VALUATION OF VANGORDA MINES LTD.

OCTOBER 30, 1981

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I N D E X

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VALUATION REPORT SUMMARY

1. CASE - HFD 1 - A FREE-STANDING VANGORDA PROJECT

The discounted present values of Vangorda Mines Limited shares, as at January 1, 1979, on the basis of mining and milling 11,450,000 short tons of ore on a free-standing basis and based on the other parameters set out in this report, is estimated by H.F. Ditchburn, using 2 discount rates, namely 12% and 14%, as follows:-

NET PRESENT VALUES AS AT JANUARY 1, 1979

Discount Rate Factor	Net Present Values $ Cdn	$ Per Short Ton Milled	$ Per Vangorda Share Issued*
12%	$ 29,903,000	$ 2.61	$ 14.78*
14%	$ 24,686,000	$ 2.16	$ 12.21*

* Based on 2,022,488 shares issued on December 31, 1978.

2. CASE - HFD 2 - AN INTEGRATED VANGORDA PROJECT

The discounted present values of Vangorda Mines Limited, as at January 1, 1979, on the basis of mining and milling 11,450,000 short tons of ore on an integrated basis with existing Cyprus Anvil Mining Corporation's operations at Faro, and based on the same parameters as Case - HFD 1 except for the smaller investment required on an integrated basis, as estimated by CAMC in its report THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS, March 1980, is estimated by H.F. Ditchburn, using 2 discount rates, namely 12% and 14% as follows:-

NET PRESENT VALUES AS AT JANUARY 1, 1979

Discount Rate Factor	Net Present Values $ Cdn	$ Per Short Ton Milled	$ Per Vangorda Share Issued*
12%	$ 56,251,000	$ 4.91	$ 27.81*
14%	$ 48,071,000	$ 4.20	$ 23.76*

* Based on 2,022,488 shares issued December 31, 1978.

3. The above estimates are considered to be conservative for two main reasons. (1) If any of the 3 deposits on the Vangorda claims contain mineable ore reserves above 11,450,000 DST, to extend the operating life by one or more years, which is highly probable, then the discounted present values will be greater than estimated above, and (2) Cyprus Anvil Mining Corporation in its many estimates of discounted present values, particularly CAMC CASE 4B-G contained in the report THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS, March 1980, estimated each ton milled (in 1980 to 1995 inclusive) for this project, would have estimated net present values from $5.31 to $6.96 per dry short ton of ore mined and milled. These Case 4B-G estimates are for the average Vangorda Plateau ton and thus do not take into account for the Vangorda ore deposits, per se, the better grade of ore, or the lower open pit mining strip ratio. The grade of ore to be mined from Vangorda is estimated by CAMC to contain 8.06% combined lead plus zinc. CAMC's Faro mines are estimated by CAMC to contain only 7.46% combined lead plus zinc content. The strip ratios at Faro and Grum are substantially higher than for Vangorda.

It is abundantly clear that the Vangorda Mines Ltd., Vangorda deposits are worth substantially more to Cyprus Anvil Mining Corporation as an integrated mine rather than a free-standing project.

4. It is incredible that Kerr Addison Mines Limited apparently did NOT conduct project feasibilities on either the Grum deposit, or the Grum + Vangorda deposits together, as a single free-standing project. Had this been done in late 1978 or early 1979 certainly Kerr Addison Mines Limited would NOT have sold its interests in these 2 deposits for the very low price it received.

5. The management of Cyprus Anvil Mining Corporation knew, or should have known, after about 9½ years of operations, as at May 1979, that each dry short ton of additional reserves in the Anvil Mining District, in close proximity to its existing operations, was worth at least the net cash flow it generated historically in this 9½ year period, namely $79,280,000 or $3.25 per dry short ton actually milled from January 1, 1970 to June 30, 1979. On this 9½ year operating basis, without any credits for Vangorda's superior ore grade and strip ratio, based on mining and milling 11,450,000 short tons, Vangorda "fair value" would be $37,212,000 or $18.40 per share for each of the 2,022,488 Vangorda Mines Limited shares issued, as at January 1, 1979.

Respectfully submitted,

H.F. Ditchburn, B.Sc., M.B.A., C.Eng.

Toronto, Ontario
October 30, 1981

VALUATION OF VANGORDA MINES LTD.

OCTOBER 30, 1981

TERMS OF REFERENCE

The plaintiff and minority shareholders of Vangorda Mines Limited, namely, Gordon Dickson, E.O. Chisholm, William S. Hare, Alan Kulan, Herbert K. Law, and Mary Campbell commissioned H.F. Ditchburn & Associates Ltd. on August 29, 1980 to act as expert evaluation witness respecting Vangorda Mines Limited, and more specifically, "to study all material facts, such as, Faro-Grum-Champ-Vangorda lead-zinc-silver deposits, geology, ore reserves, all costs, flowsheets, smelter contracts, visit CAMC offices and operations or whatever is deemed necessary by Chisholm et al and/or their solicitor, D. Ross Clark, to arrive at a "fair value" for the Vangorda Property as specified in the Canadian Business Corporations Act."

GOVERNING CONTROLS

Cyprus Anvil Mining Corporation, the defendant, has operated an open pit mining and milling operation since September 1969, within 8-10 miles of the Vangorda Mines Ltd. mineral deposits. This mining operation provided this ANVIL DISTRICT in the Yukon Territory with its first all-weather highway, its first electric power, and all other manner of infrastructure to support such an operation. Some of the costs of accessibility and infrastructure were borne by governments and thus the Canadian taxpayer.

When Vangorda Mines Ltd's. main deposit was discovered in July 1953 and up to completion of Prospectors Airways Co. Ltd. surface drilling in 1956 this area was a virgin wilderness, without accessibility except by bush plane or helicopter, or small boat. There was no existing infrastructure to support any mining operation of any size prior to 1965-1966.

As at May 15, 1979 we have a very important 9½ year history of actual Cyprus Anvil Mining Corporation (CAMC) operations. This operation has provided vital cost, metallurgical, marketing and operating experience upon which to premise a fairly definitive evaluation of Vangorda Mines Ltd., ANVIL DISTRICT, mineral deposits.

With the development of important metallurgical improvements due to finer grinding of the ores in this district since 1976, as well as other technological improvements and better equipment available in 1979 vs 1966-1967 when existing operations were conceptualized, designed and engineered, there is some room for improving the overall performance at any proposed Vangorda Mines Ltd. operation vs existing operations at Cyprus Anvil Mining Corporation.

Cyprus Anvil Mining Corporation has provided H.F. Ditchburn with all the necessary data from existing operations and the cooperation of all CAMC's personnel at operations and in Vancouver is gratefully acknowledged. The ore reserve estimate for the main Vangorda deposit, completed by Prospectors Airways, after drilling had ceased in 1956, has finally been located, after a 13 month search but as at October 30, 1981 it has not been examined by H.F. Ditchburn. Apparently it was found in Kerr Addison's Vancouver office on October 27, 1981.

CASE - HFD 1

FREE-STANDING

VALUATION OF VANGORDA MINES LTD.

CASE - HFD 1

VALUATION OF VANGORDA MINES LTD.

MAJOR ASSUMPTIONS AND CRITERIA FOR VANGORDA MINES LTD. VALUATION - CASE - HFD 1

Data Base Date	- May 15, 1979, the "closing date".
Valuation Date	- January 1, 1979.
Project Size	- 3,000 t.p.d. free-standing. 1,050,000 short tons of ore milled per year using a total of 200 employees.
Metal Prices	- Actual metal prices applicable for May 1979 using pricing and timing basis as set out in the main smelter contracts with TOHO and MITSUI.
Production Costs	- Actual unit costs for May 1979 at Faro operations, applicable to the Vangorda deposit, etc.
Capital Expenditures	- Same as those used by CAMC in its various 1979 Vangorda Minerals evaluation reports, taken from a July 4, 1979 estimate by Kilborn Engineering (B.C.) Ltd. for a 3,000 t.p.d. open pit mine-mill, self-sustaining operation. Construction commences early 1979 and finishes by September/ October 1981.
Production Start-up	- Start-up in September/October 1981. At capacity by January 1, 1982.
Production	- 11 years, 1982 to 1992 inclusive.
Metallurgical Recovery and Concentrate Grade	- Same as used by CAMC in its original Vangorda Mines Ltd. evaluation dated September 6, 1979.
Smelter Contracts	- Same as used by CAMC from TOHO and MITSUI contracts. This assumes same contracts could be negotiated.
Project Financing	- 100% by debt at 12% interest. (Equity contribution is exploration, drilling metallurgical testwork and engineering.)
Escalation	- None. This assumes inflationary cost-push will be offset by metal price increases over the minimum life of the project, ie., 1979-1992 inclusive.

Valuation Method - Discounted Net Cash Flow available to the equity shareholder. (No salvage or terminal values, ie., for mineral or residential property, fixed assets, inventories, or working capital was assumed.)

In summary the only basic differences between the valuation data used by H.F. Ditchburn in CASE - HFD 1 and CAMC's original September 6, 1979 Vangorda Evaluation, are as follows:-

- Actual costs at May 1979
- Vangorda Ore Reserve Tonnage at 3 deposits
- Metal Prices
- Financing Method

All other basic data, criteria and assumptions are the same for CAMC and H.F. Ditchburn valuation estimates. (In July 1980 CAMC revised its original September 6, 1979 Vangorda Evaluation with numerous modifications yet it was still dated September 6, 1979?????). This revised Vangorda Valuation back-dated September 6, 1979, was not made available to H.F. Ditchburn until October 13, 1981.

BRIEF HISTORY OF VANGORDA MINES LTD.

The lead, zinc, silver deposit in the ANVIL DISTRICT, Yukon Territory was:-

- discovered by Mr. Alan Kulan of Whitehorse, Y.T., on July 2, 1953. The syndicate, financed by Kulan et al, staked 48 claims. (Private letter from Mr. A. Kulan to Dr. Aaro E. Aho on January 8, 1968.)
- optioned by Mr. E.O. Chisholm, then Chief Geologist of Prospectors Airways Co. Ltd. (Prospectors Airways was controlled by Kerr Addison, a Noranda Mines Ltd. controlled company.)
- Prospectors Airways staked an additional 238 claims and diamond drilled about 58,000 feet in 184 diamond drill core holes from September 10, 1953 to September 17, 1956 without any accessibility except by aircraft since there were no roads, power, or other infrastructure in this area at that time.
- Excerpts and quotations from, "Geophysical Exploration of a Lead-Zinc Operation in Yukon Territory," by E.O. Chisholm. (Reference #2)

  "The deposit comprises an overlapping series of horizontal lenses of sulphides that appear to replace a favourable sedimentary bed; longitudinal section of the body is shown in Figure 1. Seventy-three diamond drill holes indicate a length of 3,200 ft. with an average width of 490 ft., and 9,400,000 tons of sulphide containing 3.16% Pb, 4.96% Zn, 0.27% Cu, 1.76 ozs. Ag, and 0.02 oz. Au; also, an additional 12,600,000 tons of low-grade to barren sulphides. The total mass of sulphides is estimated from diamond drilling to be in the order of 22,000,000 tons. The mineralized body extends from bedrock surface to a depth of 300 ft. Drilling to 1,000 ft. encountered no underlying body."

  Please refer to full text of this report in the appendix which describes the 1954-1956 knowledge and professional opinions of those working on this major mineral prospect in a virgin district.

- Vangorda Mines Ltd. was formed with an authorized capitalization of 5,000,000, $1 par shares, to hold 52 claims in the Vangorda Creek, Pelly River Area of the Yukon. 1,508,875 shares were issued with none pooled as at December 31, 1960.
- On November 5, 1963 Prospectors Airways Company Limited, was amalgamated with Kerr Addison Gold Mines Limited, Anglo-Huronian Ltd. and Bouzan Mines Limited into the on-going amalgamated company of Kerr Addison Mines Limited.
- On April 22, 1964 Mr. W.S. Row, President of Kerr Addison Mines Ltd., and President of Vangorda Mines Limited in which Kerr Addison Mines Ltd. held a 66 2/3% interest, commissioned General Engineering Company Ltd. (GECO) to conduct a PRELIMINARY MINING AND COST STUDY. This study was completed in a 49 page report on July 2, 1964. GECO's summary conclusion was that due to the Vangorda deposits remote location, limited known reserves, low metal prices, uncertain metallurgical recoveries, lack of accessibility and infrastructure and other factors Vangorda was NOT a profitable venture at that time.
- So far as can be ascertained field exploration on these 286 claims ceased late September 1956 and the property remained idle to about August 10, 1973. On that date the AEX Syndicate optioned all Vangorda's claims outside the MAIN VANGORDA DEPOSIT and over a 3 year period, upon expending $225,000 could earn a 40% interest in such optioned claims with Vangorda Mines Ltd. retaining a 60% interest. Canadian Natural Resources Ltd. (formerly AEX Minerals Corp.) was the successor to this optioning syndicate.
- Under the Grum Joint Venture, the Grum Extension into Vangorda and the Champ Extension into Vangorda was drilled extensively largely in 1975 and 1976 as reported in Vangorda Mines Ltd. directors' report, dated December 6, 1976, with maps.

- The GRUM JOINT VENTURE MINERAL INVENTORY report dated March 1977 provides further information on the two GRUM extensions into Vangorda claims as well as the geology and ore reserves of the Main Vangorda deposit.
- Metallurgical breakthrough as set out in Noranda Milling Committee and Lakefield Research reports of 1977 and 1978.
- 1978 to May 15, 1979 Cyprus Anvil Mining Corporation (CAMC) efforts to acquire a 100% interest in Vangorda Mines Ltd. mineral properties.
- CAMC report dated December 1978 entitled "ANVIL DISTRICT ACQUISITION PROGRAM." (This internal report as well as the 1978 CAMC shareholders report sums up management's opinion on the ore reserves and ore reserve potential on the Vangorda claims and on this lead-zinc-silver district, as a whole.)
- CAMC Vangorda Evaluations dated July 24, 1979 and September 6, 1979.

ECONOMIC GEOLOGY OF ANVIL LEAD-ZINC DEPOSITS

From the information gained since the first discovery by Mr. A. Kulan on July 2, 1953 to May 1979, the Anvil lead-zinc deposits are now known to be confined to a narrow, twenty-mile long zone, from just west of the Faro orebodies (being mined), easterly to the Sea deposit.

To quote CAMC's "ANVIL DISTRICT ACQUISITION PROGRAM," on page 16, "This zone contains between 120 million and 150 million tons of proven and indicated lead-zinc-silver mineralization within a much greater tonnage of massive and banded pyritic sulphides. The exploration potential of the immediate area could double the known reserves."

To quote further on page 17 regarding exploration potential generally, "The relatively untested lateral and down-dip extent and possible major fold repetitions of the five deposits, namely Firth, Grum, Vangorda, Swim and Sea, provide the most obvious and immediate exploration potential. Additional areas of primary exploration potential between the various deposits and northwest of Faro are indicated on the accompanying map." (See page 14)

More specifically regarding the Vangorda deposit.

"The structure of the Vangorda deposit is poorly understood. By analogy to the complex geometry of the Grum deposit, it is conceivable that additional reserves may be concealed by fold interference patterns south of the deposit. There has been inadequate deep drilling in the vicinity of the deposit to evaluate this possibility. Because of the near-surface location of the Vangorda deposit, delineation of additional, potential, open pit reserves is of prime importance. A clear geological understanding of this deposit should be generated as soon as possible to allow effective exploration and evaluation of this high priority area." (Reference #17)

The favourable strike length on the Vangorda Mines Ltd. property being acquired is about 2.27 miles long or about 11.35% of the 20 miles of known favourable strike length in this mineral district.

A summary of Anvil District Reserves is presented on the following page.

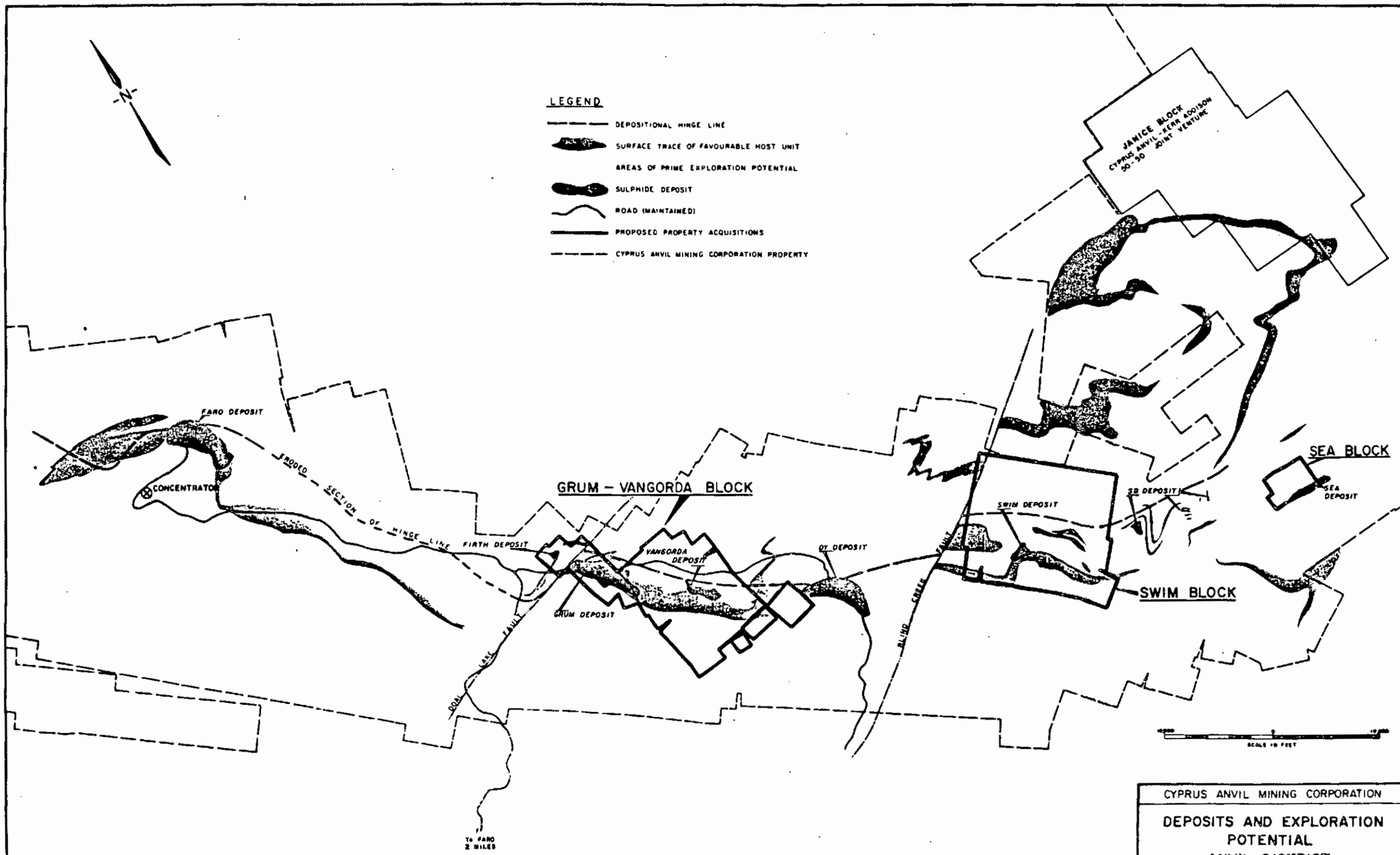
NOTE: Underlining in above quotes is by H.F. Ditchburn

Anvil Lead-Zinc District Reserves

(As at December 31, 1979 as estimated by CAMC and Noranda group of companies)

	Dry Metric Tonnes	Assays			Estimates by:
		% Lead	% Zinc	Silver gms/tonne	
Faro:					
- Mined by CAMC to Dec. 31/79	26,182,977	3.90	5.68	N/A	Actual from CAMC statistics.
- Mineable open pit reserves at Dec. 31/79					
- Zone I & III	26,385,000	2.9	4.6	34.8	CAMC
- Zone II	3,724,000	2.7	4.3	43.5	CAMC
Grum:					
- Grum deposit (including Grum Extension into Vangorda)	27,800,000	3.1	4.9	48.0	Grum Joint Venture (Noranda).
Champ:					
- Champ Deposit (including Champ Extension into Vangorda)	1,692,000	4.3	3.5	46.0	Grum Joint Venture (Noranda).
Vangorda:					
- Vangorda (Main Deposit)	8,528,000	3.16	4.96	55.0	Prospectors Airways Co. Ltd. (Noranda)
Swim:					
- Swim Deposit	4,309,000	3.8	4.7	47	Grum Joint Venture (Noranda).
Total (Mined to-date + reserves indicated)	98,620,977*				
	or 105,700,000 (short tons)				

Note: *Each reserve estimate has slightly different criteria, due to different methods, different specific gravities, cut-off grades, etc. To add them together may be like adding "apples and oranges" to some minor degree but nevertheless this reserve data base was all that was available in 1979.

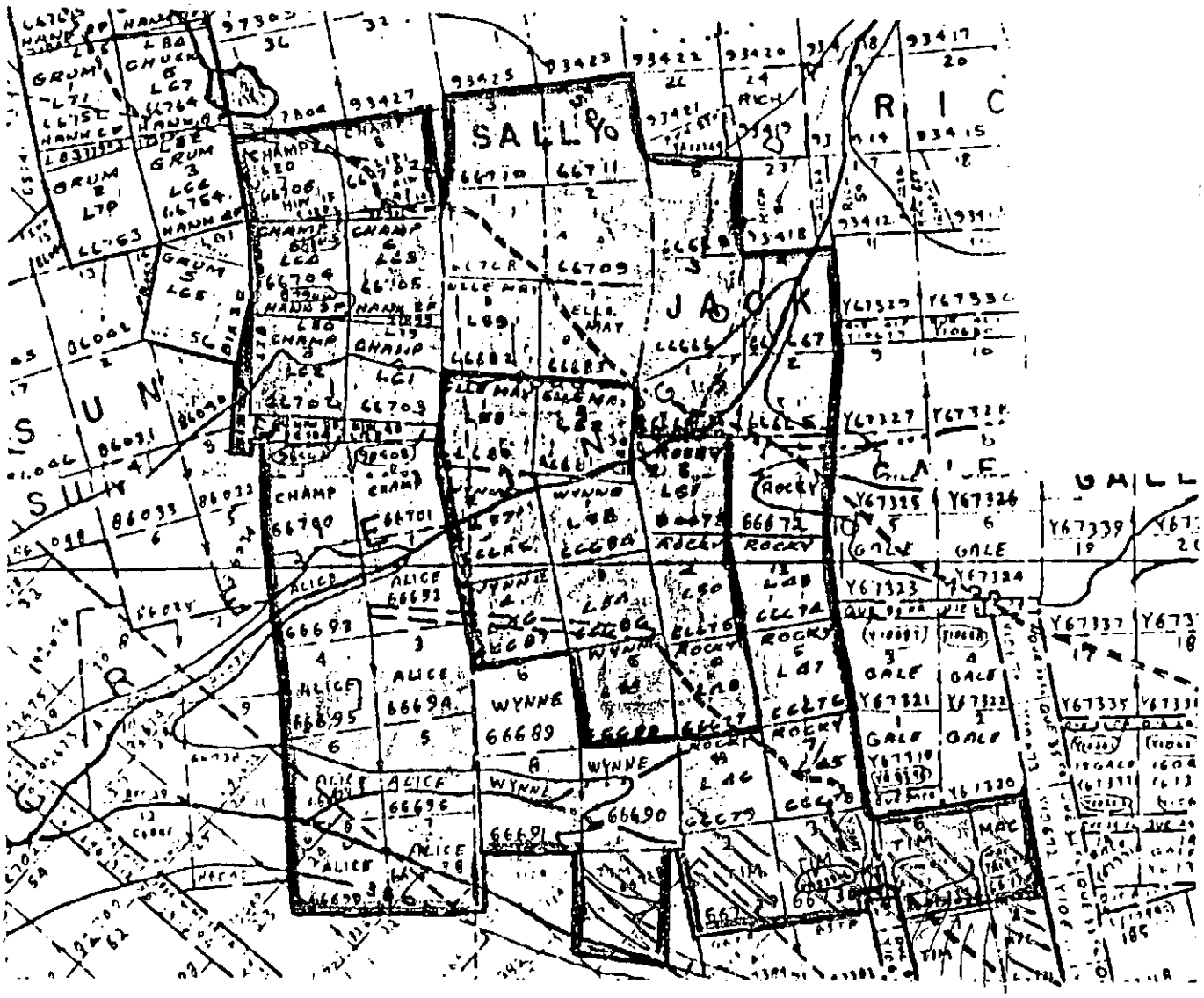


CYPRUS ANVIL MINING CORPORATION

DEPOSITS AND EXPLORATION POTENTIAL ANVIL DISTRICT

MINERAL PROPERTY

The attached map and legal descriptions define Vangorda Mines Ltd. mineral properties.



Vangorda Mines Ltd. - 100% ownership

Vangorda - CNR Option Lands

Perimeter of Total Vangorda Mines Ltd. mineral land interests

MINERAL CLAIM NUMBERS	RECORD NUMBERS
(a) held under lease name	
Rocky 3, 5, 7, and 8	66674, 66676, 66678 and 66679
Bix 2 and 3	70440 and 70441
Champ 3 to 6, both inclusive	66702 to 66705, both inclusive
Ellemay 3	66682
Hank Frs. 2 and 3	77899 and 77900
(b) held under claim name	
Sally 1 to 4, both inclusive	66692 to 66699, both inclusive
Wynne 6 to 8, both inclusive	66689 to 66691, both inclusive
Alice 1 to 8, both inclusive	66692 to 66699, both inclusive
Rocky 1	66672
Ellemay 4	66683
Jack 1 to 5, both inclusive	66664 to 66668
Champ 1, 2, 7 and 8	66700, 66701, 66706 and 66707
Hiw. Frs. 1 to 4, both inclusive	Y98405 to Y98408, both inclusive

Source: SALE AGREEMENT, Canadian Natural Resources Limited and Cyprus Anvil Mining Corporation, dated January 31, 1979.

The above detailed Vangorda-CNR Option Lands are shown on an excerpt from the official claim recording office map on the previous page in yellow shading whereas the 100% owned Vangorda mineral land is coloured green .

