufficient flotation cells to provide these retention times:

- Roughing and scavenging at 10 minutes
- First zinc cleaners at 7 minutes
- Second zinc cleaners at 6 minutes
- Third zinc cleaners at 6 minutes

Regrind mills for the lead and zinc rougher concentrates have been sized to these specifications:

- Lead regrind at 9.2 KWH/Ton of concentrate feed
- Zinc regrind at 10.0 KWH/ton of concentrate feed

The finished lead and zinc concentrates are dewatered in conventional equipment consisting of thickeners and filters. The fine structure of the finished concentrates require the equipment to be sized for relatively slow settling rates and low filtering rates.

The filtered concentrates of lead and zinc will be dried to approximately 5 percent moisture content by means of coal fired rotary dryers with auxiliary dust collection equipment.

The dried concentrates are placed into storage bins for ultimate truck loading and haulage to the tidewater.

Because the Anvil Project is in a relatively isolated area, a lime kiln for calcining limestone and subsequent grinding and slaking equipment have been included in the estimates to provide a low cost source of lime reagent.

The Anvil plantsite heating requirements have been provided by a central steam generating plant. A local source of coal will supply the boiler fuel.

The major facilities provided at tidewater include truck unloading equipment, concentrate storage and ship load-out facilities. Ship load-out rate is nominally 1,500 tons per hour. A T-shaped dock with breasting and mooring dolphins have been provided for receiving ships with dead weight capacities up to 50,000 tons.

NON-PROCESS FACILITIES

Non-process facilities have been provided at the plant site to service the production facilities and at tidewater to receive and store concentrates for outloading onto ocean-going vessels. These non-process facilities include:

Plant Site

- Office and laboratory building (11,100 square feet)
- Garage, warehouse, shops and changeroom (58,400 sq. ft.)
- Potable and process water supply and storage
- Fire protection system
- Fuel oil and gasoline storage
- Sewage system
- Dust control equipment
- Heating and ventilating system

Tidewater Site

- Combination warehouse, garage, office and power generation building containing 10,800 square feet
- Potable and fire protection water supply
- Fire protection system
- Fuel oil receiving and dispatching facilities
- Sewage system
- Dust collection for concentrate receiving, storage, and ship load-out
- Oil fired space-type heating units

The estimated operating costs for the concentrator facilities and the tidewater facilities are based on manpower schedules and related payroll rates.

Reagent costs are based on quantities developed from metallurgical test work and quoted reagent prices. Grinding media and liner consumptions and costs were calculated on the basis of energy requirements and current quoted prices. Electric energy costs are based on estimated annual charges, maintenance material costs on a percentage of erected plant costs, and coal costs (for plant heating, lime burning and concentrate drying) on calculated heat balances and delivered prices. These estimated operating costs are summarized below:

Plantsite Operating Costs
(Dollars per ton of ore)

	<u>First Five Years</u>		<u>Subsequent Years</u>	
		<u>US</u>	<u>Can.</u>	
Labor, including administrative personnel	\$ 0.52	1092	1126	\$ 0.38
Reagents	0.60	1202	1300	0.58
Grinding media and liners	0.29	581	628	0.26
Fuel (Coal)	0.32	641	693	0.23
Power	0.42	841	909	0.28
Materials, supplies and spare parts	0.25	501	542	0.20
Total	\$ 2.40	4808	5198	\$ 1.93

Tidewater Operating Costs
(Dollars per ton of concentrates)

Labor	0.50	184	199	0.46
Fuel (Oil)	0.23	85	92	0.22
Materials, supplies and spare parts	0.27	100	108	0.24
Total	\$ 1.00	369	399	\$ 0.92

CAPITAL COST

The estimated capital costs shown below are largely based on price quotations which were obtained on major process equipment items, steel and other construction material. The quantities of equipment and material required were developed by Parsons from their engineering drawings, preliminary design calculations and sketches.

Capital Costs (000's)

Concentrator	\$31,387 ✓
Mine	6,526 ✓
Tidewater	7,542 ✓
Repair facilities	427 ✓
Bridge and access road	463 ✓
Townsite	4,298 ✓
Capitalized supervision and overhead	<u>1,857 ✓</u>
Total	<u>\$52,500</u>

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Details of these costs are included in the following table.

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CAPITAL COST DETAIL

(000's)

<u>Concentrator</u>	
Material	\$17,192
Sub-contracts	2,012
Labor	12,183
	<u>\$31,387</u>
 <u>Mine</u>	
Equipment	\$ 4,303
Pre-production stripping	2,223
	<u>\$ 6,526</u>
 <u>Tidewater</u>	
Material	\$ 3,698
Sub-contracts	495
Labor	3,349
	<u>\$ 7,542</u>
 <u>Repair Facilities</u>	
Maintenance and repair shop	\$ 326
Mobile maintenance equipment	22
Shop equipment	79
	<u>\$ 427</u>
 <u>Bridge and Access Road</u>	
	<u>\$ 463</u>
 <u>Townsite</u>	
Equity in ¹⁸⁰ 300 houses	\$ 1,770
Dispensary	137
Recreation hall	1,100
Bunk houses	641
Boiler house for central heating plant	650
	<u>\$ 4,298</u>
 <u>Capitalized Supervision and Overhead</u>	
	<u>\$ 1,857</u>
 <u>Total Capital Cost Exclusive of</u>	
<u>\$3.6 Million Working Capital Requirements</u>	<u>\$52,500</u>

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TRANSPORTATION

Mine to Port

Anvil concentrates will be moved from minesite to tidewater by truck. The haul from mine to port will utilize presently existing roads including sections which are now being built and will require construction by the Canadian Government of an additional 116 miles of all-weather highway. A commitment by the Government for the projected road construction is an essential part of Anvil's planning. The proposed route is 394 miles long terminating at a concentrate storage and ship loading facility near Haines, Alaska.

Miles and Sons Trucking Services were retained by Anvil to prepare a study on truck haulage and to estimate the cost of transportation. This Company comes highly recommended as a result of past experience in contract truck haulage. CMC has had first-hand evidence of this fact resulting from Miles' service to Marcona Mining Company in Peru. Miles have performed numerous trucking feasibility studies for such organizations as Cerro de Pasco and Southern Peru Copper Mining Company. They are experienced in foreign operations and have a Canadian subsidiary and other operating subsidiaries throughout the world.

Their initial report included estimates which were in part used for transportation costs in the feasibility study. Subsequent to this report, Miles submitted a proposal for contract haulage of concentrates at \$14.65 (Canadian) per short ton to be based on a six-year contract with allowances for escalation of wages and supply costs and incremental payments for haulage during restricted load periods. To cover these factors, Anvil has used \$16.75 (Canadian) per short ton in the feasibility study. This represents an increase of 14.3% over the proposed contracting price.

The Miles proposal recommends the use of a six axle tractor and trailer units. The gross vehicle weight for these units is 95,000 pounds which coincides with the load limit prescribed for new road and bridge construction.

Load limits on existing roads in British Columbia and Alaska are less than the design limits of these trucks. However, a review of the problem indicates that either overload permits can be obtained at a minimal cost, or that revision of the load limit requirements will be possible.

