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DATA EXTRACTED FROM A REPORT ENTITLED:

CURRAGH RESOURCES CORPORATION

TECHNICAL AND COST REVIEW OF THE CYPRUS ANVIL MINE FARO, YUKON

VOLUME I

SUBMITTED IN AUGUST, 1985 BY:

KILBORN ENGINEERING (B. C.) LTD.
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ACKNOWLEDGEMENTS

Kilborn Engineering (B. C.) Ltd. is indebted to Mr. R. E. Thurmond for his advice during the preparation of this Report. Mr. Thurmond, an independent Mining Consultant, was formerly President of Cyprus Anvil. Mr. Peter Clarke, also an independent Consultant, contributed to Kilborn's review of the mine modelling techniques. Mr. Clarke, as a former employee of Cyprus Anvil, was primarily responsible for the development of the Faro pit computerized mine models. Kilborn also wishes to thank the Dome Petroleum and Cyprus Anvil staffs who provided much of the raw data incorporated in this Report.

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 SCOPE OF WORK

Mr. Clifford H. Frame, Chairman and Chief Executive Officer, Curragh Resources Corporation Inc. (Curragh) commissioned Kilborn Engineering (B. C.) Ltd., (Kilborn) to prepare a technical review of Cyprus Anvil's Faro Pit mining operation in the Yukon Territory based upon the best and most current information.

Based upon the assumed resumption of mining and milling operations in October, 1985 and April, 1986 respectively, Kilborn was requested to develop preliminary production plans, capital and operating cost budgets and estimates of gross revenues. The sensitivity of projected operating earnings to variations in the principal cost and price variables were to be examined.

Curragh is currently seeking prompt resolution of a number of issues which have a significant influence on the economics of the proposed operations. Such items include the mode and cost of transportation systems, the cost of electrical energy, and the establishment of suitable concentrate sales contracts. For the purpose of this study, all of the above items are assumed to be resolved. Kilborn's assumptions relating to each of these items are clearly defined.

At Curragh's request the Scope of this Report was confined to operation of the Faro Pit. However, a brief review of the Vangorda Plateau Deposits was also requested by Curragh to indicate the potential for extending the life of mining operations beyond the Faro pit.

1.2 HISTORY OF PRODUCTION

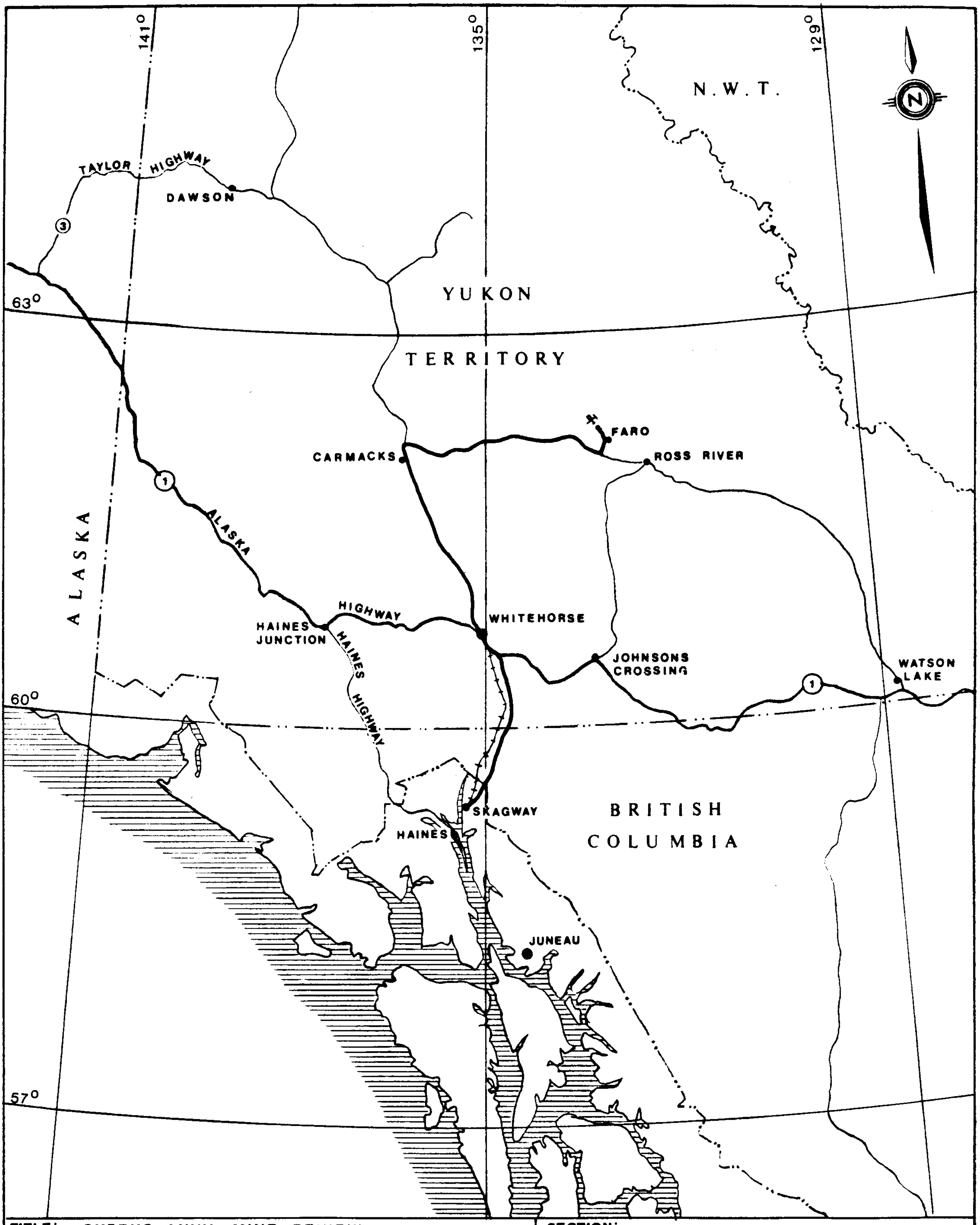
Cyprus Anvil Mining Corporation (Cyprus Anvil) owns a large, open-pit lead-zinc-silver mine near Faro, approximately 200 kilometres northeast of Whitehorse in the Yukon Territory (see Figure 1.2-1).

Following the commencement of operations in 1969, the Anvil operations assumed a position of prominence amongst the major world producers of lead and zinc concentrates. The initial plant capacity of 5000 tonnes per day was increased in 1974 to 9300 tonnes per day. Further major mill modifications were carried out in 1980-81, primarily to permit the attainment of a finer grind when milling ores from Grum and Vangorda Deposits which were acquired in 1979. Though the design criteria for the mill modifications were predicated upon the 9300 tonnes per day milling rate at a fine grind, considerable flexibility was incorporated in the design to facilitate anticipated increases in production levels in the future.

Table 1.2-1 summarizes the principal production criteria since 1970. It should be noted that production was adversely effected in 1976 by the prolonged withdrawal of services by unionized employees.

Cyprus Anvil curtailed production in June, 1982 due to the depressed state of metal prices.

Open-pit waste stripping operations commenced in June, 1983 in accordance with the terms of an agreement between Cyprus and the Federal Government which provided financial assistance for this program. Approximately 9.7 million bank cubic yards of waste were removed during the period June, 1983 to October, 1984 at unit costs substantially below planned values.



TITLE: CYPRUS ANVIL MINE REVIEW **LOCATION PLAN**		SECTION:	
KILBORN ENGINEERING (B.C.) LTD.		AREA NO:	REV. NO:
CLIENT: CURRAGH RESOURCES CORP. FARO, YUKON	PROJECT NO: 3509-15	DRAWING NO:	A
APPROVED:	DATE: JULY 15, 1985	FIGURE 1.2-1	

TABLE 1.2-1

PRODUCTION STATISTICS

Year	Ore and Waste Mined BCY* (000)	Ore Milled DMT** (000)	Concentrate Produced DMT (000)
1970	6,344	1,779	242
1971	7,006	2,425	389
1972	5,168	2,636	402
1973	5,570	2,630	425
1974	6,456	2,654	388
1975	5,677	2,926	411
1976	3,693	1,520	183
1977	8,500	3,116	358
1978	10,483	3,280	414
1979	8,121	2,823	368
1980	9,344	2,825	326
1981	11,357	2,737	313

*BCY - Bank Cubic Yards
**DMT - Dry Metric Tonnes

Unsuccessful labour negotiations resulted in the lock-out of all Union employees in October, 1984. Subsequently, Cyprus Anvil announced its intention to mothball all the mining equipment and facilities by August, 1985. The Company reached agreement with the Union on the terms of severance which applied to all hourly rated employees. While the two locals of United Steelworkers of America maintain jurisdiction in the area, Cyprus Anvil no longer has any contract with the Union, nor does it employ any unionized personnel.

The orderly termination of other staff members is proceeding and will be completed in August, 1985 at which time mothballing activities will be finished, both at the mine site and the Town of Faro.

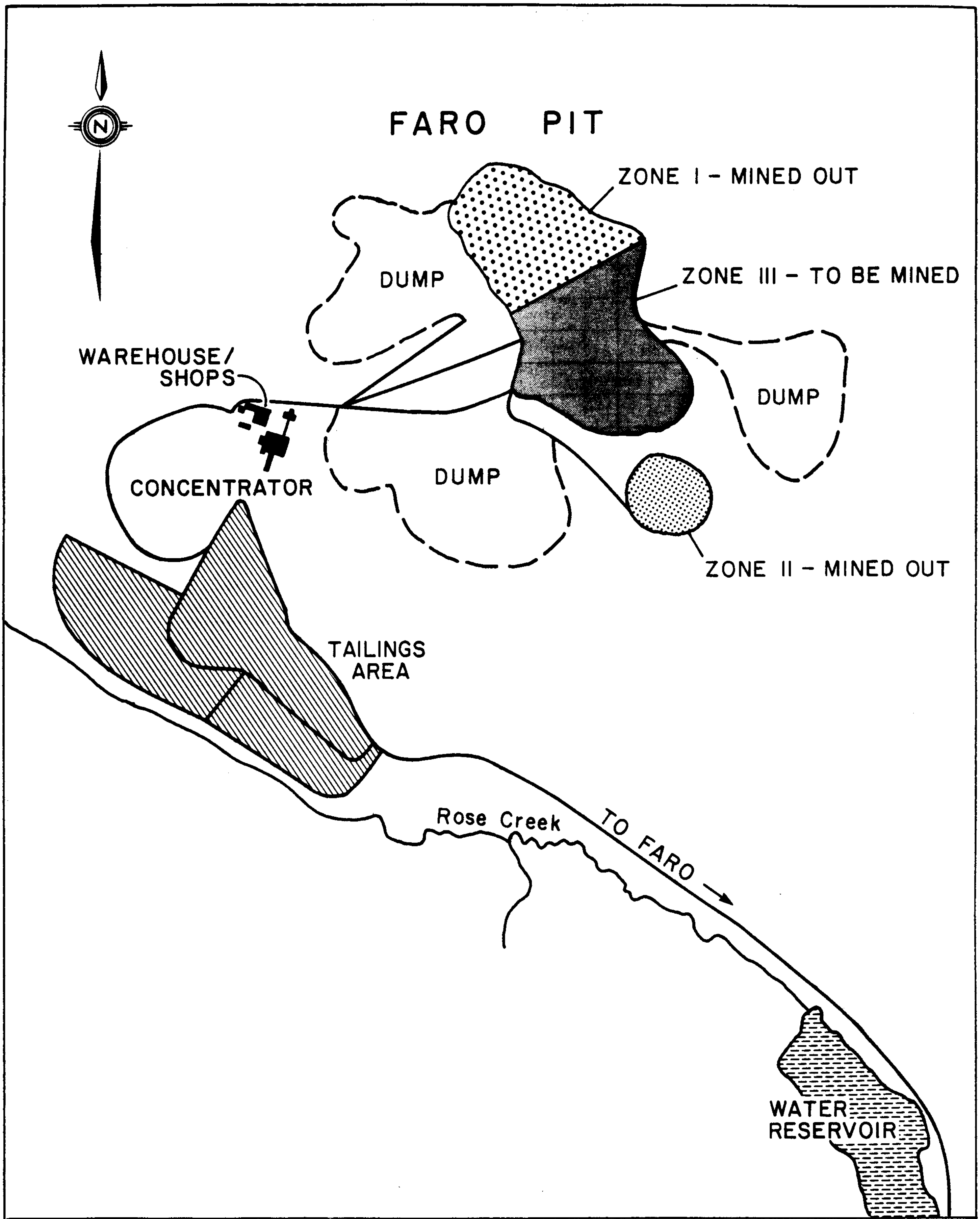
1.3 HISTORY OF OWNERSHIP

Cyprus Mines Corporation (Cyprus Mines) of Los Angeles, California joined with Dynasty Exploration Ltd. (Dynasty) in late 1965 to conduct exploration activities in the Vangorda Creek area of the Anvil Range. Upon the successful delineation of 60 million tonnes of lead-zinc-silver ore, known as the Faro Deposit, the Anvil Mining Corporation Ltd. was formed to complete the exploration and development of these reserves, and to direct the design and construction of mining and milling facilities. Cyprus Mines maintained a controlling interest of approximately 60 percent with Dynasty holding the remaining shares in the Company.

An amalgamation of the Anvil Mining Corporation Ltd. and the Cyprus Mines Corporation took place in 1975 whereby the Cyprus Anvil Mining Corporation was formed, 63 percent owned by Cyprus Mines.

In 1979, Standard Oil (Indiana) bought Cyprus Mines, thereby acquiring the latter's interest in Cyprus Anvil Mines. Following unsuccessful negotiations between Amoco Minerals Co. (a subsidiary of Standard Oil) and the Canadian Foreign Investment Review Agency, Standard Oil sold its interest in Cyprus Anvil in 1981 to Hudson's Bay Oil and Gas, controlled by Continental Oil, based in Calgary, Alberta. Shortly thereafter, Dome Petroleum purchased Hudson's Bay Oil and Gas, thus acquiring the majority interest in Cyprus Anvil.

Dome Petroleum has publicly stated its wish to divest its interest in Cyprus Anvil Mining Corporation.



TITLE: CYPRUS ANVIL MINE REVIEW GENERAL SITE LAYOUT		SECTION:	
KILBORN ENGINEERING (B.C.) LTD.		AREA NO:	REV. NO:
CLIENT: CURRAGH RESOURCES CORP. FARO, YUKON	PROJECT NO: 3509-15	DRAWING NO:	
APPROVED:	DATE: JULY 15, 1985	FIGURE 1.4-1	A

1.4 PROPERTY OWNERSHIP - ANVIL DISTRICT

Cyprus Anvil's mineral holdings in the Anvil District are shown on the District Claim Map, Figure 3.1-1.

The Faro Mine Site Layout shown in Figure 1.4-1 indicates the relative locations of the Faro open-pit, the concentrator, service buildings and the tailings impoundment ponds.

2.0 SUMMARY

2.0 SUMMARY

2.1 INTRODUCTION

Curragh proposes to resume operations at the Cyprus Anvil mine site. Ore will be mined from the existing Faro open-pit and processed at an average annual rate of 4.1 million tonnes per year to produce selective lead and zinc concentrates.

The mining cut-off grade will be 6.0 (Pb + Zn) percent. Ores in excess of this grade will be delivered to the mill. Ore of grades between 4.0 and 6.0 (Pb + Zn) percent will be delivered to a low-grade stockpile. Upon exhaustion of the high-grade ore, material will be relcaimed from the low-grade stockpile to sustain the planned mill production rate. Based upon the current 25.1 million tonnes of mining reserves, the Faro pit and stockpile ores will be depleted by 1992.

The projected production and cost data for the operation are summarized in Table 2.1-1.

Concurrent with these Faro pit operations, detailed engineering studies will be performed to assess the economic viability of developing the Vangorda Plateau Deposits. Subject to the results of this work the life of the mining operation could be extended substantially. The cash outlays and returns expected from these future operations are not considered in this study.

TABLE 2.1-1

PRODUCTION AND COST FORECAST SUMMARY

	1985	1986	1987	1988	1989	1990	1991	1992
Mine								
Pit Ore DMT (000)	NIL	3,829	5,591	5,153	6,350	2,855	NIL	NIL
Waste DMT (000)	3,775	31,121	30,115	15,251	5,673	1,527	NIL	NIL
Total DMT (000)	3,775	34,950	35,706	20,404	12,023	4,382	NIL	NIL
Mill								
Ore Source	---	High-Grade	High-Grade	High-Grade	High-Grade	High-Grade	Low-Grade	Low-Grade and Oxide
Feed - DMT (000)	NIL	2,574	4,074	4,074	4,074	4,074	4,074	2,161
- %Pb	NIL	3.32	3.83	3.21	3.21	2.58	1.88	2.49
- %Zn	NIL	5.18	5.10	4.54	4.84	4.25	2.95	4.00
- Ag Oz/Tonne	NIL	15.24	18.10	16.49	16.89	15.98	20.09	19.56
Lead Concentrate - Grade %Pb	---	60.18	61.60	62.48	61.57	61.66	61.83	59.95
- Pb Received %	---	83.49	85.42	85.19	85.65	84.11	80.73	69.73
- Grade Ag Oz/Tonne	---	14.24	17.10	15.49	15.89	14.98	19.08	18.56
- Ag Received %	---	58.15	60.00	60.00	60.00	59.27	58.00	53.23
Zinc Concentrate - Grade %Zn	---	49.90	51.13	51.22	51.29	51.03	50.48	48.11
- Zn Received %	---	82.52	84.71	84.63	85.39	84.32	82.83	72.36
Concentrate Production - Pb DMT	---	118,607	216,328	178,049	181,963	143,576	100,118	62,701
- Zn DMT	---	220,608	344,189	305,813	328,465	286,361	197,263	130,109
- Total DMT	---	339,215	560,517	483,862	510,428	429,937	297,381	192,810

PRODUCTION AND COST FORECAST SUMMARY

Operating Costs $(000)	1985	1986	1987	1988	1989	1990	1991	1992
Mine	$ 9,402	$ 34,089	$ 32,915	$ 23,757	$ 16,463	$ 9,162	$ 4,686	$ 2,544
Mill	1,288	21,698	27,616	27,426	27,416	28,250	29,403	20,399
General and Administrative	3,670	8,450	8,214	8,161	8,098	8,083	8,059	7,765
Other	604	6,039	8,401	7,990	7,839	7,670	7,415	4,842
Subtotal	$ 14,964	$ 70,276	$ 77,146	$ 67,334	$ 59,816	$ 53,165	$ 49,563	$ 35,550
Transportation	NIL	26,219	43,022	37,310	39,290	33,292	23,414	15,032
Treatment Charges	NIL	69,848	114,246	99,122	104,902	88,917	61,456	39,973
TOTAL	$ 14,964	$ 166,343	$ 234,414	$ 203,766	$ 204,008	$ 175,374	$ 134,433	$ 90,555
Unit Operating Cost/Tonne Milled	$ N/A	$ 64.62	$ 57.54	$ 50.02	$ 50.08	$ 43.05	$ 33.00	$ 41.90
Capital Cost $(000)	$ 1,305	$ 5,942	$ 2,087	$ 1,147	$ 2,275	$ 1,932	$ 500	$ NIL

KEY

High-Grade - +6 (Pb + Zn) Percent
Low-Grade - 4 - 6 (Pb + Zn) Percent Stockpile
Oxide - Oxide Stockpile

2.2 ASSUMPTIONS

Curragh has advised Kilborn that the opening of the mine will be contingent upon the resolution of certain key issues; most notably the costs of power, transportation and labour. It will also be necessary to establish concentrate sales contracts with dependable customers. In these instances Curragh has developed cost levels which must be achieved or bettered if the Company is to proceed with the proposed operating plans. Kilborn has used these costs, which are identified by an asterisk in the list of principal assumptions shown in Table 2.2-1.

2.3 ANALYSIS OF RESULTS

Table 2.3-5 is used to derive the total cost per pound of marketable lead and zinc metal produced. To calculate this value the sum of the Mining, Milling, General and Administrative, Town Site and Capital Costs is divided by the total amount of payable lead and zinc metal. Transportation and smelting charges are allocated to the respective metals to compute a total cost per pound of payable metal.

The average cash costs per pound of lead and zinc are lower than current metal prices. The increases in costs shown during 1991 and 1992 result from the milling of the low-grade and oxide stockpile ores.

The unit operating costs, expressed as dollars per tonne milled, are shown in Table 2.3-6. The high stripping ratio, combined with the low mill throughput in 1986 result in high mining unit costs in this year.

TABLE 2.2-1

PRINCIPAL ASSUMPTIONS

Infrastructure

*Power Cost	-	$ 0.04/kWhr
*Transportation (Faro - Ship)	-	$ 45.00/WMT fob Vessel
Faro Houses Sold to Employees		

Mining

Cut-Off Grade	-	6.0 (Pb + Zn) Percent
Mine Development	-	Northwest to Southeast

Milling

Milling Rate	-	4,074,000 Tonnes/Year

*Staff Salaries

Department	Weighted Average Loaded Salary ($/Year)
Mine	$ 60,000
Mechanical	60,000
Mill	60,000
Engineering	60,000
Accounting	55,000
Warehouse	55,000
Personnel	55,000
General Manager	60,000
Environmental Control	55,000

*Hourly Rates

Proposed	-	$ 10.00 to $15.50/Hour
Fringe Benefit	-	22.0 Percent

TABLE 2.3-5

SUMMARY COST PER POUND OF PAYABLE METAL

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Zinc Production	Lbs(000)'s	0	202,560	325,373	289,670	311,651	270,031	183,611	114,247	1,697,142
Lead Production	Lbs(000)'s	0	148,498	277,456	231,613	233,288	184,311	128,841	78,153	1,282,160
ZINC										
Mining,Milling,G.& A.,Townsite		NA	0.203	0.130	0.132	0.112	0.120	0.163	0.188	0.146
Land Transport		NA	0.045	0.044	0.044	0.044	0.044	0.045	0.048	0.045
Ocean Transport		NA	0.037	0.036	0.036	0.036	0.036	0.036	0.039	0.036
Smelting		NA	0.246	0.239	0.239	0.238	0.240	0.243	0.257	0.241
	Subtotal	NA	0.531	0.449	0.450	0.430	0.440	0.487	0.532	0.468
Capital		NA	0.029	0.006	0.004	0.007	0.007	0.003	0.000	0.009
Total	(Canadian $)	NA	0.561	0.456	0.454	0.437	0.447	0.489	0.532	0.477
	(U.S. $)	NA	0.409	0.333	0.331	0.319	0.326	0.357	0.388	0.348
LEAD										
Mining,Milling,G.& A.,Townsite		NA	0.203	0.130	0.132	0.112	0.120	0.163	0.188	0.146
Land Transport		NA	0.033	0.033	0.032	0.033	0.032	0.032	0.033	0.033
Ocean Transport		NA	0.027	0.026	0.026	0.026	0.026	0.026	0.027	0.026
Smelting		NA	0.135	0.131	0.130	0.131	0.131	0.131	0.135	0.132
	Subtotal	NA	0.398	0.320	0.319	0.302	0.310	0.352	0.384	0.337
Value of Payable Silver		NA	(0.101)	(0.119)	(0.106)	(0.110)	(0.104)	(0.132)	(0.133)	(0.113)
Capital		NA	0.040	0.008	0.005	0.010	0.010	0.004	0.000	0.012
Total	(Canadian $)	NA	0.337	0.209	0.218	0.202	0.217	0.224	0.251	0.236
	(U.S. $)	NA	0.246	0.153	0.159	0.147	0.158	0.164	0.184	0.172

TABLE 2.3-6

SUMMARY COST PER DMT FEED ($/Tonne Milled)

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Feed MDMT			0.000	2.574	4.074	4.074	4.074	4.074	4.074	2.161
Capital Costs										
Total capital costs		NA	NA	0.81	0.28	0.56	0.47	0.12	0.00	7.03
Operating Costs										
Mine		NA	NA	12.79	5.83	4.04	2.25	1.15	0.62	61.55
Mill		NA	NA	10.73	6.73	6.73	6.93	7.22	5.01	84.91
Power		NA	NA	2.58	1.56	1.51	1.51	1.51	0.93	18.73
Coal & fuel oil		NA	NA	0.69	0.40	0.41	0.37	0.31	0.26	4.78
General & administration		NA	NA	3.19	2.00	1.99	1.98	1.98	1.91	28.00
Land transport	$39/WMT Conc	NA	NA	9.08	4.95	5.23	4.40	3.04	1.97	54.32
Port charges	$6 /WMT Conc	NA	NA	1.40	0.76	0.80	0.68	0.47	0.30	8.36
Sales expenses	$2 /WMT Conc	NA	NA	0.47	0.25	0.27	0.23	0.16	0.10	2.79
Ocean transport	$22.67/WMT	NA	NA	5.28	2.88	3.04	2.56	1.77	1.15	31.57
Inbound Freight	$46.50/Tonne	NA	NA	0.49	0.31	0.31	0.31	0.31	0.16	3.65
Total operating costs		NA	NA	46.69	25.69	24.33	21.22	17.91	12.42	298.65

The operating plans used in this Report do not necessarily represent the optimum economic conditions. It is necessary to evaluate the effects which changes in cut-off grade impart on the Project profitability. In addition, the sequence in which ores are milled requires further examination. Studies conducted by others have been based upon the milling of oxide stockpile material, prior to the processing of fresh pit-run ore. By so doing, some of the 'front-end' preproduction stripping costs may be deferred. On the other hand, the metallurgical problems associated with the processing of oxidized ore will be exacerbated if such material were processed using personnel inexperienced in the operation of the Cyprus Anvil flotation circuits.

Consideration should be given in future to means by which annual concentrate production rates may be rendered more uniform. By so doing, more efficient use of the concentrate transportation systems will be facilitated. In addition, peak demands on the capacity of the existing concentrate dewatering circuits will be reduced. The concentrate production currently projected for 1987 will tax the existing circuit capabilities.

The mine production rate is reasonably close to equipment design capacities given the availability of working space. However, the availability of stockpiled low-grade and oxide ores provides an immediate source of mill feed in the unlikely event that inadequate quantities of pit-run high-grade ore are available.

The proposed manpower requirements, by area, are summarized in Table 2.3-7.

CURRAGH RESOURCES CORPORATION

TABLE 2.3-7

MANPOWER SUMMARY

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mine																		
Staff	0	0	19	34	34	34	34	34	34	34	34	34	34	34	34	34	34	
Technical	0	0	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Hourly	0	0	100	150	177	181	216	220	220	220	232	232	232	223	223	223	223	
	0	0	126	191	218	222	257	261	261	261	273	273	273	264	264	264	264	
Mill																		
Staff	0	0	11	13	15	18	20	26	26	26	26	26	26	26	26	26	26	
Technical	0	0	0	0	0	0	1	7	10	10	10	10	10	10	10	10	10	
Hourly	0	0	7	67	49	61	66	125	128	128	128	128	128	128	128	128	128	
	0	0	18	80	64	79	87	158	164	164	164	164	164	164	164	164	164	
G.& A.-Faro																		
Staff	0	6	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
Hourly	0	3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
	0	9	22	23	23	23	23	23	23	23	23	23	23	23	23	23	23	
G.& A.-Whitehorse																		
Staff	2	10	14	16	18	19	19	19	19	19	19	19	19	19	19	19	19	
Technical	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hourly	0	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	3	13	20	22	24	25	25	25	25	25	25	25	25	25	25	25	25	
Total																		
Staff	2	16	52	72	76	80	82	88	88	88	88	88	88	88	88	88	88	
Technical	1	1	8	8	8	8	9	15	18	18	18	18	18	18	18	18	18	
Hourly	0	5	126	236	245	261	301	364	367	367	379	379	379	370	370	370	370	
	3	22	186	316	329	349	392	467	473	473	485	485	485	476	476	476	476	

TABLE 2.3-7

MANPOWER SUMMARY

1985 & 1986 Manpower Level in December

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mine									
Staff	34	34	34	31	27	20	11	6	
Technical	7	7	7	7	6	4	1	1	
Hourly	177	223	225	182	139	82	43	28	
	218	264	266	219	172	106	55	34	
Mill									
Staff	15	26	26	26	26	26	26	26	
Technical	0	10	10	10	10	10	10	10	
Hourly	49	128	123	123	123	123	123	123	
	64	164	159	159	159	159	159	159	
G.& A.-Faro									
Staff	9	9	9	9	9	9	9	9	
Hourly	14	14	14	14	14	14	14	14	
	23	23	23	23	23	23	23	23	
G.& A.-Whitehorse									
Staff	18	19	19	19	19	19	19	19	
Technical	1	1	1	1	1	1	1	1	
Hourly	5	5	5	5	5	5	5	5	
	24	25	25	25	25	25	25	25	
Total									
Staff	76	88	88	85	81	74	65	60	
Technical	8	18	18	18	17	15	12	12	
Hourly	245	370	367	324	281	224	185	170	
	329	476	473	426	379	313	262	241	

3.0 GEOLOGY AND ORE RESERVES

3.0 GEOLOGY AND ORE RESERVES

3.1 GENERAL

The Faro Deposit is one of a series of strataform, stratabound lead, zinc deposits located in the Anvil District (Figure 3.1-1). To date, Faro is the only deposit which has been mined. The other deposits within the Anvil lead, zinc and silver District include the Vangorda, Grum, Dy, and Swim, all of which contain significant lead and zinc values. These deposits offer the potential for economic mining development upon the exhaustion of the Faro pit reserves.

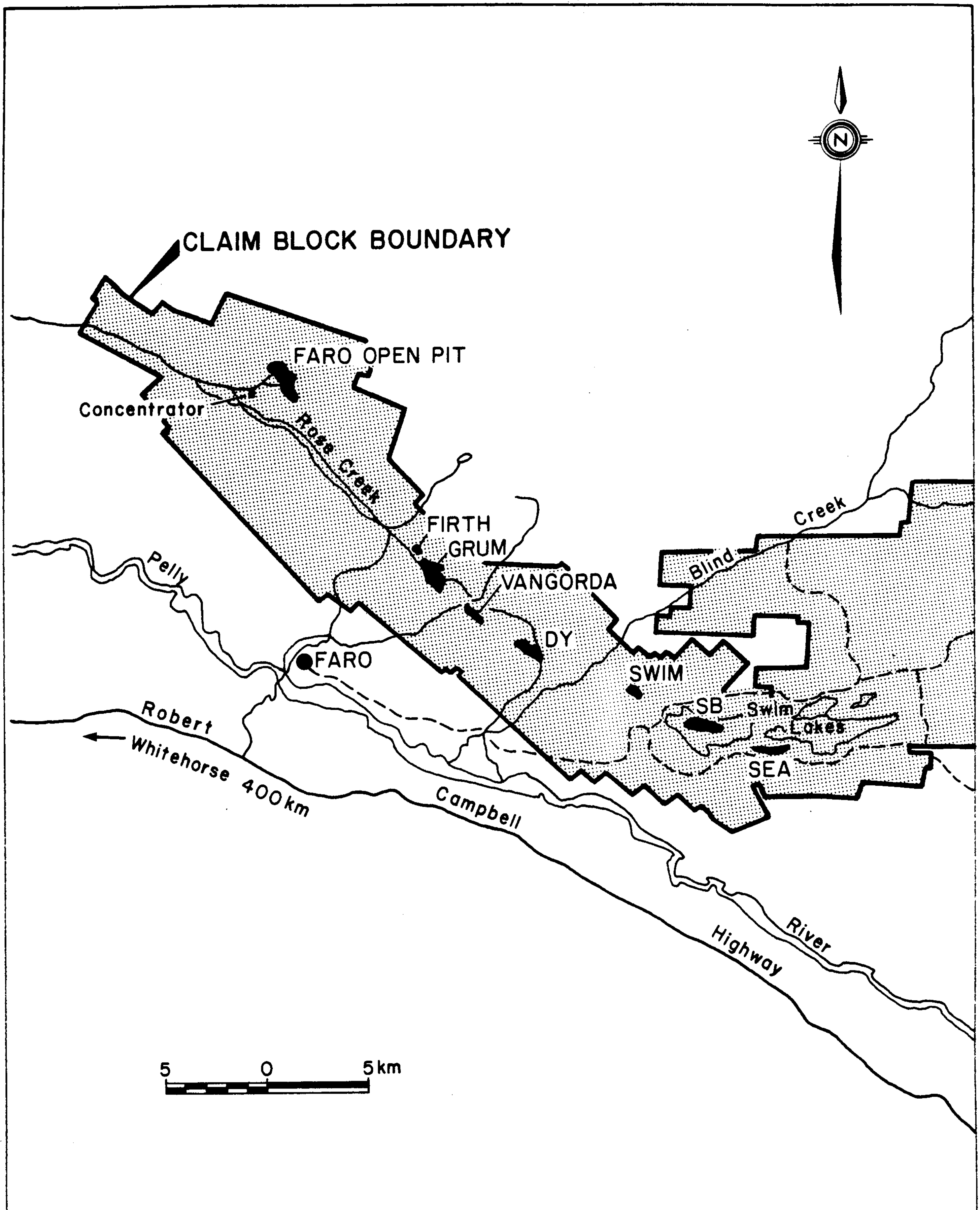
3.2 GEOLOGICAL SETTING

The Anvil Range is underlain by sedimentary and volcanic rocks of upper Precambrian to Mesozoic age. The rocks which are of most economic potential are in the Mt. Mye formation (Hadrynian - lower Cambrian) and Vangorda formation (lower Cambrian - Early Ordovician) on the southwestern edge of the Selwyn Basin adjacent to the Tintina Fault (Figure 3.2-1).

The Mt. Mye formation consists of calcareous phyllites, graphitic phyllites and intermediate volcanics and their higher grade metamorphic equivalents. Metamorphic gradient increases to the northwest along the trend of the Tintina Fault.

Although similar to the Mt. Mye, the Vangorda formation also contains limey units, volcanic tuffaceous rocks and their metamorphic equivalents.

The transition zone at the base of the Vangorda formation is up to several hundred metres in thickness and is marked by a



TITLE: CYPRUS ANVIL MINE REVIEW **CLAIM BLOCKS**		SECTION:	
KILBORN ENGINEERING (B.C.) LTD.		AREA NO:	REV. NO:
CLIENT: CURRAGH RESOURCES CORP. FARO, YUKON	PROJECT NO: 3509-15	DRAWING NO: FIGURE 3.1-1	A
APPROVED:	DATE: JULY 15, 1985		

variable graphitic phyllite unit and stratiformed lead-zinc-silver deposits.

There are at least 5 periods of deformation which have affected the pelitic sediment in the Anvil Range. Two major northeast trending faults cut across the trend of the mineralized deposits.

3.3 HISTORY OF EXPLORATION

Mineralization was first discovered in the Anvil District in 1953 when surface showings were found in the banks of Vangorda Creek. The deposit became known as the Vangorda Deposit.

In the 1960's, Dynasty Exploration (Dynasty) conducted extensive exploration activities which culminated in the discovery of the Faro Deposit. A joint venture agreement betwen Dynasty and Cyprus Mines resulted in the formation of the Anvil Corporation Limited. While further exploration continued, a production decision was made to develop and mine the Faro Deposit.

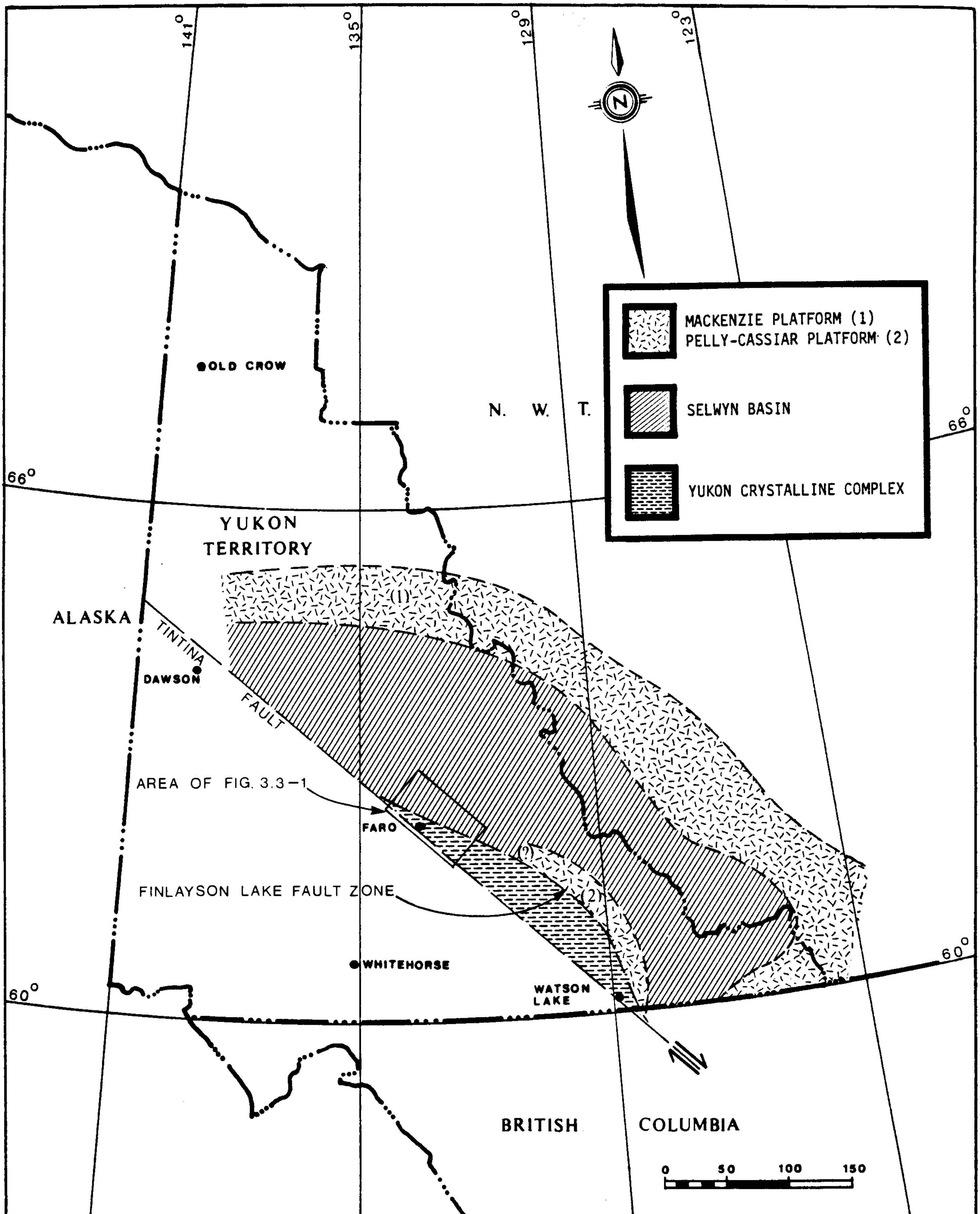
The Grum Deposit was discovered by the late Dr. Aaro Aho in 1973 while Cyprus Anvil geologists first identified the Dy in 1977.

To the present, there have been 12 separate deposits discovered of which 5 contain significant lead and zinc values (Figure 3.3-1).

3.4 DEPOSIT GEOLOGY

3.4.1 General

The lead-zinc-silver deposits of the Anvil Range are of the sediment-hosted, stratiform, massive pyritic sulphide type.



TITLE: REGIONAL GEOLOGY	SECTION:		
KILBORN ENGINEERING (B.C.) LTD.	AREA NO:		REV. NO:
CLIENT: CURRAGH RESOURCES CORP — PROJECT NO: 3509-15	DRAWING NO:	FIG. 3.2-1	A
APPROVED: — DATE: 15-7-1985			

The Faro Deposit occurs as a thick major lens with several thinner lenses stacked one above the other. The deposit is approximately 1500 metres in length, 400 metres in width. The ore lenses are approximately 35 metres thick.

The deposit occurs near the interface of the Mt. Mye and Vangorda formations in association with graphitic phyllite units. The longitudinal section through the deposit, shown as Figure 3.3-2, is the interpretation upon which the T-3 ore reserves are based. The most recent studies indicate minor faulting in the Zone III portion of the deposit.

3.4.2 Rock Types

The ore body lies conformably within a regional biotite-muscovite schist unit of Cambrian age. Metamorphic rocks associated with the deposit include the following:

(a) Calc-Silicate Gneiss

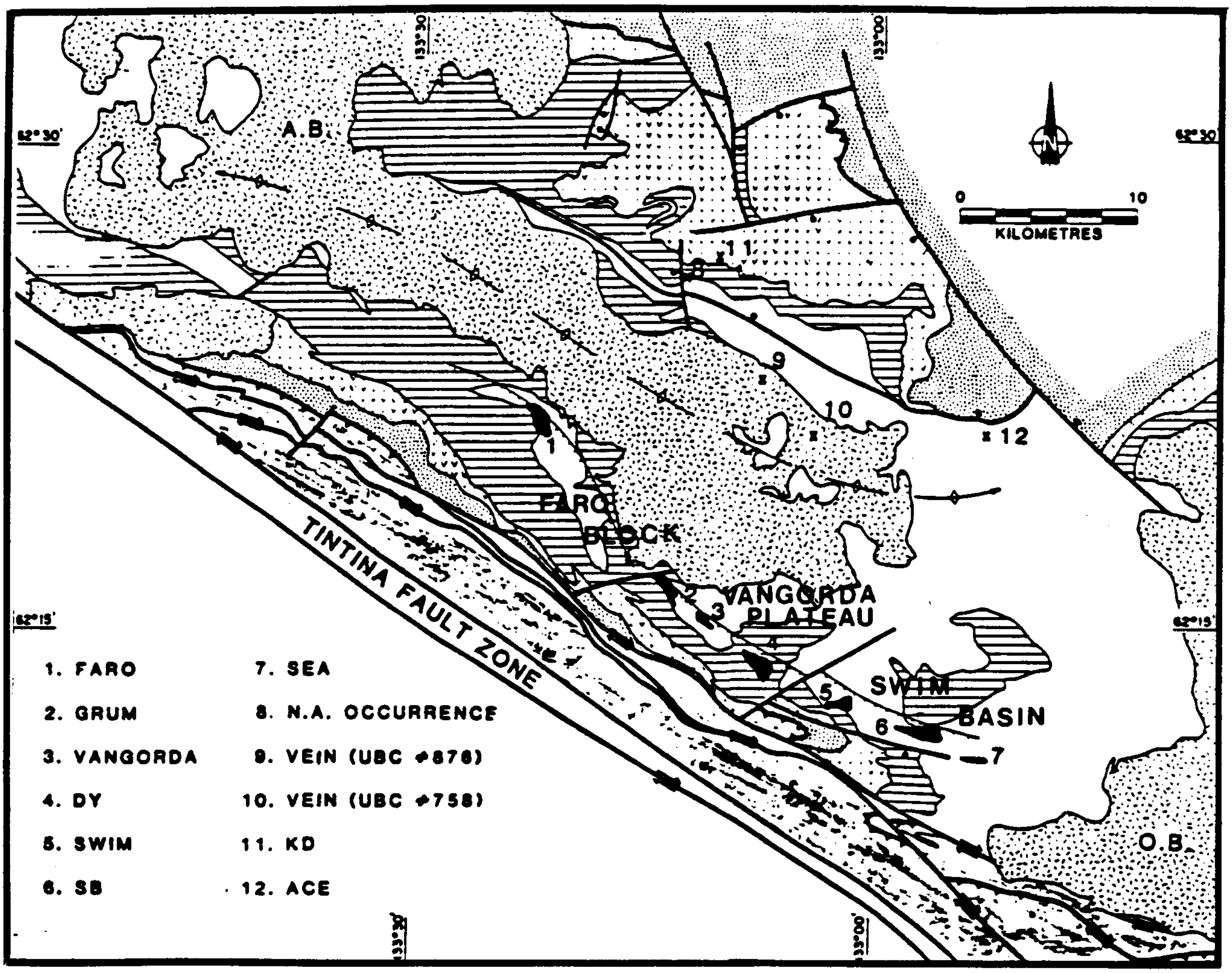
A tough, hard block gneiss which occurs approximately 80 metres above the ore zone.

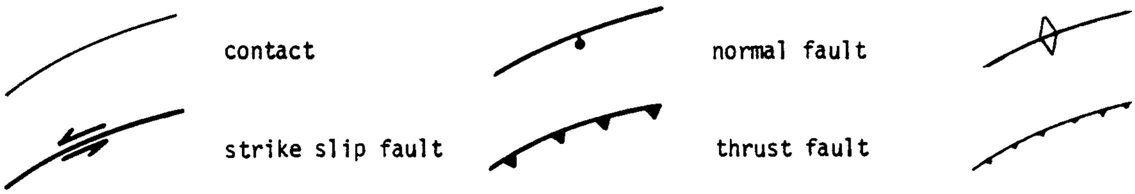
(b) Biotite Schist

A dark brown homogeneous, finely crystalline, heavy foliated schist which contains varying proportions of muscovite and biotite. The upper portions contain abundant staurolite and bands of softer graphitic schist. Near the ore zone, schist grades to muscovite schist and sericite schist.

(c) Muscovite Schist

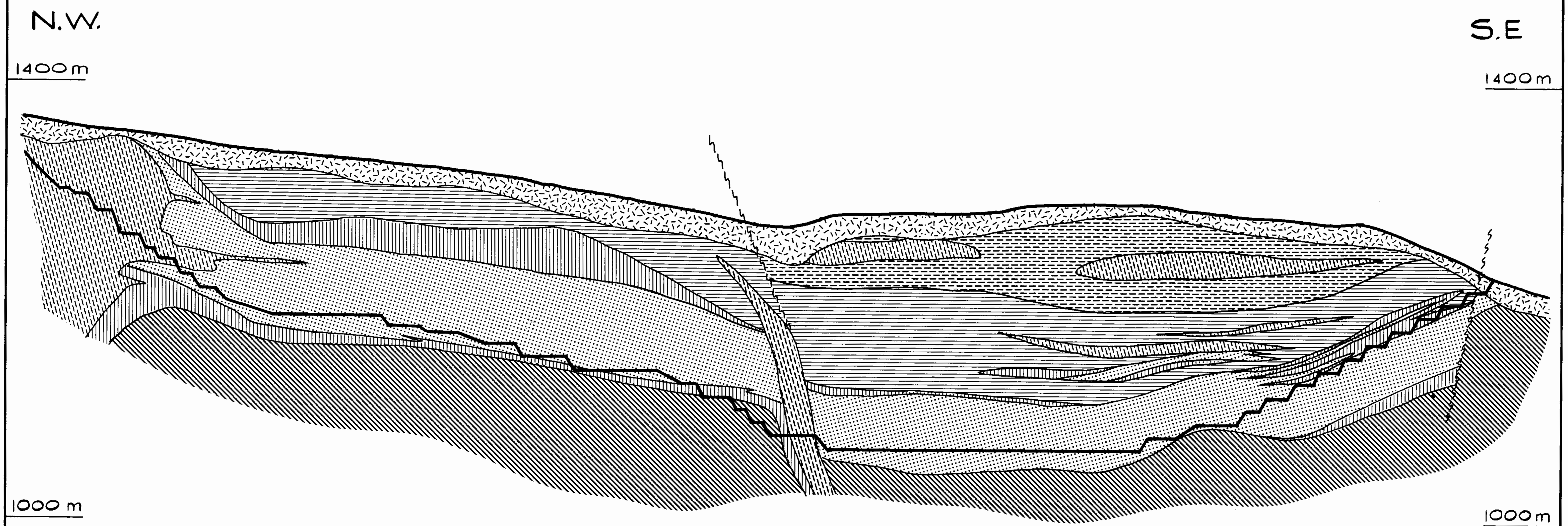
A silver grey, fine to coarse grained, strongly schistose rock which contains abundant muscovite. Finer grained





- granodiorite and quartz monzonite AB = Anvil Batholith OB = Orchay Batholith
- EARN GROUP block shale, chert, chert pebble conglomerate, limestone, quartzite (includes undifferentiated Askin Group, Silurian and Devonian dolomite and quartzite locally)
- MENZIE CREEK FORMATION metabasalt flows breccias and tuffs, graphitic phyllite (includes undifferentiated Road River Group black shales locally)
- VANGORDA FORMATION calcareous phyllite and equivalent calcsilicates, metabasite
- MOUNT MYE FORMATION non calcareous phyllite and schist
- undifferentiated rocks southwest of Finlayson Lake fault zone includes rocks of Yukon Catoclastic complex, Triassic sedimentary rocks, ultramafic and mafic plutonic rocks and basalt and varicolored chert of Permian or Pennsylvanian Anvil Range Group

TITLE: CYPRUS ANVIL MINE REVIEW LOCAL GEOLOGY	SECTION:
KILBORN ENGINEERING (B.C.) LTD.	AREA NO: — REV. NO:
CLIENT: CURRAGH RESOURCES CORP. PROJECT NO: 3509-15	DRAWING NO: FIG. 3.3-1
APPROVED: DATE: JUL. 15.1985	A



LEGEND

- OVERBURDEN
- INTRUSIVE ROCKS

VANGORDA FORMATION

- CALCAREOUS PHYLLITE; CALC-SILICATES
- GRAPHITIC PHYLLITE/SCHIST
- SULPHIDE HORIZON(S)
- ALTERATION OVERPRINT

MT. MYE FORMATION

- NON-CALCAREOUS PHYLLITE/SCHIST

0 300 600 900

SCALE IN FEET

TECHNICAL AND COST REVIEW	A	5-7-85	PAH	SCALE	DATE	CLIENT: CURRAGH RESOURCES CORPORATION	CYPRUS ANVIL MINE REVIEW
REVISIONS	NO	DATE	BY	DESIGNED		LOCATION: FARO, YUKON	FARO DEPOSIT
				DRAWN PAH	JUL.'85	KILBORN	LONGITUDINAL SECTION
				CHECKED			PROJ. NO. 3509-15
				APPROVED	JUL 16'85		DWG. NO. FIG. 3.3-2 REV. A

KE.B.C.9

sericite schist of similar composition occurs with the muscovite schist. Extremely soft, altered, sericitic zones up to one metre have been observed.

(d) Quartzite

A tough, hard band between zero and 4 metres thick both above and below the ore zone. The quartzite is generally well-foliated due to the presence of aligned phyllo-silicate minerals.

There is a coarse-grained hornblende-biotite quartz diorite intrusive in the northwest corner of the existing pit and some dark green diorite dykes occur in the pit walls. A prominent quartz feldspar porphyry dyke cuts through the centre portion of the deposit.

3.4.3 Structural Features

Structural mapping of the deposit indicates that the foliation varies considerably due to the presence of open folds and undulations within the structure.

Five relatively consistent joint sets occur within the observed pit area.

(a) Joint Set A

Joints formed parallel to or subparallel to the foliation compositional layering.

(b) Joint Set B

Joints which strike approximately east-northeast to east and dip steeply south. These joints are particularly well developed in the intrusive rocks and are probably related to the emplacement of the intrusive material.

(c) Joint Set C

Joints which strike approximately southeast to south and dip vertical to subvertical. These joints are also well developed in the intrusive rocks and probably related to intrusion.

(d) Joint Set D

Joints which strike approximately eastwest and dip steeply north.

(e) Joint Set E

Joints which strike approximately east-southeast and dip 60 to 70 degrees south.

Most faults in the vicinity of the deposit are steeply dipping and occur approximately parallel to joint sets, particularly Joint Set A. These faults often extend over 30 metres and are accompanied by zones of very soft, fine-grained micaceous clay gouge of up to 30 centimetres wide.

The most significant major fault is the Faro Fault which appears to offset the south part of the ore body downwards approximately 50 metres. This fault zone consists of a conspicuous 1 to 3 metre wide zone of extremely soft and sheared graphitic schist. The aforementioned quartz feldspar porphyry dyke occurs adjacent to this fault.

Several other major faults have been identified but do not appear to be of major importance.

3.4.4 Mineralization

There are numerous sulphide lithofacies which comprise the Anvil District deposits and are present within the Faro Deposit. Of considerable metallurgical importance, these lithofacies include:

(a) Massive Pyritic Sulphides (Unit 2E/4E)

This material is usually weakly foliated and/or lineated, massive pyrite with lesser sphalerite and galena. Sulphide content is from 80 to 100 percent with accessory minerals being pyrrhotite, chalcopyrite, magnetite, arsenopyrite and marcasite. Nonsulphide material consists of quartz and/or barite and/or carbonates.

(b) Baritic Massive Pyritic Sulphides (Unit 2G/4G)

This material is strongly and thinly banded massive sulphide/sulphate rock consisting of pyrite, galena, sphalerite and magnetite in a gangue of barite and carbonates. Barite content may be as high as 50 percent. This material is usually of 10 to 15 percent combined lead-zinc. The sphalerite is characteristically honey coloured to light brown.

(c) Carbonate-Bearing Massive Pyrite Sulphides (Unit 2K/4K)

This unit is similar to massive sulphides, however, contains 10 percent carbonate as irregular blebs or interstitial gangue.

(d) Pyrrhotitic Massive Sulphide (Unite 2H/4H)

This material is well-foliated pyrrhotite with less than 50 percent pyrite with highly variable amounts of sphalerite and galena. Minor amounts of chalcopyrite are characteristic of this facies.

In addition to the massive sulphide lithofacies discussed there are a group of quartzose disseminate lithofacies as follows:

(a) Ribbon Banded, Graphitic, Pyritic Quartzite (Unit 2A/4A)

This material is dark grey to black, well-banded, sulphide-bearing quartzite. Bands are 2 millimetres to 2 centimetres thick and consist of carbonaceous phyllitic quartzite to siliceous phyllite, and light grey, quartz-sulphide. Sulphide content usually varies between 10 to 30 percent.

(b) Pyritic Quartzite (Units 4B, C, D/2B, C, D)

These units are light grey, moderately foliated micaceous quartzites with highly variable base metal and pyrite contents. Sulphide content is normally between 10 and 40 percent.

Post-metamorphic breccias are common in the disseminated sulphide lithofacies. Both wall rocks and certain ore facies are overprinted by a prominent white mica dominant alteration assemblage. At Faro, a continuous envelope of this lithology encloses the entire deposit with best development in the hanging wall.

3.5 ORE RESERVES

3.5.1 Area Reserves and Resources

Constrained by the shortage of time, Kilborn has not verified the Faro pit ore reserve calculations, but has used the information compiled in Cyprus Anvil's computerized mine model. Nevertheless, Kilborn is satisfied that the reserves have been calculated in accordance with sampling, assaying and reserve calculation procedures which are well-proven and accepted in the industry. The close agreement achieved historically between predicted plant feed grades, and those actually received attests to the validity and the accuracy of the procedures used by Cyprus Anvil.

A summary of the Anvil District Reserves is shown in Table 3.5-1.

3.5.2 Faro Deposit - Mining Reserves

The mineable ore reserve remaining in the Faro open-pit is 23,763,000 tonnes containing; 2.9 percent lead, 4.4 percent zinc and 36.3 grams per tonne silver, at a cut-off grade of 4 percent combined lead plus zinc. Table 3.5-2 gives the mineable reserves at a cut-off grade of 4 percent combined lead-zinc grade [4.0 (Pb + Zn) percent] for the different ore types. The in-place grades have been reduced by 5 percent to conform with historical results in producing mineable ore reserves. Table 3.5-3 gives the mineable reserves at a cut-off grade of 6 percent combined lead-zinc grade.

TABLE 3.5-1

ANVIL DISTRICT GEOLOGICAL RESERVES AND GRADE

Deposit	Geological Reserves ('000) Tonnes	Cut-Off (Pb + Zn)%	Metal Content Lead %	Zinc %	Copper %	Silver g/mt	Gold g/mt
Faro							
Proven - Pit	33,000	--	3.0	4.6	0.16	35.7	0.16
- Ramp	203	4	3.7	4.5	*	60.0	*
Probable - Southwest	1,950	7	5.2	7.3	*	73.8	*
TOTAL	35,153		3.1	4.7	0.16	38.0	0.18
Grum							
Proven - 62-86 W	35,400	3	3.32	5.43	0.15	56.0	0.84
Probable - 51-62 W	1,700	4	3.51	4.28	*	46.0	*
TOTAL	37,100		3.33	5.38	0.15	55.5	0.84
Possible - 86-100 W	8,000	7	10.0 (Pb + Zn)%		--	--	--
Vangorda							
Proven - 2 W-12 E	6,200	3	3.0	4.0	*	44.0	0.77
- 12-28 E	2,500	3	3.3	3.5	*	46.0	0.78
Probable - 28-38 E	400	4	2.4	4.8	*	50.0	0.78
TOTAL	9,100		3.1	3.9	*	45.0	0.78
Dy							
Probable - A2	13,612	7	5.9	6.1	0.14	86.0	1.06
- A3	960	7	5.0	5.8	0.16	64.0	0.59
- B2	6,487	7	4.9	8.1	0.08	83.0	0.76
TOTAL	21,059		5.5	6.7	0.12	84.0	0.95
Swim							
Probable	4,300	6	3.8	4.7	*	47.0	*

*Grades Exist but have not been calculated.

TABLE 3.5-2

FARO PIT MINEABLE ORE RESERVES

CUT-OFF GRADE 4.0 (PB + ZN) PERCENT

IN-SITU GRADES REDUCED BY 5.0 PERCENT

		Grade		
Ore Type	Tonnage	% Pb	% Zn	Ag g/mt
A	1,602,000	1.93	3.70	33.1
BCD	5,467,000	2.43	3.91	35.1
EC	2,651,000	2.73	4.26	32.0
EF	10,970,000	3.06	4.49	32.8
G	1,531,000	4.66	5.44	62.3
H	1,542,000	3.68	5.07	50.0
TOTAL	23,763,000	2.94	4.37	36.2

Mineable reserves for a 6 percent combined lead-zinc grade are given in Table 3.5-3.

TABLE 3.5-3

FARO PIT MINEABLE ORE RESERVES

CUT-OFF GRADE 6.0 (PB + ZN) PERCENT

IN-SITU GRADES REDUCED BY 5.0* PERCENT

		Grade		
Ore Type	Tonnage	% Pb	% Zn	Ag g/t
A	583,000	2.67	4.61	39.6
BCD	3,419,000	2.83	4.41	40.3
EC	1,753,000	3.12	4.99	34.6
EF	8,509,000	3.34	4.99	34.9
G	1,493,000	4.74	5.51	63.5
H	1,423,000	3.83	5.24	51.9
TOTAL	17,180,000	3.36	4.93	40.0

*The above does not include the ramp zone.

In addition to the open-pit reserves, there are additional geological reserves which can be mined by underground methods after completion of open-pit mining. These reserves are approximately 2,000,000 tonnes containing; 4.70 percent lead, 7.55 percent zinc, and 71 grams per tonne silver, using a cut-off grade of 7.0 (Pb + Zn) percent. There are approximately 3 to 4 million tonnes of ore in the northeast sector of the pit which will be investigated later.

3.5.3 Reserve Calculations - Source of Data

The reserve estimates used for Kilborn's mine planning purposes are obtained from Cyprus Anvil's computerized data base.

Using the Mintec modelling program Cyprus Anvil has developed 3 mine models. In addition, a hand calculated model based upon geological sections has been prepared. The principal features of each model are highlighted in Table 3.5-4.

TABLE 3.5-4

FARO PIT MINE MODELS

Model Designation	Principal Features
F-3	Computer block model; complete remaining reserves, latest drilling included in model is 1981, no geological control in interpolation, used by Pincock, Allen and Holt.
T-3	Computer block model; complete remaining reserves, latest drilling included in model is 1981, geological control on interpolation, improvement on F-3 Model, used by Kilborn.

Model Designation	Principal Features
F-4	Computer block model; incomplete, only southern half of remaining reserves, latest drilling included in model is 1982, geological control on interpolation, superior modeling technique to F-3 and T-3 Models.
Dome	'Hand calculated' section model; complete remaining reserves, latest drilling included 1984, geological control in interpolation.

Kilborn has elected to use the T-3 Model since it is the only program which encompasses most of the remaining reserves and imposes geological constraints on the process of interpolation. The F-3 Model does not incorporate such geologic controls.

The F-4 Model is at present incomplete and therefore, of no immediate value to this study. This Model should be completed and used in later work when it is available. While the hand calculated model includes all the recent drilling results, the data is not in a format which could be used to meet Kilborn's requirements. It is noted that the results of the 1982, 1983 and 1984 diamond drill programs did not materially affect the total ore reserve inventory.

3.5.4 Method of Calculation for T-3 Model

The drilling grid over the Faro Deposit is rotated 45 degrees to north-south with section lines 140 feet apart running close to strike and dip direction of the ore body. Diamond drill hole (DDH) spacing varies over the deposit from a close of 140 feet to a maximum of 280 feet.

Many drill holes have been surveyed with a Sperry-Sun single shot camera to determine their down hole paths. Diamond drill core recoveries have averaged 95 percent in the mineralized zone. Samples of core, approximately 1.5 metres in length, are examined and logged for structure and lithology.

The geological interpretation of the deposit has been modified since preparation of the T-3 Model. These modifications are being used to develop the F-4 Model.

The T-3 Model incorporates 6 different ore rock types with respective statistically determined average densities. DDH data is composited over 20-foot bench intervals using sample length and density weighting. DDH composites are assigned predominant geology codes.

The interpolation method used is an elliptical inverse distance squared method requiring matching of DDH composite geology codes to the block geology codes. The block size carried in the model is 50 feet by 50 feet by 20 feet high.

In some cases blocks are not assigned a grade in the first pass interpolation because no matching geology codes are located in the search area. In those cases, a second pass is made with relaxed matching rules in order to assign grades to these blocks.

This overall process gives a realistic assignment of grade according to ore type and is a definite improvement over the F-3 modeling process (The F-4 interpolation method is a further improvement on the T-3 method.)

The T-3 Model at this time provides the most comprehensive estimates of the remaining reserves. Grade estimates from the F-3 and T-3 Models are normally reduced by 5 percent of their value by Cyprus Anvil to compensate for historically determined differences between model grades and actual mill feed assays.

3.5.5 Reserve Accountability

Comparisons of model reserve estimates to past production data are generally the best methods of estimating the reliability of ore reserve models. Since past production data has only been compared to the F-3 Model it was necessary to compare the T-3 to the F-3 Model.

The T-3 Model is compared with the F-3 Model in Table 3.5-5.

The F-3 Model predicted results are compared with the actual 1980 and 1981 measured values in Tables 3.5-6 and 3.5-7, respectively.

The production, in future, will be from Zone 3 which appears to be a downfaulted portion of Zone 1. Tables 3.5-8 and 3.5-9 show comparisons between in-situ T-3 reserves and blasthole grades on a selected area of 120 metres by 140 metres on three benches in Zone One.

A further comparison of the F-4 and T-3 Models is given in Table 3.5-10.

These comparisons indicate that the T-3, F-3 and F-4 Models are comparable within normal ore reserve estimating accuracy. The F-3 Model is slightly biased above actual mill feed grades but with 5.0 percent adjustment, provides the basis for meaningful deposit grade predictions. The Models are comparable to blasthole drilling results and, therefore, are suitable for quarterly production projections.

TABLE 3.5-5

T-3/F-3 MODEL COMPARISON

OPEN-PIT MINEABLE RESERVES

CUT-OFF GRADE 6.0 (PB + ZN) PERCENT

Model	Tonnage DMT ('000)	% Pb	% Zn	Ag g/mt
F-3 (Minus 5 Percent Off Grades)	18,445*	3.3	4.8	39.8
T-3 (Minus 5 Percent Off Grades)	17,180**	3.3	4.9	39.9
Percent Variance ($\frac{T-3 - F3}{F3}$ x 100)	-6.9	0	+2.0	+0.2

Both the F-3 and T-3 Models create 'unknown' tonnage which refers to tonnage geologically interpreted to be sulphide-bearing, however, not assigned grades in interpolation.

*The F-3 Model estimate does not include 126,000 DMT of 'unknown' tonnage.

**The T-3 Model estimate does not include 563,000 DMT of 'unknown' tonnage.

In general, the T-3 Model estimates lower tonnage similar or slightly higher grades.

TABLE 3.5-6

MODEL F-3

1981 PRODUCTION COMPARISON

Model	Tonnage DMT ('000)	% Pb	% Zn	Ag g/mt
F-3 (Unadjusted)	2931	3.0	5.1	35.1
Blastholes (BH)	2747	3.0	4.8	40.3
Metallurgical Balance (MB)	2703	2.9	4.9	34.3
Percent Variance F-3 Versus BH $(\frac{F\text{-}3 - BH}{BH} \times 100)$	6.7	0	5.9	-14.8
Percent Variance F-3 Versus MB $(\frac{F\text{-}3 - MB}{MB} \times 100)$	7.8	3.3	3.9	2.3

Sources of production for 1981 were from Zone 2 until May and from the main deposit for the remainder of the year.

TABLE 3.5-7

MODEL F-3

1980 PRODUCTION COMPARISON

Model	Tonnage DMT ('000)	% Pb	% Zn	Ag g/mt
F-3 (Unadjusted)	3096	3.0	4.6	43.7
Blastholes (BH)	3043	2.9	4.4	44.2
Metallurgical Balance (MB)	2825	3.0	4.5	42.5
Percent Variance F-3 Versus BH $(\frac{F\text{-}3 - BH}{BH} \times 100)$	1.7	3.3	4.3	-1.1
Percent Variance F-3 Versus MB $(\frac{F\text{-}3 - MB}{MB} \times 100)$	8.8	0	2.2	2.7

Source of production for 1980 was mainly from Zone 2.