The 100% Vangorda Mines Ltd. mineral lands as set out in an agreement entitled ASSIGNMENT OF INTEREST IN YUKON QUARTZ MINING LEASES between Vangorda Mines Ltd. and Cyprus Anvil Mining Corporation are as follows:-

MINING LEASE	LEASE NUMBER	FILE NUMBER	PARTICULARS OF LOCATION (see note 1 below)
Elle May 1	1404	66680	Whole of Lot 58, Group 905, Plan of Records 51550
Elle May 2	1405	66681	Whole of Lot 52, Group 905, Plan of Records 51550
Rocky 2	1222	66673	Whole of Lot 51, Group 905, Plan of Records 51550
Rocky 4	1238	66675	Whole of Lot 50, Group 905, Plan of Records 51550
Rocky 6	1402	66677	Whole of Lot 48, Group 905, Plan of Records 51550
Wynne 1	1223	66684	Whole of Lot 53, Group 905, Plan of Records 51550
Wynne 2	1407	66685	Whole of Lot 57, Group 905, Plan of Records 51550
Wynne 3	1224	66686	Whole of Lot 54, Group 905, Plan of Records 51550
Wynne 4	1408	66687	Whole of Lot 56, Group 905, Plan of Records 51550
Wynne 5	1409	66688	Whole of Lot 55, Group 905, Plan of Records 51550
Hank 1 Fr.	2124	77898	Whole of Lot 60, Group 905, Plan of Records 51550

Note 1: The Plans of Record referred to above are in the Canada Lands Surveys Records.

H.F. Ditchburn's Observations

The precise surveyed boundaries of Champ 3 to 6 and Bix 2 & 3 are important since they embrace the GRUM EXTENSION into Vangorda and the CHAMP EXTENSION into Vangorda.

Many plans and maps have slightly different boundaries for claims and leases probably due to the fact over a 27 year period we have some maps with unsurveyed unpatented claim boundaries and others with surveyed mining lease boundaries. It would appear that there were small fractions, after surveying, and that these fractions are now called Hank 1 Fr. #77898 (100%); Hiw Frs. 1 to 4, Y98405 to Y98406; Hank Frs. 2 and 3, 77899 and 77900 and Bix 2 and 3, 70440 and 70441. On no map of any age have I been able to identify Hank 1 Fr. #77898 and do not know if it is material to any Vangorda valuation. In a number of directors' and other official reports a Grum claim is shown as part of Vangorda. This claim covers most of the Champ Deposit.

NEARLY ALL OF THE DRILL HOLE PLANS, VERTICAL AND HORIZONTAL SECTIONS ARE DRAWN FROM A REFERENCE GRID SYSTEM AND BASE LINES, WITH LITTLE OR NO REGARD FOR CLAIM OR LEASE BOUNDARIES.

ORE RESERVES

Definitions of Ore and Classification of Ore Reserves.

"Ore" is a natural aggregate of one or more minerals which, at a specified time and place, may be mined and sold at a profit, or from which some part may be profitably separated.

"Proven Ore" or "Measured Ore" is that material for which tonnage is computed from dimensions revealed in outcrops or trenches or underground workings and/or drill holes and for which the grade is computed from the results of adequate sampling. The sites for inspection, sampling, and measurement are so spaced and the geological character so well defined that the size, shape, and mineral content are established. The computed tonnage and grade are judged to be accurate within limits which must be stated whether the tonnage and grade of "Proven" or "Measured" Ore is in situ or extractible. Dilution factors if used should be clearly explained.

"Probable Ore" or "Indicated Ore" is that material for which tonnage and grade are computed partly from specific measurements, samples, or production data, and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to outline the material completely or to establish its grade throughout.

"Possible Ore" or "Inferred Ore" is that material for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition for which there are reasonable geological indications; these indications may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific evidence of their presence.

Estimates of Possiblé or Inferred Ore should include a statement of conditions within which the "inferred" material occurs.

Source: Definitions of Ore and Classification of Ore Reserves from page 7 of the Association of Professional Engineers of the Province of Ontario, Performance Standards for Professional Engineers Advising on and Reporting on oil, gas and mineral properties, 1976, adopted by all Canadian Provincial Securities Administrations since 1977.

VANGORDA MINES LIMITED ORE RESERVES

There are three geologically distinct deposits, namely:-

1. The MAIN VANGORDA DEPOSIT
2. The GRUM EXTENSION INTO VANGORDA
3. The CHAMP EXTENSION INTO VANGORDA

Main Deposit (please refer to Drill Hole Plan, Kerr Addison Vertical Sections and a variety of CAMC and Kerr Addison Longitudinal Sections and 3 dimensional projections.)

So far as can be ascertained only Prospectors Airways Co. Ltd. (the founder and parent of Vangorda Mines Ltd.) completed an ore reserve estimate on the MAIN VANGORDA deposit. (To-date this estimate HAS NOT BEEN MADE AVAILABLE TO H.F. DITCHBURN FOR STUDY.)

Premised on 73 of the 184 diamond drill holes drilled in 1953 and 1956, before this ANVIL MINING DISTRICT had any roads, airports or other infrastructure a reserve estimate (thought to have been made by Messrs. C. Coleman, E.O. Chisholm, with Cyril Finch as geologic office draftsman) was as follows:-

	Short Tons	% Lead	% Zinc	% Copper	Silver ozs/ton	Gold ozs/ton
Sulphides	9,400,000	3.16	4.96	0.27	1.76	0.02
Low-grade to barren Sulphides	12,600,000	---------- unstated ----------				

The geology and deposit is well described in the attached professional paper by Mr. E.O. Chisholm. (Appendix number 3.)

The diamond drill logs for holes numbered in sequence DDH #1 to DDH #173 inclusive aggregating about 58,000 lineal feet of hole were drilled between September 10, 1953 and September 19, 1956 are an integral part of this evaluation report by H.F. Ditchburn. The 11 "Packsack" core drill holes drilled in 1956 for prospecting and assessment purposes are not material.

The Vangorda property was almost dormant, except for collecting 1 ton of core samples for metallurgical test work, until 1973 when Vangorda Mines Limited's claims and leases outside the MAIN VANGORDA DEPOSIT were optioned to Canadian Natural Resources Ltd. (formerly AEX Minerals Corporation and AEX Syndicate) as to 40%, with Vangorda Mines Limited retaining a 60% interest. Vangorda Mines Limited was the operator of the resulting Vangorda Joint Venture and exploration work was believed to be conducted in 1974 and 1975.

H.F. Ditchburn estimated from the 184 drill-hole logs and Kerr Addison Mines Ltd. Vertical Sections, Scale 1:1000 metric using a cut-off grade of 4% combined and a specific gravity of 4.0 for massive sulphides and 3.5 for quartz sulphides an undiluted, indicated, and inferred geologic reserve between vertical sections numbers 2.5W to 31E, of 14,177,320 metric tonnes with a weighted average grade in-place of 3.08% lead and 4.94% zinc. (The copper, silver and gold assays were not estimated simply because the assays were NOT reported on the drill hole logs.) This important information must be contained in other records not made available to me. How Cyprus Anvil Mining Corporation and/or Prospectors Airways estimated and reported on such average assays for silver and gold is unknown to H.F. Ditchburn.

Since an undiluted, drill-indicated and inferred geologic reserve has little mining economic meaning it was necessary to extract from this information the tonnage which can be mined using contemporary open pit mining practices and equipment at this location. Such an estimate was made using the experience factors on recoverability and dilution at CAMC's Faro open pit operations since 1969.

The estimated drill-indicated, mineable, open pit ore reserve between Vertical Sections 2.5W to 31E is shown on the table on the following page. The vertical sections and open pit plan used by H.F. Ditchburn in Cases HFD 1 and HFD 2 are attached on pages 23 to 52.

MAIN VANGORDA DEPOSIT

Summary of Mineable Open Pit Ore Reserves

Vertical Sections From	To	Strike Distance metres	In-Situ Ore Tonnage	In-Situ Weighted Average Grade % Lead	% Zinc	Mineable Open Pit Ore Reserves* metric tonnes	% Lead	% Zinc	Stripping Overburden cubic metres	Waste Rock cubic metres
2.5W	13E	472.4	7,658,530	3.14	4.81	7,658,530	3.034	4.594	1,270,406	926,591
13E	30E	518.2	3,426,347	2.89	4.94	3,426,347	2.752	4.708	2,107,217	2,473,452
Totals		990.6	11,084,877	3.09	4.86	11,084,877	2.95	4.63	3,377,623	3,400,043

* Open pit criteria - An initial pit design was drawn on Kerr Addison Mines Ltd., Vangorda Vertical Sections 2½W to 31E. Overburden, waste rock and mineable ore was estimated from these. The criteria for the pit is a backwall slope in rock of 45°; an overburden layback to 30°; an average bench height of 7-9 metres; an 8-10% ramp road slope; 10 cu. yd. front end loaders, scrapers and 45-55 tonne trucks plus ripper dozers. Specific Gravity massive sulphide 4.0-4.1; quartz sulphide 3.5; mixed 3.7; extractability is 95% ie., 5% of ore is mixed with waste; 4% cut-off, strip ratio 4.09:1; mine swell is 35%; total diesel equipment; crusher within 1200-1500 metres; haul roads 30 metres; safety bench and berms every 8-10 benches with runaways on all haul roads. Dilution factor with ½ grade is 10% thus grade dilution is 5% and due to loss of 5% in mining the tonnage estimated in-place is the tonnage mined.

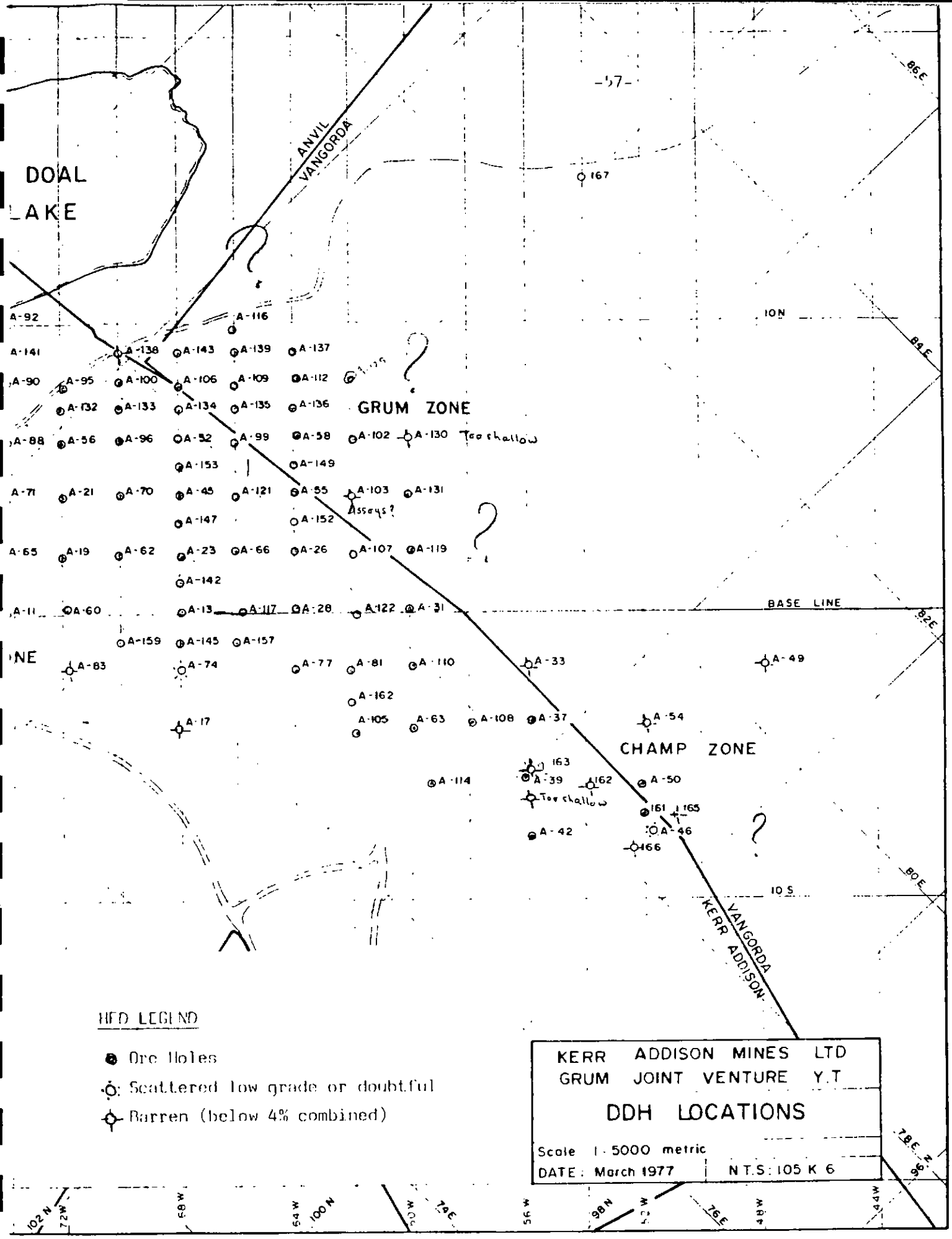
By comparison CAMC's strip ratio at Faro has been about 6.61 tons of waste per ton of ore historically. Thus the Main Vangorda open pit mine has a cost saving of (6.61-4.09) = 2.52 tons of waste less than at Faro operations. At the unit costs applicable ie., for May 1979, this converts to an operating cost saving of about $2.37 per short ton mined and milled from Vangorda.

Regarding silver and gold assays for the Main Vangorda Deposit, CAMC has used an average grade for the zone from 2W to 12E of 1.613 ozs/ton of silver and 0.024 ozs/ton of gold. This is equivalent to 55.30 gms/metric tonne for silver and 0.822 gms/metric tonne for gold, based on 31.104 grams equals 1 troy ounce and 1.102311 short tons equals one metric tonne. This information seems to have come from the original Prospectors Airways ore reserves estimate which has NOT been examined by H.F. Ditchburn.

The assays used in this valuation report, Case - HFD 1, are those used by CAMC in its initial Vangorda Evaluation of September 6, 1979. My independent check estimate for the Main Vangorda Deposit mined grade is 7.58% combined lead plus zinc. This is quite close to the 7.82% combined lead plus zinc used by CAMC in its original September 6, 1979 report.

Historically over the 10 years of actual operation at Faro the lead grade mined has been 3.9% above CAMC's estimates and the zinc grade mined has been 5.7% below CAMC's estimates. If we had the Prospectors Airways vertical sections and ore reserve estimate with all criteria it would be helpful to verify both tons and grade. Furthermore, in more recent reports CAMC's engineering staff, after reestimating Vangorda's reserves, after redrilling in 1979, and based upon its historical experience are believed to use only a 2%-3% grade dilution factor. Based upon a cut-off grade of 4.0% combined (the same as used in Case - HFD1) the combined grade for Vangorda as reestimated by CAMC was increased to 8.1% combined from 7.82% used in the initial CAMC September 6, 1979 evaluation. So if anything 7.82% combined as used by H.F. Ditchburn in this valuation of Vangorda Mines Ltd. Case - HFD 1 and Case - HFD 2 is conservative.

The various historical ore reserve estimates respecting the MAIN VANGORDA deposit are tabulated for easy reference and comparison on the following page:-


DOAL
LAKE
ANVIL
VANGORDA
GRUM ZONE
CHAMP ZONE
BASE LINE
10N
10S
86E
84E
82E
80E
78E
76E
KERR ADDISON
VANGORDA
A-92
A-116
A-141
A-138
A-143
A-139
A-137
A-90
A-95
A-100
A-106
A-109
A-112
A-132
A-133
A-134
A-135
A-136
A-88
A-56
A-96
A-52
A-99
A-58
A-102
A-130
Too shallow
A-153
A-149
A-71
A-21
A-70
A-48
A-121
A-55
A-103
A-131
Assays?
A-147
A-152
A-65
A-19
A-62
A-23
A-66
A-26
A-107
A-119
A-142
A-11
A-60
A-13
A-117
A-28
A-122
A-31
A-159
A-145
A-157
NE
A-83
A-74
A-77
A-81
A-110
A-33
A-49
A-162
A-17
A-105
A-63
A-108
A-37
A-54
163
A-39
162
A-50
A-114
Too shallow
161
165
A-42
A-46
166
HED LEGEND
Ore Holes
Scattered low grade or doubtful
Barren (below 4% combined)
KERR ADDISON MINES LTD
GRUM JOINT VENTURE Y.T
DDH LOCATIONS
Scale 1:5000 metric
DATE: March 1977
N.T.S: 105 K 6
102 N
72W
68 W
64 W
100 N
60 W
74E
56 W
98 N
52 W
76E
48W
44W

HISTORY OF VANGORDA (MAIN DEPOSIT) RESERVE ESTIMATES
(These do NOT include GRUM EXTENSION OR CHAMP EXTENSION INTO VANGORDA)

Date	Company & Estimator	Tonnage	Assays					Estimating Parameters			
			% Lead	% Zinc	o/t Ag	o/t Au	% Copper	System	Sp. Gr.	% Dilution	Other
?	Prospectors Airways W.S. Row, C. Coleman E.O. Chisholm et al	9,400,000 short tons + "12,600,000 tons low grade to barren sulphides"	3.16	4.96	1.76	0.02	0.27	?	?	?	?
			---------- not stated ----------								
July 2, 1964	GECO	6,200,000 short tons. "Probable" open pit ore only. (Central Vangorda Deposit only 2W to 12E)	2.963	4.863	1.613	0.024	0.252	Cut-off 4% combined. Used cross-sections 200' apart. Planimetered areas taken 100' each side of section. 14 vertical pit cross sections.	3.6	10%	Prospectors Airways results. Pit walls at 57°. 14 Sections only 2W to 12E. Holes not surveyed. % core recovery 50%-55% in ore sections.
December 1978	Page 14 CAMC report ANVIL DISTRICT ACQUISITION PROGRAM	9,400,000	3.16	4.96	1.76	N/A	N/A	---------- Same as Prospectors Airways ----------			
September 6, 1979	CAMC staff Vangorda Evaluation Report	6,200,000 short tons of pitable reserves between 2W to 12E	2.96	4.86	1.77	0.026	N/A	?	?	?	Partly redrilled
September 6, 1979 (REVISED July '80)	CAMC staff Vangorda Evaluation Report	6,765,000 short tons of pitable reserves between 2W to 12E.	3.47	4.58	1.6	N/A	N/A	?	?	?	Redrilled and reestimated by CAMC in early 1980.
Undated but used by G. Davis in discovery	CAMC	6,751,000 m tonnes or 7,441,700 short tons for 2W to 12E.	3.5	4.6	1.63 t ozs	N/A	N/A	Cut-off 4.0% Pb + Zn			Modified by CAMC's redrilling & additional drilling for 2W to 12E.

Grum Extension Into Vangorda

Please refer to the following basic data:-

1. ASSAYS AND MINERAL RESERVE OUTLINE on Vertical Sections 68W, 66W, 64W, 62W, 60W, Scale 1:500 metric by Kerr Addison Mines Ltd., Grum Joint Venture, Y.T. dated November 1976 to February 1977.

2. GRUM JOINT VENTURE, MINERAL INVENTORY prepared jointly by geological staffs - Grum Joint Venture and Kerr Addison, Vancouver, B.C., March 1977.

3. DDH Locations map Scale 1:5000 metric from GRUM MINERAL INVENTORY (from # 2 above) An extract from this map is attached on page 57.

4. DDH logs #1 to #173 inclusive.

5. VANGORDA MINES LTD., Directors' Report with attachments dated December 6, 1976.

6. DEPOSITS AND EXPLORATION POTENTIAL, ANVIL DISTRICT, 1¾" = 10,000 feet, page 20 of CAMC's ANVIL DISTRICT ACQUISITION PROGRAM, December 1978. (Reproduced on page 14 of this report.)

From the above basic data H.F. Ditchburn conducted an independent estimate of drill indicated ore reserves respecting the GRUM EXTENSION INTO VANGORDA. This estimate is shown on pages 58, 59 and 60.

There is little doubt that CAMC intend to mine more than half of the GRUM DEPOSIT by open pit methods. Although an open pit plan has not been seen at CAMC's offices it was assumed for CASE - HFD 1 that about 850,000 metric tonnes would become available from the GRUM EXTENSION INTO VANGORDA in 1989-1992, as the Grum Open Pit makes this ore accessible.

DRILL-INDICATED ORE RESERVES - GRUM EXTENSION INTO VANGORDA

Vertical Section	% Pb	% Zn	Ag Gms/DMT	Length	Width	Area (M^2)	Length	Volumes (M^3)	Sp. Gr.	Metric Tonnes	Pb x T	Zn x T	Ag x T	
68W to claim post														
+ 30 metres	3.11	4.20	53	30	4.6	128.0		6,400 x	4.0	25,600	79,616	107,570	1,356,800	
	3.02	4.0	41	28	3.0	84.0		4,200 x	4.0	16,800	50,736	67,200	688,800	
	6.41	8.10	75	27	5.5	148.5		7,425 x	4.0	29,700	190,377	240,570	2,227,500	
	2.49	2.34	36	8	3.0	24.0		72 x	3.0	216	538	505	7,776	
Tonnes										72,316	321,267	415,845	4,280,876	
Weighted Grade											4.4425%	5.7504%	59.1968	gms/DMT
66W - 30 metres	11.09	9.66	139	40	7.6	304.0	x 60	18,240 x	3.5	63,840	707,986	616,694	8,873,760	
each side	3.32	3.84	42	14	8.2	114.8	x 60	6,888 x	4.0	27,552	91,472	105,799	1,157,184	
ie, 65W to 67W	5.09	7.40	72	36	6.6	237.6	x 60	14,256 x	4.0	57,024	290,252	421,978	4,105,728	
	6.89	6.70	86	23	10.2	234.6	x 60	14,076 x	4.0	56,304	387,934	377,237	4,842,144	
	6.87	8.27	92	41	11.2	459.2	x 60	27,552 x	4.0	110,208	757,129	911,420	10,139,136	
	2.35	3.12	35	24	6.0	144.0	x 60	8,640 x	3.5	25,920	60,912	80,870	907,200	
	2.03	2.97	33	32	6.0	192.0	x 60	11,520 x	3.0	34,560	70,157	102,643	1,140,480	
	5.32	8.22	90	20	3.0	60.0	x 60	3,600 x	4.0	14,400	76,608	118,368	1,296,000	
	1.49	3.18	24	27	5.6	151.2	x 60	9,072 x	3.0	27,216	40,552	86,547	653,184	
	1.63	2.86	24	18	3.9	70.2	x 60	4,212 x	3.0	12,636	20,597	36,139	303,264	
Tonnes										429,660	2,503,599	2,857,695	33,418,080	
Weighted Grade											5.8269%	6.6510%	77.7779	gms/DMT
64W	5.84	6.15	78	25	6.6	165.0	x 60	9,900 x	4.0	39,600	231,126	234,540	3,088,800	
	2.48	3.17	31	18	3.0	54.0	x 60	3,240 x	4.0	12,960	32,141	41,083	401,760	
	2.04	4.69	33	10	3.0	30.0	x 60	1,800 x	3.0	5,400	11,016	25,326	178,200	
	5.92	7.11	81	25	7.3	182.5	x 60	10,950 x	4.0	43,800	259,296	311,418	3,547,800	
	4.13	2.71	49	21	2.5	52.5	x 60	3,150 x	3.0	9,450	39,028	25,610	661,500	
	5.56	6.78	75	30	9.3	279.0	x 60	16,740 x	4.0	66,960	372,298	453,989	5,022,000	
	8.14	10.62	120	32	7.9	252.8	x 60	15,168 x	4.0	60,672	493,870	644,337	7,280,640	
	3.32	4.87	51	30	3.9	87.0	x 60	5,220 x	4.0	20,880	69,322	101,685	1,064,880	
	2.10	2.70	29	35	2.0	70.0	x 60	4,200 x	3.0	12,600	26,460	34,020	365,400	
	2.64	3.42	38	28	3.9	109.2	x 60	6,552 x	3.0	19,656	51,892	67,224	746,928	
	1.59	3.08	22	30	3.6	108.0	x 60	6,480 x	3.0	19,440	30,910	59,875	427,680	
	2.64	4.38	42	24	3.2	76.8	x 60	4,608 x	3.0	13,824	36,495	60,549	359,424	
	1.43	3.49	26	33	3.1	102.3	x 60	6,138 x	3.0	18,414	26,332	64,265	478,764	
Tonnes										343,656	1,680,176	2,132,921	23,623,776	
Weighted Grade											4.8891%	6.2065%	68.7425	gms/DMT
62W	2.81	3.89	28	57	3.6	205.2	x 60	12,312 x	4.0	49,248	138,387	191,575	1,378,944	
	4.39	4.64	55	46	3.0	138.0	x 60	8,280 x	4.0	33,120	145,397	153,677	1,821,600	
	3.74	6.46	52	39	3.0	117.0	x 60	7,020 x	4.0	28,080	105,019	181,397	1,460,160	
	2.36	2.93	32	41	5.1	209.1	x 60	12,546 x	3.0	37,638	88,826	110,279	1,204,096	
Tonnes										148,086	477,629	646,928	5,864,800	
Weighted Grade											3.2253%	4.3686%	39.6040	gms/DMT
60W	3.75	6.71	55	30	3.7	111.0	x 45	4,995 x	4.0	19,980	3.75	6.71	55.0	

ESTIMATED DRILL INDICATED ORE RESERVES GRUM EXTENSION INTO VANGORDA

	Depth (M)	Tonnes	Weighted Assays % Pb	% Zn	Ag gms/DMT	Pb x T	Zn x T	Ag x T
68W (to claim post + 30 metres)	86-140	72,316	4.4425	5.7504	59.1968	321,267	415,845	4,280,876
66W (67W to 66W 60 metres)	50-150	429,660	5.8269	6.6510	77.7779	2,503,599	2,857,695	33,418,080
64W (65W to 63W 60 metres)	90-170	343,656	4.8891	6.2065	68.7425	1,680,176	2,132,921	23,623,776
62W (63W to 61W 60 metres)	101-171	148,086	3.2253	4.3686	39.6040	477,629	646,928	5,864,800
60W (61W to 59½W 45 metres)	49-119	19,980	3.75	6.71	55.00	74,925	134,066	1,098,900
						5,057,596	6,187,455	68,286,432
TOTALS		1,013,698	4.9893	6.1038	67.3636	4.9893%	6.1038%	67.3636 gms/DMT

10% dilution with barren waste	1,115,068	4.53	5.55	61.24
THIS COMPARES WITH:-				
CAMC memo from Hanson to Taggart Sept. 3/80	1,220,700	3.41	4.12	47.80
Grum Mineral Inventory (page 25) March 22/77	980,000	5.06	6.03	69

NOTE. CAMC has done extensive drilling in 1979 and 1980 to extend this zone to the east. Results are unknown by H.F. Ditchburn.

