

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

82E/2

823201

To D.A. Lowrie From W.M. Sirola

Subject Lone Star Mineral Reserves, Date December 9, 1980.
Greenwood District, B.C. 82-E-2

The reserves for the Lone Star pit area are broken down into those north of the 49th parallel on the Richmond claim and south of the 49th parallel on the Lone Star and Washington claims.

The mineralized zone on the Richmond claim (based on 14 diamond drill holes) has the dimensions: 1700 ft. x 300 ft. x 52 ft. for a total of 2,100,000 tons averaging 0.51 copper, 0.014 gold and 0.083 silver. The waste to ore ratio is 2.6:1.

The Lone Star reserves have been estimated to be somewhere between 2.3 and 4,000,000 tons with a grade ranging from 0.54 to 0.58% copper. The waste ore ratio varies from 5.7 to 8:1. Within these reserves is a higher grade plum for which estimates range from 400,000 tons at 0.95% cu to 610,000 tons at 0.99% cu. The deposit contains some gold which might average from .025 to .035 oz. per ton.

For reasons which are not very clear to me, Granby did not see fit to avail themselves of these reserves while their mill at Phoenix was still in operation.

We will research this information much more thoroughly before making any recommendations.



W.M. Sirola,
Regional Exploration Manager.

WMS/al:

P.S.

I should have mentioned that these reserves could be used to augment the reserves on the Lexington property if we made a deal with Bob Seraphim and his partner. Seraphim has just advised me that Granby felt that the mill field available from the Lone Star area would not be adequate to keep their 2,000 tpd mill in operation. In addition the two top benches were oxydized and recoveries of this material would have been low. These problems were aggravated by the 50¢ per pound net smelter Granby was receiving at that time.

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)


To D.A. Lowrie From W.M. Sirola
Subject Lone Star Project, Feasibility Study - 1976 Date December 12, 1980.

Bob Seraphim tells me that this is a confidential study but inasmuch as Granby has done the mining related to the study and inasmuch as the Granby organization no longer exists, I do not think that the study is in that category any longer.

Very briefly this work indicates a total reserve of 610,550 tons of 0.99% copper, from which 21,276 tons of concentrate could be produced with an average grade of 25% cu, 0.3 oz. Au, and 0.60 oz. Ag.

From the 610,550 tons, some 400,000 tons were mined by Granby leaving a balance of 210,550 tons of the same grade. At least part of this remaining tonnage may have been oxydized in the upper benches and therefore not taken to the mill at Phoenix or at any rate, not processed through the mill.

We are still in the process of trying to determine just where any additional mineable tonnage might be found. We will undoubtedly piece this information together in due course but it has not been easy because of the lack of integrated information. It would appear however, that the mineralization on the so-called Richmond claim north of the pit may be too low grade for consideration as a possible reserve and it may well be that ground to the south of the Lone Star pit the mineralization may be too deep for surface mining because of the plunge in that direction.



W.M. Sirola,
Regional Exploration Manager.

WMS/al: Encl.

Confidential

LONE STAR PROJECT

FEASIBILITY STUDY

January 30, 1976

For
7478

By

J. J. Antony
G. B. Hardwicke
D. A. Livingstone
W. H. Miller

* Macintosh 19.20 est. reserves @ Lexington 400,000T @ 1.24% Cu and "high" Au.

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SUMMARY & RECOMMENDATIONS

Recent exploration at the Lone Star property in Ferry County, Washington, has failed to generate new target areas or to add significantly to previously indicated reserves. However, detailed engineering studies have confirmed the near term economic viability of a small high grade ore body. If the price of copper increases substantially before mining is complete, further lower grade material could be mined and processed economically.

It is proposed to mine the deposit by open pit methods employing small scale, diesel powered equipment. Capital expenditures will be minimized by utilizing Phoenix mining equipment. Ore will be trucked to the Phoenix concentrator on a 12.6 mile haulage road to be constructed between Phoenix and Lone Star. Initial planning is to operate the property as a Canadian operation, utilizing Canadian (Phoenix) manpower and equipment. However, provision is being made to employ a U.S. (or mixed U.S./Canadian) mining crew, if necessary.

