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CURRAGH RESOURCES CORPORATION

TORONTO ONTARIO

FARO ZONE III PROJECT

FARO YUKON TERRITORY

GEOLOGICAL MODELLING OF FARO ZONE III BETWEEN CROSS-SECTIONS 117+000 & 123+015 AND LONG-SECTIONS 14+125 & 29+000

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CURRAGH RESOURCES CORPORATION

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FARO ZONE III PROJECT

Faro Yukon Territory

Report On

the Geological Modelling of Faro Zone III between cross-sections 117 + 000 and 123 + 015 and long-sections 14 + 125 and 29 + 000.

Completed By:

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March, 1986

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SUMMARY AND RECOMMENDATIONS

Summary

In September 1985 Robin S. Tolbert, Geological Consulting was contracted to partially complete the geological remodelling of the northwest portion of Faro Zone III.

This report summarizes that work, which involved the completion of geological interpretation on seven cross-sections and sixteen long-sections.

Interpretation of bench plans will be carried out at some later date by Curragh Resources Corporation.

Recommendations

1. Recode ore types on numeric coded cross and long-sections between cross-sections 124 + 022 to 134 + 047 inclusive in order that they conform with cross and long-sections between cross-sections 117 + 000 and 123 + 015.

2. Recode composites for diamond drill-holes in the area between cross-sections 124 + 022 and 134 + 047 inclusive in order that they conform with changes recommended in (1.) above.

3. Critically review assay files.

4. Complete addition of 1984/85 gold assays to assay file.

5. Re-evaluate the potential for gold occuring at Faro particularly in 2BD/2L14/1H4 'waste' bands.

SUMMARY AND RECOMMENDATIONS CONT'D.

6. Resolve pulp S.G. versus whole rock S.G. for ore types.

7. Drill define 'inferred' ore on cross-sections 117 + 000.

8. Drill define areas of uncertain waste/ore intervals in 'high-grade' zones on sections noted in this report.

9. Determine the spatial distribution of copper within the deposit as well as within ore types/horizons.

10. Continue with the blast-hole and geological mapping programs to aid future ore control.

Respectfully Submitted,

Robin S. Tolbert

RST/amc

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INTRODUCTION

During 1982/83 the Cyprus Anvil Exploration Department and the Anvil District Geology Department completed a geological remodelling of the Faro Zone III deposit between cross-sections 124 + 023 and 135 + 122 and long-sections 14 + 000 and 25 + 000 inclusive (13 cross-sections, 13 long-sections and 30 bench plans). This revised geological model was completed in May 1983 and is reported in 'Faro Deposit Zone 3 Review', by G. Simpson et al, May, 1983.

The remodelling of the remainder of Faro Zone III from cross-sections 117 + 000 to 123 + 015 and, long-sections 14 + 125 to 29 + 000 inclusive (7 cross-sections, 16 long-sections, 30 bench plans) was to be completed at a later date.

During 1984 - 1985 the Anvil District Geology Department commenced a program of additional drilling and relogging of core as a first step towards completing the remodelling of Faro Zone III. Furthermore programs of blasthole logging and on-going daily pit mapping were commenced in 1983 to aid future ore control and provide an additional framework of information for completion of the remodelling of Faro Zone III.

In August 1985 the geological staff at Faro were terminated prior to completion of the remodelling efforts.

In September 1985 R.S. Tolbert was contracted to complete the geologic remodelling project of Faro Zone III.

The purpose of this project was to:

1. Provide an improvement of the earlier geological model of Clarke et al (1977) at a similar level of interpretation as attained on the southern half of the Faro Zone III deposit completed in 1983.

2. Provide a consistant coding of ore for computer reserve modelling.

This report summarizes the work completed by the Anvil District Geology Department and the extent to which the geological modelling project has been completed by R. S. Tolbert.

CORE LOGGING

In 1984 fourteen new diamond drill-holes were completed between cross-sections 117 + 000 and 123 + 015 and long-section 14 + 125 and 34 + 000. In addition, between June 1984 and February 1985, the cores of fifty-nine diamond drill-holes, dating from 1966 to 1980, from the same area as above, were completely relogged.

Three holes 72-04, 76X-16 and 75-02 were not relogged. Information for these three holes stored in the diamond drill-hole database was obtained from previous logging. (These three holes are stored in the database as 72004, 76916 and 75002 respectively.)

A complete list of diamond drill-holes in the above area is given in Appendix I.

Approach to Logging

The logging of the core during 1984/85 was completed by Messrs. A. Chevalier, J.N. Keir, G. Lynch and R. S. Tolbert.

In an attempt to maintain continuity in logging the three staff Geologists were each given core from the holes on two cross-sections to relog with Mr. G. Lynch aiding the other three.

Therefore Mr. Tolbert, logged core from the holes on 117 + 000, 118 + 000 and 119 + 000, Mr. Chevalier 120 + 000 and 121 + 000 and Mr. Keir 122 + 020 and 123 + 015.

The coding of lithologies in the logs was as per the Anvil District codes (Appendix II) and as described by G. Jilson (G. Simpson et all, May 1983) except for modifications as described by R. Tolbert (See Lithologic Definitions - this report page 15) and in Notes on Ore Type Definition, November, 1982 (Appendix III).

The information recorded during logging was:

1. Lithology
2. Structure - foliation
3. Structure - discontinuities

LITHOLOGY

Hanging Wall Lithologies

Vangorda Formation

3D calc-silicates were modified according to the volume of calc-silicate bands present versus the volume of calcite bands, the volume of biotite versus calc-silicate minerals and prescence of obvious microlithons (see Lithologic Definition this - report page 18)

The 3A transition zone was subdivided where possible to obtain a better understanding of its lithologic composition and continuity.

Mt. Mye Formation

More care was taken, than in some of the previous logging, to subdivide the 1D schist in an attempt to define marker units that could be used in pit mapping, blast-hole logging and geologic interpretation to obtain a better understanding of the structure of the deposit prior to encountering the ore.

In particular we were interested in the 1D2, 1E0, 1H4 and 1D4 bands which exhibit the best small scale structures during mapping and were felt to be laterally extensive.

Ore Lithologies

During relogging the assay files were used to aid definition as per Tolbert, November, 1982 (Appendix III), Jilson (G. Simpson et al, May 1983) and as described in this report (see Lithologic Definition - page 22).

This use of the assay files was hampered to some degree by the 1965 to 1975 assay breaks being at five foot intervals rather than at lithologic breaks.

Furthermore the soluble iron and insoluble iron assays up to 1976 inclusive were composited at intervals of ± 20 feet, prior to assaying, so that in d.d.h. 66-03 for example - a normally 'low iron' ore lithology 2A (10-16% total Fe) shows 31% to 42% total Fe and 2F (+25% total Fe) shows only 16% total Fe.

In some cases the BaO assays (which help define 2G) were composited before assaying.

In addition all the core from the ore intervals of the 1980 drilling was sent for assaying. Therefore regretably no relogging could be carried out of the ore intervals, though it was clear from the discrepancies between the lithologic description and the assay files that problems of ore definition exist.

These above described methods of assay breaks will affect to some degree grade interpolation. Predictions of long range metallurgical costs (vis-a-vis costs of reagents in ores with high soluble iron, for example) if done, as was the case in the past - bench by bench, phase by phase from the computer block model reserve reports - could also be less than accurate.

Care was taken in logging to break out observed mineralized quartz or sulphide veins (generally galena with extremely high silver contents) which cannot be considered normal 'run of the mill ore' but have been used previously in grade interpolation.

Footwall and Alteration

Where observed mineralized quartz veins and sulphide veins were broken out.

The definition of footwall Mt. Mye Formation was as per Jilson (G. Simpson et al, May 1983) and Appendix II.
Little differentiation was made within altered lithologies (as described in Appendix II).

This is an area of work where potentially valuable research could be applied to differentiate alteration due to metamorphism, diagenisis or dyke intrusion from alteration due to ore forming fluids.

STRUCTURE - FOLIATION

The method of recording the foliation was as per L. Pigage , June 1984, Field Logging Manual Via Diamond Drill-Hole Data Base System.

Structural analysis described in this report (page 31) carried out in 1985 has shown that the major post-D2 folds in Faro Zone III are in fact F3 (with a dip azimuth of 235° true) not F4, as observed in Faro Zone I, and described by D. Jennings (1971).

The same 1985 study has shown that S2 in Faro Zone III has an overall dip azimuth of 235° also.

It was difficult to differentiate post-D2 crenulations on the few occasions in relogging where more than one occurred so that all post-D2 surfaces in the structure file for drill-holes on cross-sections 117 + 000 to 123 + 015 have been recorded as S3 with a dip azimuth of 235° true. This may of course not be true in all cases as described in Structural Analysis (page 31, this report), but in most cases this problem will be resolved at the interpretation stage.

S2 surfaces when used as reference fabric elements were also given dip azimuths of 235° true.

On the 'foliation' sections the dashed lines through the drill-holes are the projections of S2 surfaces, while the solid lines are projections of post-D2 foliation surfaces (S3?).

STRUCTURE - DISCONTINUITIES

Discontinuties - i.e. faults, gouge, breccia, poor core recovery, joints, shears etc. were recorded as per L. Pigage , June 1984, Field Logging Manual Via Diamond Drill-Hole Data Base System.

Care had to be taken to ensure that measured discontinuity surfaces were referenced to a recorded foliation surface - an obvious point that was missed in earlier relogging.

The recording of discontinuities is a new feature that was largely ignored in previous logging programs. This has been extremely important information used in the present remodelling work. Any discontinuities within ore in 1980 core have not been recorded due to the complete ore intervals having been taken for assay as previously noted.

On the 'discontinuity' sections the symbols are as per L. Pigage (1984).

ASSAY FILE

Apart from the problem of the 1980 holes, and compositing of samples (in pre-1978 core), prior to assaying for iron, and in some cases BaO, manganese has also been treated in the same way as iron prior to 1978.

In addition in some drill-hole files silver and/or iron and/or copper assays are missing and in other holes eg. 70 - 17 and 71 - 02, except for lead and zinc, all assays including S.G. have not been carried out.

All ore samples after and including 1981 have had gold assays carried out on them.

Gold assaying in 1983 and 1984 has been carried out on some pre-1981 core. Not all of these gold assays have been entered to the DDHDB (eg. 66-03, 74-15). This should be done prior to computer compositing and interpolation.

Proposed additional assays and critical assay checks were not completed prior to termination of assay and geological staff in 1985.

SPECIFIC GRAVITY

A LISA 2 statistical computer report completed by R. Tolbert on March 14, 1985 has shown, amongst other things, that of the 2,466 'pure ore type' samples used in the study 103 had S.G's $<$ 2.75 and 110 had S.G.'s $>$ 4.76.

Specific gravities have been measured from sample pulps (-200 mesh) using a specific gravity bottle, which is a water displacement method. Ore with talc or

2A ore types cause problems in that graphite or talc floats and can cause an under estimation of S.G.

Over estimation of S.G. may be due to other errors. Pulp S.G. measurements by their very nature lead to an overestimation of S.G.

R. Tolbert's study of S.G. of dense, essentially non-porous 3D, 3D breccia and 1D lithologies (see 1984 memo by R. S. Tolbert, Specific Gravity of 3D, 3D Bx and 1D, in file 1.1.2, Geology Room 1)) has demonstrated a 2% increase of measured S.G. using pulps as compared to whole rock S.G.'s.

In more porous ore types - in particular 2E, 2F and 2G - this difference will be much greater.

The reader is referred to additional primary studies on S.G. of ore by B. Hall and by G. Jilson in file 1.1.2 in the Geology Department at Faro.

A proposed study to determine the differences between pulp and whole rock S.G. in Faro ore was not completed due to lockout and termination of the assay and metallalurgical staff in 1984/85.

LITHOLOGY/ASSAY CHECKS

During relogging of pre-1984 core, and after logging of 1984 core, assays were checked vis-a-vis the lithologic codes to ensure the modifiers 4, 9, 7, 8 and 6 for ore types as described in this report (Lithologic Definition, page 28) were correctly used.

ASSAY NUMBERS

The assay numbers in the DDHDB for holes after and including 1982 are the same as used for assaying samples.

In 1982 the Exploration Department changed all the assay numbers in the DDHDB because of some duplication, so that all numbers prior to 1982 are now in sequence and unique.
Therefore if any reassaying of pre-1982 core is required to be done then the original logs and/or assay certificates will have to be checked to determine the original assay number on the reject sample stored at the Faro core shack area.

COLLAR SURVEY CHECKS

All collar surveys were checked against the original survey records to ensure the X, Y, Z coordinates were correct and Mine Engineering datum elevations were used.

Collar survey's at Faro from 1965 onwards were ground elevations of the d.d.h.'s. Since the depth of the hole is measured from the top of the casing which is on average 2 feet above the ground, the collar elevations in the DDHDB are 2 feet higher than the elevations in the survey file.

Collar surveys of diamond drill-holes around and including the Faro Deposits are also stored in file GEODAT which contains a more comprehensive listing than in the DDHDB.
Also this GEODAT file can be printed in various formats and can be plotted either in conjunction with a status map or separately.

DOWN-HOLE SURVEYS

At Faro from 1965 to 1975 the only type of down-hole survey carried out was to measure the inclination of a drill-hole in the vertical direction (i.e. zenith angle) using an acid dip test. Many holes were not even surveyed using this method.

Despite having a Sperry Sun Survey tool only 50% of holes drilled from 1976 to 1981 were surveyed using this instrument. Acid dip tests were carried out on some of the remaining 50%.

In 1980 and 1981 some holes were not even surveyed despite having a survey tool. After 1981 all holes were surveyed using a Sperry Sun camera.

It has been well known since about 1976 that drill-holes in general deviate at right angles into the regional S2 surface. Old 1960's vintage sections portray drill-holes as being vertical which we now know is probably incorrect. P. Clarke in 1976-78 made the first attempt to adjust the pre-1975 surveys to give an estimate of drill-hole deviations.

Additional analysis by R. Tolbert has introduced new estimates for drill-hole deviation and is described in Downhole Survey Measurements - Faro Zone III, April 17, 1985 (Appendix IV). These are the estimates presently used in the Anvil DDHDB.

The implications of the lack of down-hole surveys is discussed by D. S. Jennings (G. Simpson et al, May 1983 pages 7 - 10).

DATA ENTRY AND DATA FILE CHECKS

All drill-hole data, except assays prior to 1982 (these have previously been entered to the DDHDB) were entered to the Anvil DDHDB via terminals at Faro.