TABLE 3.5-8

IN-SITU T-3/BLASTHOLE GRADE COMPARISON ZONE ONE

CUT-OFF GRADE 4.0 (PB + ZN) PERCENT

Model	Tonnage DMT ('000)	% Pb	% Zn
T-3 (Unadjusted)	1273	2.66	4.49
Blastholes (BH)	1261	2.64	4.35
Percent Variance T-3 Versus BH $(\frac{T\text{-}3 - BH}{BH} \times 100)$	+1.0	+0.8	+3.2

TABLE 3.5-9

IN-SITU T-3/BLASTHOLE GRADE COMPARISON ZONE ONE

CUT-OFF GRADE 6.0 (PB + ZN) PERCENT

Model	Tonnage DMT ('000)	% Pb	% Zn
T-3 (Unadjusted)	957	2.92	4.75
Blastholes (BH)	914	2.99	4.89
Percent Variance T-3 Versus BH $(\frac{T\text{-}3 - BH}{BH} \times 100)$	+4.7	-6.7	-2.4

TABLE 3.5-10

F-4/T-3 COMPARISON

SOUTHERN AREA OF ORE BODY

CUT-OFF GRADE 4.0 (PB + ZN) PERCENT

Model	Tonnage DMT ('000)	% Pb	% Zn	Ag g/mt
F-4	3940	2.7	4.4	35.4
T-3	3945	2.6	4.1	33.7
Percent Variance T-3 Versus F-4 $\left(\frac{F-4 - T-3}{T-3} \times 100\right)$	0.1	+3.8	+7.3	+5.0

3.5.6 Recent Drilling

A total of 78 holes have been drilled in the Faro Deposit since completion of the T-3 Model. The F-4 Model incorporates the 28 holes drilled in 1982. Table 3.5-10 gives a comparison of T-3 and F-4 Models. The results of the drilling do not materially change the reserve. The 22 drill holes in 1983 are outside the pit limits and only affect underground reserves. The 28 drill holes in 1984 had given little change as shown in Table 3.5-11.

TABLE 3.5-11

DOME MODEL BEFORE AND AFTER 1984 DRILLING

OPEN-PIT IN-PLACE RESERVES

CUT-OFF GRADE 4.0 (PB + ZN) PERCENT

Model	Tonnage DMT ('000)	% Pb	% Zn	Ag g/mt
Dome Model Before 1984 Drilling (DB) (Unadjusted)	22,738	3.2	4.9	40.8
Dome Model After 1984 Drilling (AD) (Unadjusted)	22,610	3.2	4.9	41.3
Percent Variance $\left(\frac{DA - DB}{DB} \times 100\right)$	-1	0	0	+1

Based on this information, the 1984 drilling indicates a slight decrease in tonnage and similar overall grades.

4.0 MINING

4.0 MINING

4.1 GENERAL

Open-pit mining of the Faro pit commenced in 1969 and continued until cessation of milling in June, 1982. Waste stripping was carried out between June, 1983 and October, 1984 during which time approximately 19.8 million tonnes of waste were moved. All hourly paid personnel were terminated as of June 30th, 1985.

The remaining mineable reserves within the Faro pit at a cut-off grade of 6.0 (Pb + Zn) percent are:

(a) Open-Pit Ore	-	17,180,000 Tonnes;
	-	3.36 Percent Lead;
	-	4.93 Percent Zinc;
	-	40.0 Grams/Tonne Silver;
(b) Low-Grade Mineralization	-	6,602,000 Tonnes;
	-	1.98 Percent Lead;
	-	3.11 Percent Zinc;
	-	27.9 Grams/Tonne Silver;
(c) Waste	-	87,498,000 Tonnes.

The Cyprus Anvil Mining Engineering Group have developed a 4-phase mining plan for the deposit which has been used as a basis for Kilborn's work and should be reviewed before production commences.

The planning and scheduling of the open-pit is one workable approach. There are definite improvements which can be obtained by further evaluation and modifications to the ultimate pit design, bench heights, mining phases, pit access ramps, waste dumps and material movement schedules. These have not been investigated in any depth due to time constraints.

4.2 MINING CRITERIA

The mining portion is based on the following criteria:

(a) Material In-Place Specific Gravities

Waste Rock - Type 1D	-	2.60
- Type 3D	-	2.75
- Type 3DBX	-	2.71
Average	-	2.70
Ore (All Types)	-	3.93

(b) Swell Factor

Pit Material	-	1.45

(c) Bench Heights

Waste	-	12.12 Metres
Ore	-	6.06 Metres

(d) Pit Slope Geometry - Current practice

(e) Drilling and Blasting - Current practice

(f) Loading - Operation of all shovels to capacity until stripping is advanced sufficiently to permanently reduce shovel usage.

(g) Haulage - Operate R170 Trucks on waste, hauling from 2 shovels located on higher benches in the pit. Operate 120C trucks on ore and waste from lower shovels in the pit. Schedule 7 - R170 units and then all 120C units necessary to meet haulage requirements.

4.3 MINE DESIGN

4.3.1 Material Description

The waste material within the confines of the ultimate open-pit consists of an assemblage of gneiss, schists, quartzite and metamorphic rocks with a minor amount of quartz diorite and diorite intrusives which form the majority of the over-burden and 6 sulphide mineralized facies which may or may not be ore subject to the lead and zinc content.

Hardness and in-place density of the various materials are variable.

4.3.2 Pit Slope Design

Pit slopes at the Faro pit are based on a Geotechnical Study undertaken by D. R. Piteau & Associates Ltd., Geotechnical Consultants, dated January, 1976. This evaluation was based on detailed structural mapping of all accessible benches on the east side of the pit. Their recommendations are shown in Table XI excerpted from their Report.

TABLE XI

SLOPE DESIGN RECOMMENDATIONS

'Excerpt from D. R. Piteau & Associates Ltd. Report'

Design Sector	Recommended Overall Slope Design – Final Slope: High Ground-Water	Recommended Overall Slope Design – Final Slope: Dewatered	Recommended Overall Slope Design – Final Slope: Without Control Blasting	Dip of Failure Plane Considered for Bench Design	Recommended Bench Design for 40-Foot High Benches: Batter Face Angle	Recommended Bench Design for 40-Foot High Benches – Berm Width (Feet): High Ground-Water	Recommended Bench Design for 40-Foot High Benches – Berm Width (Feet): De-Watered
A	39°	44°	35° - 37°	53°	70°	34½	26½
B	36½°	39½°	35° - 37°	49° - 75°	70°	39	34
C	39°	41°	35° - 37°	49° - 75°	70°	34½	31
D (North)	38½°	43°	35° - 37°	-	70°	35½	28
D (South)	43°	47°	41° - 42°	30° - 80°	80°	36	30
E	N/A	47°	N/A	±80	80°	N/A	30
F	N/A	45°	N/A	72° - 74°	70°	N/A	25
G	N/A	45°	N/A	72° - 74°	70°	N/A	25

N/A - Not Available

Existing plans are based on final slopes approximating the average for high groundwater and dewatered conditions assuming controlled blasting on the final pit wall. To achieve these slopes water control measures and blasting control will be required.

4.4 MINING PLAN

4.4.1 Concept

The Faro pit will be mined in 4 main phases from northwest to southeast. An additional subphase at the southern end of the pit will be mined soon after commencement of mining activities.

Stripping operations will commence with one shovel operating in November, 1985 and increase to operation of all shovels by February, 1986. All shovels will be used until the end of 1987 after which time they will be operated on a diminishing scale as stripping requirements are reduced.

All material having a combined grade above 6.0 (Pb + Zn) percent will be delivered to the crusher or to temporary stockpiles near the crusher. Material with grades between 4.0 and 6.0 (Pb + Zn) percent will be stockpiled and treated after open-pit mining is complete.

The mine will operate as an integrated Department containing all functions associated with mining, including Mine Operation, Mine Equipment Maintenance, Mine Engineering and Geology. The normal work shift will be 12 hours on production and maintenance. The mine will operate 24 hours per day, 7 days per week. Operating and Maintenance Crews will work an 8-day cycle of 4 days of 12-hour shifts followed by 4 days off.

4.4.2 Mining Plan Description

(a) Phases (Figure 4.4-1)

The Faro open-pit has been mined out northwest of the Faro Fault. The longitudinal section shows the remaining portion of the open-pit which will be mined. Phases BJ, A, B, C and D are shown, as are the portions which will be mined in each time period. The drawings associated with each time period show major ramps as they exist at the end of the time period.

Kilborn has used Cyprus Anvil's phase development which, while workable, does not necessarily constitute the optimum mining plan.

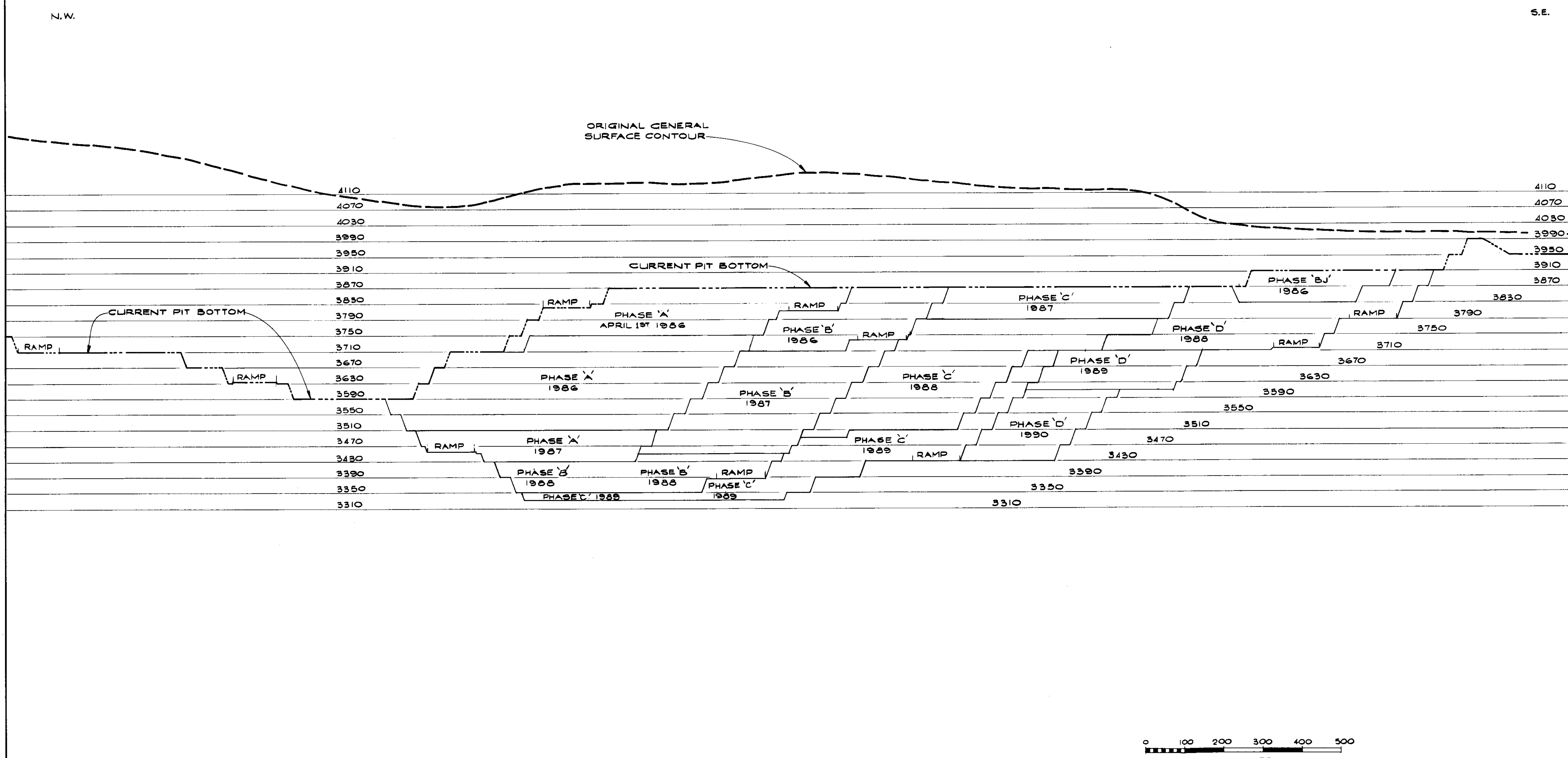
Table 4.4-1 indicates the material movement by time period.

(b) Current Condition (Figure 4.4-2)

The Faro open-pit, at the present time, has been stripped, almost completely, to the ultimate pit limits on the 3910 bench and there is extensive stripping of the pit on the 3870 bench.

(c) Mining Prior to Mill Start-Up (Figure 4.4-3)

The plan is to successively bring into operation all shovels which are now on the property. During the preproduction period, Phase A will be stripped to 3750 bench and stripping will have progressed approximately half of bench 3710. A total of 12,328,000 tonnes of waste will be removed prior to mill start-up.



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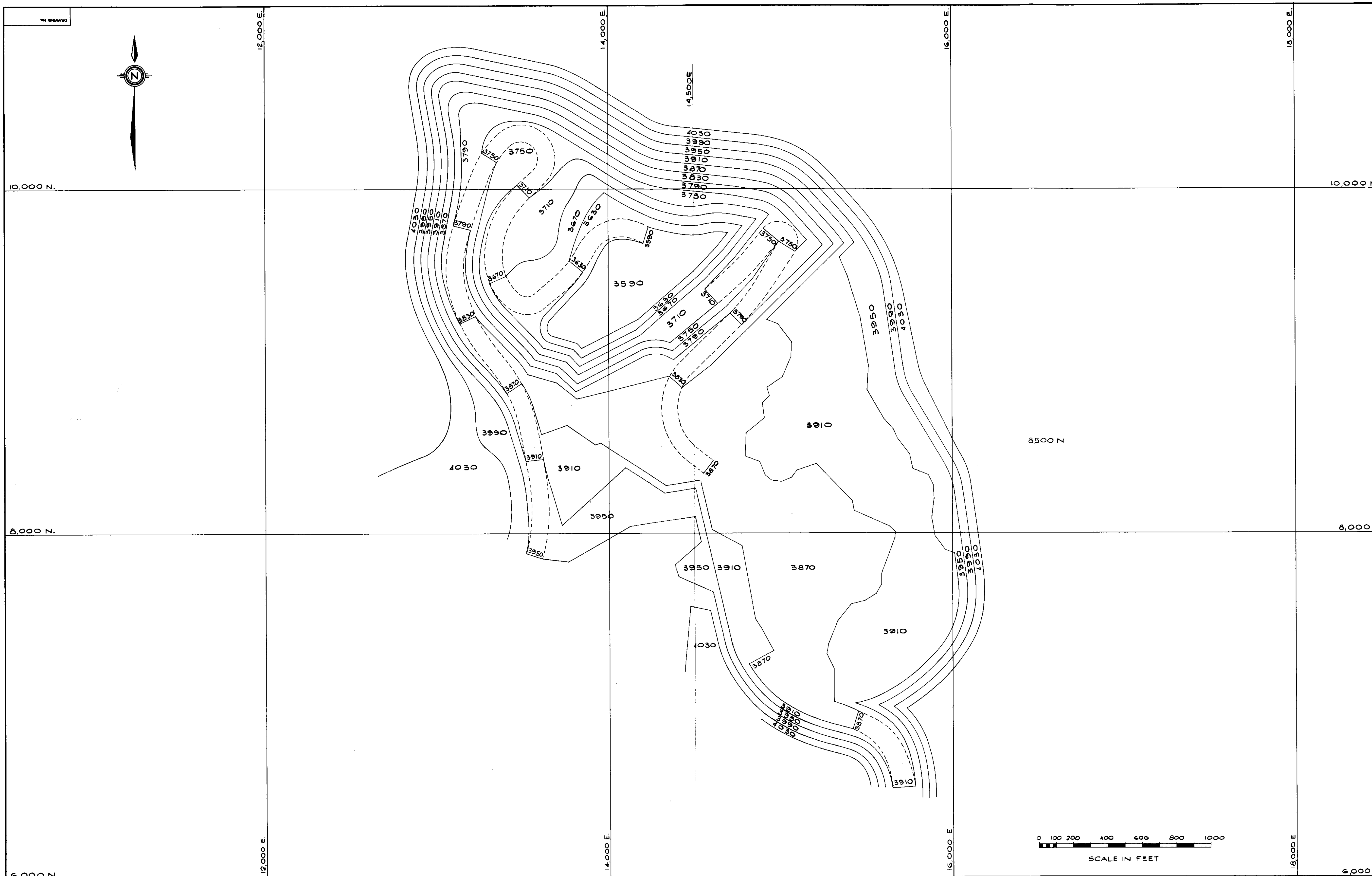
APPROVED BY	JUL 16 85
CLIENT	CURRAGH RESOURCES CORPORATION
LOCATION	FARO, YUKON.
	KILBORN
TITLE	CYPRUS ANVIL MINE REVIEW FARO PIT LONGITUDINAL SECTION
PROJECT No.	3509
DIVISION No.	15
DRAWING NUMBER	FIG. 4.4-1
REV.	A

TABLE 4.4-1

OPEN-PIT MINING SCHEDULE
(QUANTITIES - (000) TONNES

Period	Ore	Protore	Waste	Total	Stripping Ratio*
1985					
October	---	---	---	---	
November	---	---	1,125	1,125	
December	---	---	2,650	2,650	
TOTAL - 1985	---	---	3,775	3,775	N/A
1986					
January	---	---	3,000	3,000	
February	---	---	2,646	2,646	
March	19	7	2,907	2,933	
April	168	77	2,618	2,863	
May	192	179	2,619	2,990	
June	219	436	2,288	2,943	
July	295	330	2,412	3,037	
August	310	688	2,045	3,043	
September	363	522	2,092	2,977	
October	346	49	2,598	2,993	
November	335	239	2,355	2,929	
December	346	---	2,250	2,596	
TOTAL - 1986	2,593	2,527	29,830	34,950	12.19/1
1987	4,074	3,103	28,529	35,706	7.76/1
1988	4,074	2,207	14,123	20,404	4.01/1
1989	4,074	4,654	3,295	12,023	1.95/1
1990	2,361	1,011	1,010	4,382	0.86/1
TOTAL FROM PIT	17,176	13,502	80,562	111,240	5.48/1

*Cut-off grade 6.0 (Pb + Zn) percent overall stripping ratio reduces to 3.68 at cut-off grade of 4.0 (Pb + Zn) percent.



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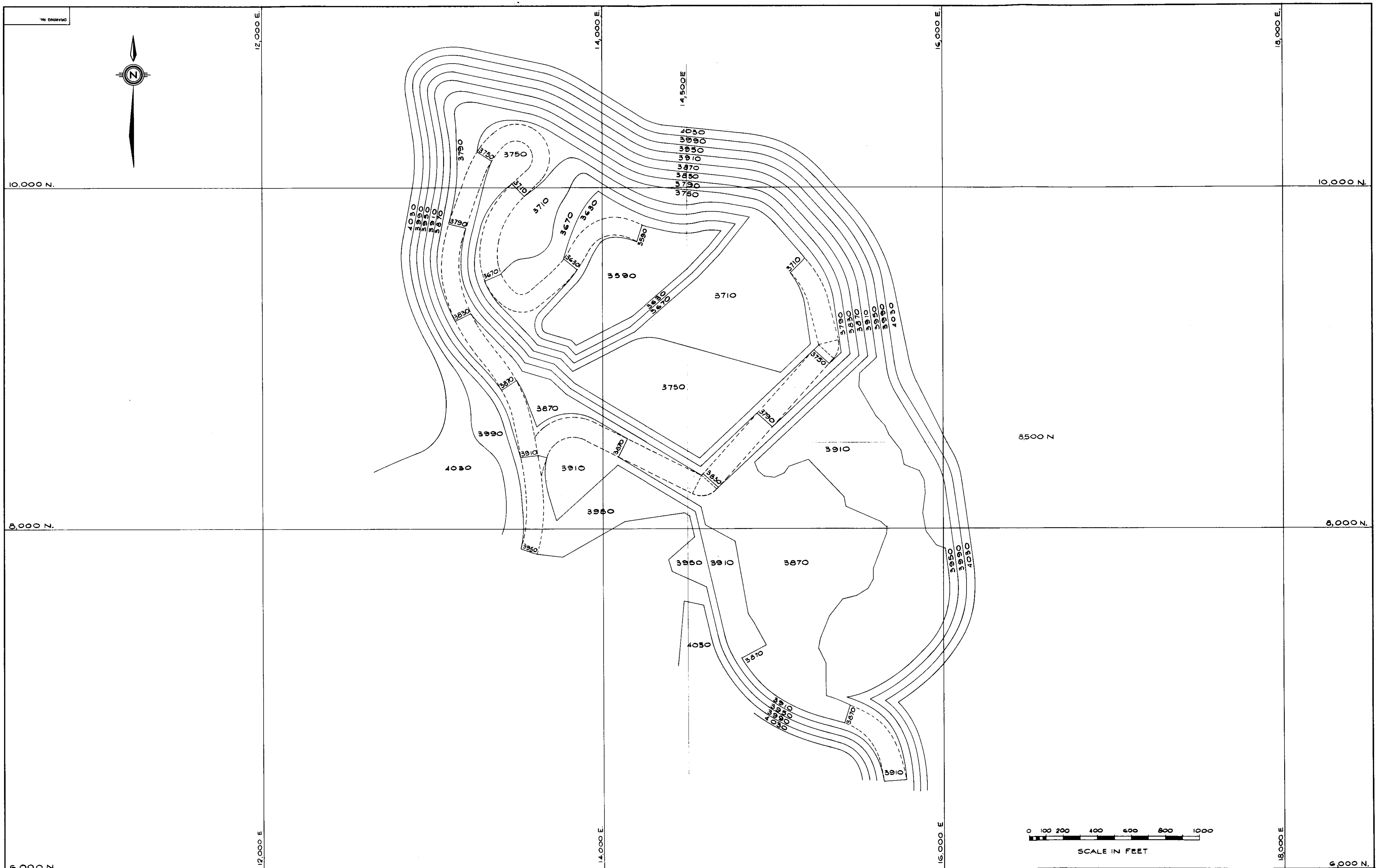
TITLE
CYPRUS ANVIL MINE REVIEW
OPEN PIT
COMPOSITE PLAN
CURRENT PIT

ACCT. No.
PROJECT No. 3509
DIVISION No. 15
DRAWING NUMBER FIG. 4.4-2
REV. A



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CYPRUS ANVIL MINE REVIEW
OPEN PIT
COMPOSITE PLAN
APRIL 1ST 1986

ACCT. No.
PROJECT No. 3509 | DIVISION No. 15
DRAWING NUMBER
FIG. 4.4-3 | REV. A

Mining shovels will be activated on the following Schedule:

November 1st, 1985 - First P & H Shovel;
November 15th, 1985 - Second P & H Shovel;
December 15th, 1985 - Third P & H Shovel;
January 15th, 1986 - Marion Shovel.

(d) Mining Start-Up to End of 1986 (Figure 4.4-4)

Milling will commence in late March, 1986. Ore for the first 3 months of milling will come from the BJ Phase near the south end of the deposit while the A Phase is stripped to the point where it will be able to supply the total mill feed requirements. As soon as Phase A is in ore, stripping will start on Phase B which will be stripped to 3710 bench by year-end.

Material moved during the year will consist of:

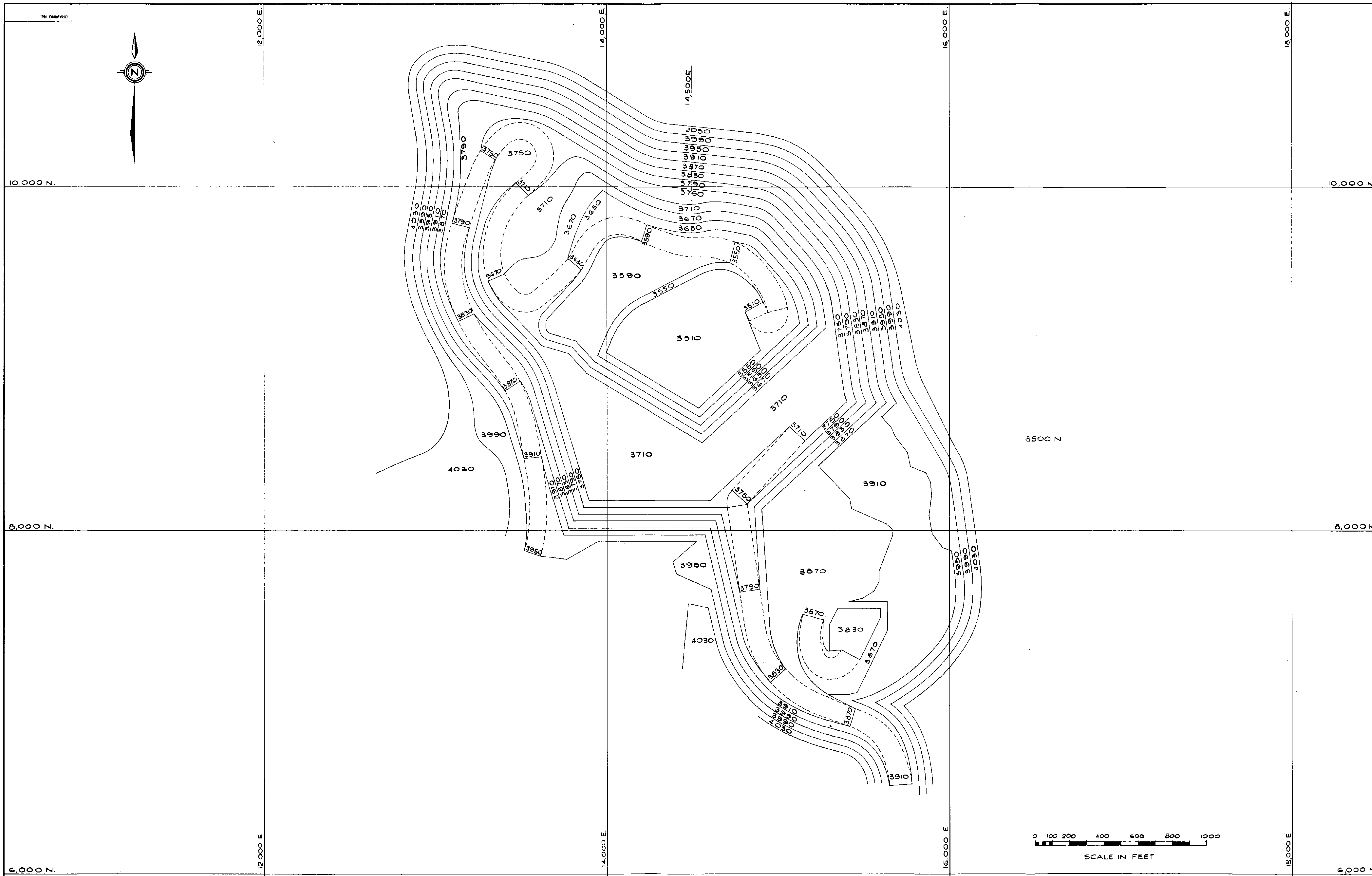
33,605,000 Tonnes Waste;
2,593,000 Tonnes Ore;
2,527,000 Tonnes Protore.

(e) Mining - 1987 (Figure 4.4-5)

During the year 1987, the mining in Phase A will be completed. Phase B will be mined to 3450 bench and initial stripping of overburden will be started on Phase C and complete to 3790 bench.

Material moved during the year will consist of:

28,529,000 Tonnes Waste;
4,074,000 Tonnes Ore;
3,103,000 Tonnes Protore.



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CYPRUS ANVIL MINE REVIEW
OPEN PIT
COMPOSITE PLAN
END OF 1986

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PROJECT No. 3509 — DIVISION No. 15
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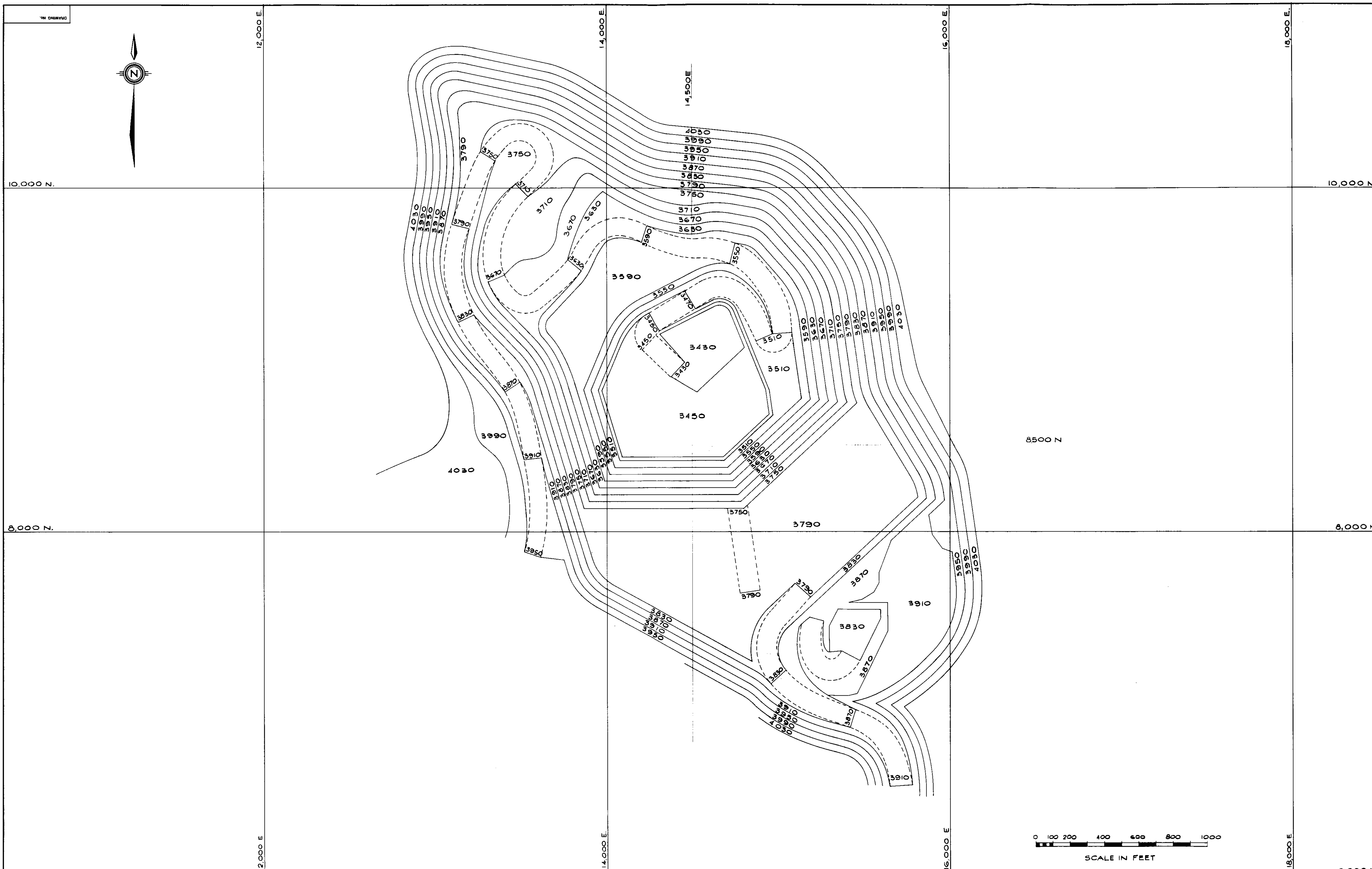

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OPEN PIT
COMPOSITE PLAN
END OF 1987

PROJECT No. 3509 DIVISION No. 15

DRAWING NUMBER: FIG. 4.4-5 REV. A

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All shovels will operate during the year.

(f) Mining - 1988 (Figure 4.4-6)

During the year 1988, mining in Phase B will be completed and Phase C will be mined to 3490 bench. Removal of waste in Phase D will be completed to 3610 bench.

Material moved during the year will consist of:

14,123,000 Tonnes Waste;
4,074,000 Tonnes Ore;
2,207,000 Tonnes Protore.

Shovel operation will be reduced from 4 to 3 shovels at the beginning of 1988 and further reduced to 2 shovels in July of the same year.

(g) Mining - 1989 (Figure 4.4-7)

Production for the year 1989 will come from the completion of Phase C and the mining of Phase D to 3610 bench.

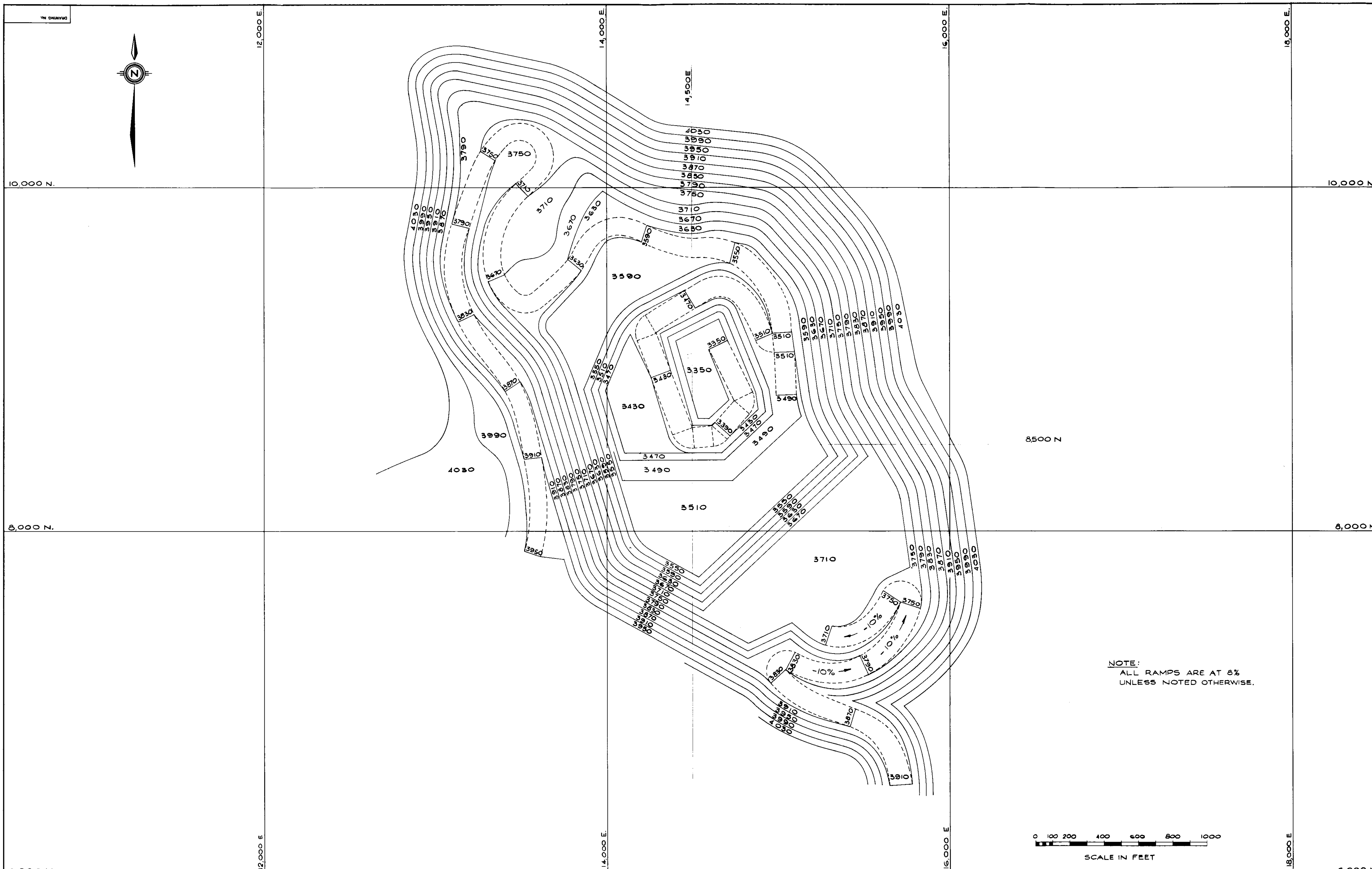
Material moved during the period will consist of:

3,295,000 Tonnes Waste;
4,074,000 Tonnes Ore;
4,654,000 Tonnes Protore.

An average of 1.5 operating shovels per shift will be required to meet this material movement schedule.

(h) Mining - 1990 (Figure 4.4-8)

Open-pit mining will be complete in the Faro pit at the end of July, 1990.



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TITLE
CYPRUS ANVIL MINE REVIEW
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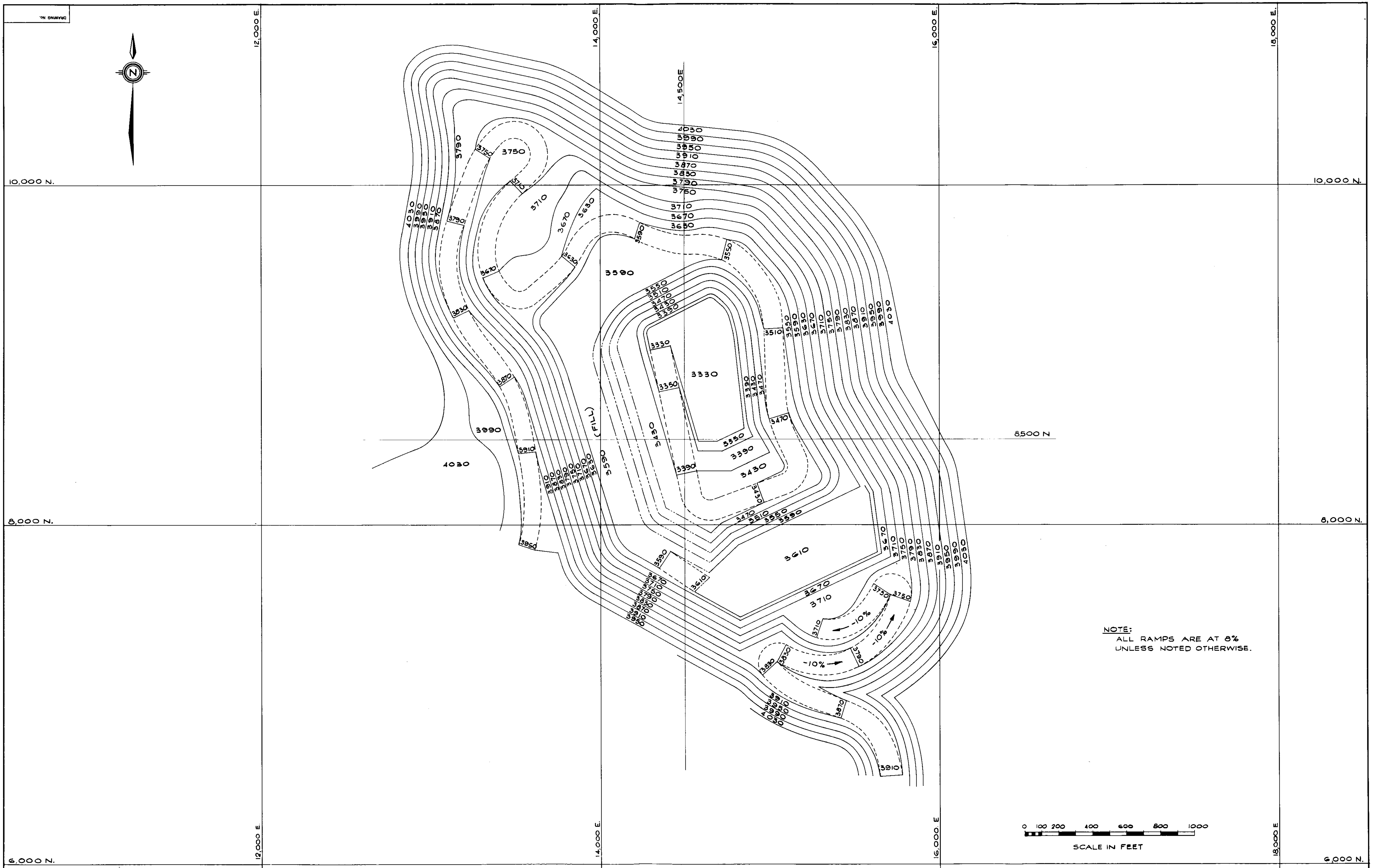
COMPOSITE PLAN
END OF 1988

ACCT. No.
PROJECT No. 3509 DIVISION No. 15
DRAWING NUMBER FIG. 4.4-6 REV. A



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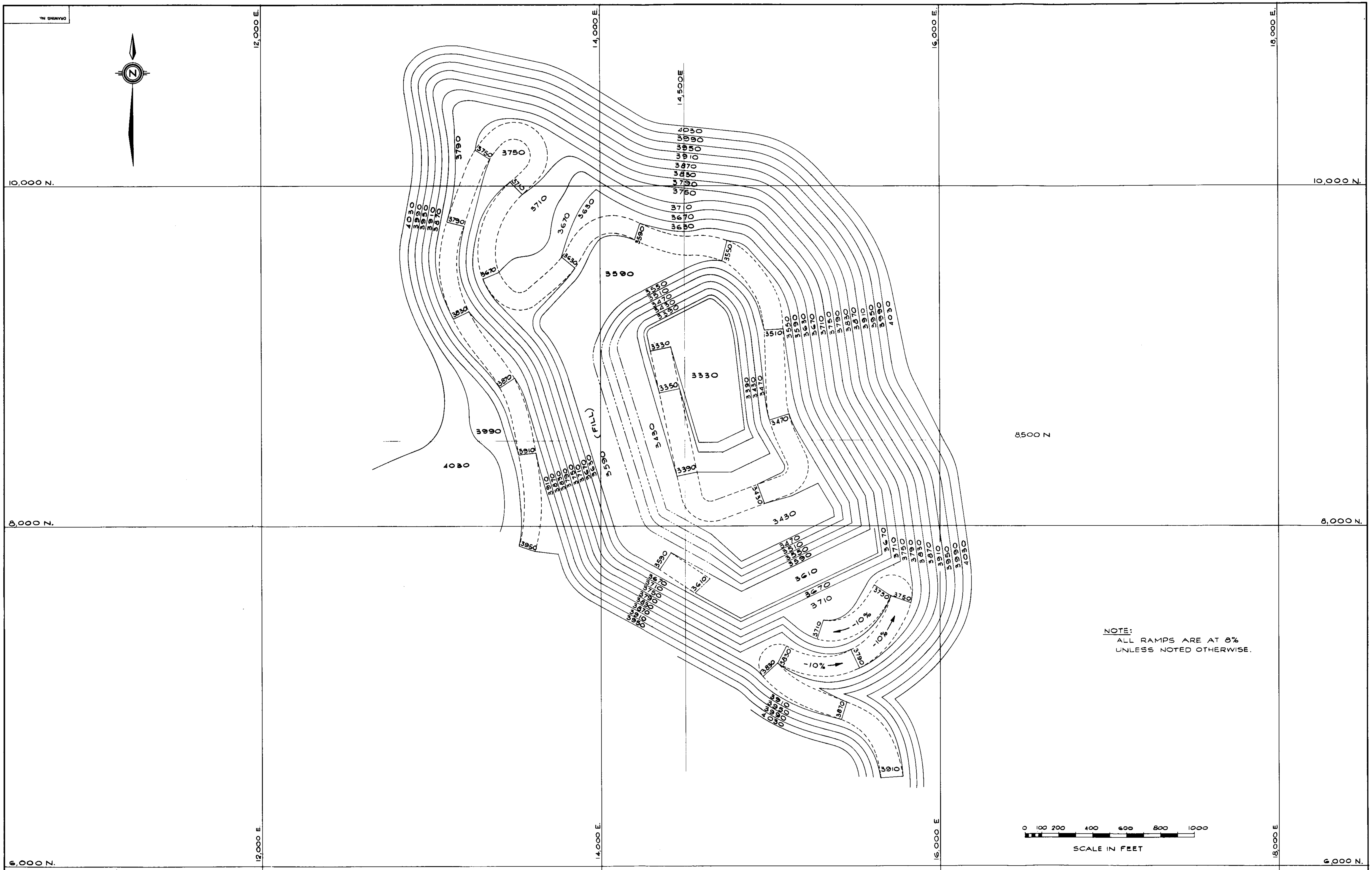
OPEN PIT
COMPOSITE PLAN
END OF 1989

ACCT. No.
PROJECT No. 3509 — DIVISION No. 15
DRAWING NUMBER FIG. 4.4-7 — REV. A



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CYPRUS ANVIL MINE REVIEW
OPEN PIT
COMPOSITE PLAN
END OF 1990

PROJECT No. 3509 DIVISION No. 15
DRAWING NUMBER FIG. 4.4-8 REV. A

Material moved during the period will consist of:

1,010,000 Tonnes Waste;
2,361,000 Tonnes Ore;
1,011,000 Tonnes Protore.

At the end of pit operation there will be a stockpile of 6,602,000 tonnes of material having an average grade between 4 and 6 (Pb + Zn) percent.

4.5 EQUIPMENT

4.5.1 Existing Equipment

Major mine operating equipment at the site consists of the following:

Equipment	Number	Description
Blasthole Drill	2	M4 Marion Drill (One Electric One Diesel Electric)
Electric Shovel	4	3 P & H 2100 1 Marion 19M 4 15-Cubic Yard Buckets 1 12-Cubic Yard Bucket
Haulage Truck (170-Ton Capacity)	8	Euclid R170
Haulage Truck (120-Ton Capacity)	22	Wabco 120
Dozer - Track Type	4	3 Caterpillar D9H 1 Komatsu D-355A
Dozer - Rubber-Tired	1	Caterpillar 854B
Motor Grader	3	2 Caterpillar 16G 1 Caterpillar 14G
Front-End Loader	2	Le Tourneau L800 12-Cubic Yard Bucket

In addition, there is a fleet of service vehicles required for servicing, maintenance and employee transport.

This equipment is in various states of repair; not all equipment was in working condition at the time of shutdown. The amount of remedial work necessary to place the equipment in good operating condition, compatible with intended use, is discussed in Section 4.8 of this Report.

A detailed listing of mobile equipment giving date of purchase and hours of use is given in Table 4.5-1. In addition, there is a fleet of 70 light gasoline powered vehicles and numerous smaller units.

TABLE 4.5-1

MINE MOBILE EQUIPMENT

Equipment Type	Make	Model	Equipment Number	Total Hours Operated	Comment
Drill	Finning	Crawler	01-003	4,000	Required
	Marion	M4	01-004	26,797	Required
	Marion	M4	01-006	10,893	Required
Shovel	Marion	191M	02-003	16,195	Required
	P & H	2100BL	02-006	21,230	Required
	P & H	2100BL	02-007	21,391	Required
	P & H	2100BL	02-008	12,948	Required
Haul Truck	Wabco	120C	03-021	22,793	Surplus
	Wabco	120C	03-022	20,871	Surplus
	Wabco	120C	03-024	21,863	Surplus
	Wabco	120C	03-025	20,273	Surplus
	Wabco	120C	03-026	21,362	Surplus
	Wabco	120C	03-027	20,072	Surplus
	Wabco	120C	03-028	21,368	Surplus
	Wabco	120C	03-029	17,279	Surplus
	Wabco	120C	03-030	15,567	Surplus
	Wabco	120C	03-031	16,146	Surplus
	Wabco	120C	03-032	17,145	Surplus
	Wabco	120C	03-033	12,386	Surplus
	Wabco	120C	03-034	15,989	Surplus
	Wabco	120C	03-035	15,702	Surplus
	Wabco	120C	03-036	17,437	Required
	Wabco	120C	03-037	15,601	Required
	Wabco	120C	03-038	16,672	Required
	Wabco	120C	03-039	15,080	Required
	Wabco	120C	03-040	13,932	Required
	Wabco	120C	03-041	15,567	Required
	Wabco	120C	03-042	14,891	Required
	Wabco	120C	03-043	12,632	Required
	Wabco	120C	03-044	3,091	Required

Equipment Type	Make	Model	Equipment Number	Total Hours Operated	Comment
	Wabco	120C	03-045	2,828	Required
	Wabco	120C	03-046	8,002	Required
	Wabco	120C	03-047	7,324	Required
	Wabco	120C	03-048	7,333	Required
	Wabco	120C	03-049	7,082	Required
	Euclid	R170	03-050	2,343	Required
	Euclid	R170	03-051	2,909	Required
	Euclid	R170	03-052	2,659	Required
	Euclid	R170	03-053	3,087	Required
	Euclid	R170	03-054	1,812	Required
	Euclid	R170	03-055	1,187	Required
	Euclid	R170	03-056	1,846	Required
	Euclid	R170	03-057	1,471	Required
Truck Dozer	Cater-pillar	D-9H	04-011	23,002	Required
	Cater-pillar	D-9H	04-014	16,141	Required
	Cater-pillar	D-8K	04-015	9,442	Surplus to Pit
	Cater-pillar	D-9H	04-016	9,093	Required
	Komatsu	D335A	04-018	6,270	Required
Tire Dozer	Cater-Pillar	824B	05-001	30,673	Yards and Services
Front-End Loader	Cater-pillar	988	06-006	16,379	Concentrate Load-Out
	Cater-pillar	980C	06-010	5,899	
	Le Tourneau	L800	06-009	8,199	Required
	Le Tourneau	L800	06-012	5,954	Required
	Cater-pillar	950	06-013	N/A	Mill
	Cater-pillar	920	06-014	N/A	Mill

Equipment Type	Make	Model	Equipment Number	Total Hours Operated	Comment
Motor Grader	Caterpillar	14G	08-004	17,846	Surplus
	Caterpillar	16G	08-005	9,082	Required
	Caterpillar	16G	08-006	9,929	Required
	Caterpillar	14G	08-007	1,107	Yards and Services
Backhoe	Koehring	C366	52-005	8,200	Required
Mobile Crane	Galion	C125	51-005	12,000	General Use
	Galion	C125	51-006	12,000	General Use
	P & H	8115TC	51-007	1,500	General Use
	P & H	Omega 40-Ton	51-008	1,821	
	Topper	8044	51-009	300	
Service Truck	Ford	F615	53-019	N/A	Fire Truck
	GMC	C70	53-025	N/A	With Hiab 8-Ton Cap
	GMC	C70	53-027	N/A	With Hiab 8-Ton Cap
	GMC	C70	53-028	N/A	With Hiab 8-Ton Cap
	GMC	C70	53-029	N/A	2.5 yd^3 Gravel Box
	GMC	C70	53-030	N/A	2.5 yd^3 Gravel Box
	GMC	C70	53-032	N/A	Van Body
	GMC	C70	53-033	N/A	With Hiab 8-Ton Cap
	GMC	Bison	53-034	N/A	Lube Truck
	GMC	C70	53-035	N/A	Mobile Shop
	GMC	C70	53-036	N/A	Mobile Shop
	Mack	ED6865	53-037	N/A	17 yd^3 Gravel Box
	Mack	ED6865	53-038	N/A	Lube Truck

Equipment Type	Make	Model	Equipment Number	Total Hours Operated	Comment
Service Truck	Mack	ED6865	53-039	N/A	12-Ton Lift and 60-Ton Low Bed

4.5.2 Equipment Usage Requirements

The equipment usage requirements for the various years of operation are given in Table 4.5-2. Operations are on two 12-hour shifts per day basis, providing a maximum of 730 shifts per year.

Mine scheduling is based on a maximum material movement from the pit being controlled by shovel operation. The shovels therefore, are scheduled to maximum projected capacity until there are adequate inventories of developed ore. Stripping demand will start to decrease in early 1988. Up until 1988, stripping is at maximum rate and the remainder of the equipment is operated accordingly.

In all equipment productivity calculations, the following assumption are made:

Total Shift Time (12 Hours)	-	720 Minutes;
Lunch and Coffee Breaks	-	80 Minutes;
Routine Checks	-	10 Minutes;
Gross Available Time	-	630 Minutes;
Effective Time Using 50-Minute Hours	-	525 Minutes.

To obtain this effective time it will be necessary to change crews at the equipment. The breaks will be taken at the convenience of the operation.

TABLE 4.5.2

SUMMARY of MINE EQUIPMENT OPERATING SHIFTS

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Operating Equipment																		
Blasthole drills	0	0	0	37	86	98	82	92	93	100	103	113	116	120	118	118	102	1,378
Electric shovels	0	0	0	69	161	183	168	186	180	186	180	186	186	180	186	180	186	2,417
170 Haul trucks	0	0	0	226	434	431	392	434	420	434	420	434	434	420	434	420	434	5,767
120 Haul trucks	0	0	0	0	236	210	382	490	461	462	652	669	791	470	485	588	443	6,339
Dozers -D9	0	0	0	90	93	93	84	93	90	93	90	93	93	90	93	90	93	1,278
Dozers -Kamatso	0	0	0	30	31	31	28	31	30	31	30	31	31	30	31	30	31	426
Dozers -854	0	0	0	8	8	8	8	8	8	8	4	4	4	4	8	8	8	96
Grader -16G	0	0	0	60	62	62	56	62	60	62	60	62	62	60	62	60	62	852
Grader -14G	0	0	0	8	8	8	8	8	8	8	4	4	4	4	8	8	8	96
Front end loaders	0	0	0	30	31	31	28	31	30	31	30	31	31	30	31	30	31	426
Water Truck	0	0	0	0	0	0	0	0	0	31	60	62	62	30				245
Lube & service vehicles	0	0	0	60	62	62	56	62	60	62	60	62	62	60	62	60	62	852
Pickups	0	0	0	201	207	207	188	207	201	207	201	207	207	201	207	201	207	2,849

TABLE 4.5.2

SUMMARY of MINE EQUIPMENT OPERATING SHIFTS

Operating Equipment	1985	1986	1987	1988	1989	1990	1991	1992	Total
Blasthole drills	123	1,255	1,420	877	710	203	0	0	4,588
Electric shovels	230	2,187	2,190	1,822	814	730	730	390	9,093
170 Haul trucks	660	5,107	5,110	3,708	1,106	352	0	0	16,043
120 Haul trucks	236	6,103	6,653	3,678	4,226	2,130	1,460	780	25,266
Dozers -D9	183	1,095	1,095	1,095	1,095	618	0	0	5,181
Dozers -Kamatso	61	365	365	365	365	206	0	0	1,727
Dozers -854	16	80	80	80	80	80	80	43	539
Grader -16G	122	730	730	730	730	450	52	28	3,572
Grader -14G	16	80	80	80	80	80	80	43	539
Front end loaders	61	365	365	365	365	236	52	28	1,837
Water Truck	0	245	245	245	245	153	0	0	1,133
Lube & service vehicles	122	730	730	730	730	441	26	14	3,523
Pickups	408	2,441	2,446	1,935	1,424	976	365	128	10,123

4.5.3 Drills

There are 2 Marion M4 drills on the property capable of drilling 250 millimetre diameter holes to a depth of 16.5 metres in a single pass with the current towers. These towers can be extended to permit drilling 19.8 metres in a single pass.

The drilling parameters and projected drilling productivity are indicated in Table 4.5-3. Drill requirements are indicated in Table 4.5-4. The drills will be marginal during the month of September, 1986 and for the last 2 quarters of 1987. This will be corrected by increased drilling in the time periods prior to these peaks.

There is potential to increase drill productivity by adopting higher bench heights in the waste above the deposit. Drilling productivity increases of from 5 to 10 percent could be obtained.

Kilborn proposes the use of a contractor to meet immediate short-term drilling requirements. The time constraints could preclude the purchase of a new or second hand drill. This matter should be reassessed at the time the decision to resume operations is made.

4.5.4 Blasting

Blasting parameters for the operation are indicated in Table 4.5-5. Explosive consumption is indicated in Table 4.5-6.

The effect of higher benches, as mentioned in Section 4.5-3, will not reduce the explosive consumption to any major extent. There would however, be a reduction in the number of blasts required and in disruptions caused by blasting.

TABLE 4.5-3

DRILL EQUIPMENT PRODUCTIVITY

Item	Ore	1D Waste	3D Waste	3DBX Waste	Unit
Drill Hole Diameter	250	250	250	250	mm
Material Density	3.93	2.60	2.75	2.71	t/m^3
Bench Height	6.10	12.20	12.20	12.20	m
Subgrade	1.22	1.52	1.52	1.93	m
Drilling Pattern	7.31 x 7.31	8.23 x 8.23	7.62 x 7.62	7.01 x 7.01	m
Production per Hole	1281	2148	1948	1625	t

Drilling Productivity

Item	Ore	1D Waste	3D Waste	3DBX Waste	Unit
Penetration Rate	2.73	1.26	2.05	5.46	Min/m
Moving and Spotting Time	4.8	4.8	4.8	4.8	Min/Hole
Time per Hole	24.7	22.1	32.9	81.9	Min
Effective Time	525	525	525	525	Min/Shift
Production per Drill Shift	21.26	23.76	15.96	6.41	Holes
Redrill Allowance	0.95	0.95	0.95	0.95	
Production per Drill Shift	25,872	48,476	29,531	9,896	t
Availability	0.80	0.80	0.80	0.80	
Sustainable Production	20,693	38,782	23,625	7,916	t/Shift
Effective Production per Metre Drilled	166.25	148.73	134.88	109.25	t

TABLE 4.5-4

DRILLING REQUIREMENTS

QUARTER	MONTH	DAYS	WASTE	ORE & PROTORE	DISTRIBUTION WASTE TYPE 1D	3D	3DBX	QUANTITY (tonnes) 1D	3D	3DBX	ORE&PRO	TOTALS	DRILLINGTIME (SHIFTS) 1D	3D	3DBX	ORE&PROT	TOTAL	DRILLS REQ'D	REQUIRED UTILIZATION
1	3	30	0		.93	.02	.05	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	4	31	330,000		.93	.02	.05	306900	6600	16500	0	330,000	7.913	.279	2.084	0.0	10.277	.17	.08
2	5	30	1,125,000		.93	.02	.05	1046250	22500	56250	0	1,125,000	26.978	.952	7.106	0.0	35.036	.58	.29
2	6	31	2,650,000		.93	.02	.05	2464500	53000	132500	0	2,650,000	63.548	2.243	16.738	0.0	82.529	1.33	.67
1985			4,105,000	0				1	82,100	205,250	0	4,105,000	98	3	26	0	128	.52	.26
3	7	31	3,000,000		.93	.02	.05	2790000	60000	150000	0	3,000,000	71.941	2.540	18.949	0.0	93.429	1.51	.75
3	8	28	2,646,000		.93	.02	.05	2460780	52920	132300	0	2,646,000	63.452	2.240	16.713	0.0	82.405	1.47	.74
3	9	31	2,907,000	25,424	.93	.02	.05	2703510	58140	145350	25424	2,932,424	69.710	2.461	18.362	1.229	91.762	1.48	.74
4	10	30	2,618,000	244,895	.93	.02	.05	2434740	52360	130900	244895	2,862,895	62.780	2.216	16.536	11.835	93.367	1.56	.78
4	11	31	2,619,000	371,398	.93	.02	.05	2435670	52380	130950	371398	2,990,398	62.804	2.217	16.542	17.948	99.512	1.61	.80
4	12	30	2,288,000	655,044	.93	.02	.05	2127840	45760	114400	655044	2,943,044	54.867	1.937	14.452	31.655	102.911	1.72	.86
5	13	31	2,412,000	624,799	.85	.08	.07	2050200	192960	168840	624799	3,036,799	52.865	8.168	21.329	30.194	112.555	1.82	.91
5	14	31	2,045,000	998,401	.92	.02	.06	1881400	40900	122700	998401	3,043,401	48.512	1.731	15.500	48.248	113.992	1.84	.92
5	15	30	2,092,000	884,946	.77	.13	.10	1610840	271960	209200	884946	2,976,946	41.536	11.512	26.427	42.765	122.240	2.04	1.02
6	16	31	2,598,800	395,057	.77	.13	.10	2001076	337844	259880	395057	2,993,857	51.598	14.300	32.830	19.091	117.819	1.90	.95
6	17	30	2,355,000	574,337	.77	.13	.10	1813350	306150	235500	574337	2,929,337	46.758	12.959	29.750	27.755	117.221	1.95	.98
6	18	31	2,250,000	346,000	.77	.13	.10	1732500	292500	225000	346000	2,596,000	44.673	12.381	28.423	16.721	102.198	1.65	.82
1986			29,830,800	5,120,301				26,041,906	1,763,874	2,025,020	5,120,301	34,951,101	671	75	256	247	1,249	1.71	.86
7		90	7,120,000	1,675,879	.77	.13	.10	5482400	925600	712000	1675879	8,795,879	141.365	39.179	89.944	80.988	351.476	1.95	.98
8		91	7,396,000	1,439,047	.66	.20	.05	4881360	1479200	369800	1439047	8,169,407	125.867	62.612	46.716	69.543	304.736	1.67	.84
9		92	6,991,000	2,034,888	.67	.22	.11	4683970	1538020	769010	2034888	9,025,888	120.777	65.101	97.146	98.337	381.362	2.07	1.04
10		92	7,022,000	2,027,279	.67	.22	.11	4704740	1544840	772420	2027279	9,049,279	121.312	65.390	97.577	97.969	382.249	2.08	1.04
1987			28,529,000	7,177,093				19,752,470	5,487,660	2,623,230	7,177,093	35,040,453	509	232	331	347	1,420	1.94	.97
11		90	5,314,000	1,384,384	.81	.11	.08	4304340	584540	425120	1384384	6,698,384	110.988	24.742	53.704	66.901	256.335	1.42	.71
12		91	5,110,000	1,750,350	.90	.04	.06	4599000	204400	306600	1750350	6,860,350	118.586	8.652	38.732	84.587	250.556	1.38	.69
13		92	1,864,000	1,555,904	.95	0.0	.05	1770800	0	93200	1555904	3,419,904	45.660	0.0	11.774	75.190	132.624	.72	.36
14		92	1,835,000	1,590,030	.95	0.0	.05	1743250	0	91750	1590030	3,425,030	44.950	0.0	11.590	76.839	133.379	.72	.36
1988			14,123,000	6,280,668				12,417,390	788,940	916,670	6,280,668	20,403,668	320	33	116	304	773	1.06	.53
15		90	345,344	3,239,951	.95	0.0	.05	328076.8	0	17267.2	3239951	3,585,295	8.460	0.0	2.181	156.572	167.213	.93	.46
16		91	130,723	1,510,253	.95	0.0	.05	124186.85	0	6536.15	1510253	1,640,976	3.202	0.0	.826	72.984	77.012	.42	.21
17		92	778,373	1,759,307	.95	0.0	.05	739454.35	0	38918.65	1759307	2,537,680	19.067	0.0	4.916	85.019	109.003	.59	.30
18		92	2,031,567	2,218,367	.95	0.0	.05	1929988.65	0	101578.35	2218367	4,249,934	49.765	0.0	12.832	107.204	169.801	.92	.46
1989			3,286,007	8,727,878				3,121,707	0	164,300	8,727,878	12,013,885	80	0	21	422	523	.72	.36
19		90	669,673	1,841,775	.95	0.0	.05	636189.35	0	33483.65	1841775	2,511.448	16.404	0.0	4.230	89.005	109.639	.61	.30
20		91	151,170	151,019	.95	0.0	.05	143611.5	0	7558.5	151019	302,189	3.703	0.0	.955	7.298	11.956	.07	.03
21		35	188,959	379,074	.95	0.0	.05	179511.05	0	9447.95	379074	568,033	4.629	0.0	1.194	18.319	24.141	.34	.17
1990			1,009,802	2,371,868				959,312	0	50,490	2,371,868	3,381,670	25	0	6	115	146	.34	.17

TABLE 4.5-5

BLASTING PARAMETERS

Item	Ore	1D Waste	3D Waste	3DBX Waste	Unit
Drill Hole Diameter	250	250	250	250	mm
Material Density	3.93	2.60	2.75	2.71	t/m^3
Bench Height	6.10	12.20	12.20	12.20	m
Hole Depth	7.32	13.72	13.72	14.33	m
Drilling Pattern	7.31 x 7.31	8.23 x 8.23	7.62 x 7.62	7.01 x 7.01	m
Production per Hole	1281	2148	1948	1625	t
Explosive Usage					
Dry Holes ANFO	109.3	340.2	347.0	353.8	kg
Wet Holes Powder Gel	173.7	410.5	408.2	403.7	kg
Wet Hole Ratio	30	20	20	20	Percent
Blast Efficiency	0.98	0.98	0.98	0.98	
Effective Production	1255	2105	1909	1592	t/Hole
Effective Powder Factor					
Dry Holes	0.09	0.16	0.18	0.22	kg/t
Wet Holes	0.14	0.20	0.21	0.25	kg/t

TABLE 4.5-6

BLASTING CONSUMPTION

QUARTER	MONTH	DAYS	WASTE	ORE & PROTORE	DISTRIBUTION WASTE TYPE 1D	3D	3DBX	QUANTITY (tonnes) 1D	3D	3DBX	ORE-PROTORE	TOTALS
1	3	30	0		.93	.02	.05	0	0	0	0	0
2	4	31	330,000		.93	.02	.05	306,900	6,600	16,500	0	330,000
2	5	30	1,125,000		.93	.02	.05	1,046,250	22,500	56,250	0	1,125,000
2	6	31	2,650,000		.93	.02	.05	2,464,500	53,000	132,500	0	2,650,000
1985			4,105,000	0				1	82,100	205,250	0	4,105,000
3	7	31	3,000,000		.93	.02	.05	2,790,000	60,000	150,000	0	3,000,000
3	8	28	2,646,000		.93	.02	.05	2,460,780	52,920	132,300	0	2,646,000
3	9	31	2,907,000	25,424	.93	.02	.05	2,703,510	58,140	145,350	25,424	2,932,424
4	10	30	2,618,000	244,895	.93	.02	.05	2,434,740	52,360	130,900	244,895	2,862,895
4	11	31	2,619,000	371,398	.93	.02	.05	2,435,670	52,380	130,950	371,398	2,990,398
4	12	30	2,288,000	655,044	.93	.02	.05	2,127,840	45,760	114,400	655,044	2,943,044
5	13	31	2,412,000	624,799	.85	.08	.07	2,050,200	192,960	168,840	624,799	3,036,799
5	14	31	2,045,000	998,401	.92	.02	.06	1,881,400	40,900	122,700	998,401	3,043,401
5	15	30	2,092,000	884,946	.77	.13	.10	1,610,840	271,960	209,200	884,946	2,976,946
6	16	31	2,598,800	395,057	.77	.13	.10	2,001,076	337,844	259,880	395,057	2,993,857
6	17	30	2,355,000	574,337	.77	.13	.10	1,813,350	306,150	235,500	574,337	2,929,337
6	18	31	2,250,000	346,000	.77	.13	.10	1,732,500	292,500	225,000	346,000	2,596,000
1986			29,830,800	5,120,301				26,041,906	1,763,874	2,025,020	5,120,301	34,951,101
7		90	7,120,000	1,675,879	.77	.13	.10	5,482,400	925,600	712,000	1,675,879	8,795,879
8		91	7,396,000	1,439,047	.66	.20	.05	4,881,360	1,479,200	369,800	1,439,047	8,169,407
9		92	6,991,000	2,034,888	.67	.22	.11	4,683,970	1,538,020	769,010	2,034,888	9,025,888
10		92	7,022,000	2,027,279	.67	.22	.11	4,704,740	1,544,840	772,420	2,027,279	9,049,279
1987			28,529,000	7,177,093				19,752,470	5,487,660	2,623,230	7,177,093	35,040,453
11		90	5,314,000	1,384,384	.81	.11	.08	4,304,340	584,540	425,120	1,384,384	6,698,384
12		91	5,110,000	1,750,350	.90	.04	.06	4,599,000	204,400	306,600	1,750,350	6,860,350
13		92	1,864,000	1,555,904	.95	0.0	.05	1,770,800	0	93,200	1,555,904	3,419,904
14		92	1,835,000	1,590,030	.95	0.0	.05	1,743,250	0	91,750	1,590,030	3,425,030
1988			14,123,000	6,280,668				12,417,390	788,940	916,670	6,280,668	20,403,668
15		90	345,344	3,239,951	.95	0.0	.05	328,077	0	17,267	3,239,951	3,585,295
16		91	130,723	1,510,253	.95	0.0	.05	124,187	0	6,536	1,510,253	1,640,976
17		92	778,373	1,759,307	.95	0.0	.05	739,454	0	38,919	1,759,307	2,537,680
18		92	2,031,567	2,218,367	.95	0.0	.05	1,929,989	0	101,578	2,218,367	4,249,934
1989			3,286,007	8,727,878				3,121,707	0	164,300	8,727,878	12,013,885
19		90	669,673	1,841,775	.95	0.0	.05	636,189	0	33,484	1,841,775	2,511,448
20		91	151,170	151,019	.95	0.0	.05	143,612	0	7,558	151,019	302,189
21		35	188,959	379,074	.95	0.0	.05	179,511	0	9,448	379,074	568,033
1990			1,009,802	2,371,868				959,312	0	50,490	2,371,868	3,381,670

QUARTER	MONTH	ANFO CONSUMPTION (kg) 1D	3D	3DBX	ORE-PROTORE	TOTALS	POWERGEL CONSUMPTION (kg) 1D	3D	3DBX	ORE-PRO	TOTALS	BLASTING CAPS	PRIMACORD (M)
1	3	0	0	0	0	0	0	0	0	0	0	0	0
2	4	39,774	961	2,930	0	43,666	11,969	282	838	0	13,090	160	3,814
2	5	135,594	3,276	9,990	0	148,860	40,804	963	2,858	0	44,624	544	13,004
2	6	319,399	7,717	23,532	0	350,648	96,116	2,268	6,731	0	105,115	1,282	30,631
1985		494,767	11,954	36,452	0	543,174	148,888	3,514	10,427	0	162,829	1,986	47,449
3	7	361,584	8,736	26,640	0	396,960	108,810	2,568	7,620	0	118,998	1,451	34,676
3	8	318,917	7,705	23,496	0	350,119	95,970	2,265	6,721	0	104,956	1,280	30,585
3	9	350,375	8,465	25,814	1,770	386,424	105,437	2,488	7,384	704	116,013	1,426	33,938
4	10	315,542	7,624	23,248	17,045	363,458	94,955	2,241	6,650	6,779	110,624	1,461	33,504
4	11	315,663	7,627	23,257	25,849	372,395	94,991	2,242	6,652	10,280	114,166	1,563	35,191
4	12	275,768	6,663	20,317	45,591	348,339	82,986	1,959	5,812	18,132	108,887	1,629	35,121
5	13	265,706	28,095	29,986	43,486	367,273	79,958	8,259	8,577	17,294	114,088	1,679	36,435
5	14	243,829	5,955	21,792	69,489	341,065	73,375	1,751	6,233	27,636	108,994	1,788	36,927
5	15	208,765	39,597	37,154	61,592	347,108	62,823	11,640	10,627	24,495	109,585	1,744	36,439
6	16	259,339	49,190	46,155	27,496	382,180	78,042	14,460	13,202	10,935	116,639	1,606	35,940
6	17	235,010	44,575	41,825	39,974	361,384	70,721	13,103	11,963	15,898	111,685	1,627	35,433
6	18	224,532	42,588	39,960	24,082	331,162	67,568	12,519	11,430	9,577	101,094	1,393	31,169
1986		3,375,031	256,820	359,644	356,373	4,347,868	********	75,494	102,871	141,730	1,335,729	18,647	415,359
7		710,519	134,767	126,451	116,641	1,088,379	213,814	39,616	36,170	46,388	335,987	4,872	106,326
8		632,624	215,372	65,676	100,158	1,013,830	190,373	63,310	18,786	39,833	312,301	4,473	98,103
9		607,043	223,936	136,576	141,628	1,109,183	182,675	65,827	39,066	56,326	343,893	5,135	110,319
10		609,734	224,929	137,182	141,099	1,112,943	183,485	66,119	39,239	56,115	344,958	5,145	110,588
1987		2,559,920	799,003	465,886	499,526	4,324,335	770,346	234,872	133,260	198,662	1,337,140	19,625	425,336
11		557,842	85,109	75,501	96,353	814,806	167,869	25,018	21,596	38,320	252,803	3,721	80,686
12		596,030	29,761	54,452	121,824	802,068	179,361	8,748	15,575	48,450	252,134	3,879	82,500
13		229,496	0	16,552	108,291	354,339	69,061	0	4,735	43,067	116,863	2,140	42,119
14		225,925	0	16,295	110,666	352,886	67,987	0	4,661	44,012	116,660	2,153	42,236
1988		1,609,294	114,870	162,801	437,134	2,324,098	484,278	33,767	46,567	173,849	738,461	11,893	247,541
15		42,519	0	3,067	225,501	271,086	12,795	0	877	89,682	103,354	2,748	46,893
16		16,095	0	1,161	105,114	122,369	4,843	0	332	41,804	46,979	1,266	21,509
17		95,833	0	6,912	122,448	225,193	28,839	0	1,977	48,698	79,513	1,778	32,282
18		250,127	0	18,040	154,398	422,565	75,270	0	5,160	61,404	141,834	2,748	52,826
1989		404,573	0	29,180	607,460	1,041,213	121,747	0	8,346	241,588	371,681	8,541	153,510
19		82,450	0	5,947	128,188	216,584	24,811	0	1,701	50,980	77,493	1,791	32,120
20		18,612	0	1,342	10,511	30,465	5,601	0	384	4,180	10,165	193	3,745
21		23,265	0	1,678	26,384	51,326	7,001	0	480	10,493	17,974	393	7,201
1990		124,327	0	8,967	165,082	298,376	37,413	0	2,565	65,653	105,631	2,377	43,066

4.5.5 Shovels

The shovel capability when completely trucked is shown in Table 4.5-7. There are sufficient 170-short ton capacity trucks to service 2 shovels with 11.48 cubic metre buckets when working on the upper benches. The third shovel with an 11.48 cubic metre bucket will load 120-short ton capacity trucks. The shovel with the 9.18 cubic metre bucket will be dedicated to mining ore and protore.