Seventy-one haulage units would be required to handle Anvil's concentrates. With a pay load of 32 short tons, forty-four trips per day would be required. The total trip time from the mine to Haines and return would be 31 hours.

Ocean Shipping

Anvil has retained Marcona Mining Corporation to develop a shipping proposal. By their letter of February 28, 1967, Marcona has quoted a rate of \$3.50 per ton based on 2 days loading, in 35,000 ton vessels which is the ocean freight rate used in the feasibility study. Marcona has also developed rates for shipping to Europe and North America in the event Anvil were to sell into these markets.

PERSONNEL STUDY

Foster Economic Consultants Ltd. has prepared a report entitled "Guide Lines for Developing a Stable Work Force at a Proposed Yukon Territory Mining Corporation." The report findings were based on evaluation of information obtained during approximately 70 field interviews with executives in the Canadian mining industry, representatives of various Canadian mining associations, appropriate government agencies, other persons knowledgeable about resource developments in the Canadian North, and from a review of pertinent studies and other published material. The field work included visits to the community of Whitehorse and to the following mines: United Keno Hill, Cassiar Asbestos, Pine Point, and Giant Yellowknife.

This study covers the following subjects:

1. The Relative Importance of Compensation versus Amenities of Life

Amenities, rather than premium wage and salary rates, are considered of more importance, for the following reasons:

- (a) Anvil will gain only a short-run advantage over existing mines if it pays premium wages and salaries.
- (b) Almost without exception, persons interviewed stressed the importance of high quality accommodations, recreational facilities and food for residents of isolated northern resource developments.
- (c) Married workers, who are the most dependable employees, are motivated more by availability of housing, schools and recreational facilities than by minor differences in wage rates between one mine and another.

2. Wages, Salaries and Fringe Benefits by Job Classification

A recommended wage and salary structure plus fringe benefits schedule for mine, mill and tidewater operations has been prepared providing the basis for operating costs included in the feasibility study. Top industry rates or premium rates were recommended only for key employees such as mine and mill superintendents, heavy duty mechanics and shovel operators. Fringe benefit costs approximate 25 percent of direct salaries and wages in Canada, and have been projected at that rate in the feasibility study.

3. Plan for and Cost of Recruiting Employees

The plan for recruiting employees shall be as follows:

Unskilled - local Yukon sources, including Indians

Semi-skilled and skilled hourly - Eskimos; farmers and other rural residents in northern parts of the Prairie Provinces; immigrants from the United Kingdom and Europe; workers laid off at the Peace River power project and United Keno Hill Mines.

Technical and professional - Canadian residents and immigrants

4. Townsite Planning and Administration

Townsite facilities should be designed and located so as to minimize exposure of residents to harsh climatic conditions.

The advantages to Anvil of an "open" rather than "closed" town outweigh the disadvantages. These advantages include:

- (a) Avoidance of heavy investment in certain townsite facilities
- (b) Avoidance of involvement in administration of non-mining matters
- (c) Avoidance of direct involvement in certain social or moral issues, particularly relating to "dry" versus "wet" camps and prostitution
- (d) Removal of "company town" stigma
- (e) Possible recovery of sizable residual utility costs

Each single employee should have a private, attractively furnished room in a relatively small bunkhouse (capacity no more than 20 men). Each bunkhouse should have a common lounge area. Unless single employees have a private room, turnover will be higher.

Anvil should construct, at the outset, the maximum number of houses required.

A sizable area should be reserved by the government for development of the Anvil site to avoid speculation on the part of outside land dealers and to prevent development of a "shack town" or other unattractive developments along highways leading to the town.

5. A Coordinated Recreational Program

A coordinated recreational program designed to relieve boredom is considered essential as a means of holding down labor turnover. Because television is not available in the Anvil townsite area, greater stress must be placed on a coordinated recreational program under the direction of a fully trained and experienced recreational director and his staff.

6. Stability of Work Force at Selected Northern Mining Operations

The extremely high labor turnover rate experienced by other mines in the North is of concern to a new mining operation desiring to obtain a stable work force. However, from the interviews conducted, the high labor turnover resulted from many contributing factors, such as non-competitive wages, extremely poor townsite facilities and layout, reportedly unsafe mining conditions, poor hiring procedures, poor food, and an attitude of the company which was not conducive to a healthy management-worker relationship.

If Anvil adopts the procedures outlined above, it should be able to develop a more stable working force than other comparable mines.

MOST PROBABLE SOURCES OF MANPOWER

<u>CLASSIFICATION OF SKILL</u>	<u>ESTIMATED NUMBER OF EMPLOYEES</u>	<u>MOST PROBABLE SOURCE</u>
Unskilled (Mine-Mill only)	50	- Yukon Indians - Yukon labour pool
Semi-skilled and Skilled (Mine-Mill and Trucking Operation Combined)	311	- Eskimos - Farmers and other rural people - Immigrants - Temporary employment office at Hudson Hope, B. C.
Professional, Technical and Administrative (Mine-Mill and Trucking Operation Combined)	69	- Other Canadian mines - Municipal workers in rural areas - Immigrants - Mining Association employment offices
	<u>430</u>	

ADVANTAGES AND DISADVANTAGES TO ANVIL OF AN "OPEN" TOWNSITE

ADVANTAGES

1. Heavy initial investment in certain townsite facilities avoided.
2. Reduced involvement in administration of non-mining matters.
3. "Company town" stigma avoided.
4. Involvement in certain social or moral problems avoided.
5. Annual utility costs avoided or recovered

DISADVANTAGES

1. Loss of complete control of townsite planning.
2. The resource development may be too small to support an "open" town.

ADVANTAGES AND DISADVANTAGES TO ANVIL OF SELLING HOMES TO EMPLOYEES

ADVANTAGES

1. A sizeable initial investment would be avoided thereby yielding a higher DCF rate of return on the overall development if houses are subsequently repurchased.
2. Sizeable repairs and maintenance costs would be avoided.
3. Potential income tax liabilities would be removed.
4. Employees should enjoy a greater interest in their home and community.
5. The "company town" image would be removed.
6. The need to administer a housing rental program would be eliminated.
7. Labour-management relations should be more stable.
8. Problems which could develop if employees are permitted to construct their own homes would be avoided.

DISADVANTAGES

1. Potential employees might balk at buying a house.
2. Possible complications concerning repurchase of homes.
3. Difficulty of evicting an employee-owner who is in arrears on his mortgage payments.
4. Costs of financing house purchase by employee might be higher than financing as part of the overall mine program.
5. Potential employees might be reluctant to make monthly payments which are higher than subsidized rent.

ANVIL MARKETING

Anvil Mining Corporation has employed two consultants to assist in the development of its marketing plans and forecasts for lead and zinc.

Arthur D. Little, Inc. was employed to evaluate total lead-zinc demand through 1980.

Ametalco Inc. of New York was retained to make a world-wide survey of smelters capable of refining Anvil concentrates. This survey resulted in a total demand projection for Anvil's concentrate production. In addition, Ametalco was asked for an analysis of lead-zinc supply and demand through 1980, price projections relating to the supply-demand forecast, and an analysis of production costs for other lead-zinc mines throughout the world.

