CRI
Board of Directors
Sept 89 meeting

019980

REPORT ON MINE GRADE

FARO
MINE GRADE

Over the last year there has been a persistent short fall in grade of mill feed compared to prediction. Feed grades have averaged about 0.5% less than production.

The primary reason for this was the calculation of the high grade and medium grade ores did not exactly simulate the mining operations.

The reserves have been calculated using another method to more closely predict the mining methods, resulting in tonnages that more accurately reflect production statistics.

CURRAGH RESOURCES INC.
BOD SEPTEMBER 22, 1989

FARO MINE
MINE GRADES

THE PROBLEM

Persistent short fall in head grade for last eight months. Predictions exceed actuals by 0.5% Pb plus Zn.

THE CAUSE

Poor simulation of the recoverable high grade and medium grade tonnages. Overstatement of high grade tonnages.

THE SOLUTION

Recalculation of reserves using methods that more closely approximate the mining method without distorting global reserves.

THE RESULT

A slightly more conservative reserve calculation that appears to fit production statistics better, especially high grade quantities.

FARO
MINE GRADE

COMPARISON OF THE BLASTHOLE QUANTITIES TO THE CALCULATED RESERVES FOR THE 3410 TO 3310 BENCHES OF THE BZ PHASE, FARO PIT

The primary cause of the lower head grade was the failure of the reserve calculations to accurately reflect the amount of mineable high grade ore. Mined high grade (+7% Pb plus Zn) quantities have been consistently below projections and mined medium grade (5 to 7% Pb plus Zn) tonnages have been consistently above projections. The sum of high grade and medium grade categories have been close to projections.

The drop in mill feed grades was due to the fact that high grade ore was expected to be segregated by mining operations and first fed to the mill and the expected amounts were not available. The mill feed shortfall was made up by lower grade ores, resulting in an overall average mill feed grade lower than expected.

Actuals on the overhead slide are based on blasthole results. Historically the mine blasthole grades have closely reflected mill head grades. The comparison of reserve grades to blasthole grades is much simpler and less equivocal than to mill feed grade, this and all further tables compare to blastholes rather than mill feed.

COMPARISON OF THE BLASTHOLE QUANTITIES TO
THE CALCULATED RESERVES FOR THE 3410 TO 3310 BENCHES
OF THE BZ PHASE, FARO PIT (mined Jan -July 1989)

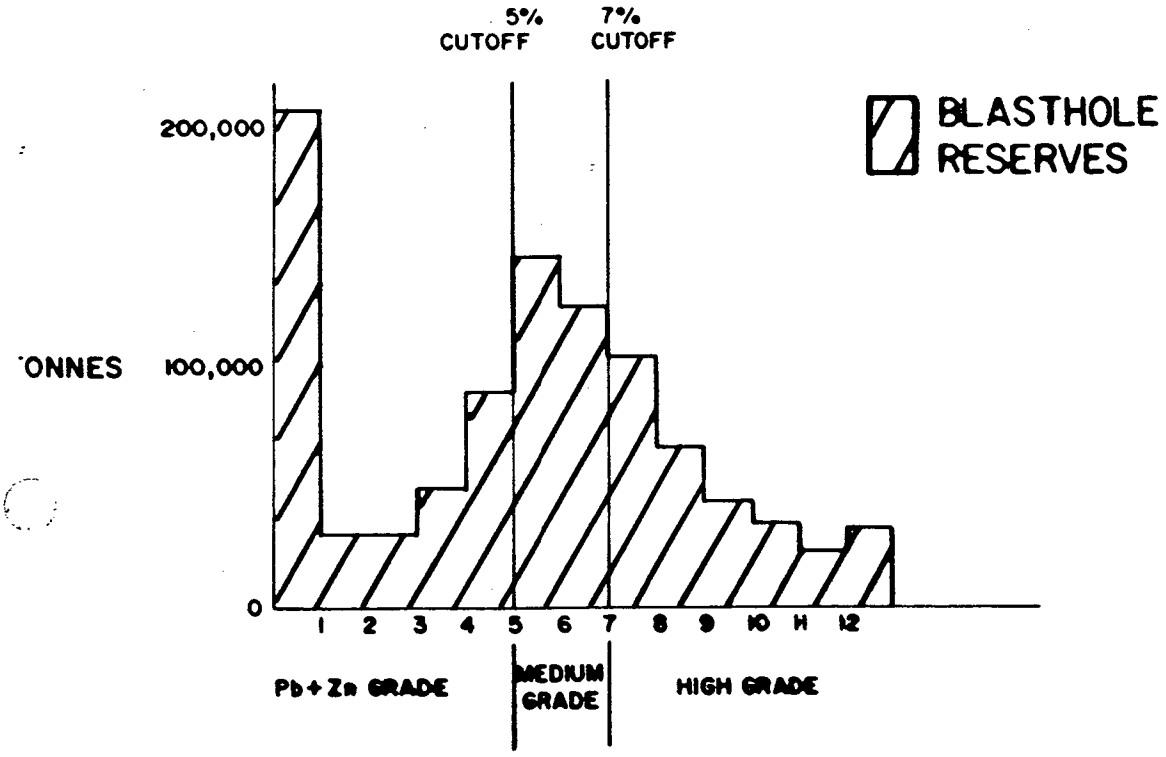
******** OLD RESERVE CALCULATION *******