All data except assays have been checked for correct entry. Despite this, there are still corrections to be made as a result of this author's work.

The assay files still require critical checking as previously discussed. In addition some gold assays from the 1984 gold assay program of pre-1981 holes still remain to be entered to the appropriate assay files.

Other corrections to the assay file needing to be made from observations made during this author's work are reported separately from this report.

PLOTTING

Plotting of sections and individual drill-hole traces were completed at Faro on the Calcomp plotter in the late summer of 1985.
The sections with d.d.h.'s were plotted on mylar and individual drill-hole traces for lithology and structure were plotted on paper.
During drafting some plots were found to be missing or misplotted and were redone at Dome Petroleum in Calgary which led to some short delays in drafting.

DRAFTING

This is discussed here in order to aid future workers estimate drafting time. This type of information was not easily obtained by this author and led to a serious underestimate of drafting time required for this project.

Each cross-section consisted of two plotted panels and each long-section consisted of one plotted panel.
There were a total of 76 holes averaging 572 feet depth, to be drafted after plotting.

Taking cross-section 118 + 000 as an example each hole had to have drafted onto the appropriate base sections - 46 lithologies, 43 foliation structures and 16 discontinuity structures (on average). Thus Table I lists the sections drafted.

TABLE 1

Type Of Section	Number Of Panels	Total Number Of D.D.H.'s	Average No. Of Elements To Be Drafted/hole
Cross-section Lithology Base	14	76	46
Long-section Lithology Base	15	76	46
Cross-section Foliation Base	14	76	43
Long-section Foliation Base	15	76	43
Cross-section Discontinuity Base	14	76	16
Long-section Discontinuity Base	15	76	16
Cross-section Interpretation Base (Anvil Codes)	14		
Long-section Interpretation Base (Anvil Codes)	15		
Cross-section Interpretation Base (numeric)	14		
Long-section Interpretation Base (numeric)	15		

In addition a geological interpretation of the three standard Faro map sheets 5, 8 and 9 has been drafted as well as two status maps (sheets 5 and 8) with blasthole data.

This work, carried out by Mr. Terry Malesku, was 'Leroyed' neatly in ink on mylar and took this one draftsman, working steadily, from September 15, 1985 to March 24, 1986 to complete including printing time and corrections.

Notes on Drafting

1) On some 'Interpreted' cross and long-sections some 'lith-units' drafted on d.d.h. projections have been removed to clarify contact lines.

LOCAL STRATIGRAPHY

Figure 1 (modified after Jilson 1983) shows the relationship of the various lithologic units (other than ore) within the stratigraphic section. The reader is referred to Appendix II for the lithologic codes and numeric modifiers.

Lithologic Definitions

The reader is referred to G. Jilson (G. Simpson et al, 1983) for comparison. The definitions used here are those used in logging core, in particular in drill-holes between cross-sections 117 + 000 and 123 + 015 during the 1984/85 drilling and relogging program.

Unit 1D

As per G. Jilson: 1D with prominant and abundant black to dark grey andalusite clots throughout it has been called 1D6.

FARO ZONE III

Schematic Stratigraphic Section

(Modified After Jilson, 1983)

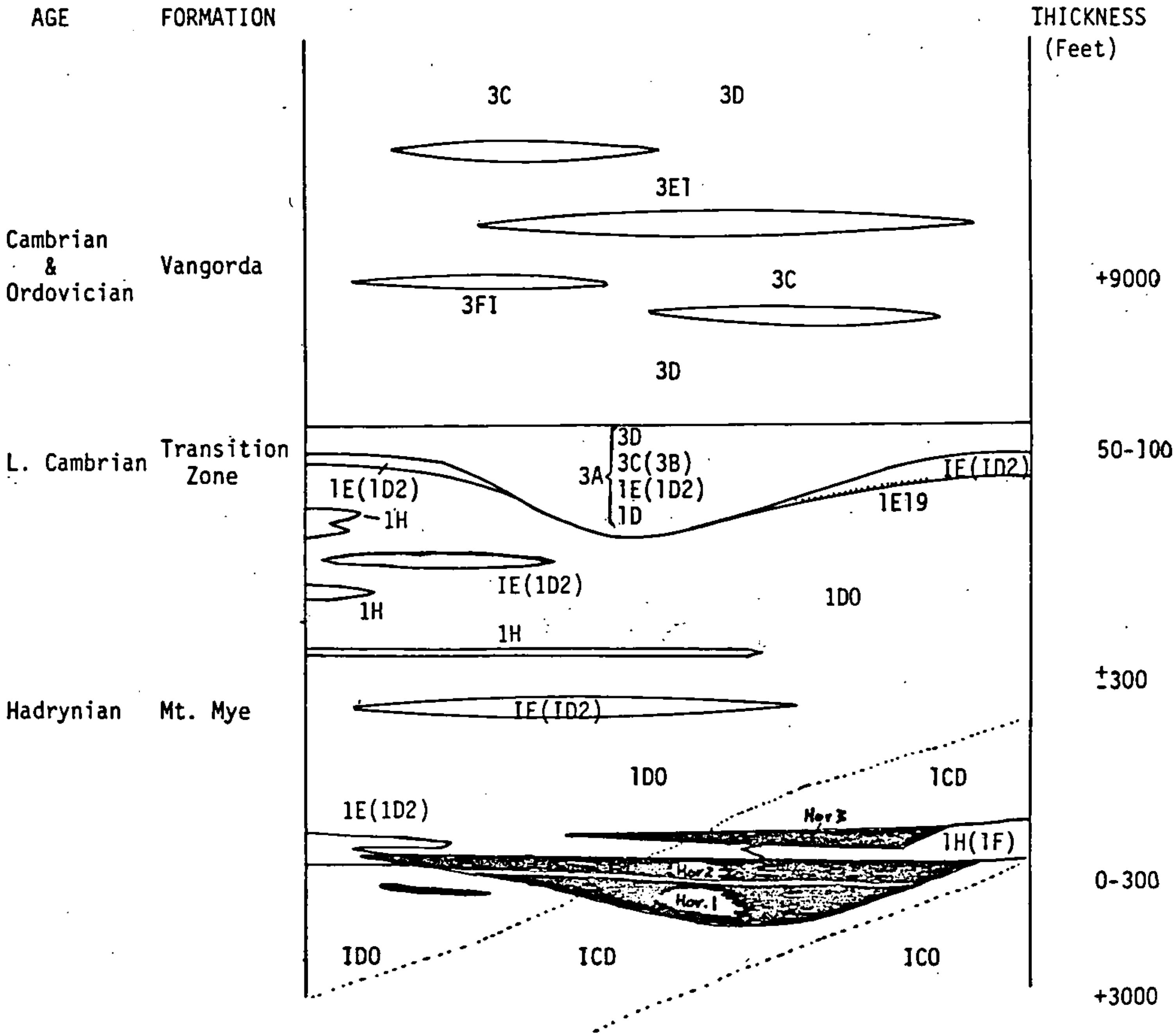


Figure 1

Units 1E and 3E - Graphitic Schist/Phyllite

As per G. Jilson except that 3E as logged is generally calcareous white to pinkish chiastolite is common in these graphitic units and in particular 1E.

Unit 1C

As per G. Jilson (1983).

Unit 1CD

As per G. Jilson (1983).

Unit 1H - Chlorite-Biotite Schist

Composed of finely banded biotite to chlorite, this unit lithologic within the Mount Mye Formation most commonly occurs in bands of 6 inches to 2 feet thick. It is characteristically calcareous to ankeritic and occasionaly contains fuchsite (?) as thin laminae.
Gradations from this chlorite-biotite schist to a highly altered ankeritic - talc - fuchsite (?) schist have been observed especially the latter - as interbands within the ore. This latter unit is termed 1H4. (See cross-section 121 + 000.)

In previous logging this unit was commonly lumped with 1D or 1D4, however, it is distinct in most cases and is significant in that it contains in some drill-holes extremely high gold values (eg: d.d.h. 84F-19; See memo by R.Tolbert, October 18, 1984 - Gold Occurences in Zone III). Some units logged as 2L14 may in fact be silicified 1H4.

This unit where laterally extensive may represent metatuff or alternatively metabasite from pre-D2 sills or dykes (where is 1H of limited extent).

Unit 1F/3C - Metabasite/Amphibolite

As per G. Jilson. This lithologic unit is commonly calcareous. Thick intersections occur in d.d.h.'s 71-01 and 76-10 on cross-section 121 + 000 and d.d.h. 82F-13 on cross-section 124 + 022. The latter occurence has confused the logger and interpreters of that section into thinking that the interval is an unusually thick intersection of 3A.

Unit 3A

As per G. Jilson. 3A has an average thickness of approximately 50 feet.

The confusion surrounding 3A is due to the local abundance of 3C/1H and 1E/1D2 above and below the 3A. Compare d.d.h.'s 76-10 and 71-01 (on cross-section 121 + 000) with d.d.h.'s 82F-13 (on cross-section 124 + 022).

Looking at the logs in detail it can be seen they are similar. In 82F-13 the base of 3A is most likely at unit 13 (1D2). The 3A units below this are in fact predominately 3C (1F) with no 3D present. Unit 16(3D) is probably a clerical error and should be 1D or 1D8 at least. (This should be confirmed from the core.)

Another confusing factor to some loggers is the appearance of more biotitic 3D - 3D6 in the more southern holes on each section. In some holes just above the 3A there is a finely banded biotitic and calcareous 3D 3D65 which has been -on occasion - mistakenly logged as 1D.

However, as stated by Jilson the top of the 3A is the end of dominant 3D and the base of 3A is the start of 1D. So put another way, apart from 3C/1F and 1E/1D2/3E, in general no 3D should occur below the base of 3A and no 1D should appear above the top of 3A.

Commonly the base of 3A is marked by a 1E0 or 1D2 unit which is a useful marker.
Locally in pit mapping (as around the area of d.d.h. 81-02) this 1E unit has approached 2A in appearance over short intervals with typical ribbon-quartz banding with pyrite, sphalerite and galena present. (Thus the 1E19 on Figure 1).

Unit 3D - Calc-Silicates

In general as per Jilson (1983) except with the following modifications, used in the 1984/85 logging program, which follow an increase in calc-silicate minerals, corresponding to a general increase in metamorphic grade.

3D6

Calcareous biotite (generally strongly calcareous) schist. Distinct commonly $<$ 0.5 inch thick compositional bands of biotite interbanded with calcite bands characterize this unit. Microlithons commonly present.
3D65 represents even more finely laminated biotite-calcite bands than described above, locally observed just above 3A.
3D6 grades outwards to the southwest of the Faro deposit to the lower metamorphic grade equivalent unit 5B0 (biotitic).

3D4

Similar to 3D6 above except that the light coloured bands are greenish - creme calc-silicate minerals with relatively little calcite present.
The compositional bands occasionally anastimose, and only rare microlithons observed.

3D0/3D1

Coursely banded dark purplish-brown biotite and light greenish-creme calc-silicate schist to gneiss. This is a dense, hard rock as compared to 3D6 with irregular anastimosing compositional bands. Microlithons not present and calcite generally rare.

These three modifications follow in part the triangular diagram (Appendix II) and are the ones generally used during 1984/85.
Any modifying number second after the Unit letter refers to the numeric modifiers from siliceous (1) through carbonaceous (9) for Unit 3 in Appendix I.I Eg. 3D696 means carbonaceous 3D6 which is sulphide bearing.

Unit 3B - Chloritic Schist

As per Jilson, except that as mapped in the pit this unit is finely laminated with a whitish-green appearance, when dry, across the foliation surface. (This is also noticeable in core). When wet or on the foliation surfaces the rock is more noticeably green. Note: 1H has been separated from 3B in this lithologic definiton (c.f. Jilson).

Unit 3F/1G - Marble

As per Jilson.

Intrusive Rocks

Following Jilson the dyke rocks observed at Faro are either 10E - porphyritic hornblende-biotite-quartz diorite or 10F - smokey quartz - feldspar - biotite porphyry.

Confusion in definition has arisen in highly altered dyke rocks in pit exposures or core, where close examination has not occured.
E.g. On the 4030 bench near d.d.h.'s 83F-03 and 83F-05 10F (the predominant dyke rock in this area) has intruded adjacent to a 10E dyke which was presumably altered by the 10F or fluids introduced along the Big Indian Fault which transects this area. The 10F is also highly altered. Initially, mapping lumped the 10E with the 10F, due to their similar appearance at a distance (although the altered 10E is actually pinker in colour once recognized). The prescence or lack of relict smokey quartz phenocrysts subsequently differentiated the two dykes though close inspection was required.

10E

Two major 10E dyke trends are observed between cross-sections 117 + 000 and 123 + 015.

The most obvious 10E dyke which dominates the deposit area is the '117' dyke which trends along cross-section 117 + 000 and has mapped widths of 100 - 160 feet. This dyke as interpreted in long-section has an open 'C' shape. This is also its shape in outcrop on the northeast wall of Zone III. Mapped contacts are commonly faulted however possible faulting along it is discussed under structural analysis.

The second of these 10E dykes is the 'Wishbone' dyke which is steeply dipping below 3500 - 3600 feet elevation and dips about 45° south above that elevation with a strike of aproximately 105°. This dyke has been mapped in the pit between cross-section 117 + 000/long-section 19 + 000 and cross-section 123 + 015/long-section 24 + 000. Because of its steep dip and strike its lower part has only been intersected in a few d.d.h's.