GRUM EXTENSION INTO VANGORDA

DDH INTERSECTIONS ON VANGORDA ONLY
(Drilling 1975-1976)

Vertical Sections	Hole No.	Depth (M)	Intersection From (M)	To (M)	Metres	Assay % Pb	% Zn	Ag (gms/DMT)
68W	A-143	168.2	140.5	141.8	1.3	3.90	6.88	46.29
			145.9	148.3	2.4	3.05	5.15	64.46
	A-106	190.50	46.8	49.2	2.4	10.56	9.02	158.37
			151.3	157.2	5.9	6.41	8.10	95.63
			159.4	164.0	4.6	2.63	3.59	36.90
66W	A-116	181.70	110.9	114.2	3.3	1.63	2.86	23.98
	A-139	150.00	122.4	125.5	3.1	5.32	8.22	90.14
			125.5	131.7	6.2	1.49	3.18	23.85
	A-109	190.80	129.1	132.1	3.0	2.64	3.90	41.9
			135.7	149.0	13.3	6.87	8.27	92.5
	A-135	175.90	47.6	58.3	10.7	11.09	9.66	139.3
			132.8	138.4	5.6	2.35	3.12	34.6
			138.4	149.0	10.6	6.89	6.70	86.06
	A-99 on border	189.60	138.5	141.6	3.1	4.32	4.23	55.04
			141.6	147.5	5.9	2.93	4.10	37.20
64W	A-137	136.20	95.5	97.6	2.5	2.30	3.86	30.17
			104.5	110.1	5.6	1.67	3.02	23.98
			118.0	121.3	3.3	1.43	3.49	26.41
	A-112	172.50	110.4	117.7	7.3	8.14	10.62	119.4
			117.7	121.9	4.2	2.64	3.42	37.6
			121.9	127.4	5.5	1.44	1.94	26.8
	A-136	156.10	116.2	117.7	1.5	5.68	5.04	78.4
			117.7	123.6	5.9	4.26	6.60	61.88
			123.6	127.2	3.6	7.62	7.81	74.06
	A-88	187.45	133.05	136.70	3.65	7.09	6.90	89.45
			136.70	140.82	4.12	4.88	7.29	74.74
			142.19	143.41	1.24	7.40	4.26	80.56
	A-149	198.40	160.80	168.60	7.80	5.85	6.13	78.20
	A-55 border	343.20	149.80	153.08	3.28	2.04	4.69	32.57
			156.87	169.37	12.50	4.30	5.59	52.6
			180.50	181.90	1.40	1.23	2.88	20.22
			173.23	183.73	10.50	2.48	3.17	31.10
62W	A-129	152.70	101.50	109.10	7.6	2.36	2.93	31.9
			109.1	113.4	4.3	3.74	6.46	52.4
	A-102	183.4	137.1	140.3	3.2	4.37	4.64	55.0
	A-103	214.00	143.0	145.0	2.0	2.85	5.28	40.45
			145.0	160.10	14.90	Assays Lost		
			160.10	160.90	0.80	6.38	6.10	76.79
			170.40	171.90	1.50	5.70	7.51	92.90
60W	A-130	72.0	Hole Lost in Overburden					
	A-131	165.50	115.2	118.9	3.70	3.75	6.71	55.09
	A-119	172.82	49.6	52.9	3.90	2.40	6.25	43.00

NOTE: Diamond Drill Holes on Grum claims contiguous to Grum Extension into Vangorda border influence assays and tonnage estimates by their proximity.

Please note that the above estimated drill-indicated ore reserves on the GRUM EXTENSION INTO VANGORDA is not definitive. CAMC describe the Grum Deposit on pages 8-10 of the report ANVIL DISTRICT ACQUISITION PROGRAM and quoting from page 17 of this report under section "Grum Extension" "Diamond drilling northwest of the proven reserve section of the Grum deposit indicated a continuation of the deposit which is open to the northwest and southwest. Detailed mapping suggests the Firth deposit is probably part of the Grum deposit. The open pattern of drilling in this area does not permit meaningful tonnage and grade estimates; however, potential for significant additional underground reserves is indicated."

Champ Extention Into Vangorda

The same references to basic data as set out under Grum Extension into Vangorda are applicable to the CHAMP EXTENSION INTO VANGORDA.

The table on the following page sets out the over 4% combined intercepts on Vertical Section 52W. My estimate based on doubtful claim boundaries is 26,280 metric tonnes with an average grade of 2.33% lead, 2.022% zinc and 29.64 grams/tonne of silver.

The fact of the matter is that most of the Vangorda Mines Ltd. diamond drill holes on this Champ Zone were too shallow to reach the zone.

This is apparent from Vertical Sections 58W, 56W, 54W, and 52W drawn by Kerr Addison Mines Ltd. but not presented in the GRUM MINERAL INVENTORY report of March 1977.

Basically the Champ deposit is an up-plunge continuation of the Grum deposit. It had not been fully explored as at May 1979. On page 10 of the GRUM MINERAL INVENTORY report and in the memo to L.P. Taggart, dated September 3, 1980, the indicated geologic ore reserves in the Champ are stated as follows:-

Source	Metric Tonnes	% Pb	% Zn	% Combined	Ag gms/MT
Grum Mineral Inventory	1,692,000	4.3	3.5	7.8	46
Taggart Memo	1,690,000*	4.28	3.51	7.79	46

* Taggart memo claims 1/3 of this reserve "occurs on Vangorda Mines property." (See Appendix 2)

Drill-Indicated Ore Reserves - Champ Extension Into Vangorda

Vertical Section	Assays			Area			Length	Volume	Sp. Gr.	Metric Tonnes	Weighted Av Grades			
	% Pb	% Zn	Ag gms/DMT	Strike Length x	Width	Area (M^2)		(M^3)			Pb x T	Zn x T	Ag x T	
52W	2.47	1.90	31	20	4	80	60	4,800	3	14,400	35,568	27,360	446,400	
	2.17	2.01	28	22	3	66	60	3,960	3	11,880	25,779	23,879	332,640	
										26,280	61,347	53,139	779,040	
Wt. Av.	2.33	2.02	29.64								2.3344%	2.0220%	29.6438	gms/DMT

NOTE: THE KERR ADDISON - VANGORDA BOUNDARY LINE of claim is wrong on Section 52W. (Please refer to claim maps and drill hole location maps and logs. It should be 73 metres south of where 52W had it.) It is probably a draftsman error only!
Many of the Vangorda holes on the CHAMP AREA are too shallow to reach the ore zone!

From the map DEPOSITS AND EXPLORATION POTENTIAL - ANVIL DISTRICT (page 14) it can be seen that CAMC believe there is significant exploration potential in the CHAMP area.

SUMMARY VANGORDA MINES LTD. - ORE RESERVES (As estimated independently by H.F. Ditchburn)

	Metric Tonnes	% Pb	% Zn	Silver gms/MT
Main Vangorda Open Pitable Reserves	11,084,877	2.95	4.63	N/A
Grum Extension Into Vangorda - Drill-Indicated in-situ geological	1,013,698	4.99	6.10	67.36
Champ Extension Into Vangorda - Drill-Indicated in-situ geological	26,280	2.33	2.02	29.64

NOTES:- Further exploration on all 3 deposits of Vangorda Mines Ltd. will probably expand the above reserves. I concur in this with the many repeated written opinions of Cyprus Anvil Mining Corporation.

CASE - HFD 1 and CASE - HFD 2 DID NOT USE THE ABOVE ORE RESERVES in its production plan. These two cases assumed only 11,450,000 short tons of ore was mined and milled in the period 1982 to 1992 inclusive, to be conservative. As further drilling and mine development provides more information on the east end of the Main Vangorda Deposit and on the CHAMP and GRUM EXTENSIONS into Vangorda claims, it will probably verify or increase the mineable reserves as used in this evaluation for Case - HFD 1 and Case - HFD 2.

The above independently estimated ore reserves, based on inadequate information, are an audit check on the basic official estimates of Prospectors Airways Ltd. and CAMC and the GRUM JOINT VENTURE MINERAL INVENTORY. Since different cut-offs and criteria were used by the various estimators my independent estimates verify the reserves quite well, all considered.

METALLURGY OF VANGORDA-TYPE ORES

Historically, from 1954 onwards, there are a large number of reports concerning the metallurgy of Vangorda Mines Ltd. ores. Those studied by H.F. Ditchburn include the following:-

October 4, 1954
Department of Mines and Technical Surveys, Ottawa, report on Vangorda metallurgy by standard flotation methods.

July 2, 1964
General Engineering Company Limited, VANGORDA MINES LIMITED, PRELIMINARY MINING AND COST STUDY.

March 25, 1969
Dowa Mining Co. Ltd., Tokyo, metallurgical test work for Mr. J.H. Stovel then President of Prospectors Airways.

July 17, 1969
The Galligher Company flotation tests on Vangorda ores.

November 25, 1969
Noranda's metallurgical laboratory report.

April 2, 1970, May 1975, May 1977
Metallurgical test reports by Dowa Mining Co. Ltd., including leaching.

February 26, 1975
NORANDA ORE DRESSING LAB REPORT NO. 4 on Vangorda Project.

December 12, 1977
The Noranda Milling Committee report, PILOT PLANT TESTING OF GRUM ORES.

February 10, 1978
Lakefield Research of Canada Ltd. report, THE RECOVERY OF LEAD AND ZINC FROM GRUM DEPOSIT SAMPLE.

December 1978
ANVIL DISTRICT ACQUISITION PROGRAM by Cyprus Anvil Mining Corporation (CAMC) metallurgy pp 21-23.

1970-1979
CAMC provided annual metallurgical performance and production data to H.F. Ditchburn. (Appendix 1, page 113)

March 1980
CAMC March 1980 report, "THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS pages 25 to 34 with flowsheets of Faro mill modifications plus predicted metallurgical performance.

Important Metallurgical Developments (1977 to May 1979)

The reports entitled PILOT PLANT TESTING OF GRUM ORES dated December 12, 1977 by the Noranda Milling Committee and THE RECOVERY OF LEAD AND ZINC FROM GRUM DEPOSIT SAMPLES by Lakefield Research of Canada Limited, dated February 10, 1978 are very significant since they show what was known or should have been known by CAMC prior to May 15, 1979.

These two reports sum up the metallurgical performance of GRUM-TYPE ORES, as a result of extensive pilot plant testing in 1977 and 1978. The findings and conclusions in these reports are thought to apply equally to the ores of the Grum Extension into Vangorda Mines Ltd. claims; the extension of Grum "Champ" ores into Vangorda Mines Ltd. claims and the Main Vangorda deposit of Vangorda Mines Ltd. Mineralogically, the ore characteristics, the genesis of the ore and other related factors as to grain size of the individual economic minerals are all quite similar in these deposits.

The grade of lead, zinc, silver, gold and copper of the various deposits differs slightly between each deposit but generally the amenability to conventional metallurgical processing is about the same overall .... and indeed very similar in all respects to the metallurgical flowsheet modifications planned for CAMC's existing 10,400 ton per day mill at Faro in 1980-1981 (presently well underway) as part of the $240,000,000 Vangorda Plateau Project.

The important metallurgical developments due to the piloting of Grùm-type ores as set out in the above mentioned Noranda and Lakefield reports, are as follows:-

1. A finer primary grind than at the Faro mill (1970-1979) ie., 90% passing 200 Tyler mesh replacing the existing 50% passing 200 Tyler mesh produced better grades and recoveries into "rougher" concentrates.

2. Regrinding of "rougher" concentrates to 95% passing 20 microns for the lead and 85%-90% passing 20 microns for the zinc concentrate gave much improved final concentrate grades and very much better metallurgical recoveries.

3. Primary grinding and regrinding would require about 45% more electric power consumption than presently used, ie., 145 GW hours vs 100 GW hours. This would necessitate large capital expenditures by N.C.P.C. and CAMC for new power installations.

4. The overall grades and recoveries of lead, zinc, silver and gold, were forecasted, after all this metallurgical test work in 1977 and 1978 as shown in the table on Metallurgical Performance with Projections below:-

Metallurgical Performance With Projections

	Lead		Zinc		Silver	Gold
	% Recovery into Conc.	Conc. Grade % Pb	% Recovery into Conc.	Conc. Grade % Zn	Grade in Pb Conc. ozs/DMT	Grade in Pb Conc. ozs/DMT
CAMC - '70-'79 Actual Results	83.34	65.19	76.55	50.41	14.00	N/A
CAMC - '80-'95 Projections Faro Ores	87.5	67.0	88.5	53.5	19.29	0.19
% Improvement '80-'95 vs '70-'79	+ 10.5	+ 10.3	+ 11.5	+ 10.6	+ 37.8	N/A
CAMC - '80-'95 Projection Grum Ores	80.0	60.0	83.0	55.0	24.11	0.11
Noranda Milling Committee report Grum Ores, Dec. 12, 1977.	77.0	62.0	81.0	56.0	29.76	0.15
CAMC Vangorda Evaluation September 6, 1979:						
Vangorda Ores:-						
- Model I, Sept. 6/79	80.0	62.0	84.0	56.0	28.0	0.15
- Model II, (July 1980)*	80.0	50.0	77.0	52.8	18.5	0.21
Utilized by H.F. Ditchburn for this Vangorda Evaluation report Case - HFD 1	80.0	62.0	84.0	56.0	28.0	0.15

* Received by H.F. Ditchburn & Associates Ltd. October 1981.

Metallurgical Findings & Conclusions

H.F. Ditchburn in this valuation report has NOT introduced any variances in metallurgical recoveries or concentrate grades as compared with CAMC's Vangorda Evaluation, dated September 6, 1979. (unrevised as at July 1980)

When CAMC made its original September 6, 1979 Evaluation this was probably the concensus opinion. CAMC had not completed its metallurgical test work on Vangorda-type ores (conducted by Kamloops Research and Assay Ltd. and/or its subsidiary Kamloops Metallurgical Engineers Ltd.). CAMC probably utilized the Noranda Milling Committee's results from the Grum ore pilot plant testing, conducted by Lakefield Research of Canada, Limited in 1976 and 1977, as well as preliminary work underway on fine grinding improvements by CAMC as it related to Faro-type and Grum-type ores.

As shown above the very important projected metallurgical performance improvements, due mainly to finer grinding, is very noteworthy because it not only increases lead, zinc, silver, and gold production into concentrates but it adds very materially to net sales, after smelting and outgoing freight costs, and promises to increase profitability dramatically. In fact the present $240,000,000 "Vangorda Plateau Project" is premised for rapid payback largely on these anticipated metallurgical improvements. Gordon Davis in discussions with me stated this opinion on several occasions and in this I concur after studying the two important CAMC reports, namely, ANVIL DISTRICT ACQUISITION PROGRAM and THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS. Please also refer to page 4 of CAMC's report VANGORDA EVALUATION, dated July 24, 1979. In the September 6, 1979 report, compared to the July 24, 1979 report the zinc recovery has been increased from 83% to 84% and the silver assay in the lead concentrate from 22.5 ozs/DMT to 28.0 ozs/DMT and further the gold assay in the lead concentrate from 0.145 oz/DMT to 0.15 oz/DMT. This would seem to be an admission by CAMC of the metallurgical performance improvements underway respecting Vangorda-type ores at that time.

METAL PRICES

The profitability of CAMC's on-going operations, or any mining operations or any valuation case for Vangorda Mines Ltd., is very sensitive to metal prices for lead, zinc, silver and gold.

THE BASIC ASSUMPTION MADE BY H.F. DITCHBURN IN THIS VALUATION REPORT IS THAT METAL PRICES ARE AS AT MAY 15, 1979 (THE DATE OF "CLOSING") SHOULD PREVAIL IN ANY DETERMINATION OF A "FAIR VALUE" FOR VANGORDA MINES LTD.

The projected metal prices used by CAMC in some of its valuations of Vangorda Mines Ltd., as used in the Examination for Discovery by Gordon Davis, and in other valuations of Anvil District projects are material to this valuation including the metal prices used by CAMC to obtain the Board of Directors' authorization for the $240,000,000 Vangorda Plateau Project. CAMC's metal price projections along with the metal prices used by H.F. Ditchburn in this valuation report are shown in the following table:-

Metal Prices As at May 1979*

U.S. Dollars

	Lead			Zinc	Silver	Gold
	LME Spot (1)	LME 3 mos. (2)	LME Average (1) + (2)	GOB European Producer Price	Handy & Harman Metals Week	London Fixings Metal Bulletin
	¢	¢	¢	¢	$	$
April 1979	52.64	49.46	51.05	35.74	7.49	239.16
May 1979	56.21	52.72	54.46	35.27	8.37	257.62
June 1979	62.68	58.14	60.41	34.13	8.53	279.07
July 1979	57.70	55.38	56.54	32.69	9.13	294.74
Average 4 months (Applicable to May 1979 shipments from Vangorda)			55.617**	34.458**	8.38	267.645

* Equivalent average prices which would have been received on the assumption Vangorda concentrates were shipped at May 15, 1979. See "quotational period" definition in Toho and Mitsui smelter contracts ie., "the calendar month following the month of arrival of the carrying vessel at the first port of discharge in Japan." See also "Payments" and "Provisional Payments" definitions in both contracts, ie., 80% paid on day shipment departs Skagway with 16% paid 120 days from the date of shipment with remainder of 4% (subject to adjustments for weights, assays and metal prices) paid immediately on final determination, which is probably later than 120 days.

** In the opinion of H.F. Ditchburn, lead prices in April-July 1979 are somewhat high relative to price trend lines and traditional lead-zinc price relationships due to exceptional automotive battery and replacement battery consumption at that time. Whereas zinc prices in April-July 1979 were somewhat depressed, below zinc price trend lines and traditional lead-zinc price relationships due to excessive zinc inventories and the substitution of zinc by aluminum in diecasting and other materials for coatings (galvanizing) causing decreased consumption in zinc in the April-July 1979 period. Nevertheless the buoyancy in lead will probably balance out the depressed situation in zinc over the period of time material to this valuation report.

CAMC Valuation Report Case Name & Number	Metal Prices: Lead ¢U.S./lb	Zinc ¢U.S./lb	Silver $U.S./oz	Gold $U.S./oz	Metal Price Period
Anvil District Acquisition Program (Dec. 1978)					
"Case 21 Anvil Alone"	30.00	32.65	5.50	175.00	1979
"Case 22 Anvil & Grum 1982"	32.00	34.02	6.00	175.00	1980
"Case 23 Anvil & Grum 1984"	32.00	40.00	6.00	175.00	1981
Vangorda Evaluation (July 24, 1979)					
"Base Case" 1	32.00	40.00	6.00	175.00	'82-'87
"Current Evaluation" Case 2.1	40.00	45.00	7.50	200.00	'82-'89
"Optimistic Evaluation" Case 2.2	45.00	50.00	8.00	250.00	'82-'87
Vangorda Evaluation (September 6, 1979)					
"Base Case" Case 1	32.00	40.00	6.00	175.00	'82-'87
"Current Evaluation" Case 2.1	40.00	45.00	8.00	250.00	'82-'89
"Optimistic Evaluation" Case 2.2	45.00	50.00	9.00	300.00	'82-'87
(These cases were used by Mr. R.E.G. Davis in Examination for Discovery C.792523)					
The Development of the Vangorda Plateau Ore Deposits (March 3, 1980 & March 24, 1980)					
"Case 1 Anvil Alone to 1988" No fine grind	43.00	39.226	24.00	456.00	1980
"Case 3B-V Rev. V-G DEV 1983-1995 fine grind '82"	42.50	44.00	20.00	400.00	1981
"Case 4B-G Rev. V-G DEV 1985-1995 fine grind '82"	42.50	50.00	20.00	400.00	1982
(These cases were used by CAMC management to obtain $240,000,000 project authorization from its Board of Directors)					
H.F. Ditchburn & Assoc. Valuation of Vangorda Mines Ltd.					
Case - HFD 1 and Case - HFD 2	55.617	34.458	8.38	267.64	May 15, 1979
Wright Engineers Ltd.					
Vangorda Mines Ltd. Property Evaluation	45.39	31.91	6.98	229.60	Moving Average

CASE - HFD 1

PRODUCTION PLAN
MINE LIFE FORECAST

	1982	1983	1984	1985	1986	1987	1988	1989	1991	1992	Project Totals
Feed Grade (%)											
- Lead	2.963	2.963	2.963	2.963	2.963	2.963	2.963	2.963	2.963	2.963	2.963
- Zinc	4.863	4.863	4.863	4.863	4.863	4.863	4.863	4.863	4.863	4.863	4.863
Total (Combined)	7.826*	7.826	7.826	7.826	7.826	7.826	7.826	7.826	7.826	7.826	7.826
Cubic Yards Moved: (000 BCY)											
- Waste and Low Grade @ 3.25 tons/BCY**	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,322	1,194	14,414
- Ore @ 3.50 tons/BCY	300	300	300	300	300	300	300	300	300	271	3,271
Total	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,622	1,465	17,685
Tons Milled (000 DST)	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	950	11,450
Mill Feed: (000 lbs)											
- Lead	62,223	62,223	62,223	62,223	62,223	62,223	62,223	62,223	62,223	56,297	678,527
- Zinc	102,123	102,123	102,123	102,123	102,123	102,123	102,123	102,123	102,123	92,397	1,113,627
Metal Recovered: (000 lbs)											
- Lead	49,778	49,778	49,778	49,778	49,778	49,778	49,778	49,778	49,778	45,038	542,818
- Zinc	85,783	85,783	85,783	85,783	85,783	85,783	85,783	85,783	85,783	77,613	935,443
Recoveries: (%)											
- Lead	80	80	80	80	80	80	80	80	80	80	80
- Zinc	84	84	84	84	84	84	84	84	84	84	84
Concentrate Grades: (%)											
- Lead	62	62	62	62	62	62	62	62	62	62	62
- Zinc	56	56	56	56	56	56	56	56	56	56	56
- Silver in Lead Concentrate (oz/DMT)	28	28	28	28	28	28	28	28	28	28	28
- Gold in Lead Concentrate (oz/DMT)	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Concentrate Produced: (DST)											
- Lead	40,144	40,144	40,144	40,144	40,144	40,144	40,144	40,144	40,144	36,321	437,761
- Zinc	76,592	76,592	76,592	76,592	76,592	76,592	76,592	76,592	76,592	69,298	835,218
Total DST	116,736	116,736	116,736	116,736	116,736	116,736	116,736	116,736	116,736	105,619	1,272,979
Concentrate Produced: (DMT)											
- Lead	36,418	36,418	36,418	36,418	36,418	36,418	36,418	36,418	36,418	32,950	397,130
- Zinc	69,484	69,484	69,484	69,484	69,484	69,484	69,484	69,484	69,484	62,867	757,707
Total Concentrate (DMT)	105,902	105,902	105,902	105,902	105,902	105,902	105,902	105,902	105,902	95,816	1,154,836

* In March 1980 after CAMC redrilled the Vangorda deposit, mined grade was estimated at 8.10% combined or 3½% higher grade than Kerr Addison Mines Ltd. or Prospectors Airways' data used above.

** All of Vangorda's overburden and oxidized capping is stripped from 1979 to December 31, 1981.

CASE - HPD 1

PRODUCTION AND GENERAL ADMINISTRATION COSTS
MINE LIFE FORECAST

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Project Totals
Production Costs*: ($000 Cdn)												
- Mine & Mechanical Department	$ 3,909	3,909 +1.0	3,909	3,909	3,909	3,909	3,909	3,909	3,909	3,909	3,531	42,621
-Cost/cu yd. moved - $	$ 2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41
- Mill Department	5,449	5,449 -.8	5,449	5,449	5,449	5,449	5,449	5,449	5,449	5,449	4,930	59,420
-Cost/DST - $	$ 5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19
- Electrical Department	1,690	1,690 -1.4	1,690	1,690	1,690	1,690	1,690	1,690	1,690	1,690	1,529	18,429
- Coal Department	124	124	124	124	124	124	124	124	124	124	112	1,352
- Environmental Control	24	24	24	24	24	24	24	24	24	24	22	262
- Sub-total	11,196	11,196 -1.3	11,196	11,196	11,196	11,196	11,196	11,196	11,196	11,196	10,124	122,084
- Transportation to Tidewater $31.26/WST	3,856	3,856 -1.2	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,488	42,048
- Skagway Terminal $4.36/WST	538	538	538	538	538	538	538	538	538	538	487	5,867
Total Production Costs	$ 15,590	15,590 2.0	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	14,099	169,999
General & Administration:												
- Personnel	258	258	258	258	258	258	258	258	258	258	258	2,838
- Safety & Security	100	100	100	100	100	100	100	100	100	100	100	1,100
- Purchasing	198	198	198	198	198	198	198	198	198	198	198	2,178
- Accounting	132	132	132	132	132	132	132	132	132	132	132	1,452
- Engineering	154	154	154	154	154	154	154	154	154	154	154	1,694
- Townsite	1,127	1,127	1,127	1,127	1,127	1,127	1,127	1,127	1,127	1,127	1,127	12,397
- General Manager & Staff	737	737	737	737	737	737	737	737	737	737	737	8,107
- Vancouver Office	923	923	923	923	923	923	923	923	923	923	923	10,153
Total General & Administration @ $3.4561/DST	$ 3,629	3,629 +.2	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	39,919
Transportation to Tidewater (WST)												
- Lead - Forecast at 5% moisture	42,151	42,151	42,151	42,151	42,151	42,151	42,151	42,151	42,151	42,151	38,137	459,647
- Zinc - Forecast at 0% moisture	81,188	81,188	81,188	81,188	81,188	81,188	81,188	81,188	81,188	81,188	73,456	885,336
Total Concentrate (WST)	123,339	123,339	123,339	123,339	123,339	123,339	123,339	123,339	123,339	123,339	111,593	1,344,983
Cost Rate ($/WST)	$ 31.26	31.26	31.26	31.26	31.26	31.26	31.26	31.26	31.26	31.26	31.26	31.26
Transportation Costs ($000 Cdn)	$ 3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,488	42,048

* All costs are the average of March 1, 1979 to August 30, 1979 for actual costs at the Faro operations.