Both the supply-demand analyses indicate continued moderate growth for lead and zinc. The large amount of new mine capacity currently under construction is expected to create an oversupply of both metals during the early 1970's. The following comments are common to both studies and apply to each of the major Free World markets for lead and zinc.

Lead

The storage battery industry is the largest single user of lead. This market is considered to be secure through 1980.

Lead cable sheathing is used for underground telephone and power cables. Development of competitive sheathing materials in the 1950's resulted in a severe drop in the U.S. market. Other countries which did not follow suit at that time are beginning to develop substitute materials but at a slower rate than in the U. S.

In recent years the use of tetra-ethyl-lead (TEL) has increased somewhat more rapidly than gasoline consumption but because of the anti-pollution outcry around the world, oil companies are expected to restrict their use of TEL which will reduce the growth rate significantly.

Other lead markets such as pipe, sheet and pigments are forecast to continue expanding at nominal growth rates.

There has not been any substantial new use or new application developed for lead during the past 15 years, nor is there any breakthrough indicated for the next few years.

Zinc

Galvanized steel is the largest single use of zinc and is expected to show continued growth in future years.

Zinc die castings have enjoyed rapid growth, particularly in the United States. However, chrome-plated polypropylene and other plastics appear to be major competitors of zinc die castings which will tend to reduce future growth rates of this product.

Brass represents a major zinc market in countries other than the United States. Increasing competition, particularly from some of the newer high strength plastics, is expected to develop in the future.

Other zinc markets, such as rolled zinc products and pigments, are growing slowly and, as in the case of lead, no large new uses are expected.

Thus, the analysis of total world demand for lead and zinc indicates continuing growth.

General Market Findings

Examining the effect of the world supply-demand balance on prices, it is obvious that when mine production exceeds consumption, price should fall; when consumption exceeds supply, price should rise. However, other factors intrude such as the geographical location of the supply and demand, inventory changes, and controlled prices. Nevertheless, over the long term, price is basically determined by the supply-demand balance.

Arthur D. Little Inc. believes a long term equilibrium price for lead is in the range of 9-10¢ on the L.M.E. Because of zinc's higher growth rate and more moderate over-capacity, they are somewhat more optimistic and expect a price of 9-11¢ over the long term.

Certainly major price fluctuations outside these ranges will continue in both metals.

Ametalco Inc. believes the 12-year historical average for lead and zinc is a reasonable expectation of the prices which may prevail during the period 1970 to 1975. This represents a price of 10¢ for lead and 10-1/2¢ for zinc. These prices appear to be reasonable on the basis of past performance and in the light of estimated production costs. The price estimates are averages and do not attempt to project peaks and valleys.

In Ametalco's market survey for Anvil lead and zinc concentrates, it was found that there is a market in several areas aggregating much more than the production derived

from Anvil's 5,500 tons/day mill. The interest expressed by areas is shown in Figure 1.

Figure 2 prepared by Ametalco shows a summary of the cost of producing lead and zinc in the Free World. By-product, co-product and what is called "nationalistic" metal is available at practically any market prices for lead and zinc. Including these three classifications where low lead and zinc prices would have little or no effect on the production, it should be noted that about 55% of zinc metal is produced at less than 8-1/2¢, the remainder above; in lead, about 62% is produced at 8-1/2¢ or lower. This cost includes depreciation, interest on borrowed money and credit for such co- and by-products as copper and silver, and is delivered to market excluding import duties.

In Ametalco's view a mine with costs of 7-1/2¢ or less is outstanding and one with costs of 8-1/2¢ or less is excellent. A mine with costs of 10¢ or more should be considered marginal under present conditions.

Ametalco states in their report, "The best guide in our opinion on whether to bring a mine into production is its position in the production costs. If Anvil's costs are in the lower area, that is 8-1/2¢ or less, you have a real mine and you should give every consideration to putting it into production as quickly as possible."

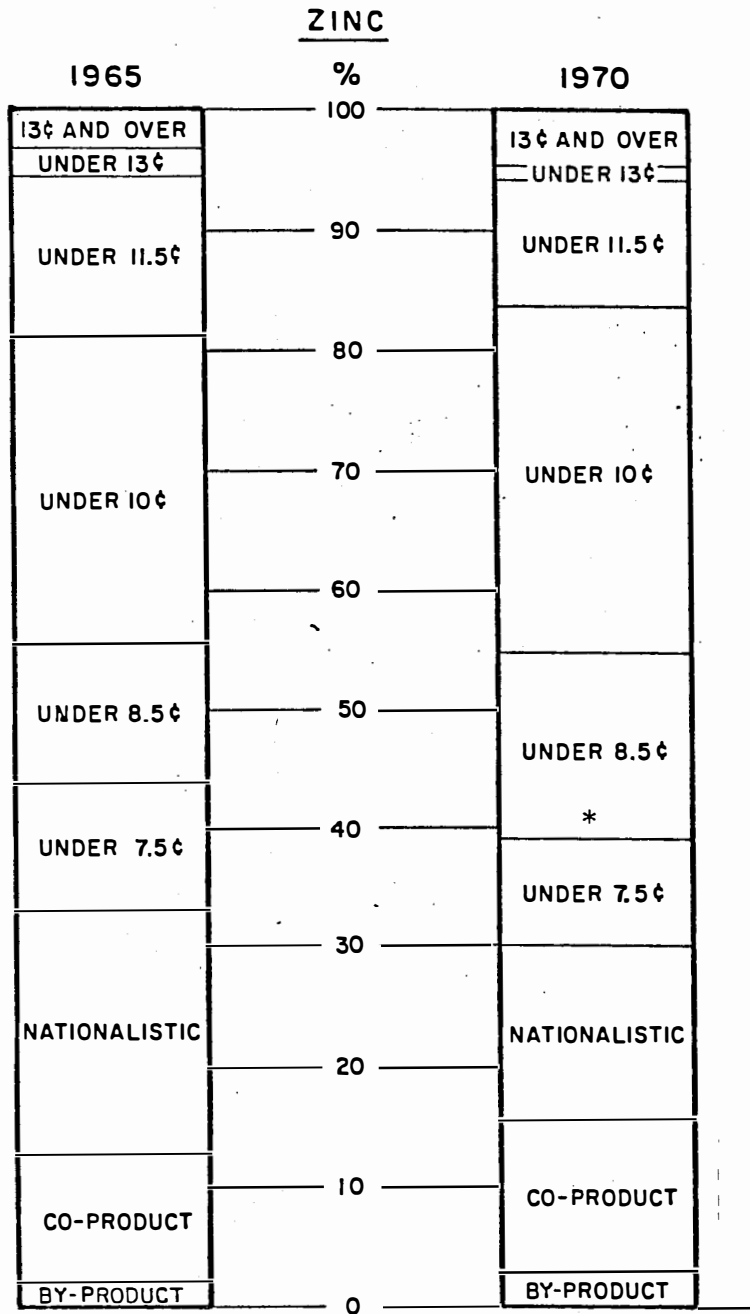
Anvil believes its position is excellent competitively as its costs to produce lead and zinc metals are 7.8¢ per pound including depreciation.