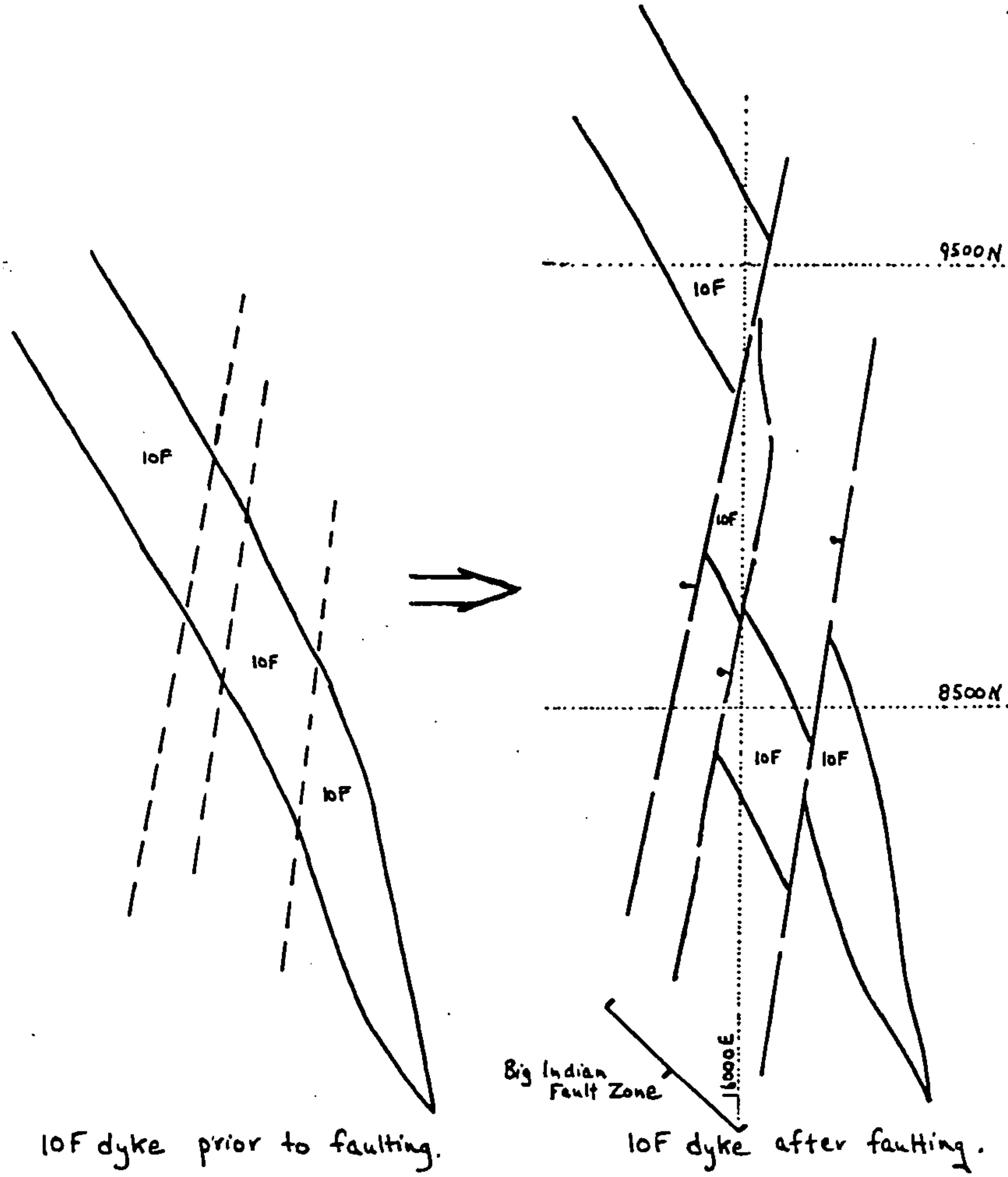
The 10E dyke on map-sheet 5 within the 3D breccia, as observed in the pit, has faulted contacts and occurs discontinously along the mapped outline.

10F

Two major mapped areas of 10F occur in Faro Zone III.

The largest occurence of 10F is that occuring along the Big Indian Fault (Map sheets 7, 8 and Figure 2). This dyke has a strike of about 155° true, with a dip of approximately 65° southwest. It predates and is faulted by the Big Indian Fault (Figure 2).

It is extremely altered and on exposure to air decrepitates quite rapidily. Its contacts with the surrounding 1C/1CD are commonly gougy and it has been recognized as being a potentially major slope stability problem on the northeast



Proposed Faulting of 10F dyke Occuring along the Big Indian Fault

R.S.T. 1986

Figure 2

wall of Zone III. This dyke also post-dates the '117' dyke since, as interpreted, it cross-cuts the '117' dyke though no outcrops expressing this relationship have been observed.

The second major occurence of 10F is in the middle of map-sheet 8. This dyke has faulted contacts and its form is interpreted from pit-mapping, blasthole logging and diamond drill-holes. This dyke appears to have a strike of about 60° and dips steeply though this is uncertain. This dyke may be the source of volatile gas discharges which result in a polymictic breccia along the PMB fault which is the eastern termination of this 10F dyke. At depth this dyke may be connected with the 10F dyke occuring along the Big Indian Fault.

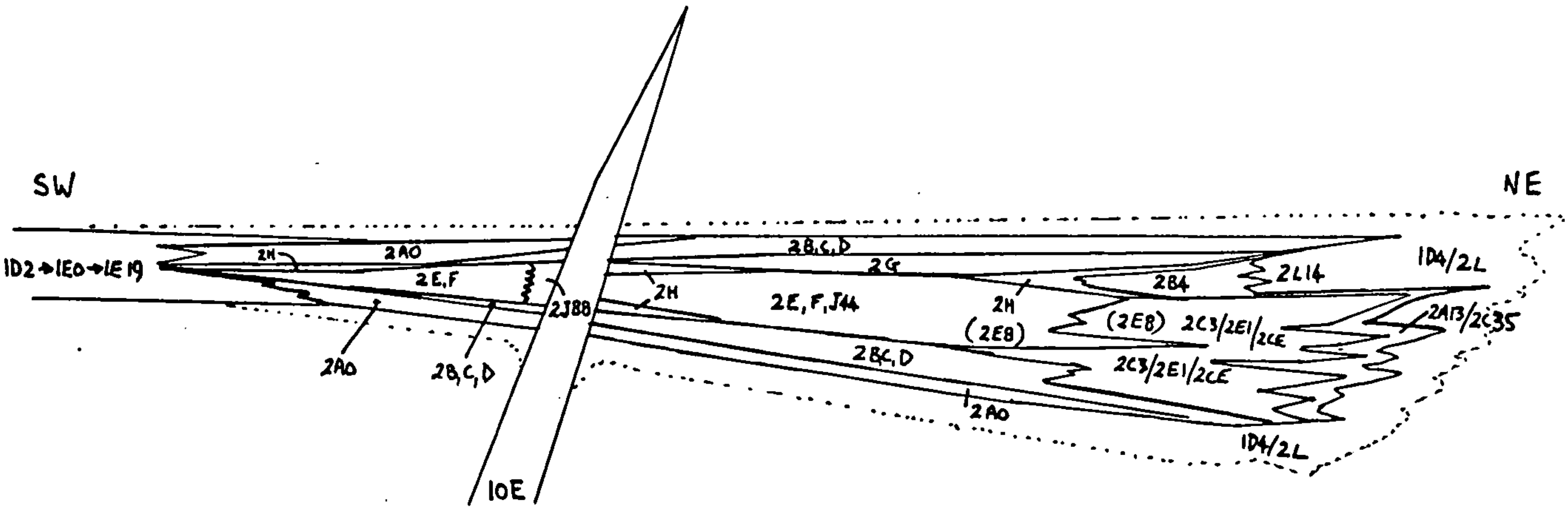
BRECCIA CAP

The 'Breccia Cap' has been adequately described by Jilson (1983) and no elaboration will be made here, except to state that pit mapping has confirmed to date that the contact of the breccia is fault bounded.

It is also interesting to note that the northern margin of the breccia is a fault parallel to the major 'Faro Fault' set.

ORE TYPES

The following modifications of ore type definitions as described by Jilson (1983) are used at Faro. The reader is also referred to Appendix III, and Figure 3 which is a modification of the 'Anvil Cycle' used to demonstrate the relative locations of each ore type. It is strictly representative of ore types occuring at Faro.



Modified 'Anvil Cycle'

R.S. Tolbert, 1986

Figure 3

Figure 5 shows the proportion of each of these ore types (and waste types) in the Assay File for the Faro DDHDB.

2A

The appearance of 2A is well described by Jilson (1983). At Faro, low-grade (< 4%Pb+Zn) 2A is termed 2AO. In general this ore type has an equal volume of/or a preponderance of grey to black 'graphitic' schist bands as compared to quartz bands. This grades laterally at the edge of the deposit or horizon to 1E19 or 1D219.

2A0 dominates the base of the southwestern end of the deposit between cross-sections 117 + 000 and 123 + 015. It also occurs as minor inter-horizonal bands of limited extent.

Generally 2A over 4%Pb+Zn had an abundance of quartz over 'graphitic' schist bands and has been termed 2A14. This is logical as it grades into 2D5 with decreasing 'graphitic' lamnae. 2A14 and 2D5 dominate the northeastern ends of cross-sections 118 + 000 and 119 + 000. It also occurs elsewhere but of lesser extent.

Generally high-pyrite 2A also has a greater volume of quartz to 'graphitic' schist -thus 2A13 which grades into 2C5. In fact 2A13 occurs most commonly within and to the north of the mass of 2E1/2C3/2CE which occurs in the northeast central portion of all sections and 2A13 is commonly interbanded with 2C35 or 2E15.

2B

This ore type is equally described by Tolbert (Nov. 1982, Appendix III) and Jilson (1983).

This quartzitic ore type commonly occurs near the base or margin of the deposit as well as commonly being associated with interore 1D4/1E19/1H4 waste bands. This association well demonstrated in the waste band between long-sections 21 + 000 and 23 + 000 on cross-sections 118 + 000 and 119 + 000 suggests that 2B in at least some instances is silicified, replaced 1D4 or possibly 1H4, i.e. 2B grades into 2L14 (in some cases). High BaO associated with 2B - thus 2B6 fits in with observed high BaO within 1D4 as described by Tolbert (Appendix III, page 1) which as another suggestion as to its origin (the high BaO) could be added BaO remobilization from metatuffs (1H4).

2D - Quartzitic Sulphides

As with 2A it has been observed during logging that 2D, which is +4%Pb+Zn, has in general, a low iron content as compared to 2C ($<$ 4%Pb+Zn). Exceptions occur in the area of 2E1/2C3/2CE at the northeastern end of the deposit.

As noted from previous logs (Appendix III) there is little difference, in terms of assay, between 2B4 and 2D0. 2D4 is +10%Pb+Zn. 2D5 grades into 2A14 (as previously noted).

2C0 - Quartzitic Sulphides

This 'ore' type has $<$ 4%Pb+Zn and has iron assays from $>$ 5% Fe to 15% Fe (in general). At higher iron content this unit is called 2C3 (Appendix III). 2C5 grades into 2A13.

2C3/2E1/2CE

The ore type 2CE was coined by ore-control geologists at Faro prior to 1981 (since this is a composited ore type reported to the mill). Unfortunately this usage has spread to logging core in the district as well as at Faro, from 1979 to 1982, so that it became difficult to differentiate if a unit called 2CE was 2C0(2E0), 2E1, 2C3 or 2EO (2C0) etc. etc.

Stating Jilson's (1983) appropriate concern in another way - logging core is not logging of composited intervals but logging of detailed lithologic intervals.

Once interpreted it is appropriate (as has been done in this 1985/86 effort) to assign 2CE to a large interval but not during logging.
2C3 defined in logging has a higher volume of SiO_2 to sulphides (in particular pyrite). 2E1 has a higher volume of sulphides to SiO_2. Where there is uncertainty square brackets , . are used to indicated an interpretive alternative eg. 2C3 ,2E13..

These units are generally $<$ 4%Pb+Zn grade and occur in a vertically extensive mass at the northeastern end of the deposit (Figure 3).

Magnetite is often associated with these units in particular 2E1, 2E1 as occurs in the 'northeast mass', is coursely banded pyrite and quartz bands with the pyrite bands being thicker and of greater volume.

2E1 is also used for an essentially massive sulphide with minor ($<$ 10%) quartz blebs.

For interpretive purposes (in retrospect) it would have been useful to differentiate these two 2E1 types since they may not be related spatially. When fine graphitic wisps are present 2E15 is used.

2E - Base-metal Bearing Pyritic Massive Sulphides

2EO is fine grained massive pyrite with < 4%Pb+Zn. Locally it has a buckshot texture and is termed 2E2 not 2F0.
Fine grained massive pyrite and basemetal sulphides is termed 2E4 when lead plus zinc is greater than 4%.
When visible barite (up to 10% by volume) is present 2E6 is used. This is generally spatially associated with 2G.

2F - 'Buckshot' Massive Sulphides

Massive sulphide ore with 'buckshot' pyrite texture (as per Jilson, 1983) is termed 2F when the grade is > 4%Pb+Zn; 2F4 is > 10%Pb+Zn.

2G - Baritic Massive Sulphides

As per Jilson and Appendix III. Between cross-sections 117 + 000 and 123 + 015 2G8 has not been that common.

2H - Pyrrhotitic Massive Sulphides

This unit is fine grained commonly with a course cataclastic appearing texture. 2H2 as described by Jilson has not been used at Faro and 2H33 refers to 2H with marcasite present.

2H4 is > 10%Pb+Zn and commonly has copper assays > 0.2%Cu, though copper sulphides are not always visible.

2H rarely occurs with 2G, as on cross-section 120 + 000 giving rise to the composited ore type 2 GH. 2H or 2E7 at Faro commonly occurs near dykes, faults and where massive sulphides are in contact with 1D/2L/1H4. (Figure 3).

2J - Non-Pyritic Massive Sulphides

2J44 refers to essentially massive compositionally banded sphalerite and galena with only minor pyrite as porphyroblasts.

2J88 refers to massive magnetitite predominately occuring adjacent to the '117' dyke.

2K - Carbonate-Bearing Massive Sulphides

As per Jilson (1983).

0Q9 - Base-Metal Bearing Quartz veins or Sulphide Veins

Galena ($\pm$ quartz), chalcopyrite ($\pm$ quartz) or sphalerite ($\pm$ quartz) veins occasionally occur in the drill core and are troublesome (in interpolation) when they occur in the ore interval.

Galena is the most common vein sulphide and gives rise to unusually high Pb/Zn ratios and extremely high silver assays. Though veins have been used in the past in interpolation of grade, they cannot be considered 'run of the mill' ore and have been segregated in the 1982-85 re-logging programs.

UNITS 2L AND 1D4

These altered lithologies have been described by Jilson (1983).

Tolbert (Appendix III page 1) noted the occurence of elevated BaO within these units.

During the 1984/85 re-logging program, little diffentiation was made of 1D4 and 2L0 except where it was obviously silicified and contained base metal sulphides - in which case it was termed 2L14.
Where possible as previously stated (Unit 1H) segregation of 1H4 was made from 1D4. During 1984/85 as was found in 1982, 1D4/2L occasionally contained elevated BaO assays, particularly when occuring as interore 1D4/2L.