NET SALES REVENUE AND CONVERSION SUMMARY, F.O.B. SKAGWAY

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Project Totals
Concentrate Sold: (DMT)												
- Lead	34,418	36,418	36,418	36,418	36,418	36,418	36,418	36,418	36,418	36,418	34,950	397,130
- Zinc	66,484	69,484	69,484	69,484	69,484	69,484	69,484	69,484	69,484	69,484	65,887	757,707
Payable Metal:												
- Lead (000 lbs)	44,692	47,289	47,289	47,289	47,289	47,289	47,289	47,289	47,289	47,289	45,383	515,676
- Zinc (000 lbs)	69,768	72,916	72,916	72,916	72,916	72,916	72,916	72,916	72,916	72,916	69,120	795,132
- Silver (000 ozs)	916	969	969	969	969	969	969	969	969	969	930	10,567
- Gold (000 ozs)	5	5	5	5	5	5	5	5	5	5	5	55
Sales: (US $000)												
- Lead @ 55.617 ¢/lb	$ 24,856	26,300	26,300	26,300	26,300	26,300	26,300	26,300	26,300	26,300	25,241	$286,797
- Zinc @ 34.458 ¢/lb	24,041	25,125	25,125	25,125	25,125	25,125	25,125	25,125	25,125	25,125	23,817	273,983
- Silver @ $8.3818/troy oz	7,680	8,123	8,123	8,123	8,123	8,123	8,123	8,123	8,123	8,123	7,798	88,585
- Gold @ $267.645/troy oz	1,414 *	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414	1,414	15,554
Gross Sales	$ 57,991	60,962	60,962	60,962	60,962	60,962	60,962	60,962	60,962	60,962	58,270	$864,919
Conversion Costs (US $000)												
Treatment Charges:												
- Lead @ $183.42 U.S.	$ 6,313	6,680	6,680	6,680	6,680	6,680	6,680	6,680	6,680	6,680	6,410	72,843
- Zinc @ $184.70 U.S.	12,275	12,834	12,834	12,834	12,834	12,834	12,834	12,834	12,834	12,834	12,166	139,767
Total	18,548	19,514	19,514	19,514	19,514	19,514	19,514	19,514	19,514	19,514	18,576	212,610
Ocean Freight & Insurance:-												
- Base Costs @ $14.47U.S./WMT	1,539	1,608	1,608	1,608	1,608	1,608	1,608	1,608	1,608	1,608	1,532	17,544
Other:												
- Conversion Costs ($000/yr)	50	50	50	50	50	50	50	50	50	50	50	550
- Superintendent	61	64	64	64	64	64	64	64	64	64	60	697
Total	111	114	114	114	114	114	114	114	114	114	110	1,247
Total Conversion Costs + CIF	20,198	21,236	21,236	21,236	21,236	21,236	21,236	21,236	21,236	21,236	20,218	231,540
Net Sales Revenue ($000 U.S.) Sales - C.C.	37,793	39,726	39,726	39,726	39,726	39,726	39,726	39,726	39,726	39,726	38,052	433,379
Exchange ($Cdn/$U.S.)	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594	1.1594
NET SALES REVENUE ($000 Cdn)	$ 43,817	46,058	46,058	46,058	46,058	46,058	46,058	46,058	46,058	46,058	44,117	$502,456

* $267.645 x 5285.1 troy ounces = $1,414,500 rounded into thousands = $1,414

CASE - HFD 1
FREE STANDING

VANGORDA PROJECT
INCOME STATEMENT, NET CASH FLOW AND NET PRESENT VALUE
($000 Cdn)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Project Totals
NET SALES REVENUE	0	0	0	43,817	46,058	46,058	46,058	46,058	46,058	46,058	46,058	46,058	46,058	44,117	502,456
Less Production Costs	0	0	0	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	14,099	169,999
Less General & Admin. Costs	0	0	0	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	39,919
Less Exploration (other than Vangorda)	0	0	0	818	0	0	0	0	1,000	2,000	1,000	1,000	0	0	5,818
Gross Mining Income	$ 0	0	0	23,780	26,839	26,839	26,839	26,839	25,839	24,839	25,839	25,839	26,839	26,389	286,720
Less Other Costs & Expenses:-															
- Depreciation and Amortization(UOP)	0	0	0	9,410	9,410	9,410	9,415	9,420	9,420	9,420	9,420	9,420	9,420	9,300	103,465
Operating Income	0	0	0	14,370	17,429	17,429	17,424	17,419	16,419	15,419	16,419	16,419	17,419	17,089	183,255
Financial Charges:-															
- Interest	112	3,425	6,897	10,480	9,405	8,230	6,855	6,280	3,508	1,530	0	0	0	0	55,722
- Less Interest Capitalized	112	3,425	6,897	0	0	0	0	0	0	0	0	0	0	0	10,434
Interest Expensed	0	0	0	10,480	9,405	8,230	6,855	5,280	3,508	1,530	0	0	0	0	45,288
Profit Before Taxes	0	0	0	3,890	8,024	9,199	10,569	12,139	12,911	13,889	16,419	16,419	17,419	17,089	137,967
Current Taxes: Federal	0	0	0	0	0	0	0	0	0	0	1,371	4,317	6,032	6,935	18,655
Yukon Royalty	0	0	0	0	0	0	0	0	0	0	49	195	232	346	822
Total Current Taxes	0	0	0	0	0	0	0	0	0	0	1,420	4,512	6,264	7,281	19,477
Net Income For Common Shares (Equity)	0	0	0	3,890	8,024	9,199	10,569	12,139	12,911	13,889	14,999	11,907	11,155	9,808	118,490
Add Depreciation and Amortization	0	0	0	9,410	9,410	9,410	9,410	9,410	9,410	9,410	9,410	9,410	9,410	9,410	103,510
Gross Cash Flow	0	0	0	13,300	17,434	18,609	19,979	21,549	22,321	23,299	24,409	21,317	20,565	19,218	222,000
Less Debt Principal Repayments	0	0	0	12,000	13,000	15,000	16,000	18,000	20,000	15,302	0	0	0	0	109,302
Less Continuing Capital (Post Production)	0	0	0	1,250	1,250	1,250	1,250	250	250	250	250	0	0	0	6,000
NET CASH FLOW FOR COMMON SHARES	$ 0	0	0	50	3,184	2,359	2,729	3,299	2,071	7,747	24,159	21,317	20,565	19,218	106,698
Discount Factor @ 12%	0.89286	0.79719	0.71178	0.63552	0.56743	0.50663	0.45235	0.40388	0.36061	0.32197	0.28748	0.25668	0.22917	0.20462	-
Discount Factor @ 14%	0.87719	0.76947	0.67497	0.59208	0.51937	0.45559	0.39964	0.35056	0.30751	0.26974	0.23662	0.20756	0.18207	0.15971	-
Discounted Net Present Value at 12%	0	0	0	32	1,807	1,195	1,234	1,332	747	2,494	6,945	5,472	4,713	3,932	29,903
Discounted Net Present Value at 14%	0	0	0	30	1,654	1,705	1,091	1,156	637	2,090	5,716	4,424	3,744	3,069	24,686
Cumulative Net Present Value at 1/1/79 12%	0	0	0	32	1,839	3,034	4,268	5,600	6,347	8,841	15,786	21,258	25,971	29,903	-
Cumulative Net Present Value at 1/1/79 14%	0	0	0	30	1,684	2,759	3,850	5,006	5,643	7,733	13,449	17,873	21,617	24,686	-
Vangorda Cumulative Share Evaluation on 2,022,488 shares at 12%	0	0	0	0.02	0.91	1.50	2.11	2.76	3.14	4.37	7.80	10.51	12.84	14.78	14.78
Vangorda Cumulative Share Evaluation on 2,022,488 shares at 14%	0	0	0	0.02	0.83	1.36	1.90	2.47	2.79	3.82	6.65	8.84	10.69	12.21	12.21

* Should mineable payable ore reserves be developed and mined from either, GRUM EXTENSION INTO VANGORDA OR CHAMP EXTENSION INTO VANGORDA OR MORE THAN THE 11,450,000 DST, assumed to be mined and milled from THE MAIN VANGORDA DEPOSIT OPEN PIT, then it would be necessary to add to the 11 years of mine life assumed and to add to the NET PRESENT VALUE OF VANGORDA MINES LTD. for such speculative values.

CASE - HFD 2

INTEGRATED

VALUATION OF VANGORDA MINES LTD.

CASE - HFD 2

INTEGRATED

VALUATION OF VANGORDA MINES LTD.

This CASE - HFD 2 gives consideration to the integration of the mining of the three VANGORDA DEPOSITS with existing (as modified) operations of Cyprus Anvil Mining Corporation at Faro, Yukon Territory.

CASE - HFD 2 assumes exactly the same MAJOR ASSUMPTIONS AND CRITERIA FOR VANGORDA MINES LTD. VALUATION CASE - HFD 1 as set out on pages 7 and 8 except that the mineable Vangorda ore would be processed at the Faro mill and would use all other Faro infrastructure. This would considerably reduce the capital investment necessary to mine and mill the Vangorda Mines Ltd. ores.

H.F. Ditchburn has considered CAMC's capital expenditure estimates contained in a report entitled, THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS, dated March 1980. The overall capital expenditures (in escalated 1980 Cdn dollars) were set out in "FIGURE 10-9 CASE 4B-G CASHFLOW REPORT" as follows:-

Reference Code	Reference Line	Item	Total Capital Expenditure 1980-1995
108	12	Housing Mortgage Principal	$ 4,732,000
391	13	Capital Expenditures - Anvil	55,840,000
389	14	Vangorda + Grum related	120,122,000
207	15	Exploration & Feasibility	5,359,000
		Pre-production stripping	49,890,000*
		Total Capital Expenditure	$235,943,000

* From details in Figure 1-7, page 11, there is an item which is apparently Vangorda + Grum related. That is, the pre-production stripping of Faro III is NOT included even though underway in 1980 and 1981. Further detail is given on page 41 with no breakdown of Vangorda + Grum related.

Even though the above capital expenditures are escalated by about 10% per annum if we take the ($120,122,000 + $49,890,000) $170,012,000 escalated Vangorda + Grum capital expenditures and prorate this on a tonnage basis of ore to be mined, we have the following:-

PRORATED CAPITAL EXPENDITURES TO VANGORDA + GRUM

	Vangorda	Grum	Total
Ore Mined & Milled (DMT)	6,134,000	15,584,000	21,718,000
- % Split	28.2	71.8	100%
Mining Rate DMT/day	4,660	4,660	-
Capital Expenditure Proration	33,927,300	86,194,700	120,122,000
Pre-production stripping	14,091,000	35,799,000	49,890,000
Sub-Total	$48,018,300	$121,993,700	$170,012,000

This compares with the unescalated Kilborn Engineering (B.C.) Ltd. report of July 4, 1979 for the non-mill related items at Vangorda as adjusted by H.F. Ditchburn, as follows:-

Site Preparation	$ 410,000
Galleries	450,000
Transfer House	170,000
Crusher Station	2,200,000
Site electrics ($\frac{1}{2}$)	2,350,000
Yards & Services	680,000
Service Complex	3,900,000
Office (no laboratory)	420,000
Explosives	50,000
Mining Pre-production equipment	6,080,000
Mining Service Equipment	900,000
	17,610,000
Construction Indirects	5,000,000
Contingency	3,340,000
Engineering, Procurement & Construction Supervision	2,330,000
Kilborn (as reestimated by HFD)	$ 28,280,000•

• This adjusted Kilborn estimate is for 3,000 short tons per day whereas the CAMC estimate is for 5,137 short tons per day. This probably accounts for much of the difference between the 2 estimates as does the escalation in CAMC's vs no escalation in Kilborn's.

H.F. Ditchburn, to be very conservative, using the above basic estimates, assumes a capital investment on integrated Vangorda of $38,000,000 for CASE - HFD 2. This would breakdown approximately as follows:-

H.F. DITCHBURN ESTIMATE OF VANGORDA CAPITAL INVESTMENT AS AN INTEGRATED MINE FOR CASE - HFD 2

	$ Cdn	
Mine Exploration	1,500,000	Expended in 1979 by CAMC
Mine Pre-production Development:		
- Overburden	7,000,000	3,377,623 cubic metres
- Waste Rock	3,468,000	926,000 cubic metres
Open pit mine and Surface Equipment	8,800,000	partial proration with Grum
Transportation system	10,750,000	tonnage proration with Grum
Other including Faro housing	6,482,000	
Total Estimate to start-up	$38,000,000	
Add Continuing Capital During Operations	6,721,000*	as per Case - HFD 1
TOTAL PROJECT CAPITAL, CASE-HFD 2	$44,721,000*	or $3.9057 per short ton on a U.O.P. basis

* Used in capital expenditure, capital cost allowance, and tax accounting workpapers.

PRODUCTION PLAN - CASE - HFD 2

This is the same as for CASE - HFD 1.

It will probably be argued that in none of CAMC's cases for integrating Vangorda into existing Faro operations was a full year of Vangorda mine production considered prior to 1985. This is really not relevant since this "fair value" litigation over the value of a share of Vangorda Mines Ltd. assumes (as also assumed by CAMC in its three Vangorda Evaluations) the first full year of Vangorda production would be in 1982. The important assumption common to all estimators is that a decision to proceed with Vangorda was made in early 1979 to facilitate start-up in late 1981, with full production at January 1, 1982.

Because of the lagging concentrate production at Faro in 1979 and 1980 CAMC could have "crashed" Vangorda into production by late 1981, to alleviate its many production problems, if a decision had been made as late as mid-1979. (This was probably ruled out by management since the overall DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS was apparently not approved until early June 1980!)

The following tables for CASE - HFD 2, are the same as for CASE - HFD 1, and are not reproduced, namely:-

CASE - HFD 2
INTEGRATED

VANGORDA PROJECT
INCOME STATEMENT, NET CASH FLOW AND NET PRESENT VALUE
($000 Cdn)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Project Totals
NET SALES REVENUE	0	0	0	43,817	46,058	46,058	46,058	46,058	46,058	46,058	46,058	46,058	46,058	44,117	502,456
Less Production Costs	0	0	0	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	15,590	14,099	169,999
Less General & Admin. Costs	0	0	0	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	3,629	39,919
Less Exploration (other than Vangorda)	0	0	0	818	0	0	0	0	1,000	2,000	1,000	1,000	0	0	5,818
Gross Mining Income	0	0	0	23,780	26,839	26,839	26,839	26,839	25,839	24,839	25,839	25,839	26,839	26,389	286,720
Less Other Costs & Expenses:-															
- Depreciation and Amortization (UOP)	0	0	0	4,101	4,101	4,101	4,101	4,101	4,101	4,101	4,101	4,101	4,101	3,711	44,721
Operating Income	0	0	0	19,679	22,738	22,738	22,738	22,738	21,738	20,738	21,738	21,738	22,738	22,678	241,999
Financial Charges:-															
- Interest	165	1,900	4,670	4,473	3,523	2,548	584	0	0	0	0	0	0	0	17,863
- Less Interest Capitalized	165	1,900	4,670	0	0	0	0	0	0	0	0	0	0	0	6,735
Interest Expensed	0	0	0	4,473	3,523	2,548	584	0	0	0	0	0	0	0	11,128
Profit Before Taxes	0	0	0	15,206	19,215	20,190	22,154	22,738	21,738	20,738	21,738	21,738	22,738	22,678	230,871
Current Taxes: Federal	0	0	0	0	0	0	6,119	7,195	7,455	7,564	8,250	8,280	8,812	8,398	62,073
Yukon Royalty	0	0	0	0	0	0	286	362	377	384	425	427	459	434	3,154
Total Current Taxes	0	0	0	0	0	0	6,405	7,557	7,832	7,948	8,675	8,707	9,271	8,832	65,227
Net Income For Common Shares (Equity)	0	0	0	15,206	19,215	20,190	15,749	15,181	13,906	12,790	13,063	13,031	13,467	13,846	165,644
Add Depreciation and Amortization	0	0	0	4,101	4,101	4,101	4,101	4,101	4,101	4,101	4,101	4,101	4,101	3,711	44,721
Gross Cash Flow	0	0	0	19,307	23,316	24,291	19,850	19,282	18,007	16,891	17,164	17,132	17,568	17,557	210,365
Less Debt Principal Repayments	0	0	0	15,000	20,000	10,735	0	0	0	0	0	0	0	0	45,735
Less Continuing Capital (Post Production)	0	0	0	250	250	250	250	250	250	250	250	0	0	0	2,000
NET CASH FLOW FOR COMMON SHARES	0	0	0	4,057	3,066	13,306	19,600	19,032	17,757	16,641	16,914	17,132	17,568	17,557	162,630
Discount Factor @ 12%	0.89286	0.79719	0.71178	0.63552	0.56743	0.50663	0.45235	0.40388	0.36061	0.32197	0.28748	0.25668	0.22917	0.20462	-
Discount Factor @ 14%	0.87719	0.76947	0.67497	0.59208	0.51937	0.45559	0.39964	0.35066	0.30751	0.26974	0.23662	0.20756	0.18207	0.15971	-
Discounted Net Present Value at 12%	0	0	0	2,578	1,740	6,741	8,866	7,687	6,403	5,358	4,862	4,397	4,026	3,593	56,251
Discounted Net Present Value at 14%	0	0	0	2,402	1,592	6,062	7,833	6,673	5,460	4,489	4,002	3,556	3,198	2,804	48,071
Cumulative Net Present Value at 1/1/79 12%	0	0	0	2,578	4,318	11,059	19,925	27,612	34,015	39,373	44,235	48,632	52,658	56,251	
Cumulative Net Present Value at 1/1/79 14%	0	0	0	2,402	3,994	10,056	17,889	24,562	30,002	34,511	38,513	42,069	45,267	48,071	
Vangorda Cumulative Share Evaluation on 2,022,488 shares at 12%	0	0	0	1.27	2.13	5.47	9.85	13.65	16.82	19.47	21.87	24.04	26.04	27.81	27.81
Vangorda Cumulative Share Evaluation on 2,022,488 shares at 14%	0	0	0	1.18	1.97	4.97	8.84	12.14	14.84	17.06	19.03	20.80	22.38	23.76	23.76

* Should mineable payable ore reserves be developed and mined from either, GRUM EXTENSION INTO VANGORDA OR CHAMP EXTENSION INTO VANGORDA OR MORE THAN THE 11,450,000 DST, assumed to be mined and milled from THE MAIN VANGORDA DEPOSIT OPEN PIT, then it would be necessary to add to the 11 years of mine life assumed and to add to the NET PRESENT VALUE OF VANGORDA MINES LTD. for such speculative values.

IMPORTANT ESTIMATE VARIABLES

The most important estimating variables in all cases estimated by Cyprus Anvil Mining Corporation, Wright Engineers Ltd., and H.F. Ditchburn & Associates Ltd., are:-

Mineable Ore Reserve Dimensions
Ore Reserve Cut-Off Grades & Minimum Intercept Thickness
Ore Reserve Specific Gravity Factor
Metal Prices
Metallurgical Performance

1. Mineable Ore Reserve Dimensions

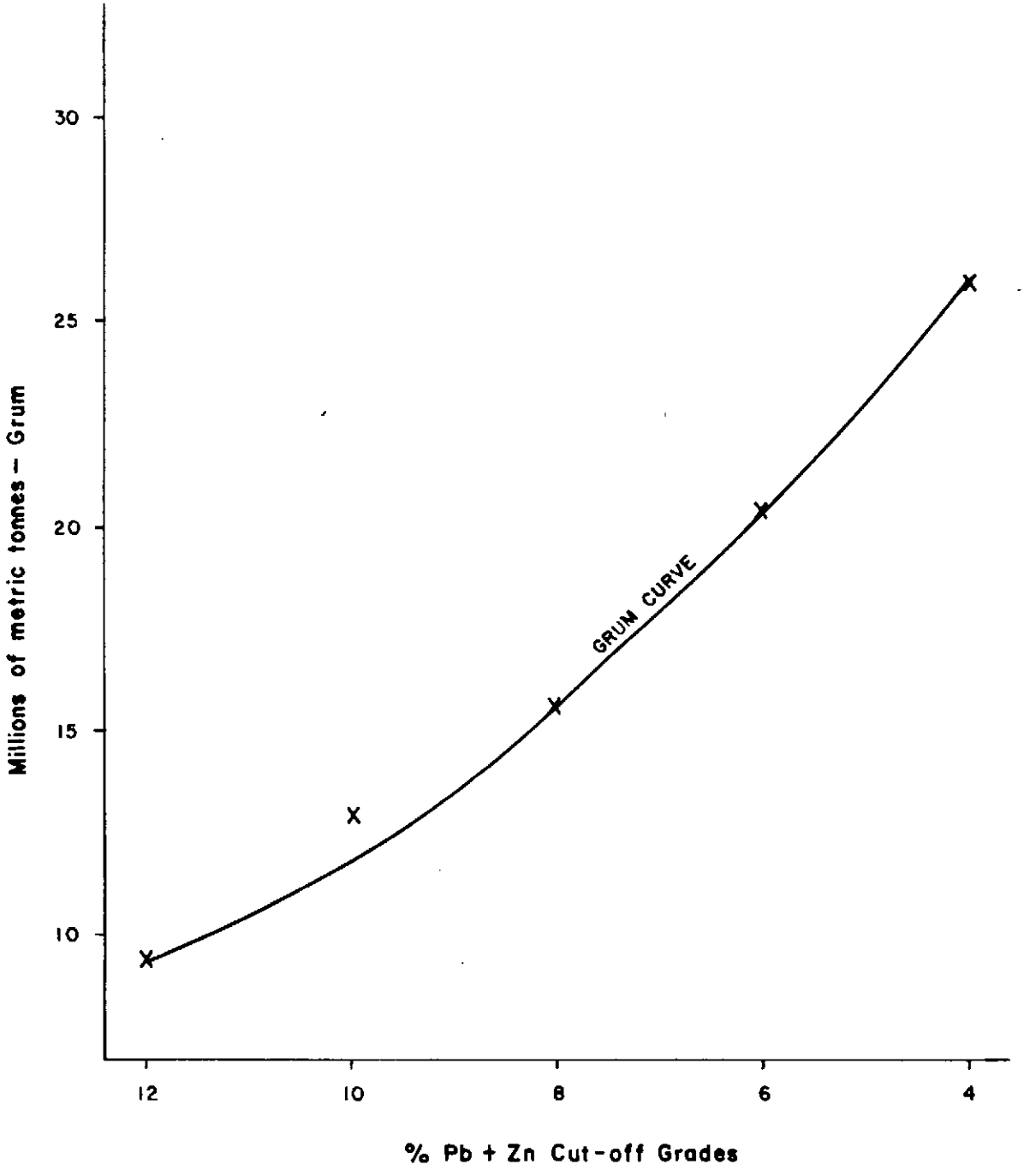
The CAMC Vangorda estimate includes open pit mineable tonnage from 2W to 12E (1400 feet long). The WEL Vangorda estimate includes open pit mineable tonnage from 4W to 38E (4200 feet long). H.F. Ditchburn & Associates' Vangorda estimate includes open pit mineable tonnage from 2.5W to 30E (3250 feet long).

2. Ore Reserve Cut-Off Grades & Minimum Intercept Thickness

Estimator	Minimum Cut-Off Grade	Minimum Intercept Thickness
Prospectors Airways	?	unknown
GECO	8%.	unknown
CAMC	4% combined Lead + Zinc	unknown
WEL	4% combined Lead + Zinc	8.2 feet
HFD	4% combined Lead + Zinc	10 feet

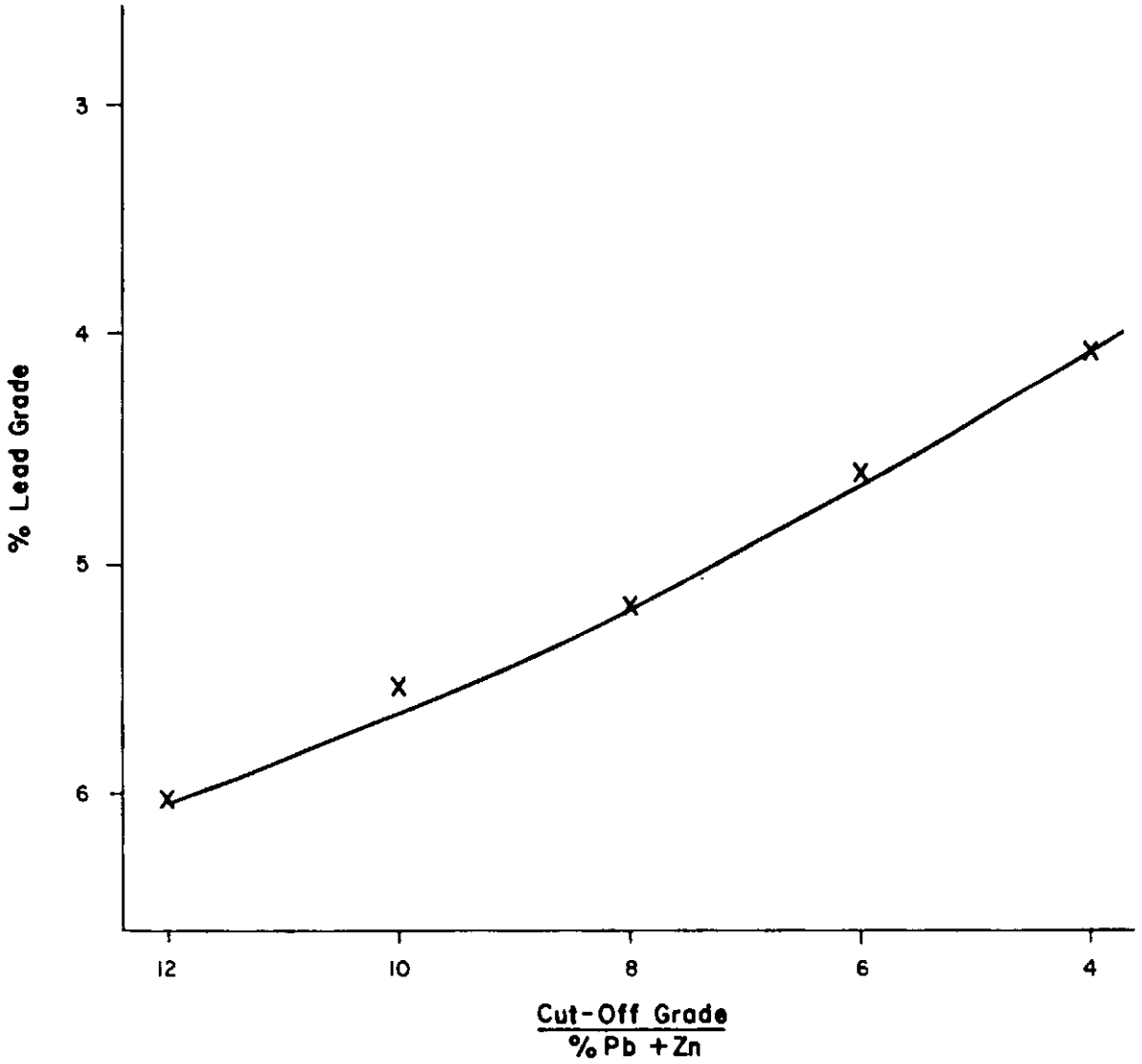
That is, the difference between an 8% and a 4% cut-off, using a Grum model to extrapolate to the Vangorda deposit, we have the 9,400,000 short tons of in-situ geologic reserves at a 4% cut-off vs an 8% cut-off by GECO to arrive at a mineable open pit reserve. Ie., using the following graph, the 9,400,000 short tons at an 8% cut-off used by GECO becomes $9,400,000 \times \frac{26}{15.5}$ = 15,768,000 short tons using a cut-off of 4%, as used by CAMC, H.F. Ditchburn & Wright Engineers. These cut-off grade differences also account for most of the variances in the grade estimated for lead, zinc and silver. The cut-off grade vs lead, zinc and silver grade is shown graphically on the following pages (as estimated by Kerr Addison for the Grum Deposit):-