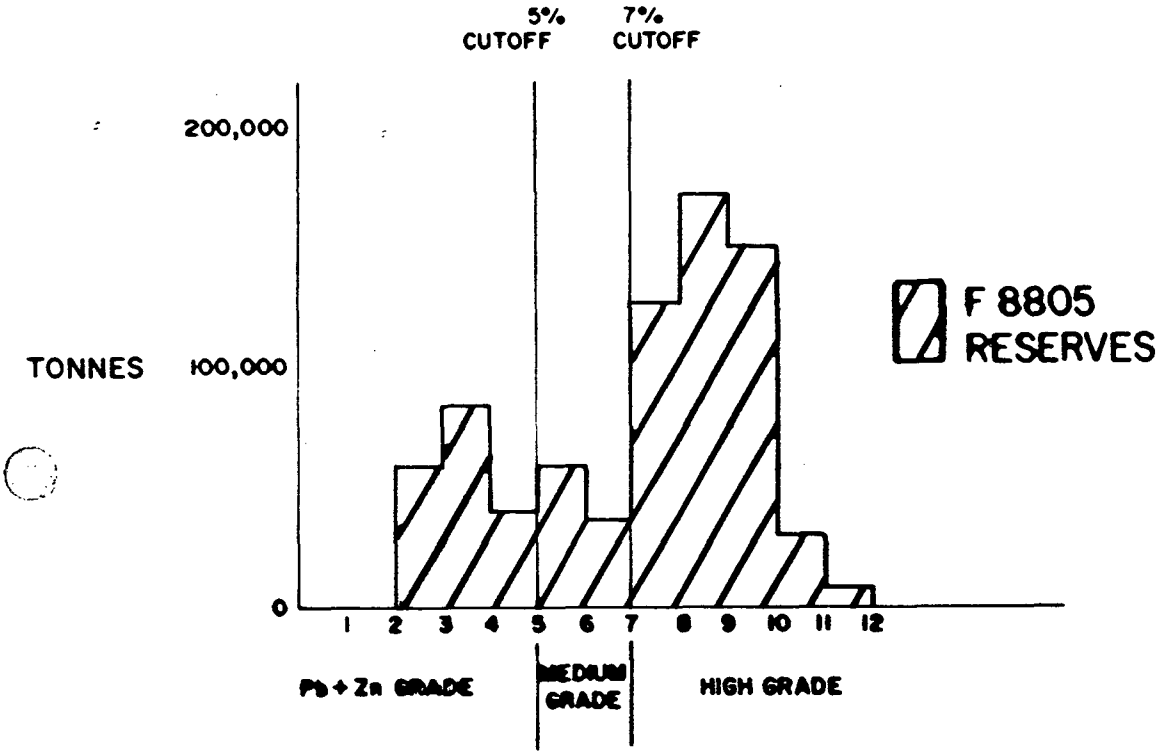
	tonnes	Pb+Zn (%)	total metal
5% cutoff			
F8805 (10% dil, 95%recvy)	1,730,000	7.27	125,771
BLASTHOLES	1,628,000	7.51	122,263
difference	(102,000)	0.24	(3,508)
% difference	-6%	3%	-3%
7% cutoff			
F8805 (10% dil, 95%recvy)	1,309,589	7.91	103,588
BLASTHOLES	893,981	8.61	76,972
difference	(415,608)	0.70	(26,617)
% difference	-32%	9%	-26%