As noted previously these latter occurences of 1D4/2L can also contain elevated gold assays.

NUMERIC MODIFIERS

The following modifications to the numeric modifiers for Unit 2 ore (Appendix II) were used at Faro.

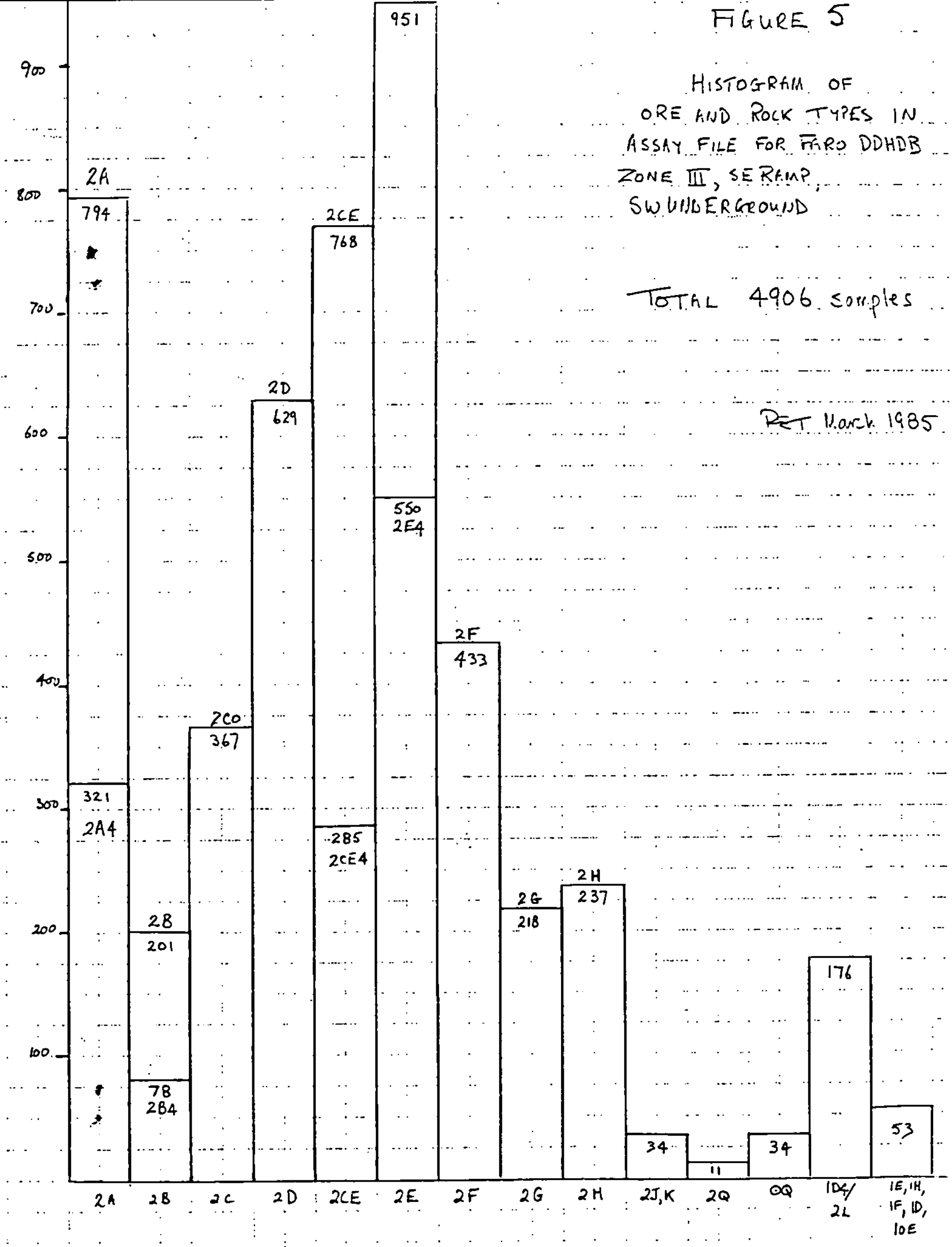


FIGURE 5
HISTOGRAM OF ORE AND ROCK TYPES IN ASSAY FILE FOR FARO DDHDB ZONE III, SE RAMP, SW UNDERGROUND
TOTAL 4906 samples
RET March 1985
900
800
700
600
500
400
300
200
100
2A
794
321
2A4
2B
201
78
2B4
2CO
367
2D
629
2CE
768
285
2CE4
951
550
2E4
2F
433
2G
218
2H
237
34
11
34
176
53
2A
2B
2C
2D
2CE
2E
2F
2G
2H
2J,K
2Q
OQ
1D4/2L
1E, 1H, 1F, 1D, 10E

Modifier 3

Pyrite-bearing eg. 2C3, 2D3, 2A13, 2H3 as described in the previous sections on ore definition except for the following:

2A33	-	Marcasite Bearing
2C33	-	Marcasite Bearing
2D33	-	Marcasite Bearing
2E3	-	Marcasite Bearing
2F3	-	Marcasite Bearing
2G3	-	Marcasite Bearing
2H33	-	Marcasite Bearing

Modifier 4

2A4	> 4%Pb+Zn
2B4	> 4%Pb+Zn
2D4	> 10%Pb+Zn nb no 2C4
2E4	> 4%+Pb+Zn
2F4	> 10%Pb+Zn
2G4	> 10%Pb+Zn
2H4	> 10%Pb+Zn
2J44	massive essentially base metal sulphides

Modifier 6 - As per Appendix III Page 1

nb no modifier was used for assayed 1D4/1H4/2L to denote elevated BaO assays.

Modifier 7 - Pyrrhotite - Bearing and as per Appendix III Page 2

nb re: note 2, page 2, Appendix III, marcasite since it contains soluble iron will also result in high Po (soluble iron) assays.

Modifier 8 - Magnetite Bearing (See Appendix III Page 2, Note 2)

It has been inferred by Jenning's 'Anvil Cycle' that magnetite is most commonly associated with 2G particularly near its base.
Between cross-sections 117 + 000 to 123 + 015 rare magnetite does occur within 2G, and occasionally within 2E at the base of 2G.

However magnetite most commonly occurs within 2E8 or 2E18 between long-sections 22 + 000 and 25 + 070 on cross-sections 118 + 000 to 122 + 020. On cross-section 123 + 015 the limit of magnetite is from long-section 20 + 026 to 25 + 070.
This locus of magnetite occurence is associated with units 2C3/2E1/2CE and their facies changes to massive sulphides (Figure 3).
Magnetite only rarely occurs southwest of these above long-section limits.

Modifier 9

During relogging from 1982 to 1985 this modifier has been used to denote copper assays + 0.2% Cu.

The use of the modifiers 3 and 9 in particular have been used as described above in attempt to localize occurences of marcasite and high copper assays, as has done here for magnetite.

GEOLOGICAL COLOUR CODES

As per Appendix II - except for ore, alteration, 10F and 1E, which are as modified in Appendix V.

STRUCTURAL ANALYSIS

As a result of geologic mapping carried out on the 4030 to 3870 benches from 1983 to 1985 J. Keir and A. Chevalier completed a structural re-analysis of the Faro deposit area. The stereonets resulting from this work accompany this report in a computer printout dated April 15, 1985.

Folds

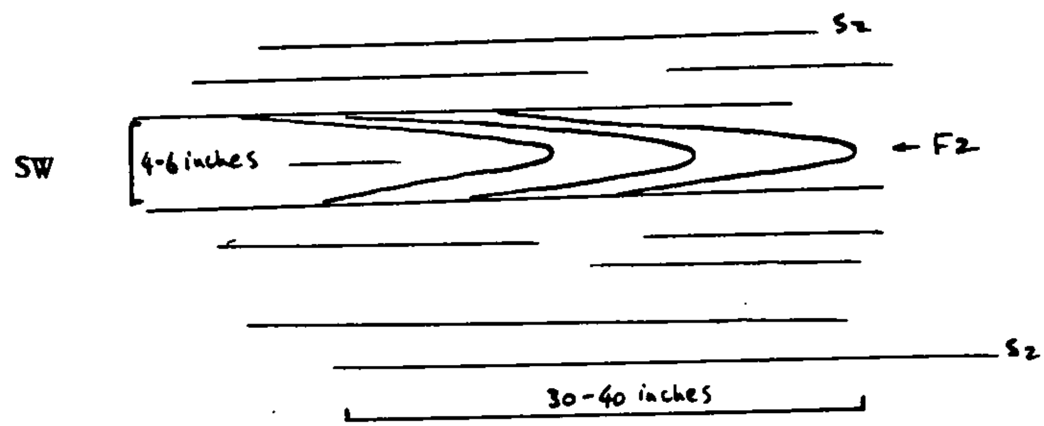
Jennings (1971) has described the folding in Zone I and Jilson has summarized this in G. Simpson et al, 1983.

As stated by Jilson the extent of the first two of five known deformation events internally distorting the Faro deposit is unknown.

No major D1 folds are known within the Faro deposit and the S1 foliation is essentially overprinted by later deformation/metamorphic events. Rare S1 microlithons are observed between S2 planar foliation surfaces in core particularly within 3D6 units.

Rare F2 folds observed in the pit are rootless tight isoclinal folds on a macro scale of inches (Figure 4).

Figure 4



The major planar foliation observed in core and in mapping is S2. Analysis by Keir and Chevalier (1985, File FAROS2) has demonstrated that S2 has an overall strike of 142 ° true with a sheet dip generally to the southwest (therefore dip azimuth of 235° in the DDHDB).

From mapping and core logging it appears the stratigraphic contacts are approximately parallel to S2.

Keir and Chevalier's analysis also indicates that the major post-D2 foliation has a strike of 143° (file FAROP) which corresponds to D3 as defined by Jennings (1971). Axial planes dip steeply to the south. Pit mapping confirms that the major fold axes in Zone III conform to the D3 event. Except for an area of interpreted F4 fold domain in the southwest corner of map sheet 8, all other folds interpreted in Faro Zone III are F3 with overall gentle plunges (ranging from 27° to 5°) to the northwest at 325°.

The most satisfying interpretation of the sections also is obtained using F3 folds for the majority of the deposit from cross-sections 118 + 000 to 123 + 015.

One major fold that has been interpreted as being F4 on the sections is the large faulted synform occuring on cross-section 118 + 000/long-section 24 + 000, cross-section 119 + 000/long-section 25 + 000 and cross-section 120 + 000/long-section 26 + 070.

The consequence of Keir and Chevalier's analysis is that S2 and post-D2 foliation used as R.F.E.'s in the DDHDB have identical dip azimuths of 235°.

During pit mapping on the northeastern side of Faro Zone III post-D2 crenulation foliation was observed with shallow northeasterly dipping axial planes (from 20° to 45°) with a strike of approximately 105 ° and axes plunging shallowly at about 105°. This post-D2 foliation has only been observed on about six occasions and its relationship to other post-D2 events is uncertain.

In this present interpretive effort as with that in 1982 (for the same reasons) folding has been down-played and the interpretation of folding on cross-sections 117 + 000 to 123 + 015 conforms with the interpretation on sections southwest of, and including 124 + 022.

Faults

J. Keir and A. Chevalier's (1985) structural analysis has shown that there are four main fault domains at Faro (files ZFLTS and C1FLTS) as follows:

Domain	Strike	Dip
1	93°-96°	61°-65°S
2	171°-175°	68°W
3	135°	60°W
4	50°-61°	75°N

Geological mapping of the 4030 to 3870 has resulted in R. Tolbert's February 1986 geological interpretation of maps 5, 8 and 9.

On map 5 two major fault domains dominate. The Big Indian faults and the North Fork/Big Bird faults would appear to belong to Domain 2 of Keir and Chevalier.

The other main faults belong to Domain 1. The 3D Breccia's southwestern boundary though dipping north has the same strike as Domain 3 as does the 10E dyke within the 3D breccia. This dyke and breccia boundary are dislocated by major northerly trending faults related to the North Fork/Big Bird Fault system.

Northwest of the '117' dyke (map sheet 8), which follows the Domain 4 trend of faulting, the two main fault trends follow Domains 2 and 3.

Between cross-sections 117 + 000 and 123 + 015 the majority of the major faults (i.e. Faults B, C, C2, E and the Faro Fault) follow the Domain 1 trend. The northern boundary of the 3D breccia also appears to follow this trend.

During pit mapping numerous faults were observed but only the major interpreted faults and some minor faults are shown on the sections and map sheets 5, 8 and 9.

The major faults follow through the sections quite well and in all cases, within the limits of uncertain drill-hole deviations, observed gouge, breccia, shears etc. in core confirm their prescence on the cross-sections.

Fault 'A'

Observed on the northeast wall of Zone III this fault disrupts the '117' dyke and exposes quartzitic ore on its footwall. As mapped it has a dip of 52°-60° south striking at 105°-120° (map sheet 8).
On sections 118 + 000, 119 + 000 and 120 + 000 it strikes 120° with an approximately 45° south dip. It appears to be a normal fault with a throw of 50 - 100 feet. Lateral displacement is unknown.
Fault 'A's eastern limit is unknown while on the west it appears to terminate in the '117' dyke though this is uncertain.

Fault 'B'

This is an interpreted fault used to explain the offsets of ore particularly at the base of the deposit at the north ends of cross-sections 118 + 000 to 120 + 000. As interpreted it has a strike at 90° true with a dip of approximately 70°S and therefore belongs to fault Domain 1.

Fault B has normal sense of displacement with a throw of 20 - 40 feet.

Fault 'C'

Fault 'C' is an interpreted fault that explains the 60 foot normal displacement of ore on cross-section 118 + 000. On cross-sections 119 + 000 and 120 + 000 the throw of this fault is in the order of 20 feet.

Fault 'C' also explains in part the appearance and abrupt termination of ore observed in the pit just north of d.d.h. 74 - 07 and the termination of 10F observed in blastholes 100 feet southeast of d.d.h. 84F-21 (map sheet 8).

The western end of this fault may merge with the Faro Fault. Fault 'C''s eastern end may cross the PMB fault and extend up to northeast wall of Zone III as interpreted following mapped faults located there. However, additional mapping is required to confirm this.

Fault 'C' has an interpreted strike of 85° true with a dip of 60 - 70° south.

Fault 'C2'

Fault 'C2' is mapped with a strike of 85-90° with a dip of 70 - 72° south and forms the northern contact of the 10F dyke near d.d.h. 74-07 (map sheet 8). It also explains the termination of 10F observed in blastholes.