The project will extend the life of the Phoenix plant by at least 8 months and will provide approximately 18 months' employment for construction and mining crews. Improved access to known prospects (Lexington, Richmond, etc.) should be considered in the planning of further Phoenix area exploration.

Timing of the project is critical. In order to take full advantage of existing manpower and mining equipment, roadbuilding and preproduction development should be initiated prior to the completion of Phoenix mining activity (June, 1976-?). Milling of Lone Star ore at Phoenix can be scheduled to give the highest return, prior to the closure of the plant (late 1978).

It is strongly recommended that Granby proceed with the proposed project in the following manner:

- 1- Enter into immediate negotiations with the Lone Star Unit to amend Coastal's joint venture option, and then take assignment of Coastal's interest.
- 2- Finalize the vehicle for Granby/Zapata's ownership of the U.S. aspects of the proposed operation.
- 3- Continue our efforts to resolve all matters pertaining to the across-the-border movement of ore, concentrates, and goods, as well as the employment of Canadian manpower and equipment in the U.S.
- 4- Proceed with final planning (Phoenix engineering staff) for the proposed road construction and mine development on recently received topographic maps.
- 5- Proceed with the project as outlined under "Proposed Property Development".

Technical Data

Overburden
 Waste
 Ore
 Total Waste:Ore
 Cu Grade (incl. dilution)
 Dilution
 Recovery
 Concentration Ratio
 Concentrate Grade (%Cu)
 Recoverable Gold (oz/ton conc.)
 Recoverable Silver (oz/ton conc.)

359,740 tons
 878,290 tons
 610,550 tons
 2.03:1
 0.99%
 10% @ 0 grade
 88%
 28.7
 25.0
 0.30
 1.60

Lone Star Mining 1800 Tpd 2 1/2 hrs / 5 days
 Phoenix - present mining 2900 Tpd
 if maintain mill rate, then must trust metallurgical balance!!
 Remember Concentration
 0.99% = 19.8 lbs x 88% = 17.42 lbs
 100%
 Concentrate
 just 634,972
 = 29.94 per Ton
 cons. of
 500 lbs Cu
 = 5.974 per
 lb.

Net Cash Flow - projected @ 70¢/lb copper price

	<u>Receipts</u>	<u>Disbursements</u>
Net Value of Prod. p. 13	\$5,759,541	
Freight & Handling of Conc. p. 12		634,972
Mining Operating Expenses p. 11 (1)		1,706,266
Use of Equipment from Phoenix p. 6		87,804 - annual rental
Crushing & Concentrating at Phoenix p. 12 (2)		1,056,251
Phoenix Mill Rental		-
Indirect Costs p. 12		702,132
Addition capital required p. 10		596,000
Recovery on Disposal of Assets	202,737	
Interest on Bank Loans		263,700
TOTALS	\$5,932,278	\$5,047,128
Net Cash Flow		\$885,153

1974 @ 75 Phoenix unit cost of prod = 4.12 / ton
 600,000 T @ 4.12 = \$2,500,000

- (1) This includes full maintenance and repair of equipment from Phoenix and ore haul to Phoenix mill. Duplication of personnel, loss in efficiency, and border crossing costs for possible mixed U.S./Canadian operation are estimated at a \$0.10/ton increase in mining operating costs, approximately \$61,055.
- (2) Includes full maintenance and repair of mill but no charge for capital cost of the mill.
- (3) Assumes all funds required are borrowed and repaid on receipt of concentrate revenues.

The Lone Star Unit receives 10% of the net cash flow calculated as shown above. In addition if the NCF from the 610,550 tons of ore that is above .75% cutoff grade and .99% average exceeds \$1,000,000 the Lone Star Unit will receive a further 10% of such excess net cash flow. The Unit's share of NCF from additional ore reverts to 10%.