CUT-OFF GRADE V S. TONNAGE



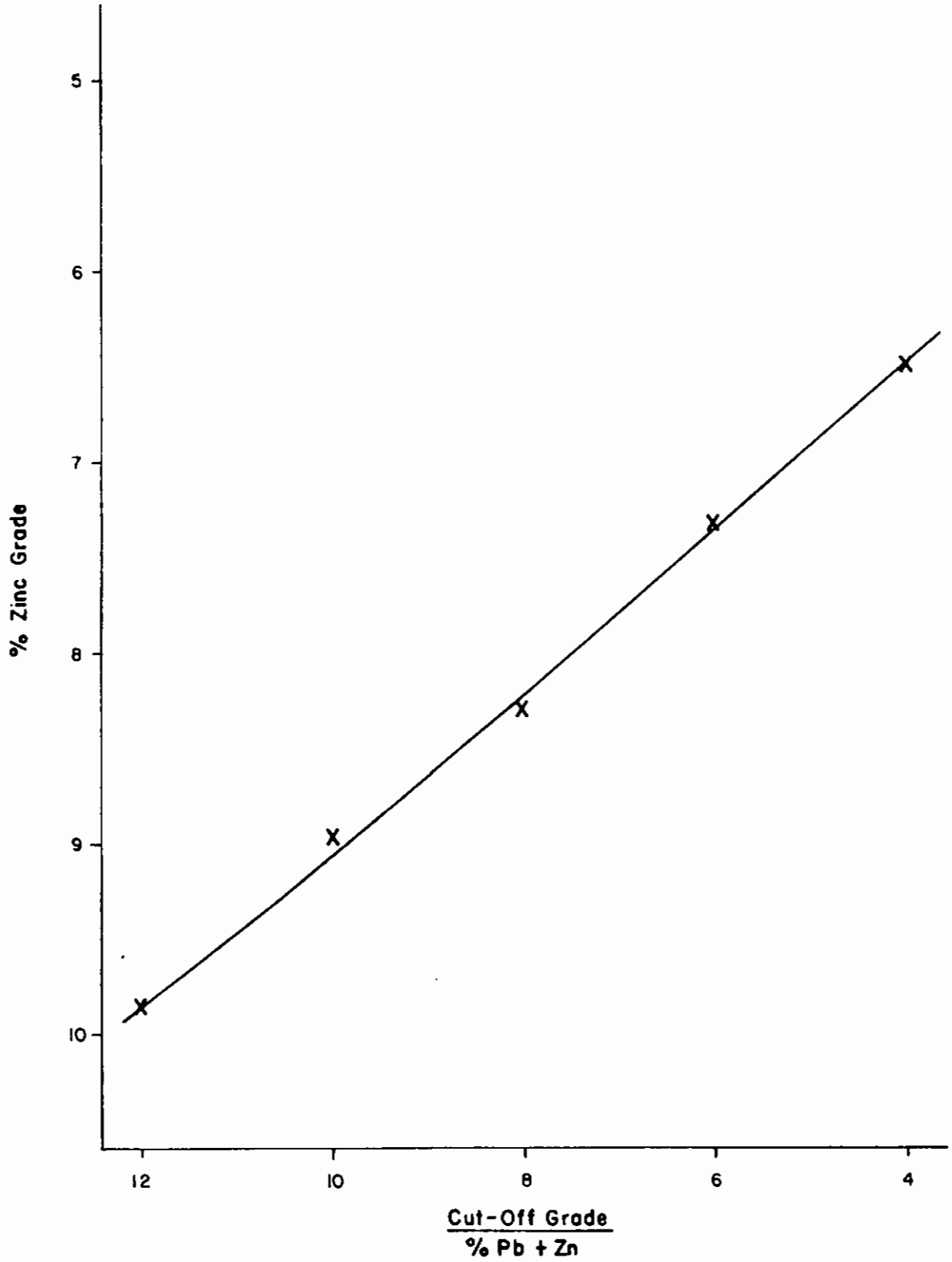
ESTIMATED % LEAD GRADE V.S CUT-OFF

(TAKEN FROM GRUM MINERAL INVENTORY REPORT)



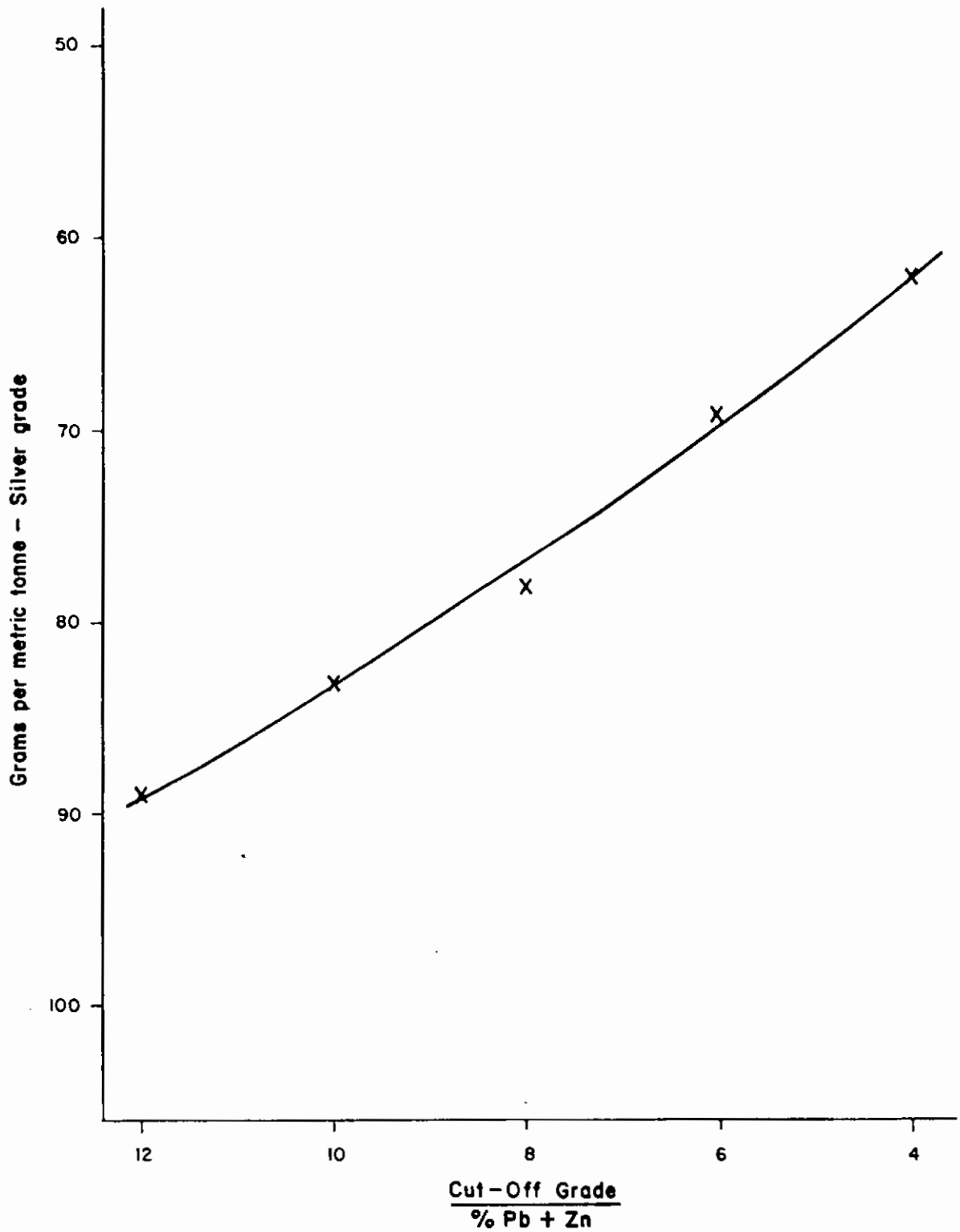
ESTIMATED % ZINC GRADE VS CUT-OFF

(TAKEN FROM GRUM MINERAL INVENTORY REPORT)



GMS/M.T. SILVER V S CUT-OFF

(TAKEN FROM GRUM MINERAL INVENTORY REPORT)



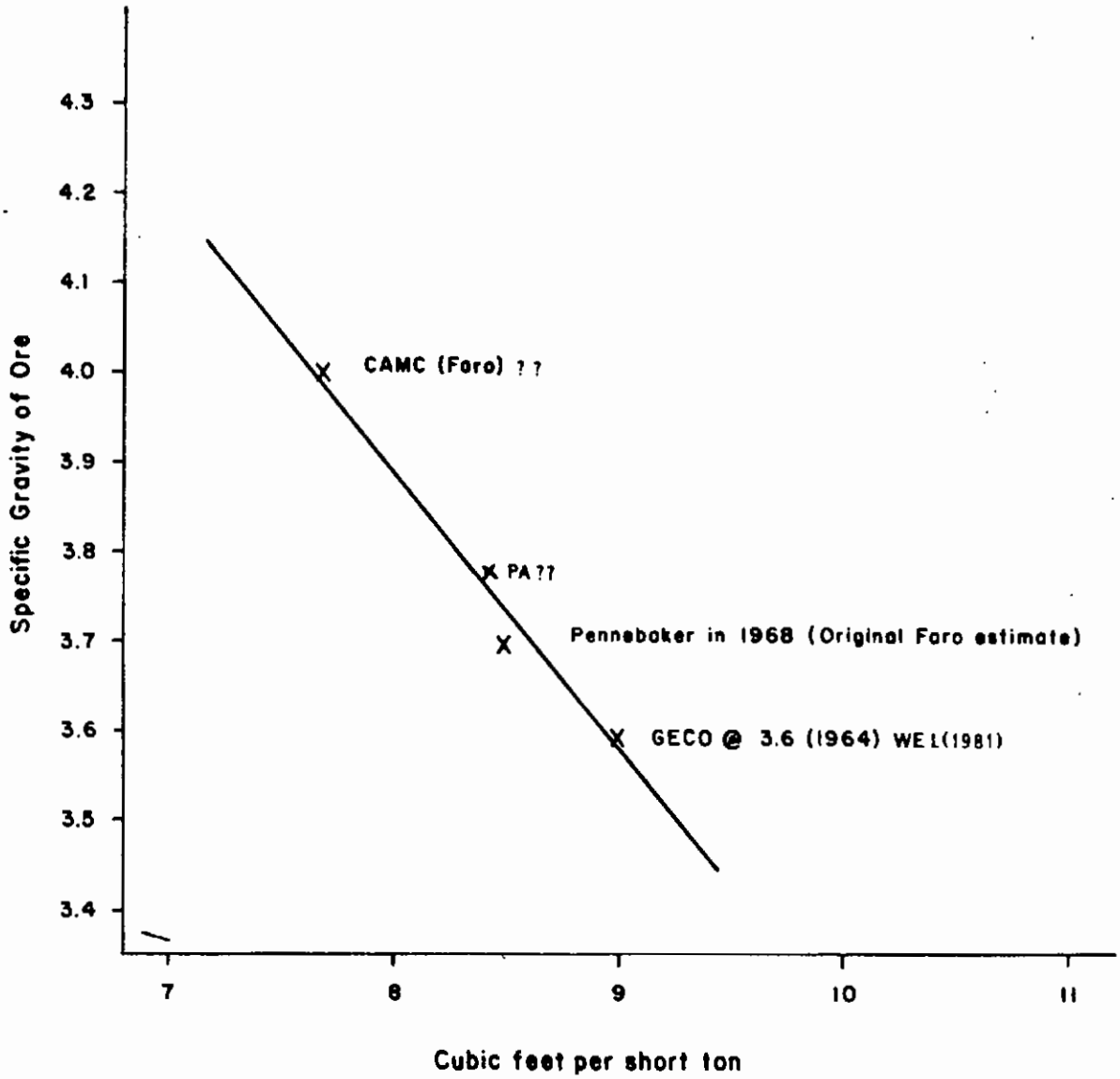
3. Ore Reserve Specific Gravity Factor

GECO and Wright Engineers Ltd used a specific gravity for ore of 3.6. This is much too low since the University of Toronto tests showed 4.28 to 4.42 for Vangorda. CAMC's experience at Faro indicates 3.25-3.50 for quartz sulphides and 4.0-4.1 for massive sulphides. 'H.F. Ditchburn used 2.4 for surface detritus and waste rock to be stripped, 3.5 for quartz sulphides and 4.0-4.1 for massive sulphides.

These differences are very significant. A specifc gravity of one (1) is premised on a cubic foot of water which weighs 62.42381 pounds avoirdupois. On this basis a specific gravity of waste at 2.4 means 2.0225 short tons per cubic yard (27 cubic feet) thus 1 short ton requires 0.546 cubic yards or it takes 14.74 cubic feet of such material per short ton. A specific gravity of 3.1 requires 10.31 cubic feet per short ton and 4.10 requires only 7.817 cubic feet per short ton.

The difference between an ore reserve tonnage using a specific gravity of 3.6 and one using a specific gravity of 4.0 is that the low specific gravity estimator would calculate only 90% of the tonnage arrived at by the estimator who used a specific gravity of 4.0. The same volume arrived at by the estimators (ore outlined area on cross-section times length between sections) using CAMC Faro practice for ore vs GECO and WEL shows a 14.528% difference in tonnage for exactly the same ore volumes as between CAMC and GECO and WEL.

SPECIFIC GRAVITY FACTOR PER SHORT TON



4. Metal Prices

It is observed by H.F. Ditchburn that CAMC used progressively better metal prices in its internal (management-type) projections. It is clear that the metal prices used by CAMC's management provide us with the opinion of management on future metal prices. It seems fair and reasonable that CAMC management, in its various evaluations of Vangorda Mines Ltd., should have used the same metal price projections as it used for its own internal studies, particularly its Case 4B-G upon which the new capital investment of $240,000,000 was validated. This would also apply to the Vangorda Evaluation by CAMC completed in July 1980 (also dated September 6, 1979).

Tabulated below are the metal prices used in the various estimates by Cyprus Anvil Mining Corporation (CAMC), H.F. Ditchburn & Associates Ltd. (HFD) and by Wright Engineers Ltd. (WEL).

METAL PRICES USED IN THE VALUATION REPORTS
($ U.S.)

	Years	Lead ¢/lb	Zinc ¢/lb	Silver $/oz	Gold $/oz
CAMC Cases 21, 22 & 23 (Dec. 1978)	1979	30.00	32.65	5.50	175
	1980	32.00	34.02	6.00	175
	1981-1988	32.00	40.00	6.00	175
CAMC Vangorda Evaluation Cases	1982-1987	32.00	40.00	6.00	175
CAMC Cases 3B-V & 4B-G (March 1980)	1980	43.00	39.22	24.00	456
	1981	42.50	44.00	20.00	400
	1982-1995	42.50	50.00	20.00	400
Case - HFD 1 (Oct. 1981) Vangorda Valuation as at May 15/79 prices	1982-1992	55.62	34.46	8.38	267.645*
WEL Vangorda Evaluation (Sept 1981)					
WEL Prices (Weighted Average)	1982-1991	45.39	31.91	6.98	229.60
CAMC Prices (basis???)	1982-1991	44.4	50.00	8.88	277.50

* See footnote on page 90.

The sensitivity of metal prices can be estimated but without considering actual paymetal recoveries, metallurgical performance and smelter contract specifics it is not very meaningful in itself.

H.F. Ditchburn & Associates Ltd. in Case - HFD 1 and Case - HFD 2 used the ACTUAL prices prevailing as at May 15, 1979, the date of the fair value to be established, giving due consideration to the details within the TOHO and MITSUI smelter contracts relative to payment dates, pricing dates, etc. The footnotes to H.F. Ditchburn's metal price assumptions are important.

The quotational basing point and quality of metal product are specified in the smelter contracts and are very important. For example, lead is premised on "London Metal Exchange quotations for standard lead (morning session) averaged for the quotational period." "Standard lead" has a purity on the LME of 99.97% minimum whereas pig lead in the United States has a minimum purity of 99.85%. A premium is paid for purity in the metal marketplace. For zinc, the price in the smelter contracts is premised on "the average of the European Producers Price basis for GOB zinc as quoted in the 'Metal Bulletin' of London, averaged for the quotational period." Zinc metal trades in 3 or 4 qualities. GOB stands for "good ordinary brands" used for galvanizing and is of about 98.5% zinc purity. "Electrolytic" zinc is 99.95% zinc whereas "special high grade" is 99.99% zinc purity. The premiums paid in the marketplace are quite significant ranging 2¢-3¢ per pound for special high grade. For zinc the "European Producer Price" is the pricing basis for CAMC zinc concentrates sold to TOHO and MITSUI and it differs materially from the LME price or N.Y. price for electrolytic grade.

For silver the smelter contracts state "The price quoted by Handy & Harman of New York for silver contained in unrefined silver-bearing materials, currently at a discount of one percent (1%) per troy ounce from the published price for refined silver in commercial bars as published in 'Metals Week' of New York, averaged for the quotational period."

Wright Engineers Ltd. used for June 8, 1979 a quoted U.S. price per troy ounce of $8.58. This does not compute with Handy & Harman's quotation for June 8, 1979 of $8.24 U.S. nor does it account for the 1% deduction

ie., 08.24¢ for its unrefined state as stipulated in the smelter contracts.

For gold the smelter contracts state "at the average of the morning and afternoon fixings in London (in United States Dollars) as quoted in the 'Metal Bulletin' of London, averaged for the quotational period."

For cadmium in the zinc concentrate after deducting (0.2) units from the cadmium assay TOHO and MITSUI pay for "50% at the producer's price for cadmium to consumers as published in the 'Metals Week' of New York, for (1) ton lots, averaged for the quotational period."

For copper in the lead concentrate after deducting 1.3 units MITSUI and TOHO will pay for 57% of the copper above 3% copper at the LME wirebar cash quotation for electrolytic copper wirebars, less 6¢ per pound, averaged over the quotational period.

* Wright Engineers Ltd. on page 8-2 of its Vangorda Mines Ltd. Property Evaluation dated September 1981 states, "* U.S. $267.645 is indicated by Ditchburn under Metal Prices (page 37) in his report, however, U.S. $282.80 is used in his cash flow projection." Actually, H.F. Ditchburn used $267.645 as stated. The problem WEL have is in rounding 5,285.16 troy ounces to 5 (000 ozs) on page 39. The actual calculation of HFD was 5,285.16 ozs of gold paymetal times $267.645/troy ounce equals $1,413,546 when rounded on page 39 becomes $1,414,000 so there is no error as inferred by Wright Engineers Ltd.

The above notes are important. They point out the pricing basis, the various deductions, the quality of metal for the price basis, etc. all very familiar to metal brokers, smelters and mining companies but often not recognized as significant by many evaluation engineers not familiar with the many metal marketing and smelter contract nuances.

5. Metallurgical Performance

A table, showing the variables between estimators for concentrate grades and metallurgical recoveries coupled with metal prices used, is presented on the following page. Also presented are graphic presentations of how concentrate grade and value per tonne of concentrate vary with price and concentrate grades for both lead and zinc.

METALLURGICAL PERFORMANCE VARIANCES IN THE VARIOUS VALUATION REPORTS

Case	Date of Estimate	% Recoveries Into Concentrate		Grade of Concentrates			
				In Lead Concentrate			In Zinc Concentrate
		Select Lead	Select Zinc	% Lead	Silver oz/DMT	Gold oz/DMT	% Zinc
CAMC Case 21 (no fine grind)	Nov. 1978	77.33	74.73	61.27	14.00	N/A	50.91
CAMC Cases 22 & 23 (fine grind)	Nov. 1978	77.81	77.59	61.43	18.40	N/A	53.05
CAMC Case 1 Vangorda Mines Ltd. Evaluation	Sept. 6/79	80.0	84.0	62.0	28.0	0.15	56.0
CAMC Case 3B-V & 4B-G	March 1980	82.31	83.04	59.58	20.29	0.077	53.34
CAMC Case 1 Vangorda Mines Ltd. Evaluation	July 1980 (?)	80.00	77.0	50.0	18.50	0.21	52.8
Case - HFD 1 & Case - HFD 2 Vangorda Valuation	Oct. 1981	80.00	84.0	62.0	28.0	0.15	56.0
WEL Vangorda Evaluation	Sept. 1981	80.0	84.0	62.0	28.0	0.15	56.0
CAMC Actual Results 1970-1979 for comparison		83.34	76.55	65.19	14.0	N/A	50.41

It is difficult indeed to rationalize the differing metallurgical recoveries and varying concentrate grades. On page 22 of the December 1978 CAMC report entitled, ANVIL DISTRICT ACQUISITION PROGRAM, the following statements were made by CAMC regarding metallurgical improvements, as follows:-

"-Lead concentrate grade remains at 61.0% Pb with an increase in recovery from 85% to 87.5%."

"-Zinc concentrate grade will increase from 50.8% to 51.7%, while zinc recovery will increase from 82% to 85%."

In the CAMC report of March 1980 entitled, THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS pages 25 to 29, we have the PREDICTED PLANT METALLURGICAL PERFORMANCE for Faro ores; for Grum ores and for Vangorda ores, as follows:-

FIGURE 2-12

PREDICTED PLANT METALLURGICAL PERFORMANCE - FARO ORE

ORE SOURCE	CONC.	ASSAYS LEAD Pb %	ZINC Zn %	GOLD Au g/tonne	SILVER Ag g/tonne	ARSENIC As g/tonne	MERCURY Hg %	DISTRIBUTION LEAD Pb %	ZINC Zn %	GOLD Au %	SILVER Ag %
Faro Zone III	Lead	67	*	0.6	600	0.03	40	87.5	*	33	65
	Zinc	*	53.5	*	*	0.01	300	*	88.5	*	*

FIGURE 2-9

PREDICTED PLANT METALLURGICAL PERFORMANCE - GRUM ORE

CONCENTRATE	ASSAYS LEAD Pb %	ZINC Zn %	GOLD Au g/tonne	SILVER Ag g/tonne	ARSENIC As %	MERCURY Hg g/tonne	DISTRIBUTION LEAD Pb %	ZINC Zn %	GOLD Au %	SILVER Ag %
Lead	60	11	3.5	750	0.10	90	80	*	33	65
Zinc	2.5	55	*	*	0.05	650	*	83	*	*

FIGURE 2-10

PREDICTED PLANT METALLURGICAL PERFORMANCE - VANGORDA ORE

CONCENTRATE	ASSAYS LEAD Pb %	ZINC Zn %	GOLD Au g/tonne	SILVER Ag g/tonne	ARSENIC As %	MERCURY Hg g/tonne	DISTRIBUTION LEAD Pb %	ZINC Zn %	GOLD Au %	SILVER Ag %
Lead	50	*	6.5	575	0.25	60	80	*	35	55
Zinc	*	52.8	*	*	0.10	300	*	77	*	*

To convert grams per metric tonne of gold and silver to troy ounces per metric tonne, in the above tables use the factor one troy ounce equals 31.104 grams.
Eg. "575 g/tonne" equals 18.486 troy ounces/tonne.

The metallurgical improvements indicated by The Noranda Milling Committee in 1977, followed by CAMC test metallurgical work, followed by mill modifications to incorporate fine grinding, when taken together ARE THE MOST IMPORTANT FACTOR IN IMPROVING CAMC'S OPERATING PERFORMANCE and upon which the $240,000,000 modernization program (The Development of the Vangorda Plateau Ore Deposits report dated March 1980) was premised by CAMC management.

To understand better the full meaning of these improvements, metal prices remaining unchanged, I present the calculations and graphs below:-

NET VALUE PER DMT OF ZINC CONCENTRATES VS CONCENTRATE GRADE
(using HFD Case 1 and TOHO smelter contract)

1. For a 50% Zinc Concentrate:

			Per DMT	
Paymetal per DMT - 1102.31-176.37 (8 units min)		=	925.94	lbs
Paymetal $ per DMT - Gross sales = 925.942 x 34.458¢		=	$319.06	U.S.
Less: smelting toll/DMT ($134.00 + (2.85 x 7.243)	= 155.64			
ocean freight & insurance 5% moisture	= 15.15			
Skagway costs @ $4.36 Cdn/WST	= 3.93			
Truckhaul @ $31.26 Cdn/WST	= 28.23			
Subtotal	202.95		(202.95)	U.S.
Paymetal value at Mine Bins Faro			$116.11	U.S.
($1 U.S. = $1.1594 Cdn)		OR	$134.62	Cdn.

