006999

PRELIMINARY REVIEW AND DISCUSSION OF

FARO ZONE III F_4 RESERVE MODEL

October 1983

PRELIMINARY REVIEW AND DISCUSSION OF FARO ZONE III F4 MINE RESERVE MODEL

INTRODUCTION

This is a preliminary review of the procedure in completing and results of the F4 mine modelling of Faro Zone III covering X-sections 124+20 to 134+47 and long sections 14 to 24. A complete report will be presented of the results of the study in the first quarter of 1984 once appropriate checks have been completed.

The F4 model completely encompasses the NA, OA and PA phases and partially incorporates the YA, UA, WA and 7D phases.

A review of Faro Zone III completed by J.G. Simpson et al in May 1983 summarizes the Exploration Department's involvement in the remodelling of Section 124+20 to 134+47 of Faro Zone III.

This present review will briefly describe events from June to October 1983 but first a brief recap.

GEOLOGIC MODELLING

In August 1982 the Geology Department at Faro observed that the tonnage and grade being mined showed a large variance from the mine model F_3 completed in 1981 (see October 2, 1982 memo by R. Tolbert, attached).

A number of other discrepancies were observed in the model and several checks were made culminating in a hand planimetered bench plan model of the NA phase (P.G.) which indicated a reduction of tonnage in the NA phase by 16%.

These discrepancies were due to an interpolation problem observed in the Mintec modelling procedure.

Concern was also expressed over the interpretation which among other things indicated an extremely large volume of 2A ore.

It was resolved in October 1982 that we would relog and interpret X-sections 124 to 134 and incorporate 1982 drill information into a new model. Meanwhile the Engineering Department, for planning purposes, reduced the tonnage in the NA phase by 15%, and 5% for the remaining phases and reduced the grades in all phases by 5%.
Relogging of 103 drill holes covering sections 124 to 135 was completed in mid-November 1982. This relogging exercise emphasized collection of fold and fault information as well as checks on lithologies and updating the assay logs to a more advanced format. Correction and interpolation of survey data was also carried out.

Editing and entering of all logged information was completed on the HP3000 DDH-Data Base during January 1983.

Preliminary X-sections were completed in early February and initial estimates (see memo dated February 9, 1983 by R. Tolbert, attached) indicated that the NA phase, which was by now getting flogged to death, would have an additional 10% reduction of tonnage due to reinterpretation of geology.

By this time the capability to plunge corrected drill holes had been developed so new sections were plotted with this feature.

Additionally the new cross and long sections were constructed to minimize large projection distances to sections.

Thirteen new X-sections were completed and as detailed in Simpson et al's review, 'idealized' long sections were constructed from X-section intersections with long sections. These twelve long sections showed considerable variance with the X-sections due to differences in fault patterns.

This fault problem was rationalized to achieve a 'best fit', though not necessarily correct, fault model.

This interpretive effort was completed at the end of May 1983 resulting in thirteen X-sections and twelve long sections.

GEOLOGIC AND MINE RESERVE MODEL

It had become apparent through analysis of the Mintec Modelling procedure that there was a tendancy to 'smooth' grades by ore types irrespective of whether the unit was at the top or bottom of the deposit.

A new numeric code compatible with the Mintec system was devised to allow for up to eight horizons of any ore type.

The cross and long sections were then coded with the numeric ore codes. At this time it became apparent that there were three horizons for the majority of ore types characterized particularly by the repetition of 2A and 2G ore types which occur at the top and bottom of the 'Anvil cycle' respectively. The upper horizon is physically separated from the lower two by up to 30 feet of metavolcanics, and metapelites of variable carbon content.

Geologic and Mine Reserve Model (Cont'd)

These cross and long sections were digitized through the services of Tetrad, verified then entered to Mintec Files at CSC in Toronto. This was completed by the middle of June 1983.

Utilizing the new Mintec Release'10' model bench plans were generated from the cross and long sections that plotted the geologic contacts along each section line where they intersected the bench. After resolving some plotting problems these were completed in early July.