INTRODUCTION

The Lone Star Unit consists of 17 patented and 27 unpatented claims in Ferry County, Washington. The property's location, adjacent to the International Boundary approximately 10 air miles south of Granby's Phoenix operation, is shown on Plate 1.

Engineering studies to develop detailed pit design, to refine capital and operating costs, and to determine strategies for utilizing the Phoenix personnel and equipment on the project were recommended by D. G. McIntosh (October, 1975 - Preliminary Feasibility Study) and have now been completed.

Total Cap. Cost \$729,000 - Proj. rate of return @ 65% Cu is 37%, @ 100% Cu = 162%

HISTORY

Granby ROI should be higher than proj. ROI

From early records the property was discovered in 1897 and developed as an underground mine during the years 1910 to 1915 when approximately 52,000 tons of 2% copper ore was mined and processed. Subsequent exploration drilling was done in 1952-1956, 1969, and 1971 to 1975.

Granby's involvement was limited to early assessment in the 1920's, drilling and extensive economic studies in 1955, and more recent exploration from 1973 to the present time.

PROPERTY OWNERSHIP

Plate 2 shows details of the 44 claims which have been unitized as the Lone Star Unit. Ownership of the Lone Star Unit is as follows:

Israel Continental Oil Company Ltd.	65%	<i>Dw King Pres. 4 mch 1955 Jill Magel holds 14m st.</i>
American Standard Explorations Inc.	18.36%	
Anyox Metals Limited	5%	<i>Falcon bridge Tim Taugh.</i>
Anglo Keno Developments Incorporated	5.1%	<i>322 Adelaide St W. Toronto</i>
Wilson Mining Corporation Ltd.	2.04%	<i>E Stein Pres</i>
Robert H. Seraphim	4.5%	<i>J Thornley-Hall secy. Treas.</i>

Coastal Mining Company, a wholly-owned subsidiary of Hanna Mining Company of Cleveland, Ohio, has an option to form a joint venture with the Lone Star Unit on the property. Lone Star can maintain up to a 30% interest in the venture. Lone Star can borrow up to 20% of the capital costs and working capital from Coastal at 1% above the prime bank rate. Lone Star is entitled to the portion of the net proceeds of the venture proportional to its interest in the venture. The first Lone Star proceeds are to be used to repay the interest and principal of the Coastal advance.

Granby has an agreement with Coastal to participate equally in the Lone Star joint venture option. Coastal has advised us that they do not wish to participate in a venture of the scale being proposed. Furthermore, Coastal are prepared to assign their interest in the venture to Granby for a nominal fee.

Granby - Coastal
Lone Star

100% equity
80%
20%
Payout
70
20 + 10 = 30%

Granby • 100%
Lone Star Unit 10% of Net Cash Flow!
Trust Their Accounting!!!

This study assumes that an agreement is reached between Granby and the Lone Star Unit and that the Lone Star Unit is entitled to 10% of the net cash flow.

GEOLOGY AND ORE RESERVES

Ore occurs as lenses and pods of high grade material in sheared dacite and serpentinite near contacts with basic rocks. Individual lenses, having dips up to 45°, are contained within a relatively flat lying zone which then steepens in dip to the southeast. Major disseminated mineralization has not been observed and ore cutoffs are thought to be sharp. Mineralization is mostly chalcopryrite with minor erratic gold/silver and rare molybdenite. Both disseminated and fracture-filling pyrite are present through most rock types.

Extensive surface drilling (over 38,000 ft) has resulted in numerous ore reserve calculations. Recent drilling has failed to generate reasonable new targets or to add to indicated reserves.

Plate 3 and Table 1 show details of our recent studies which indicate that the proposed high grade, small tonnage pit design is the most attractive under present economic conditions. If the price of copper increases substantially before mining is complete, further lower grade material (incremental reserves - Table 1) could be mined and processed economically.