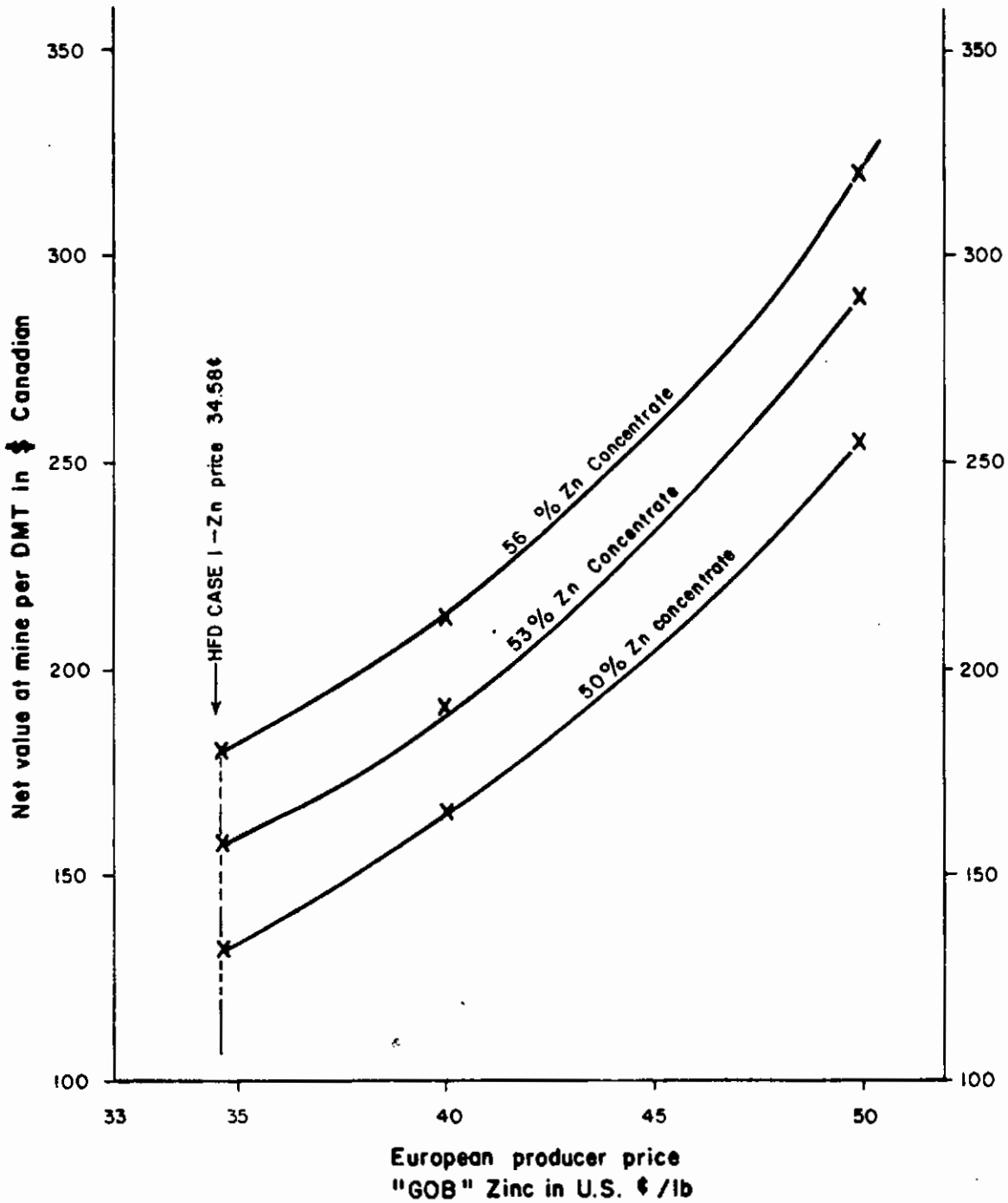
2. For a 53% Zinc Concentrate:

Paymetal per DMT - 1168.45-176.37 (8 units min)		992.08	lbs
Paymetal $ per DMT - 992.08 x 34.458¢		341.85	U.S.
Less: outgoing costs beyond Faro		(202.95)	
Paymetal value at Mine Bins Faro		$138.90	U.S.
	OR	$161.04	Cdn.

3. For a 56% Zinc Concentrate:

Paymetal per DMT - 1234.58 x 0.85		1,049.39	lbs
Paymetal $ per DMT - 1049.39 x 34.458		$361.60	U.S.
Less: outgoing costs		(202.95)	
Paymetal value at Mine Bins Faro		$158.65	U.S.
	OR	$183.94	Cdn

NET VALUE AT MINE BINS FARO OF ZINC CONCENTRATE AT VARYING CONCENTRATE GRADES & ZINC PRICES



NET VALUE PER DMT OF LEAD CONCENTRATE VS CONCENTRATE GRADE
(using HFD Case 1 and TOHO smelter contract)

1. For a 50% Lead Concentrate:

		Per DMT
Paymetal per DMT - 1102.311 lbs x 0.95 =		1,047.19 lbs
Paymetal $ per DMT - 1047.19 x 55.617¢ =		582.42 U.S.
Less: smelting toll/DMT ($94.00 + 30.00 + 32.92)	= 173.92	
ocean freight & insurance @ $16/WMT @ 6%	= 15.15	
Skagway costs @ $4.36 Cdn/WST	= 3.98	
Truckhaul @ $31.26 Cdn/WST	= 29.72	
Subtotal	221.77	(221.77) U.S.
Paymetal Value at Mine Bins Faro		$360.65 U.S.
	OR	$418.14 Cdn

($1 U.S. = $1.1594 Cdn) Lead Concentrate contains 6% moisture

2. For a 55% Lead Concentrate

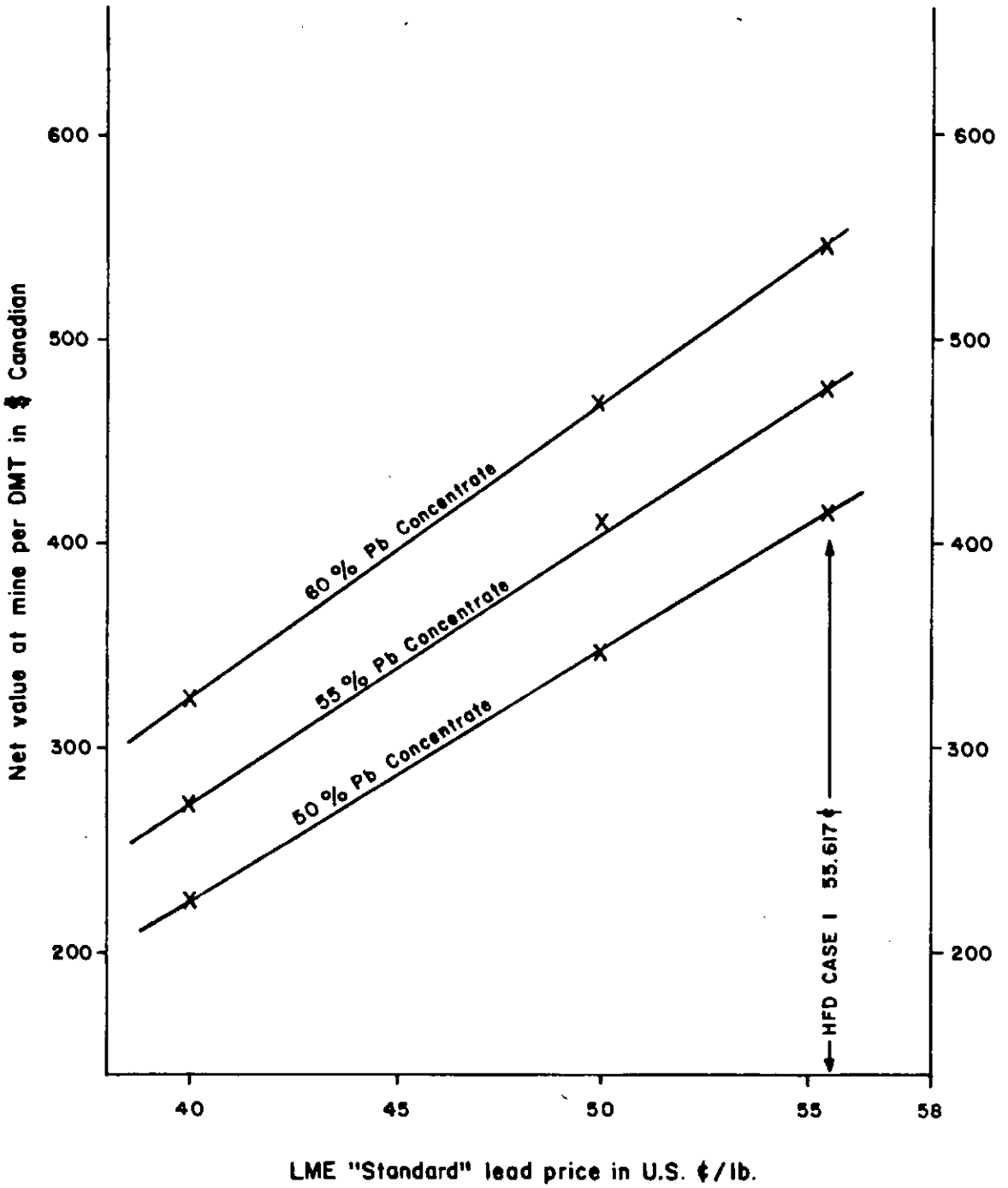
Paymetal per DMT - 1212.542 lbs x 0.95 =		1,151.91 lbs
Paymetal $ per DMT - 1151.91 x 55.617¢ =		640.66 U.S.
Less outgoing costs beyond Faro		(221.77)
Paymetal Value at Mine Bins Faro		$418.89 U.S.
	OR	$485.66 Cdn

3. For a 60% Lead Concentrate

Paymetal per DMT - 1322.773 lbs x 0.95 =		1,256.63 lbs
Paymetal $ per DMT - 1256.63 x 55.617¢ =		698.90 U.S.
Less outgoing costs		(221.77)
Paymetal Value at Mine Bins Faro		$477.13 U.S.
	OR	$553.18 Cdn

LME Standard Lead Price US¢/lb	Net Value at Mine $/DMT Cdn 50% Conc.	55% Conc.	60% Conc.
40¢	$228.52	$277.08	$325.65
50¢	349.93	410.65	471.34
55.617 / ~~44.617¢~~ Case - HFD 1	418.14	485.66	553.18

NET VALUE AT MINE BINS FARO OF LEAD CONCENTRATE AT VARYING CONCENTRATE GRADES & LEAD PRICES



The analysis of these most important five variables is rather complicated and the above notes with examples are only included to be helpful to readers of this report.

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WHAT IS AN AVERAGE TON OF VANGORDA PLATEAU MINEABLE ORE WORTH TO CYPRUS ANVIL MINING CORPORATION?

WHAT IS AN AVERAGE TON OF VANGORDA PLATEAU MINEABLE ORE WORTH TO CYPRUS ANVIL MINING CORPORATION?

and

HOW DO H.F. DITCHBURN & ASSOCIATES LTD'S. CASE - HFD 1 and CASE - HFD 2 COMPARE WITH THE ACTUAL OPERATING EXPERIENCE AND WITH THE MANY PROJECTIONS AND EVALUATIONS BY CYPRUS ANVIL MINING CORPORATION, WRIGHT ENGINEERS LTD. AND HUDSON BAY OIL AND GAS LIMITED?

ACTUAL OPERATIONS AT FARO (January 1, 1970 to June 30, 1979

For the first 9½ years of operations at Faro, the actual NET CASH FLOW from operations at June 30, 1979 was (from shareholder reports) about $79,280,000 or $3.25 per DST mined and milled

The details of this factual historical data are summarized below:-

HISTORICAL ACTUAL VALUE OF ONE DRY SHORT TON
OF ORE MILLED BY CAMC FROM JANUARY 1, 1979 TO JUNE 30, 1979

	Cumulative Actual Jan. 1, 1970 to June 30, 1979
Net Profit	$ 115,519,000
Plus Depreciation and Amortization	59,788,000
Gross Cash Flow	175,307,000
Less: Debt Repayment	87,303,000
Continuing Capital Investment & Development	58,791,000
Net Cash Flow after debt repayment & on-going investments	29,213,000
Add: Working Capital at June 30, 1979	32,351,000
Dividends paid up to June 30, 1979	17,716,000
NET CASH FLOW From Operations at June 30, 1979	$ 79,280,000
NET CASH FLOW - $ per DST milled (24,378,000 DST)	$ 3.25

Footnotes to CAMC's Historical Operations on the following page.....

NOTES: Weighted Average Grade Mined January 1, 1970 to June 30, 1979:-

Lead	3.90%
Zinc	5.68%
Combined	9.58%

Weighted Average Metal Prices Actually Received January 1, 1970 to June 30, 1979:-

	Cdn
¢/lb Lead	22.88
¢/lb Zinc	29.87
$/troy oz silver	3.86
$/troy oz gold	N/A

Paymetal Sold, January 1, 1970 to June 30, 1979:-

Lead lbs	1,653,245,000
Zinc lbs	1,943,208,000
Silver troy ozs	18,145,356
Gold troy ozs	N/A

DST Milled January 1, 1970 to June 30, 1979:-

24,378,000 DST

For complete details see shareholder reports and Appendix 1 giving complete production statistics for CAMC operations historically for calendar years 1970 to June 30, 1979 inclusive.

OTHER FINANCIAL DATA (at June 30, 1979)

Long Term Debt	$ 4,853,000
Working Capital, before property acquisition	32,235,000*
Dividends paid cumulative to June 30, 1979	17,716,000
Retained Earnings	88,492,000
Shareholder's Equity	95,624,000

* $9,726,000 + property acquisition of $22,509,000 as placed in company accounts on May 15, 1979.

VALUES AS REPORTED IN CAMC'S REPORT ENTITLED "ANVIL DISTRICT ACQUISITION PROGRAM" dated December 1978

There are three cases in this report, namely:-

Case 21 - Modified 5 year plan 1979-1983 for Faro alone with no mill modifications.

Case 22 - Grum ore delivered in 1982 with mill modifications by 1982.

Case 23 - Grum ore delivered in 1982 with mill modifications by 1982

Mill modifications involving fine grinding improvements were incorporated into Cases 22 and 23 but not Case 21. All cases were financed by bank debt and NOT by equity financing.

ANALYSIS OF NET PRESENT VALUES*
(ie. discounted net cash flows as at January 1, 1979)

Case and Production Period	Discount Factor %	CASH FLOW AVAILABLE $ Cdn millions	NET PRESENT VALUES $ Cdn millions	$/DST Milled
Case 21 1979-1988	10	$140.497	$76.050	$2.15
	12	140.497	68.191	1.92
	14	140.497	61.396	1.73
Case 22 1979-1992	10	222.470	88.956	1.74
	12	222.470	75.139	1.47
	14	222.470	64.060	1.26
Case 23 1979-1992	10	234.506	93.010	1.82
	12	234.506	78.810	1.55
	14	234.506	67.128	1.32

U.S. Metal Prices Used in Above Cases by CAMC

Years	Lead ¢/lb	Zinc ¢/lb	Silver $/t. oz	Gold $/t. oz
1979	30.00	32.65	5.50	175
1980	32.00	34.02	6.00	175
1981-1992	32.00	40.00	6.00	175

Note by H.F. Ditchburn

* These CAMC estimates of "NPV" (net present value) on pages 21-4, 22-4 and 23-4 of its report are calculated by deducting dividends of $4,569,000 annually. CAMC has used incorrect valuation procedure since the prime object is to arrive at a NPV for the equity shareholder. Dividends are indeed part

of the net cash flow generation to shareholders. Thus in all these cases CAMC have undervalued the projects by an undiscounted cash flow of $41,121,000. For more complete details please refer to the full text of CAMC's report ANVIL DISTRICT ACQUISITION PROGRAM, December 1978.

VALUES AS REPORTED IN CAMC's REPORT "THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS" dated March 1980.

This is believed to be the internal management project evaluation report presented by CAMC's management to its Board of Directors and to its then parent company, Standard Oil of Indiana (AMOCO), for the approval of the $240,000,000 program in May 1980. It is therefore, a most significant document and very material to any evaluation of Vangorda.

Three cases, Case 1, Case 3B-V and Case 4B-G were presented in this document with Case 4B-G thought to be very close to the case approved and currently being executed by CAMC. This is the understanding given to H.F. Ditchburn by Gordon Davis. This case is detailed within this report and is better described as "CASE 4B-G REV G + V DEV 85 Fine Grind 82" or as described in section 2.9 FINANCIAL ANALYSIS, on pages 37 to 40 of this report, to quote:-

"4B-G

The mill modifications would be complete by 1982. From 1985 Grum ore would constitute half of the mill feed until the exhaustion of the open pit reserves in 1993. Thereafter, the Vangorda ore will replace that from the Grum pit.

The basic assumptions used in the construction of these cases are:-

a) Open pit reserves of the Vangorda Plateau deposits are as shown in Figure 2-2.

b) The capital expenditures shown in Figure 2-19 are based on January 1980 dollars.

c) Ores from all sources are compatible for milling in any given ratio without adverse effects on the metallurgical performance.

d) Mining costs are based on experience with the Faro operation. Contract pre-production stripping costs are based on the results of an independent study.

e) Milling costs will increase by about ten percent due principally to increased steel consumption. Power costs have been increased to reflect the high price of diesel generated power.

f) Transportation to tidewater and terminal costs are at present levels.

g) Ocean freight costs will be as follows:-

FIGURE 2-17
OCEAN FREIGHT RATES U.S. $/tonne

	1980	1981	1982 AND ONWARD
To Japan	20.50	22.00	22.00
To Europe	39.50	40.00	40.00

h) Treatment charges are at current levels under Japanese and European concentrate sales contracts.

i) The price and exchange assumptions shown below are expressed in 1980 dollars.

FIGURE 2-16
METAL PRICE AND EXCHANGE RATE ASSUMPTIONS

	1980	1981	1982 AND ONWARD
Zinc U.S. ¢/lb	39.23	44.0	50.0
Lead U.S. ¢/lb	43.0	42.5	42.5
Silver U.S. $/oz	24.00	20.00	20.00
Gold U.S. $/oz	456.00	400.00	400.00
U.S. 1$ = CDN.$	1.124	1.050	1.025

j) No residual values for either plant or equipment have been included for in these calculations.

k) In the opinion of the company's tax counsel, each of the Grum and Vangorda deposits will constitute a "new mine" and all expenditures being considered will be subject to the fast write-off provisions for new mines (100%).

With the exception of railway track and related property, all expenditures will also qualify for earned depletion (33.3%). The company is seeking an advance tax ruling from the Department of National Revenue confirming the opinion of counsel.

FIGURE 2-18
A COMPARISON OF FINANCIAL DATA - 3B-V and 4B-G

CASE	DCF/ROI %	ESCALATED COST $ millions (1980 $)
3B-V	29.0	238
4B-G	31.5	263 "

****

CASE 4B-G ANALYSIS OF NET PRESENT VALUES*

Case and Production Period	Discount Factor %	CASH FLOW AVAILABLE $ Cdn Millions	NET PRESENT VALUE as at January 1/79 $ Cdn Millions	$/DST Milled
Case 4B-G	10	$808.184	$354.762	6.06
1980-1995	12	808.184	208.627	6.06
	14	808.184	270.440	5.31

Note by H.F. Ditchburn

* The 1980 dividend of $6,126,000 should NOT have been deducted in 1980. Terminal (1995) working capital of $33,564,000 should have been added to arrive at Net Cash Flow Available For the Equity Shareholder, the object of any discounted cash flow valuation. Probably the CAMC financial executive who prepared this case was trying to find the cash generation after the 1980 dividend had been declared and also assumed on-going operations at the end of 1995. This is not the same as Net Cash Flow Available to the Equity Shareholder. CAMC's NET PRESENT VALUES are therefore, understated by $39,690,000 before discounting in all the above estimates. For complete details please refer to the full text of CAMC's report, THE DEVELOPMENT OF THE VANGORDA ORE DEPOSITS.

The three reports by CAMC entitled, VANGORDA EVALUATION BY CYPRUS ANVIL MINING CORPORATION, dated July 24, 1979, September 6, 1979 and September 6, 1979 (but actually completed July 7 to 30, 1980) are compared in the table below:-

COMPARISON OF ALL KNOWN CAMC VANGORDA EVALUATION CASES

Case	Production Period	Discount Factor %	NET PRESENT VALUES* as at January 1, 1979 $ Cdn Millions	$/DST Milled
Sept. 6/79 Case 1	1982-1986	10	-32.522	-5.25
Grum Parameters July 1979		12	-33.865	-5.46
6,000,000 DST		14	-34.796	-5.61
Sept. 6, 1979	1982-1987	10	-24.245	-3.91
Case 2.1		12	-27.052	-4.36
		14	-29.185	-4.71
July 7, 1980 Case 1.1	1982-1988	10	-47.250	-6.98
July 1979 Parameters		12	-47.085	-6.96
6,765,000 DST		14	-46.090	-6.81
July 30, 1980 Case (1+2).1	1982-1990	10	-49.038	-5.46
		12	-48.578	-5.41
		14	-47.941	-5.34
July 11, 1980 Case 1.2	1982-1988	10	-13.603	-2.01
6,765,000 DST		12	-16.916	-2.50
		14	-19.566	-2.89
July 7, 1980 Case (1+2).2	1982-1990	10	-13.287	-1.48
8,977,000 DST		12	-16.692	-1.86
		14	-19.409	-2.16
July 10, 1980 Case 1.3	1982-1988	10	+ 4.067	+0.60
6,765,000 DST		12	- 1.020	-0.15
		14	- 5.226	-0.77
July 30, 1980 Case (1+2).3	1982-1990	10	+ 4.469	+0.49
8,977,000 DST		12	- 0.683	-0.07
		14	- 4.943	-0.55

Note by H.F. Ditchburn

* CAMC's parameters for all its Vangorda Evaluations assume 100% equity financing. As such, when arriving at a cumulative total "CASH AVAILA. FOR DISTRIB." line 25, accounting code 116, the resulting numbers are incorrect

for valuation of Vangorda shares. Valuing Vangorda Mines Limited shares is different from valuing the Vangorda project as part of CAMC's operations. It is incorrect to deduct the equity investment since this was provided by the equity shareholders. It is NOT like a debt having prior call on cash generation. Accordingly in all CAMC Vangorda Evaluation cases the $95,809,000 deducted during the pre-production period (1979, 1980 and 1981) is simply NOT CORRECT when valuing a share of Vangorda Mines Limited. In the eyes of CAMC's corporate financial officer, who is probably most interested in cash balances for overall corporate purposes, it may be correct. However, the Vangorda project under consideration is a separate free-standing project, to be managed, financed and operated without a parent company or as a subsidiary operation of CAMC.

To be sure, if the management of Vangorda Mines Limited elected (as assumed by CAMC) that all financing was by equity then more shares would have to be sold (or possibly some combination of convertible preferred plus common shares) to raise the $95,809,000 from its shareholders, prior to the project commencement.

Whether the Vangorda Mines Ltd., free-standing 3,000 t.p.d. mine-mill project, can payback its shareholders at the end of the venture is the acid test for any 100% equity financed venture. On this basis there is indeed positive cash flow on hand for the equity shareholder at the end of each case ranging from $46,487,000 to $146,426,000 as set out below:-

$153,742,000

POSITIVE CASH FLOW AT END OF ASSUMED PRODUCTION FROM WHICH TO PAYBACK THE EQUITY SHAREHOLDER

Case	Computer Print-out Date	Gross CASH GENERATION FROM PROJECT as reported by CAMC ($ millions)	Less Equity Financing To Payback ($ millions)	EQUALS DIVIDENDS AFTER PAYBACK ($ millions)
Case 1	Sept 6/79	+ 80.423	$95.809	-15.386
Case 2.1	Sept 6/79	+124.936	95.809	+21.127
Case 1.1	July 7/80	+ 54.195	95.809	-41.614
Case (1+2).1	July 30/80	+ 46.487	95.809	-49.622
Case 1.2	July 11/80	+114.913	95.809	+28.331
Case (1+2).2	July 7/80	+116.544	95.809	+20.735
Case 1.3	July 10/80	+146.426	95.809	+50.617
Case (1+2).3	July 30/80	+153.742	95.809	+57.933

Thus, in 5 out of the 8 cases estimated and presented by Cyprus Anvil Mining Corporation there is positive cash flow generation after payback at the end of the Vangorda project. (No case considers taxation, or the reinvestment of positive annual cash generation at bank interest rates to earn interest and generate additional funds for the equity shareholder, as in a sinking fund.) This positive cash flow, "CASH GENERATION FROM PROJECT" in above table, could be used by the management of Vangorda Mines Limited to pay dividends, or to explore for new properties, or acquire new mines or other ventures since it does not have any funded debt obligations. It is true in 3 out of 8 cases there are insufficient funds to pay dividends to Vangorda shareholders equal to the amount they (theoretically) paid for the shares of Vangorda. In 5 out of 8 cases the equity shareholder could be paid back all the money invested plus sufficient dividends to give said equity shareholder a good return on the original investment. The equity shareholders (under the CAMC & WEL assumptions) bought the Vangorda Mines Ltd. treasury shares in early 1979 believing the share price would be repaid with "rent" for its use. So in some cases the equity shareholder gets a return and in other cases he does not. Such is the nature of business with many inherent risks!

Therefore, to arrive at a price per Vangorda Mines Ltd. share at the conclusion of mining, discounted to May 15, 1979 (the object of this specific Vangorda Mines Ltd. Valuation), it is necessary for both Cyprus Anvil Mining Corporation and Wright Engineers Ltd. to restructure their valuation estimates to give effect to the 100% equity financing which they both elected to employ for Vangorda Mines Limited. In many similar valuations the annual cash generation is usually considered to be reinvested at a bank interest rate to build-up the total cash generated by the project at its completion. Proper capital cost allowance, earned depletion, and tax accounting is absolutely necessary for such a valuation using 100% equity. H.F. Ditchburn has not revised the estimates of CAMC and WEL on this fair and proper basis for valuing a mining company share.

THE WRIGHT ENGINEERS LTD. VANGORDA MINES LTD. PROPERTY EVALUATION
REPORT DATED SEPTEMBER 1981

Case and Production Period	Discount Factor %	CASH FLOW AVAILABLE* $ Cdn (millions)	NET PRESENT VALUES* as at January 1, 1979 $ Cdn (millions)	$/DST milled
WEL Prices	10	$ -35.942	$ -50.058	$-6.07
8,243,000 DST,	12	-35.942	-50.774	-6.16
945 DST/day,	14	-35.942	-51.108	-6.20
1982-1991	16	-35.942	-51.141	-6.20
	18	-35.942	-50.938	-6.18
CAMC Prices	10	+28.539	-15.635	-1.90
	12	+28.539	-20.050	-2.43
	14	+28.539	-23.587	-2.86
	16	+28.539	-26.408	-3.20
	18	+28.539	-28.639	-3.47

Note by H.F. Ditchburn

* The positive cash flow at the end of production from which to payback the equity shareholders is as follows for Wright Engineers Ltd. estimates:-

Case	CASH GENERATION FROM PROJECT ($ millions)	Less Equity Financing To Payback ($ millions)	EQUALS DIVIDENDS AFTER PAYBACK ($ millions)
WEL Prices	$ +60.063	$92.337	$ -32.274
CAMC Prices	+124.000	92.337	+31.693

The same principles of valuation of a mining share apply to WEL estimates as to CAMC's as outlined on page 106 of this report. WEL elected 100% equity financing so the Vangorda Mines Ltd. project has positive cash generation for the equity shareholder. Using WEL prices the venture falls $32,274,000 short of paying back Vangorda Mines Ltd. equity shareholders so in the original project financing the shareholders paid too much for their shares! Using CAMC prices, the equity shareholders in the Vangorda Mines Ltd. project would get their original investment back with dividends of $31,693,000 before considering interest earned by reinvestment of annual cash flows.