During July into early August the Anvil District Geologic Department completed the geologic interpretation of the 30 bench plans.

These bench plans were then digitized and verified then entered to CSC in Toronto for block coding, which in the previous F_3 model had to be carried out manually.

The block coding was completed and checked by late August 1983.

Meanwhile during August all 103 drill holes from Sections 124+20 to 135+122 were composited using the new code system. The composites were also broken out according to ore facies.

During August and September great efforts, especially on the part of Peter Clarke, were made to incorporate as many of the idiosyncrasies of the deposit into the interpolation and reserve calculation programs. Additionally, 850 gold assays carried out on Zone III core in August were entered into the DDH data base.

These innovations have made the F_3 model a 'state of the art' model which can be utilized more effectively than any previous model on the other deposits in the district.

After a number of late problems were solved, incorporation of the F_3 model phase areas by Mintec enabled both the Geologic Reserves and the Mine Reserves to be completed on the 11th of October on schedule.

RESULTS

For comparison purposes the only complete phases encompassed by the re-interpretation are the NA, OA and PA phases.

Table 1, pages 1-2 compare the F_3 and new F_4 model at 3% and 4% Pb+Zn cutoff for the NA, OA and PA phases.

At 4.00% cutoff, Table 1, page 1 shows a large variation on the phase scale and an overall decrease of close to 10% tonnage for the three phases with an overall increase in grade. This combination leads to an overall decrease in metal content.

Of concern is the fact that two of the three phases show decreases of > 10% tonnage and metal content. It is clear that Sections 117 to 123 have to be relogged, additionally drilled and interpreted.

However, for immediate planning purposes as Table 2, pages 1-6 indicates the Engineering Department adjustment (AR) of reserves based on the Geology Department's October 1982 initial studies have, except for a decrease in tonnage of 8%, covered any immediate planning concerns.

OTHER CONSIDERATIONS

Apart from having a 'state of the art' mine modelling program and a new 'bottom line', the effort put into the relogging and interpretation has resulted in:-

1) A better familiarization of the lithologies and structure.

2) Geologic and assay sections at 1" = 50' that are usable.

3) Indirectly the construction of a new map grid system for the Faro Deposit has allowed the bench plans to be compatible with the pit geologic maps and blasthole maps.

4) Usable bench plans at 1" = 50' scale that can be directly compared for future predictive purpose with pit mapping and blasthole information.

5) The awareness, if it was not already made aware, that the pit has to be geologically mapped continuously and aciduously.

6) The new interpretation also appears that it reasonably reflects the local tonnage estimation as indicated by Table 3 and therefore more predictive than the previous model on the local scale.

7) A close to 97% clean data-base usable for analytical operations.

CONCLUSIONS AND RECOMMENDATIONS

1) The new F_4 model versus the F_3 model indicates a slight decrease in total reserves over the three phases compared.

2) The new F_4 model shows dramatic decreases in reserves in two of the three phases.

3) For immediate planning purposes the Engineering Department's January 1, 1983 adjustment of reserves has essentially covered immediate concerns.

4) For longer range planning Sections 117-123 covering the remainder of the open pittable area should be relogged, additionally drilled where necessary and reinterpreted.

To

From R. Tolbert

Date October 2, 1982

Subject ZONE III NA PHASE TONNAGE AND GRADE ESTIMATION

INTRODUCTION

It became apparent to the Geology Department that there were some discrepancies between the mine model interpolated assays for blocks and actual drill hole assays, during compilation of assay sections in late August.

There were indications of a discrepancy prior to this, just before the shutdown, when blasthole assays were compared to the mine model blocks in the initial bench 3890 of the NA phase.

The predicted mine model tonnage and grade for bench 3890 as compared to the blasthole information is as follows:

	Cut-off	Tonnage (sdt)	Pb+Zn%
3890 bench - Mine model	+4%	142,000	7.3
3890 bench - Blasthole	+4%	70,000	6.4

The most noticable discrepancy on this and other benches was between the model interpolated block grades of 2A sulphide type, and actual drill hole assays.