Ore sections (shown in Plate 4) are summarized in Table 2. Pertinent reserve information is as follows:

		<i>.75% Cu Cutoff</i>	<i>MacIntosh</i>	<i>0.25% Cu Cutoff</i>
Overburden	- 359,740 tons		350,000 T	7,100,000 T
Waste	- 878,290 tons		950,000 T	27,900,000 T
Ore	- 610,550 tons		400,000 T	4,800,000 T
Stripping Ratio W/O	- 2.03/1			.73/1
Cu Grade (Incl. dilution)	- 0.99%		0.95% Cu	0.56%
Dilution	- 10% @ 0 grade			
Recoverable Gold Content	- .30 oz/ton of concentrate			
Recoverable Silver Content	- 1.60 oz/ton of concentrate			

PROPOSED PROPERTY DEVELOPMENT

It is proposed to mine the Lone Star deposit by open pit methods employing small scale, diesel powered equipment. Capital expenditure would be kept to a minimum by utilizing mining equipment from the Phoenix operation.

MacIntosh (P&E)
Range of Ore Reserves (Drill Indic), exists of:
2.3 → 4 MT.
S.R. of 5.7 to 8 :1 (w/o.)
with grade range of 0.54 to 0.58% Cu

*Case 4
of maintenance*

The ore would be trucked to the Phoenix concentrator for treatment which necessitates construction of a 12.6 mile road between Phoenix and Lone Star (see Plate 1).

It is proposed to operate the property as a Canadian operation utilizing Canadian (Phoenix) manpower and equipment. However, provision is being made to employ a U.S. (or mixed U.S./Canadian) mining crew, if necessary.

Milling of the Lone Star ore will extend the life of the Phoenix plant by at least 8 months and will provide approximately 18 months' employment for construction and mining crews.

Project Timing

- March, 1976 to September, 1976 - Purchase and delivery of equipment
- May, 1976 to August, 1976 - Road construction
- June, 1976 to September, 1976 - Overburden stripping
- August, 1976 - Moving mining equipment and buildings on site
- September, 1976 to February, 1978 - Mining of ore and waste at Lone Star and trucking to Phoenix
- January, 1977 to December, 1978 - Milling Lone Star ore - scheduled to give the highest return
- March, 1978 to May, 1978 - Reclamation of Lone Star mine site

** Critical Time
Maintain Phoenix
mill Rate.*

Mining and Hauling

It is proposed to mine the Lone Star ore body on a flexible basis in order to limit the operating and capital cost requirements. Grade control and sorting are important to the success of the operation.

Phoenix mills 2900 Tpd.

Mining of ore (1800 TPD) and waste (3655) would be done on a 2-shift basis, 5 days per week (drilling and blasting on a single shift basis). Hauling of ore to Phoenix would be done on a 3-shift 5 day week basis.

Preliminary planning indicates that the initial hauling cutoff would be 0.75% Cu. Possible marginal ore (0.4 to 0.75% Cu) would be stockpiled for possible later milling at improved copper prices.

Equipment (From Phoenix)

80D Northwest Shovel (2 1/2 yd)

Loading all ore to trucks or stockpile as required

Loading 1100 tons per shift (avg.) of waste

Eimco #920 load-haul-dump unit

Handling the balance of waste removal

Caterpillar 966 loader

Loading ore from stockpile and for standby and miscellaneous uses

40R BE Drill

Drilling

Caterpillar #14 Grader

Grading all haulage roads

Caterpillar D8 Tractor

Dumps, cleanup, roads, etc.

Miscellaneous

Sand truck
Water truck
Lube truck
An/fo truck

As required

6 - 35-ton haulpak trucks
(incl. 1 spare)

Ore haul to Phoenix

Additional Equipment Required

3 - 50-ton trucks

Haul from stockpile to mill at Phoenix

3 - 35-ton trucks
(incl. 1 spare)