FARO
MINE GRADE

BLASTHOLE RESERVES HISTOGRAM/F8805 RESERVES HISTOGRAM

The overhead slides show an unsatisfactory comparison at a high cutoff grade but a good comparison at a low cutoff grade, which may appear to be contradictory. These histograms show the grade distribution for blastholes and reserve calculation on the 3410 bench, BZ phase. The shape of the histograms demonstrate the dramatic difference that can result at a 7% cutoff grade compared to a 5% cutoff grade. Note that the area beneath these curves above a given cutoff grade is proportional to the total contained metal.


5%
CUTOFF
7%
CUTOFF
BLASTHOLE
RESERVES
200,000
100,000
0
TONNES
1 2 3 4 5 6 7 8 9 10 11 12
Pb+Zn GRADE
MEDIUM
GRADE
HIGH GRADE


5%
CUTOFF
7%
CUTOFF
200,000
100,000
TONNES
0
1 2 3 4 5 6 7 8 9 10 11 12
Pb + Zn GRADE
MEDIUM GRADE
HIGH GRADE
F 8805
RESERVES

FARO
MINE GRADE

FARO OPEN PIT
COMPARISON OF KILBORN'S SECTIONAL HAND CALCULATION OF REMAINING RESERVES AS OF JANUARY 1, 1989 TO CURRAGH'S F8805 CALCULATION FOR THE SAME VOLUME

The reserve calculations (done by computer methods) were designed to accurately predict the grade and tonnes of ore in the ground. This reserve calculation method was expected to give results close to those of a sectional hand calculation method. The overhead slide compares the computer reserve calculation and the sectional hand reserves calculation for the same part of the ore deposit. The tonnage calculations compare well, however the grades calculated by the hand method are higher.

FARO OPEN PIT

COMPARISON OF KILBORN'S SECTIONAL HAND CALCULATION OF REMAINING RESERVES AS OF JANUARY 1, 1989 TO CURRAGH'S F8805 CALCULATION FOR THE SAME VOLUME

(comparison on undiluted basis in order to be comparable)

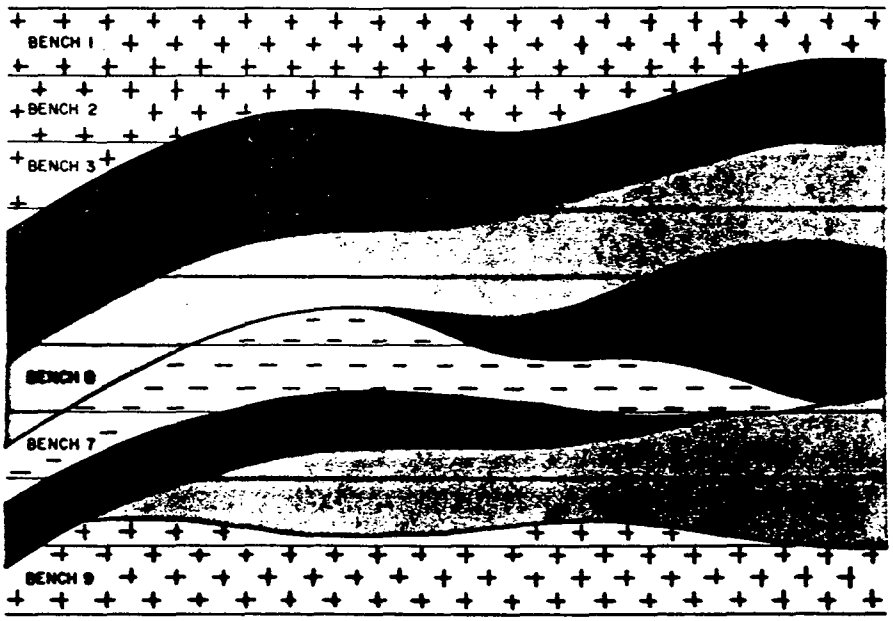
	ORE (tonnes)	LEAD (%)	ZINC (%)	Pb + Zn (%)	TOTAL METAL (tonnes)
CURRAGH	13,317,000	3.18	5.30	8.48	1,129,282
KILBORN	13,302,000	3.45	6.05	9.50	1,263,690
difference	**(15,000)**	**0.27**	**0.75**	**1.02**	**134,408**
% difference	**-0.1%**	**8%**	**12%**	**11%**	**11%**