As a result of Ametalco's survey and the recommendations by Arthur D. Little, Anvil has utilized prices in its feasibility study of 10¢ for lead and 10-1/2¢ for zinc. These figures have been further supported by discussions with other experts in the lead and zinc industry, such as Phillips Brothers, the International Lead Zinc Study Group, Bechtel of Canada in its study for the Canadian Government, and the studies by Canadian Banks. Anvil has envisioned selling 100% of its concentrates into the Japanese market. The actual distribution of Anvil marketing will depend upon terms available during negotiations. Anvil will attempt to maximize its return by selling to the areas which offer the best terms and conditions, and envisions negotiating smelter floor prices for lead and zinc equal to those used in the feasibility study.

POTENTIAL MARKETS FOR ANVIL CONCENTRATES
(Short Tons of Concentrate)

	<u>LEADS</u>	<u>ZINCS</u>
U. S. A.	114,000	311,000
EUROPE	198,000	347,000
JAPAN	<u>152,000</u>	<u>369,000</u>
TOTAL	<u>464,000</u>	<u>1,027,000</u>
Proposed Anvil Production:		
5,500 ton/day mill:	120,000	240,000

CUMULATIVE COSTS OF MINE PRODUCTION



Anvil
Production
Cost is 7.8¢
(Represented
by *)

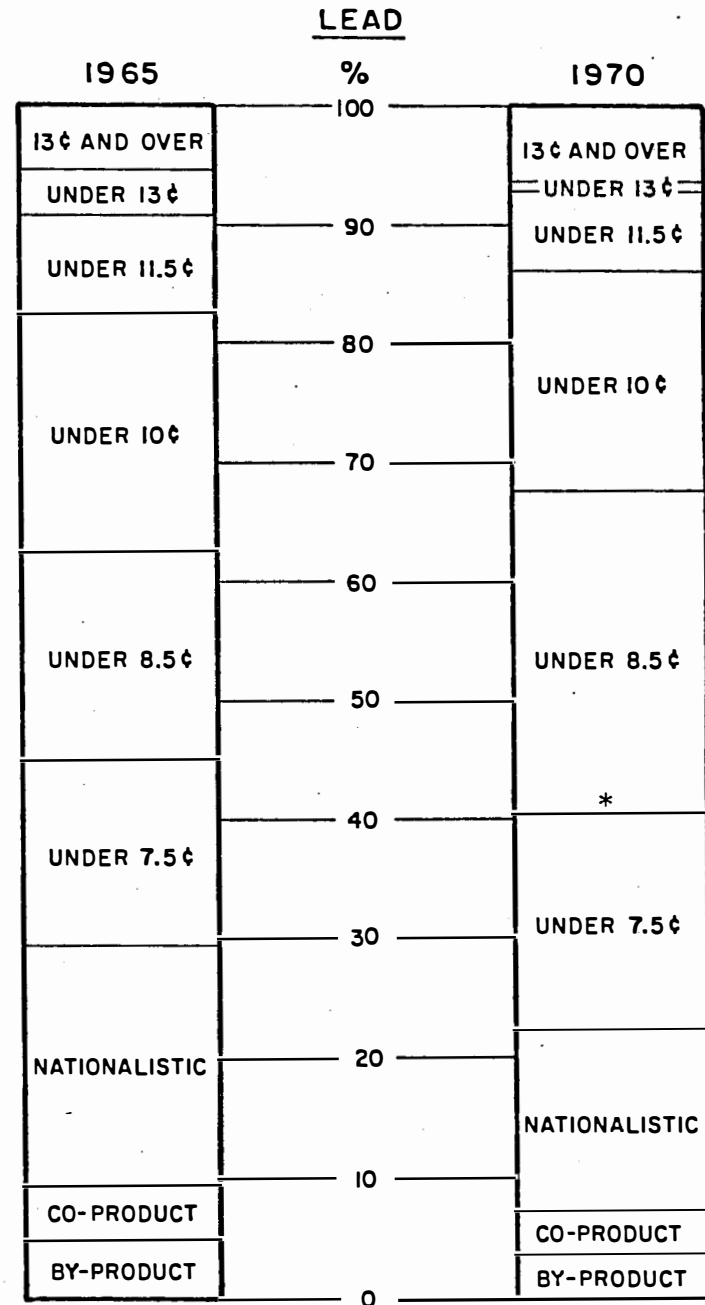


Figure II

CANADIAN GOVERNMENT RELATIONS

One of the primary aims of the Canadian Government is development of the North. For this reason, the Government is very interested in the Anvil Project as it is a further development of this area.

Anvil Mining Corporation Limited has been carrying on negotiations with the Canadian Government for over one year. In these negotiations, we have been assisted and directed by our legal counsel, Musick, Peeler & Garrett, and by the Canadian firm of Stikeman, Elliott, Tamaki, Mercier & Turner, specialists in Canadian tax law and Government relations.

Throughout these negotiations Anvil has been assured that the Government would assist in these specific areas:

I. Townsite Development

The Government has indicated it will develop the Anvil townsite on the same basis as that developed for Pine Point Mining Corporation in the Northwest Territory. (Pine Point is owned by Conminco.) They would grant the land, plan and subdivide the town, and install water, power and sewer utilities. The estimated cost of these improvements is \$6 million. Anvil in turn would purchase the town lots necessary for its employees.

In addition, loans up to \$18,000 per unit would be provided through the Government operated Central Mortgage and Housing Corporation (similar to our F.H.A.) for the building of residential housing.

Anvil will be required to assume the home loans, provide the equity for house construction, and build certain required facilities in the town as stated in the feasibility study.

II. Power

The Government through the Northern Power Commission has indicated it would provide the necessary power to our facilities by expanding the Whitehorse power plant and running a power line north to our mine. The Government has assured Anvil that this \$20 million development would be completed by 1969, provided that Anvil would enter into a 20 year power contract. The power costs projected by the Northern Power Commission have been utilized in the feasibility study.

III. Roads

The Government, through the Department of Northern Affairs, has indicated a

willingness to construct 116 miles of new road from south of Carmacks to Klukshu on the Haines Highway. The new construction, costing approximately \$5 million, is designed for 95,000 pound gross weight vehicles and will link Anvil to tidewater over a 394 mile system of all-weather roads.

An agreement between Anvil Mining Corporation Limited and Her Majesty the Queen will be required to formalize the Canadian Government's participation. This type of agreement will provide assurances to Anvil that commitments will be honored regardless of changes in the Government.

The Government, in addition to assuring Anvil that it will participate as indicated above, is extremely desirous to have raw materials produced in the north, refined in the north. For this reason, the Government desires Anvil to commit to the construction of a smelter at some future date to refine its concentrates into metal. Anvil is willing to make commitments for engineering studies and feasibility analysis of a smelter, but construction commitments would be deferred until the studies are complete and economic attractiveness established.

Negotiations on this point are continuing with the Government. Recent indications are that a workable solution can be developed and final terms will be included in the above mentioned agreement.