On the factual data and estimates at hand, the answer to the question, "WHAT IS AN AVERAGE TON OF VANGORDA PLATEAU MINEABLE ORE WORTH TO CYPRUS ANVIL MINING CORPORATION?", is $3.25 per DST, based on historical actual results; $1.26 to $2.15 per DST, based on Cases 21, 22 and 23 completed in December 1978 and $5.31 to $6.96 per DST, based on Case 4B-G completed during March 1980 by CAMC which estimate was used to authorize the $240,000,000 project now well underway.

By comparison H.F. Ditchburn's estimates detailed in this report result in a worth (NPV, or net present value) for the Vangorda deposits to be $2.16 to $2.61 per DST, if free-standing, and $4.20-$4.91 per DST if integrated into CAMC's existing operations. These particular NPV estimates place a value on a share of equity (common stock) of Vangorda Mines Limited at $12.21-$14.78 per share, if free-standing, and $23.76-$27.81 per share, if integrated.

CHANGE OF CONTROL AND SALE OF CYPRUS ANVIL MINING CORPORATION

Standard Oil of Indiana (AMOCO), a Chicago based company, bought Cyprus Mines Corporation, based in Los Angeles, California, for about $460,000,000 U.S. on September 21, 1979. Cyprus Mines Corporation owned at that time 63% of Cyprus Anvil Mining Corporation (CAMC) in Canada. The Canadian Foreign Investment Review Agengy (FIRA), despite repeated requests, did NOT approve the passing of control to AMOCO in the United States. This caused CAMC's and AMOCO's management to tender the sale of CAMC to a "Canadian" company suitable to FIRA, and many companies were solicited. On August 7, 1981 AMOCO sold for $212,600,000 (Canadian) its 63% interest (4,805,550 shares) in CAMC to Hudson' Bay Oil and Gas Company Limited (HBOG), of Calgary, Canada. (HBOG's control was bought in June 1981 by Dome Petroleum Limited of Calgary.) Thus, FIRA problems of CAMC and AMOCO were resolved and currently CAMC is a wholly-owned subsidiary of HBOG which in turn is a subsidiary of Dome Petroleum both "Canadian" companies in the eyes of FIRA in Ottawa.

The point relative to the "fair value" of Vangorda Mines Ltd. is the price of ($212,600,000 Cdn ÷ 4,805,550 shares) $44.25 per share paid by HBOG for 63% of CAMC. This price of $44.25 per share of Cyprus Anvil Mining Corporation was believed to be based upon definitive evaluations by AMOCO, CAMC, HBOG, and their respective fiscal agents and consultants. This transaction placed an overall "fair value" on Cyprus Anvil Mining Corporation of $44.25 per share. (Wood Gundy Limited acting as syndicate manager made a tender offer of $44.25 per share for the remaining 37% interest of CAMC not already owned by HBOG in July-August 1981.)

As at December 31, 1980 there were 7,697,304 shares of CAMC issued with management stock options outstanding on 89,234 shares at prices from $7.75 to $17.75 per share. It is reasonable to assume said stock options were exercised prior to, or during, the tender offer of HBOG thus there was probably about (7,697,304 + 89,234) 7,768,538 shares issued at that time. The total paid by HBOG for 100% of CAMC, on this basis is $44.25 Cdn x 7,768,538 = $343,757,800 Cdn.

Price paid for CAMC	$343,757,800	
Less Working Capital June 30/81	3,499,000	
Less Bank Loan Assumed by HBOG	26,795,000	
Add Stock Option Exercise	1,142,000	(1,511,421 - 369,000)
Equals "Fair Value" of CAMC ore reserves August 1981	$314,605,800 Cdn	

The CAMC ore reserve position at December 31, 1980 was stated in CAMC's 1980 annual report.

ESTIMATED MINEABLE OPEN PIT RESERVES
(At June 30, 1981)

Deposit	Mineable Reserves tonnes	Ore Grade % Lead	% Zinc	Silver g/tonne
Faro - Zone I & III	26,385,000	2.9	4.6	34.8
- Zone II	3,724,000	2.7	4.3	42.5
Grum	15,583,000	3.1	5.0	47.0
Vangorda	6,134,000*	3.5	4.6	50.2
Total Open Pit Mineable Reserves as at January 1, 1980 **	51,826,000**	3.0	4.7	40.8
Less Actual Production				
- 1980	2,825,000	3.12	4.68	N/A
- To June 30, 1981	1,253,000	3.19	4.47	N/A
Net Open Pit Mineable Reserves at June 30, 1981	47,748,000	2.98	4.71	

OTHER LEAD-ZINC-SILVER RESERVES***
(drill-indicated, or in-situ, or unrefined)

Grum (underground)	12,217,000	3.1	4.9	48
Dy Deposit	21,000,000	5.6	6.9	85
Swim Deposit	4,300,000	3.8	4.7	47
Cirque Deposit	30,000,000	2.2	7.8	48
Elf & Fluke Deposits	N/A	N/A	N/A	N/A
Total Other	67,517,000			
TOTAL ALL CATEGORIES OF RESERVES At June 30, 1981	115,265,000			

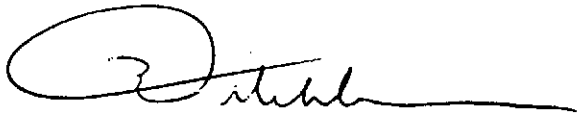
* Proven and Indicated in 1978 annual report were stated as 8,500,000 tonnes 3.2% lead and 5.0% zinc plus 55 grams/tonne silver.

** Please refer to Figure 2-2, page 14, of THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS, March 1980 by CAMC.

*** From 1978, 1979 and 1980 annual reports for these undeveloped properties.

On the basis of lead-zinc-silver reserves, ignoring the economically small 10-12 million tonnes of thermal coal at Tulameen, HBOG paid $314,605,800 ÷ 115,265,000 tonnes or $2.73 per metric tonne or $3.01 per short ton for Cyprus Anvil Mining Corporation reserves. This seems to indicate, on the basis of this sales transaction ie., the sale of CAMC to HBOG that the 11,450,000 mineable short tons, estimated conservatively by H.F. Ditchburn for Vangorda, is worth $34,464,000 or $17.05 per share of Vangorda. The above sale provides both parties with a "Fair Value" in the real marketplace and another indication of what Vangorda Mines Limited is worth. Naturally, full disclosure of more precise details by HBOG or CAMC is necessary to make any definitive determination, however, it would probably not change the above estimated "Fair Value" materially.

Respectfully submitted,



H.F. Ditchburn, B.Sc, M.B.A., C.Eng.

Toronto, Ontario
October 30, 1981

APPENDIX 1

CAMC Production and Metallurgical Performance 1970-1979

	1970 Actual	1971 Actual	1972 Actual	1973 Actual	1974 Actual	1975 Actual	1976 Actual	1977 Actual	1978 Actual	1979 Actual	Estimated 1970-mid 1979 by using ½ 1979
Feed Grade											
- Pb	4.40	4.92	4.64	4.88	4.51	4.03	2.66	2.74	3.17	3.26	3.90
- Zn	6.40	6.79	6.24	6.37	5.60	5.41	5.48	4.88	5.14	5.28	5.68
Total	10.80	11.71	10.88	11.25	10.11	9.44	8.06	7.62	8.31	8.54	9.58
Cubic Yards Moved (000's)											
- Waste & Low Grade	5,727	6,166	4,254	4,659	5,536	4,756	3,214	7,556	9,595	7,282	55,054
- Ore	617	840	915	911	920	921	479	981	1,042	889	
Total	6,344	7,006	5,169	5,570	6,456	5,677	3,693	8,537	10,637	8,121	
Tons Milled (000's) DMT	1,779	2,425	2,636	2,630	2,654	2,926	1,520	3,116	3,280	2,823	24,378
Mill Feed (000's lbs)											
- Pb	173,787	263,158	269,052	282,960	263,835	259,935	89,288	188,147	229,576	202,886	2,121,181
- Zn	250,135	362,866	361,448	369,272	327,600	348,945	183,464	335,535	371,652	328,545	3,075,190
Metal Recovered (000's lbs)											
- Pb Select	124,456	194,563	194,537	208,422	193,074	194,691	64,405	141,888	179,697	159,012	1,575,339
Bulk	2,496	23,041	32,862	30,190	26,964	28,359	8,494	15,535	13,808	10,794	192,106
Total Lead	126,952	217,604	227,399	238,612	220,038	223,050	72,899	157,423	198,505	169,806	1,767,445
- Zn Select	163,807	219,040	216,203	238,224	208,681	234,247	180,071	244,834	273,807	246,651	2,050,519
Bulk	2,975	36,003	49,583	47,138	43,898	45,258	15,710	25,171	21,671	17,762	297,288
Total Zinc	166,062	255,043	265,786	285,362	252,579	279,505	145,781	270,005	295,478	264,413	2,347,807
Recoveries %											
- Pb Select	71.6	73.9	72.3	73.66	73.18	74.90	72.17	75.41	78.29	78.40	74.38
Bulk	1.5	8.8	12.2	10.67	10.22	10.91	9.52	8.26	6.02	5.32	
Total Lead	73.1	82.7	84.5	84.33	88.40	85.81	81.59	83.67	84.31	83.72	83.34
- Zn Select	65.2	60.6	59.8	64.51	63.70	67.13	70.98	72.97	73.67	75.07	67.34
Bulk	1.2	9.7	13.7	12.77	13.40	12.97	8.56	7.50	5.83	5.41	
Total Zinc	66.4	70.3	73.5	77.28	77.10	80.10	79.46	80.47	79.50	80.48	76.55
Concentrate Grades %											
- Select Lead	65.3	67.11	68.48	66.49	64.99	66.89	67.28	64.11	60.68	61.39	65.19
- Select Zinc	49.2	49.83	50.67	51.11	50.25	50.80	51.36	50.29	50.41	50.32	50.41
- Bulk Lead	22.7	18.15	18.67	19.06	18.65	18.37	15.65	19.12	19.02	17.10	18.95
- Bulk Zinc	27.1	27.93	28.17	29.76	30.35	29.34	28.74	30.98	29.85	28.14	29.75
- Silver in Select Lead oz/DMT	13.60	17.45	16.82	16.96	16.15	17.32	13.64	11.51	14.62	12.95	14.00
- Silver in Bulk Lead oz/DMT	4.86	5.72	5.37	5.40	5.56	5.52	4.74	3.94	3.91	4.53	
Concentrate Produced (DMT)											
- Pb	86,391	131,503	128,895	142,186	134,734	131,954	43,421	100,390	134,328	117,491	1,092,548
- Zn	150,370	199,385	193,544	211,421	188,185	209,103	114,876	220,881	246,377	222,073	1,845,128
- Bulk	4,984	58,474	79,839	71,847	65,585	69,956	24,622	36,855	32,930	28,631	462,454
Total	241,745	389,362	402,278	425,454	388,504	411,013	182,919	858,076	413,365	368,195	3,400,130
Marketable Metal (000's lbs)											
- Total Pb	120,355	204,419	212,445	223,461	206,276	208,914	68,194	147,999	181,382	159,801	1,653,245
- Total Zn	133,799	210,946	219,255	236,262	208,407	231,167	121,581	224,769	246,607	220,829	1,943,208
- Total Ag oz	1,364,914	2,429,078	2,379,480	2,578,124	2,552,681	2,462,527	638,522	1,751,000	1,865,530	1,447,000	18,145,356

SOURCE: From CAMC by hand to H.F. Ditchburn in Vancouver on October 9, 1980.

CYPRUS ANVIL MINING CORPORATION INTEROFFICE CORRESPONDENCE

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APPENDIX 2

To L. P. Taggart cc: R. E. G. Davis

From D. J. Hanson

Date September 3, 1980

Subject Grum and Champ Reserves on Vangorda Mines Property

A) Grum Deposit

The following reserve figures for the Vangorda Mines portion of the Grum deposit have been extracted from the NORCOMP computer model as prepared by Kerr Addison Mines Ltd. and from the Grum Joint Venture Mineral Inventory - March, 1977. Figures from the former are mining reserves based on a 12 meter bench height while figures from the latter are essentially geologic reserves based on a 3 meter mining width.

	Tonnes	% Pb	% Zn	Ag (g/MT)
(1) total mining reserves	1,220,700	3.41	4.12	47.8
(2) mining reserves within the "ultimate" pit design	76,900	8.47	7.25	110.8
(3) "geologic" reserves	980,084	5.06	6.03	68.65

The economic "ultimate" pit was designed by Cyprus Anvil using the NORCOMP model and the Mintec Dipper software system. The results are preliminary and are therefore subject to change during detailed pit design.

B) Champ Deposit

According to the Grum Joint Venture Mineral Inventory, the Champ zone has geologic reserves of 1,690,000 tonnes averaging 3.51% lead, 4.28% zinc and 46 gram per tonne silver. No attempt has yet been made to calculate a mining reserve or to produce an economic pit design. Approximately one-third of this reserve occurs on Vangorda Mines property.

D. J. Hanson

DJH/ljb

Soil Printing

CYPRUS ANVIL

Methods and Case Histories in MINING GEOPHYSICS

Arranged by a Committee
of Geophysicists of the
Canadian Institute of
Mining and Metallurgy

Published by Authority of the General Committee
of the Sixth Commonwealth Mining and
Metallurgical Congress.

GEOPHYSICAL EXPLORATION OF A LEAD-ZINC DEPOSIT IN YUKON TERRITORY

*by Edward O. Chisholm**

Abstract

Self-potential and magnetometer surveys were followed by a gravimetric survey in the northwestern Cordillera to outline successfully a flat-lying lead-zinc sulphide replacement deposit beneath 50 ft. of glacial overburden. This site of the survey is 125 miles northeast of Whitehorse, Yukon Territory, in mountainous terrain. Detailed diamond drilling verified the accuracy of the survey both as to boundaries and estimated tonnage of the deposit. Auxiliary surveys were carried out by aeromagnetic and geochemical methods. Graphitic schists interfered with the self-potential readings, but geochemical and magnetic results were helpful for indicating favourable terrain.

Location, Topography, Etc.

THE lead-zinc sulphide replacement body investigated by geophysical techniques described here is located on the headwaters of Vangorda Creek, a tributary of Pelly River, on the Vangorda Mines property of Prospectors Airways Company Limited. The surrounding country is mountainous but the deposit is in the centre of an intermontane valley approximately 2½ miles wide. Differences of elevation within the area of the survey are less than 100 ft., a feature which facilitated gravity work.

The replacement body lies beneath a glacial sand and boulder ridge varying in thickness from 25 to 80 ft. The ridge is traversed by Vangorda Creek, a small glacial stream, and a smaller tributary. Outcrop is exposed in the area of the survey at one location only on the bank of the stream, and consists of massive sulphides 100 ft. in length, 10 ft. in height. Permafrost, though usual in this latitude, was not encountered. Overlying the glacial material is a persistent layer of volcanic ash approximately 4 inches thick. The climate is sub-arctic and the soil profile is immature with zones of leaching and oxides penetrating less than a foot below surface. This results in a smaller, residual base-metal content of the soil and water than is normal to central latitudes.

The geophysical methods were started in advance of drilling, but were broadened in kind and magnitude as the drilling progressed and as different characteristics of the deposit were revealed. Initially the simplest methods, the self-potential and the magnetometer, were used. When it was apparent that graphitic schist was present, the electrical methods were discarded and magnetometer work was increased. The detail of this method was completed during the second season in time to indicate possible extensions of the deposit.

Further drilling indicated, however, that the magnetometer could not be relied upon solely to indicate sulphides because of the presence of other magnetic zones. At this stage gravimetric work was initiated and was completed over the deposit at the same time as the drill program. The results coincided so well that further drilling to extend the margins of the deposit was considered unnecessary. The excess mass calculation agreed so closely with the tonnage figure arrived at by drilling that it was decided also that further deep holes to explore the possibility of underlying zones were unnecessary.

Geology, Mineralization, Alteration

The deposit comprises an overlapping series of horizontal lenses of sulphides that appear to replace a favourable sedimentary bed; longitudinal section of the body is shown in Figure 1. Seventy-three diamond drill holes indicate a length of 3,200 ft. with an average width of 490 ft., and 9,400,000 tons of sulphide containing 3.16% Pb, 4.96% Zn, 0.27% Cu, 1.76 ozs. Ag, and 0.02 oz. Au; also, an additional 12,600,000 tons of low-grade to barren sulphides. The total mass of sulphides is estimated from diamond drilling to be in the order of 22,000,000 tons. The mineralized body extends from bedrock surface to a depth of 300 ft. Drilling to 1,000 ft. encountered no underlying body.

The host rocks comprise a flat-lying sedimentary assemblage which can be divided into two main zones, namely, one predominantly chloritic sericite schist, and the other predominantly graphitic schist. They are intimately associated with much intercalation at the edges of the graphitic horizon. The graphitic schist is minutely crumpled, breaks easily along cleavage planes, and contains narrow (up to 1 m.m.) quartz stringers

*Chief Geologist, Prospectors Airways Co. Ltd., Toronto, Canada.

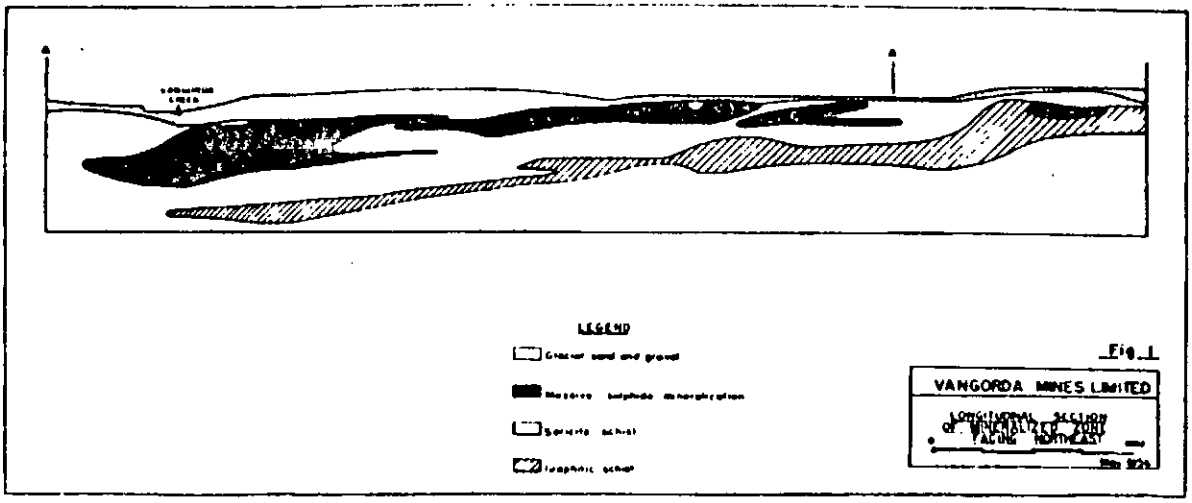

Figure 1.
Longitudinal section of mineralized zone, facing northeast.

which often are mineralized with pyrrhotite, with minor chalcopyrite and pyrite. In thin section, it consists of minutely folded bands of white mica (sericite) and black carbonaceous matter intercalated with bands of anhedral, interlocking quartz grains, and isolated siliceous lenses. Sparse mineralization is confined to the siliceous bands, pyrrhotite apparently replacing quartz. This graphitic schist seems to have been produced by strong metamorphism of impure carbonaceous slate interbedded with thin, sandy layers. Calcite is present in small amounts and may have been introduced with the sulphides.

The sericitic zone consists of light greenish-grey, chlorite schist and appears less deformed than the black schist. It is sparsely mineralized in siliceous bands (mainly pyrrhotite with some galena and chalcopyrite). In thin section, it appears to be a succession of thin bands of sericite, alternating with somewhat wider layers of quartz and chlorite containing minor amounts of orthoclase and sericite. The sericite-chlorite schist appears to have resulted from strong regional metamorphism of a succession of thin sedimentary beds, probably of impure sandstone interbedded with shale. Occasional siliceous lenses containing sulphides may originally have been small pebbles in the sediment.

No intrusive rocks were found within the area, although granite, gabbro, diorite and porphyry are present elsewhere on the claims.

The mineralization is a fine-grained aggregate of sulphides in a siliceous matrix. Sulphide content is variable but might average 60 per cent overall. Minerals present in their order of abundance follow:

Pyrite	35%
Sphalerite	25%
Galena	15%
Pyrrhotite	10%
Chalcopyrite	6%
Arsenopyrite	5%
Magnetite	3%
Marcasite	1%
Tennantite	Small amount

The assemblage indicates a hypothermal replacement deposit.

Alteration is predominantly sericitic and chloritic and is intensified in an envelope surrounding the mineralized deposit.

The control of deposition appears to be lithological rather than structural, but at this stage there is insufficient evidence to decide. There is a suggestion that the northwest extremity of the deposit is terminated by a fault along Vangorda Creek. Brecciation and carbonatization of the ore in drill holes in this section indicate faulting. There is also a suggestion that the long axis of the deposit is controlled by faulting and/or folding. No post-ore displacement of the sulphide mass in a horizontal or a vertical plane was indicated in the drilling and it would seem that any structural elements reflected in the magnetometer and gravity surveys may indicate pre-ore controls. It is reasonable to assume that the presence of feeder faults in the area and the displacement of contours in the magnetic and gravity surveys in the vicinity of Vangorda Creek and its tributary to the east near Line 19E, may be caused by this. However, part of the displacement of the gravity contours along the creeks is due to thinning of the overburden in this locality.

Gravimeter Survey

The outline of the residual gravimeter anomaly and its relation to the mineralized zone is shown in Figure 2 (in pocket).

Readings were taken with a Worden gravimeter with sensitivity of 0.10024 mgs. per scale division, at 100-ft. intervals with varying line separation. Gravity and elevation runs were made in closed loops with all errors being adjusted. Elevation misclosures were kept under 0.5 ft. and gravity misclosures under 0.5 milligals. Drift, elevation, latitude and terrain corrections were applied to the gravity readings.

Density measurements on both surface and core specimens gave the following values:

Specimen	*Depth*	*Type of Material*	*Density*
1	Surface	Granite	2.64 gms./cc.
2	139'	Sericite schist	2.69 "
3	188'	Sericite schist	2.75 "
4	393'	Sericite schist	2.76 "
5	188'	Graphite schist	2.78 "
6	45'	Gabbro	2.85 "
7	50'	Gabbro	2.84 "
8	—	Massive sulphides	4.34 "
9	—	Massive sulphides	4.23 "
10	—	Massive sulphides	4.62 "

The schists are of relatively uniform density, with the granite slightly lighter and gabbro slightly heavier.

• Observations

The mineralized zone was clearly detected by geophysics and its edges are well defined. The results show a remarkable coincidence with the zone as outlined by drilling.

Tonnage calculations from the residual anomaly (total anomaly minus regional anomaly) gave in excess of 6,000,000 long tons. Transferred into actual tonnage, on the assumption that the schist's average density is 2.8 gms./cc. and the mineralization averages 4.0 gms./cc., a total of 20,000,000 tons is indicated. This is remarkably close to the 22,000,000 tons of sulphides indicated by drilling.

The regional gravity, not shown on the accompanying map, slopes gradually southwest and is caused by a series of gabbro intrusions in this direction.

The shape of the anomaly indicates that the mineralization is banded in parallel zones along its length. The portions of greatest thickness near Vangorda Creek, (as shown on the longitudinal section on Figure 1), are reflected in high-gravity values up to a peak of 2.02 milligals. The lensing out of the deposit to the edges is reflected also in lower-gravity values.

Some of the edges of the deposit indicated by the gravity anomaly are noticeably sharp, others are gradual; this may be a reflection of faulting, especially in the northwest end of the deposit.

Approximately 500 ft. southwest of the mineralized deposit, and parallel to it, is a small, broad low; this appears to be a reflection of a graphitic schist zone which outcrops in this area. Its overall density is lower than surrounding schists.

No anomalous regional effects that might be expected in the disturbed zone of intermontane terrain were noticeable in the gravity survey.

• Conclusions

Near-surface deposits of massive sulphides enclosed in light schists that provide a marked density contrast, produced sharp high-gravity anomalies. Values about 0.5 milligals were considered anomalous.

The gravimetric method is a definite tool for outlining sulphide masses in the geological conditions described here.

Self-Potential Survey

The outline of the self-potential survey and its relation to the mineralized zone are shown in Figure 3 (in pocket). Readings were taken at 50-ft. intervals along lines 200 ft. apart.

• Observations

The self-potential survey of the mineralized zone showed several large anomalies seemingly caused by graphitic schist. Readings over the deposit itself generally were flat and appeared to be blanketed by overburden where it exceeded 25 ft. in thickness.

• Conclusions

The self-potential method, although cheap and fast, would be of use under the present geological association only in tracing the block schist zones under overburden less than 25 ft. thick. Where depth of overburden is unknown, interpretation of results would be difficult and the electrical-magnetic method would offer a more effective technique because of its greater penetration.

Aeromagnetic Survey

A series of lines approximately 5,000 ft. apart were flown over the central part of the claims at a

height of 500 ft. to test the effectiveness of this type of instrument for reconnaissance.

- **Observations**

No higher than normal readings were obtained over the mineralized zone, but a generally higher level of readings was noted over the basic intrusive rocks one mile to the southwest of the deposit.

- **Conclusions**

Insufficient lines were run over the zone to test the airborne instrument conclusively; with closely spaced flightlines at a low altitude, results comparative to the ground magnetometer survey might be expected.

Magnetometer Survey

The outline of the magnetometer survey and its relation to the mineralized zone are shown in Figure 4 (in pocket).

Readings were taken by the Askania instrument at 50-ft. intervals on lines 200 ft. apart. Sensitivity was 25.6 gammas per scale division. No magnetic storms or side hill effects from surrounding mountains were noted.

- **Observations**

Six anomalies were found within the area of mineralization, with residual magnetic values ranging from 800 to 2,000 gammas.

Contours are lenticular along the length of the deposit.

The most intense anomalies were obtained where overburden is shallow.

Anomalies of similar magnitude and shape were found outside the mineralized zone.

Certain sections of massive mineralization gave no magnetic anomalies.

Magnetic contours show displacement along Vangorda Creek and its tributary to the east.

Sufficient spot drilling has been done to indicate the cause for most anomalies.

- **Conclusions**

The magnetometer alone would not produce definitive anomalies signifying underlying sulphide mineralization because of the variable magnetite content of the sulphide deposit itself, and because of the presence within the confines of the survey of other factors contributing to a magnetic condition of magnitude similar to that encountered over the mineral deposit. These factors are:

1. Concentration of magnetite in residual gossan material underneath an eroded section of sulphides;

2. Small gabbro intrusive plugs outside the confines of the mineralized zone;

3. Widely disseminated magnetite in certain sections of the graphitic schist zone which, when near surface, produced a mass effect equal in magnitude to the magnetic section of the main mineralized zone.