FARO
MINE GRADE

HYPOTHETICAL OREBODY
20' BLASTHOLE SAMPLING OF A LAYERED SUB-HORIZONTAL BODY
BLASTHOLE CLASSIFICATION OF HIGH AND MEDIUM GRADE ORE

The grade of ore actually blocked out and mined in the pit is different than the in-situ ore since the ore is layered and layer thickness is close to bench height. This results in much mixing of grade categories, consequently there appears to be less high grade ore and more medium grade ore. Dilution calculations were intended to correct for this effect, however the dilution and mining loss applied did not accurately reflect actual mining results at a high cutoff grade. The three overhead slides illustrate this effect.

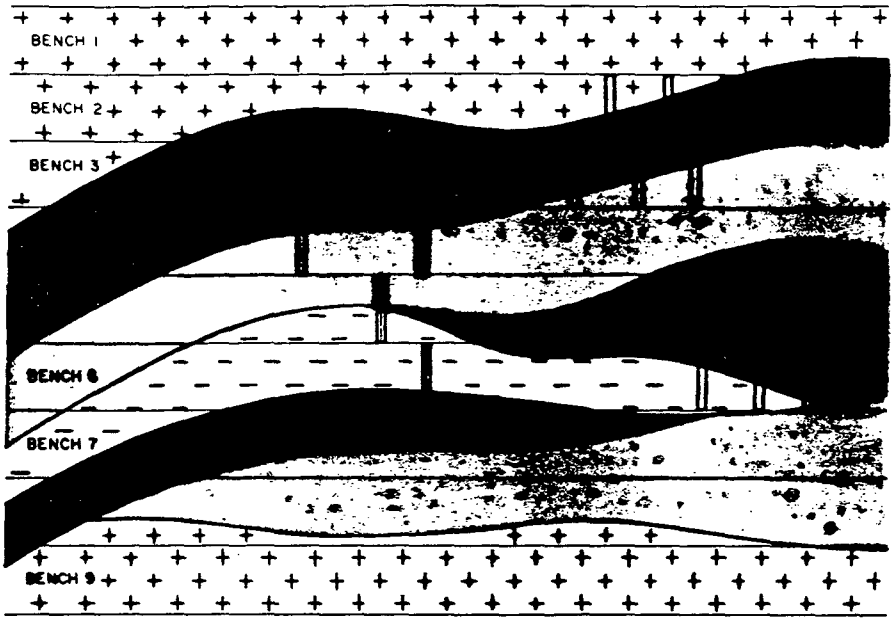
HYPOTHETICAL OREBODY



LEGEND

- HIGH GRADE ORE
- MEDIUM GRADE ORE
- LOW GRADE ORE
- EXTERNAL WASTE
- INTERNAL WASTE

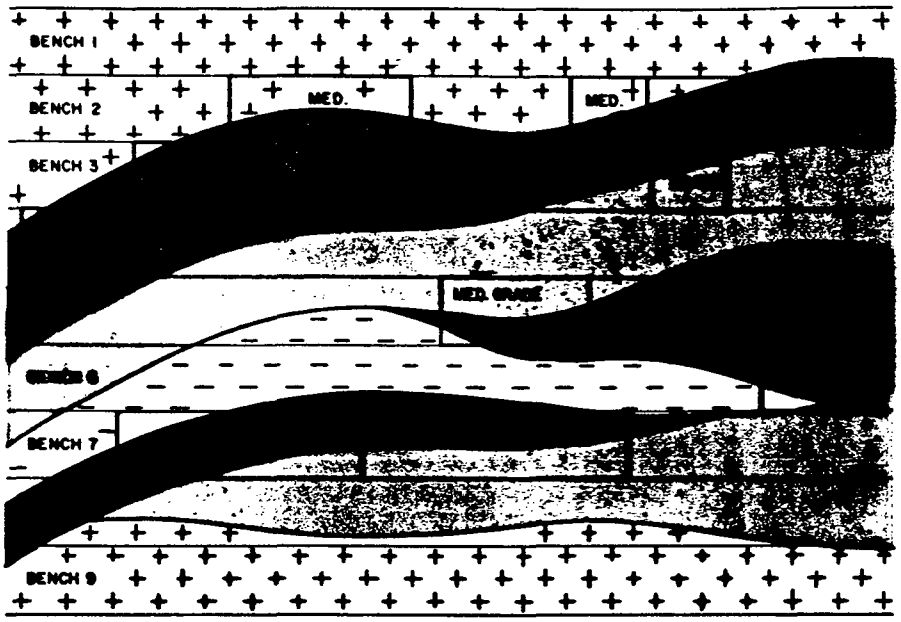
20' BLASTHOLE SAMPLING OF A LAYERED SUB-HORIZONTAL OREBODY



LEGEND

- HIGH GRADE ORE
- MEDIUM GRADE ORE
- LOW GRADE ORE
- EXTERNAL WASTE
- INTERNAL WASTE
- BLAST HOLE

BLASTHOLE CLASSIFICATION OF
HIGH AND MEDIUM GRADE ORES



LEGEND

- HIGH GRADE ORE
- MEDIUM GRADE ORE
- LOW GRADE ORE
- EXTERNAL WASTE
- INTERNAL WASTE

FARO
MINE GRADE

COMPARISON OF GEOLOGICAL INTERVAL, ASSAY COMPOSITES AND BENCH COMPOSITES

Possible solutions to this problem are:

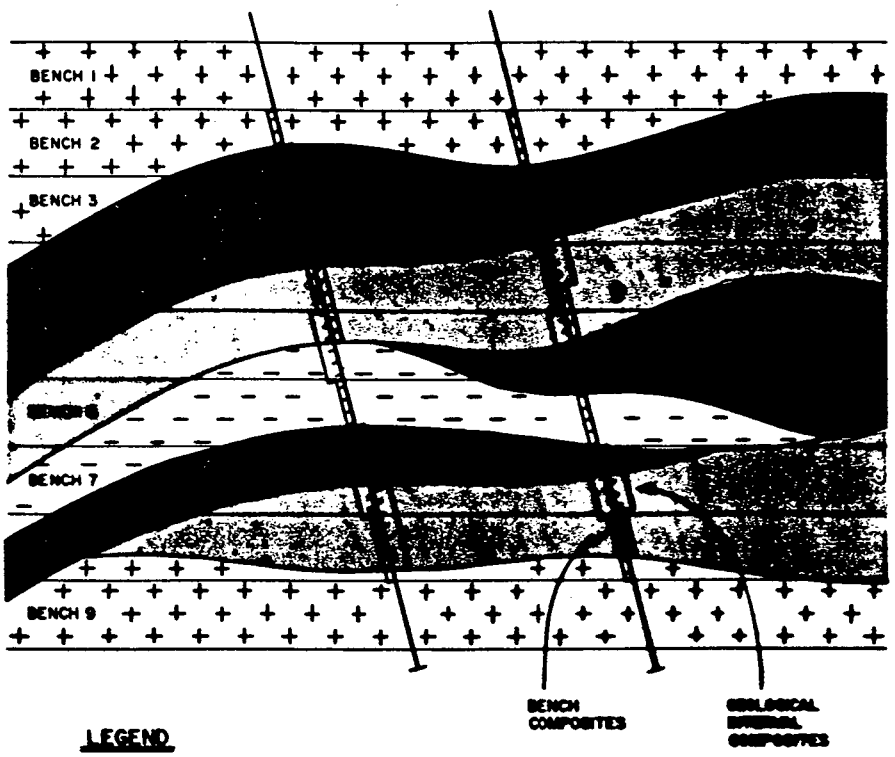
1. Change dilution practice

2. Recalculate reserves

Option one is difficult because of the need to maintain tonnage, volume and metal balance between grade categories.

Option two was chosen. This involved recalculation of reserves with less restrictive geological constraints and using assays composited by bench elevation rather than by geological unit defined intervals. The overhead slide illustrates the difference in these assay composite types.

COMPARISON OF GEOLOGICAL INTERVAL ASSAY
COMPOSITES AND BENCH COMPOSITES



LEGEND

- HIGH GRADE ORE
- MEDIUM GRADE ORE
- LOW GRADE ORE
- EXTERNAL WASTE
- INTERNAL WASTE