ANVIL ECONOMICS

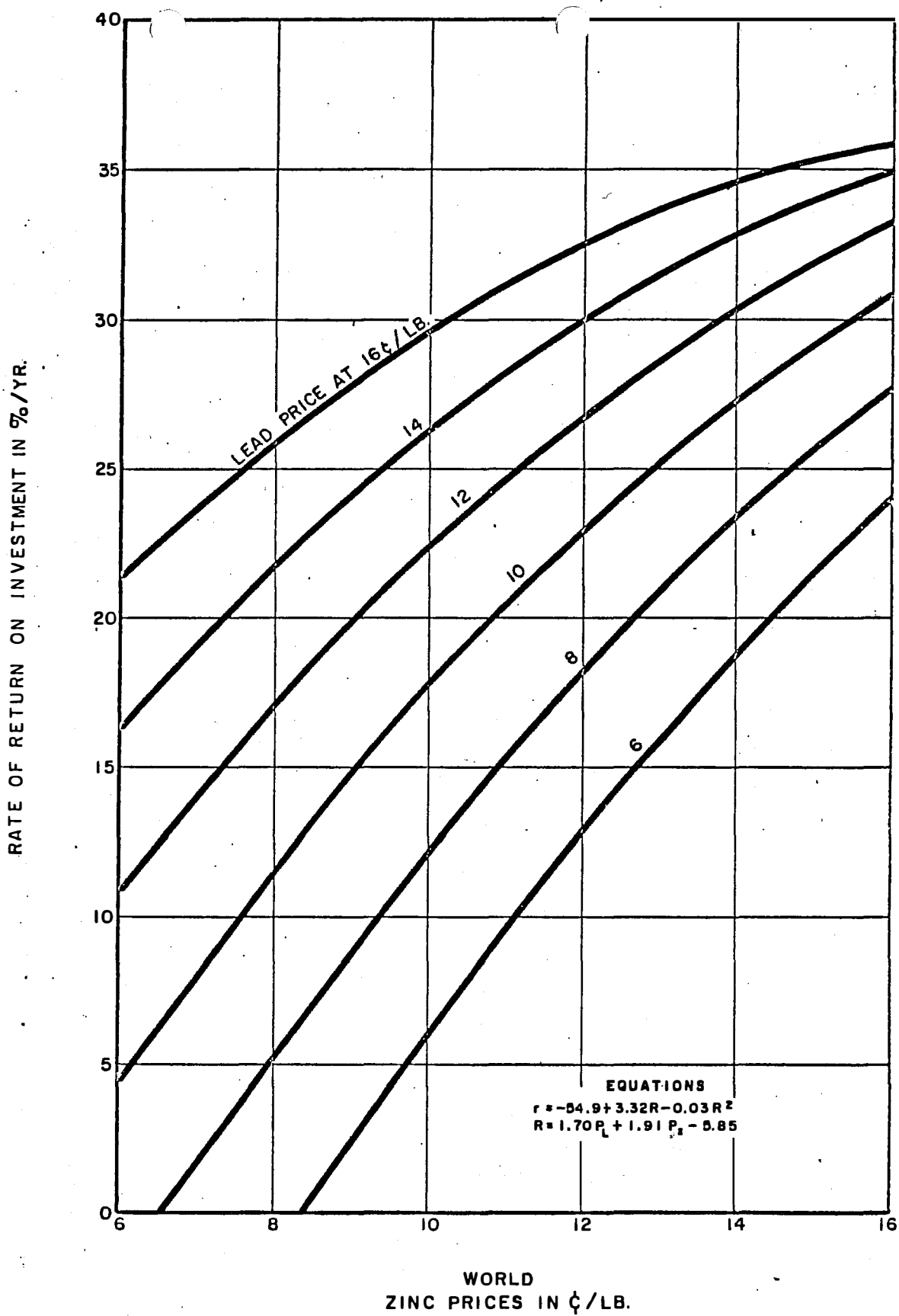
The economic evaluation of the Anvil Project is essentially a financial composite of the plans for mining, concentrating, transportation and sale of selective concentrates of lead and zinc to custom smelters which were described in preceding sections.

The following economic forecast developed by Parsons provides a discounted cash flow rate of return of 19.1% on an investment of \$56.1 million based on lead and zinc prices of 10.0¢ and 10.5¢ per pound respectively. Payout of total invested capital is reached during the fifth year.

ANVIL NET INCOME AND CASH FLOW

(000's)

	Average Annual		Total
	Years	Years	Years
	1-5	1-17	1-17
<u>Revenue</u>			
Lead Concentrate	\$18,091	\$18,238	\$310,000
Zinc Concentrate	12,289	13,485	229,300
Total	<u>\$30,380</u>	<u>\$31,723</u>	<u>\$539,300</u>
<u>Costs</u>			
Mining	\$ 1,929	\$ 2,303	\$ 39,200
Concentrating	4,808	5,510	93,700
Truck transportation to Haines	6,042	6,552	111,300
Cost at Haines	369	377	6,400
Ocean freight and stevedoring	1,552	1,684	28,600
Product Insurance	67	71	1,200
Sales Expense	431	450	7,700
Local Taxes	133	133	2,300
Insurance	150	150	2,600
General and administrative	222	222	3,800
Townsite Costs	497	497	8,400
Mining Royalty	337	166	2,800
Write-Offs	1,780	523	8,900
Depreciation	3,431	3,115	53,600
Total Costs	<u>\$21,748</u>	<u>\$21,753</u>	<u>\$369,900</u>
<u>Income before Taxes</u>	\$ 8,632	\$ 9,970	\$169,400
Income Tax	68	2,497	42,400
<u>Net Income</u>	<u>\$ 8,564</u>	<u>\$ 7,473</u>	<u>\$127,000</u>
<u>Net Cash Flow</u>	<u>\$12,853</u>	<u>\$10,936</u>	<u>\$185,900</u>



EFFECT OF PRICE ON RETURN

FINANCING AND CYPRUS ECONOMICS

Financing

Discussions with financial institutions indicate that adequate financing would be available if the project makes economic sense. Necessary qualifications would be: a) a decision to go ahead, b) a sales contract and c) the necessary government assistance.

It is likely that with a combination of bank loans and income debentures no further stockholder investment would be necessary beyond the \$10 million in CMC advances. This would leave the present 60%-40% ownership unchanged. If only bank financing were used, further equity investment would be needed. In this event CMC's ownership would likely move toward 70% because Dynasty may not wish or be able to participate. Figure 1 summarizes three possible sources of financing.

Bank loans might be obtained from one or a group of banks. The maximum term would probably be about 5 years. The likely interest rate appears to be 6.75%-7.25% with a 1% commitment fee. (A 7% rate was used in projections.) Amounts in the range of \$30-\$40 million seem reasonable for this project. Bank funds would go into the project last and be paid off first. A stockholder completion guarantee or agreement to cover overruns with additional loans would likely be insisted upon. Sufficient revenue would have to be assured by a sales contract.

A second alternative is a public issue of 10-15 year income debentures. Marketability would probably require the attachment of warrants or bonus stock. To avoid having Anvil minority stockholders, consideration was given to attaching Dynasty or CMC stock purchased in the open market by Anvil. A cost for bonus stock has been included in projections in an amount which in effect adds 1% in interest cost. The total effective rate would probably be 7.5%-8.0%. Income debentures are attractive to investors because of favorable Canadian tax treatment of the interest. The non-deductibility of interest for tax purposes is minimized by the 3-year tax holiday and the advantage that no interest is paid until earned. The underwriting fee would probably be 3%-3.5%.