Drill hole assays of 2A in the NA phase range from 1.7% to 8.0% Pb+Zn with an unweighted mean of 4.7% Pb+Zn. However the model interpolated block grades of unmixed 2A ran as high as 11.8% Pb+Zn.

At this point in early September:

A) an initial tonnage and grade comparison was started comparing interpolated block grades based on geologic control and the mine model block grades.

and B) possible reasons for the discrepancies were examined in order to take corrective measures.

A) TONNAGE AND GRADE COMPARISON

The initial hand interpolated tonnage and grade block comparison at 4% Pb+Zn cutoff reported on September 23, 1982 was based on a calculated 2A tonnage and grade, but due to time constraints, an estimated tonnage and grade of the other ore types (based on three benches completed at that time).

This above comparison showed the geologically controlled interpolated tonnage and grade to indicate a 58% decrease in 2A tonnage and an estimated 20% decrease in the other types, giving a combined reduction in tonnage of 30% as compared to the model at 4% cutoff.

There was also an overall 8% loss of combined Pb/Zn grade resulting entirely from a reduction in 2A sulphide type Pb+Zn grade.

A more accurate planimetered and geologically controlled tonnage and grade was completed on September 30, 1982 and is shown in Table 1.

These figures show a 16% loss of total tonnage at a 4% Pb+Zn cutoff and a slight increase in grade as compared to the mine model figures. Once again the largest discrepancey was in the 2A sulphide type with a 52% decrease in tonnage.

At a 3% Pb+Zn cutoff there was a larger discrepancy in both total tonnage and grade due to the elimination of low grade 2A waste in the geologically controlled interpolation.

B) INTERPRETATION OF RESULTS

The above discrepancies are due to a unfavourable combination of several variables of which I will discuss three.

1) 2A Sulphides

A large proportion of the ribbon banded graphitic quartz sulphide (2A) in the NA phase is below 3% Pb+Zn grade. This was correctly assigned into bench blocks as an 'ore" type based on geology but incorrectly based on assays.

In the past such a problem was not evidenced and it was not perceived to be a problem in the NA phase at the bench block coding stage.

From examination of the assay sections, just completed, there does not appear to be a large amount of 2A sulphides in the OA phase so this particular problem will be eliminated.

As would be expected geologically, in the higher grade Zone I the 7D phase 2A sulphides are to a large extent above 3% or 4% cutoff and it does not appear that they will cause the same problem encountered in the NA phase.

In addition, with the planned construction of assay sections and bench plans there will be checks available in future that will reduce the occurrence of similar problems.

2) Structure

The average sheet dip i.e. The general overall trend of lithologies, is approximately 20° to the southwest in the NA phase. In the central part of Zone I it is sub horizontal on some sections.

Where the sheet dip is at an angle to the horizontal benches there can be grade interpolation problems i.e. high grade being assigned to low grade ore blocks, especially when no facies control is placed on interpolation as in previous mine models, due to practical constraints.

Recent developments have allowed this problem to be corrected to enable better assigning of grades to blocks.

3) Mintec Modeling Procedures - see P.I. Clarke's memo of October 3, 1982

GEOLOGIC INTERPRETATION

It should be understood that as more pit mapping, blasthole logging and diamond drill hole information is gathered structural and lithologic interpretations can and will be changed that will effect either addition or subtraction to the reserve figures.

The Geology Department is in the process of updating and refining the geologic data base over the next several months to:

a) determine where areas in the data base require improvement.
b) provide better reserve estimates for planning purposes.

R. Tolbert - DISTRICT GEOLOGIST

TABLE I
SUMMARY OF ZONE III NA PHASE TONNAGE AND GRADE COMPARISON
(BENCHES 3890-3670)

BLOCK MODEL METHOD (MINTEX MODEL F3)

ORE TYPE	CUT OFF	TONNAGE ('000 sdt)	Pb%	Zn%
2A (Unit 7)	+4%	533	2.4	3.9
2B to H (Units 8-11)	+4%	1,513	2.8	4.3
TOTAL	+4%	2,046	2.7	4.2

PLANIMETERED GEOLOGIC BENCH PLAN METHOD (P.G.)