FARO
MINE GRADE

COMPARISON OF THE BLASTHOLE QUANTITIES TO THE CALCULATED RESERVES FOR THE 3410 TO 3310 BENCHES OF THE BZ PHASE, FARO PIT NEW RESERVE CALCULATION

The overhead slide shows the results of the comparison of mine production quantities to calculated reserve prediction quantities shown in a previous overhead slide at a 7%, and a 5%, cutoff grade.

The calculated results compare more closely to the actual results.

COMPARISON OF THE BLASTHOLE QUANTITIES TO
THE CALCULATED RESERVES FOR THE 3410 TO 3310 BENCHES
OF THE BZ PHASE, FARO PIT (mined Jan -July 1989)

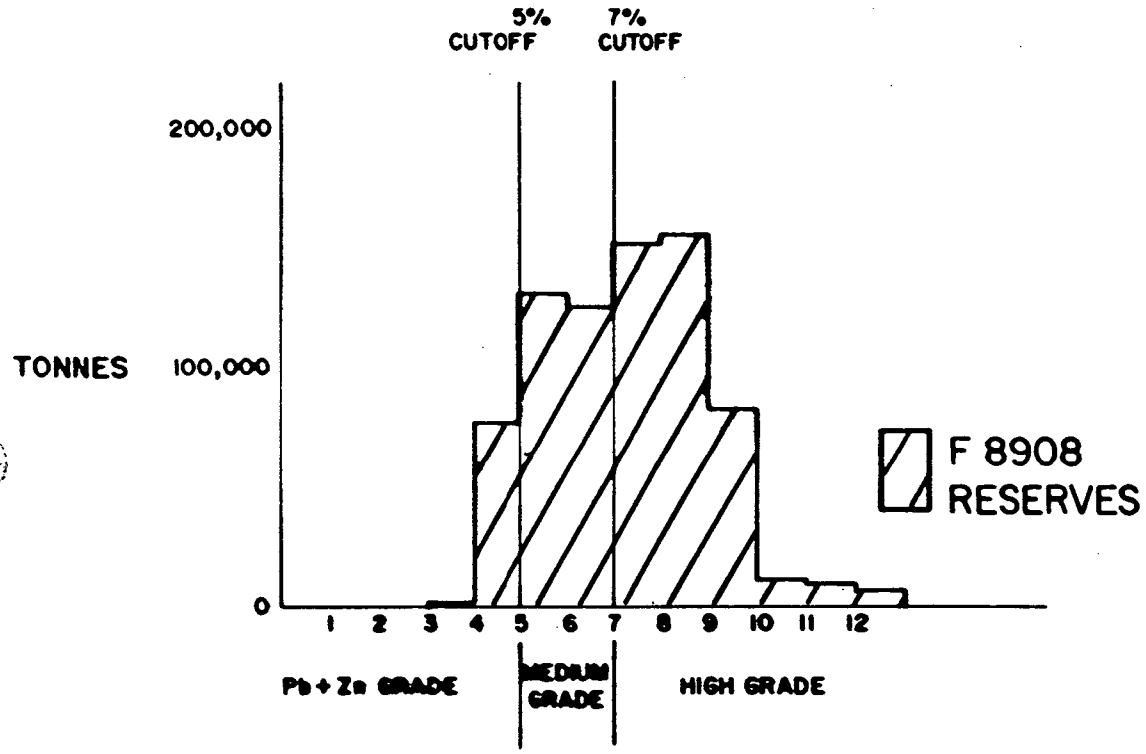
******** NEW RESERVE CALCULATION *******