On sections it explains normal displacements or ore with throws of 20-65 feet observed on cross-sections 119 + 000 to 121 + 000.

To the west it merges with the 'C' and Faro Faults and to the east it may terminate against the 'PMB' Fault.

On cross-section Fault 'C2' has a strike of 95° and a dip of 60-70° south and thus belongs to fault Domain 1.

Faro Fault

The Faro Fault has been recognized since the early 1970's as being the fault that downdrops Zone III ore and separates it from Zone I ore. As with the Big Indian Fault it has been poorly mapped.
This is the major fault interpreted on cross-sections 118 + 000 to 122 + 000. It has a normal sense of displacement with a throw ranging from 80-135 feet.
Since 1983 only one bench of waste has been mined between d.d.h.'s 74-07 and 76X-17 and the Faro Fault has not been well observed there. However the Faro Fault may be in part the northern contact of the 10F dyke in this area.

It is uncertain whether the Faro Fault extends east of the 'PMB' fault since observations are lacking due to failure of the pit-wall in this area.
A gouge Zone observed in late 1985 by Tolbert and Jilson at the southern hanging-wall contact of the ore between d.d.h.'s 79-03 and 75-09, on the ramp at the 3717 elevation, may be the Faro Fault, however, this may also be Fault 'C' or 'C2'. A major slickensided fault about 30 feet south of this may also be the Faro Fault.
The Faro Fault as interpreted on map sheet 8 causes a wedge of 10E to extend eastwards just north of d.d.h. 66-46. In fact this fault may be refracted by the '117' dyke and follow a course between d.d.h.'s 66-46 and 65-09 thus becoming the northern contact of the '117' dyke. Displacements of ore in the order of 120-150 feet on either side of the '117' dyke observed on long-sections 20 + 026 to 24 + 000 certainly suggest this possibility.
As interpreted on the sections the Faro Fault has a strike of 95° true with a dip of 60-70° south.

Fault 'E'

Fault 'E' may be the 'major fault' with a strike of 120° and dip of 62°S observed on mapsheet 8 between d.d.h.'s 79-02 and 75-09. It is not well observed in mapping and has uncertain eastern and western extensions.
As interpreted on section it has a normal sense of desplacement with a strike of 120° between cross-sections 119 + 000 and 121 + 000. The throw on this fault on these sections is 20-30 feet. On cross-sections 122 + 020 and 123 +015 the strike of Fault 'E' is 95° with throws of 40-50 feet.

Fault "E" dips approximately 60° south on all sections.

Fault 'F'

On the sections this fault dips approximately 30°S with a strike of 75° on cross-section 121 + 000 to 123 + 015 and a strike of 95° on cross-sections 118 + 000 to 120 + 000. However Fault 'F' is not well observed in the pit. Along its interpreted trace mapped faults have contradictory northerly dips of 72°-77°.
There may be some lateral movement on this fault explaining thickness variations across it (particularly cross-section 121 + 000).
Fault 'F' is interpreted from shear, gouge and breccia zones in core but is the least convincing of the faults.
Normal movement of Fault 'F' with southwestern termination against Fault 'I' requires a 'keystone' type of movement of the wedge between Faults 'F' and 'I' to allow downward movement of ore as portrayed on the cross-sections. Fault F is interpreted to have a throw from 20-40 feet.

Fault 'I'

This fault has been well observed in pit mapping and appears to be more of a zone of faulting than a single fault as interpreted. This possibility should be born in mind during mapping as it will impact an ore control if correct.

Mapped faults along Fault 'I''s trend dip between 70°-78° north with strikes of 81° to 100°.

The area between the 'Wishbone Dyke' and Fault 'I' (map sheet 8) shows a number of extensive faults which have been mapped or interpreted from blastholes, however these unamed faults have not been interpreted down to the ore on the sections.

The western termination of Fault 'I' is uncertain however it extends through the 'Breccia Cap' and may be the zone of faults traced on the northeast wall of Zone III north of d.d.h. 82F-03 on the 3910 bench (map sheet 8).

On cross-section Fault 'I' dips 70°-75° north with a strike of 85°-95° true and has a normal sense of displacement. There may be some lateral movement on this fault also, as indicated by facies changes and thickness variations across it.

The throw also varies from the top to the base of the ore, however the overall throw is in the order of 20-30 feet.

Fault 'J'

Fault 'J' is interpreted from cross-sectioins 121 + 000 to 123 + 015. It appears to have components of vertical and lateral movement. The latter inferred from thickness changes across it.

It may terminate to the east against the McChicken/'K' Fault.

Fault 'J' as interpreted has a strike of 125° and dip of 50° therefore south it is within fault Domain 3. It has a throw of 20-40 feet but its lateral movement, if any, is unknown.

Fault 'K'

This fault which may be related to the 'McChicken' Fault on cross-section 124 + 022 has a variable strike of 70°-100° true with a dip of 55°-65° south (map sheet 5). In the pit it can be traced from pit mapping and blasthole logging.
Fault 'K' which occurs on cross-sections 121 + 000 to 123 + 000 has a throw of 15 to 30 feet with a normal sense of displacement.

Fault 'P'

Fault 'P' is interpreted on cross-sections 120 + 000 and 121 + 000 - particularly the latter to explain the ore displacement in d.d.h. 76-06 as well as an extremely thick intersection of ore.
On cross-section 121 + 000 faults 'P' and 'T' interfere with each other, however their exact relationship is uncertain.
Fault 'P' as interpreted has a strike of 55°-65° true and a dip of approximately 85° north putting it into fault Domain 4. It has a reverse sense of displacement with a throw of up to 60 feet.
Its northern and southern extent is uncertain though it is interpreted to occur from at least long-sections 14 + 125 to 22 + 000.

PMB Fault

This fault occuring on the northeast wall of Zone III (map sheet 8) gets its name from the prescence of polymictic breccia along its length. Some of this breccia appears to be conglomerate from till in the upper benches implying that it is a late fault or that it has had 'recent' reactivation along it.

Most of the breccia along its exposure on lower benches, contains highly rounded fragments with a finely comminuted matrix and contains sulphide fragments. This suggests an explosive gas release, possibly related to the 10F dyke system which appears to have brought ore fragments upwards from the deposit. Similar breccias are observed in core in d.d.h. 76X-17.

On cross-section 123 + 015 the Faro Fault terminates against the PMB Fault. The PMB Fault dips 52-80° west with a strike of approximately 015° true. This fault may be related to the North Fork/Big Bird Fault.

INTERPRETATION OF SECTIONS

After plotting surface geology, diamond drill-hole lithologies, faults and foliation onto the cross-sections a first pass interpretation was carried out on all cross-sections extending projected faults from surface-mapping through gouge, breccia zones etc. the drill-hole in projections. The cross-sections were then drawn on acetate (accompanying this report) and hung.

It became quite apparent from this where major faults and folds occured. Through iterative reinterpretation and adding additional unmapped faults a 'best fit' for cross-sections was obtained.

As with the 1982 interpretive effort lithologic units of the Mount Mye and Vangorda Formations other than ore were lumped as 3D, 3A, 1D4/2L, 1D0, 1CD or 1EO/1D2. Although this latter unit as well as 1H4 may form additional marker units, time considerations prevented interpretation of additional 1E0/1D2 or 1H4 horizons other than those portrayed on the sections. Intrusive rocks are shown as either 10E or 10F.
Bearing in mind the problem of drill-hole deviation the long-sections were derived from transferring the cross-sectional interpreted geology from the appropriate cross-sections/long-sections intersections to the long-sections.
After initial interpretation the long-sections were also transferred to acetate (accompanying this report) and a best fit obtained through iteritive interpretation.
As expected, but certainly not hoped for, there were problems 'suturing' long-sections northwest of 123 + 015 to long-sections southeast of 124 + 022.
A reasonable fit was obtained for the 'Anvil Coded' sections however there are less reasonable fits obtained for the 'numeric coded' long-sections, which will be described later. (See NUMERIC CODING of Sections, Page 55).

The '1982' cross and long-sections were left intact and 'fitting' is shown on the 1986 long-sections. As later suggested revisions may wished to be carried out, splicing of sections are left until that time.
The most continuous ore lithologies as interpreted on the cross and long-sections are:

a) the quartzititic ore band occuring at the top of the deposit.
b) The three main massive 2EF horizons.
c) The basal 2A horizon which grades into quartzitic ore types to the northeast.

Table 2 tabulates the major composited ore and waste intervals after interpretation of the 'Anvil Coded' sections. The first composite listed in each composite category or type may be considered the 'composite type' name. 2D, 2DO and 2BO though considered separately here may be 'lumped' with 2BD during ore control.

Similarly 2BD/2L14, 2B/1E/1D4 may be either grouped as waste or 2BD dependant on blasthole information.

2GH and 2HG also dependeant on blasthole soluble iron assays may necome either 2GE or 2H or stay the same. 2E3 may be grouped with 2EH.

Notes on Individual Sections

117 + 000

From long-sections 14 + 125 to 21 + 000 the geology is essentially extrapolated from cross-section 118 + 000. Since this area is so close to the '117' Dyke it is recommended this section be drilled before including this extrapolated ore within a 'proven' ore inventory.

The '117' diorite dyke dominates the remainder of the section.

118 + 000

As is seen on other cross-sections the majority of the high grade massive sulphide ore is between long-sections 19 + 000 and 24 + 000. A considerable volume of massive sulphides occurs between Fault 'A' and the Faro Fault.

TABLE 2

'ANVIL CODED' SECTION COMPOSITE TYPES

ORE		WASTE
2A0 -	2A	3D
2AC -	2A3-2A13/2C-2CD5	3D Bx
2AD -	2A14-2D5-2A4-2A4/2D5-2BD5	3A
2B0		1D0
2BD		1D Bx
2BCD		1CD
2BD/2L14		1E0/1D2
2B/1E/1D4		
2C0 -	2C	**Alteration**
2CD -	2D3	
2D -	2D0	1D4/2L
2CE -	2C3-2E1-2CE5	1H4 - 1D4/2L/1H4
2E0 -	2E8-2E9	- 1H4/1D2
2EF -	2EF9	
2E3		
2EH -	2H-2HC	
2GE -	2G0	
2GH -	2HG	
2J88		
2K		

It is pointed out here that on this and other sections only the major interpreted faults are shown.

Splays of these major faults (as portrayed with Fault 'I' on this section) and other minor faults elsewhere (as have been mapped in the pit) probably 'jostle' the ore around over short distances.

Particular care in mapping and ore control has to be taken where the major faults (and probably numerous splays) occur, i.e. in particular the Faro Fault/Fault 'A' area; the Big Indian Fault area; and the North Fork/Big Bird Fault area; Fault 'I' area.

Fault 'A' is a normal fault with an undetermined throw on this section but is probably in the order of 50-100 feet.

Fault 'B' is a normal fault with a throw of 40 feet on this section.

Fault 'C' is normal with a throw of 60 feet.

The Faro Fault is the major fault on this section with a throw of 100 feet and a normal sence of displacement.

Fault 'C2' may occur between Fault 'C' and the Faro Fault. The Faro Fault and Fault 'C' merge together just northwest of section 118 + 000.

Fault 'F' is a relatively low angle normal fault with a throw of 20-30 feet on this section.

Fault 'I' is the only interpreted normal fault that dips to the north. There may be some lateral movement on this fault since there are distinct ore facies changes and increases in thickness across it giving an apparent throw of 20 feet at the top of the ore on this section and 70 feet at the base of the ore. The relationship of this and other faults with the 10E and 10F dykes is uncertain though Fault 'I' here is portrayed as predating the 'Wishbone' dyke.

The prescence of magnetitite ore (2J88) in d.d.h's 84F-06 and 66-46 may indicate that the '117' dyke penetrates this section between these two d.d.h's. The interpretation of long-sections 23 + 000 and 24 + 000 certainly indicates the '117' dyke approaches, at least very, close to cross-section 118 + 000.

Of particular concern should be the area of 2BD/2L14 lithologies between d.d.h's 66-03 and 80-01. Though these holes are only 45 feet apart (approximately) d.d.h. 66-03 has 2BD logged in this interval while d.d.h. 80-01 has 2L14. Unfortunately d.d.h. 66-03 has poor core recovery, while, as stated before, in the 1980 d.d.h.'s all ore intervals have been removed for assay.
Both holes show low grade lead and zinc assays for this interval and elevated BaO assays.

Elevated BaO assays if not in 2G or 2E6 ore are often associated with ID4/2L lithologies.

Below this interval d.d.h. 66-03 indicates an abundance of 2A4 while d.d.h. 80-01 has massive sulphides. Since d.d.h. 66-03 only has only 20% core recovery in this interval I have chosen to interpret the interval as being dominantly 2EF.

At the northeast end of the section considerable high grade ore (+6%Pb+Zn) is contained within a thick section of 2A4/2D5 ore types observed in d.d.h.'s 74-01 and 66-06.

119 + 000

As with section 118 + 000 the thickest intersection of high grade massive sulphide ore occurs between long-sections 19 + 000 and 24 + 000.

The high grade 2A4/2D5 ore interval seen on 118 + 000 also occurs on 119 + 000 between long-section 26 + 000 and 28 + 000.

The 2BD/2L14/1D4 unit discussed on 118 + 000 is also observed on this section and persists beneath the upper 2GE band and extends and thickens to the northeast.

The high grade massive sulphide area noted above is separated from the high grade 2A4/2D5 interval by a thick section of low grade ($<$ 4%Pb+Zn), essentially massive 2E0 and 2CE ore types between Fault 'B' and the Faro Fault.

Fault 'A' is normal with a throw of approximately 100 feet.
Fault 'B' has a normal throw of 20 feet.
Fault 'C' has a normal throw of 20 feet.
Fault 'C2' trends between Fault 'C' and the Faro Fault and has a throw of 20-30 feet.
The Faro Fault is normal with throw of $\pm$ 80 feet.
Fault 'E' which possibly merges with the Faro Fault before cross-section 118 + 000 is normal with a throw of 20-30 feet.
Fault 'F' has a throw of 40 feet.
Fault 'I' has a throw of 10 feet at the base of the ore and 30 feet at the top and has a normal sense of displacement.

<u>120 + 000</u>

It was proposed to drill this section in 1984 at long-sections 21 + 000 and 27 + 000, however this section runs along the steep south face of Zone I making it impossible to drill vertical holes. Thus the southern extent of the 'upper internal waste' band on this section, observed between lithologic units 50 and 65 in d.d.h. 74-15, is uncertain.