ORE TYPE	CUT OFF	TONNAGE ('000 sdt)	Pb%	Zn%	(%Variance in tonnage F3-PG X 100 / F3)
2A (Unit 7)	+4%	256	2.0	4.0	-52
2B to H (Units 8-11)	+4 %	1,462	3.0	4.6	- 3
TOTAL	+4%	1,718	2.8	4.5	-16

BLOCK MODEL METHOD (MINTEC MODEL F3)

ORE TYPE	CUT OFF	TONNAGE ('000 sdt)	Pb%	Zn%
2A (Unit 7)	+3%	671	2.3	3.6
2B to H (Units 8-11)	+3%	1,627	2.7	4.2
TOTAL	+3%	2,298	2.6	4.0

PLANIMETERED GEOLOGIC BENCH PLAN METHOD (P.G.)

ORE TYPE	CUT OFF	TONNAGE ('000 sdt)	Pb%	Zn%	(% Variance in tonnage F3-PG X 100 / F3)
2A (Unit 7)	+3%	305	1.9	3.7	-54
2B to H (Units 8-11)	+3%	1,468	2.9	4.6	-10
TOTAL	+3%	1,773	2.8	4.4	-23

NOTE:
1. No dilution applied to above figures.
2. Mean facies S.G.'s for deposit used to calculate tonnage.

CYPRUS ANVIL MINING CORPORATION INTEROFFICE CORRESPONDENCE

To J. Carrington cc R. McCallum

From R. Tolbert J.G. Simpson

Date February 9, 1983 J. Purkis

Subject Effect of New Geologic Interpretation on Ore Reserves in the NA Phase

Introduction

As stated in my October 2, 1982 memo (page 3) the Geology Department is in the process of updating the geologic data base. To that end we have:-

1. Compi all geologic mapping at Faro onto one base map of 1" = 100' as an aid to sectional interpretation and ore control.

2. Relogged drill core to record ALL main structural features and to correct where necessary previously assigned lithologies.

3. Corrected and updated the drill hole survey data base.

4. We have with the aid of the Exploration Department completed an intermediate geologic interpretation of the NA phase as was requested. The final interpretation of sections should be complete by March 31, close to the date scheduled in October 1982.

The new geologic interpretation of the NA phase utilizes:

a. The newly completed structural relogging of the drill core.
b. Geologic information gained in pit mapping.
c. Newly commenced blasthole logging for ore lithologies.

The NA phase is covered by cross sections 130-134 inclusive. The interpretational compilation and drafting was completed in Vancouver.

The product of this exercise is:

a. A geologic cross section, and
b. An assay cross section - for each of the sections 130 to 134.

Results

Referring to Table I of my October 2, 1982 memo I estimate from initial calculations, a 10% reduction on the NA phase F3 tonnage as follows:

. . ./2

Re: Effect of New Geologic Interpretation on Ore Reserves in the NA Phase

F3 reserve estimate .... 2.046 million (4% cut off)

P.G. reduction - 16% (due to computer interpolation error)
New geologic interpretation - 10%
Total - 26% - 0.532 million s.d.t.
New estimated reserve .... 1.514 million s.d.t.

No grade forecast is available from the Geology Department except to state that the greatest part of this reduction is due to the reduction of the interpreted marginal 2A ore type tonnage.

This 2A reduction in addition to the P.G. model reduction amounts to a reduction of over 80% of the original 533,000 tons of 2A in the F3 model.

The reduction of 2A will clearly raise the grade.

This is confirmed by Glenn Simpson who has independently completed a sectional reserve estimate of the NA phase as follows:

NA phase reserve	Cutoff	S.D.T.'S	Pb%	Zn%	Ag gms/mt
(based on sectional	4%	1.49 million	3.2	5.2	47
estimation method)	5%	1.24 million	3.3	5.4	49

Implications

The most obvious questions will be:

1. How does this affect the remaining reserves?
2. How does this affect the present mine plans?

1. I am sure all sorts of "ballpark" estimates can be conjurred up but good "calculated" figures cannot be deduced until the geologic interpretation of bench plans and sections has been completed.