Mortgage bonds would also be a possibility. The estimated interest cost is .25% higher than on income debentures, and even so, it is felt they would be less attractive to investors. Equity sweetener would be equally necessary.

An insurance company term loan may be appropriate. Indications of possible interest have come from two insurance companies and these should be pursued further.

Cyprus Economics

The Cyprus economics are presented in Figure 2 on the basis of two possible financing methods. Both cases are derived from the Parsons Base Case (A-4) with a 10¢ lead price, a 10.5¢ zinc price and all output to Japan. The Cyprus economics differ from Anvil's in two respects:

1. Borrowing adds a beneficial leverage affect to the equity owners rate of return.
2. The combined impact of Canadian and U. S. taxes somewhat dilutes CMC's profits from the project.

In Case I Cyprus advances only the remainder of its \$10 million loan. All other funds are supplied by \$33.7 million of bank financing and \$20.3 million from an issue of income debentures. Since neither stockholder would put up additional funds, the Cyprus interest would remain 60%. On this basis, the CMC discounted cash flow rate of return on total investment is 17.1% and 33.2% on the incremental investment.

Generally, costs incurred prior to the point of decision are not pertinent to a new capital investment decision. However, proceeding with the project would preclude immediate realization of whatever market value Anvil has. From an economic standpoint, this market value foregone is part of the investment made by going ahead rather than selling. While the true market value is somewhat imponderable, it seems certain to exceed the sunk costs of \$6 million. Therefore, it is meaningful to consider the DCF rates of return on the total investment including pre-decision, or sunk costs.

Case III assumes that CMC would advance \$7.4 million (\$8 million Canadian) in addition to the first \$9.2 million (\$10.0 million Canadian), and that Dynasty puts up no additional money. The \$44.9 million balance of total requirements would come from banks. The resulting CMC ownership in Anvil would be 70%. The discounted cash flow rate of return on total investment would be 14.2%, and on the incremental investment 20.5%.

This comparison seems to indicate that a financing plan based on maximum borrowing would be most desirable to CMC (as well as to Dynasty). Case II (not presented) was analyzed on the basis of an even

higher CMC investment with CMC ownership still limited to 70%. This case was less attractive than either I or III and seemed clearly undesirable.

Figure 3 lists the key assumptions used in the projections. The overall effective rate to CMC is 50.8% (48% U. S. plus 2.8% effective California franchise tax). Cyprus Mines Corporation, having a stock ownership in Anvil, would not be able to claim U. S. depletion. CMC would also lose the benefit of the 3-year tax holiday over the life of the project since this simply reduces the available foreign tax credit.

Further detail on Case I is presented in Figures 4 and 5. The Source and Application of Cash Schedule (Figure 4) shows that bank loans would be paid off in the fifth year after drawdown, and debentures would be paid off over the next five years after bank loans are retired. Enough surplus cash is generated in this period to permit repayment of CMC loans and commencement of dividend payments. In practice it may prove advisable to retire all the income debentures first because their interest is not deductible.

Figure 5 shows the CMC net income and cash flow for Case I. CMC income is fairly level due to share of Anvil undistributed profits and "normalization" of both Canadian and U. S. taxes. Net cash flow, however, is nominal in the first few years until repayment of advances and dividend payments begin. As previously mentioned, a DCF return of 17.1% on the total \$10.3 million outlay is indicated. On the incremental investment of \$4.3 million, the DCF return is 33.2%.

The effect of metal prices on Cyprus economics is shown in Figure 7. Case I (maximum leverage) was also calculated with lead at 8.5¢ and zinc at 9¢ to give two points on the graph. With the assumption of a straight-line relationship between metal prices and rate of return, the graph permits approximation of the CMC rate of return for a range of prices. With prices of 8.5¢ and 9.0¢, CMC's DCF return on total investment would be 6.8%, and the return on average book investment would be 7.5%.

ANVIL MINING CORPORATION LIMITED

BASIC FINANCING ALTERNATIVES

<u>Type</u>	<u>Possible Term</u>	<u>Interest Range</u>	<u>Commitment Fee</u>	<u>Possible Amount</u>	<u>Expected Features</u>
Bank loans	4- 6 yrs.	6.75-7.25%*	1%	\$30-40 MM	<ul style="list-style-type: none"> -Last in, first out financing -Stockholder completion guarantee -Sales contract with floor price -Possible working capital deficiency guarantee
Income debentures	10-15 yrs.	7.5 -8.0%**	None	\$10-20 MM	<ul style="list-style-type: none"> -Market appeal due to Canadian tax treatment of interest -Equity "sweetner" required equivalent to about 1 point in yield -No guarantee required -Underwriting fee of 3-3.5%
Mortgage bonds	10-15 yrs.	7.75-8.25%	None	\$10-20 MM	<ul style="list-style-type: none"> - Less attractive to investors -Equity "sweetner" required -No guarantee -Underwriting fee of 3-3.5%

*Bank interest rate used in projections is 7%.

**Projections assume debentures would require a 7.75 rate (stripped of any equity):

A 6.75 coupon was assumed, with \$68.70 worth of bonus stock attached to each \$1000 debenture sold at par.

SUMMARY OF ANVIL FINANCING AND
CMC ECONOMIC RESULTS
 (U.S. \$000,000)

<u>INVESTMENT PRIOR TO PRODUCTION</u>	<u>Case I</u>	<u>Case III</u>
Funds Supplied by:		
CMC equity and advances	10.3	17.7
Dynasty equity	.5	.5
Bank loans	33.7	44.9
Income debentures (10 Yrs.)	<u>20.3</u>	<u>-</u>
Total Supplied	<u>64.8</u>	<u>63.1</u>
Funds Applied to:		
Capital expenditures and working capital	54.6	54.6
Interest during construction	1.7	2.0
Bonus stock for debentures	1.4	-
Underwriting fee	.6	-
Pre-decision cost	<u>6.5</u>	<u>6.5</u>
Total Applied	<u>64.8</u>	<u>63.1</u>
<u>ECONOMIC RESULTS TO CMC:</u>		
CMC interest in Anvil	60%	70%
DCF rate of return on total investment	17.1%	14.2%
DCF rate of return on incremental investment	33.2%	20.5%
Average rate of return on average book investment	23.2%	18.6%
Payout of total investment	5.1 Yrs.	6.1 Yrs.
Payout of incremental investment	3.8 Yrs.	5.5 Yrs.
Average annual CMC income - 1st 5 years	\$2.8 Million	\$3.4 Million

SUMMARY OF BASIC ASSUMPTIONS

ANVIL FINANCIAL REPORTING

1. Depreciation, depletion and amortization of interest during construction is written off rateably over the 46 million tons mined in the 17-year period
2. The underwriting fee and cost of bonus stock for the debentures (Case I only) is written off over the life of the debentures.
3. Accelerated write-offs have been used for Canadian income tax purposes, while slower write-offs are used in financial reporting. Therefore, it is necessary to "normalize" income tax provisions for financial reporting.