Shovel usage is indicated in Table 4.5-8. Usage is defined as the number of units in operation divided by total number of units

4.5.6 Trucks

Truck requirements for the mining plan have been calculated by month to the end of 1986 and then by quarter to the end of open-pit operations. Table 4.5-9 indicates truck requirement and projected fleet. The maximum requirement may be reduced by pit rescheduling and modification. Cycle times and, therefore, truck requirements have been calculated based on the bench elevation from which the material must be moved. It is assumed that ore and protore will be hauled to the crusher area and all waste will be hauled to the dump. The dump will be extended laterally in preference to increasing the elevation.

At this time, no overall detailed dump planning has been undertaken. Proper dump planning, and the study of placing waste in areas of the mined out pit may remove the peaks on the truck demand and reduce overall truck requirements.

TABLE 4.5-7

SHOVEL PRODUCTIVITY

Item	Ore	Waste	Waste	Units
SG	3.93	2.75	2.75	--
Swell	1.45	1.45	1.45	--
Loss Density	2.71	1.90	1.90	t/m^3
Bucket Size	9.18	9.18	11.48	m^3
Fill Factor	0.90	0.90	0.90	--
Tonnes per Bucket	22.4	15.6	19.5	--
Truck - Fill Factor	0.95	0.95	0.95	--
Truck - R170	--	--	146.5	t/load
Truck - 120C	103.4	103.4	103.4	t/load
Buckets per R170 Truck	--	--	7.5	--
Buckets per 120C Truck	4.6	6.6	5.3	--
Swing Time	0.50	0.50	0.50	Minutes
Spot Time	0.60	0.60	0.60	Minutes
Cycle - R170 Truck	--	--	4.60	Minutes
- 120C Truck	3.10	4.10	3.60	Minutes
Effective Time per Shift	525	525	525	Minutes
Production per Shovel Shift:				
- R170 Truck	--	--	16,720	Tonnes
- 120C Truck	17,514	13,243	15,082	Tonnes
Availability	0.75	0.75	0.75	Tonnes
Sustainable Production:				
- R170 Truck	--	--	25,000	Tonnes
- 120C Truck	26,200	21,900	22,600	Tonnes

TABLE 4.5-8

SHOVEL USAGE

(Based Upon 75 Percent Availability, 4 Shovels On-Site)

Period	Shovels Operating	Usage (Percent)
1985:		
October	0	0
November	1.5	37.5
December	3.5	87.5
1986:		
January	4	100
February	4	100
March	4	100
2nd Quarter	4	100
3rd Quarter	4	100
4th Quarter	4	100
1987:	4	100
1988:		
1st Quarter	3	75
2nd Quarter	3	75
3rd Quarter	1.4	35
4th Quarter	1.5	38
1989:		
1st Quarter	1.2	30
2nd Quarter	1	25
3rd Quarter	1.2	30
4th Quarter	1.8	45
1990:		
1st Quarter	1.1	28
2nd Quarter	1	25
3rd Quarter	1	25
4th Quarter	1	25

TABLE 4.5-9

TRUCK REQUIREMENTS

Period	R170 Euclid		120C Wabco		
	Number in Fleet	Number Required	Number in Fleet	Number Required	Usage (Percent)
1985:					
October	---	---	---	---	--
November	6.0	3.92	---	---	65
December	8.0	7.00	6.0	3.65	76
1986:					
January	8.0	7.00	8.0	3.39	74
February	8.0	7.00	10.0	6.82	77
March	8.0	7.00	11.0	7.89	78
April	8.0	7.00	14.0	7.67	67
May	8.0	7.00	14.0	7.45	66
June	8.0	7.00	14.0	10.86	81
July	8.0	7.00	14.0	10.79	81
August	8.0	7.00	14.0	12.75	90
September	8.0	7.00	14.0	7.82	67
October	8.0	7.00	14.0	7.82	67
November	8.0	7.00	14.0	9.79	76
December	8.0	7.00	14.0	7.13	64
1987:					
1st Quarter	8.0	7.00	14.0	12.21	87
2nd Quarter	8.0	7.00	14.0	8.07	69
3rd Quarter	8.0	7.00	14.0	8.73	72
4th Quarter	8.0	7.00	14.0	8.48	70

Period	R170 Euclid Number in Fleet	R170 Euclid Number Required	120C Wabco Number in Fleet	120C Wabco Number Required	Usage (Percent)
1988:					
1st Quarter	8.0	7.00	14.0	6.27	60
2nd Quarter	8.0	6.94	14.0	5.20	55
3rd Quarter	8.0	3.17	14.0	4.52	35
4th Quarter	8.0	3.27	14.0	4.19	34
1989:					
1st Quarter	8.0	0.67	14.0	8.82	43
2nd Quarter	8.0	0.28	14.0	4.31	21
3rd Quarter	8.0	1.74	14.0	5.29	32
4th Quarter	8.0	3.34	14.0	4.99	38
1990:					
1st Quarter	8.0	1.24	14.0	4.75	27
2nd Quarter	8.0	0.30	14.0	3.17	16
3rd Quarter	8.0	1.04	14.0	2.87	18

4.6 MAINTENANCE

The Faro Mine has a well-equipped facility for repair and maintenance of the equipment on-site. No physical modifications or additions will be required.

Maintenance philosophy for future operations takes into consideration the following:

(a) Light vehicles will be maintained off-site, under contract, by one of the local garages.

(b) Major engine and component rebuilds will be carried out by equipment suppliers in their facilities or their agent's facilities.

(c) Maintenance personnel will, of necessity, be of flexible skills.

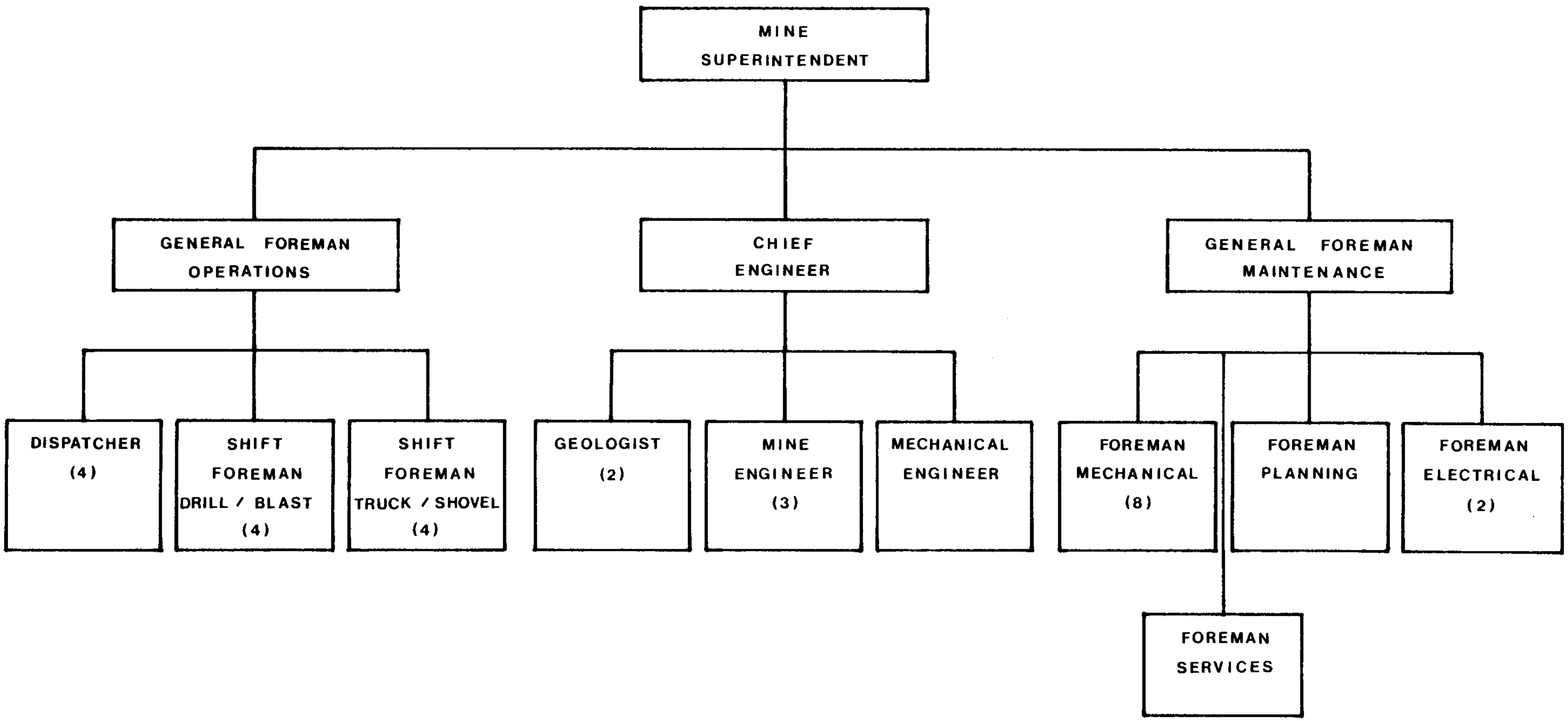
4.7 MINE ORGANIZATION STRUCTURE

4.7.1 Summary

Initial mining operations will be performed by a contractor. Over a period of several months Curragh will establish its own work force which will replace that of the original contractor's.

Figure 4.7-1 illustrates the proposed Organization Chart for the Mine Department. Table 4.7-1 indicates the total manpower complement. The Mine Department will be a fully-integrated unit, including mining operations, associated maintenance and technical support.

FIG 4.7-1
CURRAGH RESOURCES CORPORATION
ORGANIZATION STRUCTURE - MINE



(2) DENOTES NUMBER OF EMPLOYEES IF GREATER THAN 1

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4.7.2 Mine Operating Staff

Reporting directly to the General Manager - Faro Operations, the Mine Superintendent will be responsible for the safe and efficient operation, maintenance and technical support and control of the open-pit. The General Foreman - Operations, General Foreman - Maintenance and the Chief Engineer will all report to the Mine Superintendent.

TABLE 4.7-1

MINE MANPOWER - SUMMARY

	Number of Staff		Number of Hourly Paid		Total	
Classification	Max	Min	Max	Min	Max	Min
Mine Operations	14	10	132	75	146	85
Main Maintenance	12	10	92	35	104	45
Engineering/ Technical	7	6	7	6	14	12
Yard and Services	1	1	8	8	10	10
TOTAL						

The daily mine operation will be carried out under the direction of the General Foreman - Operations. The Operating staff will consist of 3 Shift Foreman per shift who will rotate with, and supervise the Operating Crews. Shift Foreman responsibilities will be divided into:

(a) Drilling and Blasting;
(b) Shovel and Truck;
(c) Dispatcher.

A total of 12 Shift Foremen will be required.

4.7.3 Mine Maintenance Staff

Mine maintenance activities will be directed by the General Foreman - Maintenance. Eight (8) Mechanical Maintenance Foremen will assign work to their respective crews in accordance with a simple but effective preventive maintenance system administered by the Maintenance Planning Foreman. Of the eight Mechanical Maintenance Foremen, 4 will rotate with the Maintenance Crews on shift to ensure continuous coverage of maintenance and repair activities. The second group of 4 Mechanical Maintenance Foremen will work steady dayshift and will be divided into various maintenance areas by type of work. The Electrical Foreman will work a shift schedule which will give continuous electrical supervision coverage on dayshift.

4.7.4 Mine Engineering

Mine engineering and associated technical activities will be the responsibility of the Chief Mine Engineer who will also substitute for the Mine Superintendent in his absence. He will supervise a group of 3 Mining Engineers, a Mechanical Engineer and 2 Geologists. The Mining Engineers duties, although flexible, will primarily be in three areas:

(a) Pit planning, scheduling and cost control.

(b) Technical control for drilling and blasting, geotechnical and hydrology.

(c) Computer applications and special projects.

The Mechanical Engineer's responsibilities will be primarily associated with mechanical engineering problems arising from the Maintenance Group.

The more senior of the two Geologists will be responsible for Mine Geology while the Junior Geologist will be responsible for grade control.

4.7.5 Mine Operating Labour

A list of the Operating Labour personnel is provided in Table 4.7-2. The variation is due to a variable waste handling schedule. The Mining personnel required during stockpile treatment are included.

The job descriptions have been expanded and the number of job classifications has been reduced to permit more flexibility in mining activities.

TABLE 4.7-2

MINE OPERATING CREW

Classification	Number of Personnel Required During Pit Operation: Maximum	Number of Personnel Required During Pit Operation: Minimum	Number of Personnel Required While Treating Stockpiles
Driller	8	4	-
Blaster	2	1	-
Blaster's Helper	4	2	-
Shovel/Front-End Loader	16	5	4
Truck Driver	72	41	8
Dozer Operator	8	8	2
Grader Operator	4	4	-
Water/Sand Truck Driver	4	4	-
Utility Man	8	4	4
Trainee	4	-	-
Front-End Loader Operator	2	2	-
TOTAL	132	75	18

4.7.6 Mine Maintenance Labour

A list of Maintenance Labour personnel is provided in Table 4.7-3. The variation is due to variable equipment usage.

No allowance is made in this study for the inclusion of an apprentice program. The use of helpers has been minimized.

TABLE 4.7-3

MINE MAINTENANCE CREW

Classification	Number of Personnel Required During Pit Operation: Maximum	Number of Personnel Required During Pit Operation: Minimum	Number of Personnel Required While Treating Stockpiles
Heavy-Duty Mechanic	56	24	8
Welder	8	4	1
Machinist	2	2	1
Lineman	1	1	-
Electrician	8	6	4
Electronic Repair	1	1	-
Utility Man	4	4	-
Janitor	2	2	-
Tool Crib	4	4	-
Clerk	2	2	-
Lube/Fuel Man	4	4	1
TOTAL	92	54	15

The Maintenance Crew is based on the coverage as shown in Table 4.7-4. This Table shows Mechanics at peak requirements. It has been assumed that the personnel will be competent and multi-skilled.

TABLE 4.7-4

MAINTENANCE PERSONNEL

Activity		Distribution	Number of Personnel
Mechanics:			
Preventive Maintenance			
- Shovels	]	Two 3-Man Crews	6
- Drills	]	Dayshift	
- Dozers	]		
- Loaders	]		
- Trucks (Weekly)		Eight 2-Man Crews	16
- Trucks (Monthly)		Four 2-Man Crews	8
Breakdown Repair			
- Trucks		2 Men/Shift	8
- General		2 Men/Shift	8
		Plus 8 Men Dayshift	8
Small Vehicles		2 Men/Dayshift	2
Subtotal			56
Welders		2 Men/Shift	8
Machinist		Dayshift 7 Days/Week	2
Electricians		1 Man/Shift 4 Dayshift	8
Electronics Repairman		Dayshift	1
Utility Man		1/Shift	4
Janitor		Dayshift	2
Tool Crib		1/Shift	4
Clerk		Dayshift	2
Lube and Fuel Man		1/Shift	4

4.7.7 Engineering - Technical and Clerical Support

A group of 7 hourly rated support personnel are included in the Engineering Group. This Group is illustrated in Table 4.7-5.

TABLE 4.7-5

ENGINEERING - CLERICAL AND TECHNICAL PERSONNEL

Classification	Number of Personnel
Surveyor/Technician	2
Survey Helper	1
Draftsperson	1
Geological Technician	1
Mine Department Clerk	1
Clerk Typist	1
TOTAL	7

4.7.8 Yards and Services

Historically, the Yards and Services Group have been part of the Mechanical Department at Cyprus Anvil. The Services Foreman will report to the General Foreman - Maintenance. The personnel in this group are illustrated in Table 4.7-6.

Duties of the group include plumbing repair, carpentry, painting, snow removal, road and yard maintenance, garbage collection and miscellaneous general services activities.

TABLE 4.7-6

YARDS AND SERVICES PERSONNEL

Classification	Number of Personnel
Services Foreman (Staff)	1
Hourly Rated	
Plumber	1
Equipment Operator	2
Truck Driver	1
Carpenter	1
Labourer	3
TOTAL HOURLY RATED	8

4.8 REACTIVATION OF MINING EQUIPMENT AND RELATED START-UP ACTIVITIES

4.8.1 Introduction

A Project Group will be formed to reactivate the mining equipment, and to carry out certain start-up tasks related to the mine. This group will remain separate from the Mine Operation Group; when a unit of equipment is ready for use it will be turned over to the Operations Group. The schedule for equipment reactivation is dictated by the production schedule. The Project Group will be in existence for approximately 6 months. In addition, due to the state of the engineering planning and pit conditions there is work which will be required as outlined in Section 4.8.4 of this Report.

4.8.2 Organization

The organization of the Project Group will be as listed below:

(a) Project Management, Mine Reactivation;
(b) Mining Engineering;
(c) Mechanical Engineering;
(d) Purchasing and Expediting;
(e) Receiving and Issuing;
(f) Manufacturer's Representatives;
(g) Tradesmen Leaders;
(h) Tradesmen.

This fully-integrated, but separate group will allow the Operations Group to build up for the 'steady state' condition; permanent operating procedures will not be compromised in the rush to get things started.

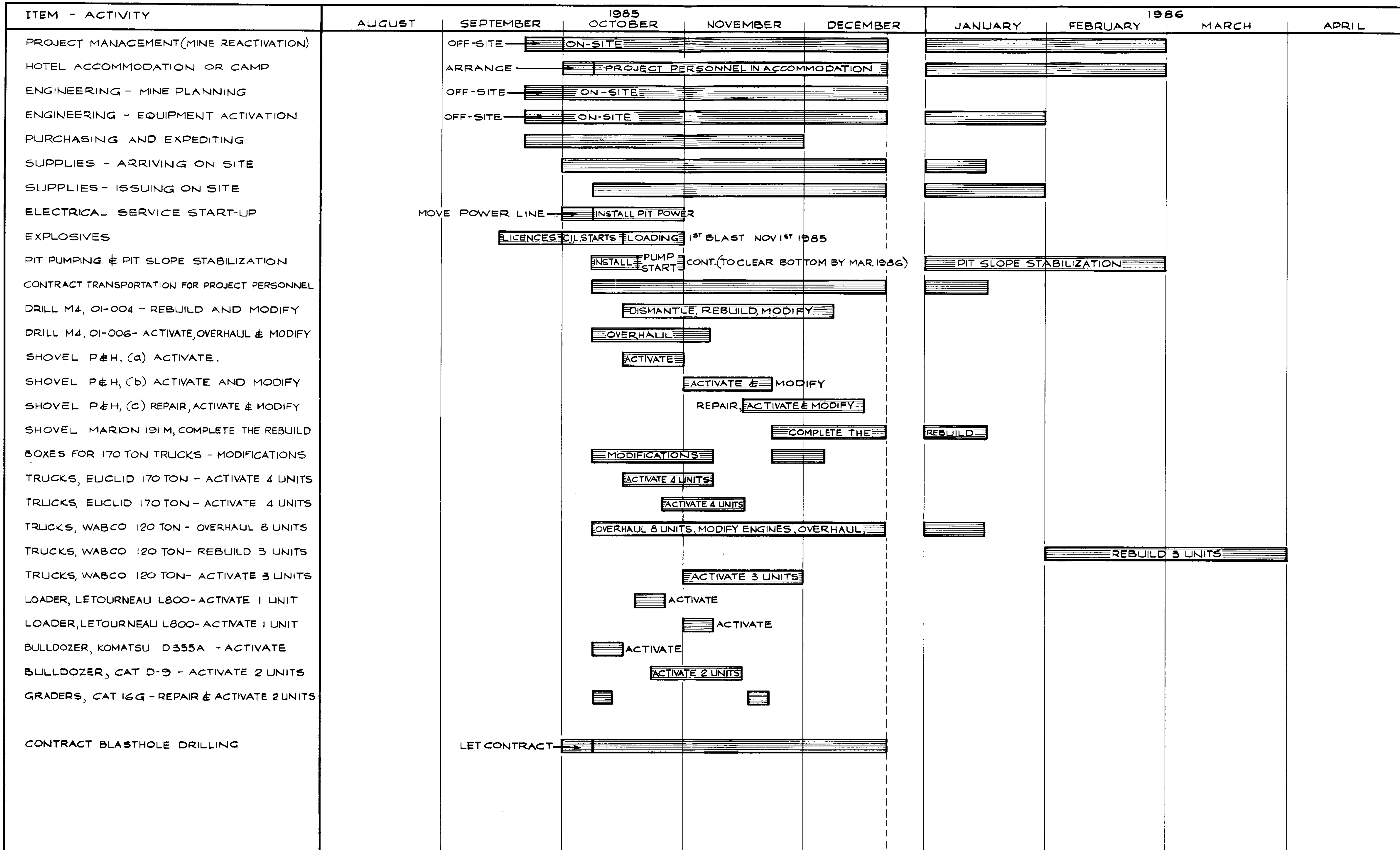
4.8.3 Chronology

Refer to Figure 4.8-1 for a graphic illustration of this series of events.

(a) September, 1985

Certain activities must be carried out to prepare for the start of the mine reactivation program in October. For example:-

i) Personnel Accommodations Arranged;
ii) Initial Supplies Ordered;
iii) Allocation of Existing Space and Equipment;
iv) Blasthole Layouts;
v) Conceptual Mine Planning.



B	TECHNICAL & COST REVIEW	AUG. 1.85	PA H
A	TECHNICAL & COST REVIEW	JUL. 15.85	PA H
No.	DESCRIPTION	DATE	BY

REVISIONS

DWG. No. — REFERENCE DRAWINGS

SECTION:
SCALE: — DATE
DESIGNED BY: H.F.B. — JUL. 85
DRAWN BY: P.A.H. — JUL. 85
CHECKED BY:
APPROVED BY: — JUL. 16 '85

CLIENT: CURRAGH RESOURCES CORPORATION
LOCATION: FARO, YUKON.

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TITLE
CYPRUS ANVIL MINE REVIEW
MINE REACTIVATION SCHEDULE

ACCT. No.
PROJECT No. 3509 — DIVISION No. 15
DRAWING NUMBER
FIG. 4.8-1 — REV. B

(b) October, 1985

During the first week the main power line into the property will be moved clear of the waste dump, and a drilling contractor will arrive to start a 2½-month drilling contract.

Some of the Project crews will start work the second week, on the Euclid truck boxes, on the overhaul of one of the Marion blasthole drills and on the Wabco truck engines. Modifications to the Euclid truck boxes were in progress before the shutdown, and these modifications will be completed as part of the reactivation; the work is mostly welding which can be started with a minimum of preparation. The first phase of the Marion drill overhaul will involve removal of certain components; this will be carried out under the technical supervision of a Marion Service Representative. Two (2) Wabco truck engines will be removed, by Wabco Service personnel, and taken to Whitehorse for rebuilding.

At mid-month, the full mine reactivation force will be in place. Work will continue on the equipment mentioned previously, and work will commence as described below.

One P & H 2100 shovel will be readied for service; a load recording device will be installed, but otherwise a great deal of work is not required. One Le Tourneau L800 loader will be activated as a back-up for the shovel.

Four (4) Euclid (170-ton) trucks will be reactivated; these units have been stored indoors and no problems are anticipated. Some switching of Euclid truck boxes may be necessary.

The second Marion drill must be dismantled completely for frame replacement; this is a 2-month program.

A pit power system will be installed to supply the sump pumps, and to provide power for the shovels at the mining faces.

The explosives preparation facilities will be put into operation, and holes drilled by the contractor will be loaded near month-end, for the first blast on November 1st, 1985. Holes drilled in excess of current requirements (say 3 weeks) may be loaded with slurry type explosives, to forestall hole losses due to caving.

(c) <u>November, 1985</u>

Mine Operations, at the first of the month, will take over the shovel, 4 Euclid trucks, service and back-up equipment for the foregoing, pit power and pit pumping. At the truck shop, the service bay will be released to Mine Operations.

At mid-month an additional 4 Euclid trucks, and the other Le Tourneau loader will be turned over to Mine Operations, as well as 4 repair bays in the truck shop. Loading will be started at a second mining face, using both Le Tourneau loaders at this face. These L800 loaders will function as a primary unit until the second P & H 2100 shovel is ready, a period of less than 2 weeks duration.

The loaders then will be returned to the Project Group, for any repairs or adjustments, to prepare them for a December 1st start on 1½ months service, as a substitute for a primary loading unit.

The Project crews will complete the overhaul of one Marion drill, releasing it to Operations after the first week of the month. Work will continue all month on the second Marion drill. The mast on each drill will be extended for 58-foot holes.

A second P & H 2100 shovel will be ready before the end of the month. This shovel will have had its boom extended from 44 feet to 50 feet, using a kit from the manufacturer; thus both shovels in service will be able to handle 50-foot benches. A load recording device will be installed.

Work will be started on the third P & H 2100 shovel. This machine requires repairs as well as the boom extension and the load recording device. The overlap in the times of the work on the second and third shovels, refer to Figure 4.8-1, allows for the Welding Specialist from P & H to be present for both boom extensions. Welders have been made available by interrupting the Euclid truck box modification schedule.

Project personnel will take up the major overhaul of the Marion 191M shovel (this overhaul was started by the previous operators of the property).

Wabco (120-ton) trucks will be made ready for use on the third mining face. Three of these trucks require only minor work which will be carried out during the month; another 3 Wabco's will be available from units already under repair during October. Each Wabco that goes into service will have 2 new tires on the front; rear tires will be taken from the stock of used tires on the property.

Two additional bulldozers and a second grader will be turned over to Operations during the month.

Temporary shelters will be used for Project work on the Marion drill rebuild and the shovel repairs.

(d) December, 1985

The Project Group will have completed, by mid-month, the modifications to the Euclid truck boxes, the rebuild of the Marion drill, and the repairs and modifications on the third P & H 2100 shovel. The Project crews will be reduced accordingly, and most of the shop area will be turned over to the Operations Group. At this time, Operations will have built up the capability to operate and maintain 2 drills, 3 shovels, 8 Euclid (170-ton) trucks, 8 Wabco (120-ton) trucks, 3 bulldozers, 2 loaders and miscellaneous other equipment.

Project work will continue on the Wabco truck overhauls and the Marion shovel overhauls.

A Christmas break is scheduled for the Project Group.

(e) January, 1986

A contractor will construct a diversion system that will eliminate, as much as is possible, the wet conditions on the high wall of the pit. (This diversion system has yet to be designed. However, for this study it has been assumed that a flume will be used.) This diversion is essential, if the pit slope is to be stabilized.

The Project Group will complete, by mid-month, the overhaul of the Marion 191M shovel, and the overhaul of Wabco trucks to bring the Wabco total to 11.

The Project Group will remain until month-end repairing any deficiencies in their work.

(f) February, 1986

The schedule indicates that 3 additional Wabco trucks are needed.

The Project Group will supervise the water control, and will start rebuilding the 3 additional Wabco trucks.

At month-end the Project Group will be terminated, except for personnel directly involved on the Wabco rebuilds.

(g) March, 1986

The mechanics engaged on the Wabco rebuilds will complete the work under the supervision of the Mine Operations Group.

4.8.4 Pit Stabilization and Planning

Two items are considered within this portion of the Report. The first of these items is pit stabilization. The second item is pit optimization and pit engineering studies.

The northeast wall of the present open-pit is showing signs of instability which is apparently caused by water entering the pit wall from above and saturating the rock. In addition to the stability problem, the water situation creates operating problems within the pit and in the crushing plant.

The initial step is to retain the services of geotechnical firm to evaluate the problem. Remedial action will depend on the results of hydrological studies. The solution may vary from possible sealing of the water courses into the structure and diversion of surface flows to a series of wells to dewater the structure. At this time no definitive estimate can be made. However, a sum of $1,000,000 is included in the estimate. It is projected that this money will be spent during the period September, 1985 to July, 1986.

The second item to be considered is the optimization of the ultimate pit and separate pit phases to improve the mining of the deposit. Included within the studies are:

(a) Update geological model to include all the drill information.

(b) Meaningful ore cut-off grade determination taking into consideration recoveries and metal price variables.

(c) Optimize ultimate pit based on the current and projected economics for the deposit.

(d) Rescheduling of the open-pit to reduce, as much as possible, peak requirements for equipment and personnel.

(e) Redesign of the pit slopes to incorporate 15-metre benches.

(f) Rescheduling and relocation of waste disposal to minimize truck requirements.

The replanning of the pit has been estimated at $200,000 and will require approximately 6 months during the initial start-up of the operation.

4.8.5 Costs

Total Costs:

Personnel (Includes Personnel Related Contracts)	$ 2,591,000
Material (Includes Contracts)	4,512,000
Pit Stabilization and Planning	1,200,000
TOTAL	$ 8,303,000

Monthly Costs:

Period	Personnel	Material
August, 1985	$ ---	---
September, 1985	29,000	---
October, 1985	726,000	905,000
November, 1985	829,000	1,575,000
December, 1985	454,000	777,000
January, 1986	302,000	351,000
February, 1986	142,000	625,000
March, 1986	109,000	279,000
TOTAL	$ 2,591,000	$ 4,512,000

Identification Summary - Material Costs

	Material
Inventory Build-Up	$ 450,000
Euclid (170-Ton) Truck - 8 Units Rebuild	80,000
Wabco (120-Ton) Truck - 3 Units Rebuild	84,000
Wabco (120-Ton) Truck - 8 Units Rebuild	824,000
Wabco (120-Ton) Truck - 3 Units Rebuild	729,000
Blasthole Drills - 2 Units Rebuild	210,000
Shovels - 4 Units Rebuild	690,000
Other Equipment	145,000
Power Line Relocation	50,000
Pit Water Diversion	250,000
Contract Blast Hole Drilling (100,000 Feet)	1,000,000
TOTAL MATERIAL COST	$ 4,512,000

Summary - Material Costs (Including Contracts)

	Material
Power Line Move	$ 50,000
Pit Water Diversion	250,000
Contract Blasthole Drilling (100,000 Feet)	1,000,000
Fuel Inventory	100,000
Lubricating and Hydraulic Oil Inventory	50,000
Grease Inventory	50,000
Bucket Teeth and Cutting Edges Inventory	100,000
Euclid Parts Inventory	150,000
Shovel Bucket Normalizing	60,000
Euclid (170-Ton) Truck Reactivation	40,000
Euclid Truck Boxes Modifications	40,000
Wabco Tires (2 x 14) for Front Wheels	252,000
Wabco Engines (11) Rebuild and Upgrade	715,000
Wabco (120-Ton) Truck (3) Reactivation	30,000
Wabco (120-Ton) Truck (8) Overhaul	160,000
Wabco (120-Ton) Truck (3) Rebuild, Statex	480,000
Marion Drill (Diesel) 01-004, Rebuild	160,000
Marion Drill (Electric) 01-006	50,000
P & H Shovel (a)	60,000
P & H Shovel (b)	170,000
P & H Shovel (c)	200,000
Marion Shovel	160,000
Le Tourneau L800 Loader	15,000
Le Tourneau L800 Loader	15,000
Komatsu Bulldozer D355A	5,000
Caterpillar Bulldozer (2) D-9H	20,000
Grader	40,000
Other Small Equipment	50,000
TOTAL	$ 4,512,000

5.0 MILLING

5.0 MILLING

5.1 GENERAL

The Cyprus Anvil Concentrator incorporates the unit processes of crushing, grinding, froth flotation, thickening, filtering and drying to produce selective lead and zinc concentrates.

The design throughput rate of the plant in 1969 was 5000 tonnes per day. No significant alterations have been made to the crushing plant facilities since the commencement of operations. Substantial changes have been made, however, to all other sections of the plant. The most recent plant modifications, completed in December, 1981, were instituted to enable the plant to produce a finer grind when milling at a 9300 tonnes per day rate. The changes to equipment and process circuitry affected all aspects of the milling process, other than the crushing plant.

Throughout the detailed design of the plant modifications, consideration was given to the probable need to increase mill throughput rates in the future. Accordingly, the proposed 20 percent increase in the production rate will be achieved with only relatively minor changes to the plant layout and equipment.

The mechanical and metallurgical tune-up of the mill was far from complete in 1982 when the operations were curtailed due to depressed metal prices. Time and funds will be required to complete this work. Furthermore, modifications will be required to the crushing plant to increase production capabilities. In addition to 'demothballing' activities, the opportunity should be taken, prior to mill start-up, to carry out routine maintenance and institute certain circuit modifications which will collectively enhance the mechanical and metallurgical performance of the Concentrator.

The plant maintenance and modification programs will commence in October, 1985 and be completed by April 1st, 1986 at which time the mill will resume operations.

Kilborn's production forecasts are based upon the target 11,160 tonnes per day throughput rate being achieved by October, 1986. The progressive improvement in production rates during the first 6 months of operation makes some allowance for minor disruptions in production during the start-up phase. The schedule is conservative. The rate at which the mill achieves planned production tonnages may be increased in subsequent detailed engineering studies.

TABLE 5.1-1

AVERAGE DAILY MILL THROUGHPUT RATES
DURING START-UP PHASE

Month	Average Throughput Tonnes/Day
April, 1986	5,600
May, 1986	6,200
June, 1986	7,300
July, 1986	9,500
August, 1986	10,000
September, 1986	11,000
October, 1986 and Thereafter	11,160

5.2 MILL PRODUCTION CRITERIA

The principal criteria applied by Kilborn in the development of long-range production forecasts are summarized in Table 5.2-1.

TABLE 5.2-1

MILL PRODUCTION CRITERIA - SUMMARY

Primary Crushing

Shifts per Week	-	9
Hours per Shift	-	12
Effective Hours per Week	-	105
Crushing Rate (DMT per Hour)	-	1200

Fine Crushing

Shifts per Week	-	10
Hours per Shift	-	12
Effective Hours per Week	-	118
Crushing Rate (DMT per Hour)	-	600

Grinding

Available Days per Year	-	365
Average Throughput	-	11,160 Tonnes/Day
Plant Availability	-	93 Percent
Grinding Rate	-	12,000 Tonnes/Day
Work Index	-	13.2
Nominal Grind	-	60 to 65 Microns

Flotation and Dewatering

Average Lead Concentrate Production 1987-1991	-	164,000 DMT/Year
Average Zinc Concentrate Production 1987-1991	-	292,000 DMT/Year
Total Average Concentrate Production	-	456,000 DMT/Year

5.3 METALLURGY

5.3.1 Summary

The metallurgical characteristics of the Anvil District ores are profoundly influenced by three principal factors; namely:

(a) The host deposit from which the ore is extracted;
(b) The mineralogical constitution of the ore;
(c) The fineness of grind.

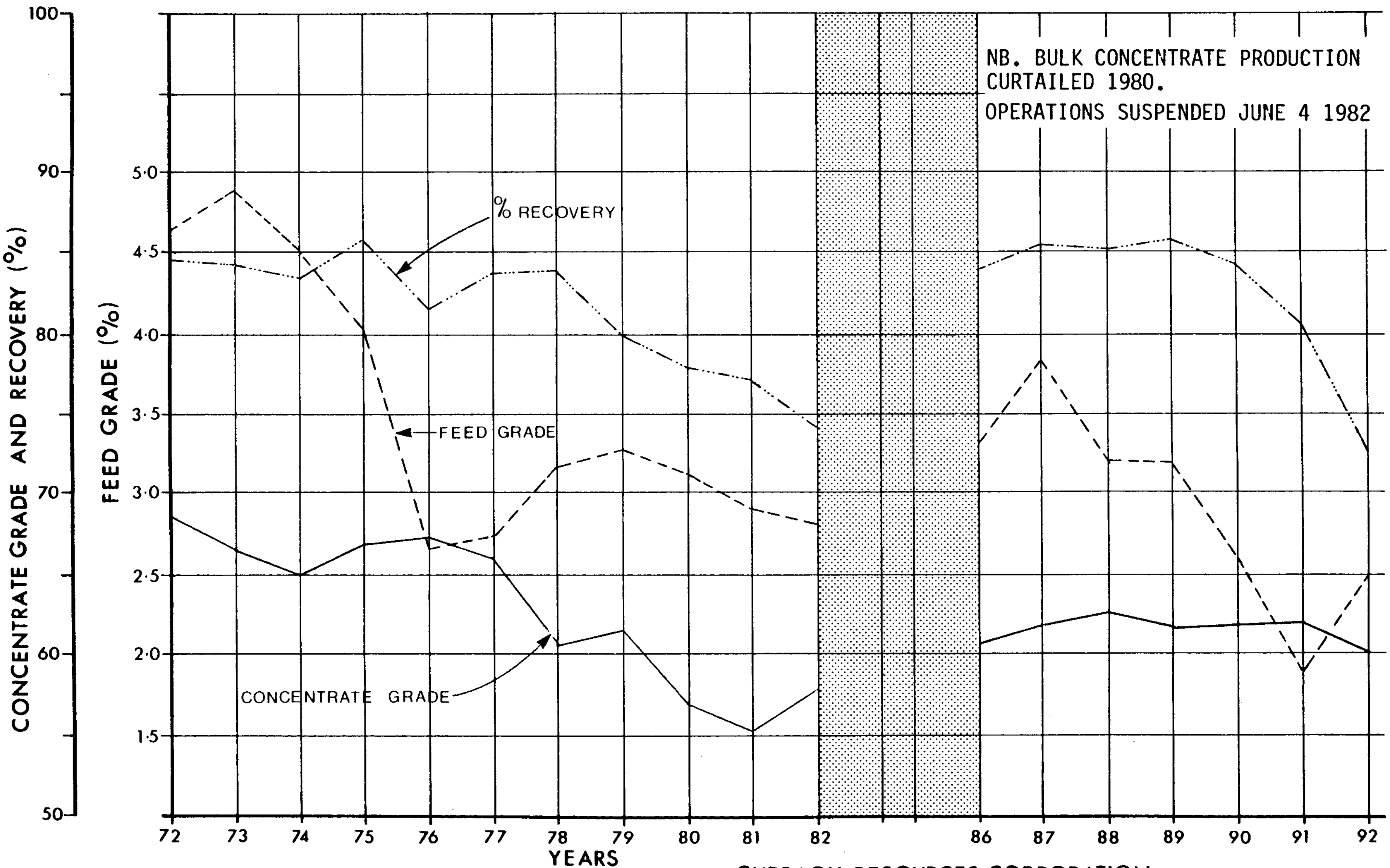
The Anvil District deposits consist of a number of mineralogically different ore species, each of which exhibits its own 'metallurgical profile'. Further, it has been established that the response of any particular ore type to differential flotation techniques can vary when samples of the ore specie are selected from the various deposits.

Kilborn's metallurgical forecasts are developed given the source, grade and types of ore to be milled. The forecast parameters are derived by computing the weighted average metallurgical response of the constituent ore types; based upon the results of meaningful laboratory test programs.

It is clearly established that fine grinding enhances the metallurgical performance of all ore types present in each of the deposits.

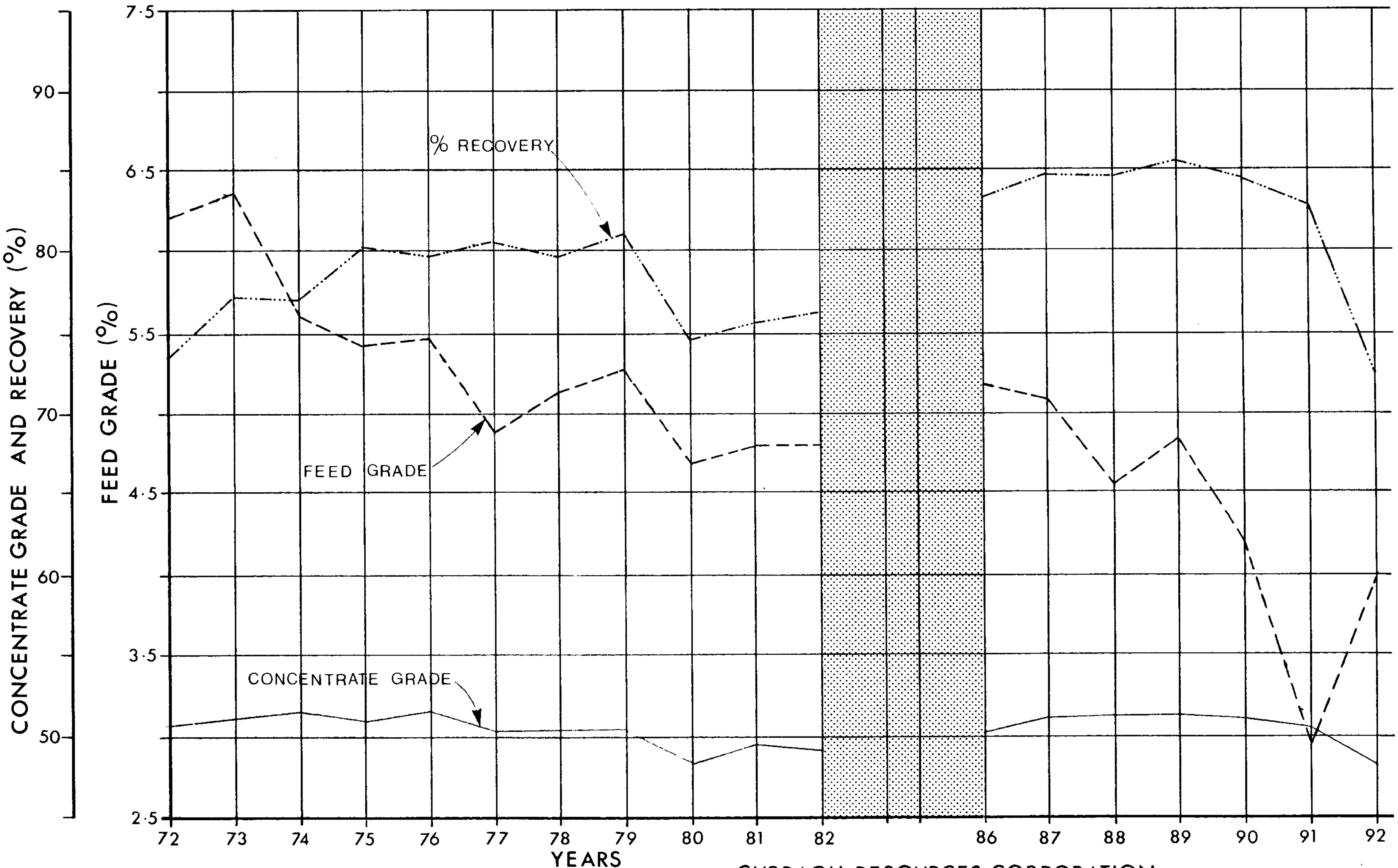
5.3.2 Historical Performance

Since the commencement of operations the mill feed grades progressively decreased from 11.7 (Pb + Zn) percent in 1971 to 7.6 (Pb + Zn) percent in 1977 (Figures 5.3-2 and 5.3-3). Notwithstanding this 35 percent reduction in feed grade the plant metallurgical performance remained reasonably constant. Thereafter, a marked deterioration in metallurgical results



CURRAGH RESOURCES CORPORATION
CYPRUS ANVIL MINE REVIEW
LEAD METALLURGICAL PERFORMANCE

FIG. 5.3 – 2



CURRAGH RESOURCES CORPORATION
CYPRUS ANVIL MINE REVIEW
ZINC METALLURGICAL PERFORMANCE

FIG. 5.3-3

ensued which could not be attributed simply to the continuing decrease in feed grades. It was at this time that the Cyprus Anvil personnel first appreciated the significant differences in metallurgical response between the various ore types. In this case, predominantly baritic matrix and massive sulphide ores were gradually replaced by finer-grained, massive sulphide or ribbon banded siliceous ores.

The principal ore types identified in the Faro, and the other Anvil District deposits, are listed below with the alpha-numeric designation assigned by Cyprus Anvil geologists.

Anvil District Ore Types

Ore Species Designation	Ore Characteristics
2A	Sulphide-bearing ribbon banded, graphitic quartz. Generally low-grade lead and zinc with iron values less than 10 percent.
2BCD	Pyritic quartzites constituting a group of siliceous ore types of average lead and zinc grade with iron values typically below 14 percent.
2EC	Blend of pyritic and siliceous ores of average grade.
2EF	Massive pyritic facies exhibiting a broad range of lead and zinc values. Iron contents vary between 30 and 40 percent.

Ore Species Designation	Ore Characteristics
2G	Frequently of higher grade, this massive sulphide ore is contained in a baritic facies.
2H	Massive sulphide ore rich in pyrrhotite.

During the first 10 years of operation, ore was supplied to the mill from the Faro Zone I Deposit. With the passing of time, however, the distribution of ore types changed; the coarse grained EF and G ores being replaced in part by the finer-grained and more refractory BCD ores.

Preliminary laboratory flotation test work conducted in 1978 determined that metallurgical performance could be improved by finer grinding. Work in this regard was accelerated in 1979 when Cyprus Anvil acquired the Grum and Vangorda properties, since it was known that ores from those deposits required fine grinding to produce marketable differential flotation concentrates. Based upon the results of extensive metallurgical test work, and the knowledge that the Faro Zone III Deposit is composed in large part of the finer-grained ores, the decision was made to modify the concentrator to provide a nominal flotation feed grind of 50 microns. Providing additional grinding, flotation and concentrate dewatering capacities the major mill modifications were essentially completed by year-end 1981.

5.3.3 Actual Plant Performance - January to June 1982

Though most of the new flowsheet components were in place, the metallurgical performance of the plant in 1982 failed to even approximate the parameters which were used to justify the major capital expenditure required for the mill modification program.

TABLE 5.3-3

PLANT METALLURGICAL PERFORMANCE

(BASE METAL DATA)

	Feed Grade		Lead Concentrate		Zinc Concentrate	
	% Pb	% Zn	Grade % Pb	Recovery %	Grade % Zn	Recovery %
Plant Results 1982	2.8	4.8	57.8	74.2	48.2	76.3
Predicted Results Milling Zone III Ore	2.9	4.6	67.0	87.5	53.5	88.5

It is important that the reasons for this discrepancy be understood in order that future metallurgical production criteria not be predicted on misleading data.

There were two basic factors which contributed to the poor metallurgical performance of the mill in 1982, namely:

(a) Ore type;

(b) Inadequate plant test work resulting from a critical shortage of personnel.

The problems associated with each of these factors are briefly summarized below.

(a) Ore Type

Of the 1.6 million tonnes of ore milled in 1982, 750,000 tonnes were taken from the oxide stockpile. This stockpile, which contains ore mined since preproduction time to the present, is highly oxidized and of poor metallurgical response. The actual 1982 plant results recorded when milling oxidized stockpile ore are shown below.

OXIDE METALLURGY - 1982

Lead Concentrate		Zinc Concentrate	
Grade % Pb	Recovery %	Grade % Zn	Recovery %
59.6	70.0	48.3	72.8

The data shown represent weighted averages of highly variable results caused by the complete lack of homogeneity of this oxidized material. Ore from this source represented 47 percent of the mill feed in 1982.

Supplies of pit-run ore in 1982 were mined from the lowest benches of Zone I (3750 to 3730). Zone I ore was rich in the A type constituent, and totally atypical when compared to the composition of Zone III ores. In fact, the results obtained were not too dissimilar to those produced in 1979, 1980 and 1981 when milling Zone II ore, also notable for the high graphite content. Ore mined from the 3950 to 3930 benches was located on the uppermost extremity of the Zone III Deposit. These reserves, which were not initially included in the computerized mine model, were heavily diluted with talcose material. Talc, being naturally hydrophobic, closely resembles graphite in its adverse influence upon metallurgical performance.

In summary, the ore milled in 1982 represented a completely atypical blend of the most metallurgically difficult material. The composition of Zone III ores yet to be milled will bear no resemblance to the 'make-up' of the plant feed in 1982.

(b) Plant Test Work

In 1982, an acute shortage of experienced metallurgical personnel impeded the rate at which the new circuitry could be 'tuned' to design conditions. This statement should not be construed as a criticism of the Faro staff who worked both enthusiastically and diligently. The amount of work required to effectively optimize the complex circuitry far exceeded the capabilities of the small, recently recruited and generally inexperienced metallurgical team assigned to the job.

Though considerable progress was made in commissioning the grinding circuit, the actual flotation feed grinds of 70 to 80 microns represent an appreciable divergence from the planned 50 micron level.

The results of work conducted in 1982 indicate that target grind levels can be achieved shortly after the resumption of operations.

Due to the work load in the grinding section, the difficulties created by wide fluctuations in ore types and the normal problems associated with a new mill start-up, virtually no in-plant process surveys of the flotation section were conducted.

There is no doubt that this inability to optimize circuitry during the relatively short time available contributed in part to the poor metallurgical performance in 1982. Kilborn expects many of these problems will be resolved in the future.

5.3.4 Predicted Plant Performance - 1985 to 1992

Empirical plant results generated in 1982 under the adverse and atypical circumstances described in the preceding text should not be used as a basis for predicting long-term metallurgical performance. Such forecasts should be predicated upon the substantial amount of reproducible laboratory and pilot plant test work conducted by independent authorities, while making due provision for circuit optimization during the first 12 to 18 months of operation.

The average metallurgical performance data for each of the principal ore types contained in the Zone III reserves are shown in Table 5.3-4, based upon the results of locked-cycle laboratory flotation tests performed by Cyprus Anvil and other reputable testing authorities. Due to the relatively small amounts of 2G and 2H type ores little recent test work has been performed on these species. The metallurgical performance of the 2H ore is probably pessimistic and based upon only one locked-cycle test. For this purpose, the metallurgical response of the 2G ore is deemed to be the same as that of 2EF ore. For completeness, typical results are shown from two pilot plant studies conducted by Lakefield Research on composite samples of Faro ore deemed to be representative of Zone III ore.

TABLE 5.3-4

AVERAGE METALLURGICAL PERFORMANCE DATA

LOCKED CYCLE FLOTATION TEST RESULTS

	Average Sample Feed Grades		Lead Concentrate		Zinc Concentrate	
			Grade	Recovery	Grade	Recovery
Ore Type	% Pb	% Zn	% Pb	%	% Zn	%
2A	1.2	2.9	45.0	77.3	53.5	90.5
2BCD	2.3	5.6	63.2	89.1	53.7	91.9
2EF	3.0	4.8	67.4	86.2	53.2	86.4
2H	4.8	7.0	50.3	91.6	50.3	78.4
Pilot Plant No. 1	2.1	3.7	68.4	86.9	52.1	90.4
Pilot Plant No. 2	2.1	4.2	73.6	91.0	55.2	90.6

NOTES:

1. Extensive test work performed upon samples of pure 2A ore indicate that lead concentrate grades as low as 18 to 25 percent lead will be produced. Post flotation techniques and the use of graphite depressants have been shown to substantially improve these values. For this purpose, the lead concentrate grade is shown as 45 percent lead - the lead recovery and zinc parameters are unchanged.

2. Pilot plant samples were found to be partially oxidized upon arrival at the Lakefield testing facilities. Based upon oxide determinations adjustments to the lead grades were made as shown overleaf.

Sample	Lead			Zinc		
	Assay Head	Assay Oxide	Calculated Effective Head	Assay Head	Assay Oxide	Calculated Effective Head
Bulk Sample No. 1	2.35	0.40	2.05	3.85	0.25	3.72
Bulk Sample No. 2	2.40	0.35	2.14	4.34	0.22	4.23

It should be noted that the data in Table 5.3-4 represent the average of all recent locked-cycle tests, including the best and the worst results, the latter produced under conditions known to be less than optimum.

The laboratory test work was performed under grinding conditions which would produce a nominal grind of 50 microns. When milling the silicious 2BCD ore of higher work index grinds in the order of 70 to 75 microns could be expected and were reported in this test work.

Kilborn's metallurgical production forecast is based upon the results of the flotation test work shown in Table 5.3-4. In all cases, however, 2 percent has been deducted from base metal concentrate grades and recoveries to reflect, in part, the effect of a 60 to 65 micron grid. Accordingly, Kilborn's weighted average metallurgical performance projections assign the grades and recoveries shown in Table 5.3-5 to each of the constituent ore types.

TABLE 5.3-5

METALLURGICAL PERFORMANCE BY ORE TYPE

KILBORN FORECAST

	Lead Concentrate			Zinc Concentrate	
Ore Type	Grade % Pb	Pb Recovered %	Ag Recovered %	Grade % Zn	Zn Recovered %
2A	43.0	75.3	60.0	51.5	88.5
2BCD	61.2	87.1	60.0	51.7	89.9
2EC	63.3	85.7	60.0	51.5	87.2
2EF	65.4	84.2	60.0	51.2	84.4
2G	65.4	84.2	60.0	51.2	84.4
H	48.0	89.6	60.0	50.3	76.4

Kilborn has assumed an average 60.0 percent recovery of silver to the lead concentrate. No allowance is made for the recovery of payable gold to either of the selective concentrates. It should be recognized, however, that sporadic amounts of payable gold will occur from time to time, subject to the amount of gold contained in the mill feed ores.

The cptimum metallurgical performance of the plant will not be achieved immediately upon the commencement of operations. Kilborn has recognized this fact by deducting 'start-up allowances' from base metal grades and recoveries and the silver recovery. These allowances will be applied during the first 18 months of production and are shown in Table 5.3-6.

TABLE 5.3-6

METALLURGICAL PERFORMANCE

START-UP ADJUSTMENT FACTORS

Period	Lead Concentrate			Zinc Concentrate	
	Lead Grade % Pb	Lead Recovery %	Silver Recovery %	Zinc Grade % Zn	Zinc Recovery %
2nd Quarter 1986	-3.0	-3.0	-3.0	-2.0	-5.0
3rd Quarter 1986	-2.5	-2.0	-2.0	-1.5	-3.0
4th Quarter 1986	-1.0	-1.0	-1.0	-1.0	-2.0
1st Quarter 1987	-1.0	--	--	-0.5	-1.0
2nd Quarter 1987	-0.5	--	--	--	-0.5
3rd Quarter 1987	-0.5	--	--	--	--
4th Quarter 1987	--	--	--	--	--

Ore will be delivered to the mill in accordance with the Schedule shown in Table 5.3-7.

TABLE 5.3-7

ORE DELIVERY SCHEDULE

Source	Tonnes DMT	Grade % Pb	% Zn	Ag g/mt	Cut-Off Grade (Pb + Zn) %	Period
Faro Pit (High-Grade)	17,180	3.36	4.94	40.10	6.0	1986 - 1990
Low-Grade Stockpile	6,602	1.98	3.11	27.87	4.0 - 6.0	1990 - 1992
Oxide Stockpile	1,360	2.90	4.70	37.60	N/A	1992
TOTAL						

Since the graphite quartz-hosted ores, designated 2A, are generally of low-grade, the amount of this refractory material contained in the high-grade ore will be less than the average for the total remaining reserves. Accordingly, metallurgical performance during the first 5 years will benefit not only from the higher feed grades, but also as a result of the greater amenability of the ores to be milled.

Ore classified as low-grade will be stockpiled until the reserves of high-grade material are exhausted in 1990. The metallurgical performance of the low-grade ore will be adversely affected by the increased proportions of 2A ore, and the surficial oxidation which will inevitably occur during the stockpiling period. There are no reliable means of forecasting the effects which such surface alteration will impart on plant metallurgical results. For this purpose, a weighted average metallurgy is calculated as if the ore were freshly broken and mined. These grades and recoveries are then adjusted by the amounts shown in Table 5.3-8 to an attempt to reflect the possible effects of oxidation.

TABLE 5.3-8

LOW-GRADE STOCKPILE

ADJUSTMENTS TO REFLECT OXIDATION

Lead Concentrate % Pb	Lead Recovery %	Silver Recovery %	Zinc Concentrate Grade % Zn	Zinc Recovery %
-1.00	-5.00	-2.00	-1.00	-4.50

The metallurgical results achieved in 1982 when milling material from the oxide stockpile are applied when this stockpile provides the source of mill feed in 1992.

5.4 MILL PRODUCTION FORECAST

A summary of the mill production forecast, by period, is shown in Table 5.4-1.

The metal recoveries and concentrate grades are derived in Section 14.0 of this Report.

An allowance for transportation losses of 0.5 percent is included as representative of historical performance.

The amounts of payable metal are computed in accordance with the terms of the assumed smelter contract terms described in Section 9.0.

5.5 MILL ORGANIZATION STRUCTURE

5.5.1 Summary

Figure 5.5-1 illustrates the proposed Mill Organization Chart. Table 5.5-1 indicates the total mill manpower complement.