In terms of risk analysis we can expect in the remaining phases a maximum of 10% reduction and a minimum of zero reduction in presently defined reserve tonnage due to a new geologic interpretation.

On the plus side minor additional extraneous reserves discovered during the new geologic interpretation can be added to the total reserves to offset in the longer term the above losses.

. . ./3

Re: Effect of New Geologic Interpretation on Ore Reserves in the NA Phase

These "additional" reserves come from marginal areas not drilled off and therefore not included in the mine reserves, e.g.:

200,000 - 300,000 tons ± 8% Pb and Zn between Zone II and Zone III
> 100,000 tons in the north east wall of Zone III - grade unknown.

2. This question is best asked of the Engineering Department but clearly key variables affecting cost are:

- decrease in tonnage
- increase in grade
- decrease in 2A tonnage (reagent costs, etc.)
- increase in shipping ratio
- change in pit plan??

R.S. Tolbert

RST/DBC

TABLE 1 pg 1

COMPARISON OF THE F_3 & F_4 MODELS FOR NA, OA, PA PHASES 3.0% CUTOFF

PHASE	BENCHES	MODEL F3 TONNES	MODEL F3 %Pb	MODEL F3 %Zn	MODEL F3 Ag g/mt	MODEL F4 TONNES	MODEL F4 %Pb	MODEL F4 %Zn	MODEL F4 Ag g/mt
NA	3890 – 3670	2,087	2.56	4.01	38.8	1,578	2.79	4.66	39.7
OA	3810 – 3630	1,400	2.47	3.58	33.4	1,541	2.83	4.30	36.2
PA	3710 – 3550	1,388	2.74	4.44	33.2	1,248	2.49	4.00	31.7
TOTAL		4,875	2.59	4.01	35.7	4,367	2.72	4.34	36.2

% VARIANCE $\left(\frac{F_3 - F_4}{F_3} \times 100\right)$

PHASE	TONNES	%Pb	%Zn	Ag g/mt	kgs Pb	kgs Zn	kgs Ag
NA	-24	+9	+16	+2	-18	-12	-30
OA	+10	+15	+20	+8	+26	+32	+17
PA	-10	-9	-9	-5	-18	-19	-13
TOTAL	-10	+5	+8	+1	-6	-3	-9

COMPARISON OF THE F3 & F4 MODELS FOR NA, OA, & PA PHASES @ 4.0 CUTOFF

TABLE 1 p.2

PHASE	MODEL F3 TONNES	MODEL F3 %Pb	MODEL F3 %Zn	MODEL F3 Ag g/mt	MODEL F4 TONNES	MODEL F4 %Pb	MODEL F4 %Zn	MODEL F4 Ag g/mt
NA	1,856	2.72	4.23	40.1	1,451	2.91	4.88	40.9
OA	1,232	2.57	3.82	33.7	1,441	2.92	4.47	37.1
PA	1,228	2.90	4.73	34.8	1,048	2.67	4.41	32.7
TOTAL	4,316	2.73	4.26	36.8	3,940	2.85	4.61	37.3

% VARIANCE $\left(\frac{F3 - F4}{F3} \times 100 \right)$

PHASE	TONNES	%Pb	%Zn	Ag g/mt	kgs Pb	kgs Zn	kgs Ag
NA	-22	+7	+15	+2	-16	-10	-20
OA	+17	+14	+17	+10	+33	+37	+29
PA	-15	-8	-7	-6	-21	-20	-20
TOTAL	-9	+4	+8	+1	-5	-11	-8