The magnetometer proved useful in indicating favourable terrain; in determining the strike of mineralized zones; and in pinpointing thick sections of sulphide containing magnetite. It indicated also a possible fault that terminates the deposit abruptly along Vangorda Creek between anomalies 1 and 2; drilling confirmed this fault. A possible pre-ore fault is indicated along the creek at Line 19E.

The magnetometer is best used under the above geological conditions in conjunction with other exploration survey methods.

Geochemical Surveys

The outlines of geochemical heavy-metal surveys in the soil surrounding part of the deposit and in the drainage system cutting through it are shown on Figures 5 and 8 respectively. Geochemical profiles showing the relationship between heavy-metal content in the soil, topography, location of sulphides, gravity and magnetic determinations, are shown in cross-sections 6 and 7.

Soil samples were taken at 100-ft. intervals on lines 200 ft. apart at uniform depth of 2 ft.; this represents the "C" or parent soil zone. It was tested for heavy-metal content by the cold extraction method devised by Bloom*. Surveys were conducted in July after the seasonal run-off had taken place and the water table had reached a state of equilibrium.

The method is a rapid and simple field technique that involves extraction of (Zn, Cu, Pb, Co, Ni) ions from a soil sample with a cold solution of ammonium citrate in the presence of dithizone-xylene solution.

*BLOOM, H. A.: A Field Method for the Determination of Ammonium-Citrate Soluble Heavy Metals in Soils and Alluvium. *Econ. Geol.*, Vol. 50, pp. 533-541.

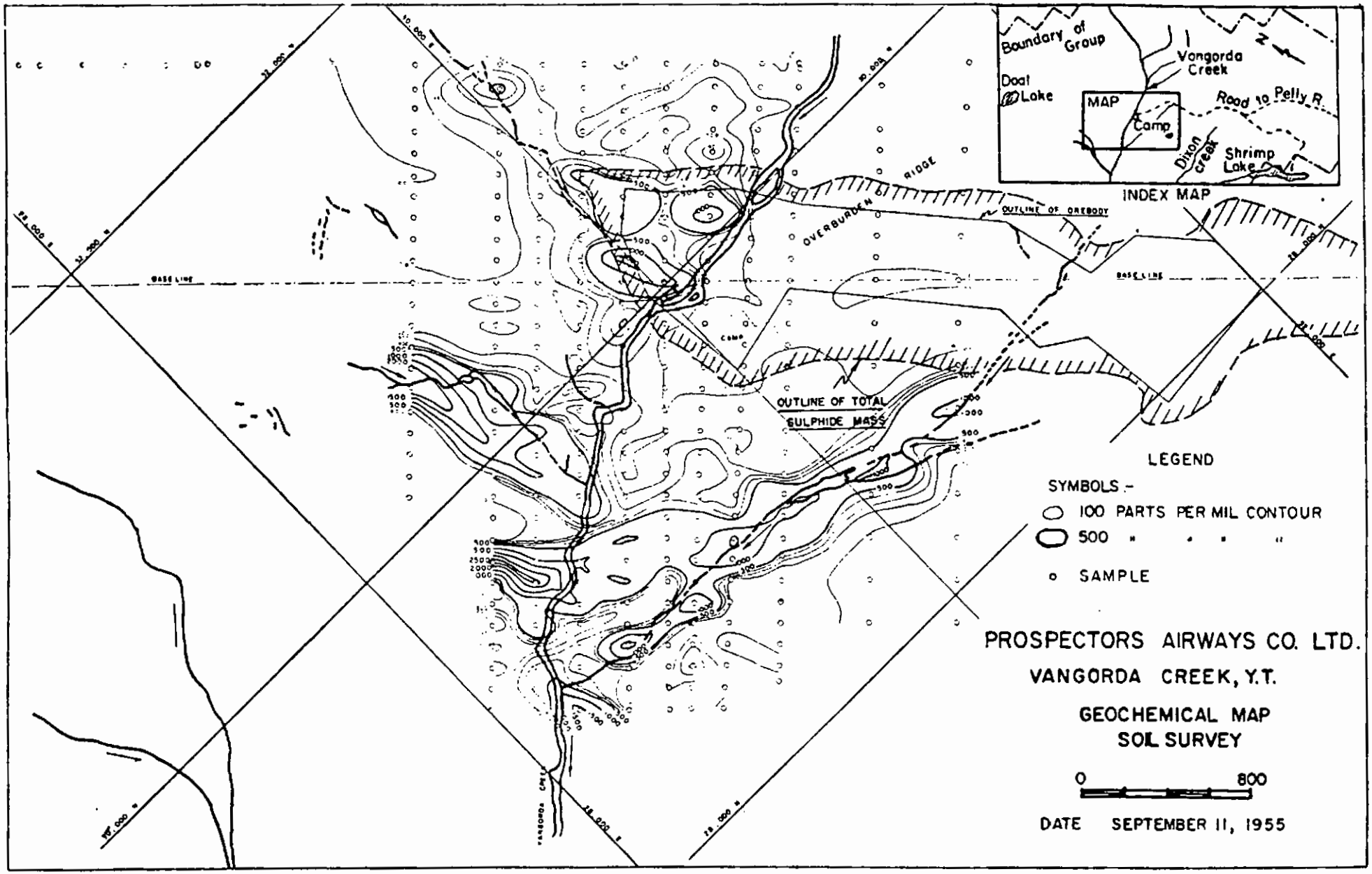

Figure 5. Geological map--soil survey.

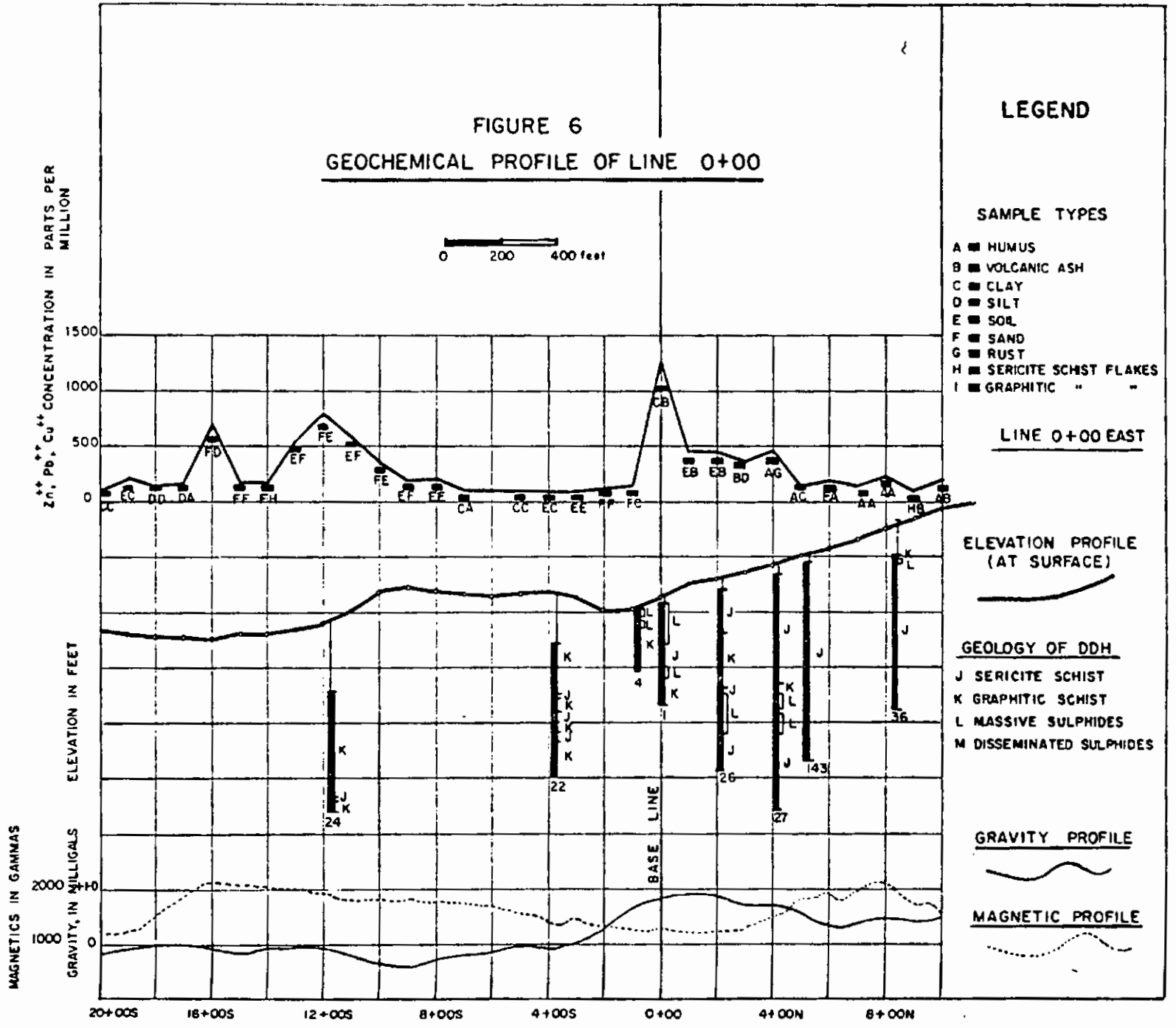

Figure 6. Geochemical profile of line 0+00.

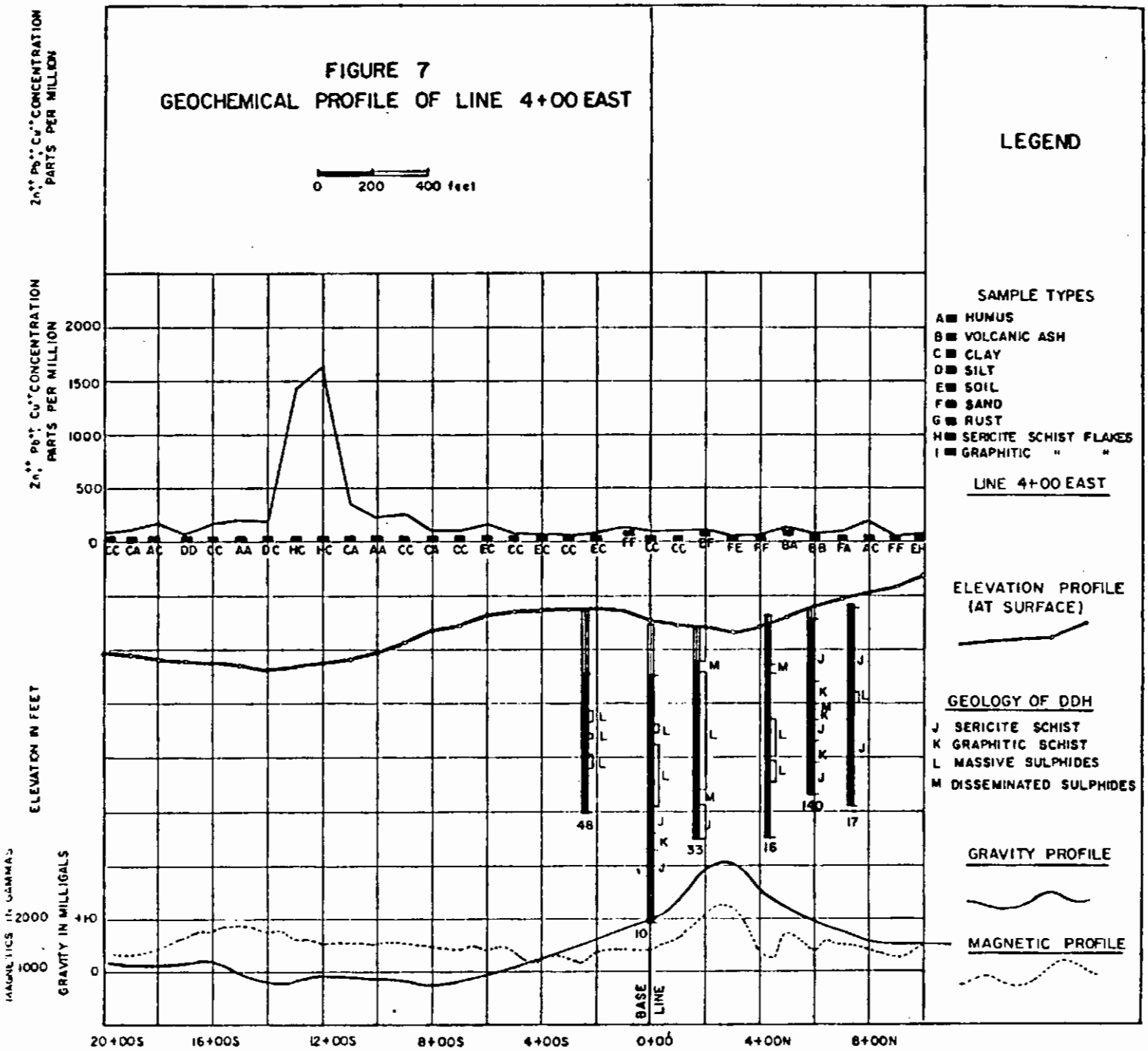

Figure 7. Geochemical profile of line 4 + 00 east.

The method may be used also for water samples taken at regular intervals along streams.

- **Observations**

Figure 5 shows distinct heavy-metal anomalies in the soil near the mineralized zone on the down slope side.

The higher contours generally follow the water channels.

Deep overburden blanketed out anomalies.

Similar results are noted also in Figures 6 and 7 where sharp increases were obtained in the heavy-metal content of the soil on sections 0 plus 00 and 4

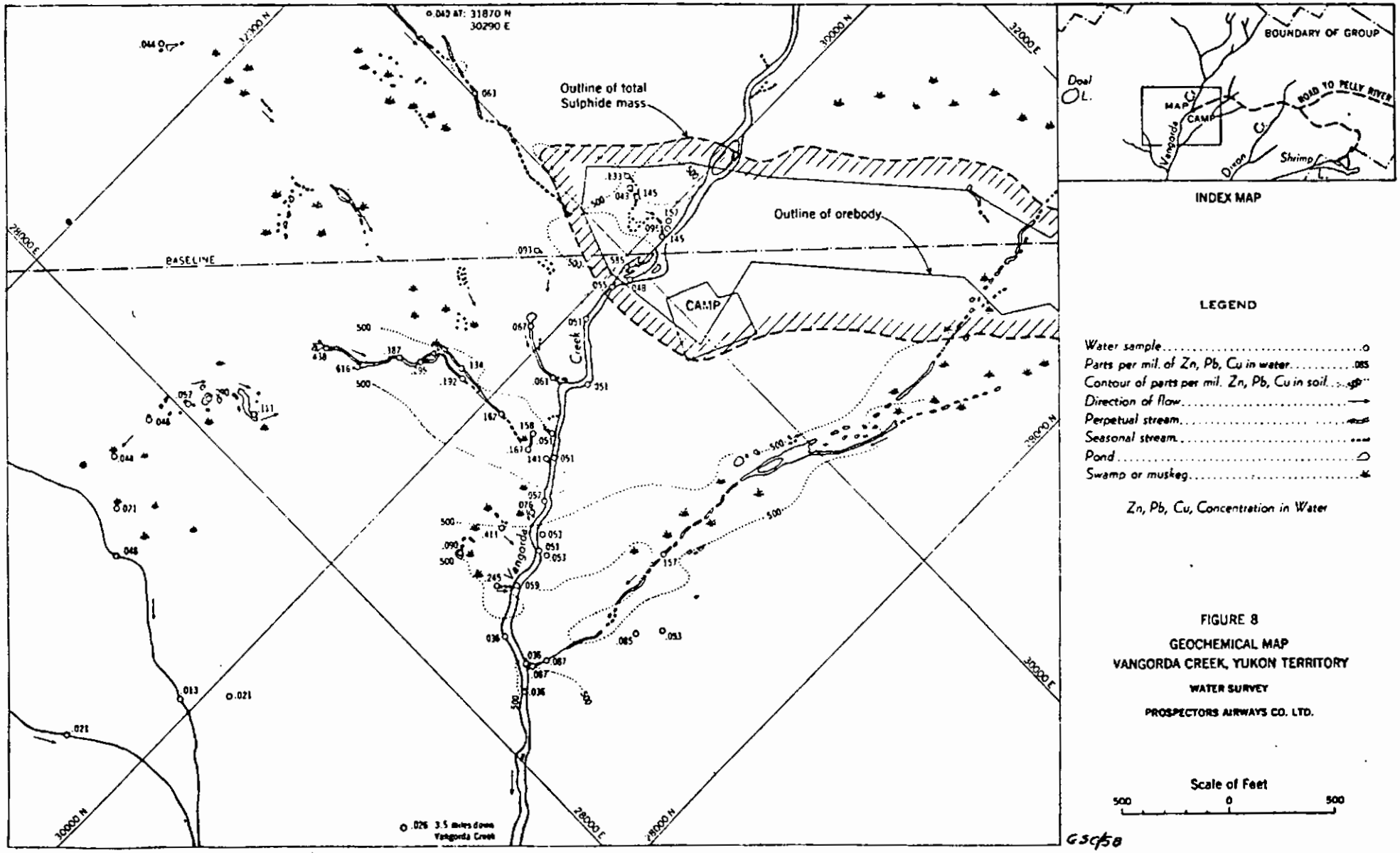

Figure 8. Geochemical map, Vangorda Creek,

plus 00 east at 12 plus 00 south, down-slope from the mineralized zone.

Figure 6 shows a sharp rise in the heavy-metal content of the soil at 0 plus 00 south where the massive sulphides are near surface and where overburden is light. In these conditions a heavy-metal content of over 200 parts per million was considered significant for the soil and over 0.01 part per million for water.

There is a rough correspondence between heavy-metal soil contours and the self-potential contours which trend along water courses. Both may be due in part to the concentration of ions along these channels.

Figure 8 shows a gradual build-up in the heavy-metal content of the water in Vangorda Creek up to the point where it cuts through the mineralized zone. Similar increases in heavy metals were noted in the tributaries of the main creek on proceeding upstream and approaching the mineralized zone.

- **Conclusions**

The geochemical water test is a cheap and useful prospecting method for testing streams and tracing heavy metals to their point of maximum concentration. The soil testing is useful as an auxiliary exploration tool where overburden is light.

The main usefulness of geochemical methods lies in the quick determination of large targets for subsequent exploration by methods other than time-consuming investigation within narrow limits. This is because of the large inherent sampling error in any soil sample.

General Conclusions

The results of geophysical and geochemical surveys over the sulphide deposit at Vangorda Creek indicate that the optimum combination of preliminary exploration techniques elsewhere on the property would consist of a geochemical soil and water reconnaissance followed by electro-magnetic and gravity survey.

The assistance of the following is gratefully acknowledged: Radar Exploration Company (gravity survey); and R. W. Baker, (engineering and diamond drilling data), D. R. S. Doal (magnetometer survey), V. Papezik (geological survey), G. Novak (geochemical survey), and F. A. Campbell (self-potential survey), of Prospectors Airways Company Limited.

APPENDIX 4 -125-

SELECTED BIBLIOGRAPHY USED AS A BASIS FOR THIS VALUATION REPORT

Reference Number

Geology

-Prospectors Airways COMPOSITE SURFACE MAP - VANGORDA CREEK CLAIMS, Scale 1" = 1000', April 24, 1957. 1

-GEOPHYSICAL EXPLORATION OF A LEAD-ZINC DEPOSIT IN YUKON TERRITORY, by E.O. Chisholm, Chief Geologist, Prospectors Airways Co. Ltd. Source: Mining Geophysics special CIM volume for SIXTH COMMONWEALTH MINING AND METALLURGICAL CONGRESS, 1957. (attached as appendix #3) 2

-Geological Survey of Canada Papers - THE MINERAL INDUSTRY OF YUKON TERRITORY AND SOUTHWESTERN DISTRICT OF MACKENZIE,
1965 BY L.H. Green pp. 47-50 3
1966 by D.C. Findlay pp 35-39 4
1967 by D.C. Findlay pp 37-45 5
LODE MINING POTENTIAL OF YUKON TERRITORY, by L.H. Green 1968 pp 11-12 6

Drilling

-Diamond Drill Hole Logs 1-173 inclusive covering all Prospectors Airways drilling with "AX" and "EX" size core from September 10, 1953 to September 17, 1956. 7

-Prospectors Airways Drill Hole Plans on various scales 8

-Prospectors Airways Co. Ltd. Packsack Drill Hole Logs PDH #1-11 inclusive drilled between May 26, 1956 to September 6, 1956 for prospecting and assessment purposes. 9

-Further drilling in 1975 and 1976 by Grum Joint Venture, reference AEX and Canadian Natural Resources shareholder reports plus Vangorda Mines Ltd. directors' reports. 10

-CAMC redrilling program 1979 and 1980. Drill hole plans and sections examined at Faro by H.F. Ditchburn on October 7-8, 1980 and in CAMC's Vancouver office October 9-10, 1980. 11

-CAMC Drill Hole Plan for redrilling the MAIN VANGORDA DEPOSIT (various scales) 12

-DDH Logs prefixed "A" for GRUM EXTENSION INTO VANGORDA and CHAMP EXTENSION INTO VANGORDA from CAMC, October 1980. 13

Reserve Estimates	Reference Number
-Prospectors Airways summary of tonnage and grade signed by W.S. Row, dated May 24, 1965.	14
-GRUM JOINT VENTURE MINERAL INVENTORY, March 1977 by geological staff of Grum Joint Venture and Kerr Addison. (This report contains vertical sections, longitudinal sections and 3 dimensional drawings of both geology and ore reserve intercepts and ore. Many of these vertical and longitudinal sections were obtained in larger scale than in the GRUM MINERAL INVENTORY REPORT from CAMC in Vancouver.)	15
-General Engineering Company report entitled, VANGORDA MINES LTD. PRELIMINARY MINING AND COST STUDY, July 2, 1964.	16
-ANVIL DISTRICT ACQUISITION PROGRAM, by CAMC, December 1978.	17
-EVALUATION REPORT, VANGORDA MINES LTD., by Brodie-Hicks Engineering Ltd. May 9, 1979.	18
-Three VANGORDA EVALUATION reports by CAMC dated July 24, and September 6, 1979 (Model I), and (Model II), after redrilling reserves in 1979 and conducting bench scale metallurgical tests.	19
-THE DEVELOPMENT OF THE VANGORDA PLATEAU ORE DEPOSITS by CAMC March 1980.	20
-35mm slides of Vangorda Main Deposit Longitudinal Section from CAMC, October 1980.	21
-Many maps, vertical and longitudinal sections of deposits by both Grum Joint Venture and CAMC of various dates and at various scales.	22
-A complete list of file data at CAMC, Vancouver on the Vangorda deposits, its metallurgy, etc., as received from Kerr Addison after closing of the sale transaction on May 15, 1979.	23
-Longitudinal Plan and Section plus cross sections of Vangorda drawn by Kerr Addison Mines Ltd., April 1978.	24

NO PROSPECTORS AIRWAYS DETAILED ORE RESERVE SECTIONS OR COMPUTATIONS ARE AVAILABLE EITHER FROM CAMC OR KERR ADDISON!

Metallurgy

-A 1970-1979 production and metallurgical performance table for CMAC's Faro operation from Mr. Gordon Davis to H.F. Ditchburn on October 9, 1980 with weighted averages calculated by H.F. Ditchburn.	25

	Reference Number
-PILOT PLANT TESTING OF GRUM ORES, a report by The Noranda Milling Committee dated December 12, 1977.	26
-THE RECOVERY OF LEAD AND ZINC FROM GRUM DEPOSIT SAMPLES, a report by Lakefield Research of Canada Ltd., dated February 10, 1978.	27
-Also #17 and #20 above.	

Metal Prices (Applicable to TOHO and MITSUI Contracts)

-Lead Prices -	"Monthly bulletins of the International Lead and Zinc Study Group" of London in £ per metric ton for quotational period, converted to U.S. dollars using U.S. Federal Reserve Board noon cable transfer exchange rates in New York for days and period specified. Quality is a minimum of 99.97% purity.	28
-Zinc Prices -	"Metal Bulletin" of London quotation for "European Producer Price" applicable to The London Metal Exchange for GOB zinc quality not less than 98% zinc.	29
-Silver Prices -	Handy & Harman of New York quotations from its publications and as reprinted in various daily, weekly and monthly metals journals, including "Metals Week" of New York for refined grade of 999 purity.	30
-Gold Prices -	Average of the morning and afternoon fixings in London quoted by "Metal Bulletin" in London, averaged for the quotational period for London Good Delivery bars assaying 995 purity, or better.	31

Smelter Contracts

-TOHO ZINC CO., LTD. smelter contract, dated 1st day of January 1978 with CAMC.	32
-MITSUI MINING & SMELTING CO., LTD. smelter contract dated 1st day of January 1978 with CAMC.	33

Costs (Applicable to May 1979)

-Production and General Administration Costs by CAMC to H.F. Ditchburn on October 9, 1980 showing total actual CAMC costs for period March 1, to August 31, 1979.	34

	Reference Number
-Calculation of Current Income Tax Provision for the Year 1979, by CAMC.	35
-Yukon Mining Royalty for the Year 1979 by CAMC.	36
-INLAND TRANSPORTATION COSTS applicable to 1979 by CAMC.	37
-Milling Cost Summary for 1977, 1978 and September YTD 1979 by CAMC.	38
-General & Administration Costs by CAMC.	39

Corporate and Other

-H.F. Ditchburn & Associates Ltd. have copious corporate files on Cyprus Anvil Mining Corporation, Canadian Natural Resources Ltd. and Kerr Addison Mines Ltd. including prospectuses, securities commission filings, shareholder reports and some reports from trade papers and technical journals. 40

Mineral Valuation Texts and References (selected list only)

-Money and Mines by H.F. Mariott, Ernest Bonn Ltd., London 1925

-The Economics of Mining by H.J. Hoover, Stanford University Press

-The Principles of Mining by Herbert C. Hoover, McGraw-Hill Publishing Co.

-Economics of the Mineral Industries, by AIME, Seeley W. Mudd Series, 1968.

-Examination and Valuation of Mineral Property, by Roland D. Parks, Addison-Wesley Press Inc., 1949

-Economics For The Mineral Engineers, by E.J. Pryor, Pergamon Press, N.Y. 1958

-Mine Economics, by S.J. Truscott, Mining Publications, Ltd., London 1937

-Proceedings, Council of Economics, AIME, 1953 to 1980

-Economic Evaluation of Proposed Mining Ventures, Mining Congress Journal November 1959-January 1960

-The Evaluation of Mining Properties, by J.B. Evans, CIM meeting, Trail, B.C., 1959, unpublished.