As the area between Faults 'C' and 'E' is most likely low grade 2CE, as seen on cross-section 119 + 000, the lack of drilling on long-section 25 + 000 is not so critical, though it should be done.

It would be useful to know if the 'high-grade' 2A4/2D5 ore intersection seen on cross-section 118 + 000 and 119 + 000 extends to this section at long-section 27 + 000 though the 10F dyke observed in the south wall of Zone I probably interferes with the ore as interpreted, though the question marks indicate the certainty of this belief.

The location of Faults 'A' and 'B' are uncertain.
Fault 'C' is normal with a throw of 20 feet.
Fault 'C2' is now separate from the Faro Fault and Fault 'C' with a normal throw of 50 feet.
The Faro Fault has a throw of 90 feet.
Fault 'E' has a throw of 20 feet.
Fault 'F' has a throw of 30 feet.
Fault 'I' has a throw of 20-50 feet.
Fault 'P' which is a reverse fault is first observed on this section and has a throw of 10-20 feet. This fault with a strike of 55°-65° true occurs between cross-sections 120 + 000 and 121 + 000.

121 + 000

The thickest part of the 'high-grade' ore now occurs between long-sections 18 + 000 and 23 + 000. From Fault 'E' northeast 'low grade' 2CE and 2A ore types dominate.

The 10F dyke first observed on cross-section 120 + 000 is interpreted, due to its strike, as cutting off any 'ore' (which is thinning out and of low grade anyway) between long-sections 26 + 000 and 28 + 000.

Fault 'A' has become unimportant to the location of ore and its location along with Faults 'B' and 'C' is uncertain.
Fault 'C2' is normal with a throw of 65 feet.
The Faro Fault is normal with a throw in the order of 135 feet.
Fault 'E' has a throw of 20 feet.

Fault 'I' and 'P' interfere with each other and it was difficult to interpret this area. However Fault 'I' is shown as normal with a throw of ± 25 feet. Fault 'P' is a reverse fault with an overall throw on its two interpreted splays of 60 feet. Fault 'P' is portrayed as post-dating the 'Wishbone' dyke and therefore Fault 'I', through this relationship is uncertain.

Faults 'J' and 'K' observed in pit mapping occur on cross-sections 121 + 000, 122 + 020 and 123 + 015.

Fault 'J' may be related to the 'Big Gulp' Fault interpreted by Jennings and Jilson on cross-section 124 + 022 and Fault 'K' may be related to the 'McChicken' Fault also on cross-section 124 + 022 though these relationships were not satisfactorily resolved in this interpretive effort. However these two faults on the three aformentioned sections are of small displacement and in an area of ore unlikely to be mined within an open pit.

Fault 'J' is a normal fault with a throw of 20-40 feet.
Fault 'K' is normal with a throw of 15-30 feet.

<u>122 + 020</u>

As with cross-section 121 + 000 the thickest interval of 'high-grade' ore occurs between long-sections 18 + 000 and 23 + 000, with low-grade 2CO, 2CE and 2A ore types dominating the northeastern end of the section.
The location of the 10F dyke is uncertain though it is most likely as portrayed (from pit mapping). This dyke may also be related to the 'PMB' (Polymictic breccia) Fault which contains highly rounded ore fragments and may be in part a diatreme breccia dyke.

Fault 'C2' is normal though its displacement is uncertain.
The Faro Fault has a throw of 120 feet.
Fault 'E' has a throw of 50 feet.
Fault 'F' has a throw of 40 feet.
Fault 'I' has a throw of between 10 and 30 feet.
Fault 'J' is normal with a throw of 15 feet.

<u>123 + 015</u>

Thick 1D4/2L waste bands become prominant at the top and middle of the ore between long-sections 20 + 026 and 23 + 000. These can cause dilution and recovery problems without careful ore control.

Low grade 2CE, 2E, 2CO dominate the upper and middle part of the ore body northeast of long-sections 22 + 000. The thicker 'high-grade' part of the ore between long-sections 18 + 000 and 22 + 000 appears to be near the middle to bottom of the deposit on this section.

The Faro Fault has a throw of 130 feet.
Fault 'E' has a throw of 40 feet.
Fault 'I' has a throw of 20 feet.
Fault 'J' has a throw of 20 feet.
Fault 'K' has a throw of ± 30 feet.
This section also intersects the upper northwest corner of the '3D Breccia'.

<u>14 + 125 and 16 + 000</u>

Only one drill-hole (71-01) occurs on this section so that the interpretation is highly inferred. Note the downwarp of ore on cross-section 120 + 000. The relationships of the 'P', 'J' and 'K' faults are uncertain. The location of the '117' dyke at depth is also uncertain.

<u>17 + 000</u>

The intersection of the 'J' and 'K' faults is problematic and is left as a 'possible' fault.

18 + 000

Fault 'I' now appears and causes interpretive problems at the pit surface projection where 3A occurs. This is unsatisifactorily resolved with a minor reverse fault. Note the displacement of the base of the ore upwards on the northwest side of the '117' dyke.
The 1E0/1D2 band seen above the ore on the previous sections now extends from 117 + 000 southwestwards on this section.

Fault 'K' may be related to the McChicken Fault on cross-section 124 + 000.

19 + 000

The ore interpreted on this long-section and others northwest of cross-section 118 + 000 and therefore on cross-section 117 + 000 has not been drill-tested and has been inferred from cross-section 118 + 000. Due care should be applied when quoting reserve figures from this area.

The 'Wishbone' dyke first appears on this long-section having probably merged with the '117' dyke between long-sections 18 + 000 and 19 + 000. The 1E0/1D2 on the previous section terminates abruptly on this section.

19 + 094

Note the 2D, 2BD, 2CD band extending across the top of the deposit. The 2EF horizons are also laterally extensive.

20 + 026

The basal 2EF horizon is the most laterally extensive ore type on this section, followed by the upper 2CD/D horizon. Note the interbanding of 2G and 2H ore types adjacent to the 'Wishbone' dyke and 'P' and 'T' Faults (thus 2GH).

Fault 'F' which was below the ore body on the previous section now cuts through the middle of it between cross-sections 117 + 000 and 119 + 000

21 + 000

On this and long-section 22 + 000 Faults 'P' and 'T' interfere causing interpretive problems which are not 100% satisfactorily resolved.

Note also the continued downward warpof the ore on cross-section 120 + 000.

The 1D4/2L band, observed on the previous two sections, which separates the upper 2GE horizon from the rest of the deposit becomes quite thick on this section and extends from cross-section 120 + 000 southwest.
A lower 1D4/2L band appears between cross-sections 121 + 000 and 124 + 022. Note the development of 2EH around these waste bands.

The massive 2E horizons, forming the core of the deposit on this section, are laterally continuous as well as being at their thickest width.

The '117' dyke approaches close to cross-section 118 + 000. Note the upward displacement of ore to the northwest of the '117' dyke.

22 + 000

The basal 2EF is still laterally continuous though thinner than on the previous section. Increasing amounts of 2CE and 2E8 appear on this section. The ore above the upper 1D4/2L band between cross-sections 122 + 020 and 124 + 022 is now completely separate from the rest of the deposit and is dominated by 2CE/2CO ore types.

On this and the previous section the southwestern location of the 'Wishbone' dyke is uncertain. The base of the 'Breccia Cap' is a 10E sill.

23 + 000

Warps in Faults 'E' and 'F are due to changes in strike and (dip) between cross-sections 121 + 000 and 122 + 020.

The base of the 'Breccia Cap' is uncertain as is the extent of the 'Wishbone' dyke into it.
This section is now dominated by 2CE/2E1/2C3 ore types which account for 40-50% of the area of ore.
The'117' dyke is interpreted as, at least, approaching close to cross-section 118 + 000 as implied by the development of the 2J88 ore type.

24 + 000 and 25 + 000

The major easterly-striking, southerly-dipping faults 'B', 'C', 'C2' Faro, 'C' and 'F' dominate these sections making interpretation difficult.

Except for northwest of 120 + 000 the dominant ore types are 2CE, 2CO and 2AD.

Fault 'I' fits nicely (it just happened) where 2CE ore is displaced upwards between cross-sections 123 + 015 and 124 + 022 on long-section 24 + 000. The relationship of Fault 'I' with the 'McRib' fault is uncertain.

26 + 000

Ore types 2AD and 2CE dominate the northwest half of this section while 2AC and 2CE dominate the southeastern half. The 10F dyke observed in the pit starts to appear on this section.

27 + 000

Ore types 2A14/2D5 and 2AC dominate cross-sections 118 + 000 and 119 + 000. Southwest of this 10F dominates except for minor mineralization observed in d.d.h. 84F-27.

28 + 000 and 29 + 000

These sections speak for themselves.

NUMERIC CODING OF SECTIONS

Numeric coding of the cross and long-sections followed the same format, as devised by R. Tolbert (1982, Appendix VI), that was used on the cross and long-sections interpreted in 1982.

The interpreted ore lithologies were given numeric composite codes that correspond to composited ore types . Horizon codes were also given to the various ore types, since in some cases one ore type may occur at various levels (or horizons) in the deposit. This 'horizonizing' prevents the composite assay from one horizon (possibly low-grade) being interpolated into another (possibly high-grade) at a different level. For example the basal 2A (horizon 111) has consistantly low grade ($<$ 4%Pb+Zn) and without a horizon code a higher grade composite from a different horizon may be used to interpolate grade into an area of the basal 2A or vica versa. This could occur especially in areas of folding and faulting.

During 1986 the sections were coded from the northwest to the southeast so that problems of overlap occur between cross-sections 123 + 015 and 124 + 022 on the long-sections.

In 1982 the numeric coding of the cross and long-sections was carried out by R. Tolbert and J. Keir working against time constraints and some problems (in retrospect) occurred.

In particular at the south end of Zone III since in some instances few drill-holes existed from which to interpolate grade some horizons which occurred at different elevations and had similar grades (eg. units -35, -56 , -57 and -77 in particular) were asigned the same horizon code.

In 1986 the numeric coding of sections by R.Tolbert commenced from the northwest to the southeast of Zone III, on the rational that it would be easier to sort out the greatest number of horizons and follow them out to where they end and/or fewer horizons occur than vica versa.

This exercise worked reasonably well except on long-sections between cross-sections 123 + 015 and 124 + 022.
Here problems exist which require resolving before or after interpolation as follows:

<u>14 + 125 to 16 + 000</u>

Unit 214 occurs at different levels on cross-sections 124 + 022 and 123 + 015.

<u>16 + 000 to 18 + 000</u>

O.K.

<u>18 + 000 to 19 + 000</u>

Unit 224 occurs at different levels on cross-sections 124 + 022 and 123 + 015.
<u>19 + 094 to 21 + 000</u>

On cross-sections 124 + 022 unit 156 occurs of two different levels whereas on cross-section 123 + 015 these have been separated into units 156 and 256.

<u>21 + 000 to 24 + 000</u>

In addition to the problem of 156, similar horizon problems exist with units 177, 157, 257, 357, 377 and 457 (baritic sulphides) as well as units 135, 235, 335, 435 (2CE ore types) on cross sections 124 + 022 and 123 + 015.

These can be resolved by:

1) carefully checking the block grades between these two sections (123 + 015 and 124 + 022) after interpolation to ensure they are not obtained from horizons named the same but from different levels.
   or:
2) recoding the affected cross and long-sections southeast of 123 + 015, as well as the composites, so they 'jive' with cross and long-sections northwest of cross-section 123 + 015. This should be done prior to making bench plans and interpolation.

The second alternative is the one recommended and it is estimated to take one person two weeks to complete.

COMPOSITING OF ASSAYS

The assays for drill-holes between cross-sections 117 + 000 to 123 + 015 (Appendix I) were composited using the same numeric coding as on the numeric coded sections.
This has been described by P.N. Clarke (1983, Documentation of MINTEC Mine Modelling System).
The composited assays are reported separately from this report.

APPENDIX 1

ROBIN S. TOLBERT
Geological Consulting
Vancouver, B.C.

DATE Feb. 26/86
BY RST

SUBJECT Faro Deposit DDH's in Database 116-123

X-SECTION	L. SECTION	DDH	
116 +000	16 +000	72004	
117 +000	19 +000	74-02	
↓	21 +000	76916	
	22 +000	73-02	
	26 +000	73-01	
118 +000	16 +000	71-02	
↓	18 +000	66-05	
	19 +000	75-11	
	19 +094	66-52	
	20 +026	79-01	∠ hole NW
	22 +000	80-01	
	22 +000	66-03	
	23 +000	75-06	∠ hole NW
	23 +000	84F-06	
	24 +000	66-46	
	24 +000	79-02	∠ hole NW
	25 +000	74-16	∠ hole NW
	25 +000	79-03	
	26 +000	66-06	
	27 +000	74-01	
	28 +000	76X-10	
	29 +000	76X-14	
	31 +000	76X-09	
119 + 000	17 +000	76-11	
↓	19 +000	76-22	
	21 +000	76-13	
	21 +000	75002	∠ Hole NW
	22 +000	84F-01	
	23 +000	76-14	
contd.	24 +000	84F-03	

ROBIN S. TOLBERT
Geological Consulting
Vancouver, B.C.

DATE

SUBJECT

BY

X-SECTION	L-SECTION	DDH	
119+000	25+000	75-09	
↓	25+070	84F-05	
	26+000	75-05	
	27+000	84F-08	
	28+000	84F-22	
120+000	16+000	71-03	
↓	18+000	70-17	
	19+000	80-05	
	19+094	66-49	
	22+000	74-15	
	23+000	80-08	
	24+000	66-07	
	26+000	74-07	
	28+000	66-47	
	34+000	77-19	NOT IN DDHD
121+000	14+000	71-01	
↓	17+000	76-10	
	19+000	76-07	
	20+000	84F-18	
	21+000	76-06	
	22+000	84F-19	
	23+000	76-12	
	24+000	84F-20	
	25+000	75-03	
	26+000	75-10	
	28+000	84F-21	

ROBIN S. TOLBERT
Geological Consulting
Vancouver, B.C.