TABLE 5.4-1

MILL PRODUCTION SCHEDULE

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
A.Mill Feed																		
Mill feed -Millions DMT					0.000	0.000	0.000	0.000	0.168	0.192	0.219	0.295	0.310	0.363	0.346	0.335	0.346	2.574
B.Zinc Production																		
Zinc in feed % Zn									4.96%	5.21%	5.29%	4.81%	5.15%	5.47%	5.19%	5.24%	5.19%	
Zinc in concentrate % Zn									49.17%	49.39%	49.31%	49.95%	50.01%	49.82%	50.31%	50.28%	50.09%	
Zinc recovery %									79.38%	81.40%	80.52%	83.93%	84.54%	82.59%	83.38%	83.21%	81.36%	
Zinc concentrate DMT					0	0	0	0	13,446	16,480	18,920	23,827	27,014	32,938	29,786	29,038	29,159	220,608
Zinc concentrate WMT					0	0	0	0	14,381	17,625	20,235	25,484	28,892	35,227	31,857	31,056	31,186	235,944
Transport losses %									0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	
Smelter pay for %									83.73%	83.80%	83.77%	83.99%	84.00%	83.94%	84.10%	84.09%	84.03%	
Composite recovery %									66.05%	67.80%	67.03%	70.07%	70.60%	68.91%	69.70%	69.55%	67.94%	
Payable zinc (1000 Lbs)					0	0	0	0	12,128	14,944	17,122	21,907	24,870	30,180	27,615	26,904	26,891	202,560
C.Lead Production																		
Lead in feed % Pb									3.13%	3.38%	3.54%	2.74%	3.05%	3.22%	3.31%	3.69%	3.76%	
Lead in concentrate % Pb									53.90%	59.33%	60.12%	61.36%	60.50%	57.95%	63.79%	61.10%	60.71%	
Lead recovery %									82.42%	81.58%	82.25%	83.24%	83.82%	84.12%	83.62%	84.31%	84.04%	
Lead concentrate DMT					0	0	0	0	8,031	8,914	10,615	10,942	13,077	16,968	14,996	17,042	18,022	118,607
Lead concentrate WMT					0	0	0	0	8,589	9,534	11,353	11,703	13,986	18,148	16,039	18,226	19,275	126,853
Transport Losses %									0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	
Smelter pay for %									94.43%	94.94%	95.00%	95.00%	95.00%	94.82%	95.00%	95.00%	95.00%	
Composite recovery %									77.36%	76.98%	77.67%	78.60%	79.15%	79.29%	78.97%	79.62%	79.37%	
Payable lead (1000 Lbs)					0	0	0	0	8,956	11,002	13,284	13,978	16,472	20,435	19,914	21,678	22,779	148,498
D.Silver Production																		
Silver in lead concentrate																		
Grams per DMT					0.0	0.0	0.0	0.0	525.7	548.4	511.2	407.2	509.0	414.8	440.1	476.7	489.0	
Ounces per DMT					0.00	0.00	0.00	0.00	16.90	17.63	16.44	13.09	16.36	13.34	14.15	15.33	15.72	
Payable silver Oz/DMT					0.00	0.00	0.00	0.00	15.90	16.63	15.44	12.09	15.36	12.34	13.15	14.33	14.72	
Payable Silver (1000 Oz)								0.0	127.7	148.3	163.8	132.3	200.9	209.3	197.2	244.2	265.3	1,689.0
E.Total Production																		
Concentrate-Dry Metric Tons					0	0	0	0	21,477	25,394	29,535	34,770	40,091	49,906	44,783	46,079	47,181	339,215
Concentrate-Wet Metric Tons					0	0	0	0	22,970	27,159	31,588	37,187	42,878	53,375	47,896	49,283	50,461	362,797

TABLE 5.4-1

MILL PRODUCTION SCHEDULE

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Payable lead & zinc (Thousands Lbs)					0	0	0	0	21,085	25,946	30,406	35,885	41,342	50,615	47,529	48,581	49,671	351059

CURRAGH RESOURCES CORPORATION

TABLE 5.4-1

MILL PRODUCTION SCHEDULE

	1985	1986	1987	1988	1989	1990	1991	1992	Total
A.Mill Feed									
Mill feed -Millions DMT	0.000	2.574	4.074	4.074	4.074	4.074	4.074	2.161	25.105
B.Zinc Production									
Zinc in feed % Zn	0.00%	5.18%	5.10%	4.54%	4.84%	4.25%	2.95%	4.00%	
Zinc in concentrate % Zn	0.00%	49.90%	51.13%	51.22%	51.29%	51.03%	50.48%	48.11%	
Zinc recovery %	0.00%	82.52%	84.71%	84.63%	85.39%	84.32%	82.83%	72.36%	
Zinc concentrate DMT	0	220,608	344,189	305,813	328,465	286,361	197,263	130,109	1,812,807
Zinc concentrate WMT	0	235,944	368,116	327,073	351,299	306,269	210,976	139,154	1,938,831
Transport losses %	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	
Smelter pay for %	0.00%	83.97%	84.36%	84.38%	84.40%	84.32%	84.15%	83.37%	
Composite recovery %	0.00%	68.87%	71.04%	70.99%	71.65%	70.68%	69.28%	59.91%	
Payable zinc (1000 Lbs)	0	202,560	325,373	289,670	311,651	270,031	183,611	114,247	1,697,142
C.Lead Production									
Lead in feed % Pb	0.00%	3.32%	3.83%	3.21%	3.21%	2.58%	1.88%	2.49%	
Lead in concentrate % Pb	0.00%	60.18%	61.60%	62.48%	61.57%	61.66%	61.83%	59.95%	
Lead recovery %	0.00%	83.49%	85.42%	85.19%	85.65%	84.11%	80.73%	69.73%	
Lead concentrate DMT	0	118,607	216,328	178,049	181,963	143,576	100,118	62,701	1,001,343
Lead concentrate WMT	0	126,853	231,367	190,427	194,613	153,557	107,078	67,060	1,070,955
Transport Losses %	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	
Smelter pay for %	0.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	
Composite recovery %	0.00%	78.84%	80.68%	80.46%	80.89%	79.43%	76.22%	65.76%	
Payable lead (1000 Lbs)	0	148,498	277,456	231,613	233,288	184,311	128,841	78,153	1,282,160
D.Silver Production									
Silver in lead concentrate									
Grams per DMT	0.0	474.0	563.0	513.0	525.5	496.9	624.8	608.4	
Ounces per DMT	0.00	15.24	18.10	16.49	16.89	15.98	20.09	19.56	
Payable silver Oz/DMT	0.00	14.24	17.10	15.49	15.89	14.98	19.08	18.56	
Payable Silver (1000 Oz)	0.000	1,689.038	3,699.564	2,758.439	2,892.177	2,150.405	1,910.612	1,163.824	16,264.058
E.Total Production									
Concentrate-Dry Metric Tons	0	339,215	560,517	483,862	510,428	429,937	297,381	192,810	2,814,150
Concentrate-Wet Metric Tons	0	362,797	599,483	517,500	545,912	459,826	318,054	206,214	3,009,786

TABLE 5.4-1

MILL PRODUCTION SCHEDULE

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Payable lead & zinc (Thousands Lbs)	0	351,059	602,830	521,283	544,938	454,342	312,452	192,399	2,979,302

FIG 5.5 - 1

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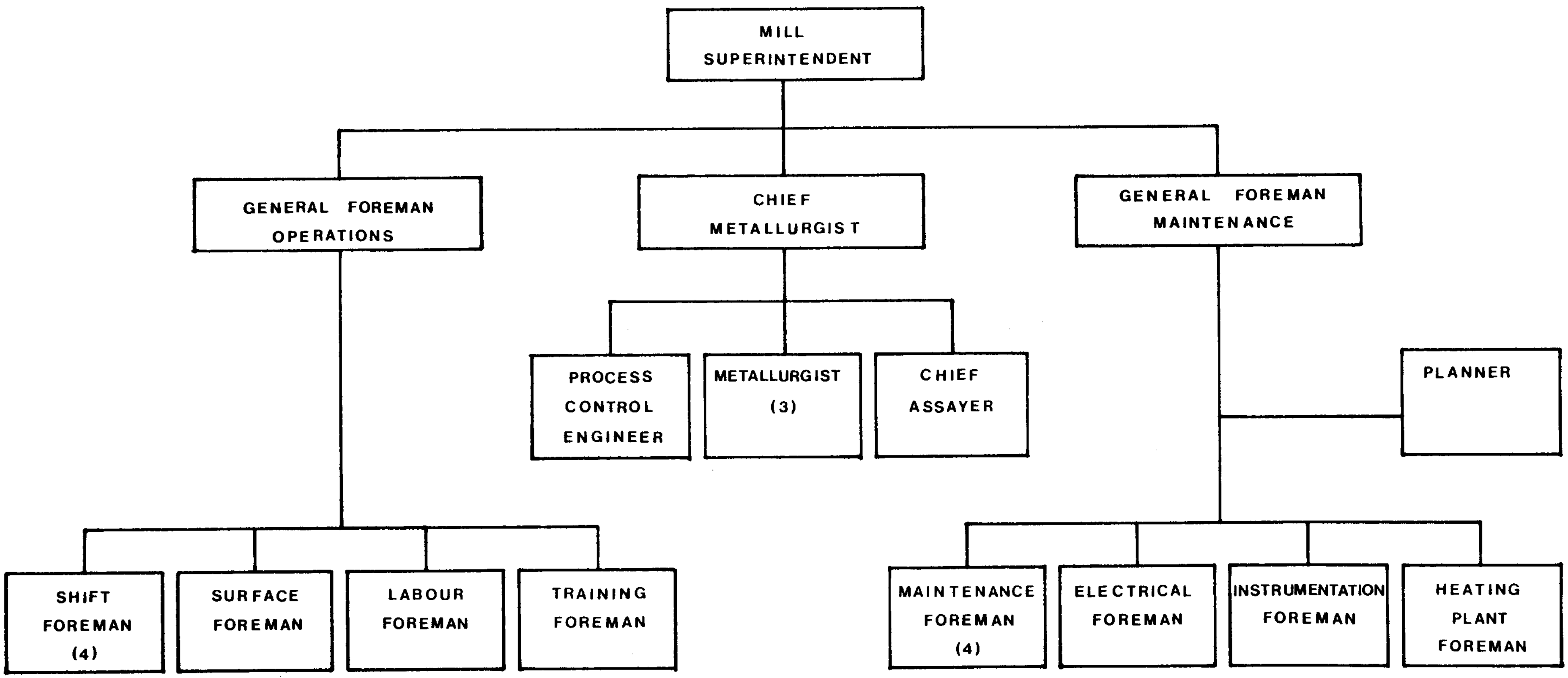
ORGANIZATION STRUCTURE - MILL



(2) DENOTES NUMBER OF EMPLOYEES IF GREATER THAN 1

KILBORN

TABLE 5.5-1

MILL MANPOWER - SUMMARY

Classification	Number of Employees Staff	Hourly	Total
Mill Operations	16	74	90
*Mill Maintenance	10	59	64
TOTAL	26	133	159

*An additional 5 Millwrights will be employed in 1986 to carry out circuit changes which may be instituted as a result of plant and laboratory test programs.

5.5.2 Mill Operating Staff

Reporting directly to the General Manager - Faro Operations, the Mill Superintendent will be responsible for the safe and efficient operation, maintenance and metallurgical control of the concentrator. The General Foreman - Operations, General Foreman - Mill Maintenance and the Chief Metallurgist will all report to the Mill Superintendent.

The daily mill operation will be carried out under the direction of the General Foreman - Operations. The mill operating staff will include 4 Shift Foremen, one Surface Foreman, one Labour Foreman and a Training Foreman. The Shift Foreman will work in accordance with the rotating shift schedule and will supervise the Operating Crews. The Labour Foreman will work on day shift and will be responsible for assigning duties to the Labour gang, Reagent Mixing Crew and those persons who will be required to work periodically at the tailings impoundment pond. The Training Foreman will be responsible for implementing programs designed to ensure that all operating personnel are trained to perform their assigned duties safely and efficiently. The proposed reduction in the number of wage classifications will contribute significantly to the reduction in the movement of employees within, and between the operating departments. This decrease in employee mobility will enhance considerably the cost effectiveness of the in-house training programs.

The Chief Metallurgist will be responsible for the direction of laboratory and plant test programs designed to expedite the attainment of optimum metallurgical performance. Four graduate Metallurgists will each be assigned specific plant areas in which a prioritized list of projects will be established. The Metallurgists will compile and analyze operating results to provide a basis for future plant improvements. The Metallurgists will direct the activities of the Metallurgical Technicians. A Process Control Engineer will be responsible to ensure that all process control systems function efficiently, and with the assistance of the Chief Metallurgist and Mill Superintendent he will develop short and long-term process control strategies to improve process efficiencies. A Chief Assayer will be responsible for the Assayers and Sample Buckers.

5.5.3 Mill Maintenance Staff

Plant maintenance activities will be directed by the General Foreman - Mill Maintenance. Four Mechanical Maintenance Foremen will assign work to their respective crews in accordance with a simple but effective preventive maintenance system administered by the 2 Maintenance Planners. An Electrical Maintenance Foreman and Instrumentation Foreman will direct the work of the Mill Electrical and Instrumentation Repair Crews. The Heating Plant Foreman will be a Stationary Engineer holding a First Class Steam Engineer's Certificate. The incumbent will be responsible for the operation of the Heating Plant and will serve in an advisory capacity to the Mill Maintenance Crews.

5.5.4 Mill Operating Labour

A list of the Operating Labour personnel is provided in Table 5.5-4.

TABLE 5.5-4

MILL OPERATING CREW

Area	Number of Personnel
Production and Maintenance	
Crusher Operator	4
Crusher Helper	4
Grinding Operator	4
Control Room Operator	4
Flotation Operator	4
Flotation Helper	4
Filter Operator	4
Filter Helper	4
Filter Sector	1
Load-Out Operator	4
Load-Out Helper	4
Tailings Operator	1
Equipment Operator	1
Garbage Truck Driver	1
General Labourer	10
Trainee	4
Reagent Operator	2
Bucker	3
Coal Crusher Operator	1
Subtotal	64

Area	Number of Personnel
Office and Technical	
Metallurgical Technician	4
Assayer	4
Mill Clerk	2
Subtotal	10
TOTAL OPERATING LABOUR	74

The terms of the proposed collective agreement incorporate a reduction in the number of wage classifications. Consequently, employees will be less motivated to move rapidly from job-to-job in an effort to increase their rate of pay. Instead, operating personnel will be more likely to remain longer in operating positions, thereby acquiring increased skills through experience and on-the-job training.

5.5.5 Mill Maintenance Labour

Table 5.5-5 indicates the complement of Mill Maintenance personnel.

During the year 1986 an additional 5 Millwrights will be added to perform work of a project nature arising from the rigorous plant testing programs.

The crew includes an expanded group of Instrumentation Technicians and, for the first time, a Mill Electrical Crew dedicated solely to maintenance of electrical systems in the Concentrator.

TABLE 5.6-1

MILL OPERATING COST SUMMARY

$(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mill PreProduction & Operating Costs																		
Area of expense																		
Operating supervision	0	0	30	35	35	45	50	80	80	80	80	80	80	80	80	80	80	995
Operating labour	0	0	0	63	12	12	30	158	198	198	198	198	198	198	198	198	198	2,057
Operating supplies	0	0	0	0	0	0	0	0	794	907	1,035	1,392	1,465	1,715	1,635	1,583	1,635	12,162
Maintenance supervision	0	0	25	30	40	45	50	50	50	50	50	50	50	50	50	50	50	690
Maintenance labour	0	0	24	124	151	193	193	244	217	217	217	217	217	217	217	217	217	2,879
Maintenance supplies	0	0	24	124	151	193	193	244	217	217	217	217	217	217	217	217	217	2,879
Sub-total	0	0	103	377	389	487	515	777	1,555	1,669	1,796	2,153	2,226	2,477	2,396	2,344	2,396	21,661
Premium for Milling LG/Oxide Ore		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Project Supplies																		
Rockbreaker	0	0	0	0	0	0	70	70	0	0	0	0	0	0	0	0	0	140
Coarse ore feeder	0	0	0	0	50	100	150	0	0	0	0	0	0	0	0	0	0	300
Upgrade of conveyors	0	0	0	0	20	20	20	20	0	0	0	0	0	0	0	0	0	80
Water distribution system	0	0	0	0	0	25	25	50	0	0	0	0	0	0	0	0	0	100
Vibrating screens	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	60
Engineering	0	0	50	50	50	25	25	25	0	0	0	0	0	0	0	0	0	225
Sub-Total -Add Proj.Supplies	0	0	50	50	180	170	290	165	0	0	0	0	0	0	0	0	0	905
Contingency on Preproduction 20 % of Maintenance Costs	0	0	15	56	69	86	87	108	0	0	0	0	0	0	0	0	0	420
Total Mill Preproduction & Operat	0	0	168	482	638	743	892	1,050	1,555	1,669	1,796	2,153	2,226	2,477	2,396	2,344	2,396	22,986

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TABLE 5.6-1

MILL OPERATING COST SUMMARY

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mill PreProduction & Operating Costs									
Area of expense				$(000)'s					
Operating supervision	100	895	960	960	960	960	960	960	6,755
Operating labour	75	1,982	2,376	2,376	2,376	2,376	2,376	2,376	16,311
Operating supplies	0	12,162	19,252	19,062	19,052	19,052	19,002	10,053	117,635
Maintenance supervision	95	595	600	600	600	600	600	600	4,290
Maintenance labour	299	2,579	2,394	2,394	2,394	2,394	2,394	2,394	17,240
Maintenance supplies	299	2,579	2,035	2,035	2,035	2,035	2,035	2,035	15,086
Sub-total	869	20,792	27,616	27,426	27,416	27,416	27,366	18,417	177,317
Premium for Milling LG/Oxide Ore	0	0	0	0	0	834	2,037	1,982	4,853
Additional Project Supplies									
Rockbreaker	0	140	0	0	0	0	0	0	140
Coarse ore feeder	50	250	0	0	0	0	0	0	300
Upgrade of conveyors	20	60	0	0	0	0	0	0	80
Water distribution system	0	100	0	0	0	0	0	0	100
Vibrating screens	60	0	0	0	0	0	0	0	60
Engineering	150	75	0	0	0	0	0	0	225
Sub-Total -Add Proj.Supplies	280	625	0	0	0	0	0	0	905
Contingency on Preproduction 20 % of Maintenance Costs	139	281	0	0	0	0	0	0	420
Total Mill Preproduction & Operating	1,288	21,698	27,616	27,426	27,416	28,250	29,403	20,399	183,494

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TABLE 5.5-5

MILL MAINTENANCE CREW

Job Classification	Job Functions	Number of Employees
	Millwright	38
	Electrician	10
	Instrument Technician	5
	Heating Plant Operator	4
	Truck Driver/Labourer	2
	TOTAL	59

No allowance is made in this study for the inclusion of an Apprenticeship Program. In fact, it is highly probable that such formal job training will be instituted, although, for this purpose it may be assumed that there will be no increase in the number of Maintenance personnel, or the associated costs.

5.6 MILL OPERATING COST SUMMARY

A summary of the projected mill operating costs is provided in Table 5.6-1. for completeness, costs incurred by the Mill Department prior to the commencement of milling operations are also shown.

The costs of grinding steel and reagents are all quoted and used on an 'fob Vancouver' basis. The incremental freight cost to move supplies from Vancouver to the mine site are estimated in Section 8.6 of this Report in order that such costs can be clearly identified.

5.7 MILL PREPRODUCTION PROGRAM

5.7.1 Program Objectives

Prior to the commencement of milling operations on April 1st, 1986 it will be necessary to 'demothball' the plant, carry out routine maintenance activities and effect certain circuit modifications.

Kilborn has not seen a detailed schedule of work which should be performed during the prestart-up period. A considerable amount of effort has been expended by Cyprus Anvil, and others, to identify maintenance activities and new projects which should be included in any such schedule.

A well-planned preproduction program will:

(a) Ensure the plant is capable of achieving the proposed plant throughput rates and metallurgical targets.

(b) Facilitate a smooth and trouble-fee start-up, thereby allowing attention to focus on the metallurgical optimization studies.

(c) Include only those projects which are economically justifiable. Front-end capital expenditures will be minimized, consistent with the previously-noted objectives.

(d) Not include projects which are based upon insufficient operating data. Instead, programs will be established whereby meaningful empirical data will be recorded, compiled and analyzed once stable operations have been achieved. The economic viability of projects which currently indicate potential to improve efficiencies will then be determined.

Certain maintenance and project work will be carried out before the start-up to enhance plant performance. To keep such plans, in perspective, however, it is worthy of note that the average mill production rate achieved during 1982 equalled 96 percent of the proposed 11 160 tonnes per day, despite the usual start-up difficulties.

TABLE 5.7-1

MILL FEED TONNAGES

JANUARY - MAY, 1982

Month	Dry Metric Tonnes	Number of Operating Days	Average Daily Mill Throughput Dry Metric Tonnes
January	288,300	31	9,300
February	296,571	28	10,592
March	367,177	31	11,844
April*	308,869	29	10,651
May*	339,378	30	11,703
TOTAL	1,600,295	149	10,740
Proposed Throughput			11,160

*The plant was shutdown April 9th and May 24th, 1982 to observe Statutory holidays.

Certain capital projects have been proposed by others which are excluded from Kilborn's program. In many of these instances, Kilborn recognizes the desirability of the proposed facilities, but contends that the additional systems and equipment are not necessary to ensure the efficient operation of the Concentrator at the planned production rates. In subsequent years Mill Operating staff may be able to justify more sophisticated process control systems, for example, based upon dependable operating data and prevailing economic circumstances.

A list of the principal prestart-up projects is provided in Table 5.7-2.

Maintenance supply costs are estimated by assuming that the cost of supplies equals that of labour (reference Section 14.3-8). The costs of new equipment required for projects are based, in part, upon telephone quotations and previous engineering studies.

It is proposed that one project, the construction of the bulk lime and soda ash receiving station, be contracted out to a local civil contractor.

Virtually all mechanical and piping engineering will be performed by 2 Design draftsmen and one Process Engineer, all of whom will work at the site during the prestart-up phase.

These personnel will be retained by Curragh to assist in the design of field modifications and to maintain existing drawings in the 'as-built' condition.

TABLE 5.7-2

PREPRODUCTION MILL PROJECTS

Area	Project Description
Crushing	Install Primary Crusher Rock Breaker
	Modify Vibrating Screens
	Replace Coarse Ore Vibrating Feeders
	Upgrade Conveyors (Motors, Gear, Reducers, etc.)
	Routine Maintenance
Grinding	Overhaul Slot Feeders No. 2 and No. 3 Fine Ore Bins
	Routine Maintenance
Flotation	Install One Cyclopac 15-inch Regrind Cyclones
	Modify Zinc Rougher Feed Pumpbox and Discharge Piping
	Pumpbox and Launder Modifications
	Routine Maintenance
Reagents	Bulk Lime and Soda Ash Receiving Station
	Improve Cyanide Area Ventilation
	Routine Maintenance and Minor Modifications
	Install Soda Ash Slurry Distribution Tank
Dewatering	General Upgrading of Pumps and Piping Systems
	Routine Maintenance
Water Distribution	Modify Existing Water Distribution System

Area	Project Description
Electrical	Install New Conveyor Motors, Overhaul and Clean Existing Equipment. Clean MCC Rooms, Relable as Necessary MCC and Control Panel Stations. Dewatering Controls
Instrumentation	Clean, and Calibrate Existing Equipment. Replace Broken Equipment. Install Additional Instrumentation and Dewatering Controls

5.7.2 Crushing

(a) General

The primary and secondary fine crushing circuits have been changed little since the commencement of operations in 1969 when the mill throughput rate was 1.8 million tonnes per years.

The proposed increase in the crushing plant production rate to 4.1 million tonnes per year will be achieved in, large part, by extending the scheduled operating time of the two crushing plants as shown in Table 5.7-3.

TABLE 5.7-3

CRUSHING PLANT OPERATING SCHEDULES

	Primary Circuit		Secondary Circuit	
Item	Original Criteria	Proposed Criteria	Original Criteria	Proposed Criteria
Hours per Shift	8	12	8	12
Shifts per Day	1	2	1	2
Shifts per Week	6	9	7	10
Crushing Rate (DMT per Hour)	1270	1200	762	600

The broad assumptions used to develop this Operating Schedule are shown below (reference Figure 5.7-1).

Primary Crushing Circuit

Assume: Crushing Rate - 1200 DMT/Hour
Primary Screen Oversize - 65 Percent of Screen Feed

During a normal operating week, with no plant shutdowns the mill will consume 12,000 DMT per day x 7 which equals 84,000 DMT per week.

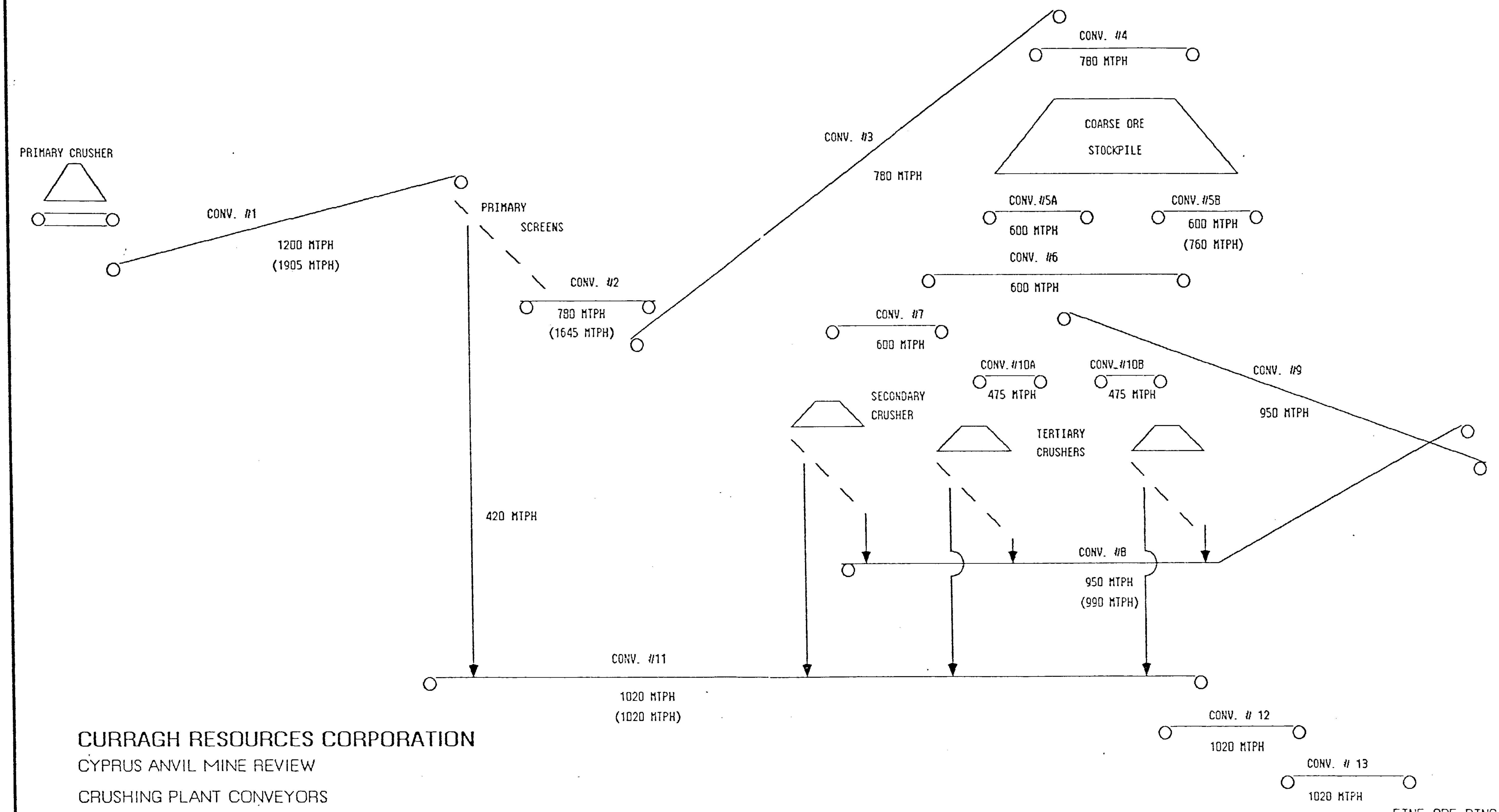
Theoretical Primary Crushing Time - $\frac{84,000}{1200} = 70$ Hours

Allow 50 percent efficiency factor for primary circuit.

Note:

Required crushing time equals 70 hours x 1.5 which equals 105 hours.

Primary crushing circuit will operate for nine 12-hour shifts per week.



CURRAGH RESOURCES CORPORATION

CYPRUS ANVIL MINE REVIEW

CRUSHING PLANT CONVEYORS
DESIGN CAPACITIES

( ) DENOTES ORIGINAL DESIGN CAPACITY

KILBORN

FIG. 5.7-1

Secondary Crushing Circuit

Weekly Mill Throughput at 12,000 DMT per Day	-	84,000 DMT/Week
Less Primary Screen Undersize	-	29,400 DMT/Week
Equals Feed to the Secondary Crushing Circuit	-	54,600 DMT/Week
Assume Secondary Crushing Rate	-	600 DMT/Hour
Theoretical Secondary Crushing Time	-	$\frac{54,600}{600}$ = 91 Hours

Allow 30 percent efficiency factor for secondary circuit.

Note:

Required crushing time equals 91 hours x 1.3 which equals 118 hours.

Secondary crushing circuit will operate for ten 12-hour shifts per week.

(b) Primary Crushing Circuit

Crushing operations were frequently disrupted in the past by oversized rocks which became lodged in the gape of the primary crusher. An allowance of $300,000 is provided for the purchase and installation of a suitable rock breaker to facilitate the rapid removal of such material.

New primary screen decks will be installed in accordance with the manufacturer's recommendations to reflect the revised production rates.

No conveyor modifications will be required in the primary crushing circuit.

Routine maintenance will, however, be carried out on all process equipment, dust collection and heating and ventilating systems.

(c) Secondary Crushing Circuit

The original design of the chutes through which ore is withdrawn from the coarse ore bin has not proved successful. An improved chute design has been developed which, when operated in conjunction with larger vibrating feeders will considerably improve the operation of the fine crushing plant. Approximately $300,000 will be spent to purchase the new vibrating feeders and associated chutes.

The secondary screen will be modified from a single deck to a double deck unit. The screens beneath the tertiary crushers will be replaced.

Conveyor modifications which will be required are identified in Table 5.7-4 which compares some of the original conveyor design criteria with those proposed by Kilborn. In addition to the changes to the drives of Conveyor Nos. 8, 9, 11, 12 and 13 routine maintenance will be carried out on all conveyors, chutes and dust handling systems. Conveyor belting throughout the crushing plant will be vulcanized as necessary to eliminate all mechanical splices. Conveyor skirtings, scrapers and protection devices will be repaired and/or replaced as required to ensure efficient and clean operation.

5.7.3 Grinding

The principal items of process equipment are adequately-sized to accommodate the increased production rates.

Prior to the recent suspension of the operations, No. 1 Fine Ore Bin was emptied of residual muck and the slot feeder chutes were replaced. This work, being particularly labour intensive and time consuming, will be performed on No. 2 and No. 3 Fine Ore Bins prior to the resumption of operations in order to avoid future grinding circuit shutdowns.

Maintenance programs, curtailed in 1982, provided for the installation of new hydraulic drives on two slot feeder conveyors. Certain mill feed and discharge chutes were also scheduled to be replaced. Much of the material for these programs is currently on-site. This work, in addition to routine maintenance activities, will be performed prior to the resumption of milling operations.

TABLE 5.7-4

CONVEYOR DESIGN CRITERIA

		Original Flowsheet (1969)			Kilborn Proposal		
Conveyor Number	Belt Width (in)	Capacity DMT/Hour	Speed Ft/Min	Motor hp	Capacity DMT/Hour	Speed Ft/Min	Motor hp
1	42	1875	425	200	1200	425	200
2	48	1620	250	15	780	250	15
3	42	1620	425	250	780	425	250
4	48	1620	275	20	780	275	20
5A & 5B	36	750	250	15	600	250	15
6	36	750	350	100	600	350	100
7	48	750	200	10	600	200	10
8*	36	975	350	75	950	440	125
9*	36	975	350	100	950	440	150
10A & 10B	48	715	Variable	5	475	Variable	5
11*	30	1005	425	150	1020	610	150
12*	30	1005	425	15	1020	610	25
13**	30	1005	425	200	1020	610	200

*Changes required to conveyor speed and motor size as noted.

**Conveyor No. 13 motor was increased from the original 150 horsepower to the present 200 horsepower by Cyprus Anvil after 5 years of operation.

The alignments of all mills will be checked and adjusted as necessary.

No changes to cyclone sizes should be made until further operating data is obtained. Test programs will be implemented promptly upon the start-up to optimize cyclone parameters. A contingency is included in the capital costs during the first year's operation to provide for such items if required.

5.7.4 Flotation and Reagents

While the major items of process equipment will satisfy the proposed production criteria, a number of circuit modifications should be implemented before operations commence.

During the 6-month period of operation following the completion of the mill modifications, the zinc rougher circuit performance was adversely affected by surges in flows from the feed pumps. Attempts to eliminate this problem were not successful. Allowance is made in the capital budget to redesign, fabricate and install a zinc rougher feed pumping system which will work effectively.

Experience gained during the brief period of operation indicated a number of relatively minor improvements which could be made to minimize process spillage from distributors, pumpboxes and launders. This work is scheduled in the preproduction activities.

Provision is included to install 15-inch diameter cyclones in one zinc regrind circuit. By so doing, test work may commence immediately to evaluate various cyclone configurations at the higher plant throughput rates.

Cyprus Anvil has recently conducted a limited amount of test work to evaluate the effects which conditioning imparts on the metallurgical performance of the zinc circuit. Contrary to the results of earlier test programs, recent data indicates that improvements in the rate of flotation may be achieved through the use of conditioners. It is proposed that the modifications to the zinc rougher feed pumpbox be designed to operate in conjunction with conditioners which may be installed in 1986, subject to the results of further laboratory and plant test programs.

For this purpose, it is assumed that lime and soda ash will be delivered in bulk form. The reagents will be dumped into a single hopper from which the material will be conveyed pneumatically to the respective existing bulk storage tanks. The installation of this system is necessary to eliminate the expensive and dangerous methods used in the past to unload lime. Further, the use of such a bulk chemical receiving facility will eliminate the Company's current dependency upon the use of the White Pass & Yukon soda ash transloading building in Whitehorse.

Prior to the start-up of the mill operation the lime ball mill will be completely overhauled. The existing baghouse will be replaced with a Ducon wet dust collector to improve the dust extraction and eliminate the traditionally-hazardous job of cleaning and maintaining the original system.

A new soda ash distribution tank will be installed, complete with all necessary controls to alleviate the difficulties which were encountered in producing a soda ash slurry of constant consistency.

The filter and distribution system will be modified to provide individual reagent control to each filter by means of dedicated metering pumps.

The ventilation in the cyanide mixing area is currently inadequate. The mixing and distribution tanks will be covered and additional exhaust fan capacity provided.

5.7.5 Dewatering and Load-Out

The thickeners, clarifiers, concentrate surge tanks, filters and dryers will all be capable of dewatering the projected concentrate production. Nevertheless, there will be periods of time when the plant throughput will be at, or close to the maximum theoretical capacity. Kilborn has not examined means by which the capacity of the plant may be increased. It is recommended, however, that the total dewatering plant capabilities be reviewed in detail as an integral part of any subsequent engineering studies. It remains to complete some of the work which initially was included in the 1980-81 Construction Program. In addition, experience with the new plant identified a number of materials handling problems which should be resolved prior to plant start-up.

It was Cyprus Anvil's intention initially to develop one central control room in the grinding area from which all plant functions could ultimately be controlled. Accordingly, certain controls for the dewatering area were installed in the grinding control room. Pending the completion of these long-term plans it is proposed that those controls installed in the grinding control room be duplicated in the filter control room to facilitate efficient operations in the immediate future.

5.7.6 Water Distribution

Cyprus Anvil is currently seeking regulatory approval to increase the permissible amount of freshwater which may be consumed by the Mining operation. This matter is reviewed in Section 6.3 of this Report.

The availability of additional quantities of freshwater will facilitate the simplification and upgrading of the existing water distribution systems. Once complete, the proposed installation will ensure adequate quantities of water will be available for all purposes with little dependency upon the use of any recycled water.

6.0 SERVICES

6.0 SERVICES

6.1 ELECTRICAL ENERGY

6.1.1 Power Supply

The Northern Canada Power Commission (NCPC) electrical power generating stations and distribution grid provides power to the mine site and the Town of Faro. The 138 kV overhead transmission line also services Whitehorse, Carmacks Ross River and a number of smaller Communities (see Figure 6.1-1).

The Commission generates hydro electric power at Aishihik and Whitehorse. Diesel generated power can be produced at Whitehorse and Faro.

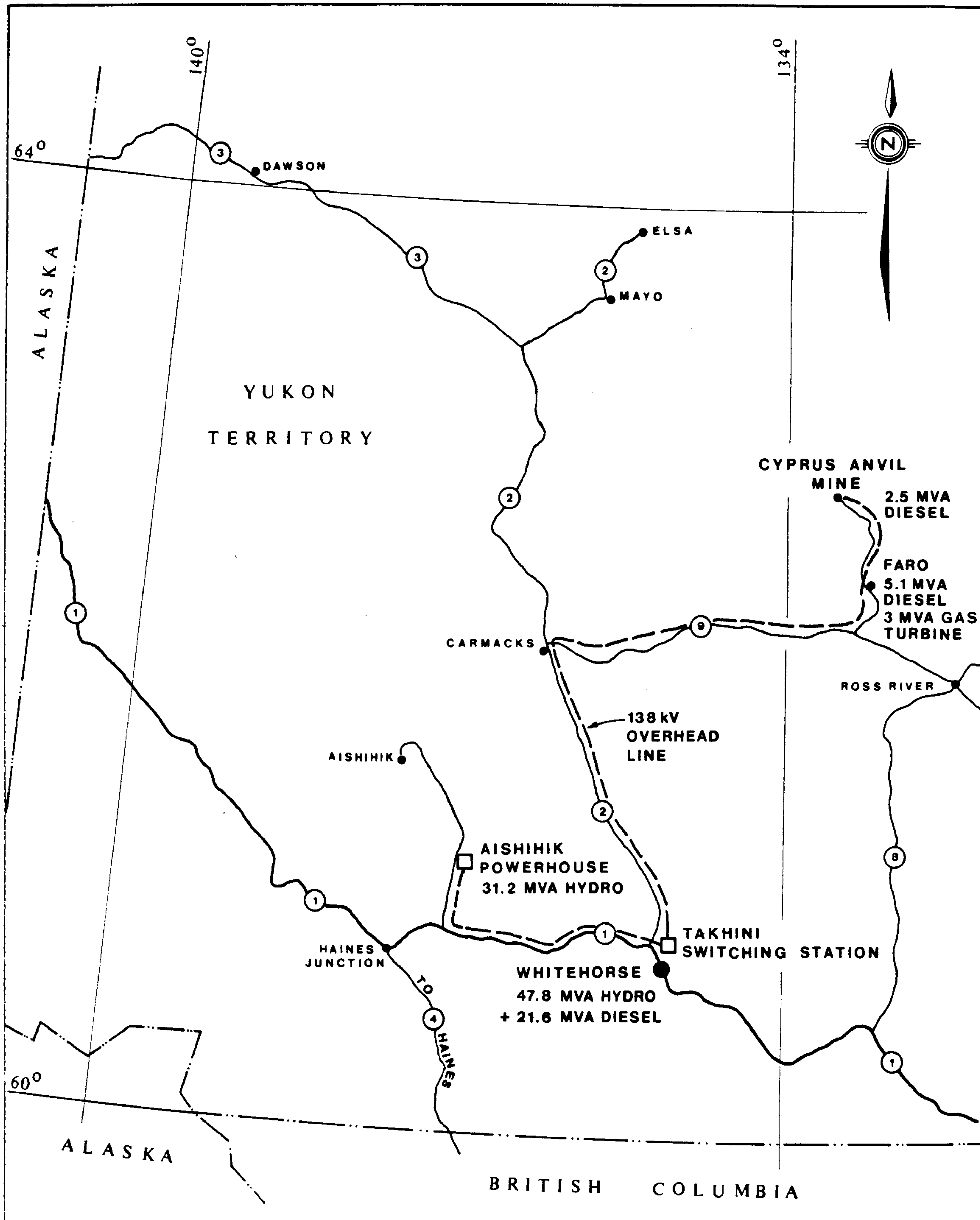
TABLE 6.1-1

NCPC POWER GENERATING CAPABILITY

Source		Rated Capacity (MW)
Hydro	- Aishihik	31.2
	- Whitehorse	47.8
Diesel	- Whitehorse	21.6
	- Faro	5.1
	- Faro Turbine	3.0
TOTAL		108.7

In addition to the above, a 2.5 MW diesel emergency generator is owned and operated as required by Cyprus Anvil.

Constraints imposed by the availability of water dictate that the Aishihik hydro electric plant operate generally through



TITLE: CYPRUS ANVIL MINE REVIEW **NCPC YUKON POWER SYSTEM**	SECTION:	
KILBORN ENGINEERING (B.C.) LTD.	AREA NO:	REV. NO:
CLIENT: CURRAGH RESOURCES CORP. FARO, YUKON — PROJECT NO: 3509-15	DRAWING NO:	
APPROVED: — DATE: JULY 15, 1985	FIGURE 6.1-1	A

the winter months. The hydro electric load during the summer months is generally assumed by the Whitehorse plant.

The depressed state of the Yukon's economy has resulted in the availability of electric power far in excess of the projected load growth requirements. In earlier times, portions of Cyprus Anvil's power were generated by diesel electric units due to the lack of the less expensive hydro electric energy. The shutdown of the Whitehorse Copper Mine, the installation of the fourth hydro electric turbine and the general decline in Yukon economic growth have resulted in an excess of hydro electric power available to future consumers. It is certain that virtually all the mine's future energy requirements will be serviced by hydro electric generators.

6.1.2 Power Requirements

The total mine site energy consumption during the last 8 months of operation after the 1981 expansion (October, 1981 through June, 1982) averaged 13.2 GWH.

It is anticipated the total power requirements in the future will vary little from this value.

For the purposes of this Report, the maximum annual energy consumption is assumed to be 165 GWH; the peak demand will be in the order of 24 kVA. The monthly energy consumptions projected between October, 1985 and March, 1986 are reported in Table 6.1-2.

TABLE 6.1-2

PRE-MILL PRODUCTION

ENERGY CONSUMPTION

Month	Year	Energy Consumption (GWH)
October	1985	2.0
November	1985	2.4
December	1985	2.8
January	1986	3.1
February	1986	3.3
March	1986	3.3

6.1.3 Power Costs

Cyprus Anvil's costs for electrical power were calculated in accordance with a formula which incorporated such factors as:

(a) The peak demand;
(b) The amount of hydro electric energy consumed; and,
(c) The amount of diesel electric energy consumed.

The total costs of electric power, and the average cost per unit of energy are shown in Table 6.1-3 for the period 1977 through 1984.

TABLE 6.1-3

ELECTRICAL ENERGY COSTS

Year	Energy Consumption GWH	Total Power Cost $ (Millions)	Average Energy Price ¢/kWhr
1977	101.0	3.3	3.3
1978	105.6	3.8	3.6
1979	89.9	3.6	4.0
1980	103.5	4.3	4.2
1981	108.6	6.5	6.1
1982	80.1	6.4	8.0
1983	44.2	2.9	6.5
1984	21.6	1.4	6.5

The operations were shutdown in June, 1982. Mine waste stripping activities commenced in June, 1983 and ceased on October 28th, 1984.

The NCPC issues a new Utility Service Rate Schedule each year. Under the terms of the most recent schedule, the price of energy is $0.0961 (Industrial Primary Rate) and a demand charge of $32.00 per kVA is charged. In addition, a surcharge of $685.92 per billing months is proposed.

NCPC is a Crown corporation operating under the terms of the NCPC Act which, in essence, requires the Utility Company to operate generally at a breakeven point. One intent of the Act is that NCPC customers will pay over time for major capital programs which are undertaken in the respective divisions of NCPC, either the Yukon or the Northwest Territories.

The NCPC has historically adopted a system known as 'zone rate rationalization' by which those customers, deemed by the Commission most able to pay higher rates, were so charged in an effort to reduce NCPC's debt. Through this expedient Cyprus Anvil has been charged, and has paid, power rates in excess of the cost of service, and higher than rates paid by other customers in the Yukon. Further, the total unit cost of energy to Cyprus Anvil is amongst the highest in Canada when compared to similar mining operations serviced by electrical distribution grids.

Over the past 2 years the National Energy Board of Canada (NEB) has conducted an inquiry into the structure and operation of the NCPC. As a result of the NEB's investigations it is probable that fundamental changes will be announced in the near future to the methods by which the NCPC must currently establish the price to the charged for electrical power. It is anticipated that some, of the Commission's debt to the Federal Government will be forgiven, or converted into equity. In addition, the unit cost of energy will be established to more closely reflect the actual costs incurred by the Commission.

The NCPC presented data to the NEB on October 19th, 1984 (revised December 10th, 1984) which indicated the Commission's forecast revenue requirements, based upon the assumption that the Cyprus Anvil mine would remain shutdown.

Cyprus Anvil adjusted the NCPC submission to provide for the resumption of operations at Faro. Since the power consumed would be generated almost entirely by hydro electric means, Cyprus Anvil assumed the NCPC costs of service to remain unchanged. The data submitted by Cyprus Anvil is compared with that offered by the NCPC in Table 6.1-4.

TABLE 6.1-4

ESTIMATED ENERGY COSTS

Item		NCPC Proposal MWhr/Year	Cyprus Anvil Submission MWhr/Year
Faro System	- Cyprus Anvil (Base Case)	12,000	160,000
	- Other	174,141	174,141
	- Faro Town	--	1,077
Mayo System		28,836	28,836
TOTAL ENERGY REQUIREMENTS		214,977	364,054
NCPC Revenue Requirements		$ 19,950,000	$ 19,950,000
Average Energy Price ($/kWhr)		$ 0.0928	$ 0.0548

It is expected that announcements will be made in the near future relating to the new electrical energy pricing structure for the NCPC. The current high costs of energy are due, in part to the $200 million debt load carried by the NCPC in the Yukon and Northwest Territories. Kilborn has been advised, if the costs of this debt were excluded, then the average energy costs would be less than 2.0 cents per kWhr.

Curragh has advised Kilborn to use 4.0 cents per kWhr as the cost of energy, based upon information Curragh has obtained from Ottawa sources.

The annual consumption of electrical energy will vary with the level of mining and processing activity. In 1987, all mining equipment will be operating in addition to the mill. Based upon projected maximum 165 GWH energy consumption, and the 4.0¢ per kWhr energy price, the annual cost will be $6.6 million, or $1.62 per tonne milled.

6.2 TAILINGS DISPOSAL

6.2.1 Existing Facilities

Tailings facilities for the mine are located in the Rose Creek Valley (Figure 6.2-1).

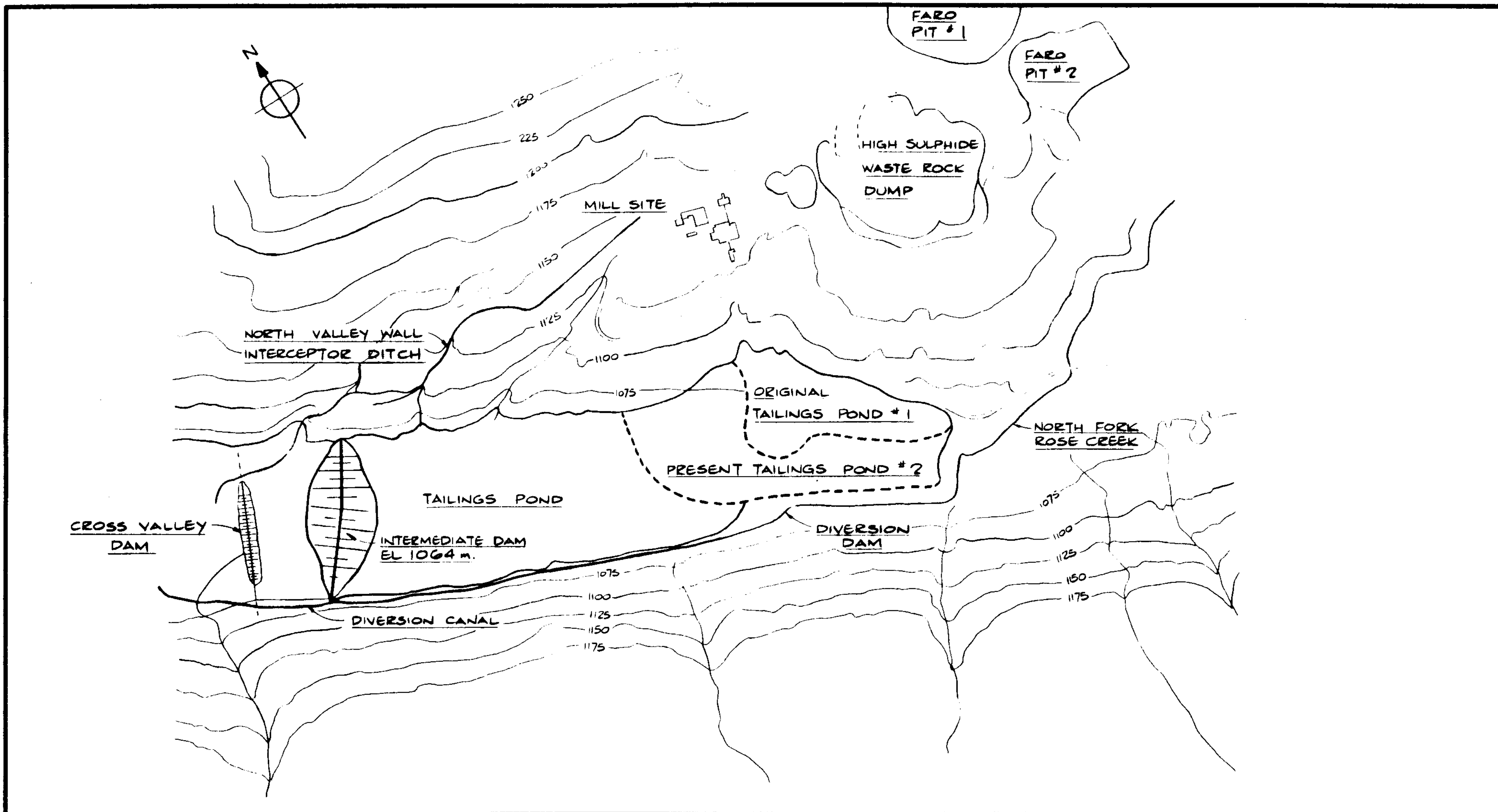
To date, 2 impoundment dams have been utilized occupying some 67 hectares and containing 11 million cubic metres of tailings.

The upstream site extends from the north Valley wall to the midpoint of Rose Creek Valley. It is surrounded by a composite-material dyke and is filled to an average elevation of approximately 1100 metres. This pond contains approximately 6 million cubic metres of tailings and covers 27 hectares.

The second tailings pond is located immediately downstream and has a surface area of 40 hectares. It is filled to an average elevation of 1093 metres and contains approximately 5 million cubic metres of tailings. Construction of this pond required that Rose Creek be diverted onto the terrace along the south wall of the Valley.

As part of the mine expansion in 1980-81, the Down Valley Tailings Impoundment Facility was designed and built.

The tailings pond configuration includes 2 dams, the Intermediate and Cross Valley Dams, which both extend across the Rose Creek Valley. The upstream volume contained by the Intermediate Dam will be used to store solid tailings. Supernatant will decant from this pond into that contained by the Cross Valley Dam located 500 metres downstream of the Intermediate Dam. Sufficient retention time is provided in this portion of the pond to permit settlement of the fine



REV.	ISSUED FOR	DATE	APPVD.

No.	DATE	REVISION
A	15·7·85	TECHNICAL & COST REVIEW

CLIENT CURRAGH RESOURCES CORP.

LOCATION FARO - YUKON

KILBORN ENGINEERING (B.C.) LTD.

SECTION	PROJECT No. 3509 - 15	AREA No.
DRAWN P.C.	CHECKED	EQMT: No.
DATE	APPROVED	PROJ. APPR.

TITLE

CYPRUS ANVIL MINE REVIEW
FINAL AREA OF
DRY TAILINGS AT
ABANDONMENT

SHEET No.	CONT. ON	DWG. No.	REV. No.
		FIG. 6.2-1	A

NCI - 468

particulates, and chemical degradation before the final tailings effluent decants into Rose Creek.

The elevation of the Intermediate Dam will be raised periodically up to a maximum elevation of 1064 metres as required to contain the solid tailings.

A diversion channel has been constructed and is presently operating on the south wall of the Valley to convey Rose Creek flows around the impoundment area. A second channel, the north Valley wall intercepter ditch, is under construction to divert smaller creeks which flow into the Valley from the north. Reference should be made to the 1980 Reports prepared by Golder Associates for a detailed description of the proposed Down Valley Scheme.

6.2.2 Abandonment Plans

In September, 1980 Cyprus Anvil presented the Down Valley Scheme to the Yukon Territorial Water Board. Subsequent to a public hearing held on September 3rd, 1980, the Water Board recommended that the Controller of Water Rights grant permission to begin construction of the facilities however, the Water Board withheld the operating licence until an acceptable abandonment plan for the tailings pond was presented. In January, 1981, Klohn Leonoff Ltd. (KLL) was selected by Cyprus Anvil to design this abandonment plan.

Three schemes were presented:

(a) Scheme 1

Isolation of the tailings from groundwater and surface water, i.e. adoption of diversion canal concept as proposed for the operation of the Down Valley Scheme.

(b) Scheme 2

Creation and maintenance of an abandonment pond above the tailings surface to prevent oxidation and acidification of tailings. The design provided for the flow of water through the pond area.

(c) Scheme 3

Removal of tailings from the Valley for subsequent backfilling of the Faro No. 1 pit.

The KKL Report was issued September 1st, 1982 and recommended Scheme 2. Following the requisite public hearings the plan identified as Scheme 2 above was incorporated into the Water Licence granted by the Yukon Territorial Water Board.

Additional studies have been conducted to develop less expensive and environmentally-acceptable alternatives.

C. O. Brawner Engineering was commissioned by the Department of Indian and Northern Affairs to provide a preliminary engineering and economic assessment of the Tailings Abandonment Plan. In his Report, issued May 31st, 1985, C. O. Brawner expressed his opinion that the design criteria used in the abandonment plan were unreasonably severe.

Accordingly, C. O. Brawner recommended an alternative plan which significantly reduced the costs of final abandonment. The highlights of the plan are summarized below.

(a) The C. O. Brawner Engineering Proposal is based on a dry abandonment scheme based upon the KLL Scheme One.

(b) The design criteria include:

Peak Discharge Rose Creek	-	200 m^3/second;
Return Period for Peak Discharge	-	500 years;
Maximum Credible Earthquake Forces	-	15 percent g;
Abandonment Dam Slopes	-	2 horizontal, 1 vertical.

(c) The Intermediate Dam will be faced with calc-silicate gneiss waste over the existing compacted mine waste rock cover.

(d) The sides of the Rose Creek diversion channel will be armored.

(e) Upon the termination of mining activities, Rose Creek will be diverted toward Faro, thereby reducing the flood flow volumes past the tailings pond by 15 percent.

(f) Fish barriers will be constructed above and below the tailings impoundment area.

(g) The fish-free zone below the dam will be 3.5 kilometres in length. Crushed local limestone will be stockpiled alongside this channel to permit effluent neutralization, if required.

(h) The tailings surface will be covered with a 200 millimetre layer of topsoil.

Adequate time remains for Curragh to finalize the ultimate abandonment plan.

6.2.3 Future Operating Plans

Cyprus Anvil has developed a preliminary tailings deposition plan which provides for the staged construction of the intermediate dam as tailings inventories increase.

Sufficient volume currently exists to accommodate approximately 2 million tonnes of tailings. The deposition sites available could not, however, be used at temperatures below the freezing point.

Deposition in the intermediate dam will require careful ponding and beaching techniques to maximize capacity and to provide the bulk of materials for the actual dam raising.

The dam will be raised to an ultimate height of 1064 metres thus providing a tailings capacity for 63 million tonnes of mill feed. To maximize capacity the surface of the tailings will be laid on a 2 percent gradient.

Some 3.6 million embankment cubic metres (ECM) of mine waste will be required for downstream dam facings. In addition, approximately one million ECM of calc-silicate mine waste will be required to armour the face of the Intermediate Dam and sides of the Rose Creek diversion. It is reported that sufficient quantities of calc-silicate have been stockpiled and are now available for this purpose.

The area between the Cross Valley Dam and the Intermediate Dam provides a water retention time of 60 days prior to being released to Rose Creek. This volume will be maintained throughout the mine life.

Initially some 400 metres of gravity tailings pipeline from the plant tailings collection box to the roadside drop box is to be replaced.

From this point a gravity distribution system (4500 metres) will be installed to service the existing dams and the Intermediate Dam.

6.2.4 Capital Costs

For the purpose of this Report, operating costs and capital costs of tailings disposal are combined. A summary of the total annual tailings management costs is shown in Table 6.2-4.

TABLE 6.2-4

TAILINGS DISPOSAL COSTS - SUMMARY

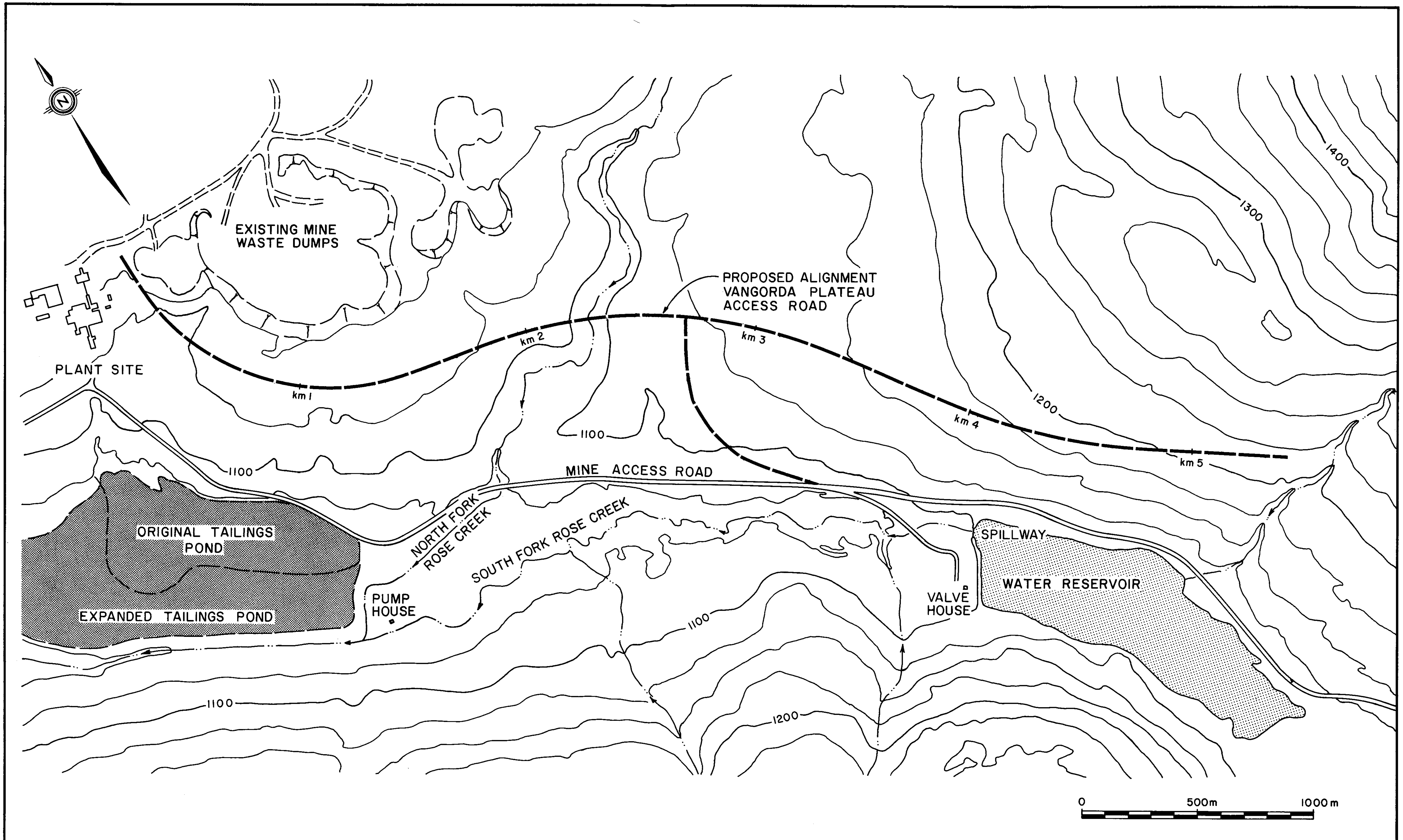
Period	Cost $('000)
1986	$ 1,592
1987	1,587
1988	647
1989	1,775
1990	1,432

An analysis of the annual costs is provided in Section 15.0 of this Report.

6.3 WATER SUPPLY

6.3.1 Existing Facilities

A reservoir, located on the South Fork of Rose Creek is used to store freshwater for use at the mine site (Figure 6.3-1). Water is released in controlled volumes through a valve located at the lower Southwest corner of the impoundment dam. Excess water produced during the spring run-off flows over a concrete decant spillway at the North end of the dam.



				SCALE AS NOTED	DATE	CLIENT CURRAGH RESOURCES CORPORATION	CYPRUS ANVIL MINE REVIEW
				DESIGNED			SITE PLAN
				DRAWN P.L.	JUL.8,'85	LOCATION FARO, YUKON	
ISSUED FOR TECHNICAL AND COST REVIEW	A	JUL.15,'85	PL	CHECKED	JUL.16'85	KILBORN	
REVISIONS	NO	DATE	BY	APPROVED	July 16'85		PROJ. NO. 3509-15 DWG. NO. FIGURE 6.3-1 REV. A

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Water flows from the reservoir along the natural creek bed for approximately 2 kilometres at which point a pump house is located. Three 350 horsepower turbine pumps deliver the water to the mill storage tank through a 24-inch diameter, insulated steel pipeline. The pipe is approximately 2300 metres long with a vertical rise of 115 metres. An additional diesel powered turbine pump is available at the pump house for emergency purposes. The electric pumps can each deliver 2500 U.S. gallons per minute while the emergency pump is rated at 1500 U.S. gallons per minute. Provision is made for the installation of a fourth electric turbine unit in the pump house.

The existing water license authorizes the use of 4568 U.S. gallons per minute averaged over one year. A maximum water consumption of 6000 U.S. gallons per minute averaged over one day is also permitted. The license requires that a minimum flow of 1000 U.S. gallons per minute be permitted to flow at all times from the reservoir and past the pump house in order to provide a migration route for fish.

The freshwater supply system has worked well since the commencement of operations in 1969.

6.3.2 Future Water Requirements

The proposed increase in plant throughput rate will result in an increase in the consumption of water.

Kilborn has not conducted process mass flow and water balance calculations at the proposed 11,160 DMT per day average milling rate. The total water requirements for the milling operation may be roughly assessed, however, by estimating the volumes of water which will leave the milling process with the final concentrates and plant tailings. The results of water requirement calculations performed at various mill throughput rates and tailings slurry densities are reported in Table 6.3-1.

The data do not provide for the return of vacuum pump seal water and equipment cooling water flows. Amounting to approximately 1000 U.S. gallons per minute, such water could be safely returned to the process with no adverse effect on metallurgical performance. Accordingly, the volumes shown in Table 6.3-1 may be reduced by 1000 U.S. gallons per minute.

Constrained by the stated requirements to minimize the use of freshwater, recent plant modifications included a provision for recycling certain process water flows within the confines of the mill. The complex piping configurations and inadequate water volumes resulted in a number of operating problems. As a result of the increased mill production rates, and the aforementioned difficulties, the consumption of freshwater increased to levels above those permitted by the Water Licence. In addition it became evident that the volume of water contained by the storage dam would be inadequate to sustain continuous operations under such conditions.

(a) Future Plans

Cyprus Anvil has conducted studies to evaluate two alternative methods of supplementing the supply of water to the Concentrator; the recycle of supernatant from the tailings pond and the use of additional freshwater.

TABLE 6.3-1

ORDER-OF-MAGNITUDE WATER REQUIREMENTS

CONCENTRATE MOISTURE CONTENT - 6.5 PERCENT WATER

Mill Throughput	Concentrate Production	Final Tailings Production	Final Tailings Pulp Density	Water Contained In: Concentrate	Water Contained In: Tailings	Total Water Requirement
DMT/Day	DMT/Day	DMT/Day	% Solids	U.S. gpm	U.S. gpm	U.S. gpm
11,160	1300	9,860	20.0	17	7218	7235
			23.0	17	6014	6058
			25.0	17	5413	5430
12,000	1400	10,600	20.0	18	7759	7777
			25.0	18	5819	5837
15,000	1750	13,250	20.0	22	9699	9721
			25.0	22	7274	7296

In order to recycle water from the tailings pond to the mill, additional pumping facilities could be required. Further, a new pipeline must be installed. Alternatively, the capacity of the existing freshwater storage dam can be increased to contain the additional quantities of water required to meet the process requirements at the increased production rates. An additional 350 horsepower turbine pump must be installed at the pump house. Cost estimates, prepared by others indicate the cost of each alternative to be in the order of $1.8 million.