Ore to stockpile and portion of waste at Lone Star

1 - Caterpillar 343 Power Plant
250 Kw, 4160 volt

For 40R Drill

1 - 8 Kw 220/110 volt 8 Kw
light plant

For mine buildings

1 - underslung grader blade

For sand truck

1 - push blade

For water truck

*Revised # 87,804/44
19 10*

Manpower Requirements

<u>Operation</u>	<u>Lone Star</u>	<u>Base</u>	<u>Phoenix</u>
Drilling	1		-
Blasting (part-time)	1		-
Loading			
LHD	2		-
Shovel (operator, oiler)	4		-
Hauling			
Ore	-		15
Waste	4		-
Support			
D-8	-		2
Grader	-		2
Sorting	2		-
Spare (sand, water, misc.)	-		2
Mechanics	3		3
Supervision			
Mine Superintendent	-		1
Mechanical Superintendent	-		1
Engineer	-		1
Shift Boss	1		-
	<u>18</u>		<u>27</u>
TOTAL	18		27

Concentrating

Extensive metallurgical testing on Lone Star ore was done at Allenby (1955-56) and at Phoenix (1975).

A sample of ore designated as Lone Star Composite No. 2 (approximately 400 pounds) was submitted for laboratory investigation at Phoenix in November to determine its amenability to the existing grinding and flotation circuits. The sample assayed as follows:

Total Copper	0.92%
Non-Sulphide Copper	0.04%
Sulphur	2.07%
Gold	0.012 oz/ton
Silver	0.099 oz/ton

This material responded favourably to the existing Phoenix flowsheet, yielding 88% copper recovery in concentrates grading 25% copper, 0.30 oz gold and 1.6 ozs silver per ton. When treating the anticipated higher grade ore containing 0.99% copper, and since the recovery established by the bench tests did not fully take into account the undistributed contents of the middlings, it would be reasonable to expect the recovery figure of 88% to show some improvement in plant operation.

The ore is appreciably easier to grind than Phoenix ore, thereby allowing a higher throughput and/or finer grinding, but these factors have not been quantified.

There will be need for an additional flotation reagent to suppress talcose gangue, for which due allowance has been made in operating cost estimates.

Administration, Supervision and Engineering

For the Lone Star project it is proposed that these functions remain substantially as they are at present at Phoenix. This includes a mine superintendent for day shift operation, a shift boss with technical qualifications for afternoon shift, a mechanical superintendent, and one engineer all of whom would be chargeable to the Lone Star project during the mining period.

Marketing

Current charges for Phoenix concentrates were used as a guide in determining the net value of Lone Star production. However, it should be possible to deliver Lone Star concentrates to smelters other than Anaconda for lower total charges, if desirable.

Marketing studies indicate a realistic price range of 65-75¢/lb for 1977 with a minimum expectation of 65¢ for both the LME and US producer price. In this study an average price of 70¢ has been used.

INTERNATIONAL CONSIDERATIONS

It is proposed that the copper ore from Lone Star be owned by a U.S. corporation and sold to, or treated under contract by Granby. Mine development and operation would be carried out by Granby, using Canadian equipment and labor, if possible.

The distinction between U.S. and Canadian operations will be maintained with regard to legislation pertaining to taxation, safety, pollution control, reclamation, etc., for each country.

Customs

U.S. Customs is receptive to the concept of a security fence prohibiting direct access from the U.S. Minimum specifications for such a fence are:

- 1) 8 ft high chain link fence topped by 3 strands of barbed wire at 45° with a 1 ft vertical lift.
- 2) Metal posts securely anchored.
- 3) Cleared lines for fence.

Machinery and equipment to be almost exclusively used on the U.S. side of the border can be entered duty free under Section 864.50 of the U.S. Tariff Act. This section provides for a temporary use permit for one year - renewable for additional 1-yr periods up to a maximum of 3 years. A written submission requesting a "determination" from U.S. Customs is being prepared.

Arrangements will have to be made with the local authorities regarding the movement of ore, spare parts, fuel, lubricants, explosives, etc. across the border. Goods of Canadian origin may be dutiable by the U.S. Ore and concentrates appear to be non-dutiable items.

Immigration (Labor)

Discussions with the U.S. Department of Labor have established that we can not obtain permission to use Canadian labor in the U.S. (excluding supervisors and ore haulage truck drivers) until we have made "a conscientious recruitment effort to locate qualified U.S. workers prior to the consideration of hiring an alien".