	tonnes	Pb+Zn (%)	total metal
5% cutoff			
F8908 (95%recvy)	1,747,506	7.24	126,519
BLASTHOLES	1,628,000	7.51	122,263
difference	(119,506)	0.27	(4,257)
% difference	-7%	4%	-3%
7% cutoff			
F8908 (95%recvy)	966,007	8.25	79,696
BLASTHOLES	893,981	8.61	76,972
difference	(72,026)	0.36	(2,724)
% difference	-7%	4%	-3%

FARO
MINE GRADE

F8908 RESERVES HISTOGRAM

The overhead slide compares the grade distribution shown in previous overhead slides with that predicted by the new calculation. The comparison is better but still not perfect in the small part of the deposit portrayed here.


5%
CUTOFF
7%
CUTOFF
200,000
TONNES
100,000
0
1 2 3 4 5 6 7 8 9 10 11 12
Pb + Zn GRADE
MEDIUM GRADE
HIGH GRADE
F 8908
RESERVES

FARO
MINE GRADE

COMPARISON OF TOTAL PRODUCTION BY CURRAGH DIRECTLY FROM THE FARO OPEN PIT FROM START-UP TO JULY 1,1989

The overhead slide shows the comparison of all ore actually mined by Curragh to date from the Faro Pit to ore reserve calculated predictions as calculated by the two (old and new) methods. The new calculation slightly underpredicts the ore.

COMPARISON OF TOTAL PRODUCTION BY CURRAGH
DIRECTLY FROM THE FARO OPEN PIT
FROM START-UP TO July 1, 1989

(at a 5% cutoff since no 7% high-grade
blasthole data was available
for the early years)

******* NEW RESERVE CALCULATION *******

	tonnes	lead + zinc (%)	total metal (tonnes)
BLASTHOLES	12,279,000	8.46	1,038,803
F8908 (at 5% mining loss)	11,722,000	8.38	982,304
difference	557,000	0.08	56,500
percent difference	5%	1%	6%

******* OLD RESERVE CALCULATION *******

BLASTHOLES	12,279,000	8.46	1,038,803
F8805 (10% dilution, 5% mining loss)	12,692,000	8.38	1,063,590
difference	(413,000)	0.08	(24,786)
percent difference	-3%	1%	-2%

FARO
MINE GRADE

REMAINING RESERVES FOR FARO AS OF JULY 1, 1989

The overhead slide shows the remaining reserves for the Faro deposit as of July 1, 1989 calculated by the old and new reserve calculation methods. The two calculations are not very different at a low cutoff grade but are quite different at a high cutoff grade, as expected.

REMAINING RESERVES FOR FARO
as of July 1, 1989

	tonnes	Pb+Zn (%)	total metal
5% cutoff			
F8805 calculation	10,547,833	8.25	870,196
F8908 calculation	10,394,000	8.05	836,717
difference	(153,833)	-0.20	(33,479
percent difference	-1.5%	-2.4%	-3.8
7% cutoff			
F8805 calculation	8,173,833	9.06	740,54
F8908 calculation	6,520,363	9.27	604,438
difference	(1,653,470)	0.21	(136,112)
percent difference	-20.2%	2.3%	-18.4%

split - + Pb .Zn .Ag