Cyprus Anvil has expressed its preference for the alternative which provides additional quantities of freshwater. Kilborn concurs that additional quantities of water will be required and that the expansion of the existing freshwater storage and supply infrastructure offers the preferred alternative.

Cyprus Anvil has determined that a 6.5 metre increase in the height of the dam will increase the capacity of the reservoir by a quantity sufficient to satisfy the needs of future operations. Geotechnical engineers from Dome Petroleum, in conjunction with Acres Consulting Services Ltd. have studied the condition of the existing dam and determined that the proposed increase in the elevation of the dam crest is technically feasible. This conclusion, however, is contingent upon the results of a proposed geotechnical study which must be carried out prior to the commencement of detailed dam design.

A hydrological study, recently completed by Acres, confirmed that the volumes of surface drainage feeding the reservoir will be sufficient to satisfy the proposed demand. The study also reviewed the dam construction schedule as it relates to the large seasonal fluctuations in the volumes of water charging the reservoir. While it is imperative that the work be reviewed in light of the revised mine Start-Up Schedule it is probable that the construction program can be completed in time to ensure an adequate inventory of freshwater is available for the 1986/1987 winter.

(b) Water Supply Capital Costs

The cost of the water dam construction program is estimated by Cyprus Anvil to be $1.8 million, of which $400,000 must be spent in 1985 to cover the costs of geotechnical and design studies and $1.4 million for the dam construction. While adequate quantities of natural materials are available for construction purposes, Cyprus Anvil is currently evaluating the use of mine waste rock as a means of reducing the total capital cost. As shown in Figure 6.3-1, Cyprus Anvil propose to construct the first portion of a main access road to the Vangorda Plateau using mine waste material. It is planned to have this road complete as far as the water reservoir by the spring of 1986, thereby allowing haulage trucks to deliver mine waste to the construction site. It is necessary to complete these analyses to:

i) Ensure that the waste rock is suitable for construction purposes.

ii) Confirm that the incremental mining costs are lower than the costs which would be incurred by excavating the required amount of natural material.

iii) Determine that the increased haulage truck cycle time will in no way interfere with the mine's ability to provide continuity of ore supply to the mill.

6.4 COAL SUPPLY

6.4.1 Background

Three, 25 million Btu per hour coal-fired boilers are used by Cyprus Anvil to energize a hot water distribution system which provides heat to the plant and other surface buildings. Concentrate is dried by four, 10 million Btu per hour coal-fired rotary kiln dryers, and one, 15 million Btu per hour oil-fired unit.

Coal used at the mine site was backhauled in empty concentrate containers from Carmacks where the Company operated a small coal mine on a seasonal basis. Coal was initially mined by underground methods until a fire caused the premature closure of the workings. Open-pit stripping operations were being used to mine coal up to 1981.

The calorific value of the coal decreased from approximately 11,000 Btu per pound to 9000 to 8400 Btu per pound when surface stripping operations commenced. Further, the coal was extremely high in ash.

Prior to 1980 the cost of coal delivered to the mine site varied within the range $30.00 and $35.00 per tonne. The increased stripping ratios experienced during the latter years increased mining costs dramatically. In 1981 the cost of coal was $123.00 per tonne.

A stockpile at Carmacks currently contains 5300 tonnes of coal.

6.4.2 Energy Consumption

The Carmacks coal mine produced an average 18,900 tonnes per year during the period 1979-81. Kilborn's calculations indicate the allocation of coal consumptions to be approximately as shown in Table 6.4-1.

TABLE 6.4-1

ANNUAL COAL CONSUMPTION - BY AREA

Area	Coal Consumption per Year (Tonnes)
Lead Dryers	4,500
Zinc Dryers	4,400
Plant Heating	10,000
TOTAL	18,900

In addition to the above, fuel oil was used to energize the oil-fired zinc concentrate dryer.

6.4.3 Alternate Sources of Fuel

Kilborn has briefly considered the alternate sources and types of fuel which may practically be used in Faro.

TABLE 6.4-2

ALTERNATIVE SOURCES OF FUEL

Fuel	Source
Coal	Carmacks Ross River Southeast British Columbia
Fuel Oil	From British Columbia Direct, or Via Skagway, Alaska

Apart from the 5000 tonnes remaining in the stockpile, the economic reserves of coal at Carmacks are all but exhausted.

A potential 5-year supply of low-grade coal is available at Ross River. The estimated cost of this material, delivered to Faro, would be in the range of $80.00 and $100.00 per tonne.

A dependable, long-term supply of higher grade coal can be obtained from Southeast British Columbia.

A further consideration would be the substitution of coal by oil. Advantages to be derived from such a conversion would include:

(a) Reduced material handling and maintenance costs;
(b) Improved concentrate dryer and hot water boiler control;
(c) Improved working conditions.

In view of these potential benefits, Kilborn conducted a brief review of the costs of oil versus coal. The order-of-magnitude capital cost estimate to convert all the existing coal-fired units to oil are as shown in Table 6.4-3. The concept provides the flexibility to use coal in the future if required.

TABLE 6.4-3

COAL TO OIL CONVERSION

ORDER-OF-MAGNITUDE CAPITAL COST ESTIMATE

Item	Estimated Cost
Equipment - Burners (2 Boilers and 4 Dryers)	$
- Oil Pumps	150,400
- Day Tanks	10,000
- 7-Day Site Fuel Storage	50,000
Construction - Earth Works	5,000
- Piping	15,000
- Mechanical	20,000
Subtotal	$ 250,400
Engineering	25,000
Contingency at 15 Percent	37,600
TOTAL	$ 313,000

Amortizing this cost over 5 years, with no allowance for interest, the annual cost will be $62,600.

Due to the cost of fuel oil the analysis shown in Table 6.4-4 favours the continued use of coal as the primary fuel for heating purposes.

TABLE 6.4-4

FUEL - COST COMPARISON - COAL AND OIL

(Based on Average Plant Heating Load and Proposed 474,000 Tonnes Annual Concentrate Production)

Fuel	Calorific Value Btu/lb	Quantity Required	Cost/Tonne	Back Haul Skagway	Skyway Terminal	fob Cost Faro	Annual Cost	Remarks
Tantalus Butte Coal	8,400 - 9,000	24,100	$ --	--	--	$ 123.00	$ 2,964,300	5000 tonnes available plus 12-month mine life
Ross River Coal	12,000 Estimated	19,900	70.00	--	--	90.00	1,791,000	No plan in place to open the mine
Imported SEBC Coal	13,000	18,400	87.75	15	10.25	105.75	1,945,800	Recommended reliable long-term supply
Fuel Oil for Existing Zinc Dryer	17,000 (Low Temperature Pour Point)	1,700	534.00	15	--	549.00 (Delivered)	933,300	No alternative but to maintain
Fuel Oil Complete Conversion	17,000	12,300	534.00	15	--	549.00	6,752,700	Fuel fob Whitehorse
							62,600	Capital Cost
							$ 6,815,300	Total Fuel Cost

Annual Fuel Costs

(a) Using imported SEBC coal plus maintaining one existing zinc oil-fired dryer = $ 2,879,100

(b) Converting all equipment to oil = $ 6,815,300

Estimated savings through use of oil - $500,000 per year due to reduction in labour force and concentrate moistures.

Cost advantage for use of coal - (6,815,300 - 500,000) - 2,879,100 = $3,436,200 per Year.

6.4.4 Future Coal Supply

Kilborn proposes that future supplies of coal be obtained from Southeastern British Columbia.

Coal will be loaded into 5000 tonne capacity barges which will be towed to Skagway. Front-end loaders will be used to discharge the coal onto a system of portable conveyors which ultimately will feed a radial stacker. A circular area of 1300 square metres will be required to accommodate a conical stockpile of 5000 tonnes capacity. It is expected that the barge turnaround time will not exceed 48 hours.

When not unloading barges the front-end loader will be used to load empty concentrate containers/truck boxes with coal to be backhauled to Faro. Subject to the type of truck/container used, some modification to the existing coal dumping facilities at the mine site may be required.

Coal will be shipped from Vancouver in the spring with a view to having the annual coal requirement delivered to the mine site before the onset of continuous freezing conditions. By so doing, material handling difficulties will be minimized.

6.4.5 The Cost of Coal

The cost of 13,000 Btu per pound thermal coal located at Vancouver will be $67.75 per tonne.

An informal quotation provided by Rivtow for the barging of coal from Vancouver to Skagway is summarized as follows:

5000-Tonne Capacity Barge Loaded Vancouver to Skagway (24-Hour Loading Time Included)	-	$ 70,340
Demeurage at Skagway ($275.00 per Hour for 48 Hours)	-	13,200
Insurance and Contingency	-	10,000
TOTAL		$ 93,540
Unit Cost per 5000 Tonne Load	-	$ 18.71/Tonne

For this purpose, the ocean freight costs between Vancouver, British Columbia and Skagway, Alaska are assumed to be $20.00 per tonne.

Assuming a $6.00 per tonne terminal charge and $12.00 per tonne backhaul rate the total cost of coal delivered to Faro will be $105.75 per tonne.

7.0 GENERAL AND ADMINISTRATIVE

7.0 GENERAL AND ADMINISTRATIVE

7.1 GENERAL

Curragh intends to establish a small Executive Office in Toronto, Ontario. Kilborn has been advised that up to 6 personnel, including senior executives and secretarial staff will work in this office.

The Company's Head Office of operations will be located in Whitehorse, Yukon. Significant benefits will be derived by locating the President of the Company in such close proximity to the centre of Government and the Yukon business community.

The movement of some of the administrative functions from Faro to Whitehorse will permit the Manager of Operations to focus his entire attention on the short and long-term operating performance of the mining operations.

7.2 GENERAL AND ADMINISTRATIVE - TORONTO, ONTARIO

According to Curragh the Executive Office in Toronto will consist of the following positions:

(a) Chairman and Chief Executive Officer;
(b) Vice Chairman;
(c) Financial Planning and Analysis;
(d) Corporate Counsel.

In addition there will be 4 support staff. Office space of 2500 square feet will be leased.

An annual budgetary allowance of $1,500,000 is included in the operating cost projections to cover costs of salaries, rent, office expenses, and miscellaneous Corporate costs, including the preparation of quarterly and annual reports to shareholders, audit, and outside legal expenses.

7.3 GENERAL AND ADMINISTRATIVE - WHITEHORSE, YUKON

An office of approximately 10,000 square feet will be rented in Whitehorse to accommodate approximately 20 to 25 professional staff and support employees in total. Resident in Whitehorse, the President of the Company will be responsible for all Curragh's activities in the Territory.

Kilborn's suggested Organization Chart for the Whitehorse Office is illustrated in Figure 7.3-1.

The Comptroller will be responsible for directing all the accounting functions. He will be directly involved in the development of operating budgets and will work closely with Department Heads to ensure the Accounting Group provides useful and timely information.

The staff of 4 Accountants and 4 Accounting Clerks will attend to all matters relating to staff and unionized payrolls, accounts receivable and accounts payable. One Accounting Clerk will be located in Faro to facilitate the efficient transfer of data between Faro and Whitehorse.

The Manager of Personnel and Labour Relations will report directly to the President and be responsible for all recruiting, collective bargaining, and the formulation and administration of staff remuneration policies. He will liaise closely with Government officials in matters such as job training. Two Personnel Officers will be located at Faro but will report to the Manager of Personnel and Labour Relations in Whitehorse.

The Personnel Officers will work closely with Department Heads to train staff members in the correct application and interpretation of the Collective Bargaining Agreements. They will also provide assistance, as required, in the handling of union grievances.

The Municipal Affairs Manager, located in Faro, will report to the Manager of Personnel and Labour Relations. The Municipal Affairs Manager will attend to all matters pertaining to Curragh's interests in the Town of Faro.

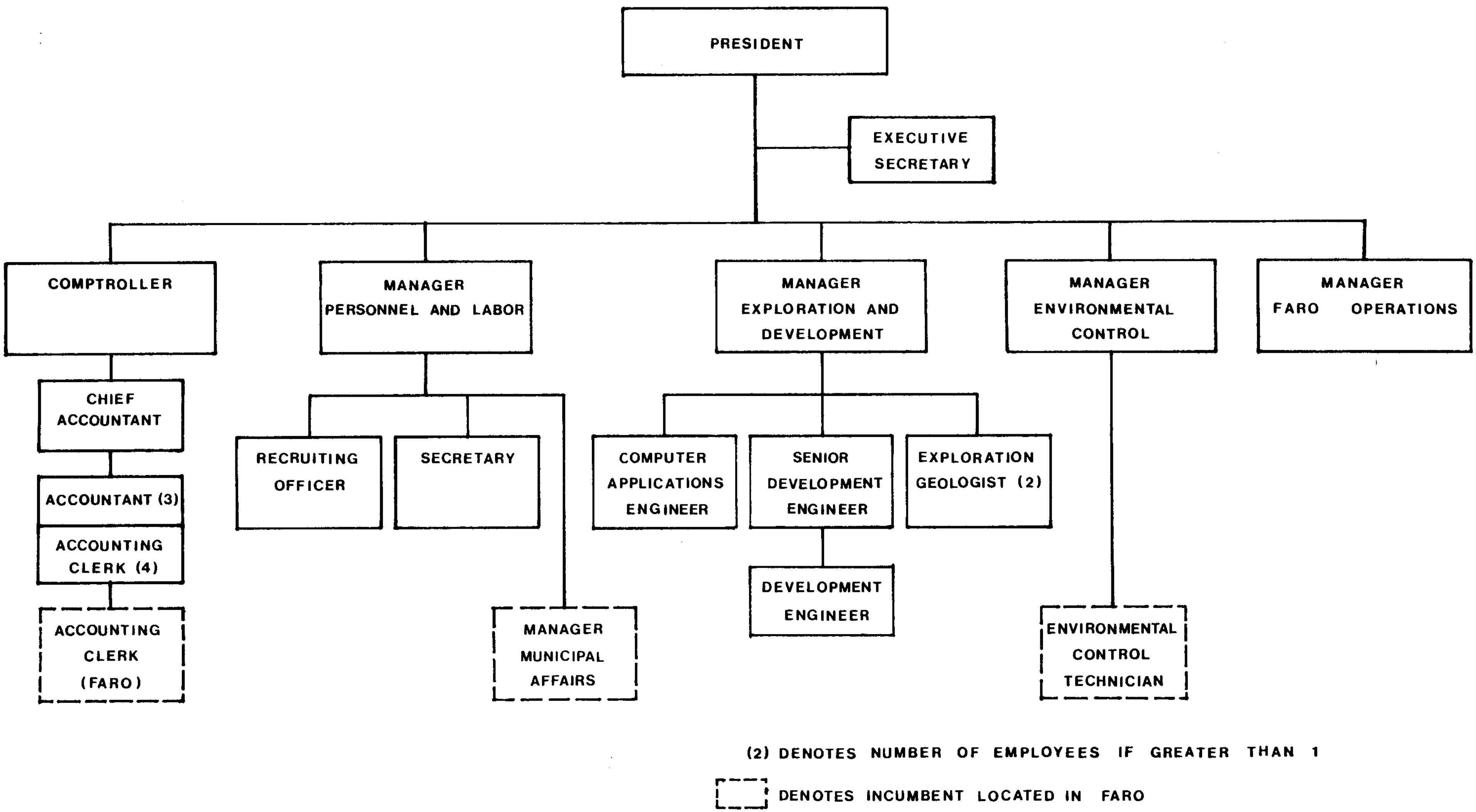
The budget forecast allows for 4 additional personnel whose functions have yet to be defined.

The Manager of Exploration and Development will work with 2 Development Engineers to study long-term operating strategies, such as the development of the Vangorda Plateau Deposits. In addition, they will monitor closely the principal operating cost centres, such as transportation systems. Studies will be carried out to determine means by which operating costs may be reduced. A Computer Applications Engineer will be retained to establish useful data handling systems. In addition, his assistance will be required as plant process control systems evolve and become more sophisticated. Two Exploration Geologists will concentrate their efforts primarily in the Anvil District to ensure the longevity of the Faro Operations.

The Manager of Environmental Control will ensure the company's compliance with all regulations pertaining to the protection of the natural environment and personal health and hygiene. He will negotiate with the Regulatory Authorities to secure fair and reasonable terms in the various permits and licences. An Environmental Technician, located in Faro, will be responsible for taking all the necessary air and water samples and conducting the regular noise surveys.

FIG 7.3-1

CURRAGH RESOURCES CORPORATION
ORGANIZATION STRUCTURE - WHITEHORSE



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7.4 GENERAL AND ADMINISTRATIVE - FARO

The Manager of Faro Operations will be responsible for the Mine and Mill Departments which are described in Sections 4.0 and 5.0, respectively of this Report. His areas of responsibility which may be classified as General and Administrative include only the Warehouse and the Safety and Security Departments as shown in the Organization Chart, Figure 7.4-1.

It should be noted that the Engineering and Geology Departments have historically been classified at Faro with the more traditional General and Administrative Departments. Kilborn recommends that these technical personnel, who basically provide Mine Engineering Services, be incorporated into the Mine Department as shown in Figure 4.7-1.

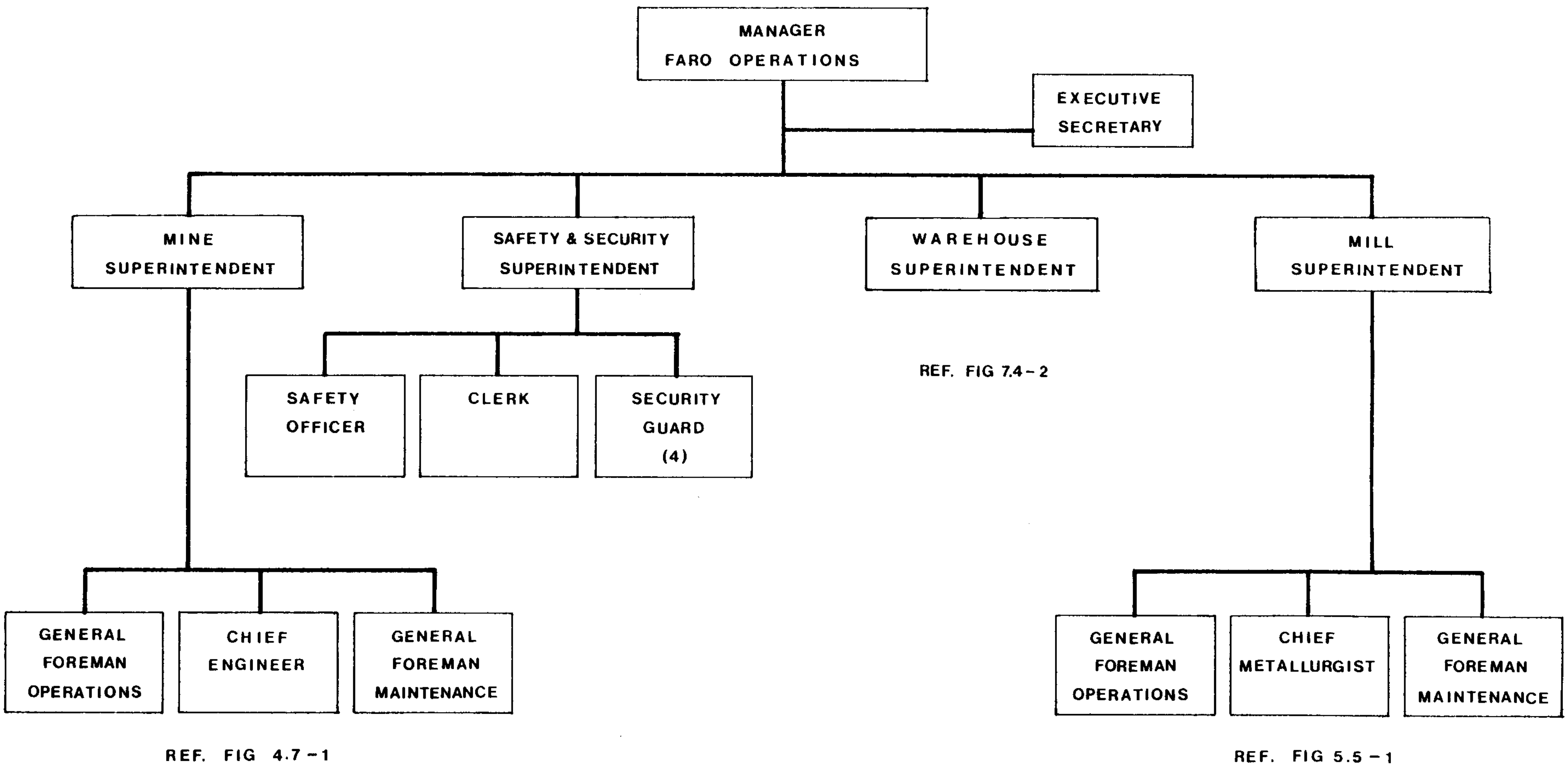
It is Kilborn's recommendation that all the Warehouse and Purchasing personnel be located at Faro for the reasons shown below.

(a) The systems of communication available in Whitehorse are also available at Faro.

(b) The Manager of Faro Operations will be accountable for the success of the integrated operations at the mine site. It is reasonable, therefore, that he should maintain direct control over the handling, storage and distribution of the supplies and spare parts necessary to sustain the operations.

(c) It is probable that all supplies will be delivered to the mine site by truck directly from Skagway by means of a backhaul. In this event there will be little, if any, need to maintain supply inventories in Whitehorse.

FIG 7.4-1
CURRAGH RESOURCES CORPORATION
ORGANIZATION STRUCTURE - FARO



(2) DENOTES NUMBER OF EMPLOYEES IF GREATER THAN 1

THE TOWNSITE ADMINISTRATOR, 2 PERSONNEL OFFICERS AND AN ACCOUNTING CLERK WILL BE LOCATED IN FARO BUT REPORT TO THE APPROPRIATE PERSONNEL IN THE WHITEHORSE OFFICE

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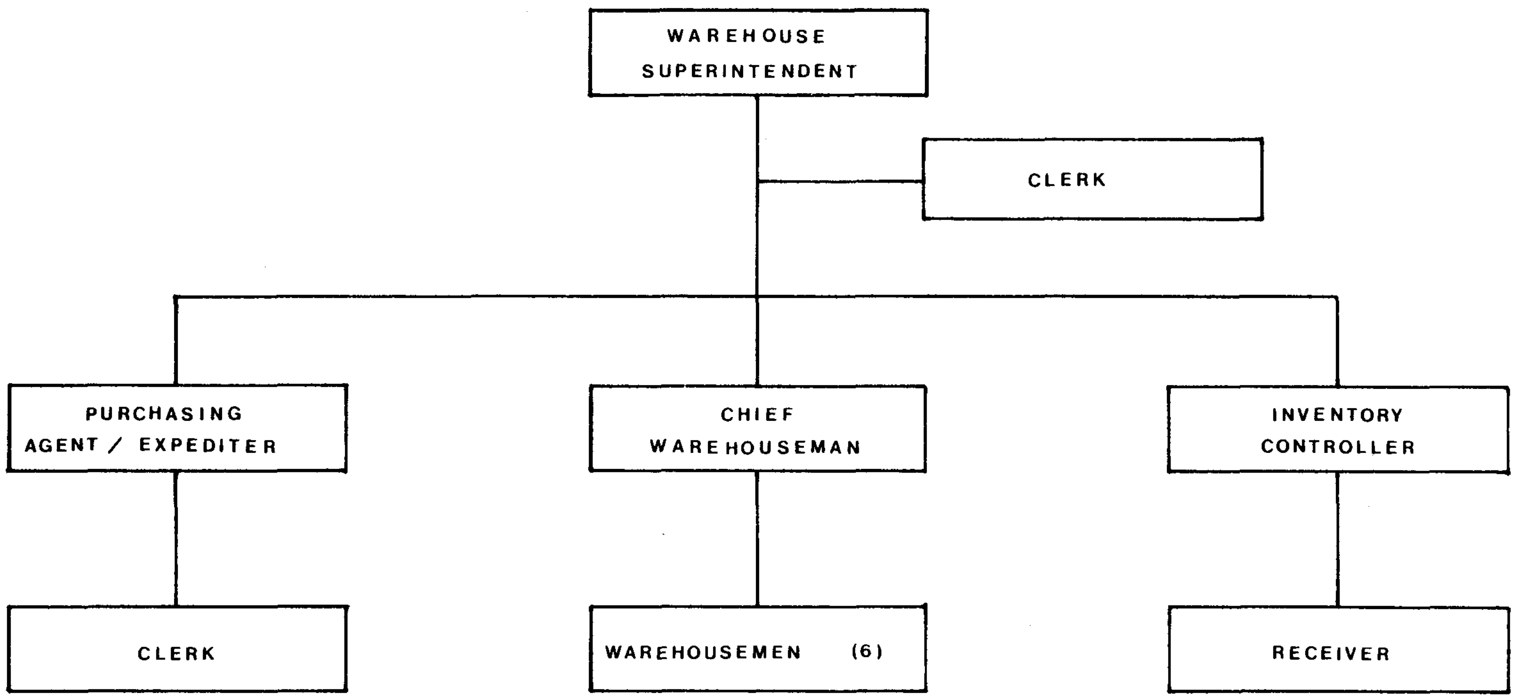
FIG 7.4 – 2
CURRAGH RESOURCES CORPORATION
ORGANIZATION STRUCTURE - WAREHOUSE



(2) DENOTES NUMBER OF EMPLOYEES IF GREATER THAN 1

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(d) Increased Departmental efficiencies will be realized by consolidating the Warehousing and Purchasing personnel in one location. That location should be the point at which all supplies are received, stored and distributed.

Figure 7.4-2 illustrates Kilborn's proposed Warehouse Organization Chart.

The warehouse inventory is currently reported to be worth approximately $12 million. Notwithstanding the relatively remote location of the mine, the value of the inventory appears to be higher than such an operation would normally require. Concerted efforts should be made to identify and dispose of obsolete stock items. Prior to the commencement of operations, user departments should review the maximum/minimum criteria applied to high cost items in an effort to reduce inventory costs without compromise to operating efficiencies.

The existing warehouse storage facilities and offices are perfectly adequate to meet anticipated future demands.

The Superintendent, Safety and Security will report to the Manager - Faro Operations. With the assistance of the Safety Officer the Superintendent will organize and administer property wide safety awareness and training courses. In addition, the Company should resurrect the Mine Rescue training which proved of great value in earlier times. The Company owns a fire truck, ambulance and other important items of emergency equipment. Four (4) Security Guards and a Clerk will also report to the Superintendent, Safety and Security.

7.5 FARO TOWN SITE

7.5.1 Background

The majority of the accommodations in Faro are owned by Cyprus Anvil and were rented to employees on a heavily subsidized basis. In addition, the costs associated with power supply and heating fuel were also paid in part by the Company.

Routine maintenance was carried out on all dwelling by Cyprus Anvil's tradesmen at no cost to the tenant. The Company owned the Recreation Centre which was leased to the Faro Recreation Association at a minimal cost. The operating costs of the facility were paid for in large part by Cyprus Anvil's annual contributions.

The total cost to Cyprus Anvil of of town taxes and operations reached almost $7.0 million in 1981.

Being the largest property Owner in Faro, the Company paid approximately 81 percent of the municipal taxes levied by the Town.

It was Cyprus Anvil's wish to nurture a strong community spirit and a pride in the Town of Faro.

7.5.2 Proposed Strategy

Considerable attention has been given to means by which Curragh can reduce the town site operating costs.

As directed by Curragh, Kilborn has assumed that a new philosophy will be adopted with regard to the Company's involvement in Faro. Based almost entirely on extensive work performed by Cyprus Anvil, the highlights of this new policy are shown below.

(a) The Company will sell all self-contained housing units to employees. The selling price of each unit is expected to be in the $10,000 to $15,000 range. This will be amortized through monthly payments in the range of $200.00 per housing unit.

A 'buy-back' scheme, based upon the Company's right of first refusal will be implemented and will recognize the employee's tenure with the Company.

(b) A pool of single houses, and the guest house will be retained for Company use.

(c) The owner of each house will pay for all the fuel and electric power consumed in the unit.

(d) The owner will also pay for insurance, water, sewer services and Municipal taxes.

(e) The Company will cease to provide heavily subsidized 'bunkhouse/cookhouse' accommodations for single status employees. Instead, the Chateau Jomini quarters and apartment complexes will be sold to private enterprises to be operated independently as commercial ventures.

(f) All routine minor maintenance activities will be performed and paid for by the owner.

(g) The Company will sell the Recreation Centre to the Town of Faro for a nominal price. The operating and maintenance costs of the facility will be assumed by the Town. Assistance from the Yukon Government is expected.

(h) The Company will investigate the inclusion of the mine site assets into the Faro Municipal tax base. Any change will require approval from the Yukon Territorial

Government and an Agreement between all parties on the means by which the mine site taxes will be levied. Currently, Cyprus Anvil pays mine site taxes to the Yukon Government.

Based upon a review of the number of housing units available, and the projected manpower requirements it is evident that adequate housing will be available to satisfy the Company's requirements.

A Municipal Affairs Manager will attend to all the Company's interests in Faro. This person may help to administer the affairs of the Town depending upon arrangements negotiated with the Yukon Government. The basis upon which taxes will be assessed to the Company will be established through agreement with the Yukon Government.

The net cost of the town site to the Company is projected to be $1,492,000 per year. This amount includes the estimated tax assessment for the mine assets plus subsidies provided to certain town businesses and medical facilities, plus the salary of the Municipal Affairs Manager on the payroll of Curragh.

Details of Kilborn's town site cost estimate are included in Section 14.8-4 of this Report.

7.6 GENERAL AND ADMINISTRATIVE - OPERATING COST SUMMARY

A summary of the total General and Administrative operating costs is shown in Table 7.6-1.

CURRAGH RESOURCES CORPORATION

TABLE 7.6-1

GENERAL & ADMINISTRATIVE COSTS

SUMMARY $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Summary																		
G & A -Payroll	14	98	161	177	188	193	193	193	193	193	193	193	193	193	193	193	193	2,954
G & A -Materials & Expenses	294	547	975	717	500	501	505	621	531	495	500	496	496	498	497	497	496	9,166
-Total	308	645	1,137	893	688	694	698	814	724	688	693	689	689	691	691	691	690	12,120
Whitehorse																		
-Payroll -Salaries	11	54	76	87	98	103	103	103	103	103	103	103	103	103	103	103	103	1,560
-Payroll -Hourly	3	8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	231
-Supplies & Expenses	63	271	683	423	203	203	204	319	189	154	160	154	154	154	154	154	154	3,796
-Toronto G.& A.	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	2,125
Total	202	458	898	649	441	445	447	562	432	396	402	397	397	397	397	397	397	7,712
Faro																		
-Payroll -Salaries	0	28	38	42	42	42	42	42	42	42	42	42	42	42	42	42	42	655
-Payroll -Hourly	0	8	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	509
-Supplies & Expenses	105	151	168	169	172	174	176	177	217	217	216	217	217	219	219	219	218	3,244
Total	105	187	238	244	247	249	251	252	292	292	291	292	292	294	294	294	293	4,408

CURRAGH RESOURCES CORPORATION

TABLE 7.6-1

GENERAL & ADMINISTRATIVE COSTS — SUMMARY $(000)'s

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Summary									
G & A -Payroll	638	2,317	2,317	2,317	2,317	2,317	2,317	2,317	16,856
G & A -Materials & Expenses	3,033	6,133	5,897	5,845	5,782	5,767	5,742	5,448	43,645
-Total	3,670	8,450	8,214	8,161	8,098	8,083	8,059	7,765	60,501
Whitehorse									
-Payroll -Salaries	325	1,235	1,235	1,235	1,235	1,235	1,235	1,235	8,970
-Payroll -Hourly	55	176	176	176	176	176	176	176	1,286
-Supplies & Expenses	1,644	2,153	1,801	1,749	1,736	1,721	1,696	1,669	14,167
-Toronto G.& A.	625	1,500	1,500	1,500	1,500	1,500	1,500	1,500	11,125
Total	2,648	5,064	4,712	4,659	4,646	4,631	4,607	4,580	35,548
Faro									
-Payroll -Salaries	150	505	505	505	505	505	505	505	3,685
-Payroll -Hourly	108	401	401	401	401	401	401	401	2,915
-Supplies & Expenses	764	2,480	2,596	2,596	2,546	2,546	2,546	2,279	18,353
Total	1,022	3,386	3,502	3,502	3,452	3,452	3,452	3,185	24,953

8.0 TRANSPORTATION

8.0 TRANSPORTATION

8.1 HISTORICAL

The White Pass and Yukon Route (WP-YR) has handled most of Cyprus Anvil's in-bound freight and all of the out-bound concentrate haulage since 1969.

Typically, freight destined for Faro was received by WP-YR in Vancouver, British Columbia and shipped by sea to Skagway, Alaska where the cargo was transferred to a 176 kilometre long railroad which terminates in Whitehorse, Yukon Territory. From this point, freight was transferred to trucks which transported the supplies the remaining 380 kilometres to Faro.

Concentrates were shipped from Faro to tidewater in custom-built containers, each of which carried approximately 22.5 tonnes of payload. Normally, one truck hauled two such containers to Whitehorse where they were transferred by gantry crane to flatbed rail cars.

From Whitehorse to Skagway, transportation was by narrow-gauge WP-YR railroad. Upon arrival at Skagway, the containers were dumped by means of a gantry crane into a 100,000 tonne capacity storage shed, owned and operated by WP-YR.

Pertinent historical cost and production data for the last 5 full years of operation are shown in Table 8.1-1.

The Cyprus Anvil operations were curtailed in June, 1982. Dome Petroleum announced that the resumption of operations would be contingent, in part upon the reduction of the costs expended to move concentrate and supplies between Faro and Skagway.

TABLE 8.1-1

CYPRUS ANVIL CONCENTRATE HAUL

HISTORICAL DATA[1]

1977 - 1981

						Transport and Terminal Cost		
Year	Concentrate Production (DMT) (3)	Land Transport Costs ($,000)	Port Terminal Costs ($,000)	Total Land and Terminal Costs ($,000)	Total Operating Costs (2) ($,000)	Unit Cost Current ($/t)	Unit Cost Escalated ($/t) (4)	% Total Operating Costs (%)
1977	358,076	$ 12,653	$ 1,642	$ 14,295	$ 113,377	$ 34.92	$ 58.80	12.6
1978	413,634	13,726	2,169	15,895	113,276	38.39	51.97	11.9
1979	368,195	15,587	2,244	17,831	159,392	48.43	59.91	11.2
1980	325,852	16,198	2,494	18,692	163,261	57.36	65.96	11.4
1981	313,628	17,999	2,494	20,493	172,422	65.34	65.34	11.9

Sources of Data

(1) Key Financial and Operating Statistics and Historical Cost and Revenue Analysis Dominion Securities Ames Prospectus.

(2) 'Total Operating Costs' include all direct mine site operating costs, general and administrative expenses, land and ocean freight costs and smelter charges.

(3) Concentrate weights are expressed in dry tonnes due to the absence of historical average concentrate moisture contents.

(4) Transportation and terminal costs are escalated to 1981 dollars using the published Consumer Price Index for Canada.

8.2 OVERLAND TRANSPORTATION

8.2.1 Developments Since June, 1982

Cyprus Anvil conducted detailed studies to investigate the economics associated with the movement of materials to tide-water by different means, including:

(a) The use of the existing road and rail route;

(b) Direct trucking to Skagway using a recently completed highway between Whitehorse and Skagway;

(c) Direct trucking from the mine site to Haines, Alaska;

(d) Trucking to Stewart, British Columbia.

The results of Cyprus Anvil's investigations favoured the alternative by which concentrates would be hauled directly to Skagway by truck. The cost of shipping concentrates to Haines, and the construction of new docking facilities was calculated to be less than the cost of the traditional truck/rail route to Skagway.

The Yukon and Alaska Governments support the recommendation that the Klondike Highway be opened for year-round operation, and that trucks be used to haul concentrate between the mine site and the Port of Skagway.

The Alaskan Government is willing to negotiate the terms by which the road may be used. In his telex dated April 12th, 1985 to the Honorable Willard Phelps, Government Leader, Yukon Territorial Government, the Govenor of Alaska, William Sheffield offered the 'following proposal for opening the Klondike Highway on a year-round basis:

1) The increased cost for start-up and annual maintenance of the Alaskan portion on a year-round basis will be shared on a ratio of 40 percent Alaska 'Government' and 60 percent Yukon 'Government'. We estimate this total figure to be approximately $300,000 (U.S.) for the first year.

2) All necessary capital improvements on the Alaskan portion attributable to this decision will be shared on a 50/50 'basis by the two Governments'. We have determined there will be an initial $300,000 (U.S.) cost for additional equipment and snow poles, and expect other more major capital expenditures depending on anticipated traffic volumes.

3) There will be no changes in truck weight restrictions on the Alaskan portion of the Klondike Highway.

4) Reciprocity shall be accorded to U.S. Firms from Alaska doing business in the Yukon on the same basis as Canadian Firms operating in Alaska.

5) Arrangements must be structured to ensure U.S. citizens in Alaska are afforded comparable business employment opportunities as Canadians for the movement of goods through Skagway into the Yukon, with particular attention to trucking activity.'

Since the maximum permissible vehicle weights in Alaska are less than those in the Yukon, it is necessary to provide a staging area at the Canadian/United States border at which double trailer 'B-train' units would be split, and a shuttle service used to haul the individual trailers of concentrates the remaining distance to Skagway.

The Gross Vehicle Weight (GVW) of the trucks which were used previously to haul concentrates in B-trains was 134,500 pounds on the Faro to Skagway run.

The use of 8-axle B-train units with a GVW of 159,000 to 160,000 pounds is now planned as a means of improving system efficiency and reducing operating costs. Annual savings are calculated by Cyprus Anvil to be $2,600,000.

Since both the weight and length of these rigs do not comply with existing Yukon Code, negotiations with the licencing authorities are in progress.

TABLE 8.2-1

TRUCK SPECIFICATIONS - SUMMARY

	Yukon Code	Proposed Design	Original Design
Gross Vehicle Weight (Pounds)	140,000	160,000	134,500
Payload (Pounds)	---	110,000	88,000
Number of Axles	8	8	8
Length (Feet)	75	85	75

Cyprus Anvil's study indicates that some bridge upgrading would be required to support the larger trucks. Test loading studies will also be required to verify tractor power and road grade requirements.

8.2.2 Proposed Transportation System

At Curragh's request, Kilborn has assumed that the 160,000-pound GVW units will be used to haul concentrates to the International border at which point the 2-trailer B-trains will be split to transport the product the final 18 kilometres to the port of Skagway. The proposed payload will be 110,000 pounds, as compared to the 88,000-pound GVW achieved using the former configuration.

Early consideration must be given to the type of containers/truck boxes in which concentrates, coal, reagents and general freight will be hauled. Significant cost advantages may be realized through the use of multi-purpose containers. The need to eliminate concentrate loss and contamination must be given the highest priority in the design and selection of containers.

8.2.3 Overland Transportation Costs

Recent cost estimates for the movement of materials between the mine site and Skagway are shown in Table 8.2-2 based upon 134,500-pound GVW trucks.

TABLE 8.2-2

OVERLAND TRANSPORTATION COSTS

MINE SITE TO SKAGWAY - $ PER TONNE

(134,500-POUND GVW TRUCKS)

	With Alaska Shuttle		Without Alaska Shuttle	
Source of Estimate	Forehaul	Backhaul	Forehaul	Backhaul
Cyprus Anvil	$ 42.85	$ 15.00	$ 39.89	$ 15.00
Alaska West Express	41.43	12.00	37.93	11.00
WP-YR	--	--	40.95	30.06

Based upon the use of the 160,000-pound GVW rigs improvements in transportation efficiencies will be realized. Assuming a 7-year contract is awarded, on a competitive bid basis, Curragh expects the unit cost of the forehaul to be $38.00 per tonne. This cost assumes the use of split trains for the

Alaska portion. An additional $1.00 per tonne of concentrate shipped road usage fee is provided to compensate the Yukon Government for incremental road maintenance costs.

The cost of the incremental freight backhaul is assumed to be $12.00 per tonne of backhaul, or approximately $1.00 per tonne of concentrate equivalent.

8.2.4 Capital Costs

Kilborn has assumed that any capital expenditures required to upgrade existing roads and bridges will be paid for by the respective Governments. Similarly, the costs of additional mobile equipment required to maintain the roads will be paid by the authorities normally responsible for such work. It is anticipated that these costs will be recovered in part from the special road use tax of $1.00 per tonne.

8.3 PORT FACILITIES

8.3.1 Concentrate Storage and Shiploading

The existing concentrate storage shed and shiploading facilities are owned and operated by WP-YR. During 1981, the last complete year of operation, the cost of handling 313,628 tonnes of concentrate averaged $6.47 U.S. per tonne.

WP-YR has filed a new tariff schedule in March, 1985, based upon a sliding scale as shown in Table 8.3-1.

TABLE 8.3-1

WHITE PASS AND YUKON ROUTE

SKAGWAY TERMINAL CHARGES

Tonnage	Charge
To 400,000 Tonnes	$ 13.65 U.S.
Next 100,000 Tonnes	$ 12.65 U.S.
Above 500,000 Tonnes	$ 11.65 U.S.

Kilborn is of the opinion that these rates establish a position from which WP-YR will commence negotiations.

The successful negotiation of a reasonable terminal charge is critical to the overall Project economics. Total transportation costs will be reduced by only a small amount, despite the use of the road, unless realistic terminal fees are charged.

Cyprus Anvil has based one estimate of the terminal costs upon the actual costs incurred by the terminal operation in 1985 (see Table 8.3-2).

TABLE 8.3-2

SKAGWAY TERMINAL - COST OF OPERATION

Item	Source	Cost $(000) U.S.
Fixed Costs and Return		
Supervision	1981 Costs + 20 Percent	$ 286
Office	1981 Costs	110
Lease Rentals	1981 Costs x 2	150
Depreciation	1981/82 Schedule	353
Return	1981 Return on Capital	300
Other	Allowance	50
Subtotal		$ 1,249
Variable Costs		
Labour	1981 Costs + 20 Percent	$ 873
Maintenance Supplies	1981 Costs + 20 Percent	151
Fuel	As for 1981	126
Subtotal		$ 1,150
TOTAL		$ 2,399

Based upon the 1981 concentrate production of 325,000 tonnes, the unit cost for terminal operations would be $7.38 U.S. per tonne.

This cost is considered to be prohibitive to the opening of the mine by Curragh. Curragh contends that a $6.00 (Canadian) per WMT port fee would constitute a fair and reasonable charge. This amount would include the ownership costs incurred by the Owner of the terminal.

At Curragh's request, Kilborn has applied the transportation and terminal costs shown in Table 8.3-3.

TABLE 8.3-3

CONSOLIDATED TRANSPORTATION AND TERMINAL COSTS

(160,000-POUND GVW TRUCKS)

Area of Expense	$/WMT Concentrate
Faro - Skagway with Alaska Shuttle	$ 38.00
Road - Maintenance Fee to Government	1.00
Terminal Cost	6.00
TOTAL	$ 45.00*

*Excludes backhaul.

8.4 OCEAN FREIGHT

Traditionally, concentrates were shipped from Skagway to Japan or Europe in 25,000 WMT capacity bulk cargo ships. No major change in this practise is anticipated.

Placer Development Limited of Vancouver, British Columbia has been carrying out marketing duties for Curragh. Based upon discussions with Placer's marketing personnel, and the proposed distribution of concentrate sales, a weighted average ocean freight cost of $17.00 U.S. per WMT is applied in Kilborn's cost projections.

8.5 OTHER MARKETING EXPENSES

An allowance of $1.50 U.S. per DMT of concentrate is included in operating cost projections to cover the costs incurred in cargo sampling, assaying and Owner's representation.

8.6 BACKHAUL COSTS

Cyprus Anvil estimates that 54,000 tonnes of freight will be delivered to the mine site each year. This amount includes fuel, tires and explosives, the costs of which are used on an fob mine site basis. Similarly, general freight costs are based upon historical data which include distributed freight expenses. For the purpose of this Report, backhaul costs are applied only to the weight of mill supplies, estimated to be 27,000 tonnes per year. It is assumed that these supplies will be shipped by barge to Skagway and, thereafter, by road to the mine site.

Based upon a recent cost estimate provided by Rivtow Straits Ltd., Kilborn has used a rate of $28.50 which will cover the costs of ocean transport, cargo insurance and loading the freight Vancouver to Skagway. Using a terminal charge of $6.00 per tonne and a road backhaul cost of $12.00 per tonne, the total cost to move supplies from Vancouver to Faro will be $46.50 per tonne of mill supplies backhauled. Other commodity prices will also be reduced as a result of the backhaul.

9.0 MARKETING

9.0 MARKETING

9.1 POTENTIAL MARKETS

Curragh has retained the services of Placer Development (Placer) to assist in establishing future markets for the selective lead and zinc concentrates.

Based upon discussions with Placer's Marketing personnel, it is probable that approximately 60 percent of Curragh's concentrates will be sold in Pacific Rim countries. At the time of writing this Report, the Japanese and Korean smelters have indicated an interest in purchasing both concentrates. Product which can not be sold across the Pacific will be sold in Europe. It will be the intention, however, to minimize such quantities in order to take advantage of the lower ocean freight costs to the Western markets.

9.2 CONCENTRATE SPECIFICATIONS

The approximate specifications of Curragh's selective concentrates are reported in Table 9.2-1.

TABLE 9.2-1

SELECTIVE CONCENTRATE SPECIFICATIONS

Constituent Symbol	Lead Concentrate	Zinc Concentrate
Pb	60 - 63 percent	1.0 - 2.0 percent
Ag	450 - 650 grams/tonne	30 - 60 grams/tonne
Au	0.3 grams/tonne	0.3 grams/tonne (maximum)
Cu	0.2 - 0.4 percent	0.5 - 1.0 percent
Zn	5.0 - 7.0 percent	50 - 53 percent

Constituent Symbol	Lead Concentrate	Zinc Concentrate
Fe	5.5 - 7.5 percent	8.5 - 10.5 percent
S	18 - 20 percent	32.0 - 34.0 percent
Bi	50 - 100 ppm	$<$30 ppm
As	200 - 500 ppm	100 - 300 ppm
Sb	400 - 1200 ppm	$<$20 ppm
Insol.	2 - 5 percent	$<$1.0 percent
SiO_2	2 - 7 percent	$<$2.0 percent
Al_2O_3	0.1 - 0.5 percent	0.05 - 0.15 percent
CaO	0.05 - 0.2 percent	0.1 - 0.3 percent
MgO	0.04 - 0.10 percent	0.05 - 0.09 percent
Cr	0.05 - 0.15 percent	0.04 - 0.2 percent
Mn	0.02 - 0.10 percent	0.1 - 1.0 percent
Cd	50 - 100 ppm	500 - 700 ppm
Ni	10 - 30 ppm	$<$50 ppm
Co	30 - 50 ppm	$<$50 ppm
Sn	0.01 percent	$<$0.01 percent
Cl	0.01 percent	$<$0.01 percent
Fl	50 - 80 ppm	50 - 80 ppm
Hg	20 - 50 ppm	250 - 350 ppm

For the first three months, zinc and lead concentrate grades may be as much as 3 percent lower than those specified above.

The lead concentrate will contain payable quantities of silver and also, on occasions, some payable gold. Kilborn has made no provision for gold payments in revenue projections. The lead concentrate contains no deleterious elements in amounts which could impose constraints on marketing strategies.

The zinc concentrate is not considered a high-grade product and contains no payable metals other than zinc.

The amount of mercury contained in the zinc concentrate will probably limit the market to those smelters capable of extracting mercury. Smelters capable of extracting mercury are located in Europe and the Pacific Rim countries.

9.3 CONCENTRATE TREATMENT CHARGES

Smelter treatment charges, when considered as an operating cost accounted for approximately 45 percent of the total operating expenses during the period 1977 - 1981.

The smelter contract terms applied by Kilborn to calculate operating revenues are described in the following Sections of the Report. For this purpose, the assumed terms are considered to be the same for each customer.

9.3.1 Lead Concentrate Sales Contract Terms

(a) Metal Payments

Lead

Pay for the lesser of 95 percent of contained metal; or, assay of contained metal less 3 units.

Silver

Pay for the lesser of 95 percent of contained metal; or, assay of contained metal less one troy ounce.

(b) Treatment Charges

Base - $120.00 U.S. per DMT at the base price.

Escalator - $3.00 U.S. per 1.0 cent increase in price above base price.

- $2.50 U.S. per 1.0 cent decrease in price below base price.

Base Price - $0.20 U.S. per pound of lead.

9.3.2 Zinc Concentrate Sales Contract Terms

(a) Metal Prices

Zinc

Pay for the lesser of 85 percent of contained metal; or, assay of contained metal less 8 units.

(b) Treatment Charges

Base	-	$165.00 U.S. per DMT at the base price.
Escalator	-	$3.50 U.S. per 1.0 cent increase above base price.
	-	$2.50 U.S. per 1.0 cent decrease in price below base price.
Base Price	-	$0.45 U.S. per pound of zinc.

The above terms and conditions are deemed to apply to all concentrates produced, regardless of the individual contractual quantities and the durations of the respective sales agreements.

It should be noted that no payment is made for lead in the zinc concentrates or zinc in the lead concentrates. Further, it is assumed that concentrations of cadmium and copper in the lead concentrate, and silver in the zinc concentrate all fail to reach levels which will qualify for payment. Such has been the case throughout Cyprus Anvil's history.

10.0 EXPENDITURE AND CASH FLOW ANALYSIS

10.0 EXPENDITURE AND CASH FLOW ANALYSIS

10.1 ASSUMPTIONS

Kilborn's estimates of the pretax net operating revenues are based upon the production and cost data derived elsewhere in this Report.

The metal price and exchange rates used are shown below.

Exchange Rate: $1.00 Canadian Equals $0.73 U.S.

	Metal Prices	
	$ U.S.	$ Canadian
Lead	$ 0.21	$ 0.29
Zinc	0.45	0.62
Silver	6.50	8.90

All income and expense items are expressed in Canadian dollars.

No escalation has been applied to either metal prices or costs.

Kilborn has not included any provision for Yukon Royalties, Corporate income taxes, debt interest, depletion, depreciation charges, profit participantions, preferred share dividends, financing charges or costs of Corporate organization, etc.

The expenditures associated with certain major projects have been classified as 'capital costs' in order to highlight such items. Kilborn has not applied rigid definitions to differentiate between capital costs, operating costs and preproduction costs.

The net operating revenues are reported both as 'Expenditure Flows' and as 'Cash Flows'.

'Expenditure Flows' make no provision for the delays which normally occur in the payment and receipt of funds. Thus expenditures equal the value of work performed and goods purchased. Monies are deemed to be paid when labour and supplies are used. Revenues are considered to be received as concentrate is produced.

'Cash Flows' are based upon expenditure flows, but they incorporate time lags in the payment and receipt of funds. The time lags used by Kilborn are reported in Table 10.1-1.

TABLE 10.1-1

CASH FLOW - TIME LAGS

Area of Expense	Duration of Time Lag (Months)
Labour	0
Materials	2
Power	1
Fuel (Oil)	1
Coal	2
Land Transport	1
Port Charges	1
Sales Expenses	1
Ocean Transport	1
In-Bound Freight	1

Curragh anticipates that funds will be earned through the sale of some single houses and multiple residential units in Faro. It is assumed that such incomes will be used to retire existing mortgages.

Capital and operating costs are expressed in terms of 'dollars per pound payable' metal. In such cases, the costs include all direct operating cash costs incurred at the mine site, Faro, Whitehorse and Toronto. In addition, the costs incurred to transport and smelt each metal are included. The sum of these costs is divided by the total amount of payable lead and zinc.

A silver credit is assigned to the lead concentrate.

FIG 10.2-1 Sheet 1

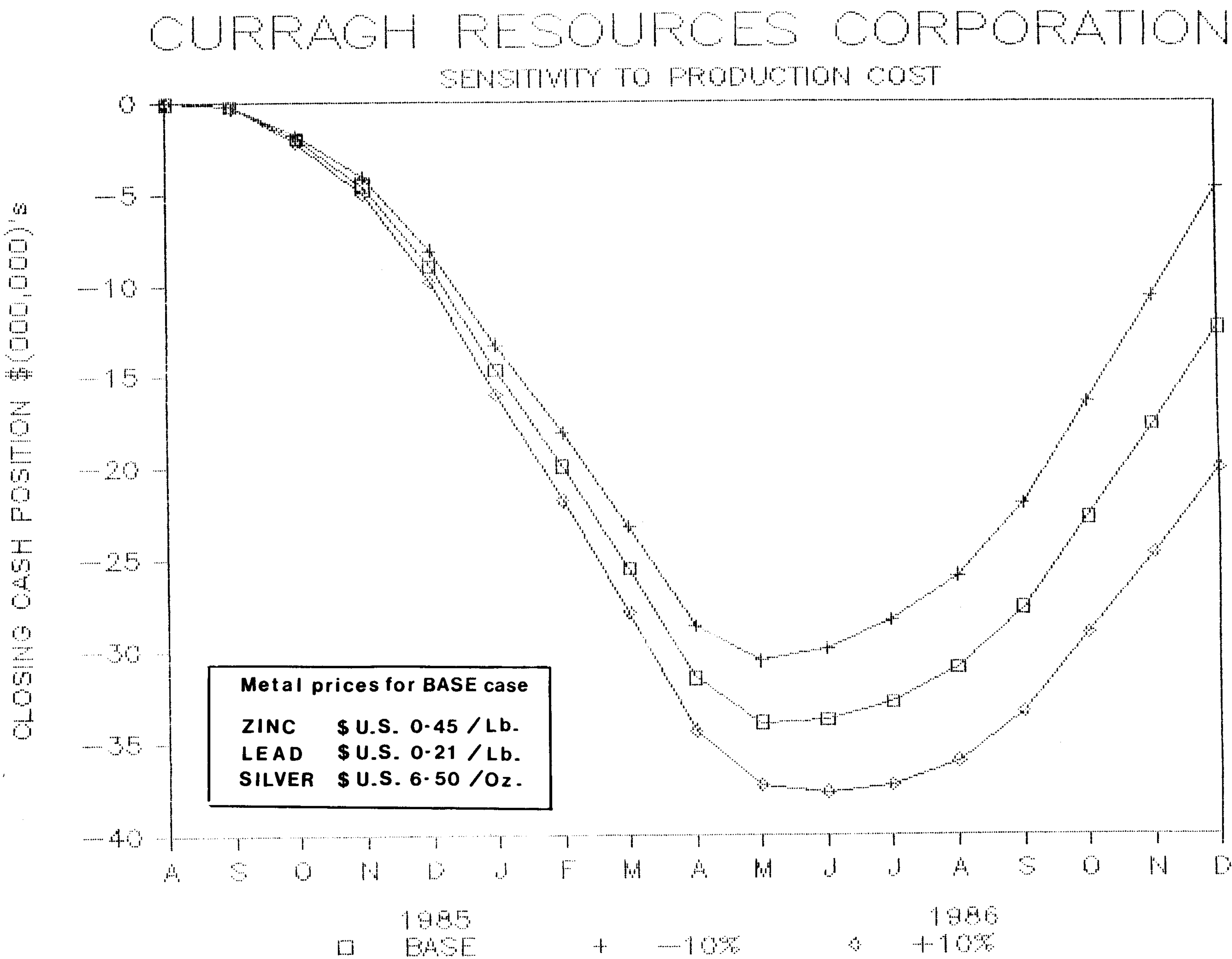


FIG 10.2-1 Sheet 2

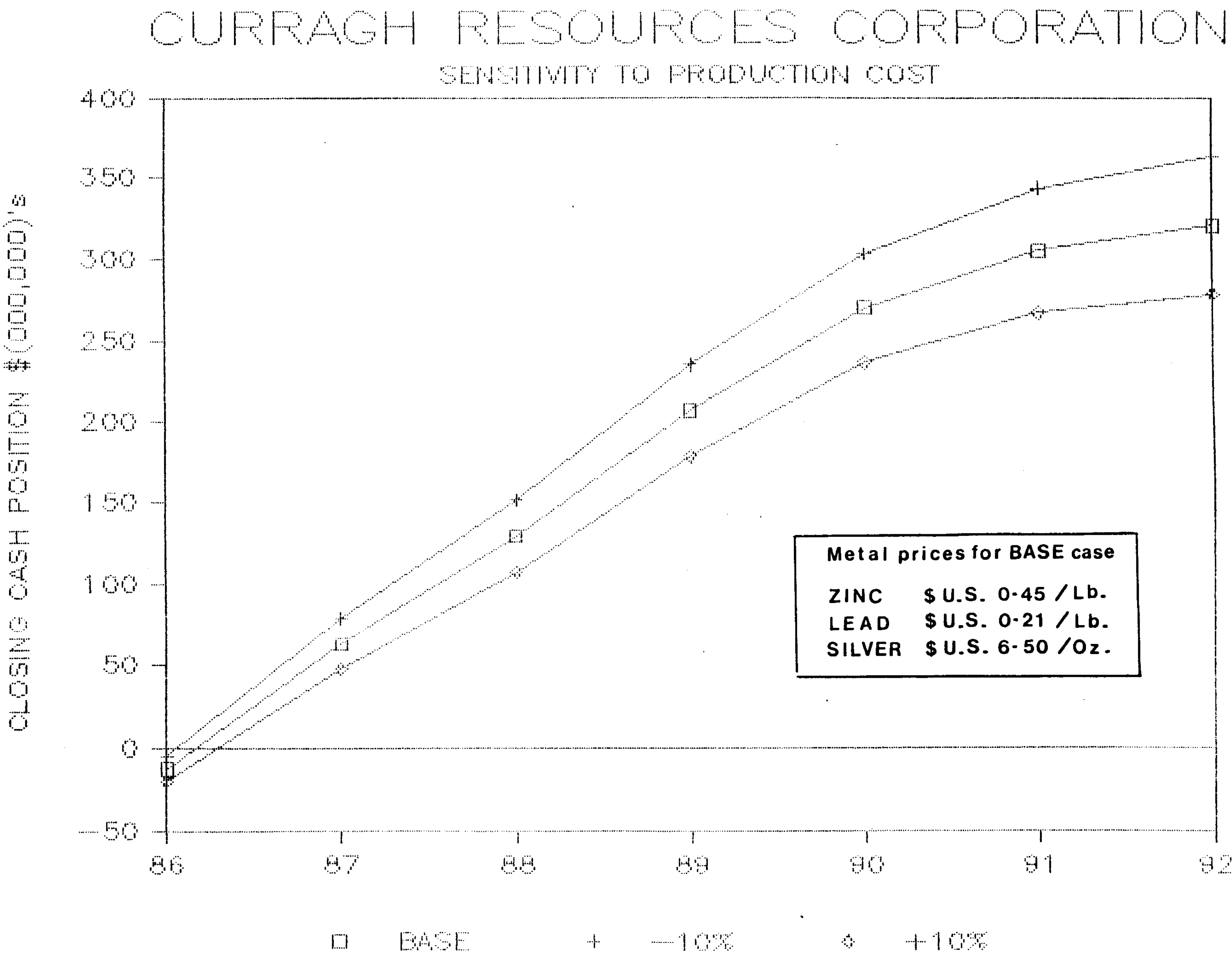


FIG 10.2-2 Sheet 1

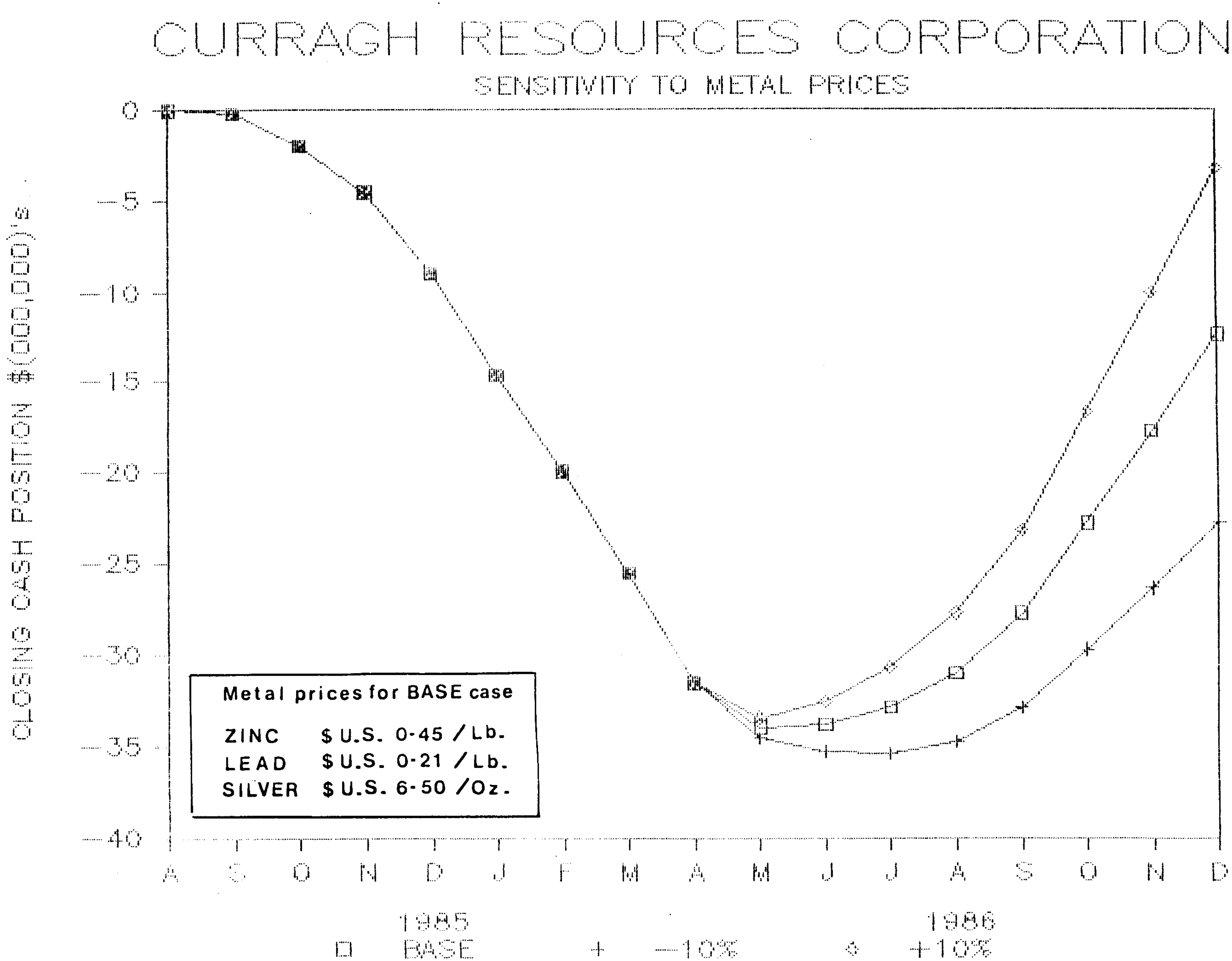
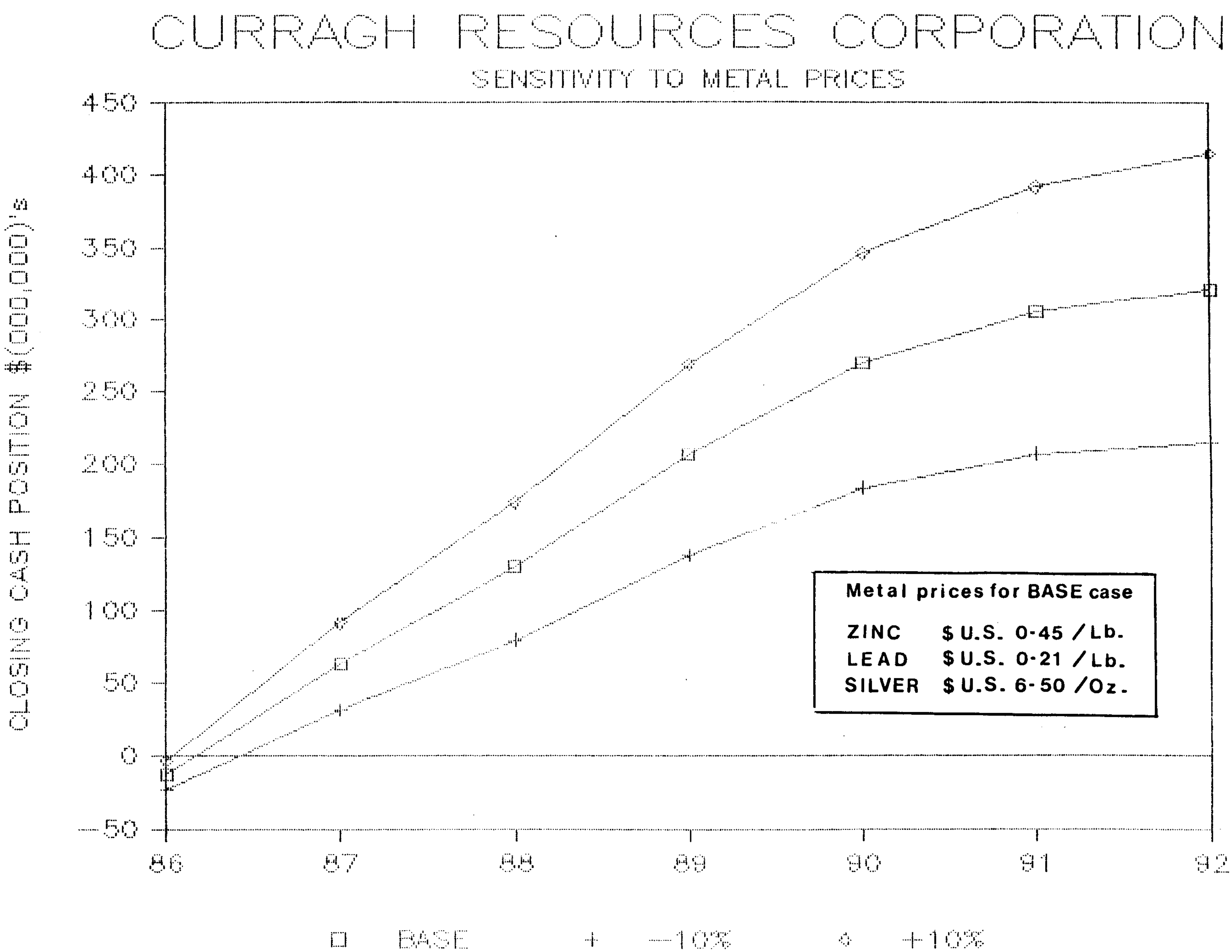


FIG 10.2-2 Sheet 2



11.0 COLLECTIVE BARGAINING AGREEMENTS

11.0 COLLECTIVE BARGAINING AGREEMENTS

11.1 GENERAL

Two Locals of the United Steelworkers of America (USWA) currently hold jurisdiction at the mine site at Faro:

(a) Local 8243 - Office and Technical Workers;
(b) Local 1051 - Production and Maintenance Workers.