U.S. workers must be able to meet our job specifications and conditions of employment. These job specifications may be restrictive, but must be attainable by the Canadian hired, if a U.S. worker is unavailable. Conditions of employment are that no accommodation or cookhouse facilities will be supplied by the company and that U.S. employees will have to commute from the Danville crossing through Canada to get to the mine site.

A preliminary labor survey in Ferry County, suggested that suitable mine labor may be unavailable, in which case application for the use of alien labor can be made. Supervisory personnel, ore haulage truck drivers, and other Canadian personnel working on both sides of the border are eligible for special visas permitting their activities in the U.S.

CAPITAL REQUIREMENTS

1. Roads-12.6 miles of 20 ft road surface, approximately 3 miles of new road, and upgrading the balance	\$265,000	<i>20,000/mi</i>
2. 3 only 50-ton trucks (used)	100,000	} <i>on hand</i>
3. 3 only 35-ton trucks (used)	90,000	
4. 1 only Caterpillar skid mounted 343 Power Plant, 250 Kw, 4160 volts new with required switch gear (for the 40R Drill)	35,000	
5. 1 only 8 Kw 110/220 volt light plant for mine buildings	4,000	
6. 1 underslung grader blade for sand truck and one push blade for water truck	8,000	
7. Security fencing	15,000	
8. Inventory	10,000	
9. Concentrator modifications at Phoenix	15,000	
10. Surface Installations		
(a) Small shop building, office and dry trailer	30,000	
(b) Hyab for vehicle on hand	8,000	
(c) Small tools required	6,000	
(d) Water and sanitary facilities	10,000	

ADDITIONAL CAPITAL REQUIRED

\$596,000

265

331,000

\$87,804

PHOENIX EQUIPMENT per page 6 supplied at a nominal rental of

Inventory refers to additional inventory only and does not include inventory already on hand at Phoenix.

Preproduction expense is treated as an operating expense due to the short term of the mining program.

It is expected that the salvage value of the mining equipment at the end of the mining phase should equal the written down value. The total road costs, however, will have to be charged against the project.

Consideration should be given to leasing equipment rather than purchasing, where a cost advantage exists.

OPERATING COSTS

Mining Costs

\$/TM

Overburden

Loading & Hauling 0.25

Waste

Drilling 0.05
 Blasting 0.13
 Loading & Hauling 0.25
 Support Equipment 0.02
 Total Waste 0.45

Ore

Drilling 0.05
 Blasting 0.13
 Loading 0.12
 Hauling to Stockpile 0.08
 Hauling to Phoenix 1.51
 Support Equipment 0.03
 Supervision/Sorting 0.08
 Total Ore 2.00

12 1/2 ton mi. (incl. nuisance @ border crossing)

*1.51
 99*

Total Unit Mining Costs

<u>Category</u>	<u>Quantity</u>	<u>Cost \$/ton</u>	<u>Total Cost</u>
Overburden	359,740	0.25	\$ 89,935
Waste	878,290	0.45	395,231
Ore	610,550	2.00	1,221,100
TOTAL	610,550		\$1,706,266

$$\frac{1,706,266}{610,550} = 2.80/\text{ton ore}$$

OPERATING COSTS (continued)

Crushing

Feed crusher from stockpile
Crushing & conveying

\$/ TM

0.12
0.34
0.46

TOTAL

Concentrating

Current Cost
Extra reagent costs

1.07
.20

.46
1.27
\$ 1.73

TOTAL

1.27
.46
1.73

Indirect Costs

General Mine Administration
(incl. reclamation @ \$500/acre)
Plantsite Services
Engineering