PAGE 3/3

DATE

SUBJECT

BY

X-SECTION	L-SECTION	DDH
122+020	16+000	70-12
↓	18+000	74-17
	20+000	67-12
	21+000	80-07
	22+000	66-10
	23+000	80-06
	24+000	72-16
	25+000	76-01
	26+000	66-11
123+015	16+000	84F-24
↓	17+000	76-09
	19+000	76-08
	19+094	84F-23
	21+000	76-05
	22+000	84F-25
	23+000	76-03
	24+000	76-02
	25+000	84F-26
	26+000	76X-26
	27+000	84F-27
	28+000	76X-17

APPENDIX II

MAIN DEPOSIT AREA

LITHOSTRATIGRAPHIC CODE

Intrusive Rocks

Unit 10	928	10-A	Granodiorite (kspar<plag, quartz>10%)
	929	B	Adamellite (qtz monzonite)
	939	C	Pegmatite
	954	D	Quartz diorite (kspar<<plag, qtz>10%)
	934	E	Diorite (kspar<<plag, qtz<10%)
	925	F	Monzonite (kspar~plag, qtz<10%)
	932	G	Pyroxenite
	937	H	Granite (kspar>plag, qtz>10%)
	930	I	Syenite (kspar>plag, qtz<10%)
	938	O	Bull qtz veins/pods

1 Foliated/lineated
2 Porphyritic
3 Aphanitic
4 Smokey qtz-bearing
5 Muscovite-bearing
6 Kspar-bearing
7 Biotite-bearing
8 Amphibole-bearing
9 Altered (kaolinite, montmorillonite)
0 Normal (equigranular)

Vangorda Formation — Intrusive Contact

Unit 5	936	5-A	Variably calcareous, graphitic phyllite (hosts Unit 4; ± 1E, hosts Unit 2)
	920	B	Calcareous muscovite-chlorite±biotite phyllite (greenschist equivalent of 3D)
	908	C	Metabasite
	910	D	Chloritic phyllite
	904	E	Phyllitic marble and silicated marble
	910	F	Laminarly banded, variably calcareous, chloritic phyllite (associated with 5C)
	949	G	Variably calcareous, graphitic phyllite.

1 Siliceous
2 Carbonaceous
3 Calcareous
4 Altered, pyritic (white mica envelope)
5 Banded/laminated
6 Non-calcareous
7 Chlorite laminations
8 Chloritic
9 Sulfide-bearing
0 Normal
* Carbonate-bearing

Faro, Grum, Vangorda, DY Deposits — Conformable Contact

Unit 2/4	922	2/4-A	Sulfide-bearing, ribbon-banded, graphitic quartzite
	915	B	Pyrite-free quartzite (may contain base metal sulfides)
	916	C	Base metal-poor, pyritic quartzite
	942	D	Base metal-bearing, pyritic quartzite
	918	E	Massive pyritic sulfides
	923	F	Buckshot facies, massive sulfides
	928	G	Baritic facies, massive sulfides/sulfates (>10% $BaSO_4$)
	924	H	Pyrrhotitic facies, massive sulfides
	949	J	Non-pyritic, massive sulfides/oxides
	921	K	Carbonate-bearing, massive pyritic sulfides
	814	L	——→ 2/4L Muscovite-qtz-chl-bio- (generally sulfide-

1 Siliceous
2 Coarse, porphyroblastic pyrite-bearing
3 Fine pyrite/marcasite-bearing
4 Sphalerite and/or galena-bearing
5 Carbonaceous
6 Barite-bearing
7 Pyrrhotite-bearing
8 Magnetite-bearing
9 Chalcopyrite-bearing
0 Normal
* Carbonate-bearing

2/4L:
1 Siliceous
2 Pyrite-bearing
3 Talc/kaolinite-bear
4 ZnS and/or PbS-bear
5 Carbonate-bearing
6 Chl-bio-qtz-musc ph
7 Pyrrhotite-bearing
8 Magnetite-bearing
9 Chalcopyrite-bearin
0 Normal

Mt. Rye Formation — Conformable Contact

GREENSCHIST FACIES

Unit 3	916	3-I	Graphitic quartzite in non-calcareous phyllite/schist
	913	H	Tuffaceous calc-silicate phyllite/schist (assoc. with 3D; identical to 5F)
	941	G	Non-calcareous muscovite-chlorite±biotite phyllite/schist (± 1C, 1D)
	906	F	Marble and silicated marble (± 1G)
	963	E	Graphitic phyllite/schist (≠ 5A)
	913	D	Calc-silicate phyllite/schist (e. greenschist to amphibolite facies equiv. of 5B) ——→ Calc-silicate phases
	908	C	Metabasite
	946	B	Chloritic phyllite/schist (c.f. 5D)
	912	3-A	Transition zone with Unit 1 (interbanded chloritic phyllite, graphitic phyllite and pelites of Vangorda and Mt. Rye Fms.) ——→

1 Siliceous
2 Non-calcareous
3 Calcareous
4 Altered, pyritic (wme)*
5 Banded/laminated
6 Sulfide-bearing
7 Chlorite laminations
8 Chloritic
9 Carbonaceous
0 Normal

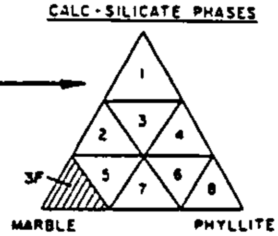
AMPHIBOLITE FACIES

	902	1-B	Tactite and silicated marble (≠ 3F)
	943	C	Quartzo-feldspathic, biotite-muscovite gneiss/schist (± 3G)
	947	D	Carbonaceous biotite-muscovite-andalusite schist (± 3G)
	967	E	Graphitic schist (± 5A)
	908	F	Metabasite (± 3C)
	901	G	Marble and silicated marble (± 3F)
	910	1-H	Chloritic schist (c.f. 5D) ——→

Unit 1

1 Siliceous
2 Carbonaceous
3 Calcareous
4 Altered, pyritic (wme)*
5 Banded
6 Clotted
7 Staurolitic
8 Chloritic
9 Sulfide-bearing
0 Normal

CALC-SILICATE PHASES



*(wme) White mica envelope

Nov. 16/31
Dc-T. E.S.

APPENDIX III

CORE LOGGING AT FARO

NOTES ON ORE TYPE DEFINITION

2G

Defined by > 10% visual $BaSO_4$ which = 6.6% BaO assay.

From the sections logged to date ie 124, 125, 126, 130, 131, 132 it was noted that ore types defined visually as 2G by previous loggers ranged from 5.5% BaO to 30% BaO in assay with a mean of 16% BaO.

Ore types defined as 2D6 or 2E6 had BaO assays ranging from 4% BaO to 14% BaO with a mean of 8% BaO.

N.B.

1) Pure barite ($BaSO_4$) = 66% BaO
   15% barite = 9.8 % BaO
   20% barite = 13.13% BaO
   25% barite = 16.42% BaO

2) When checking lithologic log against assays believe the lithologic log.

   Since e.g. a 5' sample of 2EO may have a 1' minor component of 2GO (with say ±50% $BaSO_4$) giving the 5' sample an assay of 6% BaO.

   ∴ If a 2EO BaO assay is ±6% check the lithologic log for one of three possibilities for change ie 2EO (2GO)
   2E6
   2GO

3) It has been noticed during recent checks that marginal and interbedded 1D4 (2L) has up to 10% BaO noticed so far, possibly indicating remobilisation of Ba fluids during diagenesis, metamorphism or Ba enrichment of sediments during ore deposition.

4) 2G4 > 10% of Pb+Zn assay.

<u>2H</u>

Defined by > 80% sulphides of which > 50% of sulphides is pyrrhotite.

<u>ie</u> ∴ > 40% visual po = ⇒20% po (sol. Fe) assay or 35% Total Fe.

If po assay is > 10% po to < 20% po assay then modifier 7 should be added to 2E, 2G, etc. <u>ie</u> 2E7.

<u>ie</u> > 20% to < 40% visual pyrrhotite - yes it is difficult.

Again believe the lithologic log.

<u>N.B.</u>

1) Caution; some of the older logs which have po, py assays composited over 20' have to be checked with care.

2) Reported under po are also other soluble iron sources essentially Fe_3O_4
$Fe,Ca(CO_3)^2$
$FeOH . H_2O$

Of which the first - magnetite is most common at Faro.

It has been observed during recent assay checks that ore with magnetite ranges from 3% to ±10% po assay but most commonly 6% to 8% po.

3) 2H4 >10 % Pb+Zn assay.

4) Previous loggers have frequently under estimated the 2H grade generally by a factor of 2 <u>ie</u> estimate 5%, actually 10% - 12% it is most commonly > 8% Pb+Zn.

<u>2EF</u>

Defined as > 80% sulphides - if py is main sulphide

∴ 2EO would typically assay $\pm$ 32% Total Fe - if no or little base metals.

If high base metals obviously the Fe assay will be less

∴ then 2FO ≈> 20% Fe to < 32% Fe assay.

2E4 > 4% Pb+Zn assay ≡ 2FO in grade.

2F4 > 10% Pb+Zn assay.

<u>N.B.</u>

1) Again check lithology log.

2) If 2EO - but assay > 4% Pb+Zn assay change to 2E4 <u>not</u> 2FO.

<u>2CE</u>

50% to 80% sulphides	=	25% to 32% Fe assay
but with SiO_2 : py	=	$\pm$ 50 : 50 to $\pm$30 : 70

2CE4 > 4% Pb+Zn assay.

1) <u>If</u> 2C3 is written in lithology log - but assay of $\pm$25% Fe - ok.

2) <u>If</u> 2E1 is written in litholgy log - but assay of $\pm$30% Fe - ok.

3) Remember to check lithology log.

4) Remember base metal variable.

2CO

Pyritic quartizite < 4% Pb+Zn assay; > 5% Fe to 15% Fe assay.

From 2CE previously noted;

If high pyrite ie. 15% Fe to 25% Fe assay then 2C3.

N.B.

No 2C4

2DO

Pyritic quartzite > 4% Pb+Zn assay; py generally low but > 5% Fe assay.

2D4 > 10% Pb+Zn assay; py generally low but > 5% Fe assay.

1) It has been noted during recent assay checks that 2C has a higher Fe content than 2D.

2) It has also been noted that 2DO is similar to 2B4 as defined by previous loggers in terms of Fe assay.

2BO

Quartizite < 5% visual pyrite ie. < 3% Fe assay.

However 2BO as defined by previous loggers assayed up to 8% Fe with $\bar{m}$ = 4% Fe.

∴ During assay lithologic checks up to 10% visual pyrite estimation for 2BO ie. 5% Fe assay will be accepted.

2B4 > 4% Pb+Zn

N.B.

2B4 during interpretation will in cases probably correlate with 2DO units in other drill holes.

2A

For holes logged in past the following modification will take place after checking against assays:

2AO < 15% pyrite ie < 7% Fe assay, < 4% Pb+Zn assay.
2A3 > 15% pyrite ie > 7% Fe assay.
2A4 > 4% Pb+Zn assay.

IN GENERAL

1) From holes checked to date at Faro footwall 2AO is low grade and low Fe ≈ ±4% Pb+Zn, < 7% Fe assay.

2) High level (Anvil Cycle) to Hanging wall 2A is higher in sulphides ie > 4% Pb+Zn, > 7% Fe assay.

*3) Yes we have 2A phyll. at Faro ie Carbonaceous phyllite with 2A texture, rather than graphitic phyllite.

Again in all the preceeding check the lithology logs for any minor components that may effect what might be termed the typical ore type assays.

OQO

N.B.

Quartz veins with sulphides or sulphide veins (generally galena) with grade, are to be noted as OQ9 - with a note in description on the type of vein.

R.S.T.
November, 1982

RST/df

APPENDIX IV

CYPRUS ANVIL MINING CORPORATION INTEROFFICE CORRESPONDENCE

To: Geology/Exploration Meeting

From: Robin Tolbert

Date: April 17, 1985

Subject: Downhole Survey Measurements -- Faro Zone III

It hardly needs to be stated that it is important to know the spacial location of ore-samples, faults, etc. and therefore it is important to obtain downhole deviation information. Yet from 1965 to 1975 at Faro the only downhole survey carried out was to measure the inclination of a hole in the vertical direction (i.e. zenith angle) using an acid dip test. Many holes were not even surveyed using this method.

Old 1960's vintage sections portray drill-holes as being vertical which we now know is incorrect.

From 1976 to 1981 50% of the holes drilled at Faro were surveyed using acid dip tests only. The other 50% of holes were surveyed using a Sperry-Sun single shot camera which measures deviation in both the vertical (zenith angle) and horizontal (azimuth) directions.

Attached is a summary report which outlines the methods used during 1983 to 1985 to estimate downhole deviations for holes drilled prior to 1981 which have not been surveyed.

These new estimations described in this report have been entered to the Faro DDHDB and will be used in the F4 model.

R.S. Tolbert

District Geologist

ESTIMATION OF DOWNHOLE SURVEY AZIMUTHS
FARO ZONE III

INTRODUCTION

At Faro most of the diamond drill-holes completed prior to 1975 were tested, for zenith deviation only, using acid dip tests.

In the area of x-sections 118 to 123 the first hole tested for deviation in the horizontal (azimuth) as well as the vertical (zenith) direction was 75-11 (x-sect.118, long-sect.19). This hole deviated 250 feet from the collar and almost 100 feet from the plane of the x-section at the end of the hole at 2155 feet depth.

In 1976 seven of the 16 holes drilled that year in this area were tested for both azimuth and zenith deviation using a Sperry Sun single shot camera. These holes deviated considerably from vertical in a northwesterly direction and appear to be trending into the regional S2 foliation which at Faro dips overall to the southwest, at a dip azimuth direction of 235 degrees true.

In 1978 during the first geological modelling, to be used in the first computer mine model, it was realized that the previous assumption that the diamond drill - holes were vertical was incorrect.

For modelling purposes it was thought that an average estimated deviation based on surveyed drill - holes to that date would be more likely to be correct than using a vertical drill - hole portrayal. An average of all the azimuth directions was calculated to be 37 degrees true. This azimuth direction was used for all unsurveyed drill - holes in the F-3 model.

The deviations from vertical (both zenith and azimuth) for those holes which had not been surveyed, even by acid dip test, were estimated from holes which had been surveyed by acid dip or Sperry Sun.

Despite having a Sperry Sun single shot surveying tool available less than 50% of the holes drilled from 1976 to 1981 were surveyed.

For 50% of the holes drilled and not surveyed from 1976 to 1981 (as stated above) the average azimuth of 37 degrees was used despite the other 50% of those holes that were surveyed displaying considerable variance from this direction.

In 1983 this estimate was reevaluated for the F-4 model from x-section 124 to 133, based on all new drilling to that date.