However, there is no agreement in force because there are no unionized employees. A new agreement will have to be negotiated.

The wording of the former Local 8243 Agreement stipulated that Cyprus Anvil's operations in Whitehorse were considered within this Local's area of jurisdiction.

Historically, both Union Locals negotiated with the Company upon the expiry of the contracts in September of the final contract year. The most recent Collective Agreements expired on September 30th, 1984.

The failure of negotiations between the Company and Union representatives in October, 1984 resulted ultimately in a lock out of all Union workers. In May, 1985 the Company announced its intention to suspend all operations and mothball the plant and equipment.

A Memorandum of Agreement dated May 13th, 1985 was signed by the Company and both Unions in which the terms and conditions of severance were set out.

At the present time, no Collective Bargaining Agreements exist and Cyprus Anvil employs no unionized personnel.

11.2 PROPOSED WAGE RATES

For the purpose of this Report, Kilborn has used maximum and minimum wage rates, and a payroll burden factor of 22 percent provided by Curragh to encompass Canada Pension Plan, Unemployment Insurance, Group Life Insurance, and Medical Benefits.

The number of wage grade classifications has been reduced from 23 to 5 to reduce internal movement within a Department. Table 11.1-1 indicates the proposed wage classifications and corresponding wage rates. Representative jobs are shown in each classification.

TABLE 11.1-1

CURRAGH'S WAGE RATES

Wage Grade	Production and Maintenance	Wage Rate ($/Hour)	Office and Technical
1	General Labourer	$ 10.00	Clerk - Mill
	Janitor		Clerk - Mine
	Blasthole Loader		Clerk - Mechanical
	Filter Helper		Clerk - Accounting
	Tailings Man		Clerk - Purchasing
	Sample Bucker		Security Guard
	Crusher Helper		
	Service Truck Driver		
2	Secondary Driller	$ 11.30	Warehouse Person
	Pit Pumpman		
	Reagent Operator		
	Load-Out Operator		
	Pit Man-Haul Driver		

Wage Grade	Production and Maintenance	Wage Rate ($/Hour)	Office and Technical
3	Haulage Truck Driver	$ 12.70	Senior Warehouse Person
	General Equipment		Engineering
	Operator		Draftsperson
	Lube Serviceman		Geological Technician
			Environmental Control Technician
4	Grinding Operator	$ 14.10	Survey Technician
	Filter Operator		Metallurgical Technician
	Flotation Helper		
	Crusher Operator		Assayer
	Rotary Driller		
	Blaster		
	Pit Equipment Operator		
5	Journeyman Tradesman	$ 15.50	Senior Metallurgical Technician
	Steam Engineer - 2nd Class		Planning Technician
	Shovel Operator		
	Flotation Operator		
	Payroll Burden	22 Percent	Payroll Burden

These wages are compared with those currently in effect for Pine Point employees shown in Table 11.1-2. At the United Keno Hill mine at Elsa, Yukon the Unions have conceded a 25 percent reduction in wages and the resultant wage rates are similar to those proposed by Curragh.

TABLE 11.1-2

COMPARISON OF WAGE RATES

PINE POINT VERSUS CURRAGH

(REPRESENTATIVE JOB CLASSIFICATIONS)

	Wage Rates ($/Hour)	
Classification	Proposed Curragh October 1st, 1985	Pine Point May 1st, 1985
Mill		
General Labourer	$ 10.00	$ 12.76
Bucker	10.00	13.02
Filter Helper	10.00	13.02
Reagent Operator	11.30	14.27
Grinding Operator	14.10	14.27
Flotation Operator	15.50	17.56
Mine		
Blasthole Loader	$ 10.00	$ 12.76
Secondary Driller	11.30	14.27
Haulage Truck Driver	12.70	15.18
Rotary Driller	14.10	15.55
Blaster	14.10	15.79
Shovel Operator	15.50	16.75
Mechanical and Other		
Janitor	$ 10.00	$ 12.76
Lube Serviceman	12.70	14.74
Journeyman Tradesman	15.50	17.56

It is also appropriate, and indicative of current trends to compare Curragh's proposed wage rates with those which will be paid to employees of the Bell Copper Mine situated in Central British Columbia. An agreement signed between the Provincial Government, Noranda Inc. and the USWA sets out the conditions under which the parties will participate in the reopening of this mine. In accordance with the terms of this agreement the Union agreed to freeze wages for the remaining life of the mine, a period of approximately 3½ years. Wage rates will be within the range of $10.95 to $15.10 per hour. In recognition of the Union's concession the Company commits to implement a profit sharting plan.

Similar negotiations are currently in progress in an attempt to facilitate the resumption of operations at Noranda Inc.'s Brenda Mine in Southern British Columbia.

The maximum and minimum rates are shown in Table 11.1-3.

TABLE 11.1-3

CURRAGH RESOURCES CORPORATION

CYPRUS ANVIL MINE REVIEW

COMPARISON OF LABOUR RATES

	Maximum $/Hour	Minimum $/Hour
Curragh	$ 15.50	$ 10.00
(Old Cyprus Anvil Rate)	(18.43)	(12.67)
Keno Hill	14.43	10.75
(Old Rate)	(19.12)	(14.32)
Bell Copper	15.25	10.50

12.0 ANVIL DISTRICT GEOLOGICAL POTENTIAL

12.0 ANVIL DISTRICT GEOLOGICAL POTENTIAL

12.1 INTRODUCTION

The Faro Deposit is one of 4 major lead-zinc-silver zones of mineralization in close proximity to the existing Concentrator. The Grum, Vangorda and Dy Deposits are all located on an area known as the Vangorda Plateau, approximately 15 kilometres east of the Faro pit.

In general, the lead and zinc grades of the Vangorda Plateau Deposits are higher than those in the remaining Faro pit reserves, at any given cut-off grade. The value of concentrates produced from the Vangorda Plateau ores will be enhanced by the significantly higher silver and gold contents of Grum, Vangorda and Dy mineralization. Mercury contents will also probably be higher. The potential to discover additional mineralized reserves in the Anvil District is considered to be high, based upon the results of extensive diamond drilling in the area, and recent analyses of the structural geology between the Faro pit and the Dy Deposit.

Future cash flows from development of these deposits are not estimated in this Report.

12.2 THE GRUM DEPOSIT

The Grum Deposit has been extensively drilled by Kerr Addison and Cyprus Anvil. Prior to the acquisition of the property in 1979, Kerr Addison had driven approximately 2900 metres of underground workings to obtain bulk samples for metallurgical testing, and to permit underground diamond drilling of the deposit.

The deposit is drilled on a minimum of 100 foot by 200 foot centres. The core of the deposit, which contains the bulk of the higher grade mineralization, is drilled on a closer, but variable spacing that averages 100 feet by 50 feet. Grum is the best drill-defined deposit in the Anvil District.

The Grum Deposit is amenable to both underground and open-pit mining techniques. Preliminary investigations indicate that approximately one half of the total geologic reserves could be extracted by open-pit methods.

Table 12.2-1 provides a comparison of recent reserve estimates of the Grum Deposit provided by Cyprus Anvil's Geological staff.

The Grum Deposit is structurally more complex than the Faro and Vangorda Deposits. It is probable that dilution could be as high as 15 percent when mining this deposit by open-pit methods. This value compares with an estimated 5 percent dilution experienced at the Faro pit. Notwithstanding the adverse effects of the dilution, the mineable grades of the Grum Deposit are expected to be higher than the equivalent Faro pit grades. A comparison of the diluted grades is shown in Table 12.2-2.

Cyprus Anvil has compiled a significant computerized data base of all the drill hole data generated since the commencement of exploration activities.

A mine model will be completed in the near future which will be adequate for preliminary feasibility study purposes. A detailed reinterpretation of the deposit geometry is now in progress. The results of this work will be incorporated in a more refined computerized model scheduled to be completed by the end of 1986.

TABLE 12.2-1

THE GRUM DEPOSIT

A COMPARISON OF RESERVE ESTIMATES

Open-Pits at 4 percent Pb + Zn Cut-Off Grade (Between Sections 62 W - 86 W)

	Tonnes	Pb %	Zn %	Ag g/mt	Strip Ratio m^3/mt	(Pb + Zn)%	Contained Metal Tonnes	Variance from Average
Olk Pit 1983 Hand Calculation	17,055,000	3.4	5.9	59	2.91	9.3	1,586,115	13.8
Kerr Addison Noranda Computer Model	15,583,000	3.1	5.0	47	2.90	8.1	1,262,223	-9.4
Cyprus Anvil G1 Computer Model Grade Reduced by 6 Percent	16,875,000	3.0	4.9	47	2.72	7.9	1,333,125	-4.4
(No Grade Reduction)		(3.25)	(5.25)	(49.9)		(8.50)		

AVERAGE = 1,393,821

Geological Reserves at 4 Percent Pb + Zn Cut-Off Grade (Between Sections 62 W - 86 W)

	Tonnes	Pb %	Zn %	Ag g/mt	Strip Ratio m^3/mt	(Pb + Zn)%	Contained Metal Tonnes	Variance from Average
Kerr Addison Hand Calculation	26,083,000	4.1	6.4	62	--	10.5	2,738,715	5.2
Kerr Addison Noranda Computer	27,650,000	3.1	4.9	48	--	8.0	2,212,000	-15.0

Geological Reserves at 4 Percent Pb + Zn Cut-Off Grade (Between Sections 62 W - 86 W) (Cont'd)

	Tonnes	Pb %	Zn %	Ag g/mt	Strip Ratio m^3/mt	(Pb + Zn)%	Contained Metal Tonnes	Variance from Average
Cyprus Anvil G1 Computer Model	30,781,000	3.1	4.9	49	--	8.0	2,462,480	-5.4
Cyprus Anvil/Dome* Hand Calculation	32,611,000	3.5	5.7	59	--	9.2	3,000,212	15.2

AVERAGE = 2,603,351

High-Grade Reserves - Underground - 8 Percent Pb + Zn Cut-Off Grade

	Tonnes	Pb %	Zn %	Ag g/mt	Strip Ratio m^3/mt	(Pb + Zn)%	Contained Metal Tonnes	Variance from Average
Kerr Addison Hand Calculation	15,784,000	5.2	8.3	78	--	13.5	2,130,840	---
Cyprus Anvil** Hand Calculation	10,960,000	4.5	7.8	78	--	12.3	1,348,080	---

NOTES:

* Includes approximately 3,500,000 tonnes drilled off in 1982.

** More selective choice of ore panels than Kerr Addison.

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TABLE 12.2-2

THE GRUM DEPOSIT

MINEABLE GRADES (OPEN-PIT)

	Pb %	Zn %	Ag g/mt	Au g/mt	(Pb + Zn)%	Dilution %	Diluted (Pb + Zn)%
Faro Zone 3 (Dome)	3.2	4.9	41	0.18	8.1	5	7.7
Grum (Cyprus Anvil)	3.4	5.9	59	0.80	9.3	15	7.9

Extensive laboratory and pilot plant metallurgical test programs were carried out by Noranda Mines Ltd. on samples of Grum ores. The ores were found to be amenable to differential flotation, although mercury concentrations in the order of 600 ppm were reported. Subsequent test work and duplicate assays indicated levels of mercury in the 300 to 400 range. While more work is required it is probable that the levels of mercury in the Grum zinc concentrates will exceed equivalent values in Faro zinc concentrates.

12.3 THE VANGORDA DEPOSIT

While the Vangorda Deposit is smaller and of lower grade than the Grum, the geometry and mineral distributions offer the potential to 'high-grade' this deposit using open-pit methods.

Table 12.3-1 indicates the improvements in grade, at the expense of tonnage, which may be achieved by selectively mining portions of the deposit. A zone of high-grade baritic massive sulphides has been identified by Cyprus Anvil Geologists located close to the surface. Covered only with glacial till, it is reported that 'at least 1.5 to 2.0 million tonnes of ore assaying about 11.5 (Pb + Zn) percent exist in this area'.

TABLE 12.3-1

THE VANGORDA DEPOSIT

A COMPARISON OF RESERVE ESTIMATES

Cyprus Anvil Open-Pit at 4 Percent Pb + Zn Cut-Off Grade

Between Sections 2 W - 14E Mintec Block Model Tonnage and Grade Reduced by 5 Percent

Between Sections 14 E - 18 E Sectional Hand Calculation Grade Reduced by 5 Percent

Tonnes ('000)	Pb %	Zn %	Ag g/mt	Cu %	Au g/mt	Strip Ratio mt/mt
5,189	3.4	4.2	47	--	--	4.7

Between Sections 2 W - 18 E Recalculated or Original Results

Tonnes ('000)	Pb %	Zn %	Ag g/mt	Cu %	Au g/mt	Strip Ratio mt/mt
5,415	3.6	4.4	50	--	0.8	4.7

Geco Open-Pit at 4 Percent Pb + Zn Cut-Off Grade

Between Sections 0 E - 24 E Sectional Hand Calculation, No Dilution

Tonnes ('000)	Pb %	Zn %	Ag g/mt	Cu %	Au g/mt	Strip Ratio mt/mt
5,076	3.3	5.3	61	0.3	0.9	3.2

Roswell-Wilton Open-Pit at 4 Percent Pb + Zn Cut-Off Grade

Between Sections 0 E - 26 E Sectional Hand Calculation, No Dilution

Tonnes ('000)	Pb %	Zn %	Ag g/mt	Cu %	Au g/mt	Strip Ratio mt/mt
3,060	3.6	6.4	69	0.2	--	1.2

The Vangorda Deposit is drilled in a 200 foot gird pattern. Preliminary metallurgical test work performed on a variety of ore types indicated that the Vangorda ores will be amenable to selective flotation.

12.4 THE DY DEPOSIT

The Dy Deposit is located at the eastern extremity of the Vangorda Plateau. Since the deposit is located 550 metres to 850 metres below the surface, underground mining methods will be required to exploit the deposit.

The Dy Deposit has the potential to be one of the largest deposits in the Anvil District. Due to the depth of the mineralized zone, however, only 57 diamond drill holes have been drilled date. It is probable that any future exploration programs will depend upon the driving of an underground adit from which diamond drilling will be carried out to better define the deposit.

Preliminary metallurgical test work conducted on samples of Dy indicate a particularly clean sphalerite which results in zinc concentrate grades in excess of 56 percent zinc.

12.5 DEVELOPMENT OPTIONS

Since the acquisition of the Vangorda Plateau Deposits in 1979, Cyprus Anvil has studied many long-term development strategies. Such plans have examined the alternative sequences in which the Grum, Vangorda and Dy Deposits should be mined and integrated into existing short-term plans which depend upon ore mined from the Faro pit.

There remains a very considerable amount of engineering and some additional drilling to be carried out before long-term development plans can be finalized. Major work activities include the development of mine models suitable for detailed mine planning and the selection of a transportation system by which ore will be transported the 15 kilometres from the Vangorda Plateau to the Concentrator. Based upon the Faro pit production schedule described in this Report, a lead time of approximately 6 years is probably available during which time planning and development for the Vangorda Plateau Deposit must be implemented. This time is sufficient provided a group of competent personnel is dedicated to the work upon the resumption of operations at the Faro pit.

DATA EXTRACTED FROM A REPORT ENTITLED:

CURRAGH RESOURCES CORPORATION

TECHNICAL AND COST REVIEW
OF THE CYPRUS ANVIL MINE
FARO, YUKON
VOLUME II

SUBMITTED IN AUGUST, 1985 BY:

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ACKNOWLEDGEMENTS

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13.0 PRODUCTION PLAN

13.0 PRODUCTION PLAN

The Production Plan is summarized in Table 13.0-1.

Waste stripping will commence November 1st, 1985. The mill will resume operations April 1st, 1986 and take 6 months to achieve the planned 11,160 DMT per day throughput rate.

The mining cut-off grade will be 6.0 (Pb + Zn) percent. Ores in excess of this grade will be delivered to the mill. Ore of grades between 4.0 and 6.0 (Pb + Zn) percent will be delivered to a low-grade stockpile. Upon exhaustion of the high-grade ore, material will be reclaimed from the low-grade stockpile to sustain the planned mill production rate.

The 1.3 million tonnes of oxide ore will be the source of mill feed once the low-grade stockpile is depleted.

It is emphasized that the proposed Production Plan will not necessarily represent the optimum economic operating strategy. Detailed engineering studies must be conducted to evaluate various mine cut-off grades and the sequence in which the high-grade, low-grade and oxidized ores are processed. The results of these recommended optimization studies could result in significant improvements in the Project economics.

Kilborn's Terms of Reference precluded consideration of the Vangorda Plateau Deposits in long-term production plans. It is assumed for this purpose that these deposits will be developed to provide continuity of the milling operations once all the ore is mined from the Faro pit.

TABLE 13.0-1

PRODUCTION AND COST FORECAST SUMMARY

	1985	1986	1987	1988	1989	1990	1991	1992
Mine								
Pit Ore DMT (000)	NIL	3,829	5,591	5,153	6,350	2,855	NIL	NIL
Waste DMT (000)	3,775	31,121	30,115	15,251	5,673	1,527	NIL	NIL
Total DMT (000)	3,775	34,950	35,706	20,404	12,023	4,382	NIL	NIL
Mill								
Ore Source	---	High-Grade	High-Grade	High-Grade	High-Grade	High-Grade	Low-Grade	Low-Grade and Oxide
Feed - DMT (000)	NIL	2,574	4,074	4,074	4,074	4,074	4,074	2,161
- %Pb	NIL	3.32	3.83	3.21	3.21	2.58	1.88	2.49
- %Zn	NIL	5.18	5.10	4.54	4.84	4.25	2.95	4.00
- Ag Oz/Tonne	NIL	15.24	18.10	16.49	16.89	15.98	20.09	19.56
Lead Concentrate - Grade %Pb	---	60.18	61.60	62.48	61.57	61.66	61.83	59.95
- Pb Received %	---	83.49	85.42	85.19	85.65	84.11	80.73	69.73
- Grade Ag Oz/Tonne	---	14.24	17.10	15.49	15.89	14.98	19.08	18.56
- Ag Received %	---	58.15	60.00	60.00	60.00	59.27	58.00	53.23
Zinc Concentrate - Grade %Zn	---	49.90	51.13	51.22	51.29	51.03	50.48	48.11
- Zn Received %	---	82.52	84.71	84.63	85.39	84.32	82.83	72.36
Concentrate Production - Pb DMT	---	118,607	216,328	178,049	181,963	143,576	100,118	62,701
- Zn DMT	---	220,608	344,189	305,813	328,465	286,361	197,263	130,109
- Total DMT	---	339,215	560,517	483,862	510,428	429,937	297,381	192,810

PRODUCTION AND COST FORECAST SUMMARY

Operating Costs $(000)	1985	1986	1987	1988	1989	1990	1991	1992
Mine	$ 9,402	$ 34,089	$ 32,915	$ 23,757	$ 16,463	$ 9,162	$ 4,686	$ 2,544
Mill	1,288	21,698	27,616	27,426	27,416	28,250	29,403	20,399
General and Administrative	3,670	8,450	8,214	8,161	8,098	8,083	8,059	7,765
Other	604	6,039	8,401	7,990	7,839	7,670	7,415	4,842
Subtotal	$ 14,964	$ 70,276	$ 77,146	$ 67,334	$ 59,816	$ 53,165	$ 49,563	$ 35,550
Transportation	NIL	26,219	43,022	37,310	39,290	33,292	23,414	15,032
Treatment Charges	NIL	69,848	114,246	99,122	104,902	88,917	61,456	39,973
TOTAL	$ 14,964	$ 166,343	$ 234,414	$ 203,766	$ 204,008	$ 175,374	$ 134,433	$ 90,555
Unit Operating Cost/Tonne Milled	$ N/A	$ 64.62	$ 57.54	$ 50.02	$ 50.08	$ 43.05	$ 33.00	$ 41.90
Capital Cost $(000)	$ 1,305	$ 5,942	$ 2,087	$ 1,147	$ 2,275	$ 1,932	$ 500	$ NIL

KEY

High-Grade - +6 (Pb + Zn) Percent
Low-Grade - 4 - 6 (Pb + Zn) Percent Stockpile
Oxide - Oxide Stockpile

14.0 OPERATING COST BUDGET

14.0 OPERATING COST BUDGET

14.1 INTRODUCTION

The information contained in Section 14.0 is used to derive the operating cost projections which are summarized in Volume I of this Report. A considerable amount of work remains to develop a useful format for an effective operating budget. It is intended that this data provide a basis for such work.

14.2 MINE OPERATING COSTS

14.2.1 Summary

The projected costs by areas of expense are summarized in Table 14.2-1.

Table 14.2-2 indicates the mine operating costs until 1992. Active mining in the Faro open-pit will be complete at the end of July, 1990. According to the present schedule, the oxide and low-grade stockpiles will be depleted by July, 1992.

Table 14.2-3 indicates the total mine manpower requirements which are based on the Equipment Usage Schedule in Table 4.5-2.

SUMMARY of MINING COSTS $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mine Operation Cost																		
Labour	0	0	414	641	727	738	847	858	858	858	892	892	892	867	867	867	867	12,084
Material	1	1	103	508	1,094	1,160	1,142	1,285	1,241	1,288	1,353	1,402	1,445	1,280	1,306	1,320	1,228	17,157
Equipment Reactivation-Labour	0	29	726	829	454	302	142	109	0	0	0	0	0	0	0	0	0	2,590
Equipment Reactivation-Materia	0	0	905	1,575	777	351	625	279	0	0	0	0	0	0	0	0	0	4,512
Fuel & Lubricants	0	0	0	195	423	413	457	535	512	533	614	633	685	528	535	569	515	7,147
Total Mining Cost	1	30	2,149	3,748	3,475	2,964	3,213	3,066	2,612	2,680	2,859	2,926	3,022	2,674	2,708	2,755	2,610	43,491
Cost/Tonne Ore	NA	NA	NA	NA	NA	NA	NA	$161.35	$15.55	$13.96	$13.06	$9.92	$9.75	$7.37	$7.83	$8.22	$7.54	$16.77
Cost/tonne Moved	NA	NA	$2.77	$2.50	$1.54	$1.32	$1.21	$1.05	$0.91	$0.90	$0.97	$0.96	$0.99	$0.90	$0.90	$0.94	$1.01	$1.12
Mining Quantities																		
Ore (000)'s Tonnes	0	0	0	0	0	0	0	19	168	192	219	295	310	363	346	335	346	2,593
Protore (000)'s Tonnes	0	0	0	0	0	0	0	7	77	179	436	330	688	522	49	239	0	2,527
Waste (000)'s Tonnes	0	0	775	1,500	2,250	2,250	2,646	2,907	2,618	2,619	2,288	2,412	2,045	2,092	2,598	2,355	2,250	33,605
Stockpile (000)'s Tonnes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total (000)'s Tonnes	0	0	775	1,500	2,250	2,250	2,646	2,933	2,863	2,990	2,943	3,037	3,043	2,977	2,993	2,929	2,596	38,725
Stripping Ratio @ 6% Cut-off	NA	NA	NA	NA	NA	NA	NA	153.37	16.04	14.57	12.44	9.29	8.82	7.20	7.65	7.74	6.50	13.93

SUMMARY of MINING COSTS $(000)'s

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mine Operation Cost									
Labour	1,783	10,302	10,268	8,509	6,635	4,176	2,167	1,171	45,009
Material	1,707	15,451	15,865	10,587	6,439	3,290	1,778	979	56,096
Equipment Reactivation-Labour	2,037	553	0	0	0	0	0	0	2,590
Equipment Reactivation-Material	3,257	1,255	0	0	0	0	0	0	4,512
Fuel & Lubricants	618	6,529	6,782	4,661	3,388	1,697	741	395	24,811
Total Mining Cost	9,402	34,089	32,915	23,757	16,463	9,162	4,686	2,544	133,018
Cost/Tonne Ore	NA	$13.15	$8.08	$5.83	$4.04	$3.88	NA	NA	$7.74
Cost/tonne Moved	$2.08	$1.00	$0.92	$1.16	$1.37	$1.50	$1.15	$1.17	$1.12
Mining Quantities									
Ore (000)'s Tonnes	0	2,593	4,074	4,074	4,074	2,361	0	0	17,176
Protore (000)'s Tonnes	0	2,527	3,103	2,207	4,645	1,011	0	0	13,493
Waste (000)'s Tonnes	4,525	29,080	28,529	14,123	3,295	1,010	0	0	80,562
Stockpile (000)'s Tonnes	0	0	0	0	0	1,712	4,074	2,175	7,961
Total (000)'s Tonnes	4,525	34,200	35,706	20,404	12,014	6,094	4,074	2,175	119,192
Stripping Ratio @ 6% Cut-off	NA	12.19	7.76	4.01	1.95	0.86	NA	NA	5.48

SUMMARY of MINE OPERATING COSTS $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
OPERATING COST-LABOUR																		
Salaried	0	0	90	165	165	165	165	165	165	165	165	165	165	165	165	165	165	2,400
Hourly	0	0	324	476	562	573	682	693	693	693	727	727	727	702	702	702	702	9,684
Total	0	0	414	641	727	738	847	858	858	858	892	892	892	867	867	867	867	12,084
OPERATING COST-MATERIAL																		
Mine Operating Supplies	0	0	76	253	549	598	562	626	605	628	639	665	670	627	643	638	581	8,361
Mine Maintenance Supplies	1	1	27	254	545	563	580	659	636	661	714	737	776	652	663	681	647	8,797
Total	1	1	103	508	1,094	1,160	1,142	1,285	1,241	1,288	1,353	1,402	1,445	1,280	1,306	1,320	1,228	17,157

SUMMARY of MINE OPERATING COSTS $(000)'s

	1985	1986	1987	1988	1989	1990	1991	1992	Total
OPERATING COST-LABOUR									
Salaried	420	1,980	1,980	1,805	1,560	1,163	600	318	9,826
Hourly	1,363	8,322	8,288	6,704	5,075	3,012	1,567	853	35,183
Total	1,783	10,302	10,268	8,509	6,635	4,176	2,167	1,171	45,009
OPERATING COST-MATERIAL									
Mine Operating Supplies	879	7,482	7,640	4,547	2,700	1,059	340	189	24,836
Mine Maintenance Supplies	828	7,969	8,225	6,040	3,740	2,231	1,439	789	31,260
Total	1,707	15,451	15,865	10,587	6,439	3,290	1,778	979	56,096

SUMMARY of TOTAL MINE MANPOWER

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Salaried																		
Operations	0	0	4	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
Maintenance	0	0	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Engineering	0	0	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Yards & Services	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total salaried	0	0	19	34	34	34	34	34	34	34	34	34	34	34	34	34	34	
Hourly																		
Operations	0	0	36	80	92	96	116	120	120	120	132	132	132	123	123	123	123	
Maintenance	0	0	56	62	77	77	92	92	92	92	92	92	92	92	92	92	92	
Engineering	0	0	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Yards & Services	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Total hourly	0	0	107	157	184	188	223	227	227	227	239	239	239	230	230	230	230	
Total Mining	0	0	126	191	218	222	257	261	261	261	273	273	273	264	264	264	264	

SUMMARY of TOTAL MINE MANPOWER

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Salaried									
Operations	6	14	14	12	10	8	5	3	
Maintenance	6	12	12	11	10	7	4	2	
Engineering	4	7	7	7	6	4	1	1	
Yards & Services	1	1	1	1	1	1	1	1	
Total salaried	17	34	34	31	27	20	11	6	
Hourly									
Operations	52	122	121	94	75	38	18	10	
Maintenance	49	91	94	78	54	34	15	8	
Engineering	5	7	7	7	6	4	1	1	
Yards & Services	6	8	10	10	10	10	10	10	
Total hourly	112	227	232	188	145	86	44	28	
Total Mining	129	261	266	219	172	106	55	34	

14.2.2 Mine Reactivation Costs

The work required to enable the mine to start preproduction stripping is discussed in Section 4.8 of this Report.

The activities are costed by month and by job assuming they are carried out by a contracted task force. The equipment will be turned over to the Mine Department for use after completion of rehabilitation. The majority of the activities consist of demothballing and refurbishing equipment prior to use. In addition, funds are provided to permit detailed pit engineering, pit wall stabilization, and the costs of contract drilling required initially to ensure adequate supplies of developed ore. These costs are summarized in Section 4.8.5 with monthly expenditures shown in Tables 14.2-4 and 14.2-5.

MINE REACTIVATION COSTS-MATERIALS $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Material Costs																		
Contract blasthole drilling			500	500	250													1,250
Credit from operations,for blastholes			0	0	(250)													(250)
Pit slope stabilization			0	0	0	125	125											250
Fuel inventory			10	40	50													100
Greases inventory			10	30	10													50
Lube & hydraulic oil inventory			10	30	10													50
Bucket teeth & cutting edge inventory			0	60	40													100
Euclid parts inventory			50	50	0		50											150
Shovel bucket normalizing			20	30	10													60
Euclid 170T truck activation			20	20	0													40
Euclid truck box modifications			20	15	5													40
Wabco 120T truck activation			0	30	0													30
Wabco 120T truck overhaul,rebuild,STATEX			0	80	40	40	320	160										640
Wabco engine rebuild & upgrade			0	260	130	130	130	65										715
Wabco Tires			0	0	162	36		54										252
Marion drill (Diesel) rebuild			60	80	20													160
Marion drill (Electric) overhaul			30	20	0													50
P&H shovel (a) reactivation			60	0	0													60
P&H shovel (b) boom extension included			0	170	0													170
P&H shovel (c) boom extension			0	60	140													200
Marion shovel rebuild			0	40	140	20												200
LeTourneau loader, activate			30	0	0													30
Komatsu bulldozer D355A			5	0	0													5
Caterpillar bulldozer D9			0	20	0													20
Grader			10	30	0													40
Other small equipment			20	10	20													50
Relocate main power line			50	0	0													50
Total Material			905	1575	777	351	625	279										4,512

MINE REACTIVATION COSTS-LABOUR & SUMMARY $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Personnel Costs																		
Project Manager (Mine Reactivation)		6.000	12.000	12.000	10.500	12.000	12.000											64.500
Project Mechanical Superintendant			12.000	12.000	10.500	12.000	12.000											58.500
Mine Planning Engineer		5.500	9.600	11.000														26.100
Mine Planning Draftsman			8.700	10.000														18.700
Mine Mechanical Engineer		5.500	11.000	11.000	9.600	11.000												48.100
Mine Mechanical Clerical			9.000	9.000	8.700	9.000												35.700
Purchasing & Expediting		5.500	22.000	9.600	5.500	9.000												51.600
Warehousing			9.000	9.000	7.900													25.900
Service Rep: Marion			13.000	13.000	13.000	13.000												52.000
Service Rep: P&H			13.000	13.000														26.000
Service Rep: Euclid - Cummins			13.000	13.000														26.000
Service Rep: Wabco - GM			13.000	13.000	13.000	13.000	13.000	13.000										78.000
Welder Leader			12.411	12.782														25.193
Welders			62.056	63.910														125.966
Lead Mechanics			37.233	60.196	38.250	25.443	12.714	12.714										186.551
Mechanics			399.066	469.766	280.500	154.835	63.571	63.571										1431.310
Electricians			12.411	12.782	12.750	12.772	12.714	12.714										76.144
Utility			24.822	25.564	25.500	0.000	0.000	0.000										75.886
Bus			9.000	12.000	6.000	9.000	7.000	3.000										46.000
Staff Expense		6.000	24.000	36.000	12.000	21.000	9.000	4.000										112.000
Total Personnel Costs		28.500	726.300	828.600	453.700	302.050	142.000	109.000										2590.150
SUMMARY																		
Labour		29	726	829	454	302	142	109	0	0	0	0	0	0	0	0	0	2,590
Material		0	905	1,575	777	351	625	279	0	0	0	0	0	0	0	0	0	4,512
Total		29	1,631	2,404	1,231	653	767	388	0	0	0	0	0	0	0	0	0	7,102

14.2.3 Mine Salaried Staff

Mine salaried staff costs are illustrated in Table 14.2-6. A weighted average of $60,000 per person per year, including salary burdens is used in the estimates.

MINE SALARIED STAFF COST

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Salaried Staff																		
Operations																		
Mine superintendant	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Number	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$0.00	$0.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	
Monthly cost$(000)	$0.00	$0.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$75.00
General foreman	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Shift foremen	0	0	2	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Dispatcher	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Number	0	0	3	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$0.00	$0.00	$180.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	$780.00	
Monthly cost$(000)	$0.00	$0.00	$15.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$65.00	$925.00
Subtotal-Operations-Manpower	0	0	4	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
Subtotal-Operations-Cost $(000	$0.00	$0.00	$20.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$1,000
Maintenance																		
General foreman	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mechanical foremen	0	0	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Electrical foremen	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Planning Foremen	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Number	0	0	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$0.00	$0.00	$480.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	$720.00	
Monthly cost$(000)	$0.00	$0.00	$40.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$880.00
Subtotal-Maintenance-Manpower	0	0	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Subtotal-Maintenance-Cost$(000	$0.00	$0.00	$40.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$880.00
Yards & Services																		
Services Foreman	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Number	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	

MINE SALARIED STAFF COST

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Annual cost $(000)	$0.00	$0.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	$60.00	
Monthly cost$(000)	$0.00	$0.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$75.00
Subtotal-Yards & Serv-Manpower	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Subtotal-Yards&Serv-Cost$(000)	$0.00	$0.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$75.00
Engineering																		
Chief mine engineer	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mining engineers	0	0	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Mechanical engineers	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Geologists	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Number	0	0	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$0.00	$0.00	$360.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	$420.00	
Monthly cost$(000)	$0.00	$0.00	$30.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$520.00
Subtotal-Engineering-Manpower	0	0	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Subtotal-Engineering-Cost	$0.00	$0.00	$30.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$35.00	$520.00
Total Salaried Manpower	0	0	18	33	33	33	33	33	33	33	33	33	33	33	33	33	33	
Total Salaried Cost $(000)'s	$0.00	$0.00	$90.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$165.00	$2,400

MINE SALARIED STAFF COST

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Salaried Staff	Monthly Rates are Averages for Operating Months								
Operations									
Mine superintendant	1	1	1	1	1	1	1	0.5	
Number	0.6	1	1	1	1	1	1	0.5	
Annual cost/man	60000	60000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$36.000	$60.000	$60.000	$60.000	$60.000	$60.000	$60.000	$30.000	
Monthly cost$(000)	$3.000	$5.000	$5.000	$5.000	$5.000	$5.000	$5.000	$2.500	
General foreman	0.6	1.0	1.0	1.0	1.0	0.6	0.0	0.0	
Shift foremen	3.6	8.0	8.0	6.3	4.0	4.0	4.0	2.2	
Dispatcher	1.6	4.0	4.0	4.0	4.0	2.4	0.0	0.0	
Number	5.8	13.0	13.0	11.3	9.0	7.0	4.0	2.2	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$348.000	$780.000	$780.000	$680.000	$540.000	$420.000	$240.000	$132.000	
Monthly cost$(000)	$29.000	$65.000	$65.000	$56.667	$45.000	$35.000	$20.000	$11.000	
Subtotal-Operations-Manpower	6	14	14	12	10	8	5	3	
Subtotal-Operations-Cost $(000)	$160.000	$840.000	$840.000	$740.000	$600.000	$480.000	$300.000	$162.000	$4,122.000
Maintenance									
General foreman	0.6	1.0	1.0	1.0	1.0	1.0	1.0	0.5	
Mechanical foremen	4.0	8.0	8.0	7.2	6.0	4.3	2.0	1.1	
Electrical foremen	1.2	2.0	2.0	2.0	2.0	1.6	1.0	0.5	
Planning Foremen	0.6	1.0	1.0	1.0	1.0	0.6	0.0	0.0	
Number	6.4	12.0	12.0	11.2	10.0	7.5	4.0	2.1	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$384.000	$720.000	$720.000	$670.000	$600.000	$449.096	$240.000	$126.000	
Monthly cost$(000)	$32.000	$60.000	$60.000	$55.833	$50.000	$37.425	$20.000	$10.500	
Subtotal-Maintenance-Manpower	6	12	12	11	10	7	4	2	
Subtotal-Maintenance-Cost$(000)	$160.000	$720.000	$720.000	$670.000	$600.000	$449.096	$240.000	$126.000	$3,685.096
Yards & Services									
Services Foreman	0.6	1.0	1.0	1.0	1.0	1.0	1.0	0.6	
Number	0.6	1	1	1	1	1	1	0.6	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	

MINE SALARIED STAFF COST

	1985	1986	1987	1988	1989	1990	1991	1992	Total
	----	----	----	----	----	----	----	----	-----
Annual cost $(000)	$36.000	$60.000	$60.000	$60.000	$60.000	$60.000	$60.000	$36.000	
Monthly cost$(000)	$3.000	$5.000	$5.000	$5.000	$5.000	$5.000	$5.000	$3.000	
Subtotal-Yards & Serv-Manpower	1	1	1	1	1	1	1	1	
Subtotal-Yards&Serv-Cost$(000)	$15.000	$60.000	$60.000	$60.000	$60.000	$60.000	$60.000	$36.000	$411.000
Engineering									

Chief mine engineer	0.6	1.0	1.0	1.0	1.0	0.6	0.0	0.0	
Mining engineers	1.6	3.0	3.0	2.6	2.0	1.2	0.0	0.0	
Mechanical engineers	0.6	1.0	1.0	1.0	1.0	1.0	1.0	0.5	
Geologists	1.2	2.0	2.0	2.0	2.0	1.2	0.0	0.0	
Number	4.0	7.0	7.0	6.6	6.0	3.9	1.0	0.5	
Annual cost/man	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual cost $(000)	$240.000	$420.000	$420.000	$395.000	$360.000	$234.247	$60.000	$30.000	
Monthly cost$(000)	$20.000	$35.000	$35.000	$32.917	$30.000	$19.521	$5.000	$2.500	
Subtotal-Engineering-Manpower	4	7	7	7	6	4	1	1	
Subtotal-Engineering-Cost	$100.000	$420.000	$420.000	$395.000	$360.000	$234.247	$60.000	$30.000	$2,019.247
Total Salaried Manpower	17	33	33	30	26	19	10	5	
Total Salaried Cost $(000)'s	$420.000	$1,980.000	$1,980.000	$1,805.000	$1,560.000	$1,163.342	$600.000	$318.000	$9,826.342

14.2.4 Hourly Paid Labour Cost

Operating labour costs are illustrated in Table 14.2-7. Wage rates and burdens are provided in Section 11.0 of this Report.

MINE HOURLY LABOUR COST

Operations	Hourly Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Driller	$14.10	0	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Blaster	$14.10	0	0	1	3	3	2	2	2	2	2	2	2	2	2	2	2	2	
Blaster's He	$11.30	0	0	1	3	3	4	4	4	4	4	4	4	4	4	4	4	4	
Shovel Opera	$15.50	0	0	3	9	12	12	16	16	16	16	16	16	16	16	16	16	16	
Truck Driver	$12.70	0	0	9	27	36	40	56	60	60	60	72	72	72	63	63	63	63	
FEL Operator	$14.10	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Dozer Operat	$14.10	0	0	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Grader Opera	$14.10	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Water Truckd	$12.70	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Utilityman	$12.70	0	0	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Trainees	$11.30	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Manpower		0	0	36	80	92	96	116	120	120	120	132	132	132	123	123	123	123	
Crew Cost (2184 Hours)	$(000)	$0	$0	$1,035	$2,329	$2,680	$2,785	$3,364	$3,475	$3,475	$3,475	$3,808	$3,808	$3,808	$3,558	$3,558	$3,558	$3,558	
Payroll Burden @ 22%	$(000)	$0	$0	$228	$512	$590	$613	$740	$765	$765	$765	$838	$838	$838	$783	$783	$783	$783	
Annual Cost Rate	$(000)	$0	$0	$1,263	$2,841	$3,270	$3,398	$4,104	$4,240	$4,240	$4,240	$4,646	$4,646	$4,646	$4,341	$4,341	$4,341	$4,341	
Cost	$(000)																		
Equivalent Monthly Cost		$0	$0	$105	$237	$272	$283	$342	$353	$353	$353	$387	$387	$387	$362	$362	$362	$362	$4,908

Maintenance	Hourly Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86
Heavy Dty.Me	$15.50	0	0	16	20	28	28	36	36	36	36	36	36	36	36	36	36	36
Mechanic	$14.10	0	0	10	11	15	15	20	20	20	20	20	20	20	20	20	20	20
Welder	$15.50	0	0	4	5	6	6	8	8	8	8	8	8	8	8	8	8	8
Machinist	$15.50	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Linemen	$15.50	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Electrician	$15.50	0	0	6	6	8	8	8	8	8	8	8	8	8	8	8	8	8
Electronic R	$15.50	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mobile Optr.	$14.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Utilityman	$12.70	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Janitor	$10.00	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Tool Crib	$11.30	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Clerks	$10.00	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

MINE HOURLY LABOUR COST

Operations	Hourly Rate	1985	1986	1987	1988	1989	1990	1991	1992	Total
		Months								
Driller	$14.10	4.0	8.0	8	6	4	0.6	0	0	
Blaster	$14.10	1.8	2.0	2	2	1	0.6	0	0	
Blaster's He	$11.30	1.8	4.0	4	3	2	0.6	0	0	
Shovel Opera	$15.50	6.0	15.7	16	9.5	5	4.6	4	2.2	
Truck Driver	$12.70	18.0	62.0	65	49	41	16.8	8	4.3	
FEL Operator	$14.10	1.5	2.0	2	2	2	1.2	0	0	
Dozer Operat	$14.10	5.0	8.0	8	8	8	5.1	1	0.5	
Grader Opera	$14.10	3.0	4.0	4	4	4	2.7	1	0.5	
Water Truckd	$12.70	3.0	4.0	4	4	4	2.3	0	0	
Utilityman	$12.70	5.0	8.0	8	6.3	4	4.0	4	2.2	
Trainees	$11.30	3.0	4.0	0	0	0	0.0	0	0	
Manpower		52.0	121.7	121	93.8	75	38.5	18	9.7	
Crew Cost (2184 Hours)	$(000)	$1,511	$3,519	$3,515	$2,719	$2,163	$1,124	$530	$286	
Payroll Burden @ 22%	$(000)	$688	$1,601	$773	$598	$476	$247	$117	$63	
Annual Cost Rate	$(000)	$1,844	$4,294	$4,288	$3,317	$2,639	$1,371	$646	$348	
Cost	$(000)	$615	$4,294	$4,288	$3,317	$2,639	$1,371	$646	$348	$17,518
Equivalent Monthly Cost		$154	$358	$357	$276	$220	$114	$54	$29	

Maintenance	Hourly Rate	Monthly Rates are Months							
Heavy Dty.Me	$15.50	16.0	35.3	36	29	16	12.7	8	4.3
Mechanic	$14.10	9.0	19.6	20	15	8	2.9	0	0
Welder	$15.50	3.8	7.8	8	7.5	7	3.0	1	0.5
Machinist	$15.50	1.5	2.0	2	2	2	1.0	1	0.5
Linemen	$15.50	0.8	1.0	1	1	1	0.6	0	0
Electrician	$15.50	5.0	8.0	8	7	6	5.2	4	2.2
Electronic R	$15.50	0.8	1.0	1	1	1	0.6	0	0
Mobile Optr.	$14.10	0.0	0.0	0	0	0	0.0	0	0
Utilityman	$12.70	3.0	4.0	4	4	2	1.3	0	0
Janitor	$10.00	1.5	2.0	2	2	2	1.3	0	0
Tool Crib	$11.30	3.0	4.0	4	4	4	2.3	0	0
Clerks	$10.00	1.5	2.0	4	1.5	1	0.6	0	0

MINE HOURLY LABOUR COST (Continued)

		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Lube/Fuel	$12.70	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Manpower		0	0	56	62	77	77	92	92	92	92	92	92	92	92	92	92	92	
Crew Cost (2184 Hours)	$(000)	$0	$0	$1,731	$1,932	$2,427	$2,427	$2,920	$2,920	$2,920	$2,920	$2,920	$2,920	$2,920	$2,920	$2,920	$2,920	$2,920	
Payroll Burden @ 22%	$(000)	$0	$0	$381	$425	$534	$534	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	$642	
Annual Cost Rate	$(000)	$0	$0	$2,112	$2,356	$2,961	$2,961	$3,562	$3,562	$3,562	$3,562	$3,562	$3,562	$3,562	$3,562	$3,562	$3,562	$3,562	
Cost	$(000)																		
Equivalent Monthly Cost		$0	$0	$176	$196	$247	$247	$297	$297	$297	$297	$297	$297	$297	$297	$297	$297	$297	$4,131
Engineering	**Hourly Rate**																		
Survey Techn	$14.10	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Survey Helpr	$11.30	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Draftsman	$12.70	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Geolog. Tech	$14.10	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mine Clerk	$11.30	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Clerk/Typist	$10.00	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Manpower		0	0	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Crew Cost (2080 Hours)	$(000)	$0	$0	$182	$182	$182	$182	$182	$182	$182	$182	$182	$182	$182	$182	$182	$182	$182	
Payroll Burden @ 22%	$(000)	$0	$0	$40	$40	$40	$40	$40	$40	$40	$40	$40	$40	$40	$40	$40	$40	$40	
Annual Cost Rate	$(000)	$0	$0	$222	$222	$222	$222	$222	$222	$222	$222	$222	$222	$222	$222	$222	$222	$222	
Cost	$(000)	$0	$0	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	$90	
Equivalent Monthly Cost		$0	$0	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$278
Yards & Services																			
Plumber	$15.50	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Eq.Operator	$14.10	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Carpenter	$15.50	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

MINE HOURLY LABOUR COST (Continued)

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Lube/Fuel	$12.70	3.0	4.0	4	4	4	2.2	1	0.5	
Manpower		48.8	90.8	94	78	54	33.7	15	8	
Crew Cost (2184 Hours)	$(000)	$1,523	$2,879	$2,963	$2,467	$1,694	$1,067	$502	$268	
Payroll Burden @ 22%	$(000)	$693	$1,310	$652	$543	$373	$235	$110	$59	
Annual Cost Rate	$(000)	$1,857	$3,512	$3,615	$3,010	$2,067	$1,302	$612	$327	
Cost	$(000)	$619	$3,512	$3,615	$3,010	$2,067	$1,302	$612	$327	$15,063
Equivalent Monthly Cost		$155	$293	$301	$251	$172	$108	$51	$27	

Monthly Rates are Averages for Operating Months

Engineering	Hourly Rate	1985	1986	1987	1988	1989	1990	1991	1992	Total
Survey Techn	$14.10	1.5	2.0	2	1.5	1	0.6	1	0.5	
Survey Helpr	$11.30	0.8	1.0	1	1	1	0.6	0	0	
Draftsman	$12.70	0.8	1.0	1	1	1	0.6	0	0	
Geolog. Tech	$14.10	0.8	1.0	1	1	1	0.6	0	0	
Mine Clerk	$11.30	0.8	1.0	1	1	1	0.6	0	0	
Clerk/Typist	$10.00	0.8	1.0	1	1	1	0.6	0	0	
Manpower		5.3	7.0	7	6.5	6	3.6	1	0.5	
Crew Cost (2080 Hours)	$(000)	$137	$182	$182	$168	$153	$92	$29	$15	
Payroll Burden @ 22%	$(000)	$30	$40	$40	$37	$34	$20	$6	$3	
Annual Cost Rate	$(000)	$167	$222	$222	$204	$187	$112	$36	$18	
Cost	$(000)	$56	$222	$90	$83	$76	$45	$15	$7	$594
Equivalent Monthly Cost		$14	$19	$19	$17	$16	$9	$3	$1	

Months

Yards & Services		1985	1986	1987	1988	1989	1990	1991	1992
Plumber	$15.50	0.8	1.0	1	1	1	1	1	0.5
Eq.Operator	$14.10	1.5	2.0	2	2	2	2	2	1.5
Carpenter	$15.50	0.8	1.0	1	1	1	1	1	0.5

MINE HOURLY LABOUR COST (Continued)

		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Truck driver	$11.30	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Labourer	$10.00	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Manpower		0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
Crew Cost (2080 Hours)	$(000)	$0	$0	$209	$209	$209	$209	$209	$209	$209	$209	$209	$209	$209	$209	$209	$209	$209	
Payroll Burden @ 22%	$(000)	$0	$0	$85	$85	$85	$85	$85	$85	$85	$85	$85	$85	$85	$85	$85	$85	$85	
Annual Cost Rate	$(000)	$0	$0	$294	$294	$294	$294	$294	$294	$294	$294	$294	$294	$294	$294	$294	$294	$294	
Cost	$(000)																		
Equivalent Monthly Cost		$0	$0	$24	$24	$24	$24	$24	$24	$24	$24	$24	$24	$24	$24	$24	$24	$24	$367
Total Hourly Manpower		0	0	107	157	184	188	223	227	227	227	239	239	239	230	230	230	230	
Total Hourly Cost $(000)'s		0	0	324	476	562	573	682	693	693	693	727	727	727	702	702	702	702	9,684

MINE HOURLY LABOUR COST (Continued)

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Truck driver	$11.30	0.8	1.0	1	1	1	1	1	0.5	
Labourer	$10.00	2.3	3.0	3	3	3	3	3	1.6	
Manpower		6.0	8.0	10.0	10.0	10.0	10.0	10.0	10.0	
Crew Cost (2080 Hours)	$(000)	$157	$209	$209	$209	$209	$209	$209	$121	
Payroll Burden @ 22%	$(000)	$34	$46	$85	$85	$85	$85	$85	$49	
Annual Cost Rate	$(000)	$220	$294	$294	$294	$294	$294	$294	$170	
Cost	$(000)	$73	$294	$294	$294	$294	$294	$294	$170	$2,007
Equivalent Monthly Cost		$18	$24	$24	$24	$24	$24	$24	$14	

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Total Hourly Manpower		112	227	232	188	145	86	44	28	
Total Hourly Cost $(000)'s		1,363	8,322	8,288	6,704	5,075	3,012	1,567	853	35,183

14.2.5 Mine Operating Supplies

Mine operating supplies for the life of the operation are illustrated in Table 14.2-8.

Operating supplies are listed under various categories as follows:

Drill Bits and Steel	-	Table 14.2-9;
Explosives	-	Table 14.2-10;
Tires	-	Tables 14.2-11 and 14.2-12;
Wear Parts	-	Tables 14.2-13 and 14.2-14;
Nonequipment Operating Materials*	-	Table 14.2-15.

*Electrical Supplies, Training Supplies, Engineering Supplies and Miscellaneous.

MINE OPERATING SUPPLIES $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mine Operating Supplies																		
Drill bits & steel	0	0	5,504	18,763	44,197	50,034	44,130	49,724	55,614	61,804	70,125	73,101	83,323	82,540	68,167	72,330	59,212	838,568
Explosives	0	0	40,923	139,510	328,623	372,026	328,127	362,426	343,278	353,022	333,546	350,722	330,396	334,432	361,892	344,394	313,622	4636939
Tires	0	0	0	49,203	116,794	113,134	125,617	147,012	140,714	146,632	168,955	174,017	188,531	144,448	146,418	155,823	141,421	1958717
Wear parts	0	0	0	9,341	20,671	23,374	21,448	23,742	22,978	23,742	22,960	23,724	23,724	22,960	23,742	22,978	23,742	309,127
Electrical service supplies			5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	75,000
Training			1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	15,000
Engineering supplies	0	0	13,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	209,000
Miscellaneous	0	0	10,920	16,553	18,893	19,240	22,273	22,620	22,620	22,620	23,660	23,660	23,660	22,880	22,880	22,880	22,880	318,240
Total Mine Operating Supplies	0	0	76,347	253,370	549,178	597,808	561,595	625,525	605,203	627,820	639,246	665,224	669,634	627,259	643,099	638,405	580,877	8360590

MINE OPERATING SUPPLIES $(000)'s

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mine Operating Supplies									
Drill bits & steel	68,464	770,104	886,130	551,389	480,172	132,419			2,888,678
Explosives	509,056	4,127,883	4,123,089	2,245,125	1,070,299	305,134			12,380,586
Tires	165,997	1,792,720	1,858,727	1,239,174	811,953	384,013	184,266	98,399	6,535,249
Wear parts	30,012	279,114	279,483	234,274	110,441	95,945	90,384	48,290	1,167,943
Electrical service supplies	15,000	60,000	48,000	36,000	36,000	23,500	6,000	6,000	230,500
Training	3,000	12,000							15,000
Engineering supplies	41,000	168,000	168,000	13,083	12,000	7,504	2,000	1,000	412,587
Miscellaneous	46,367	271,873	276,640	228,193	178,880	110,424	57,200	35,464	1,205,042
Total Mine Operating Supplies	878,896	7,481,695	7,640,069	4,547,239	2,699,745	1,058,939	339,850	189,153	24,835,585

TABLE 14.2-9

DRILLING MATERIAL COSTS

QUARTER	MONTH	DAYS	1D	3D	3DBX	ORE & PRO	TOTALS
1	3	30	$ 0	$ 0	$ 0	$ 0	$ 0
2	4	31	$ 4,696	$ 156	$ 652	$ 0	$ 5,504
2	5	30	$ 16,008	$ 533	$ 2,222	$ 0	$ 18,763
2	6	31	$ 37,707	$ 1,256	$ 5,234	$ 0	$ 44,197
1985							$ 68,463
3	7	31	$ 42,687	$ 1,422	$ 5,925	$ 0	$ 50,034
3	8	28	$ 37,650	$ 1,254	$ 5,226	$ 0	$ 44,130
3	9	31	$ 41,364	$ 1,378	$ 5,741	$ 1,241	$ 49,724
4	10	30	$ 37,252	$ 1,241	$ 5,171	$ 11,951	$ 55,614
4	11	31	$ 37,266	$ 1,241	$ 5,173	$ 18,124	$ 61,804
4	12	30	$ 32,556	$ 1,085	$ 4,519	$ 31,966	$ 70,125
5	13	31	$ 31,368	$ 4,573	$ 6,669	$ 30,490	$ 73,101
5	14	31	$ 28,785	$ 969	$ 4,847	$ 48,722	$ 83,323
5	15	30	$ 24,646	$ 6,445	$ 8,263	$ 43,185	$ 82,540
6	16	31	$ 30,616	$ 8,007	$ 10,265	$ 19,279	$ 68,167
6	17	30	$ 27,744	$ 7,256	$ 9,302	$ 28,028	$ 72,330
6	18	31	$ 26,507	$ 6,932	$ 8,888	$ 16,885	$ 59,212
1986							$ 770,104
7		90	$ 83,881	$ 21,937	$ 28,124	$ 81,783	$ 215,724
8		91	$ 74,685	$ 35,057	$ 14,607	$ 70,225	$ 194,574
9		92	$ 71,665	$ 36,451	$ 30,376	$ 99,303	$ 237,794
10		92	$ 71,983	$ 36,613	$ 30,511	$ 98,931	$ 238,037
1987							$ 886,130
11		90	$ 65,856	$ 13,854	$ 16,792	$ 67,558	$ 164,060
12		91	$ 70,365	$ 4,844	$ 12,111	$ 85,417	$ 172,737
13		92	$ 27,093	$ 0	$ 3,681	$ 75,928	$ 106,703
14		92	$ 26,672	$ 0	$ 3,624	$ 77,593	$ 107,889
1988							$ 551,389
15		90	$ 5,020	$ 0	$ 682	$ 158,110	$ 163,811
16		91	$ 1,900	$ 0	$ 258	$ 73,700	$ 75,859
17		92	$ 11,314	$ 0	$ 1,537	$ 85,854	$ 98,705
18		92	$ 29,529	$ 0	$ 4,012	$ 108,256	$ 141,797
1989							$ 480,172
19		90	$ 9,734	$ 0	$ 1,323	$ 89,879	$ 100,935
20		91	$ 2,197	$ 0	$ 299	$ 7,370	$ 9,866
21		35	$ 2,747	$ 0	$ 373	$ 18,499	$ 21,619
1990							$ 132,419

TABLE 14.2-10

BLASTING COSTS

QUARTER	MONTH	DAYS	ANFO	POWERGEL	IGNITION	TOTAL
1	3	30	$ 0	$ 0	$ 0	$ 0
2	4	31	$ 28,797	$ 10,560	$ 1,566	$ 40,923
2	5	30	$ 98,173	$ 35,998	$ 5,338	$ 139,510
2	6	31	$ 231,252	$ 84,796	$ 12,574	$ 328,623
1985						$ 509,055
3	7	31	$ 261,795	$ 95,996	$ 14,235	$ 372,026
3	8	28	$ 230,903	$ 84,668	$ 12,555	$ 328,127
3	9	31	$ 254,846	$ 93,588	$ 13,992	$ 362,426
4	10	30	$ 239,701	$ 89,241	$ 14,337	$ 343,278
4	11	31	$ 245,595	$ 92,097	$ 15,330	$ 353,022
4	12	30	$ 229,730	$ 87,839	$ 15,977	$ 333,546
5	13	31	$ 242,216	$ 92,035	$ 16,470	$ 350,722
5	14	31	$ 224,932	$ 87,925	$ 17,538	$ 330,396
5	15	30	$ 228,918	$ 88,402	$ 17,111	$ 334,432
6	16	31	$ 252,048	$ 94,092	$ 15,751	$ 361,892
6	17	30	$ 238,333	$ 90,096	$ 15,965	$ 344,394
6	18	31	$ 218,401	$ 81,552	$ 13,668	$ 313,622
1986						$ 4,127,882
7		90	$ 717,786	$ 271,041	$ 47,794	$ 1,036,620
8		91	$ 668,621	$ 251,934	$ 43,877	$ 964,432
9		92	$ 731,506	$ 277,419	$ 50,377	$ 1,059,302
10		92	$ 733,986	$ 278,278	$ 50,471	$ 1,062,735
1987						$ 4,123,089
11		90	$ 537,365	$ 203,937	$ 36,504	$ 777,805
12		91	$ 528,964	$ 203,397	$ 38,055	$ 770,415
13		92	$ 233,687	$ 94,274	$ 20,989	$ 348,949
14		92	$ 232,728	$ 94,109	$ 21,118	$ 347,956
1988						$ 2,245,125
15		90	$ 178,781	$ 83,376	$ 26,961	$ 289,118
16		91	$ 80,702	$ 37,898	$ 12,424	$ 131,025
17		92	$ 148,515	$ 64,143	$ 17,438	$ 230,096
18		92	$ 278,682	$ 114,418	$ 26,961	$ 420,060
1989						$ 1,070,299
19		90	$ 142,837	$ 62,513	$ 17,568	$ 222,919
20		91	$ 20,092	$ 8,200	$ 1,896	$ 30,188
21		35	$ 33,850	$ 14,499	$ 3,858	$ 52,207
1990						$ 305,314

MINE OPERATING COST-TIRES

Operating Equipment -Tires Cost

	Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Blast drills	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elec shovels	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170Haultruck	$189.00 /Shift		0	0	42,714	82,026	81,459	74,088	82,026	79,380	82,026	79,380	82,026	82,026	79,380	82,026	79,380	82,026	1090152
120Haultruck	$118.97 /Shift		0	0	0	28,077	24,984	45,447	58,295	54,845	54,964	77,568	79,591	94,105	55,916	57,700	69,954	52,704	754,270
Dozers -D9	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozers -Kama	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozers -854	$33.60 /Shift		0	0	269	269	269	269	269	269	269	134	134	134	134	269	269	269	3,259
Grader -16G	$36.96 /Shift		0	0	2,218	2,292	2,292	2,070	2,292	2,218	2,292	2,218	2,292	2,292	2,218	2,292	2,218	2,292	31,527
Grader -14G	$14.40 /Shift		0	0	115	115	115	115	115	115	115	58	58	58	58	115	115	115	1,397
F.End Loader	$71.19 /Shift		0	0	2,136	2,207	2,207	1,993	2,207	2,136	2,207	2,136	2,207	2,207	2,136	2,207	2,136	2,207	30,398
Water truck	$95.17 /Shift		0	0	0	0	0	0	0	0	2,950	5,710	5,901	5,901	2,855	0	0	0	23,412
Lube & serv.	$25.00 /Shift		0	0	1,500	1,550	1,550	1,400	1,550	1,500	1,550	1,500	1,550	1,550	1,500	1,550	1,500	1,550	21,325
Pickups	$1.25 /Shift		0	0	251	259	259	235	259	251	259	251	259	259	251	259	251	259	3,563
																			0
Total Tires Cost			0	0	49,203	116,794	113,134	125,617	147,012	140,714	146,632	168,955	174,017	188,531	144,448	146,418	155,823	141,421	1958717

MINE OPERATING COST-TIRES

Operating Equipment -Tires Cost		1985	1986	1987	1988	1989	1990	1991	1992	Total
Blast drills	$0.00	0	0	0	0	0	0	0	0	0
Elec shovels	$0.00	0	0	0	0	0	0	0	0	0
170Haultruck	$189.00	124,740	965,223	965,790	700,812	209,034	66,528	0	0	3,032,127
120Haultruck	$118.97	28,077	726,074	791,507	437,572	502,767	253,406	173,696	92,797	3,005,896
Dozers -D9	$0.00	0	0	0	0	0	0	0	0	0
Dozers -Kama	$0.00	0	0	0	0	0	0	0	0	0
Dozers -854	$33.60	538	2,688	2,688	2,688	2,688	2,688	2,688	1,445	18,110
Grader -16G	$36.96	4,509	26,981	26,981	26,981	26,981	16,632	1,922	1,035	132,021
Grader -14G	$14.40	230	1,152	1,152	1,152	1,152	1,152	1,152	619	7,762
F.End Loader	$71.19	4,343	25,984	25,984	25,984	25,984	16,801	3,702	1,993	130,776
Water truck	$95.17	0	23,317	23,317	23,317	23,317	14,561	0	0	107,828
Lube & serv.	$25.00	3,050	18,250	18,250	18,250	18,250	11,025	650	350	88,075
Pickups	$1.25	510	3,051	3,058	2,419	1,780	1,220	456	160	12,654
Total Tires Cost		165,997	1,792,720	1,858,727	1,239,174	811,953	384,013	184,266	98,399	6,535,249

TABLE 14.2-12

TIRE COSTS

Item	Operating Hours/Shift	Tire Cost/Hour	Tire Cost/Shift
Blasthole drill	6.7	$ --	$ --
Electric Shovel	10.5	--	--
R170 Truck	10.5	18.00	189.00
120-Ton Truck	10.5	11.33	118.97
Dozers - D9	9.5	--	--
- Komatsu	9.5	--	--
- C824	6.0	5.60	33.60
Graders - 16G	8.4	4.40	36.96
- 14G	6.0	2.40	14.4
Front-End Loader	9.0	7.91	71.19
Water Truck	8.4	11.33	95.17
Service Vehicles	--	--	25.00
Pickup Trucks	--	--	1.25

MINE OPERATING COST- WEAR PARTS

Operating Equipment -"Wear Parts" Cost	Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Blast drills	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elec shovels	$122.85 /Shift		0	0	8,477	19,779	22,482	20,639	22,850	22,113	22,850	22,113	22,850	22,850	22,113	22,850	22,113	22,850	297,051
170Haultruck	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120Haultruck	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dozers -D9	$4.73 /Shift		0	0	426	440	440	397	440	426	440	426	440	440	426	440	426	440	6,050
Dozers -Kama	$4.73 /Shift		0	0	142	147	147	132	147	142	147	142	147	147	142	147	142	147	2,020
Dozers -854	$3.00 /Shift		0	0	24	24	24	24	24	24	24	12	12	12	12	24	24	24	291
Grader -16G	$2.10 /Shift		0	0	126	130	130	118	130	126	130	126	130	130	126	130	126	130	1,791
Grader -14G	$1.50 /Shift		0	0	12	12	12	12	12	12	12	6	6	6	6	12	12	12	146
F.End Loader	$4.50 /Shift		0	0	135	140	140	126	140	135	140	135	140	140	135	140	135	140	1,922
Water truck	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lube & serv.	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pickups	$0.00 /Shift		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
																			0
Total Wear Parts Cost			0	0	9,341	20,671	23,374	21,448	23,742	22,978	23,742	22,960	23,724	23,724	22,960	23,742	22,978	23,742	309,127

MINE OPERATING COST- WEAR PARTS

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Operating Equipment -"Wear Parts" Cost										
Blast drills	$0.00	0	0	0	0	0	0	0	0	0
Elec shovels	$122.85	28,256	268,673	269,042	223,833	100,000	89,681	89,681	47,912	1,117,075
170Haultruck	$0.00	0	0	0	0	0	0	0	0	0
120Haultruck	$0.00	0	0	0	0	0	0	0	0	0
Dozers -D9	$4.73	866	5,179	5,179	5,179	5,179	2,923	0	0	24,506
Dozers -Kama	$4.73	289	1,726	1,726	1,726	1,726	974	0	0	8,169
Dozers -854	$3.00	48	240	240	240	240	240	240	129	1,617
Grader -16G	$2.10	256	1,533	1,533	1,533	1,533	945	109	59	7,501
Grader -14G	$1.50	24	120	120	120	120	120	120	65	809
F.End Loader	$4.50	275	1,643	1,643	1,643	1,643	1,062	234	126	8,267
Water truck	$0.00	0	0	0	0	0	0	0	0	0
Lube & serv.	$0.00	0	0	0	0	0	0	0	0	0
Pickups	$0.00	0	0	0	0	0	0	0	0	0
Total Wear Parts Cost		30,012	279,114	279,483	234,274	110,441	95,945	90,384	48,290	1,167,943

TABLE 14.2-14

WEAR PARTS - COSTS

Item	Operating Hours/Shift	Cost/Hour	Cost/Shift
Blasthole Drill	10.5	$ --	$ --
Electric Shovel	10.5	11.70	122.85
R170 Truck	10.5	--	--
120-Ton Truck	10.5	--	--
Dozers - D9	9.5	0.50	4.73
- Kamatsu	9.5	0.50	4.73
- C824	6.0	0.25	3.00
Graders - 16G	8.4	0.25	2.10
- 14G	6.0	0.25	1.50
Front-End Loader	9.0	0.50	4.50

TABLE 14.2-15

NONEQUIPMENT RELATED OPERATING MATERIALS

Electrical Service Supplies	Cost/Month
October, 1985 to June, 1987	$ 5,000
July, 1987 to July, 1990	3,000
August, 1990 to December, 1992	500

Training Supplies

October, 1985 to December, 1986	$ 1,000

Engineering Supplies

Allowance - $1,000/Month x Number of Engineering Personnel

Miscellaneous

Allow $0.50/Man-Hour Worked for Total Department Personnel

14.2.6 Fuel and Lubricant Costs

The mine fuel and lubricant costs, shown in Table 14.2-17, are based on manufacturer's consumption rates and the Schedule of Equipment Usage illustrated in Table 4.5-2. Fuel consumption and costs are illustrated in Table 14.2-16. Lubricant consumption costs are illustrated in Table 14.2-18.