0.90
0.17
0.08

→ high but hard to argue

TOTAL

1.15

Off-Property Costs

Freight & Handling Concentrate

OK 1.04

*Gasol/ton / rail \$ 25⁰⁰/ton
CR 28.7
1⁰⁰ x 28.7 = \$ 30⁰⁰/T cost*

Total Unit Costs

Mining
Crushing
Concentrating
Indirect
Off Property

2.80
0.46
1.27
1.15
1.04

*One Stop
- extras.
w/one 2:1 - 0.10 (incl) Phoenix
- 1.51 (12 mi @ 12¢)
- 0.12 (haul @ 100¢ from stockpile)
- 0.20 (extra reags)*

TOTAL

6.72

6.72
- 1.93
\$ 4.79

NOTE: Above costs for totally Canadian operation. Duplication of personnel, loss in efficiency, and border crossing costs for possible mixed US/ Canadian operation are estimated at an additional \$0.10/ton.

*Mr James - letter of 28 Oct 75 sugg. mill chgo of 25¢/ton.
i.e. reduce cost to \$ 4⁰⁰/ton with extras as noted*

*0.10
1.51
0.12
0.20
0.25
\$ 1.88*

ECONOMIC PROJECTIONS

Assumptions

Ore (tons)	610,550
Grade (Cu)	0.99%
Recovery	88%
Concentrate Grade	25%
Au (oz/ton concentrate)	0.30
Ag (oz/ton concentrate)	1.60
Concentration Ratio	28.70

Revenue Calculation

Cu produced	10,638,223 lbs.
Concentrate produced	21,276 tons
Salable Cu	10,106,311 lbs
Salable Au	6,383 oz
Salable Ag	34,402 oz

<u>Cu Price (\$/lb)</u>	<u>0.60</u>	<u>0.65</u>	<u>0.70</u>	<u>0.75</u>
Gross value of Cu	6,063,787	6,569,102	7,074,418	7,579,733
Less Smelting @ .15/lb	1,515,947	1,515,947	1,515,947	1,515,947
Refining @ .082/lb	828,718	828,718	828,718	828,718
Add Au @ \$140/oz	893,620	893,620	893,620	893,620
Ag @ \$4/oz	136,168	136,168	136,168	136,168
Net Value of Production	4,748,910	5,254,225	5,759,541	6,264,856
	\$0.4699	.5195	.5699	.6199

probably OK.

*= .13^e
+ 54 for treatment
= 18^e net value*

TABLE 1 - PIT COMPARISONS

	<u>OB</u> (tons)	<u>WASTE</u> (tons)	<u>ORE</u> (tons)	<u>GRADE</u> (%Cu)	<u>OB+W:O</u>
<u>Undiluted</u>					
Pit #1	359,736	933,795	555,044	1.09	2.33:1
Pit #2	491,402	1,179,454	625,290	1.03	2.67:1
Pit #3	895,904	1,540,563	776,460	0.96	3.14:1
<u>Diluted (10% with waste)</u>					
*Pit #1	Unchanged	878,291	610,550	0.99	2.03:1
Pit #2	"	1,116,925	687,819	0.94	2.34:1
Pit #3	"	1,462,917	854,106	0.87	2.75:1
<u>Incremental Diluted Reserves</u>					
Pit #2			77,269	0.55	4.79:1
Pit #3			166,287	0.58	4.51:1
		TOTAL	243,556 @	0.57	4.60:1

*Used for technical feasibility study

TABLE 2 - ORE SECTIONS (PIT #1)

<u>SECTION</u>	<u>AREA</u> <u>(ft²)</u>	<u>GRADE</u> <u>(%Cu)</u>	<u>ORE</u> <u>(tons)</u>	<u>GRADE</u> <u>(%Cu)</u>
4,900N	0	-	13,215	1.07
4,950N	9,500	1.07	57,438	1.10
5,000N	18,070	1.13	75,063	1.18
5,050N	17,960	1.23	78,646	1.16
5,100N	19,790	1.10	83,683	1.09
5,150N	20,378	1.08	86,131	1.07
5,200N	20,965	1.06	79,302	1.04
5,250N	17,100	1.01	63,198	0.98
5,300N	13,235	0.94	18,368	0.94
5,350N	0	-		
		TOTAL	555,044 @	1.09% Cu