In 1985 additional reevaluation of downhole deviations was carried out for x-sections 118 to 123, also based on additional new drill information.

X-Sections 124 to 133

All drill - hole azimuths from surveyed holes were plotted bench by bench for 6 benches at 100 feet intervals. Zones of continuity were outlined with the aid of geology. Four zones were outlined:-

A) Breccia Cap
B) Big Indian - North Fork Fault Zones
C) Southwest of the Big Indian Fault
D) Northeast of the Big Indian Fault

A) Breccia Cap

In this area large rock masses and therefore S2 have been rotated and this is reflected in downhole surveys. Downhole surveys in this area do not display a systematic azimuth direction.
All unsurveyed drill - holes in this area have been assigned vertical zeniths .

B) Big Indian - North Fork Fault Zones

In this area surveyed drill holes drilled within the faults tend to parallel the faults . Holes outside the faults and drilled into them tend to trend perpendicular to the faults. This latter phenomena may possibly be to the fabric elements in particular S2 being re-oriented in strike parallel to the later faults.
All unsurveyed holes in this area were assigned azimuths perpendicular to the faults.

C) Southwest of the Big Indian Fault

This area has the most surveyed holes and has the best continuity of azimuth directions.
Unsurveyed hole azimuths were estimated from surrounding holes.

D) Northeast of the Big Indian Fault

This area has least survey control so an average of all azimuths in this area and area D has been used to estimate the azimuths of the unsurveyed holes in this area.

Estimate of Zenith Angles

Previous estimates of zenith angles of drill holes in the above four areas which were not even surveyed by acid dip test, with the exception of area A, have not been changed since the previous estimates were made for, and from, holes drilled predominantly with BQ core. All recent drilling has been with NQ core which generally does not deviate at the same rate as smaller core.

X-Sections 118 to 123

Recent reevaluation of downhole deviations in this area is based on those pre-1982 downhole drill surveys that are available as well as 1982 and 1984 downhole surveys.
Three areas were subdivided based on geology and zones of continuity of azimuth deviation:-

A) Breccia Cap

Unsurveyed holes within or peripheral to this area have been assigned vertical zenith angles since those holes that have been surveyed show no systematic azimuth direction and in fact are quite variable.

B) North of a Line from DDH 73-02 to 84F-27

North of this line there is a tendency for measured azimuths to be less than 45 degrees i.e. to the northwest of the x-section lines (see Table I). If it was possible to interpolate an azimuth from at least three surrounding holes this was done otherwise an average of the 24 azimuth measurements north of the dividing line (34° true) has been used.
One standard deviation of these measurements is 14°, so that it might be expected that at least 68% of the holes in this area would be to the northwest of the section lines which have an azimuth of 45° true.

C) South of a Line from DDH 73-02 to 84F-27

South of the above dividing line there is a tendency for measured azimuths to be greater than 45° true i.e. to the southeast of the x-section lines (see Table II).
If it was possible to interpolate an azimuth from at least three surrounding holes this was done otherwise an average of the 50 azimuth measurements south of the above dividing line (63° true) has been used.
One standard deviation of these measurements is 21° so that it might be expected that at least 68% of the holes in this area would be to the southeast of the sections which have an azimuth of 45° true.

Three holes 66-03, 80-01 and 66-07 are marginal to the dividing line between areas B and C, however their azimuths have been estimated from surrounding holes on either side of the above dividing line.

A detailed description of the estimation calculations for sections 118 to 123 is shown in Appendix I.

Zenith Angle Estimations

As with the estimation of zenith angles in the first half of the F4 model previous estimates have not been changed since the most recent drilling has been with NQ core where as previous drilling upon which the old estimates were calculated was with predominantly BQ core.

APPENDIX I

CALCULATION OF DRILL HOLE AZIMUTHS

A histogram was drawn of measured azimuths of drill holes between x-sections 118 to 124 (Figure 1).
The distribution of the 76 measurements shows that 79% of the values are between 20° and 120° true and there is a bimodal distribution centred around 45°-50° true and 75°-120° true.
Only 21% of the values are less than 45° true (the x-section line azimuth) putting into question the previously estimated azimuth of 37° true.
It may be possible to explain azimuths of 85°-120° true as being due to faults as an overlay of geology has suggested. However this cannot be used to estimate other hole azimuths along a particular fault trace with confidence
Therefore three zones of continuity were defined:-

A) Breccia Cap
B) North of a Line between DDH's 73-02 and 84F-27
C) South of a Line between DDH's 73-02 and 84F-27

In area A measured azimuths are random so that azimuths cannot be estimated with confidence ∴ un-measured holes are assumed to be vertical to minimize errors.
In areas B and C the average of azimuths from measured holes were used (see Tables I & II) to determine the estimate of azimuths to be used in those areas which cannot be interpolated.
Azimuths outside the range 20° to 120° were not used as they would deleteriously bias the results, especially values in the 300° to 345° range.

It should be noted that:-

1) Earlier holes were drilled predominantly with BQ core whereas from 1976 onwards drilling was done with NQ core.
2) Holes drilled prior to 1980 were drilled though a considerable thickness of 3D calc-silicate compared to holes drilled post-1980.
3) Faults occurring in core and projected to section have to be veiwed with caution since their exact location is questionable particularly in drill holes with estimated azimuths.

TABLE I

MEASURED AZIMUTHS FROM DDH'S IN AREA B

DDH	AZIMUTH
84F-06	28
	22.5
	17
76X-14	38
	20
	16
	19
76X-09	24
	31
	30
	30.5
84F-03	28
	29
	55
84F-08	45
	28
	43
84F-22	77
	31
84F-21	37
	43
	44
84F-27	47
	35

$n = 24$
$m = 34^{o}$
$s = 13.7^{o}$

TABLE II

MEASURED AZIMUTHS FROM DDH'S IN AREA C

DDH	AZIMUTH
75-11	53
	35
	102
76X-11	49
	29
76-13	21
	50
	55
	61
84F-01	58
	59
	58
76-14	62
76-07	32
	42
	52
	69
84F-18	73
	76
84F-19	56
	50
	50
84F-20	49
	54
	57
76-12	101
	93
	82
	77
80-07	63
	78
	68
80-06	53
	68
84F-24	21
	36
	46
76X-20	103
	106
	95
76-09	86
	81
	73

DDH	AZIMUTH
84F-23	87
	77
	79
82F-11	53
	48
	49

$n = 49$
$m = 63^{\circ}$
$s = 21^{\circ}$

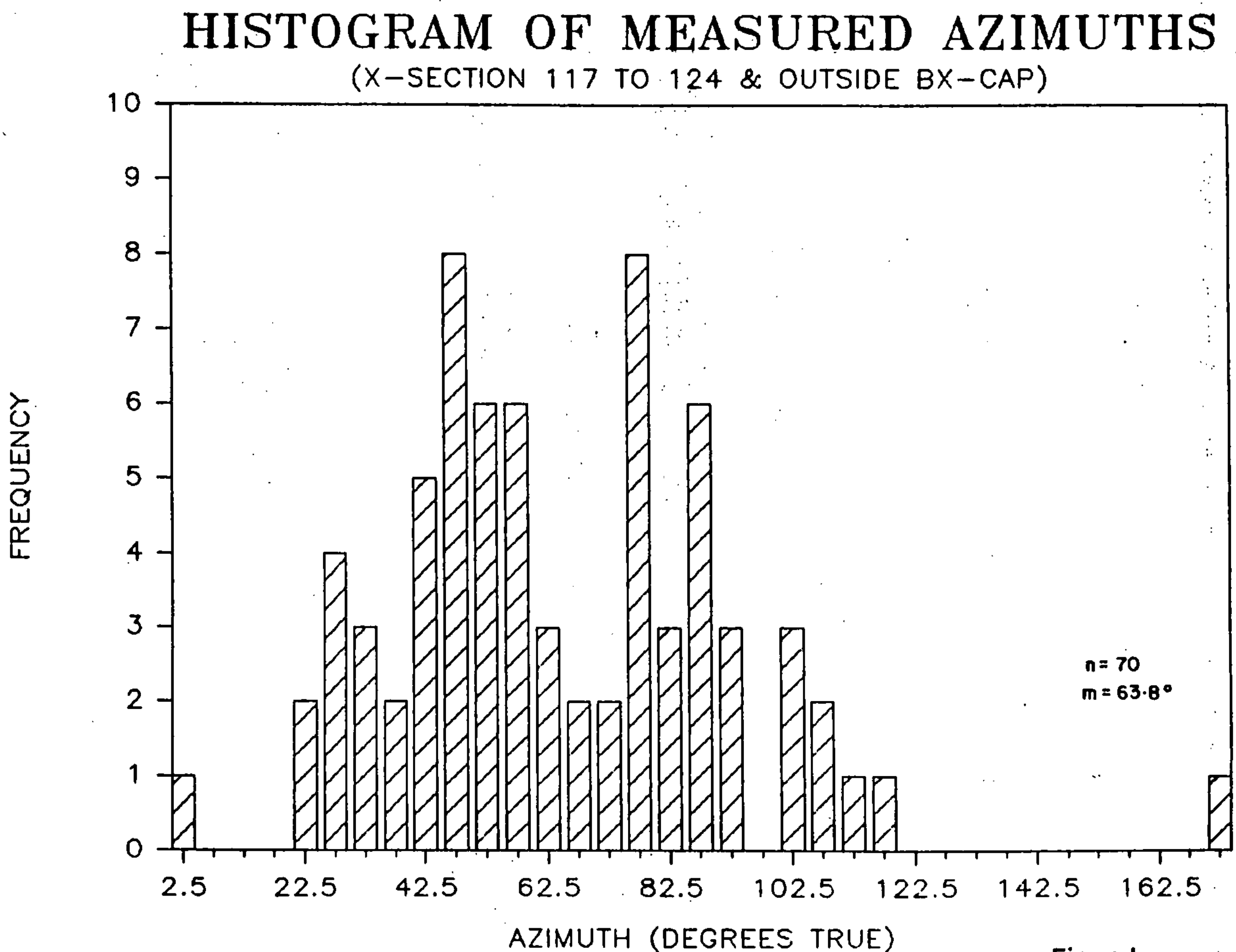

HISTOGRAM OF MEASURED AZIMUTHS
(X-SECTION 117 TO 124 & OUTSIDE BX-CAP)
FREQUENCY
0
1
2
3
4
5
6
7
8
9
10
2.5
22.5
42.5
62.5
82.5
102.5
122.5
142.5
162.5
AZIMUTH (DEGREES TRUE)
n = 70
m = 63.8°

Figure I

APPENDIX V

CYPRUS ANVIL MINING CORPORATION
ANVIL DISTRICT GEOLOGY DEPT.

From: *R.S. Tolbert* Date June 21, 1984

To Jim, Alain, Gregg, Carl

Attached are changes to the colour codes for DDH's and blastholes which are now in effect.

Please be aware to change DSJ legend of Nov. 81.

Thanks

Ron

GEOLOGICAL COLOUR CODES

DIAMOND DRILL HOLES UNIT	COLOUR CODE	BLASTHOLES UNIT	COLOUR CODE
2G0, 2G4	929	2GE	928
2H0, 2H4	931	2EH	931
2J88	933	2JK	906
2CE=2E1=2C3	915/922 slash	2CE	915/922 slash
2DE=2DE4=2D34	918/922 slash		
2E44, 2F4, 2J4	925	2EF	924
2E4, 2K4, 2F0	924		
2E0, 2K0	922	2E0	922
2D4	921		
2B4, 2D0	918	2BD	918
2B0	915		
2D45	921/-		
2B5, 2D5	918/-	2AD	942
2A4	942		
2C0	916	2CD	916
2C5	916/-	2AC	915/-
2A0	968	2A0	968

ALTERATION

UNIT	COLOUR CODE		BLASTHOLES UNIT	COLOUR CODE
4L0	914			
4L6-3G str.	914/908	(Chlôrite & stringers)		
4L14	914/924	(quartzose & sulphides)	4L0	914
4L2				
4L12				
4L124				
4L7	914/931	(pyrrhotite)		

OTHER ROCK UNITS

UNIT	COLOUR CODE	BLASTHOLES UNIT	COLOUR CODE
IE	965	IE/3E	965
10F	927	10F	927

Nb: /- means black slash

RST May 1984

APPENDIX VI

APPENDIX VI

Numeric Coding of Ore and Waste Lithologies for Computer Modelling - Faro Zone III

Coding of lithologies consists of 3 columns of numbers. The first column refers to horizon number (except for 9 which refers to waste lithologies) so there can be up to 8 ore horizons coded.

The second and third column refers to lithologies as follows:-

ORE LITHOLOGIES

	Column 1	Column 2 & 3
Unit 2 ore (undivided)	1-8	0 1
2 AO	1-8	1 1
2 BO	1-8	2 2
2 CO	1-8	3 3
2 DO	1-8	4 4
2 EO	1-8	5 5
2 FO	1-8	6 6
2 GO	1-8	7 7
2 HO	1-8	8 8
2 J &or K	1-8	9 9

Mixed or Interbanded Ore Types

2AC	1-8	13
2AD	1-8	14
2BCD	1-8	23
2BC	1-8	32
2BD	1-8	24
2CD	1-8	34
2CE (2E1, 2C3)	1-8	35
2EH	1-8	58
2EG	1-8	57
2AE	1-8	15
2CG	1-8	37
2C5	1-8	31
2EF	1-8	56

APPENDIX VI (contd)

WASTE LITHOLOGIES

UNIT 3

3Ao	-	930
3A Bx	-	931
3Do	-	932
3D Bx	-	933
3C, 3B, 3H	-	934
3C, 3B, 3H Bx	-	935
3E	-	936
3F	-	937
3I	-	938
3G	-	939

UNIT 1

1CD	-	910
1CD Bx	-	911
1Do	-	912
1Do Bx	-	913
1D4(2E)	-	914
1D4/2L	-	915
1Eo (1D2)	-	916
1Fo [1Ho]	-	917

UNIT 5

5AO	-	950
5B	-	951
5C, 5D, 5F	-	952
5E	-	953
5G	-	954

INTRUSIVE ROCKS

10A	-	980
10B	-	981
10C	-	982
10D	-	983
10E	-	984
10F	-	985
10G	-	986
10H	-	987
10I	-	988
10Q	-	989

OTHER CODES

OVERBURDEN - 996
AIR - 998
UNDETERMINED WASTE - 997
INTERNAL WASTE - 920 - (specifically for DDH coding for Mine Model)