HASE NA

COMPARISON OF THE COMPUTER MODELS F_3 AND F_4 AND THE ADJUSTED RESERVES (AR)*
3.0 % CUTOFF

TABLE 2 p1/6

ITEM	MODEL F3	MODEL F4	% VARIANCE $\frac{F_3-F_4}{F_3} \times 100$	ADJUSTED RESERVES* MODEL AR	% VARIANCE $\frac{F_3-AR}{F_3} \times 100$	% VARIANCE $\frac{AR-F_4}{AR} \times 100$
TONNES (000's)	2,087	1,578	-24	1,773	-15	-11
% Pb	2.56	2.79	+9	2.43	-5	+15
% Zn	4.01	4.66	+16	3.81	-5	+22
Ag g/mt	38.8	39.7	+2	36.9	-5	+8
Kgs. Pb (000's)	53,427	44,026	-18	43,084	-19	+2
Kgs. Zn (000's)	83,689	73,535	-12	67,551	-19	+9
Kgs Ag (000's)	81	63	-22	65	-19	-3

* Official Jan. 1/83 Ore Reserves (memo Nov 19/82) - all grades (Pb, Zn, Ag) reduced 5%
- tonnage reductions, 15% NA, 5% all other phases

COMPARISON OF THE COMPUTER MODELS F_3 AND F_4 AND THE ADJUSTED RESERVES (AR)*
3.0 % CUTOFF

PHASE OA

ITEM	MODEL F3	MODEL F4	% VARIANCE $\frac{F_3-F_4}{F_3} \times 100$	ADJUSTED RESERVES* MODEL AR	% VARIANCE $\frac{F_3-AR}{F_3} \times 100$	% VARIANCE $\frac{AR-F_4}{AR} \times 100$
TONNES (000's)	1,400	1,541	+10	1,330	-5	+16
% Pb	2.47	2.83	+15	2.35	-5	+20
% Zn	3.58	4.30	+20	3.40	-5	+27
Ag g/mt	33.4	36.2	+8	31.7	-5	+14
Kgs. Pb (000's)	34,580	43,610	+26	31,255	-10	+40
Kgs. Zn (000's)	50,120	66,263	+32	45,220	-10	+47
Kgs Ag (000's)	47	55	+17	42	-10	+31

* Official Jan. 1/83 Ore Reserves (memo Nov 19/82) - all grades (Pb, Zn, Ag) reduced 5%
- tonnage reductions, 15% NA, 5% all other phases

PHASE PA

TABLE 2 p3/6

COMPARISON OF THE COMPUTER MODELS F_3 AND F_4 AND THE ADJUSTED RESERVES (AR)*
3.0 % CUTOFF

ITEM	MODEL F3	MODEL F4	% VARIANCE $\frac{F_3-F_4}{F_3}\times 100$	ADJUSTED RESERVES* MODEL AR	% VARIANCE $\frac{F_3-AR}{F_3}\times 100$	% VARIANCE $\frac{AR-F_4}{AR}\times 100$
TONNES (000's)	1,388	1,248	-10	1,319	-5	-5
% Pb	2.74	2.49	-9	2.60	-5	-4
% Zn	4.44	4.00	-9	4.20	-5	-5
Ag g/mt	33.2	31.7	-5	31.5	-5	+1
Kgs. Pb (000's)	38,031	31,075	-18	34,294	-10	-9
Kgs. Zn (000's)	61,627	49,920	-19	55,398	-10	-10
Kgs Ag (000's)	46	40	-13	41	-10	-2

* Official Jan. 1/83 Ore Reserves (memo Nov 19/82) - all grades (Pb, Zn, Ag) reduced 5%
- tonnage reductions, 15% NA, 5% all other phases

HASE NA

TABLE 2 p4/6

COMPARISON OF THE COMPUTER MODELS F3 AND F4 AND THE ADJUSTED RESERVES (AR)*
4.0 % CUTOFF

ITEM	MODEL F3	MODEL F4	% VARIANCE $\frac{F3-F4}{F3} \times 100$	ADJUSTED RESERVES* MODEL AR	% VARIANCE $\frac{F3-AR}{F3} \times 100$	% VARIANCE $\frac{AR-F4}{AR} \times 100$
TONNES (000's)	1,856	1,451	-22	1,578	-15	-8
% Pb	2.72	2.91	+7	2.58	-5	+13
% Zn	4.23	4.88	+15	4.02	-5	+21
Ag g/mt	40.1	40.9	+2	38.1	-5	+7
Kgs. Pb (000's)	50,483	42,224	-16	40,712	-19	+4
Kgs. Zn (000's)	78,509	70,808	-10	63,436	-19	+12
Kgs Ag (000's)	74	59	-20	60	-19	-2