AFFECT OF FINANCING ON ANVIL TAXES

1. Interest on CMC advances and bank loans and bank commitment fees are deferred and deducted following the end of the 3-year tax holiday.
2. The following items are not deductible (Case I only):
 - Underwriting fee
 - Cost of bonus stock for income debentures
 - Interest on income debentures

TAXES ON CMC

1. Interest income accrued payable on CMC loans to Anvil are subject to:
 - 15% Canadian withholding tax
 - 48% U. S. income tax minus withholding tax
 - 5.5% California franchise tax which is deductible against U. S. taxable income
2. Dividends received by CMC from Anvil bear the following taxes:
 - 10% Canadian withholding tax
 - 48% U. S. tax on grossed-up dividend
 - Less foreign tax credit -
 - (a) Canadian withholding tax
 - (b) CMC's share of Canadian income tax paid by Anvil
 - 5.5% California franchise tax which is deductible against U. S. taxable income

ANVIL MINING CORPORATION, LTD.
Source and Application of Cash
(U.S. \$000,000)

CASE I

	SOURCE						APPLICATION				
	Net Income	Add Non- Cash Char- ges ¹	Equ- ity Cap- ital	CMC Loans	Bank Loans	Deben- tures	Total Source	Capital Expen- di- tures	Work- ing Cap- ital ²	Divi- dends	Total Ap- plica- tion
Prior			1.5	4.9			6.4	6.5	(.1)		6.4
-2				4.3	4.1	20.4	28.8	26.5	2.3		28.8
-1					29.6		29.6	26.0	3.6		29.6
1	6.7	3.0			(5.3)		4.4		4.4		4.4
2	7.1	3.0			(10.1)		-				-
3	7.8	3.0			(10.8)		-				-
4	7.5	3.6		(3.5)	(7.5)		.1		.1		.1
5	5.4	6.6		(4.6)		(4.1)	3.3	3.1	.2		3.3
6	4.6	7.3	(.2)	(1.1)		(4.1)	6.5		.2	6.3	6.5
7	5.0	5.3				(4.1)	6.2		(2.0)	8.2	6.2
8	5.3	4.7				(4.1)	5.9		(.6)	6.5	5.9
9	5.7	4.3				(4.0)	6.0		(.2)	6.2	6.0
10	5.9	3.9					9.8		(.2)	10.0	9.8
11	5.9	3.7					9.6		(.1)	9.7	9.6
12	5.9	3.5					9.4		(.1)	9.5	9.4
13	5.9	3.4					9.3		(.1)	9.4	9.3
14	5.9	3.3					9.2		(.1)	9.3	9.2
15	5.9	3.2					9.1		(.1)	9.2	9.1
16	5.9	3.2					9.1		-	9.1	9.1
17	7.0	4.0	(1.3)				9.7		(.3)	10.0	9.7
	<u>103.4</u>	<u>69.0</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>172.4</u>	<u>62.1</u>	<u>6.9</u>	<u>103.4</u>	<u>172.4</u>

¹ Includes depreciation, depletion, amortization of financing costs and deferred tax liability.

² Includes \$3.6 working capital developed by Parsons, liability for interest, and deferred assets from capitalization of finance costs.

CYPRUS MINES CORPORATION
NET INCOME AND NET CASH FLOW FROM ANVIL
 (U.S. \$000,000)

Year	Interest			Dividends			Share of Undis- tributed Profits	Net Income	CMC Advances	Stock Acquired	Net Cash Flow
	Interest Income	Less Taxes (1)	Net Interest Income	Divi- dend Income	Less Taxes (1)	Net Divi- dend Income					
Prior									(4.9)	(1.1)	(6.0)
-2									(4.3)		(4.3)
-1											
1	1.7	(.9)	.8				2.1	2.9			.8
2	.6	(.3)	.3				2.2	2.5			.3
3	.6	(.3)	.3				2.4	2.7			.3
4	.6	(.3)	.3				2.5	2.8	3.5		3.8
5	.4	(.2)	.2				2.8	3.0	4.6		4.8
6	.1		.1	3.7	(1.8)	1.9	.3	2.3	1.1		3.1
7				4.9	(1.7)	3.2	(.8)	2.4			3.2
8				3.9	(1.1)	2.8	(.3)	2.5			2.8
9				3.7	(.9)	2.8	(.2)	2.6			2.8
10				6.0	(2.0)	4.0	(1.4)	2.6			4.0
11				5.9	(1.8)	4.1	(1.5)	2.6			4.1
12				5.7	(1.7)	4.0	(1.4)	2.6			4.0
13				5.6	(1.7)	3.9	(1.3)	2.6			3.9
14				5.6	(1.4)	4.2	(1.6)	2.6			4.2
15				5.5	(1.4)	4.1	(1.4)	2.7			4.1
16				5.5	(1.3)	4.2	(1.5)	2.7			4.2
17				6.0	(1.9)	4.1	(.9)	3.2		1.1	5.2
Totals	<u>4.0</u>	<u>(2.0)</u>	<u>2.0</u>	<u>62.0</u>	<u>(18.7)</u>	<u>43.3</u>	<u>-</u>	<u>45.3</u>	<u>-</u>	<u>-</u>	<u>45.3</u>

(1) Total effective rate 50.8%.

DCF R.O.I. on 10.3 outlay 17.1%
 DCF R.O.I. on 4.3 outlay 33.2%

ANVIL MINING CORPORATION, LTD.
Source and Application of Cash
(U.S. \$000,000)

CASE III

	SOURCE					APPLICATION				
	<u>Net Income</u>	<u>Add Non-Cash Charges</u>	<u>Equity Capital</u>	<u>CMC Loan</u>	<u>Bank Loans</u>	<u>Total Source</u>	<u>Capital Expenditures</u>	<u>Working Capital²</u>	<u>Dividends</u>	<u>Total Application</u>
Prior			1.5	5.0		6.5	6.5			6.5
-2				11.6	15.4	27.0	26.5	.5		27.0
-1				-	29.5	29.5	26.0	3.5		29.5
1	7.0	2.8			(5.5)	4.3		4.3		4.3
2	7.4	2.8			(10.2)	-				-
3	8.1	2.8			(10.9)	-				-
4	8.3	2.8			(11.1)	-				-
5	6.1	5.9		(1.6)	(7.2)	3.2	3.1	.1		3.2
6	5.2	7.0		(11.5)		.7		.7		.7
7	5.7	6.6	(.2)	(3.5)		8.6			8.6	8.6
8	5.9	4.5				10.4			10.4	10.4
9	5.9	4.1				10.0		(.1)	10.1	10.0
10	5.9	3.8				9.7			9.7	9.7
11	6.0	3.5				9.5		.1	9.4	9.5
12	6.0	3.4				9.4			9.4	9.4
13	6.0	3.4				9.4			9.4	9.4
14	6.0	3.2				9.2			9.2	9.2
15	6.0	3.1				9.1			9.1	9.1
16	6.0	3.2				9.2			9.2	9.2
17	7.0	4.1	(1.3)			9.8		(4.2)	14.0	9.8
	<u>108.5</u>	<u>67.0</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>175.5</u>	<u>62.1</u>	<u>4.9</u>	<u>108.5</u>	<u>175.5</u>

¹ Includes depreciation, depletion, amortization of financing costs and deferred tax liability.

² Includes \$3.6 working capital developed by Parsons, liability for interest, and deferred assets from capitalization of finance costs.