TABLE 14.2-17

FUEL CONSUMPTION RATES

RATES AND COSTS

Unit	Operating Hours/Shift	Fuel Consumption Litres/Hour	Fuel/Shift Litres	Lubricants $/Shift
Blasthole Drill (1 Diesel, 1 Electric)	6.7	17.5	118	$ 49.53
Electric Shovel	--	--	--	89.25
170-Ton Truck	10.5	120	1260	43.15
120-Ton Truck	10.5	97	1019	30.87
Dozers - D9	9.5	64	605	21.92
- Komatsu	9.5	64	605	21.92
- 824	6.0	41	246	12.48
Graders - 16G	8.4	30	255	8.07
- 14G	6.0	25	150	6.48
Front-End Loader	9.0	91	819	39.27
Water Truck	8.4	90	756	26.46
Service Vehicle			400	31.20
Pickup Truck			40	3.13

MINE OPERATING COST-FUEL

Operating Equipment -Fuel Consumption & Cost

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Blast drills	118 /Shift	0	0	4,366	10,148	11,564	9,676	10,856	10,974	11,800	12,154	13,334	13,688	14,160	13,924	13,924	12,036	162,604
Elec shovels	0 /Shift	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170Haultruck	1260 /Shift	0	0	284,760	546,840	543,060	493,920	546,840	529,200	546,840	529,200	546,840	546,840	529,200	546,840	529,200	546,840	7266420
120Haultruck	1019 /Shift	0	0	0	240,484	213,990	389,258	499,310	469,759	470,778	664,388	681,711	806,029	478,930	494,215	599,172	451,417	6459441
Dozers -D9	605 /Shift	0	0	54,450	56,265	56,265	50,820	56,265	54,450	56,265	54,450	56,265	56,265	54,450	56,265	54,450	56,265	773,190
Dozers -Kama	605 /Shift	0	0	18,150	18,755	18,755	16,940	18,755	18,150	18,755	18,150	18,755	18,755	18,150	18,755	18,150	18,755	257,730
Dozers -854	246 /Shift	0	0	1,968	1,968	1,968	1,968	1,968	1,968	1,968	984	984	984	984	1,968	1,968	1,968	23,616
Grader -16G	255 /Shift	0	0	15,300	15,810	15,810	14,280	15,810	15,300	15,810	15,300	15,810	15,810	15,300	15,810	15,300	15,810	217,260
Grader -14G	150 /Shift	0	0	1,200	1,200	1,200	1,200	1,200	1,200	1,200	600	600	600	600	1,200	1,200	1,200	14,400
F.End Loader	819 /Shift	0	0	24,570	25,389	25,389	22,932	25,389	24,570	25,389	24,570	25,389	25,389	24,570	25,389	24,570	25,389	348,894
Water truck	756 /Shift	0	0	0	0	0	0	0	0	23,436	45,360	46,872	46,872	22,680	0	0	0	185,220
Lube & serv.	400 /Shift	0	0	24,000	24,800	24,800	22,400	24,800	24,000	24,800	24,000	24,800	24,800	24,000	24,800	24,000	24,800	340,800
Pickups	40 /Shift	0	0	8,040	8,280	8,280	7,520	8,280	8,040	8,280	8,040	8,280	8,280	8,040	8,280	8,040	8,280	113,960
Total fuel consumption -Litres		0	0	436804	949939	921081	1030914	1209473	1157611	1205321	1397196	1439640	1564312	1191064	1207446	1289974	1162760	16163535
Fuel cost @ $0.03906 /Litre		0	0	170,616	371,046	359,774	402,675	472,420	452,163	470,798	545,745	562,323	611,020	465,230	471,628	503,864	454,174	6313477

MINE OPERATING COST-FUEL

Operating Equipment -Fuel Consumption & Cost

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Blast drills	118	11,514	148,090	167,560	103,486	83,780	23,954	0	0	541,384
Elec shovels	0	0	0	0	0	0	0	0	0	0
170Haultruck	1260	831,600	6,434,820	6,438,600	4,672,080	1,393,560	443,520	0	0	20,214,180
120Haultruck	1019	240,484	6,218,957	6,779,407	3,747,882	4,306,294	2,170,470	1,487,740	794,820	25,746,054
Dozers -D9	605	110,715	662,475	662,475	662,475	662,475	373,890	0	0	3,134,505
Dozers -Kama	605	36,905	220,825	220,825	220,825	220,825	124,630	0	0	1,044,835
Dozers -854	246	3,936	19,680	19,680	19,680	19,680	19,680	19,680	10,578	132,594
Grader -16G	255	31,110	186,150	186,150	186,150	186,150	114,750	13,260	7,140	910,860
Grader -14G	150	2,400	12,000	12,000	12,000	12,000	12,000	12,000	6,450	80,850
F.End Loader	819	42,959	298,935	298,935	298,935	298,935	193,284	42,588	22,932	1,504,503
Water truck	756	0	185,220	185,220	185,220	185,220	115,668	0	0	856,548
Lube & serv.	400	48,800	292,000	292,000	292,000	292,000	176,400	10,400	5,600	1,409,200
Pickups	40	16,320	97,640	97,840	77,400	56,960	39,040	14,600	5,120	404,920
Total fuel consumption -Litres		1,384,243	14,776,792	15360692	10478133	7717879	3807286	1600268	852640	55,980,433
Fuel cost @ $0.03906 /Litre		541,642	5,771,815	5,999,886	4,092,759	3,014,604	1,487,126	625,065	333,041	21,865,957

MINE OPERATING COST-LUBRICANTS

Operating Equipment -Lubicants Cost

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Blast drills	$49.53 /Shift	0	0	1,833	4,260	4,854	4,061	4,557	4,606	4,953	5,102	5,597	5,745	5,944	5,845	5,845	5,052	68,302
Elec shovels	$89.25 /Shift	0	0	6,158	14,369	16,333	14,994	16,601	16,065	16,601	16,065	16,601	16,601	16,065	16,601	16,065	16,601	215,807
170Haultruck	$43.15 /Shift	0	0	9,752	18,727	18,598	16,915	18,727	18,123	18,727	18,123	18,727	18,727	18,123	18,727	18,123	18,727	248,889
120Haultruck	$30.87 /Shift	0	0	0	7,285	6,483	11,792	15,126	14,231	14,262	20,127	20,652	24,418	14,509	14,972	18,152	13,675	195,716
Dozers -D9	$21.92 /Shift	0	0	1,973	2,039	2,039	1,841	2,039	1,973	2,039	1,973	2,039	2,039	1,973	2,039	1,973	2,039	28,036
Dozers -Kama	$21.92 /Shift	0	0	658	680	680	614	680	658	680	658	680	680	658	680	658	680	9,360
Dozers -854	$12.48 /Shift	0	0	100	100	100	100	100	100	100	50	50	50	50	100	100	100	1,211
Grader -16G	$8.07 /Shift	0	0	484	500	500	452	500	484	500	484	500	500	484	500	484	500	6,884
Grader -14G	$6.48 /Shift	0	0	52	52	52	52	52	52	52	26	26	26	26	52	52	52	629
F.End Loader	$39.27 /Shift	0	0	1,178	1,217	1,217	1,100	1,217	1,178	1,217	1,178	1,217	1,217	1,178	1,217	1,178	1,217	16,768
Water truck	$26.46 /Shift	0	0	0	0	0	0	0	0	820	1,588	1,641	1,641	794	0	0	0	6,509
Lube & serv.	$31.20 /Shift	0	0	1,872	1,934	1,934	1,747	1,934	1,872	1,934	1,872	1,934	1,934	1,872	1,934	1,872	1,934	26,614
Pickups	$3.13 /Shift	0	0	629	648	648	588	648	629	648	629	648	648	629	648	629	648	8,921
Total Lubricants Cost		0	0	24,688	51,811	53,437	54,256	62,180	59,971	62,533	67,874	70,311	74,226	62,304	63,314	65,130	61,225	833,260

MINE OPERATING COST-LUBRICANTS

Operating Equipment -Lubicants Cost

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Blast drills	$49.53	6,092	62,160	70,333	43,438	35,166	10,055	0	0	227,244
Elec shovels	$89.25	20,528	195,190	195,458	162,614	72,650	65,153	65,153	34,808	811,550
170Haultruck	$43.15	28,479	220,367	220,497	160,000	47,724	15,189	0	0	692,255
120Haultruck	$30.87	7,785	188,400	205,378	113,540	130,457	65,753	45,070	24,079	779,961
Dozers -D9	$21.92	4,011	24,002	24,002	24,002	24,002	13,547	0	0	113,568
Dozers -Kama	$21.92	1,337	8,001	8,001	8,001	8,001	4,516	0	0	37,856
Dozers -854	$12.48	200	998	998	998	998	998	998	537	6,727
Grader -16G	$8.07	985	5,891	5,891	5,891	5,891	3,632	420	226	28,826
Grader -14G	$6.48	104	518	518	518	518	518	518	279	3,493
F.End Loader	$39.27	2,395	14,334	14,334	14,334	14,334	9,268	2,042	1,100	72,139
Water truck	$26.46	0	6,483	6,483	6,483	6,483	4,048	0	0	29,979
Lube & serv.	$31.20	3,806	22,776	22,776	22,776	22,776	13,759	811	437	109,918
Pickups	$3.13	1,277	7,640	7,656	6,057	4,457	3,055	1,142	401	31,685
Total Lubricants Cost		76,999	756,760	782,324	568,651	373,457	209,490	116,155	61,864	2,945,200

14.2.7 Maintenance Material Costs

Mine maintenance material costs are shown in Table 14.2-19. These costs are based on equipment usage shown in Table 4.5-2, where applicable, and unit costs based on supplier information. Table 14.2-20 illustrates unit maintenance material costs for equipment. Table 14.2-21 indicates the basis for nonequipment related maintenance material.

TABLE 14.2-20

MAINTENANCE MATERIAL

Unit	Operating Hours/Shift	Maintenance Cost/Hour	Maintenance Cost/Shift
Blasthole Drill	6.7	$ 31.00	$ 208.32
Electric Shovel	10.5	106.67	1,120.04
R170 Truck	10.5	43.67	459.54
120-Ton Truck	10.5	30.00	315.00
Dozers - D9	9.5	20.00	189.00
- Komatsu	9.5	20.00	189.00
- 824	6.0	7.98	47.88
Graders - 16G	8.4	7.52	63.16
- 14G	6.0	5.97	35.82
Front-End Loader	9.0	21.79	196.11
Water Truck	9.0	30.00	270.00
Service Vehicle (Fleet)			50.00
Pickup Truck (per Unit Operating)			2.75

MINE OPERATING COST-MAINTENANCE SUPPLIES

	Aug-85	Sep-85	Oct 85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mine Maintenance Supplies																		
Blast drills @ $208.32 /Shift	0	0	0	7,708	17,916	20,415	17,082	19,165	19,374	20,832	21,457	23,540	24,165	24,998	24,582	24,582	21,249	287,065
Elec shovels @ $1120.04 /Shift	0	0	0	77,283	180,326	204,967	188,167	208,327	201,607	208,327	201,607	208,327	208,327	201,607	208,327	201,607	208,327	2707137
170Haultruck @ $459.94 /Shift	0	0	0	103,946	199,614	198,234	180,296	199,614	193,175	199,614	193,175	199,614	199,614	193,175	199,614	193,175	199,614	2652474
120Haultruck @ $315.00 /Shift	0	0	0	0	74,340	66,150	120,330	154,350	145,215	145,530	205,380	210,735	249,165	148,050	152,775	185,220	139,545	1996785
Dozers -D9 @ $189.00 /Shift	0	0	0	17,010	17,577	17,577	15,876	17,577	17,010	17,577	17,010	17,577	17,577	17,010	17,577	17,010	17,577	241,542
Dozers -Kama @ $189.00 /Shift	0	0	0	5,670	5,859	5,859	5,292	5,859	5,670	5,859	5,670	5,859	5,859	5,670	5,859	5,670	5,859	80,514
Dozers -854 @ $ 47.88 /Shift	0	0	0	382	382	382	382	382	382	382	191	191	191	191	382	382	382	4,587
Grader -16G @ $ 63.16 /Shift	0	0	0	3,790	3,916	3,916	3,537	3,916	3,790	3,916	3,790	3,916	3,916	3,790	3,916	3,790	3,916	53,812
Grader -14G @ $ 35.82 /Shift	0	0	0	287	287	287	287	287	287	287	143	143	143	143	287	287	287	3,439
F.End Loader @ $196.11 /Shift	0	0	0	5,883	6,079	6,079	5,491	6,079	5,883	6,079	5,883	6,079	6,079	5,883	6,079	5,883	6,079	83,543
Water truck @ $270.00 /Shift	0	0	0	0	0	0	0	0	0	8,370	16,200	16,740	16,740	8,100	0	0	0	66,150
Lube & serv. @ $ 50.00 /Shift	0	0	0	3,000	3,100	3,100	2,800	3,100	3,000	3,100	3,000	3,100	3,100	3,000	3,100	3,000	3,100	42,600
Pickups @ $ 2.75 /Shift	0	0	0	553	569	569	517	569	553	569	553	569	569	553	569	553	569	7,835
Pumping	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	17,000
Electrical	0	0	3,120	3,120	4,160	4,160	4,160	4,160	4,160	4,160	4,160	4,160	4,160	4,160	4,160	4,160	4,160	60,320
Misc.	0	0	22,533	24,613	29,813	29,813	35,013	35,013	35,013	35,013	35,013	35,013	35,013	35,013	35,013	35,013	35,013	491,920
Total Maint.Supplies	1,000	1,000	26,653	254,245	544,939	562,510	580,231	659,400	636,119	660,616	714,232	736,565	775,620	652,344	663,241	681,332	646,678	8796722

MINE OPERATING COST-MAINTENANCE SUPPLIES

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mine Maintenance Supplies									
Blast drills @ $208.32 /Shift	25,623	261,442	295,814	182,697	147,907	42,289	0	0	$955,772
Elec shovels @ $1120.04 /Shift	257,609	2,449,527	2,452,888	2,040,713	911,713	817,629	817,629	436,816	$10,184,524
170Haultruck @ $459.94 /Shift	303,560	2,348,914	2,350,293	1,705,458	508,694	161,899	0	0	$7,378,817
120Haultruck @ $315.00 /Shift	74,340	1,922,445	2,095,695	1,158,570	1,331,190	670,950	459,900	245,700	$7,958,790
Dozers -D9 @ $189.00 /Shift	34,587	206,955	206,955	206,955	206,955	116,802	0	0	$979,209
Dozers -Kama @ $189.00 /Shift	11,529	68,985	68,985	68,985	68,985	38,934	0	0	$326,403
Dozers -854 @ $ 47.88 /Shift	764	3,822	3,822	3,822	3,822	3,822	3,822	2,055	$25,753
Grader -16G @ $ 63.16 /Shift	7,706	46,107	46,107	46,107	46,107	28,422	3,284	1,768	$225,608
Grader -14G @ $ 35.82 /Shift	573	2,866	2,866	2,866	2,866	2,866	2,866	1,540	$19,307
F.End Loader @ $196.11 /Shift	11,963	71,580	71,580	71,580	71,580	46,282	10,198	5,491	$360,254
Water truck @ $270.00 /Shift	0	66,150	66,150	66,150	66,150	41,310	0	0	$305,910
Lube & serv. @ $ 50.00 /Shift	6,100	36,500	36,500	36,500	36,500	22,050	1,300	700	$176,150
Pickups @ $ 2.75 /Shift	1,122	6,713	6,727	5,321	3,916	2,684	1,004	352	$27,838
Pumping	5,000	12,000	12,000	12,000	12,000	6,970	0	0	$59,970
Electrical	10,400	49,920	49,920	43,680	37,440	32,448	24,960	13,728	$262,496
Misc.	76,960	414,960	458,640	388,752	283,920	195,395	113,568	81,245	$2,013,440
Total Maint.Supplies	827,937	7,968,885	8,224,942	6,040,155	3,739,744	2,230,752	1,438,531	789,395	$31,260,241

TABLE 14.2-21

NONEQUIPMENT RELATED MAINTENANCE MATERIAL

Electrical Maintenance

Allow Number of Electricians x Hours Worked x $3.00

Pumping

Allowance - $1,000/Month

Miscellaneous

Number of Maintenance Personnel
Plus Yards and Services Personnel
Plus Supervision x Hours Worked x $2.00

14.2.8 UNIT COSTS

The unit costs by area of expense are provided in the following Tables:

Drill Material Cost	-	Table 14.2-22;
Blasting Material Costs	-	Table 14.2-23;
Drill Operation	-	Table 14.2-24;
Electric Shovel	-	Table 14.2-25;
R170 Haulage Truck	-	Table 14.2-26;
120C Haulage Truck	-	Table 14.2-27;
Track Dozers	-	Table 14.2-28;
Rubber Tired Dozer	-	Table 14.2-29;
16G Motor Grader	-	Table 14.2-30;
14G Motor Grader	-	Table 14.2-31;
Le Tourneau L800	-	Table 14.2-32.

TABLE 14.2-22

DRILLING SUPPLY COST

Item	Cost
Bit Cost	$ 3,880
Pipe and Stabilizers - 25 Percent	970
Equivalent Bit Cost	$ 4,850

Bit Life Assumed (Cyprus Anvil Budget)	Metres
1D Waste	2,130
3D Waste	1,520
3DBX Waste	910
Ore and Protore	910

Bit, Pipe and Stablizer Costs

	$/Metre Drilled	$/Tonne Ore
1D Waste	$ 2.28	$ 0.015
3D Waste	3.19	0.024
3DBX Waste	5.33	0.040
Ore and Protore	5.33	0.049

TABLE 14.2-23

BLASTING SUPPLY COSTS

BASIS

ANFO and AL/ANFO

Usage: ANFO - 60 Percent
15 Percent AL/ANFO - 40 Percent

Average Cost - $ 65.95/100 Kilograms

Power Gel

Usage: A Type - 37 Percent
B Type - 11 Percent
C Type - 52 Percent

Average Cost - $ 80.67/100 Kilograms

Ignition System

Nonelectric Single Primed - $ 9.81/Hole

Rock Type	Hole Type	Cost/Hole	Cost/Tonne
1D Waste	Dry	$ 234.17	$ 0.111
	Wet	340.96	0.162
3D Waste	Dry	238.66	0.125
	Wet	339.10	0.178
3DBX Waste	Dry	243.14	0.153
	Wet	335.47	0.211
Ore and Protore	Dry	81.89	0.065
	Wet	149.93	0.119

TABLE 14.2-24

OPERATING COST - ROCK DRILL - MARION MODEL 4

(80 Percent Availability)

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Power (150 kWhr)	$ N/A	$
Maintenance Parts $\frac{\$1,550,000}{50,000\ Hr}$	31.00	
Lubricants - Allowance	3.00	
Hydraulic Oil and Transmission Fluid - Allowance	1.00	
TOTAL ELECTRIC DRILL	$ 35.00	$ 235.20
Add for Diesel Driven Drill		
Fuel - 35 Litres x $0.39	$ 13.68	$
Lubricants = Fuel Cost x 20 Percent	2.74	
TOTAL DIESEL	$ 51.42	$ 345.54

TABLE 14.2-25

OPERATING COST - ELECTRIC SHOVEL - 15 CUBIC YARD

(100 Percent Availability)

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Power (550 kWhr)	$ N/A	$
Maintenance Parts $\frac{\$3,200,000}{30,000\ Hr}$	106.67	
Lubricants	8.50	
Cable	4.70	
Bucket Maintenance	7.00	
TOTAL	$ 126.87	$ 1,332.14

TABLE 14.2-26

OPERATING COST - HAULAGE TRUCK - R170

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 120 Litres/Hour x $0.3908	$ 46.90	$
Tires: $\frac{6 \text{ Tires} \times 12{,}000}{4000 \text{ Hr/Tire}}$	18.00	
Maintenance Parts: $\frac{\$1{,}310{,}000}{30{,}000 \text{ Hr}}$	43.67	
Lubricants: $\frac{193 \text{ L} \times 16}{2000 \text{ Hr}} \times 1.50$	2.31	
Transmission Fluid - 0.24 Litres	1.00	
Hydraulic Fluid - 0.08 Litres	0.80	
TOTAL	$ 123.48	$ 1,296.54

TABLE 14.2-27

OPERATING COST - HAULAGE TRUCK - 120C

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 97 Litres/Hour x $0.3908	$ 37.91	$
Tires: $\frac{6 \text{ Tires} \times 7550}{4000 \text{ Hr/Tire}}$	11.33	
Maintenance Parts: $\frac{\$900{,}000}{30{,}000 \text{ Hr}}$	30.00	
Lubricants: $\frac{180 \text{ L} \times 16}{2000 \text{ Hr}} \times 1.50$	1.44	
Transmission Fluid - 0.19 Litres	0.80	
Hydraulic Fluid - 0.07 Litres	0.70	
TOTAL	$ 88.97	$ 934.19

TABLE 14.2-28

OPERATING COST - TRACK DOZER - 35,000 KILOGRAMS

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 64 Litres/Hour x $0.3908	$ 25.01	$
Maintenance Parts:		
0.65 x $13.50 U.S. x 1.33 x 1.2	14.00	
Undercarriage	6.00	
Lubricants:		
$1.40 U.S. x 1.33 x 1.25	2.32	
Blade - $2,000/Month	0.50	
TOTAL	$ 47.83	$ 452.00

TABLE 14.2-29

OPERATING COST - RUBBER TIRED DOZER

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 41 Litres/Hour x $0.3908	$ 16.02	$
Tires:		
4 Tires x $4,200 / 3,000 Hr	5.60	
Maintenance Parts:		
0.60 x $8.00 U.S. x 1.33 x 1.2	7.98	
Lubricants:		
$1.25 U.S. x 1.33 x 1.25	2.08	
Wear Parts	0.25	
TOTAL	$ 31.93	$ 191.58

TABLE 14.2-30

OPERATING COST - MOTOR GRADER - 16G

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 30 Litres/Hour x $0.3908	$ 11.72	$
Tires:		
6 Tires x $2,200 / 3,000 Hr	4.40	
Maintenance Parts:		
0.55 x $8.50 U.S. x 1.33 x 1.21	7.52	
Lubricants:		
$0.85 U.S. x 1.33 x 1.25	1.41	
TOTAL	$ 25.05	$ 210.42

Operating Hours/Shift = 8.4

TABLE 14.2-31

OPERATING COST - MOTOR GRADER - 14G

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 25 Litres/Hour x $0.3908	$ 9.77	$
Tires:		
6 Tires x $1,200 / 3,000 Hr	2.40	
Maintenance Parts:		
0.55 x $6.75 U.S. x 1.33 x 1.21	5.97	
Lubricants:		
$0.65 U.S. x 1.33 x 1.25	1.08	
TOTAL	$ 19.22	$ 115.32

Operating Hours/Shift = 6.0

TABLE 14.2-32

OPERATING COST - FRONT-END LOADER - L800

Summary of Costs

Item	Cost/Operating Hour	Cost/Shift
Fuel - 91 Litres/Hour x $0.3908	$ 35.56	$
Tires: 4 Tires x $8,900 / 4,500 Hr/Tire	7.91	
Maintenance Parts: $21.00 U.S. x 1.33 x 0.65 x 1.21	21.79	
Lubricants and Fluids: $1.75 U.S. x 1.33 x 1.25 x 1.5	4.36	
TOTAL	$ 69.62	$ 626.58

14.3 MILL OPERATING COSTS

14.3.1 Summary

The projected costs by area of expense are summarized in Table 14.3-1 which also indicates the costs which will be incurred prior to the resumption of mill operations.

The manpower requirements are shown in Table 14.3-2.

Sections 14.3.2 to 14.3.8 provide the basis for the mill operating cost estimates during normal operations.

MILL OPERATING COST SUMMARY

$(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mill PreProduction & Operating Costs																		
Area of expense																		
Operating supervision	0	0	30	35	35	45	50	80	80	80	80	80	80	80	80	80	80	995
Operating labour	0	0	0	63	12	12	30	158	198	198	198	198	198	198	198	198	198	2,057
Operating supplies	0	0	0	0	0	0	0	0	794	907	1,035	1,392	1,465	1,715	1,635	1,583	1,635	12,162
Maintenance supervision	0	0	25	30	40	45	50	50	50	50	50	50	50	50	50	50	50	690
Maintenance labour	0	0	24	124	151	193	193	244	217	217	217	217	217	217	217	217	217	2,879
Maintenance supplies	0	0	24	124	151	193	193	244	217	217	217	217	217	217	217	217	217	2,879
Sub-total	0	0	103	377	389	487	515	777	1,555	1,669	1,796	2,153	2,226	2,477	2,396	2,344	2,396	21,661
Premium for Milling LG/Oxide Ore		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Project Supplies																		
Rockbreaker	0	0	0	0	0	0	70	70	0	0	0	0	0	0	0	0	0	140
Coarse ore feeder	0	0	0	0	50	100	150	0	0	0	0	0	0	0	0	0	0	300
Upgrade of conveyors	0	0	0	0	20	20	20	20	0	0	0	0	0	0	0	0	0	80
Water distribution system	0	0	0	0	0	25	25	50	0	0	0	0	0	0	0	0	0	100
Vibrating screens	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	60
Engineering	0	0	50	50	50	25	25	25	0	0	0	0	0	0	0	0	0	225
Sub-Total -Add Proj.Supplies	0	0	50	50	180	170	290	165	0	0	0	0	0	0	0	0	0	905
Contingency on Preproduction 20 % of Maintenance Costs	0	0	15	56	69	86	87	108	0	0	0	0	0	0	0	0	0	420
Total Mill Preproduction & Operat	0	0	158	482	638	743	892	1,050	1,555	1,669	1,796	2,153	2,226	2,477	2,396	2,344	2,396	22,986

TABLE 14.3-1

MILL OPERATING COST SUMMARY

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mill PreProduction & Operating Costs									
Area of expense				$(000)'s					
Operating supervision	100	895	960	960	960	960	960	960	6,755
Operating labour	75	1,982	2,376	2,376	2,376	2,376	2,376	2,376	16,311
Operating supplies	0	12,162	19,252	19,062	19,052	19,052	19,002	10,053	117,635
Maintenance supervision	35	595	600	600	600	600	600	600	4,290
Maintenance labour	279	2,579	2,394	2,394	2,394	2,394	2,394	2,394	17,240
Maintenance supplies	279	2,579	2,035	2,035	2,035	2,035	2,035	2,035	15,086
Sub-total	849	20,792	27,616	27,426	27,416	27,416	27,366	18,417	177,317
Premium for Milling LG/Oxide Ore	0	0	0	0	0	834	2,037	1,982	4,853
Additional Project Supplies									
Rockbreaker	0	140	0	0	0	0	0	0	140
Coarse ore feeder	50	250	0	0	0	0	0	0	300
Upgrade of conveyors	20	60	0	0	0	0	0	0	80
Water distribution system	0	100	0	0	0	0	0	0	100
Vibrating screens	60	0	0	0	0	0	0	0	60
Engineering	150	75	0	0	0	0	0	0	225
Sub-Total -Add Proj.Supplies	280	625	0	0	0	0	0	0	905
Contingency on Preproduction 20 % of Maintenance Costs	139	281	0	0	0	0	0	0	420
Total Mill Preproduction & Operating	1,738	21,698	27,616	27,426	27,416	28,250	29,403	20,399	183,494

TABLE 14.3-2

MILL MANPOWER REQUIREMENTS

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mill Manpower Requirement																		
Salaried staff																		
Operating staff	0	0	6	7	7	9	10	16	16	16	16	16	16	16	16	16	16	
Maintenance staff	0	0	5	6	8	9	10	10	10	10	10	10	10	10	10	10	10	
Total salaried staff	0	0	11	13	15	18	20	26	26	26	26	26	26	26	26	26	26	
Hourly Employees																		
Operating	0	0	0	30	4	4	9	53	64	64	64	64	64	64	64	64	64	
Maintenance	0	0	7	37	45	57	57	72	64	64	64	64	64	64	64	64	64	
Total hourly paid	0	0	7	67	49	61	66	125	128	128	128	128	128	128	128	128	128	
Technical Employees																		
Operating	0	0	0	0	0	0	1	7	10	10	10	10	10	10	10	10	10	
Maintenance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Technical	0	0	0	0	0	0	1	7	10	10	10	10	10	10	10	10	10	

MILL MANPOWER REQUIREMENTS

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Mill Manpower Requirement									
Salaried staff									
Operating staff	7	15	16	16	16	16	16	16	
Maintenance staff	6	10	10	10	10	10	10	10	
Total salaried staff	13	25	26	26	26	26	26	26	
Hourly Employees									
Operating	7	54	64	64	64	64	64	64	
Maintenance	18	64	59	59	59	59	59	59	
Total hourly paid	25	117	123	123	123	123	123	123	
Technical Employees									
Operating	0	8	10	10	10	10	10	10	
Maintenance	0	0	0	0	0	0	0	0	
Total Technical	0	8	10	10	10	10	10	10	

14.3.2 Mill Preproduction Costs

The work which will be carried out to enable the plant to satisfy production goals is described in Section 5.5 of this Report.

The approximate estimates of the costs to complete these projects are based, in large part, upon the number of maintenance personnel required to perform the work. Much of the work consists of maintenance, rather than the construction of new facilities. The traditional labour: supply factors modified to reflect an increase consumption of materials are used to develop total Project costs. In those few instances where substantial expenditures will be made to purchase new equipment, such costs are estimated and included in the total budget estimate.

The mill preproduction costs are included in Table 14.3-1. The costs of the new equipment include the prices of the following:

(a) Primary crusher, rock breaker and associated civil contractor costs;

(b) New vibratory screen components;

(c) New coarse ore vibratory feeders;

(d) Replacement reducer gears and new motors for crushing conveyors.

14.3.3 Mill Operating Supervision

The mill operating supervisory work force is shown below.

Position	Number of Employees
Mill Superintendent	1
General Foreman/Operator	1
Shift Foreman	4
Labour/Surface Foreman	2
Training Foreman	1
Chief Metallurgist	1
Process Control Engineer	1
Metallurgist	4
Chief Assayer	1
Subtotal	16

Weighted Average Annual Salary = $ 60,000 per Employee
Average Annual Cost = $ 60,000 by 16
= $ 960,000
========

The mill operating supervision costs are shown in Table 14.3-3.

MILL OPERATING COST -SUPERVISION

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Mill Supervision Cost																		
Mill Superintendent	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
General Foreman/Operator	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Shift Foremen	0	0	1	1	1	1	2	4	4	4	4	4	4	4	4	4	4	
Labour/Surface Foreman	0	0	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	
Training Foreman	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	
Chief Metallurgist	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Process Control Engineer	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Metallurgist	0	0	0	1	1	1	1	4	4	4	4	4	4	4	4	4	4	
Chief Assayer	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	
Total Supv.Manpower	0	0	6	7	7	9	10	16	16	16	16	16	16	16	16	16	16	
Average Salary	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual Cost $(000)'s	0	0	360	420	420	540	600	960	960	960	960	960	960	960	960	960	960	
Period Cost $(000)'s	0	0	30	35	35	45	50	80	80	80	80	80	80	80	80	80	80	995

MILL OPERATING COST -SUPERVISION

Mill Supervision Cost		1985	1986	1987	1988	1989	1990	1991	1992	Total
Mill Superintendent		1	1	1	1	1	1	1	1	
General Foreman/Operator		1	1	1	1	1	1	1	1	
Shift Foremen		1	4	4	4	4	4	4	4	
Labour/Surface Foreman		1	2	2	2	2	2	2	2	
Training Foreman		0	1	1	1	1	1	1	1	
Chief Metallurgist		1	1	1	1	1	1	1	1	
Process Control Engineer		1	1	1	1	1	1	1	1	
Metallurgist		0	4	4	4	4	4	4	4	
Chief Assayer		0	1	1	1	1	1	1	1	
Total Supv.Manpower		4	15	16	16	16	16	16	16	
Average Salary		$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual Cost	$(000)'s	240	895	960	960	960	960	960	960	
Period Cost	$(000)'s	100	895	960	960	960	960	960	960	6,755

14.3.4 Mill Operating Labour

Area of Expense	Number of Employees
Production and Maintenance	
Crusher Operator	4
Crusher Helper	4
Grinding Operator	4
Control Room Operator	4
Flotation Operator	4
Flotation Helper	4
Filter Operator	4
Filter Helper	4
Filter Sector	1
Load-Out Operator	4
Load-Out Helper	4
Tailings Operator	1
Equipment Operator	1
Garbage Truck Driver	1
General Labourer	10
Trainee	4
Reagent Operator	2
Bucker	3
Coal Crusher Operator	1
TOTAL PRODUCTION	64

Office and Technical	Number of Employees
Metallurgical Technician	4
Assayer	4
Mill Clerk	2
TOTAL OFFICE AND TECHNICAL	10
TOTAL OPERATING LABOUR	74

The labour rates used to calculate labour costs are those identified in Section 11.0 of this Report. A 22 percent loading factor, provided by Curragh is used to calculate the total labour cost.

The mill operating costs for hourly labour are shown in Table 14.3-4.

MILL OPERATING COST -LABOUR

A.Production & Maintenance

Number of Employees & Period Cost

	Hours/Year	Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Crusher Operator			0	0	0	0	1	1	1	3	4	4	4	4	4	4	4	4	4	
	2184	$14.10	$0	$0	$0	$0	$2,566	$2,566	$2,566	$7,699	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	107,780
Crusher Helper			0	0	0	0	1	1	1	3	4	4	4	4	4	4	4	4	4	
	2184	$10.00	$0	$0	$0	$0	$1,820	$1,820	$1,820	$5,460	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	76,440
Grinding Operator			0	0	0	0	1	1	1	3	4	4	4	4	4	4	4	4	4	
	2184	$14.10	$0	$0	$0	$0	$2,566	$2,566	$2,566	$7,699	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	107,780
Control Room Operator			0	0	0	0	1	1	1	3	4	4	4	4	4	4	4	4	4	
	2184	$15.50	$0	$0	$0	$0	$2,821	$2,821	$2,821	$8,463	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	118,482
Flotation Operator			0	0	0	0	0	0	1	3	4	4	4	4	4	4	4	4	4	
	2184	$15.50	$0	$0	$0	$0	$0	$0	$2,821	$8,463	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	112,840
Flotation Helper			0	0	0	0	0	0	1	3	4	4	4	4	4	4	4	4	4	
	2184	$14.10	$0	$0	$0	$0	$0	$0	$2,566	$7,699	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	102,648
Filter Operator			0	0	0	0	0	0	1	3	4	4	4	4	4	4	4	4	4	
	2184	$14.10	$0	$0	$0	$0	$0	$0	$2,566	$7,699	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	$10,265	102,648
Filter Helper			0	0	0	0	0	0	1	3	4	4	4	4	4	4	4	4	4	
	2184	$10.00	$0	$0	$0	$0	$0	$0	$1,820	$5,460	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	72,800
Filter Sector			0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	
	2080	$10.00	$0	$0	$0	$0	$0	$0	$0	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	17,333
Load-out Operator			0	0	0	0	0	0	1	4	4	4	4	4	4	4	4	4	4	
	2184	$11.30	$0	$0	$0	$0	$0	$0	$2,057	$8,226	$8,226	$8,226	$8,226	$8,226	$8,226	$8,226	$8,226	$8,226	$8,226	84,321
Load-out Helper			0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	
	2184	$10.00	$0	$0	$0	$0	$0	$0	$0	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	$7,280	72,800
Tailings Operator			0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	
	2080	$10.00	$0	$0	$0	$0	$0	$0	$0	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	17,333
Equipment Operator			0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	
	2080	$12.70	$0	$0	$0	$0	$0	$0	$0	$2,201	$2,201	$2,201	$2,201	$2,201	$2,201	$2,201	$2,201	$2,201	$2,201	22,013
Garbage Truck Driver			0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	
	2080	$10.00	$0	$0	$0	$0	$0	$0	$0	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	17,333
General Labourer			0	0	0	30	0	0	0	10	10	10	10	10	10	10	10	10	10	
	2080	$10.00	$0	$0	$0	$52,000	$0	$0	$0	$17,333	$17,333	$17,333	$17,333	$17,333	$17,333	$17,333	$17,333	$17,333	$17,333	225,333
Trainee			0	0	0	0	0	0	0	3	4	4	4	4	4	4	4	4	4	
	2080	$12.70	$0	$0	$0	$0	$0	$0	$0	$6,604	$8,805	$8,805	$8,805	$8,805	$8,805	$8,805	$8,805	$8,805	$8,805	85,852
Reagent Operator			0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	
	2184	$11.30	$0	$0	$0	$0	$0	$0	$0	$2,057	$4,113	$4,113	$4,113	$4,113	$4,113	$4,113	$4,113	$4,113	$4,113	39,075

MILL OPERATING COST -LABOUR

			Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Bucker			0	0	0	0	0	0	0	2	3	3	3	3	3	3	3	3	3	
	2080	$10.00	$0	$0	$0	$0	$0	$0	$0	$3,467	$5,200	$5,200	$5,200	$5,200	$5,200	$5,200	$5,200	$5,200	$5,200	50,267
Coal Crusher Operator			0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	
	2080	$10.00	$0	$0	$0	$0	$0	$0	$0	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	$1,733	17,333
Subtotal-Employees			0	0	0	30	4	4	9	53	64	64	64	64	64	64	64	64	64	
Subtotal-Cost	$(000)'s		0	0	0	52	10	10	22	113	138	138	138	138	138	138	138	138	138	1,450
Payroll Burden		22.00%	0	0	0	11	2	2	5	25	30	30	30	30	30	30	30	30	30	319
Total	$(000)'s		0	0	0	63	12	12	26	138	169	169	169	169	169	169	169	169	169	1,770

Mill Operating Labour Cost

B.Office & Technical

	Hours/Year	Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Metallurgical Tech.			0	0	0	0	0	0	1	3	4	4	4	4	4	4	4	4	4	
	2080	$15.50	$0	$0	$0	$0	$0	$0	$2,687	$8,060	$10,747	$10,747	$10,747	$10,747	$10,747	$10,747	$10,747	$10,747	$10,747	107,467
Assayer			0	0	0	0	0	0	0	3	4	4	4	4	4	4	4	4	4	
	2080	$14.10	$0	$0	$0	$0	$0	$0	$0	$7,332	$9,776	$9,776	$9,776	$9,776	$9,776	$9,776	$9,776	$9,776	$9,776	95,316
Mill Clerk			0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	
	2080	$10.00	$0	$0	$0	$0	$0	$0	$0	$1,733	$3,467	$3,467	$3,467	$3,467	$3,467	$3,467	$3,467	$3,467	$3,467	32,933
Subtotal-Employees			0	0	0	0	0	0	1	7	10	10	10	10	10	10	10	10	10	
Subtotal-Cost	$(000)'s		0	0	0	0	0	0	3	17	24	24	24	24	24	24	24	24	24	
Payroll Burden		22.00%	0	0	0	0	0	0	1	4	5	5	5	5	5	5	5	5	5	
Total-Office & Technical			0	0	0	0	0	0	3	21	29	29	29	29	29	29	29	29	29	

MILL OPERATING COST -LABOUR

A.Production & Maintenance

	Hours/Year	Rate	1985 (Average)	1986	1987	1988	1989	1990	1991	1992	Total
			Number of Employees & Period Cost								
Crusher Operator			0.2	3.4	4	4	4	4	4	4	
	2184	$14.10	$2,566	$105,214	$123,178	$123,178	$123,178	$123,178	$123,178	$123,178	$846,846
Crusher Helper			0.2	3.4	4	4	4	4	4	4	
	2184	$10.00	$1,920	$74,620	$87,360	$87,360	$87,360	$87,360	$87,360	$87,360	$600,600
Grinding Operator			0.2	3.4	4	4	4	4	4	4	
	2184	$14.10	$2,566	$105,214	$123,178	$123,178	$123,178	$123,178	$123,178	$123,178	$846,846
Control Room Operator			0.2	3.4	4	4	4	4	4	4	
	2184	$15.50	$2,821	$115,661	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$930,930
Flotation Operator			0	3.3	4	4	4	4	4	4	
	2184	$15.50	$0	$112,840	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$925,288
Flotation Helper			0	3.3	4	4	4	4	4	4	
	2184	$14.10	$0	$102,648	$123,178	$123,178	$123,178	$123,178	$123,178	$123,178	$841,714
Filter Operator			0	3.3	4	4	4	4	4	4	
	2184	$14.10	$0	$102,648	$123,178	$123,178	$123,178	$123,178	$123,178	$123,178	$841,714
Filter Helper			0	3.3	4	4	4	4	4	4	
	2184	$10.00	$0	$72,800	$87,360	$87,360	$87,360	$87,360	$87,360	$87,360	$596,960
Filter Sector			0	0.8	1	1	1	1	1	1	
	2080	$10.00	$0	$17,333	$20,800	$20,800	$20,800	$20,800	$20,800	$20,800	$142,133
Load-out Operator			0	3.4	4	4	4	4	4	4	
	2184	$11.30	$0	$84,321	$98,717	$98,717	$98,717	$98,717	$98,717	$98,717	$676,621
Load-out Helper			0	3.3	4	4	4	4	4	4	
	2184	$10.00	$0	$72,800	$87,360	$87,360	$87,360	$87,360	$87,360	$87,360	$596,960
Tailings Operator			0	0.8	1	1	1	1	1	1	
	2080	$10.00	$0	$17,333	$20,800	$20,800	$20,800	$20,800	$20,800	$20,800	$142,133
Equipment Operator			0	0.8	1	1	1	1	1	1	
	2080	$12.70	$0	$22,013	$26,416	$26,416	$26,416	$26,416	$26,416	$26,416	$180,509
Garbage Truck Driver					1	1	1	1	1	1	
	2080	$10.00	$0	$17,333	$20,800	$20,800	$20,800	$20,800	$20,800	$20,800	$142,133
General Labourer			6	8.3	10	10	10	10	10	10	
	2080	$10.00	$52,000	$173,333	$208,000	$208,000	$208,000	$208,000	$208,000	$208,000	$1,473,333
Trainee			0	3.3	4	4	4	4	4	4	
	2080	$12.70	$0	$85,852	$105,664	$105,664	$105,664	$105,664	$105,664	$105,664	$719,836
Reagent Operator			0	1.6	2	2	2	2	2	2	
	2184	$11.30	$0	$39,075	$49,358	$49,358	$49,358	$49,358	$49,358	$49,358	$335,226

MILL OPERATING COST -LABOUR

			1985	1986	1987	1988	1989	1990	1991	1992	Total
Bucker			0	2.4	3	3	3	3	3	3	
	2080	$10.00	$0	$50,267	$62,400	$62,400	$62,400	$62,400	$62,400	$62,400	$424,667
Coal Crusher Operator			0	0.8	1	1	1	1	1	1	
	2080	$10.00	$0	$17,333	$20,800	$20,800	$20,800	$20,800	$20,800	$20,800	$142,133
Subtotal-Employees			7	54	64	64	64	64	64	64	
Subtotal-Cost	$(000)'s		$61.773	$1,388.640	$1,659.362	$1,659.362	$1,659.362	$1,659.362	$1,659.362	$1,659.362	$11,406.583
Payroll Burden		22.00%	$13.590	$305.501	$365.060	$365.060	$365.060	$365.060	$365.060	$365.060	$2,509.448
Total	$(000)'s		$75.364	$1,694.141	$2,024.421	$2,024.421	$2,024.421	$2,024.421	$2,024.421	$2,024.421	$13,916.031

Mill Operating Labour Cost

B.Office & Technical

	Hours/Year	Rate	Average								
Metallurgical Tech.			0.0	3.3	4	4	4	4	4	4	
	2080	$15.50	$0	$107,467	$128,960	$128,960	$128,960	$128,960	$128,960	$128,960	$881,227
Assayer			0.0	3.3	4	4	4	4	4	4	
	2080	$14.10	$0	$95,316	$117,312	$117,312	$117,312	$117,312	$117,312	$117,312	$799,188
Mill Clerk			0.0	1.6	2	2	2	2	2	2	
	2080	$10.00	$0	$32,933	$41,600	$41,600	$41,600	$41,600	$41,600	$41,600	$282,533
Subtotal-Employees			0	8	10	10	10	10	10	10	
Subtotal-Cost	$(000)'s		$0	$235.716	$287.872	$287.872	$287.872	$287.872	$287.872	$287.872	$1,962.948
Payroll Burden		22.00%	$0	$51.858	$63.332	$63.332	$63.332	$63.332	$63.332	$63.332	$431.849
Total-Office & Technical			$0	$287.574	$351.204	$351.204	$351.204	$351.204	$351.204	$351.204	$2,394.797

14.3.5 Mill Operating Supplies

The Table below summarizes the mill operating supply costs which will be incurred when processing run-of-mine (ROM) ore. Premiums of $0.50 per tonne and $1.50 per tonne respectively, will be necessitated when milling stockpiled low-grade ore and material from the existing oxide stockpile.

	Area of Expense	Annual Cost	Unit Cost $/Tonne Milled
	Primary Crusher	$ 106,000	$ 0.03
	Secondary Crusher	97,000	0.02
	Screens	94,000	0.02
	Grinding - Liners	542,500	0.13
	- Media	8,513,406	2.09
	Flotation - Reagents	8,691,342	2.13
	Thickeners/Filters	150,000	0.04
	Concentrate Drying	350,000	0.09
	Concentrate Load-Out	235,000	0.06
	Tailings Disposal	20,000	0.01
	Water Supply	2,000	0.01
	Metallurgical Laboratory	40,000	0.01
	Assay Laboratory	100,000	0.02
	Heating Plant	30,000	0.01
	Other Departmental	200,000	0.05
*	Plant Testing	250,000	0.06
**	Training Supplies	50,000	0.01
	TOTAL	$ 19,470,748	$ 4.78

		Period	$/Year
*	Plant Testing Supply Costs	1986, 1987	$ 250,000
		1988, 1989, 1990	100,000
		1991 -	50,000
**	Training Supplies	1986, 1987	$ 50,000
		1988 -	10,000

Area of Expense - Operating Supplies - Primary Crusher

Item	Annual Consumption Units/Year	Cost Per Unit	Annual Cost $/Year	Unit Cost $/Tonne Milled
Primary Mantles	1 Set	$ 44,000	$ 44,000	$
Concave Liners	1 Set	57,000	57,000	
Miscellaneous			5,000	
TOTAL			$ 106,000	$ 0.03

Area of Expense - Operating Supplies - Secondary Crusher

Item	Annual Consumption Units/Year	Cost Per Unit	Annual Cost $/Year	Unit Cost $/Tonne Milled
Secondary Crusher				
Mantles	2.5	$ 9,000	$ 22,500	$
Bowls	2.5	9,000	22,500	
Tertiary Crusher				
Mantles	2.0	$ 8,500	$ 17,000	$
Bowls	2.0	10,000	20,000	
Miscellaneous			15,000	
TOTAL			$ 97,000	$ 0.02

Area of Expense - Operating Supplies - Crushing Plant Screens

Item	Annual Consumption Units/Year	Cost Per Unit	Annual Cost $/Year	Unit Cost $/Tonne Milled
Primary Screen				
Upper Deck	20 Sections	$ 1,500	$ 30,000	$
Lower Deck	16 Sections	900	14,400	
Secondary Screen				
Upper Deck	12 Sections	$ 1,500	$ 18,000	$
Lower Deck	8 Sections	900	7,100	
Tertiary Screen Decks				
	16	$ 900	$ 14,400	$
Miscellaneous			10,000	
TOTAL			$ 94,000	$ 0.02

Area of Expense - Operating Supplies - Grinding Liners

Item	Annual Consumption Units/Year	Cost Per Unit	Annual Cost $/Year	Unit Cost $/Tonne Milled
Rod Mills				
9 x 12 Liners	2.5	$ 82,000	$ 205,000	$
12½ x 16 Liners	0.8	170,000	136,000	
Ball Mills				
9 x 12 Liners	1.5	$ 41,000	$ 61,500	$
9 x 12 Lifters	2.00	20,000	40,000	
13½ x 22 Liners	0.5	80,000	40,000	
13½ x 22 Lifters	1.0	40,000	40,000	
Miscellaneous			20,000	
TOTAL			$ 542,500	$ 0.13

Area of Expense - Operating Supplies - Grinding Media

Item	Consumption kg/Tonne	Cost $/kg	Unit Cost $/Tonne Milled	Annual Cost
1½ inch Balls	0.60	$ 0.70	$ 0.42	$
1 inch Balls	0.90	1.54	1.39	
4 inch Rods	0.25	0.55	0.14	
3½ inch Rods	0.25	0.55	0.14	
TOTAL			$ 2.09	$ 8,513,407

Area of Expense - Operating Supplies - Flotation Reagents and Supplies

Item	Consumption kg/Tonne	Cost $/kg	Unit Cost $/Tonne Milled	Annual Cost
Soda Ash	2.00	$ 0.22	$ 0.44	$
Lime	1.50	0.09	0.14	
Copper Sulphate	0.50	0.90	0.45	
Sodium Cyanide	0.15	1.94	0.29	
Xanthate	0.35	1.70	0.60	
MIBC	0.015	1.69	0.03	
Dow 1012	0.003	2.17	0.01	
Flocculant	0.003	5.95	0.02	
Filter Aid	0.040	2.88	0.15	
Subtotal			$ 2.13	$ 8,676,342
Miscellaneous				15,000
TOTAL			$ 2.13	$ 8,691,342

When milling ore from the low-grade stockpile add $0.50 per tonne.

When mill ore from the existing oxide stockpile add $1.50 per tonne.

Area of Expense - Operating Supplies - Thickeners and Filters

Allowance for filter bags and miscellaneous supplies $150,000 per year or $0.04 per tonne.

Area of Expense - Operating Supplies - Concentrate Drying

Five (5) concentrate dryers are used to dry filter cake to acceptable shipping moisture contents; one unit is fuelled with oil and the remaining units with coal.

The cost of coal used for both concentrate drying and plant heating purposes is consolidated in Account Code 'Coal Supply.'

The cost of fuel oil required for concentrate drying purposes will be $350,000 per annum.

Area of Expense - Operating Supplies - Concentrate Load-Out

Item	Consumption	Cost/ Unit	Annual Cost $/Year	Unit Cost $/Tonne Milled
Antifreeze	0.45 L/t Concentrate	$ 1.17	$ 145,000	$
Loader (Allowance: Fuel, Lube, Tires)			80,000	
Miscellaneous			10,000	
TOTAL			$ 235,000	$ 0.06

Assume:
- 470,000 tonnes concentrate per year;
- 7-month period during which concentrate container spraying required;
- Cost of antifreeze $1.17 per litre;
- Consumption 0.45 litres.

Then Annual Cost $= \frac{474,000}{12} \times 7 \times 0.45 \times 1.17$

$= \$145,000$

Area of Expense - Operating Supplies - Tailings Disposal

A nominal allowance of $20,000 per year is provided to cover the costs of small tools and personal protective equipment.

All costs incurred associated with the construction of roads and dams and the laying of pipe are classified as 'capital expenditures.'

Area of Expense - Operating Supplies - Annual Cost Allowance

	Cost
Water Supply	$ 2,000
Metallurgical Laboratory	40,000
Assay Laboratory	100,000
Heating Plant (Water Treatment)	30,000
Other Departmental (Equipment Leases, Rental; Travel and General Supplies)	200,000

Area of Expense - Operating Supplies - Plant Testing

Incremental operating costs which are incurred during the plant testing of grinding media, reagents, cyclones and other programs of similar scope are charged to this account.

Extra ordinary allowances of $250,000 per year in 1986 and 1987 are provided to cover the increased costs which will be incurred during the initial metallurgical optimization programs.

Projected costs for the period 1988 to 1990 will be $100,000 while annual allowances of $50,000 are provided for years 1911 and 1992.

Area of Expense - Operating Supplies - Training

An annual allowance of $50,000 is provided for years 1986 and 1987 to reflect the high level of training activity during the first 2 years of operation. Thereafter an allowance of $10,000 per annum is deemed adequate.

14.3.6 Mill Maintenance - Supervision

Position	Number of Employees
General Foreman Maintenance	1
Maintenance Foreman	4
Electrical Foreman	1
Instrumentation Foreman	1
Heating Plant Foreman	1
Mill Maintenance Planner	2
TOTAL	10

Weighted Average Annual Salary Plus Burden = $60,000/Employee

Average Annual Cost = $ 600,000

The mill maintenance supervision costs are illustrated in Table 14.3-5.

MILL MAINTENANCE COST -SUPERVISION

Mill Maintenance Supervision Cost		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
General Foreman Maintenance		0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Maintenance Foreman		0	0	1	2	2	3	4	4	4	4	4	4	4	4	4	4	4	
Electrical Foreman		0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Instrumentation Foreman		0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Heating PLant Foreman		0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mill Maintenance Planner		0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
Total Supv.Manpower		0	0	5	6	8	9	10	10	10	10	10	10	10	10	10	10	10	
Average Salary		$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual Cost	$(000)'s	0	0	300	360	480	540	600	600	600	600	600	600	600	600	600	600	600	
Period Cost	$(000)'s	0	0	25	30	40	45	50	50	50	50	50	50	50	50	50	50	50	690

MILL MAINTENANCE COST -SUPERVISION

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Mill Maintenance Supervision Cost										
General Foreman Maintenance		1	1	1	1	1	1	1	1	
Maintenance Foreman		1	4	4	4	4	4	4	4	
Electrical Foreman		1	1	1	1	1	1	1	1	
Instrumentation Foreman		1	1	1	1	1	1	1	1	
Heating PLant Foreman		0	1	1	1	1	1	1	1	
Mill Maintenance Planner		1	2	2	2	2	2	2	2	
Total Supv.Manpower		4	10	10	10	10	10	10	10	
Average Salary		$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	$60,000	
Annual Cost	$(000)'s	228	595	600	600	600	600	600	600	
Period Cost	$(000)'s	95	595	600	600	600	600	600	600	4,290

14.3.7 Mill Maintenance - Labour

Position	Number of Employees
Millwrights	
- Day	30
- Shift	4
- Lubemen	2
- Tool Crib	2
Electricians	
- Day	6
- Shift	4
Instrument Technician	5
Truck Driver	2
Heating Plant Operator	4
TOTAL	59

An additional 5 millwrights will be employed in 1986 to implement circuit charges which will be necessitated as a result of plant testing programs.

The hourly rates and payroll burden provided in Section 11.0 are used to compute Mill Maintenance Labour costs.

The Mill Maintenance Labour Costs are illustrated in Table 14.3-6.

CURRAGH RESOURCES CORPORATION

TABLE 14.3-6

MILL MAINTENANCE COST -LABOUR

Mill Maintenance Labour Cost

	Hours/Year	Rate	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
			Number of Employees & Period Cost																	
Millwrights-Day			0	0	5	20	20	30	30	45	35	35	35	35	35	35	35	35	35	
	2184	$15.50	$0	$0	$14,105	$56,420	$56,420	$84,630	$84,630	########	$98,735	$98,735	$98,735	$98,735	$98,735	$98,735	$98,735	$98,735	$98,735	#########
Millwrights-Shift			0	0	0	0	2	4	4	4	4	4	4	4	4	4	4	4	4	
	2184	$15.50	$0	$0	$0	$0	$5,642	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	141,050
Millwrights-Lube			0	0	0	0	1	1	1	1	2	2	2	2	2	2	2	2	2	
	2184	$15.50	$0	$0	$0	$0	$2,821	$2,821	$2,821	$2,821	$5,642	$5,642	$5,642	$5,642	$5,642	$5,642	$5,642	$5,642	$5,642	62,062
Millwrights-T.Crib			0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	
	2080	$15.50	$0	$0	$0	$0	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	$5,373	69,853
Electrician-Day			0	0	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	2184	$15.50	$0	$0	$5,642	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	$16,926	242,606
Electrician-Shift			0	0	0	0	3	3	3	3	4	4	4	4	4	4	4	4	4	
	2184	$15.50	$0	$0	$0	$0	$8,463	$8,463	$8,463	$8,463	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	135,408
Instrument Tech.			0	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
	2080	$15.50	$0	$0	$0	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	$13,433	188,067
Truck Driver			0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
	2184	$10.00	$0	$0	$0	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	$3,640	50,960
Heating Plant Opr.			0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	2184	$15.50	$0	$0	$0	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	$11,284	157,976
Subtotal-Employees			0	0	7	37	45	57	57	72	64	64	64	64	64	64	64	64	64	
Subtotal-Cost	$(000)'s		0	0	20	102	124	158	158	200	178	178	178	178	178	178	178	178	178	2,360
Payroll Burden		22.00%	0	0	4	22	27	35	35	44	39	39	39	39	39	39	39	39	39	519
Total-Mill Maint.Labour			0	0	24	124	151	193	193	244	217	217	217	217	217	217	217	217	217	2,879

MILL MAINTENANCE COST -LABOUR

Mill Maintenance Labour Cost

Hours/Year	Rate	1985	1986	1987	1988	1989	1990	1991	1992	Total
		Number of Employees & Period Cost								
Millwrights-Day		9.0	35.0	30	30	30	30	30	30	
2184	$15.50	$126,945	$1,184,820	$1,015,560	$1,015,560	$1,015,560	$1,015,560	$1,015,560	$1,015,560	$7,405,125
Millwrights-Shift		0.4	4.0	4	4	4	4	4	4	
2184	$15.50	$5,642	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$953,498
Millwrights-Lube		0.2	1.8	2	2	2	2	2	2	
2184	$15.50	$2,821	$59,241	$67,704	$67,704	$67,704	$67,704	$67,704	$67,704	$468,286
Millwrights-T.Crib		0.4	2.0	2	2	2	2	2	2	
2080	$15.50	$5,373	$64,480	$64,480	$64,480	$64,480	$64,480	$64,480	$64,480	$456,733
Electrician-Day		2.8	6.0	6	6	6	6	6	6	
2184	$15.50	$39,494	$203,112	$203,112	$203,112	$203,112	$203,112	$203,112	$203,112	$1,461,278
Electrician-Shift		0.6	3.8	4	4	4	4	4	4	
2184	$15.50	$8,463	$126,945	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$947,856
Instrument Tech.		2.0	5.0	5	5	5	5	5	5	
2080	$15.50	$26,867	$161,200	$161,200	$161,200	$161,200	$161,200	$161,200	$161,200	$1,155,267
Truck Driver		0.8	2.0	2	2	2	2	2	2	
2184	$10.00	$7,280	$43,680	$43,680	$43,680	$43,680	$43,680	$43,680	$43,680	$313,040
Heating Plant Opr.		1.6	4.0	4	4	4	4	4	4	
2184	$15.50	$22,568	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$135,408	$970,424
Subtotal-Employees		18	64	59	59	59	59	59	59	
Subtotal-Cost $(000)'s		$245.453	$2,114.294	$1,961.960	$1,961.960	$1,961.960	$1,961.960	$1,961.960	$1,961.960	$14,131.507
Payroll Burden	22.00%	$54.000	$465.145	$431.631	$431.631	$431.631	$431.631	$431.631	$431.631	$3,108.932
Total-Mill Maint.Labour		$299.453	$2,579.439	$2,393.591	$2,393.591	$2,393.591	$2,393.591	$2,393.591	$2,393.591	$17,240.439

14.3.8 Mill Maintenance - Repair Supplies

Mill maintenance supply costs are factored estimates based upon the projected maintenance supervision and labour costs. Historical values, as reported by Cyprus Anvil, are illustrated below.

Year	Repair Labour Costs $(000)	Repair Supply Costs $(000)	Ratio Labour:Supply Costs
1977	$ 1481	$ 2,404	$ 0.62
1978	1575	1,859	0.85
1979	1397	1,728	0.81
1980	1943	2,863	0.68
1981	2729	3,379	0.80
TOTAL	$ 9125	$ 12,233	$ 0.75

A ratio of labour:supply costs of 1.00 is applied for the year 1986 to reflect a possible increased use of new equipment required as a result of circuit modifications.

A ratio of 0.85 is applied to estimate the repair supply expenses incurred in subsequent years.

Table 14.3-7 illustrates mill operating supplies unit costs.