* Official Jan. 1/83 Ore Reserves (memo Nov 19/82) - all grades (Pb, Zn, Ag) reduced 5%
- tonnage reductions, 15% NA, 5% all other phases

PHASE OA

COMPARISON OF THE COMPUTER MODELS F_3 AND F_4 AND THE ADJUSTED RESERVES (AR)*
4.0 % CUTOFF

TABLE 2 p5/6

ITEM	MODEL F3	MODEL F4	% VARIANCE $\frac{F_3-F_4}{F_3} \times 100$	ADJUSTED RESERVES* MODEL AR	% VARIANCE $\frac{F_3-AR}{F_3} \times 100$	% VARIANCE $\frac{AR-F4}{AR} \times 100$
TONNES (000's)	1,232	1,441	+17	1,170	-5	+23
% Pb	2.57	2.92	+14	2.44	-5	+16
% Zn	3.82	4.47	+17	3.63	-5	+19
Ag g/mt	33.7	37.1	+10	32.0	-5	+16
Kgs. Pb (000's)	31,662	42,077	+33	28,548	-10	+47
Kgs. Zn (000's)	47,062	64,412	+37	42,471	-10	+52
Kgs Ag (000's)	42	53	+29	37	-10	+43

* Official Jan. 1/83 Ore Reserves (memo Nov 19/82) - all grades (Pb, Zn, Ag) reduced 5%
- tonnage reductions, 15% NA; 5% all other phases

PHASE PA

COMPARISON OF THE COMPUTER MODELS F3 AND F4
AND THE ADJUSTED RESERVES (AR)*
4.0 % CUTOFF

TABLE 2 p6/6

ITEM	MODEL F3	MODEL F4	% VARIANCE $\frac{F3-F4}{F3} \times 100$	ADJUSTED RESERVES* MODEL AR	% VARIANCE $\frac{F3-AR}{F3} \times 100$	% VARIANCE $\frac{AR-F4}{AR} \times 100$
TONNES (000's)	1,228	1,048	-15	1,167	-5	-10
% Pb	2.90	2.67	-8	2.76	-5	-3
% Zn	4.73	4.41	-7	4.49	-5	-2
Ag g/mt	34.8	32.7	-6	33.1	-5	-1
kgs. Pb (000's)	35,612	27,981	-21	32,209	-10	-13
kgs. Zn (000's)	58,084	46,217	-20	52,398	-10	-12
kgs Ag (000's)	43	34	-20	39	-10	-13

* Official Jan. 1/83 Ore Reserves (memo Nov 19/82) - all grades (Pb, Zn, Ag) reduced 5%
- tonnage reductions, 15% NA, 5% all other phases

COMPARISON OF THE ORE MINED AND ADJUSTED*
F3 AND F4 MODELS
3890 BENCH, NA PHASE @ 3.5% CUTOFF

TABLE 3

ITEM	ACTUAL	ADJUSTED* MODEL F3	ADJUSTED* MODEL F4	% VARIANCE (ACT − F3) / ACT	% VARIANCE (ACT − F4) / ACT
TONNES	59,300	128,656	72,700	+117	+23
%Pb	2.5	3.2 / 2.9	3.3 / 3.0	+16	+20
%Zn	3.9	4.2 / 3.9	4.4 / 4.1	0	+5
Ag g/mt	41.3	46.5 / 42.8	47.8 / 43.8	+4	+6
Kgs. Pb	1,482,500	3,731,000	2,181,000	+152	+47
Kgs Zn	2,312,700	5,017,584	2,980,700	+117	+29
Kgs Ag	2,450	5,500	3,180	+125	+30

* grades for models have been reduced by 8% for dilution