CYPRUS MINES CORPORATION
NET INCOME AND NET CASH FLOW FROM ANVIL
 (U.S. \$000,000)

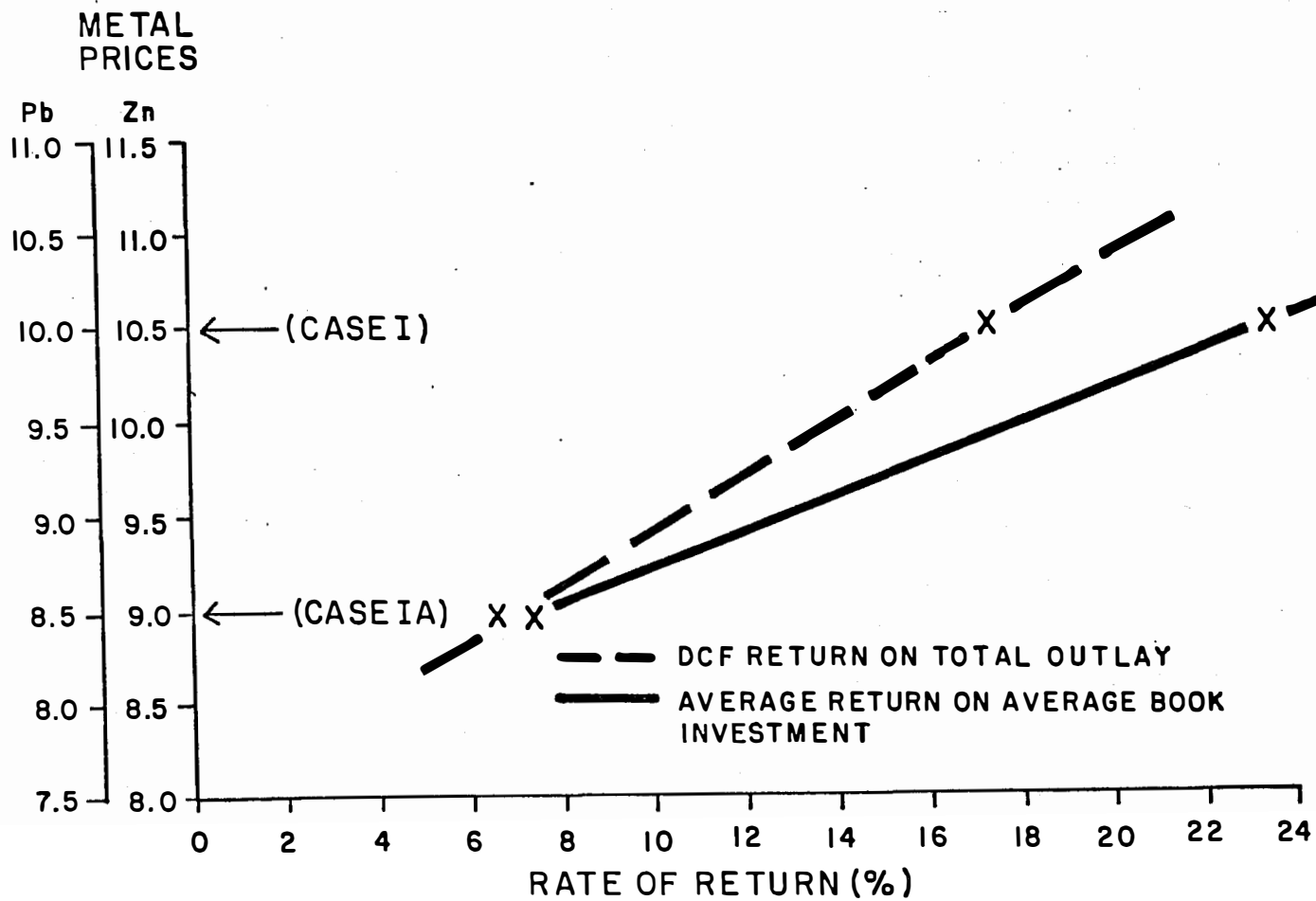
CASE III

Year	Interest		Net Interest Income	Dividends		Share of Undistributed Profits	Net Income	CMC Advances	Stock Acquired	Net Cash Flow
	Interest Income	Less Taxes (1)		Dividend Income	Less Taxes (1)					
Prior								(5.0)	(1.1)	(6.1)
-2								(11.6)		(11.6)
-1										
1	3.2	(1.7)	1.5			2.6	4.1			1.5
2	1.1	(.6)	.5			2.7	3.2			.5
3	1.1	(.5)	.6			2.9	3.5			.6
4	1.1	(.5)	.6			3.0	3.6			.6
5	1.1	(.6)	.5			3.3	3.8	1.6		2.1
6	.6	(.3)	.3			2.8	3.1	11.5		11.8
7	.1	(.1)		6.0	(2.8)	3.2	(.2)	3.0	3.5	6.7
8				7.3	(2.6)	4.7	(1.6)	3.1		4.7
9				7.0	(2.4)	4.6	(1.6)	3.0		4.6
10				6.8	(2.1)	4.7	(1.6)	3.1		4.7
11				6.6	(2.0)	4.6	(1.6)	3.0		4.6
12				6.6	(1.9)	4.7	(1.6)	3.1		4.7
13				6.5	(1.9)	4.6	(1.6)	3.0		4.6
14				6.4	(1.7)	4.7	(1.6)	3.1		4.7
15				6.4	(1.7)	4.7	(1.6)	3.1		4.7
16				6.4	(1.6)	4.8	(1.6)	3.2		4.8
17				<u>9.9</u>	<u>(3.6)</u>	<u>6.3</u>	<u>(2.7)</u>	<u>3.6</u>	<u>1.1</u>	<u>7.4</u>
Totals	<u>8.3</u>	<u>(4.3)</u>	<u>4.0</u>	<u>75.9</u>	<u>(24.3)</u>	<u>51.6</u>	<u>-</u>	<u>55.6</u>	<u>-</u>	<u>55.6</u>

(1) Total effective rate 50.8%.

DCF R.O.I. on 17.7 outlay 14.2%
 DCF R.O.I. on 11.6 outlay 20.5%

EFFECT OF METAL PRICES ON CMC



ACTION PLAN

A. Obtain project approval by CMC Board of Directors within the following parameters:

1. Canadian Government will commit to:

- (a) Power development
- (b) Road development
- (c) Townsite development
- (d) Tax holiday assurance

2. Concentrate sales contracts to be secured with:

- (a) Five to ten year period
- (b) Metal price floor

3. Financing to be accomplished in accordance with CMC plans and with CMC guarantee only to bring mine and concentrator into production.

B. Obtain interim authorization for \$1.8 million expenditure.

1. These funds sufficient to proceed with project pending finalization of above items. This is to be accomplished by June 1, 1967, and the plan would be to proceed now with construction camp, final engineering, and site preparation.

C. Obtain approval of Anvil Board.

D. If by June 1, 1967, all commitments have been met, Anvil would proceed as follows:

- 1. Proceed with all possible preparatory work during the summer and fall of 1967.
- 2. Proceed with 18 month construction schedule in the spring of 1968.
- 3. Mechanical completion by July 1, 1969.
- 4. Full production reached by September 1, 1969.