MILL OPERATING SUPPLIES -UNIT COSTS

Category	Item	Annual Cost		Unit Cost $/Tonne Milled	
Primary Crusher	Primary Mantles	$44,000		$0.011	
	Concave Liners	$57,000		$0.014	
	Misc.	$5,000		$0.001	
			$106,000		$0.026
Secondary Crusher	Secondary Crusher Mantles	$22,500		$0.006	
	Secondary Crusher Bowls	$22,500		$0.006	
	Tertiary Crusher Mantles	$17,000		$0.004	
	Tertiary Crusher Bowls	$20,000		$0.005	
	Misc.	$15,000		$0.004	
			$97,000		$0.024
Crushing Plant Screens	Primary Screen	$44,400		$0.011	
	Secondary Screen	$25,100		$0.006	
	Tertiary Screen	$14,400		$0.004	
	Misc.	$10,000		$0.002	
			$93,900		$0.023
Grinding Liners	Rod Mills	$341,000		$0.084	
	Ball Mills	$201,500		$0.049	
			$542,500		$0.133
Grinding Media	Balls & Rods	$8,513,407		$2.090	
			$8,513,407		$2.090
Flotation Reagents & Suppl.	Reagents	$8,472,257		$2.080	
			$8,472,257		$2.080
Thickeners & Filters	Filter Bags	$150,000		$0.037	
			$150,000		$0.037
Drying	Coal	See "Coal Supply"			
	Fuel Oil	$350,000		$0.086	
			$350,000		$0.086
Load-out	Antifreeze	$145,000		$0.036	
	Loader-Fuel,Lube,Tires,Wear Parts.	$80,000		$0.020	
	Misc.	$10,000		$0.002	
			$235,000		$0.058
Tailings	Small Tools	$20,000		$0.005	

TABLE 14.3-7

		------------	$20,000	------------	$0.005
Annual Cost Allowance	Water Supply	$2,000		$.000	
	Metallurgical Laboratory	$40,000		$0.010	
	Assay Laboratory	$100,000		$0.025	
	Heating Plant- Water Treatment	$30,000		$0.007	
	General Supplies	$200,000		$0.049	$0.091
===============		------------	$372,000	------------	===========

TOTAL = Base Factor For 1987 Mill Operation (Dollars per DMT Feed)......							$4.652
Additional Costs in 1986 & 1987	Testing	$250,000 + Training	$50,000	=	300,000 /Year	=	$0.074
Additional Costs in 1988	Testing	$100,000 + Training	$10,000	=	110,000 /Year	=	$0.027
Additional Costs in 1989 & 1990	Testing	$100,000 + Training	$0	=	100,000 /Year	=	$0.025
Additional Costs in 1991	Testing	$50,000 + Training	$0	=	50,000 /Year	=	$0.012

UNIT COSTS	1986	1987	1988	1989	1990	1991	1992
$/DMT Feed	$4.726	$4.726	$4.679	$4.677	$4.677	$4.664	$4.652

Reagents

Item	Consumption Kg/DMT Milled	Cost $/Kg	Unit Cost $/DMT Milled	Annual Cost @ 4.074 MDMT/Year $(000)'s
Soda Ash	2.000	$0.220	$0.440	1,793
Lime	1.500	$0.090	$0.135	550
Copper Sulphate	0.500	$0.900	$0.450	1,833
Sodium Cyanide	0.150	$1.940	$0.291	1,186
Xanthate	0.350	$1.700	$0.595	2,424
MIBC	0.015	$1.690	$0.025	103
Dow 1012	0.003	$2.170	$0.007	27
Flocculant	0.003	$5.950	$0.018	73
Filter Aid	0.040	$2.880	$0.115	469
			--------	--------
Subtotal			2.07591	8,457
Miscellaneous				15

TOTAL			2.07959	8,472

14.4 COAL SUPPLY

Approximately 5300 tonnes of coal are stockpiled at Carmacks. In essence, the cost of this coal to Curragh will be the loading and transportation expenses required to deliver the material to the Faro mine site.

The cost of coal delivered to the mine site from Southern British Columbia is estimated to be $105.75 per tonne based on the assumptions shown below.

Item	Unit Cost $/Tonne
Price of Coal, fob Vancouver	$ 67.75
Ocean Freight, Vancouver to Skagway	20.00
Skagway Terminal Costs	6.00
Overland Transportation, Skagway to Faro	12.00
TOTAL	$ 105.75

Table 14.4-1 indicates the projected coal requirements and associated costs of supply.

It is assumed that fuel oil, in addition to the coal from Carmacks will be used to energize the hot water heating system during the 1985/1986 winter.

Pending the resumption of the milling operators, fuel oil will be used to supplement the Carmacks coal supply to provide heat to the plant and other surface facilities. The heating requirements are very considerably reduced provided the mill is inoperative. During this period of time, contracts for the supply of coal will be finalized and the transportation 'pipeline' prepared for the future deliveries of coal from British Columbia.

COAL & POWER COSTS

		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Coal							Coal & Fuel Oil Costs - $(000)'s												
Mill Heating for the Period upto Mill Start-Up																			
Coal from CARMACKS @ $10.0/Tonne																			
Quantity	Tonnes			1,500	1,500	2,000	0	0	0	0	0	0	0	0	0	0	0	0	5,000
Cost	$(000)'s			$15.000	$15.000	$20.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$50.000
Fuel Oil	@ $549/Tonne																		
Quantity	Tonnes			60	70	70	70	70	60	0	0	0	0	0	0	0	0	0	400
Cost	$(000)'s			$32.940	$38.430	$38.430	$38.430	$38.430	$32.940	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	219.600
Mill Heating & Product Drying (After Start-Up)																			
B.C. Coal	@ $105.75/Tonne																		
Qty. for Heating	DMT									554	443	332	222	332	443	665	886	997	4,875
Concentrate Production	DMT	0	0	0	0	0	0	0	0	21,477	25,394	29,535	34,770	40,091	49,906	44,783	46,079	47,181	339,215
Qty for Drying	Conc./55.0	0	0	0	0	0	0	0	0	390	462	537	632	729	907	814	838	858	6,168
Total Qty.	DMT	0	0	0	0	0	0	0	0	944	905	869	854	1,061	1,351	1,479	1,724	1,855	11,043
Cost	$(000)'s	0	0	0	0	0	0	0	0	100	96	92	90	112	143	156	182	196	1,168
Total Cost -Coal & Fuel Oil		0	0	48	53	58	38	38	33	100	96	92	90	112	143	156	182	196	1,437
Electric Power Consumption & Cost							Power Costs - $(000)'s												
Power Consumption	KwHr(000)																		
Base Load		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	34,000
Mine @ 300/Shovel.Month				0	350	750	1,050	1,200	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	16,350
Mill @ 31 /DMT Feed										5,208	5,952	6,789	9,131	9,610	11,253	10,726	10,385	10,726	79,780
Total Power Consumption		2,000	2,000	2,000	2,350	2,750	3,050	3,200	3,300	8,508	9,252	10,089	12,431	12,910	14,553	14,026	13,685	14,026	130,130
Power Cost	$0.04/KwHr																		
Elec.Power Cost	$(000)	80	80	80	94	110	122	128	132	340	370	404	497	516	582	561	547	561	5,205

COAL & POWER COSTS

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Coal		Coal & Fuel Oil Costs - $(000)'s								
Mill Heating for the Period upto Mill Start-Up										
Coal from CARMACKS @ $10.0/Tonne										
Quantity	Tonnes	5,000	0	0	0	0	0	0	0	5,000
Cost	$(000)'s	50	0	0	0	0	0	0	0	50
Fuel Oil	@ $549/Tonne									
Quantity	Tonnes	200	200	0	0	0	0	0	0	400
Cost	$(000)'s	110	110	0	0	0	0	0	0	220
Mill Heating & Product Drying (After Start-Up)										
B.C. Coal	@ $105.75/Tonne									
Qty. for Heating	DMT	0	4,875	6,500	6,500	6,500	6,500	6,500	6,500	43,875
Concentrate Production	DMT	0	339,215	560,517	483,862	510,428	429,937	297,381	192,810	2,814,150
Qty for Drying	Conc./55.0	0	6,168	10,191	8,797	9,281	7,817	5,407	3,506	51,166
Total Qty.	DMT	0	11,043	16,691	15,297	15,781	14,317	11,907	10,006	95,041
Cost	$(000)'s	0	1,168	1,765	1,618	1,669	1,514	1,259	1,058	10,051
Total Cost -Coal & Fuel Oil		160	1,278	1,765	1,618	1,669	1,514	1,259	1,058	10,320
Electric Power Consumption & Cost		Power Costs - $(000)'s								
Power Consumption	KwHr(000)									
Base Load		10,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	178,000
Mine @ 300/Shovel.Month		1,100	15,250	15,600	9,000	3,960	3,600	3,600	3,600	55,710
Mill @ 31 /DMT Feed		0	79,780	126,294	126,294	126,294	126,294	126,294	66,991	778,241
Total Power Consumption		11,100	119,030	165,894	159,294	154,254	153,894	153,894	94,591	1,011,951
Power Cost	$0.04/KwHr									
Elec.Power Cost	$(000)	444	4,761	6,636	6,372	6,170	6,156	6,156	3,784	40,478

14.5 POWER SUPPLY

In recent times Cyprus Anvil has divided the total electrical power costs between the Mine and the Mill.

For the purpose of this Report, the power costs have been extracted from the Operating Department Accounts and consolidated in this Account. By so doing, the magnitude of projected power costs will be readily identifiable.

During normal operations, the mine site power requirements are projected to be:

(a)	Demand	24,500 kW;
(b)	Energy	165,000,000 kWhr/year.

Historically Cyprus Anvil's total cost of electrical power has been calculated using a formula based upon the peak demand and amount of energy consumed. In accordance with Curragh's stated requirements, a weighted average energy cost of $0.04 per kilowatt hour is assumed for this purpose. (Reference Section 6.1-3 of this Report).

Tables 14.4-1 and 14.5-1 summarizes the projected electrical power costs during the life of the Faro Pit.

TABLE 14.5-1

ELECTRICAL ENERGY CONSUMPTION AND COST

Period	Activity	Energy Consumption Kilowatt Hours (000)	Cost $(000)
1985			
October	Base Load - No Operations	2,000	$ 80
November	1st & 2nd Shovels Start-Up	2,350	94
December	3rd Shovel Start-Up	2,750	110
TOTAL 1985		7,100	$ 284
1986			
January	4th Shovel Start-Up	3,050	$ 122
February		3,300	132
March		3,300	132
April	Mill Commences Operation	8,000	320
May		9,000	360
June		10,000	400
July		11,000	440
August		12,000	480
September		13,000	520
November		13,300	532
December		13,300	532
TOTAL 1986		98,650	$ 3,970
1987	4 Shovels Operating	165,000	$ 6,600
1988	2.5 Shovels Operating (Average)	150,000	6,000
1989	1.1 Shovels Operating (Average)	135,000	5,400
1990	1 Shovel Operating	132,000	5,280
1991	1 Shovel Operating	132,000	5,280
1992	1 Shovel Operating	132,000	5,280

14.6 GENERAL AND ADMINISTRATIVE - FARO

14.6.1 Summary

The General and Administrative costs incurred at the mine site and manpower requirements are summarized in Table 14.6-1.

CURRAGH RESOURCES CORPORATION

TABLE 14.6-1

GENERAL & ADMINISTRATIVE COSTS

FARO - SUMMARY

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Payroll -Salaries																		
Safety & Security	0	0	5	9	9	9	9	9	9	9	9	9	9	9	9	9	9	133
Purchasing & Warehousing	0	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	293
Townsite	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	69
General Manager's Account	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	160
Total Salaries	0	28	38	42	42	42	42	42	42	42	42	42	42	42	42	42	42	655
Payroll - Hourly																		
Safety & Security	0	0	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	167
Purchasing & Warehousing	0	8	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	342
Townsite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Manager's Account	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly	0	8	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	509
Supplies & Expenses																		
Safety & Security	0	0	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	188
Purchasing & Warehousing	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	283
Townsite	89	89	93	93	93	93	93	93	124	124	124	124	124	124	124	124	124	1,857
General Manager's Account	0	46	45	46	49	51	53	54	63	63	62	63	63	65	65	65	64	917
Total Supplies & Expenses	105	151	168	169	172	174	176	177	217	217	216	217	217	219	219	219	218	3,244
Total Faro G.& A.	105	187	238	244	247	249	251	252	292	292	291	292	292	294	294	294	293	4,408

CURRAGH RESOURCES CORPORATION

TABLE 14.6-1

GENERAL & ADMINISTRATIVE COSTS

FARO - SUMMARY

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Payroll -Salaries									
Safety & Security	23	110	110	110	110	110	110	110	793
Purchasing & Warehousing	73	220	220	220	220	220	220	220	1,613
Townsite	14	55	55	55	55	55	55	55	399
General Manager's Account	40	120	120	120	120	120	120	120	880
Total Salaries	150	505	505	505	505	505	505	505	3,685
Payroll - Hourly									
Safety & Security	33	133	133	133	133	133	133	133	966
Purchasing & Warehousing	74	268	268	268	268	268	268	268	1,949
Townsite	0	0	0	0	0	0	0	0	0
General Manager's Account	0	0	0	0	0	0	0	0	0
Total Hourly	108	401	401	401	401	401	401	401	2,915
Supplies & Expenses									
Safety & Security	38	150	150	150	150	150	150	150	1,088
Purchasing & Warehousing	83	200	200	200	200	200	200	200	1,483
Townsite	458	1,399	1,492	1,492	1,492	1,492	1,492	1,275	10,592
General Manager's Account	186	731	754	754	704	704	704	654	5,191
Total Supplies & Expenses	764	2,480	2,596	2,596	2,546	2,546	2,546	2,279	18,353
Total Faro G.& A.	1,022	3,386	3,502	3,502	3,452	3,452	3,452	3,185	24,953

14.6.2 Safety and Security

The staffing requirements of the Department are summarized below.

Position	Number of Employees
Salary	
Superintendent	1
Safety Officer	1
Hourly Rate	
Clerk	1
Security Officer	4
TOTAL	7

Supplies

Shown below are the total costs incurred during the years 1978-1981 to purchase safety supplies.

Year	Annual Cost $(000)
1978	$ 93
1979	150
1980	139
1981	193

Kilborn projects the annual costs of such supplies to be $150,000.

The projected departmental costs are shown in Table 14.6-2.

CURRAGH RESOURCES CORPORATION

TABLE 14.6-2

GENERAL & ADMINISTRATIVE COSTS

FARO - SAFETY & SECURITY

		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Faro - G.& A.																			
Safety & Security																			
Salaried Staff																			
Safety Superintendent		0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Safety Officer		0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total (No. of Staff)		0	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Average Cost		4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	
Salaries Cost	$(000)'s	0	0	5	9	9	9	9	9	9	9	9	9	9	9	9	9	9	133
Hourly	Rate/Hr																		
Clerk	$10.00	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Security Officer	$10.00	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Base @ 2184 Hrs/Year		0.000	0.000	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	9.100	136.500
Payroll Burden	22.00%	0.000	0.000	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	2.002	30.030
Hourly Cost	$(000)'s	0	0	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	167
Supplies																			
Supplies		0	0	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	188
Total -Safety & Security		0	0	28	33	33	33	33	33	33	33	33	33	33	33	33	33	33	487

CURRAGH RESOURCES CORPORATION

TABLE 14.6-2

GENERAL & ADMINISTRATIVE COSTS

FARO - SAFETY & SECURITY

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Faro - G.& A.										
Safety & Security										
Salaried Staff										
Safety Superintendent		1	1	1	1	1	1	1	1	
Safety Officer		0	1	1	1	1	1	1	1	
Total (No. of Staff)		1	2	2	2	2	2	2	2	
Average Cost		23	55	55	55	55	55	55	55	
Salaries Cost	$(000)'s	23	110	110	110	110	110	110	110	793
Hourly	Rate/Hr									
Clerk	$10.00	1	1	1	1	1	1	1	1	
Security Officer	$10.00	2	4	4	4	4	4	4	4	
Base @ 2184 Hrs/Year		27.300	109.200	109.200	109.200	109.200	109.200	109.200	109.200	
Payroll Burden	22.00%	6.006	24.024	24.024	24.024	24.024	24.024	24.024	24.024	
Hourly Cost	$(000)'s	33	133	133	133	133	133	133	133	966
Supplies										
Supplies		38	150	150	150	150	150	150	150	1,088
Total -Safety & Security		94	393	393	393	393	393	393	393	2,846

14.6.3 Purchasing/Warehousing

The Departmental staffing requirements are shown below.

Position	Number of Employees
Salaried	
Superintendent	1
Purchasing Agent/Expeditor	1
Inventory Control	1
Chief Warehouseman	1
Hourly Rate	
Senior Warehouseman	1
Warehouseman	5
Receiver	1
Clerk	2
TOTAL	13

Historial warehouse supply costs are shown below.

Year	Annual Cost $(000)
1978	$ 94
1979	136
1980	186
1981	363

Kilborn has included $200,000 per year to cover the costs of supplies, equipment rentals and other miscellaneous department expenses.

The projected departmental costs are shown in Table 14.6-3.

CURRAGH RESOURCES CORPORATION

TABLE 14.6-3

GENERAL & ADMINISTRATIVE COSTS

FARO - PURCHASING & WAREHOUSING

		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Purchasing & Warehousing																			
Salaried Staff																			
Superintendent		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Purchasing Agent/Expeditor		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Inventory Control		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Chief Warehouseman		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total (No. of Staff)		0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Average Cost		4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	
Salaries Cost		0	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	293
Hourly	Rate/Hr																		
Snr. Warehouseman	$12.70	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Warehouseman	$11.30	0	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Receiver	$11.30	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Clerks	$10.00	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Base @ 2184 Hrs/Year		0.000	6.188	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	18.291	280.553
Payroll Burden	22.00%	0.000	1.361	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	4.024	61.722
Hourly Cost		0	8	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	342
Supplies																			
Supplies		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	283
Total - Purchasing		17	43	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	919

CURRAGH RESOURCES CORPORATION

TABLE 14.6-3

GENERAL & ADMINISTRATIVE COSTS

FARO - PURCHASING & WAREHOUSING

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Purchasing & Warehousing										
Salaried Staff										
Superintendent		1	1	1	1	1	1	1	1	
Purchasing Agent/Expeditor		1	1	1	1	1	1	1	1	
Inventory Control		1	1	1	1	1	1	1	1	
Chief Warehouseman		1	1	1	1	1	1	1	1	
Total (No. of Staff)		3.2	4	4	4	4	4	4	4	
Average Cost		22.917	55.000	55.000	55.000	55.000	55.000	55.000	55.000	
Salaries Cost		73	220	220	220	220	220	220	220	1,613
Hourly	Rate/Hr									
Snr. Warehouseman	$12.70	1	1	1	1	1	1	1	1	
Warehouseman	$11.30	3	5	5	5	5	5	5	5	
Receiver	$11.30	1	1	1	1	1	1	1	1	
Clerks	$10.00	1	2	2	2	2	2	2	2	
Base @ 2184 Hrs/Year		61.061	219.492	219.492	219.492	219.492	219.492	219.492	219.492	1,598
Payroll Burden	22.00%	13.433	48.288	48.288	48.288	48.288	48.288	48.288	48.288	351
Hourly Cost		74	268	268	268	268	268	268	268	1,949
Supplies										
Supplies		83	200	200	200	200	200	200	200	1,483
Total - Purchasing		231	688	688	688	688	688	688	688	5,046

14.6.4 Faro Town Site

The town site costs summarized in Table 14.6-4 reflect the operating philosophies described in Section 7.8 of this Report.

(a) Salaries

A Municipal Affairs Manager will be employed by Curragh. An allowance of $55,000 per year is provided to cover his loaded salary.

(b) Wages

There will be no Maintenance personnel assigned to the Town. Secretarial services, as required by the Town Site Administrator will be provided by the clerical staff at the mine site.

(c) Maintenance Supplies

Provision is included in the budget for routine maintenance supplies and services required to maintain the remaining Company buildings in Faro.

A total annual allowance of $100,000 is provided for painting, flooring, janitorial services, electrical maintenance and routine supplies.

(d) Utilities/Power Fuel

An allowance of $49,000 per year is provided to cover the costs of utilities, power and heating fuel required to service those buildings owned by Curragh in Faro.

CURRAGH RESOURCES CORPORATION

TABLE 14.6-4

GENERAL & ADMINISTRATIVE COSTS

FARO - TOWNSITE

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Salaried Staff																		
Municipal Affairs Manager	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total (No. of Staff)	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Average Cost	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	4.583	
Salaries Cost	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	69
Other Costs																		
Vehicles	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	2.833
Maintenance Supplies (Including ......Painting, ..Flooring,....Janitorial, ..Electrical,..etc.)	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	8.333	141.667
Townsite Upgrading	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	57
Medical Subsidies	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	71
Utilities/Power/Fuel	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	13
Taxes	72	72	72	72	72	72	72	72	103	103	103	103	103	103	103	103	103	1,503
Total Other Costs	89	89	89	89	89	89	89	89	120	120	120	120	120	120	120	120	120	1,788
Total Townsite	89	89	93	93	93	93	93	93	124	124	124	124	124	124	124	124	124	1,857

CURRAGH RESOURCES CORPORATION

TABLE 14.6-4

GENERAL & ADMINISTRATIVE COSTS

FARO - TOWNSITE

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Salaried Staff										
Municipal Affairs Manager		1	1	1	1	1	1	1	1	
Total (No. of Staff)		1	1	1	1	1	1	1	1	
Average Cost		23	55	55	55	55	55	55	55	
Salaries Cost		14	55	55	55	55	55	55	55	399
Other Costs										
Vehicles		1	2	2	2	2	2	2	2	15
Maintenance Supplies (Including ......Painting, ..Flooring,....Janitorial, ..Electrical,..etc.)		42	100	100	100	100	100	100	100	742
Townsite Upgrading		17	40	40	40	40	40	40	40	297
Medical Subsidies		21	50	50	50	50	50	50	50	371
Utilities/Power/Fuel		4	9	9	9	9	9	9	9	67
Taxes		360	1,143	1,236	1,236	1,236	1,236	1,236	1,019	8,702
Total Other Costs		444	1,344	1,437	1,437	1,437	1,437	1,437	1,220	10,193
Total Townsite	0	458	1,399	1,492	1,492	1,492	1,492	1,492	1,275	10,592

(e) Medical Subsidy

Traditionally, Cyprus Anvil provided subsidies to certain medical facilities in Faro. It is assumed for this purpose that such programs would continue at a cost of $55,000 per year.

(f) Taxes

It is proposed that the mine site be included in the Faro tax base.

At a meeting convened between the Town and Cyprus Anvil on December 21st, 1984 a formula was established to determine the taxes which would be payable by the Company were its assets to be included in the Municipal tax base.

The calculations shown below are used to derive the Company's tax liability to the Town.

TOTAL TAX SUMMARY

Assessed Area	Annual Tax Liability $(000)
Mine Site - Operating Mode	$ 533
- Shutdown Mode	157
Town Site	705
Grum	2
TOTAL - MINE OPERATING	$ 1,240
TOTAL - MINE SHUTDOWN	$ 864

During the period of normal mine operations the mine and Grum taxes will constitute 43.1 percent of the total Municipal taxes. With the advent of the Vangorda Plateau Development, the value of the mine's assets will increase. The Company should negotiate with those concerned to establish a ceiling on the proportion of taxes paid by Curragh.

Mine Taxes

Mine Assessment When Operating	$ 73,991,000;
Assessment 1985 While Shutdown	$ 21,872,890.

Based upon the mill rate of $0.0072 per dollar of assessed value.

Taxes payable will be:

(a) When Operating - $ 73,991,000 x 0.0072 = $ 532,735
(b) When Shutdown - $ 21,872,890 x 0.0072 = $ 157,484

Town Site Taxes

Assessed Area	Value	Rate $ Value	Tax Payable
Property Taxes	$ 28,381,030 x	$ 0.0185	$ 525,049
Nonresidential Property	1,092,900 x	0.0155	16,939
Residential School Tax	28,381,000 x	0.0035	99,334
Nonresidential School Tax	1,092,900 x	0.0021	2,295
Frontage Tax			3,775
Arena Tax			57,730
TOTAL			$ 705,122

Grum Taxes

The Grum camp is currently contained within the Faro Town site boundaries.

The taxes are assessed as shown below.

Assessed Area	Value	Rate %/$ Value	Tax Payable
General Purpose Tax	$ 214,250	0.80	$ 1,715
School Tax	214,250	0.21	450
TOTAL			$ 2,165

(h) Multiple Residential and Specialized Units

The Company intends to sell the single persons quarters and apartment buildings to independent private individuals and businesses. The Company will not subsidize or in any way financially participate in the operation of these ventures.

(i) Housing

Housing units will be sold to employees. The Company will reserve the right of first refusal should the owner of a unit wish to sell the property. The amount the Company will offer to the employee will be contingent upon the condition of the unit and the employee's years of service. By so doing, the actual cost of owning the home may be structured to be equivalent to the expenditures which an employee would otherwise make were he renting housing accommodations on a non-subsidized basis.

The details of such a program are beyond the Scope of this Report. It is important to emphasize however, that the employee will be the owner of the housing unit and will register a mortgage with a financial institution. All costs associated with home, maintenance, utilities, fuel and power supply will be to the direct account of the employee.

In view of the proposed buy-back provision, monies received by the Company for the sale of housing units will be placed in trust to be used for future house purchases. For the purpose of this Report, no allowance is included in the operating cash flows for such funds. Similarly, the selling prices for the houses, though yet to be determined, will not affect Kilborn's operating cost projections.

Houses surplus to the Company's needs will be sold with no buy-back provisions. Subject to the finalization of manpower plans for the Faro pit and Vangorda Plateau Operations no accurate estimate of the numbers of surplus accommodations is available.

Funds received from the sale of multiple residential units and houses will be used to retire outstanding mortgages.

14.6.5 General Manager's Account

Kilborn's projected costs to this Account are provided in Table 14.6-5.

Personnel charged to this Account include only the General Manager and the Executive Secretary.

It is assumed that the above personnel or consultants acting on an interim basis will be working by August 1st, 1985.

Area of Expense - General Manager - Legal Fees/Audit

For the purpose of this Report, it is assumed that all legal fees and audit expenses will be charged to and paid by the Head Office in Whitehorse.

Area of Expense - General Manager - Insurance

Insurance expenses incurred by the Faro Operations and the Whitehorse Office will all be charged to, and paid by the Whitehorse Office.

Area of Expense - General Manager - Road Maintenance

For this Report, it is assumed that the maintenance of the road between the mine site and the Town of Faro will be performed by the Territorial Government and that the costs of such work will not be to Curragh's Account. In the past, Cyprus Anvil contracted out the work and absorbed the total cost.

CURRAGH RESOURCES CORPORATION

TABLE 14.6-5

GENERAL & ADMINISTRATIVE COSTS

FARO - GENERAL MANAGER'S ACCOUNT

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Payroll -Salaries																		
General Manager	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
Executive Secretary	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
Total (No. of Staff)	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	32
Average Cost	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	85
Salaries Cost	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	160
Supplies & Expenses																		
Office Supplies	0	5	6	6	7	6	6	7	13	13	14	13	13	14	13	13	14	163
Travel	0	5	3	3	4	3	3	4	4	4	4	4	4	4	4	4	4	61
Equipment Rental	0	0	3	3	4	6	6	7	7	7	7	7	7	7	7	7	7	92
Legal Fees	Included in Whitehorse G.& A. Costs						0	0	0	0	0	0	0	0	0	0	0	0
Memberships	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	11
Communications	0	10	10	10	10	16	16	16	16	16	16	16	16	16	16	16	16	232
Building Expenses	0	3	2	2	1	2	2	1	2	2	1	2	2	1	2	2	1	28
Bank Charges	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	13
Consultants	0	20	13	13	14	10	10	8	8	8	8	8	8	8	8	8	8	160
Public Relations	0	0	6	6	7	6	6	7	8	8	8	8	9	10	10	10	10	119
Insurance	Included in Whitehorse G.& A. Costs						0	0	0	0	0	0	0	0	0	0	0	0
Recreation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scholarships	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	10
Property Tax	Included in Townsite Costs					0	0	0	0	0	0	0	0	0	0	0	0	0
Guest House	0	3	2	2	1	2	2	1	2	2	1	2	1	2	2	2	1	28
Total Supplies & Expenses	0	46	45	46	49	51	53	54	63	63	62	63	63	65	65	65	64	917
Total General Managers Account	0	56	55	56	59	61	63	64	73	73	72	73	73	75	75	75	74	1,077

CURRAGH RESOURCES CORPORATION

TABLE 14.6-5

GENERAL & ADMINISTRATIVE COSTS

FARO - GENERAL MANAGER'S ACCOUNT

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Payroll -Salaries										
General Manager		1	1	1	1	1	1	1	1	
Executive Secretary		1	1	1	1	1	1	1	1	
Total (No. of Staff)		1.6	2	2	2	2	2	2	2	
Average Cost		25	60	60	60	60	60	60	60	
Salaries Cost		40	120	120	120	120	120	120	120	880
Supplies & Expenses										
Office Supplies		24	139	160	160	160	160	160	160	1123
Travel		15	46	50	50	50	50	50	50	361
Equipment Rental		10	82	80	80	80	80	80	80	572
Legal Fees		0	0	Included in Whitehorse G.& A. Costs			0	0	0	0
Memberships		0	11	10	10	10	10	10	10	71
Communications		40	192	200	200	200	200	200	200	1432
Building Expenses		8	20	20	20	20	20	20	20	148
Bank Charges		2	11	10	10	10	10	10	10	73
Consultants		60	100	100	100	50	50	50	0	510
Public Relations		19	100	100	100	100	100	100	100	719
Insurance		0	0	Included in Whitehorse G.& A. Costs			0	0	0	0
Recreation		0	0	0	0	0	0	0	0	0
Scholarships		0	10	4	4	4	4	4	4	34
Property Tax		0	0	Included in Townsite Costs				0	0	0
Guest House		8	20	20	20	20	20	20	20	148
Total Supplies & Expenses		186	731	754	754	704	704	704	654	5,191
Total General Managers Account	0	226	851	874	874	824	824	824	774	6,071

Area of Expense - General Manager - Recreation

Cyprus Anvil currently owns the Recreation Centre. Historically, the Company spent between $200,000 and $300,000 per year to pay for the salaries/wages of certain 'Recreation Centre' employees and to cover the operating expenses of the building.

It is now proposed that ownership of the Recreation Centre be transferred to the Town of Faro. Thereafter, the taxpayers of Faro will be responsible for the cost of operating and maintaining the facility. Accordingly, no expenditures will be charged to this Account.

Area of Expense - General Manager - Bus Transportation

The transportation of employees between the mine site and Faro has been performed by a local bus line paid for entirely by Cyprus Anvil.

It is proposed that this benefit cease and that employees provide their own means of transportation to the mine site.

Area of Expense - General Manager - Employee Suggestion Awards

Prior to the cessation of operations Cyprus Anvil used a system of financial incentives to encourage employees to submit suggestions designed to improve productivity or the safety of the workplace. This program enjoyed limited success and consumed a disproportionate amount of management's time. It is recommended that alternative plans be used to earn the commitment and enthusiastic support of the employees. Provision for such programs has not been included in these preliminary budget cost estimates.

Area of Expense - General Manager - Property Tax

It is proposed that the mine site be included in the Faro Town Site Municipal boundary and that no property taxes will be paid to the Yukon Government. Projected Municipal taxes are shown in the 'Town Site Account'.

14.7 GENERAL AND ADMINISTRATIVE - WHITEHORSE

14.7.1 Summary

The General and Administrative cost forecasts are summarized in Table 14.7-1. The significant costs which will be expended to recruit the new Operating Crew are included in Personnel Department cost projections.

CURRAGH RESOURCES CORPORATION

TABLE 14.7-1

GENERAL & ADMINISTRATIVE COSTS

SUMMARY $(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Summary																		
G & A -Payroll	14	98	161	177	188	193	193	193	193	193	193	193	193	193	193	193	193	2,954
G & A -Materials & Expenses	294	547	975	717	500	501	505	621	531	495	500	496	496	498	497	497	496	9,166
-Total	308	645	1,137	893	688	694	698	814	724	688	693	689	689	691	691	691	690	12,120
Whitehorse																		
-Payroll -Salaries	11	54	76	87	98	103	103	103	103	103	103	103	103	103	103	103	103	1,560
-Payroll -Hourly	3	8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	231
-Supplies & Expenses	63	271	683	423	203	203	204	319	189	154	160	154	154	154	154	154	154	3,796
-Toronto G.& A.	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	2,125
Total	202	458	898	649	441	445	447	562	432	396	402	397	397	397	397	397	397	7,712
Faro																		
-Payroll -Salaries	0	28	38	42	42	42	42	42	42	42	42	42	42	42	42	42	42	655
-Payroll -Hourly	0	8	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	509
-Supplies & Expenses	105	151	168	169	172	174	176	177	217	217	216	217	217	219	219	219	218	3,244
Total	105	187	238	244	247	249	251	252	292	292	291	292	292	294	294	294	293	4,408

CURRAGH RESOURCES CORPORATION

TABLE 14.7-1

GENERAL & ADMINISTRATIVE COSTS

SUMMARY $(000)'s

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Summary									
G & A -Payroll	638	2,317	2,317	2,317	2,317	2,317	2,317	2,317	16,856
G & A -Materials & Expenses	3,033	6,133	5,897	5,845	5,782	5,767	5,742	5,448	43,645
-Total	3,670	8,450	8,214	8,161	8,098	8,083	8,059	7,765	60,501
Whitehorse									
-Payroll -Salaries	325	1,235	1,235	1,235	1,235	1,235	1,235	1,235	8,970
-Payroll -Hourly	55	176	176	176	176	176	176	176	1,286
-Supplies & Expenses	1,644	2,153	1,801	1,749	1,736	1,721	1,696	1,669	14,167
-Toronto G.& A.	625	1,500	1,500	1,500	1,500	1,500	1,500	1,500	11,125
Total	2,648	5,064	4,712	4,659	4,646	4,631	4,607	4,580	35,548
Faro									
-Payroll -Salaries	150	505	505	505	505	505	505	505	3,685
-Payroll -Hourly	108	401	401	401	401	401	401	401	2,915
-Supplies & Expenses	764	2,480	2,596	2,596	2,546	2,546	2,546	2,279	18,353
Total	1,022	3,386	3,502	3,502	3,452	3,452	3,452	3,185	24,953

14.7.2 Manpower Requirements and Payroll Costs

Table 14.7-2 indicates the proposed requirements by month until the end of 1986 and for the duration of the mine life respectively. The weighted average loaded salary of the Whitehorse staff is assumed to be $70,000 per year.

CURRAGH RESOURCES CORPORATION

TABLE 14.7-2

GENERAL & ADMINISTRATIVE COSTS

WHITEHORSE PAYROLL

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Whitehorse - Payroll										
Salaries										
President		1	1	1	1	1	1	1	1	
Executive Secretary		1	1	1	1	1	1	1	1	
Controller		0.8	1	1	1	1	1	1	1	
Chief Accountant		0.8	1	1	1	1	1	1	1	
Accountants		1.8	3	3	3	3	3	3	3	
Manager of Personnel		0.8	1	1	1	1	1	1	1	
Recruiting Officer		0.8	1	1	1	1	1	1	1	
Personnel Secretary		0.8	1	1	1	1	1	1	1	
Personnel Officers (Faro)		0.6	2	2	2	2	2	2	2	
Manager Development		0.8	1	1	1	1	1	1	1	
Senr.Development Eng.		0.8	1	1	1	1	1	1	1	
Development Eng.		0.2	1	1	1	1	1	1	1	
Exploration Geologist		0.8	2	2	2	2	2	2	2	
Computer Applications Eng.		0.4	1	1	1	1	1	1	1	
Manager Environment		0.6	1	1	1	1	1	1	1	
Total (No. of Staff)		12	19	19	19	19	19	19	19	
Average Cost		27,083	65,000	65,000	65,000	65,000	65,000	65,000	65,000	
Salaries Cost	$(000)'s	325	1,235	1,235	1,235	1,235	1,235	1,235	1,235	8,970
Hourly	Rate/Hr									
Accountg.Clerk W/H	$11.30	2.8	4	4	4	4	4	4	4	
Accountg.ClerkFaro	$10.00	0.6	1	1	1	1	1	1	1	
Environment Techn.	$14.10	1	1	1	1	1	1	1	1	
Base @ 2080 Hrs/Year		44,841	144,144	144,144	144,144	144,144	144,144	144,144	144,144	
Payroll Burden	22.00%	9,865	31,712	31,712	31,712	31,712	31,712	31,712	31,712	
Hourly Cost	$(000)'s	55	176	176	176	176	176	176	176	1,286

CURRAGH RESOURCES CORPORATION

TABLE 14.7-2

GENERAL & ADMINISTRATIVE COSTS

WHITEHORSE PAYROLL

		Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Whitehorse - Payroll																			
Salaries																			
President		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Executive Secretary		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Controller		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Chief Accountant		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Accountants		0	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Manager of Personnel		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Recruiting Officer		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Personnel Secretary		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Personnel Officers (Faro)		0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	
Manager Development		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Senr.Development Eng.		0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Development Eng.		0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	
Exploration Geologist		0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
Computer Applications Eng.		0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Manager Environment		0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Total (No. of Staff)		2	10	14	16	18	19	19	19	19	19	19	19	19	19	19	19	19	
Average Cost		5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	5,417	
Salaries Cost	$(000)'s	11	54	76	87	98	103	103	103	103	103	103	103	103	103	103	103	103	1,560
Hourly	Rate/Hr																		
Accountg.Clerk W/H	$11.30	0	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Accountg.ClerkFaro	$10.00	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Environment Techn.	$14.10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Base @ 2080 Hrs/Year		2,444	6,361	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	12,012	
Payroll Burden	22.00%	538	1,399	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	2,643	
Hourly Cost	$(000)'s	3	8	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	231

14.7.3 Supplies and Expenses

(a) General

Table 14.7-3 indicates the 'supplies and expenses' budget for the Whitehorse Office. Insurance premiums, legal fees and the costs of audits which traditionally were paid by the Faro Operations (Resident Manager's Account) are now consolidated with projected Whitehorse costs and shown in this Account.

In general, these cost projections are based upon historical data. The magnitude of the recruiting costs however is sufficiently large to justify a detailed review of these expenses.

No costs are included in Kilborn's cash flows to provide for the abandonment of the property. It is assumed that, upon the exhaustion of the Faro pit reserves, ores from the Vangorda Plateau Deposits will be available to sustain ongoing milling operations. It should be emphasized also that no expenditures have been included by Kilborn to reflect the development of the Grum and Vangorda properties during the life of the Faro pit. Kilborn is advised that funds required for such purposes will be secured through independent financing arrangements.

CURRAGH RESOURCES CORPORATION

TABLE 14.7-3

GENERAL & ADMINISTRATIVE COSTS

WHITEHORSE SUPPLIES & EXPENSE

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Whitehorse - Supplies & Expenses																		
Corporate																		
Travel	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	67
Legal & Audit	0	17	22	22	22	17	17	17	17	17	17	17	17	17	17	17	17	283
Memberships	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	28
Insurance	0	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	533
Office Rental	0	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	107
Consultants	0	8	11	11	11	8	8	8	8	8	8	8	8	8	8	8	8	142
Communications	0	0	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	188
General Expenses	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	133
Total Corporate	0	79	101	101	101	92	92	92	92	92	92	92	92	92	92	92	92	1,481
Personnel																		
Recruiting Costs	34	163	553	293	74	69	70	185	55	20	26	20	20	20	20	20	20	1,665
General Supplies	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	58
Total Personnel	37	165	556	296	76	73	74	189	59	24	30	24	24	24	24	24	24	1,722
Accounting																		
Computer Services	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	213
General Supplies	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	71
Total Accounting	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	283
Development																		
Development	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	142
Environmental Control																		
Supplies	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	18
Consulting	0	0	0	0	0	13	13	13	13	13	13	13	13	13	13	13	13	150
Total Environment Control	2	2	2	2	2	13	13	13	13	13	13	13	13	13	13	13	13	168
Toronto G.& A.																		
Toronto	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	2,125
Total Supplies & Expenses	188	396	808	548	328	328	329	444	314	279	285	279	279	279	279	279	279	5,921

CURRAGH RESOURCES CORPORATION

TABLE 14.7-3

GENERAL & ADMINISTRATIVE COSTS

WHITEHORSE SUPPLIES & EXPENSE

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Whitehorse - Supplies & Expenses										
Corporate										
Travel		17	50	50	50	50	50	50	50	367
Legal & Audit		83	200	200	200	200	200	200	200	1,483
Memberships		8	20	20	20	20	20	20	20	148
Insurance		133	400	400	400	400	400	400	400	2,933
Office Rental		27	80	80	80	80	80	80	80	587
Consultants		42	100	100	100	100	100	100	100	742
Communications		38	150	150	150	150	150	150	150	1,088
General Expenses		33	100	100	100	100	100	100	100	733
Total Corporate		381	1,100	1,100	1,100	1,100	1,100	1,100	1,100	8,081
Personnel										
Recruiting Costs	0	1,117	548	246	244	231	216	191	164	2,955
General Supplies		13	45	45	45	45	45	45	45	328
Total Personnel	0	1,129	593	291	289	276	261	236	209	3,283
Accounting										
Computer Services		63	150	150	150	150	150	150	150	1,113
General Supplies		21	50	50	50	50	50	50	50	371
Total Accounting		83	200	200	200	200	200	200	200	1,483
Development										
Development		42	100	100	100	100	100	100	100	742
Environmental Control										
Supplies		8	10	10	10	10	10	10	10	78
Consulting		0	150	100	50	50	50	50	50	500
Total Environment Control		8	160	110	60	60	60	60	60	578
Toronto G.& A.										
Toronto		625	1,500	1,500	1,500	1,500	1,500	1,500	1,500	11,125
Total Supplies & Expenses	0	2,269	3,653	3,301	3,249	3,236	3,221	3,196	3,169	25,292

(b) Recruiting Costs

Kilborn's projected turnover statistics are shown below.

Classification	Annual Turnover
Salaried	15 Percent
Hourly Paid	33 Percent

The costs incurred to recruit, salaried staff, Office and Technical workers and Production personnel shown below, are based upon recent analyses conducted by Cyprus Anvil.

Staff Recruiting Costs

Summary

Item	$/Staff Employee
Placement Agency	$ 8,000
Interview Costs	3,000
Transportation	10,000
Medical Examination	100
TOTAL	$ 21,100

This cost is reduced by 30 percent to reflect the filling of job vacancies by internal promotions.

Placement Agency Costs

It is assumed that staff members are hired using the services of a placement agency which charges a commission equal to 20 percent of the staff member's first year's salary. Based upon an average staff salary of $40,000 per annum, placement agency costs will average $8,000 per staff member hired.

Interview Costs

An allowance of $3,000 per staff member is provided to cover the costs incurred in bringing potential staff members, and their spouses to Faro for interview purposes.

Movement of Personal Effects

Based upon historical data, the average cost to move a staff member, his family and personnel effect to Faro is $10,000.

Pre-Employment Medical Examination

The average cost of a pre-employment medical examination is $100.

Office and Technical Workers

Summary

Item	$/Staff Employee
Advertising	$ 3,000
Interview Costs	3,000
Transportation Assistance	2,000
Medical Examination	100
TOTAL	$ 8,100

This cost is reduced by 20 percent to reflect the filling of job vacancies by internal promotions.

Advertising

The average cost of recruiting advertisements is reported to be $3,000 per employee hired.

Interview Costs

$3,000 per employee, as for staff.

Transportation Assistance

An allowance of $2,000 per employee hired is provided to each Office and Technical Worker to assist him in the movement of his/her family and personal effects.

Pre-Employment Medical Examination

The average cost of a pre-employment medical examination is $100.

Operating and Maintenance Workers

An allowance of $500 per employee is included to cover the costs of advertising, medical examination and the transportation of tool boxes.

For the purpose of this Report a weighted average recruting cost of $11,400 per employee is used for each Salaried and Technical employee hired by Curragh. A recruting cost of $500 per new hire is used for Production and Maintenance workers.

Tables 4.7-4 to 4.7-6 are used to derive total recruiting costs based upon the proposed Manpower Schedule and Kilborn's assumed turnover rates.

CURRAGH RESOURCES CORPORATION

TABLE 14.7-4

GENERAL & ADMINISTRATIVE COSTS

RECRUITING COSTS - MINE

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Salaried Staff																		
Manpower at start of period	0	0	0	26	41	41	41	41	41	41	41	41	41	41	41	41	41	0
Manpower at end of period	0	0	26	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
Manpower increase over period	0	0	26	15	0	0	0	0	0	0	0	0	0	0	0	0	0	41
Turnover rate :15% per year	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	21.25%
Turnover replacement recruits	0.00	0.00	0.00	0.33	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	6.99
Total recruits over period	0.00	0.00	26.00	15.33	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	47.99
Avg.Recruiting cost per person	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400
Recruiting cost-$(000)'s	$0.00	$0.00	$296.40	$174.71	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$5.84	$547.06
Hourly Paid Personnell																		
Manpower at start of period	0	0	0	100	150	177	181	216	220	220	220	232	232	232	223	223	223	0
Manpower at end of period	0	0	100	150	177	181	216	220	220	220	232	232	232	223	223	223	223	223
Manpower increase over period	0	0	100	50	27	4	35	4	0	0	12	0	0	0	0	0	0	232
Turnover rate :33% per year	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	46.75%
Turnover replacement recruits	0.00	0.00	0.00	2.75	4.13	4.87	4.98	5.94	6.05	6.05	6.05	6.38	6.38	6.38	6.13	6.13	6.13	78.35
Total recruits over period	0.00	0.00	100.00	52.75	31.13	8.87	39.98	9.94	6.05	6.05	18.05	6.38	6.38	6.38	6.13	6.13	6.13	310.35
Recruiting cost per person	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Recruiting cost-$(000)'s	$0.00	$0.00	$50.00	$26.38	$15.56	$4.43	$19.99	$4.97	$3.03	$3.03	$9.03	$3.19	$3.19	$3.19	$3.07	$3.07	$3.07	$155.17
Total recruiting costs -$(000)'s	$0.00	$0.00	$346.40	$201.08	$21.41	$10.28	$25.83	$10.81	$8.87	$8.87	$14.87	$9.03	$9.03	$9.03	$8.91	$8.91	$8.91	$702.23

CURRAGH RESOURCES CORPORATION

TABLE 14.7-4

GENERAL & ADMINISTRATIVE COSTS

RECRUITING COSTS - MINE

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Salaried Staff									
Manpower at start of period	0	41	41	41	38	33	24	12	0
Manpower at end of period	41	41	41	38	33	24	12	6	6
Manpower increase over period	41	0	0	0	0	0	0	0	41
Turnover rate :15% per year	6.25%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	
Turnover replacement recruits	0.84	6.15	6.15	6.15	5.64	4.95	3.60	1.80	35.27
Total recruits over period	41.84	6.15	6.15	6.15	5.64	4.95	3.60	1.80	76.27
Avg.Recruiting cost per person	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400
Recruiting cost-$(000)'s	$476.948	$70.110	$70.110	$70.110	$64.268	$56.430	$41.021	$20.520	$869.516
Hourly Paid Personnell									
Manpower at start of period	0	177	223	225	182	139	82	43	0
Manpower at end of period	177	223	225	182	139	82	43	28	28
Manpower increase over period	177	55	2	0	0	0	0	0	234
Turnover rate :33% per year	13.75%	33.00%	33.00%	33.00%	33.00%	33.00%	33.00%	33.00%	
Turnover replacement recruits	6.88	71.47	73.59	74.25	60.01	45.87	27.12	14.19	373.37
Total recruits over period	183.88	126.47	75.59	74.25	60.01	45.87	27.12	14.19	607.37
Recruiting cost per person	$500	$500	$500	$500	$500	$500	$500	$500	$500
Recruiting cost-$(000)'s	$91.938	$63.236	$37.795	$37.125	$30.003	$22.935	$13.561	$7.095	$303.687
Total recruiting costs -$(000)'s	$568.885	$133.346	$107.905	$107.235	$94.270	$79.365	$54.582	$27.615	$1,173.204

GENERAL & ADMINISTRATIVE COSTS RECRUITING COSTS - MILL

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Salaried & Technical Employees																		
Manpower at start of period	0	0	0	11	13	15	18	21	33	36	36	36	36	36	36	36	36	0
Manpower at end of period	0	0	11	13	15	18	21	33	36	36	36	36	36	36	36	36	36	36
Manpower increase over period	0	0	11	2	2	3	3	12	3	0	0	0	0	0	0	0	0	36
Turnover rate :15% per year	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	21.25%
Turnover replacement recruits	0.00	0.00	0.00	0.14	0.16	0.19	0.23	0.26	0.41	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	4.99
Total recruits over period	0.00	0.00	11.00	2.14	2.16	3.19	3.23	12.26	3.41	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	40.99
Avg.Recruiting cost per person	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400
Recruiting cost-$(000)'s	$0.00	$0.00	$125.40	$24.37	$24.65	$36.34	$36.77	$139.79	$38.90	$5.13	$5.13	$5.13	$5.13	$5.13	$5.13	$5.13	$5.13	$467.26
Hourly Paid Personnell																		
Manpower at start of period	0	0	0	7	67	49	61	66	125	128	128	128	128	128	128	128	128	0
Manpower at end of period	0	0	7	67	49	61	66	125	128	128	128	128	128	128	128	128	128	128
Manpower increase over period	0	0	7	60	0	12	5	59	3	0	0	0	0	0	0	0	0	146
Turnover rate :33% per year	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	46.75%
Turnover replacement recruits	0.00	0.00	0.00	0.19	1.84	1.35	1.68	1.82	3.44	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	38.47
Total recruits over period	0.00	0.00	7.00	60.19	1.84	13.35	6.68	60.82	6.44	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	184.47
Recruiting cost per person	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Recruiting cost-$(000)'s	$0.00	$0.00	$3.50	$30.10	$0.92	$6.67	$3.34	$30.41	$3.22	$1.76	$1.76	$1.76	$1.76	$1.76	$1.76	$1.76	$1.76	$92.24
Total recruiting costs -$(000)'s	$0.00	$0.00	$128.90	$54.46	$25.57	$43.01	$40.10	$170.20	$42.12	$6.89	$6.89	$6.89	$6.89	$6.89	$6.89	$6.89	$6.89	$559.49

CURRAGH RESOURCES CORPORATION

TABLE 14.7-5

GENERAL & ADMINISTRATIVE COSTS

RECRUITING COSTS - MILL

	1985	1986	1987	1988	1989	1990	1991	1992	Total
Salaried & Technical Employees									
Manpower at start of period	0	15	36	36	36	36	36	36	0
Manpower at end of period	15	36	36	36	36	36	36	36	36
Manpower increase over period	15	21	0	0	0	0	0	0	36
Turnover rate :15% per year	6.25%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	
Turnover replacement recruits	0.30	4.69	5.40	5.40	5.40	5.40	5.40	5.40	37.39
Total recruits over period	15.30	25.69	5.40	5.40	5.40	5.40	5.40	5.40	73.39
Avg.Recruiting cost per person	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400
Recruiting cost-$(000)'s	$174.420	$292.838	$61.560	$61.560	$61.560	$61.560	$61.560	$61.560	$836.618
Hourly Paid Personnell									
Manpower at start of period	0	49	128	133	133	133	133	133	0
Manpower at end of period	49	128	133	133	133	133	133	133	133
Manpower increase over period	67	79	5.224	0	0	0	0	0	151.224
Turnover rate :33% per year	13.75%	33.00%	33.00%	33.00%	33.00%	33.00%	33.00%	33.00%	
Turnover replacement recruits	2.04	36.44	42.24	43.96	43.96	43.96	43.96	43.96	300.53
Total recruits over period	69.04	115.44	47.46	43.96	43.96	43.96	43.96	43.96	451.76
Recruiting cost per person	$500	$500	$500	$500	$500	$500	$500	$500	$500
Recruiting cost-$(000)'s	$34.518	$57.719	$23.732	$21.982	$21.982	$21.982	$21.982	$21.982	$225.878
Total recruiting costs -$(000)'s	$208.938	$350.556	$85.292	$83.542	$83.542	$83.542	$83.542	$83.542	$1,062.496

CURRAGH RESOURCES CORPORATION

TABLE 14.7-6

GENERAL & ADMINISTRATIVE COSTS

RECRUITING COSTS - G.& A.

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Salaried Staff																		
Manpower at start of period	0	3	17	23	26	28	29	29	29	29	29	29	29	29	29	29	29	0
Manpower at end of period	3	17	23	26	28	29	29	29	29	29	29	29	29	29	29	29	29	29
Manpower increase over period	3	14	6	3	2	1	0	0	0	0	0	0	0	0	0	0	0	29
Turnover rate :15% per year	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	1.25%	21.25%
Turnover replacement recruits	0.00	0.04	0.21	0.29	0.33	0.35	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	5.20
Total recruits over period	3.00	14.04	6.21	3.29	2.33	1.35	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	34.20
Avg.Recruiting cost per person	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400
Recruiting cost-$(000)'s	$34.20	$160.03	$70.82	$37.48	$26.51	$15.39	$4.13	$4.13	$4.13	$4.13	$4.13	$4.13	$4.13	$4.13	$4.13	$4.13	$4.13	$389.88
Hourly Paid Personnell																		
Manpower at start of period	0	0	5	19	19	19	19	19	19	19	19	19	19	19	19	19	19	0
Manpower at end of period	0	5	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Manpower increase over period	0	5	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
Turnover rate :33% per year	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	46.75%
Turnover replacement recruits	0.00	0.00	0.14	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	7.45
Total recruits over period	0.00	5.00	14.14	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	26.45
Recruiting cost per person	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500
Recruiting cost-$(000)'s	$0.00	$2.50	$7.07	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$13.23
Total recruiting costs -$(000)'s	$34.20	$162.53	$77.89	$37.74	$26.77	$15.65	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$4.39	$403.11
Grand Total Recruiting Costs	34	163	553	293	74	69	70	185	55	20	26	20	20	20	20	20	20	1,665

CURRAGH RESOURCES CORPORATION

TABLE 14.7-6

GENERAL & ADMINISTRATIVE COSTS

RECRUITING COSTS - G.& A.

		1985	1986	1987	1988	1989	1990	1991	1992	Total
Salaried Staff										
Manpower at start of period		0	28	29	29	29	29	29	29	0
Manpower at end of period		28	29	29	29	29	29	29	29	29
Manpower increase over period		28	1	0	0	0	0	0	0	29
Turnover rate :15% per year		6.25%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	
Turnover replacement recruits		0.86	4.34	4.35	4.35	4.35	4.35	4.35	4.35	31.30
Total recruits over period		28.86	5.34	4.35	4.35	4.35	4.35	4.35	4.35	60.30
Avg.Recruiting cost per person		$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400	$11,400
Recruiting cost-$(000)'s		$329.033	$60.848	$49.590	$49.590	$49.590	$49.590	$49.590	$49.590	$687.420
Hourly Paid Personnell										
Manpower at start of period		0	19	19	19	19	19	19	19	0
Manpower at end of period		19	19	19	19	19	19	19	19	19
Manpower increase over period		19	0	0	0	0	0	0	0	19
Turnover rate :33% per year		13.75%	33.00%	33.00%	33.00%	33.00%	33.00%	33.00%	33.00%	
Turnover replacement recruits		1.18	6.27	6.27	6.27	6.27	6.27	6.27	6.27	45.07
Total recruits over period		20.18	6.27	6.27	6.27	6.27	6.27	6.27	6.27	64.07
Recruiting cost per person		$500	$500	$500	$500	$500	$500	$500	$500	$500
Recruiting cost-$(000)'s		$10.091	$3.135	$3.135	$3.135	$3.135	$3.135	$3.135	$3.135	$32.036
Total recruiting costs -$(000)'s	$0.00	$339.12	$63.98	$52.73	$52.73	$52.73	$52.73	$52.73	$52.73	$719.46
Grand Total Recruiting Costs	0	1,117	548	246	244	231	216	191	164	2,955

14.8 TRANSPORTATION COSTS

The unit transportation costs are reviewed in Section 8.0 of this Report and are summarized below for completeness.

TABLE 14.8-1

OUTBOUND FREIGHT COSTS

Area of Expense	$/WMT Concentrate
Outbound	
Trucking - Mine Site to Skagway	$ 38.00
- Road Maintenance Allowance	1.00
Terminal	
User's Cost	6.00
Concentrate Sales Expense ($1.50 U.S.)	2.00
Ocean Freight ($17.00 U.S.)	22.67
TOTAL	$ 69.67

Inbound freight costs are derived in Table 14.8-2.

The $6.00 per WMT terminal charge includes an allowance for the cost of ownership.

TABLE 14.8-2

INBOUND FREIGHT COSTS

Area of Expense	$/Tonne Concentrate
Vancouver to Skagway	$ 28.50
Skagway Terminal	6.00
Skagway to Mine Site	12.00
TOTAL INBOUND FREIGHT COST	$ 46.50

Estimated Annual Mill Freight Movement - 27,000 Tonnes

ANNUAL INBOUND FREIGHT COST - $ 1,255,500

The costs of general supplies are based upon historical values, which include freight costs. The costs of fuel, explosives and tires are quoted and applied on an fob mine site basis. It is reasonable, therefore, to apply the backhaul costs only to the mill supplies, estimated to be 27,000 tonnes per year.

15.0 CAPITAL COST BUDGET

15.0 CAPITAL COST BUDGET

Capital equipment items are described in each Section of this Report.

In the interests of highlighting certain major expenditures, Kilborn identified a number of projects and equipment purchases as Capital Expenditures. Other capital items are not identified as such in the cash flow statements. The costs associated with routine maintenance, the refurbishing of existing equipment and the demothballing of facilities are all considered to be preproduction operating expenses. It must be emphasized that Kilborn has given no consideration to the financial implications of such categorization. For this purpose, certain capital equipment items are shown simply to indicate the magnitude and timing of significant Project costs. Table 15.0-1 lists selected capital equipment items included in Kilborn's cash flow forecasts.

Prior to the commencement of operations, it will be necessary to replace 11 pick-up trucks. In addition, 3 new 5-ton chassis will be required.

Having inspected Cyprus Anvil's monthly tire reports, Kilborn concurs with others that the cost of a gravel crusher could be readily justified.

A water diversion ditch was constructed by Cyprus Anvil to minimize the influx of water into the pit, over and through the northeast wall. The ditch, although lined with a plastic membrane, has not proved effective. It is proposed to construct a steel flume within the existing ditch to minimize the serious slope stability problems currently experienced due to the pressure of water behind the pit wall. The installed cost of the flume is estimated to be $250,000 which is included in Section 4.8-5 of this Report.

Allowances of $500,000 and 1,500,000 are provided in 1985 and 1986, respectively, to remove large volumes of gravel along the rim of the

CURRAGH RESOURCES CORPORATION

TABLE 15.0-1

CAPITAL COSTS

(000)'s

	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Total
Capital Cost Schedule-Mine																		
Light vehicle replacement	0	0	0	0	0	70	70	80	0	0	0	0	0	0	0	0	0	220
Gravel crusher	0	0	70	85	70	0	0	0	0	0	0	0	0	0	0	0	0	225
Pit slope unloading	0	0	150	150	200	200	200	200	100	100	100	100	100	100	100	100	100	2,000
Computer systems	0	0	15	20	15	0	0	0	0	0	0	0	0	0	0	0	0	50
Vehicle plug-ins	0	0	50	50	0	0	0	0	0	0	0	0	0	0	0	0	0	100
Haulage truck radios	0	0	10	10	10	10	10	10	0	0	0	0	0	0	0	0	0	60
Total mine capital costs	0	0	295	315	295	280	280	290	100	100	100	100	100	100	100	100	100	2,655
Capital Cost Schedule-Mill																		
Bulk reagent recieving station	0	0	0	0	0	200	250	250	0	0	0	0	0	0	0	0	0	700
Capital Cost Schedule-Other																		
Water reservoir	0	0	100	150	150	200	200	250	250	250	250	0	0	0	0	0	0	1,800
Tailings impoundment	0	0	0	0	0	100	100	205	200	200	200	200	200	187	0	0	0	1,592
Total other capital costs	0	0	100	150	150	300	300	455	450	450	450	200	200	187	0	0	0	3,392
Sustaining Capital	0	0	0	0	0	42	42	42	42	42	42	42	42	42	42	42	42	500
Total Capital	0	0	395	465	445	822	872	1,037	592	592	592	342	342	329	142	142	142	7,247

CURRAGH RESOURCES CORPORATION

TABLE 15.0-1

CAPITAL COSTS

	1985	1986	1987	1988	1989	1990	1991	1992	Total
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Capital Cost Schedule-Mine					(000)'s				
Light vehicle replacement	0	220	0	0	0	0	0	0	220
Gravel crusher	225	0	0	0	0	0	0	0	225
Pit slope unloading	500	1,500	0	0	0	0	0	0	2,000
Computer systems	50	0	0	0	0	0	0	0	50
Vehicle plug-ins	100	0	0	0	0	0	0	0	100
Haulage truck radios	30	30	0	0	0	0	0	0	60
Total mine capital costs	905	1,750	0	0	0	0	0	0	2,655
Capital Cost Schedule-Mill									
Bulk reagent recieving station	0	700	0	0	0	0	0	0	700
Capital Cost Schedule-Other									
Water reservoir	400	1,400	0	0	0	0	0	0	1,800
Tailings impoundment	0	1,592	1,587	647	1,775	1,432	0	0	7,033
Total other capital costs	400	2,992	1,587	647	1,775	1,432	0	0	8,833
Sustaining Capital	0	500	500	500	500	500	500	0	3,000
Total Capital	1,305	5,942	2,087	1,147	2,275	1,932	500	0	15,188

northeast wall of the pit. These allowances include funds for grouting and other water control measures, should such programs be required.

Electronic shovel loading controls will be installed on each shovel in order to optimize haulage truck payloads. The proposed system is relatively inexpensive and has performed to expectation at a major open-pit mine in British Columbia.

Haulage truck radios will be purchased to permit direct communications between the dispatch and the truck driver. By so doing, trucks may be assigned to whichever shovel can most effectively service the truck.

A bulk soda ash/lime receiving station will be constructed to receive these reagents. Traditionally, lime was hauled from Vancouver in the concentrate containers. Upon arrival, the container was emptied by means of vacuum system which was both dangerous and labour intensive. Soda ash was delivered in bulk to a storage shed owned by White Pass and Yukon Route in Whitehorse. At this point, the soda ash was loaded into trucks which were pneumatically unloaded at the mine site. By installing the proposed bulk handling reagent system, handling will be safer, less expensive and independent of the freight carrier.

Curragh does not intend to provide transportation for employees between Faro and the mine site. Accordingly, a provision of $100,000 is made to install 200 additional vehicle 'plug-ins' in the mine site parking lot area.

The water reservoir dam will be increased in elevation to accommodate the additional freshwater requirements. $400,000 will be required in 1985 to cover the costs associated with field geotechnical investigations and the detailed dam design. $1,400,000 will be expended in 1986 during the construction of the dam.

The single persons' accommodation, known as Chateau Jomini, will be converted to make bachelor suites. The intention is to eliminate the Company's dependence on 'bunkhouse' and 'cookhouse' facilities and associated costs. Henceforth, single persons will live in apartments or suites which will be fully self-contained. Appropriate rents will be charged by the Company for such accommodation.

The tailings impoundment pond's capacity will be increased in stages to contain the solid tailings. It must be emphasized that the capital cost projections for the tailings impoundment programs are considered to be only 'order-of-magnitude' accuracy. Based upon the information reviewed by Kilborn, a considerable amount of work remains to be carried out to develop, design and cost a long-term tailings disposal strategy. For this purpose only, it is assumed that all pipe laying and drop box construction activities will be performed by a contractor. Surveillance, and the day-to-day operation of the pond will be carried out by the mill tailings operator, with technical guidance provided as required by the Superintendent of Environmental Control.

The total cost of the tailings distribution systems, as presently conceived are shown in Table 15.0-2.

A unit cost of $107.00 per metre is used to cover the purchase and installation of 20 inch diameter, high-density polyethylene pipe.

Provision is included in this estimate for the costs of moving deposited tailings to construct dam structures.

In addition to the above, tailings distribution system costs, a further $3.2 million will be spent to place mine waste rock over the face of the intermediate dam. A further $220,000 will be expended to upgrade the access road to the intermediate dam.

Based upon all of the above data, the total costs required for the proposed program will be as shown in Table 15.0-3.

TABLE 15.0-2

TAILINGS IMPOUNDMENT PROGRAM

TAILINGS DISTRIBUTION COSTS

	Length Piping				Drop Boxes				
	Metres	$/Metre	$000	Preparation $000	Units	$/Unit	$000	Other $000	Total $000
Mill to Roadway	400	100	40	10	-	-	65	-	115
Roadway to 1st Pond*	1005	---	30	15	-	-	-	25	70
Roadway to Intermediate Dam	800	107	86	50	Double	15	30	-	166
Summer Spigoting System	960	107	103	60	3	20	60	-	223
Summer/Winter Transition	800	107	86	50	Double	15	30	-	166
Winter System	480	107	51	50	5	20	100	-	201
Permanent	1440	107	154	50	2	20	40	-	244
System Across Intermediate Dam			550	285			325	25	1185

* Existing pipe will be used.

TABLE 15.0-3

TAILINGS IMPOUNDMENT PROGRAM

TOTAL COSTS

Item	Cost ($000)
Mine Waste	$ 3,200
Tailings Distribution	1,185
Road Upgrading	220
TOTAL	$ 4,605

Kilborn has distributed these costs in accordance with the preliminary activity schedule shown in Table 15.0-4.

TABLE 15.0-4

TAILINGS IMPOUNDMENT PROGRAM
ANNUAL ACTIVITY SCHEDULE AND COSTS

Year	Activity		Cost $(000) Distribution	Cost $(000) Total Annual
1985			$	$
1986	Jan-March	Replace Mill Discharge Line	15	
		Install Pipe to First Pond	70	
		Upgrade Road to I.D.*	220	
		Subtotal	$ 305	
	Apr-Sept.	Install Pipe to I.D.	$ 166	
		Commence Facing I.D.	695	
		Raise Dam	260	
		Install Spigot System	166	
		Subtotal	$ 1,287	
	ANNUAL TOTAL			$ 1,592
1987	Install Spigot Systems		$ 423	
	Dam Facing		838	
	Raise Dam		326	
	ANNUAL TOTAL			$ 1,587
1988	Dam Facing		$ 147	
	Raise Dam		500	
	ANNUAL TOTAL			$ 647
1989	Raise Dam		$ 650	
	Dam Facing		1,125	
	ANNUAL TOTAL			$ 1,775
1990	Raise Dam		$ 850	
	Complete Dam Facing		338	
	Install Permanent Piping Across I.D.		244	
	ANNUAL TOTAL			$ 1,432

*Intermediate Dam