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**SUMMARY of the
GEOLOGY, MINERAL INVENTORY
and RESERVES of the DY DEPOSIT
YUKON**

Curragh Inc.

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INTRODUCTION

One of five known lead-zinc deposits in the Anvil District, the Dy deposit is located 22 kilometres southeast of the Faro concentrator, 480 to 900 metres below the surface. The Dy deposit was discovered in 1976 by Cyprus Anvil Mining Corporation. The discovery hole (76X-21) was targeted to intersect favourable stratigraphy interpreted to exist at least 500 m below the surface. The hole was successful in intersecting several thick sulphide horizons over an interval from 513.6 m to 622.8 m. In the five years that followed, Cyprus Anvil drilled 52 holes in the vicinity of the deposit and produced two versions of a preliminary reserve calculation.

After acquiring the assets of Cyprus Anvil in 1985, Curragh Inc. (then Curragh Resources Inc.) completed an additional 21 drillholes at Dy. The holes were drilled between 1989 and 1991. The majority of the drillholes were drilled to test geotechnical conditions near proposed underground development. Nine drillholes were targeted to test and delineate parts of the Dy mineralized zone.

This document is an excerpt from Report WH9103 "Dy Deposit Mineral Inventory", dated December 1991. Some new information is included in this document as well. Report WH9103 presented a new structural interpretation for the deposit, based partly on the results of the above drilling, and presented a polygonal calculation of the mineral inventory based on all drilling completed to date. Detailed calculation sheets, maps, vertical sections, and drillhole assays were included in the Appendices at the end of that report. The assumptions used to derive the minable reserves have been added to this document and it has been updated to reflect the proposed central shaft access.

LOCATION AND ACCESS

The Dy property is located in the Anvil Range of central Yukon near the town of Faro, approximately 200 km northeast of Whitehorse. The Dy property is 6 km southeast of the Grum deposit on the southeast limit of the Vangorda Plateau (Figure 1). Ground elevations on the property range from 800 to 1175 m.

Access to the property can be gained by all weather roads from two directions. A secondary road from Faro southeast along Pelly River and northeast along Blind Creek can be used as can a road extending southeast from the Vangorda deposit. Access to Faro is via all weather highway or scheduled air service.

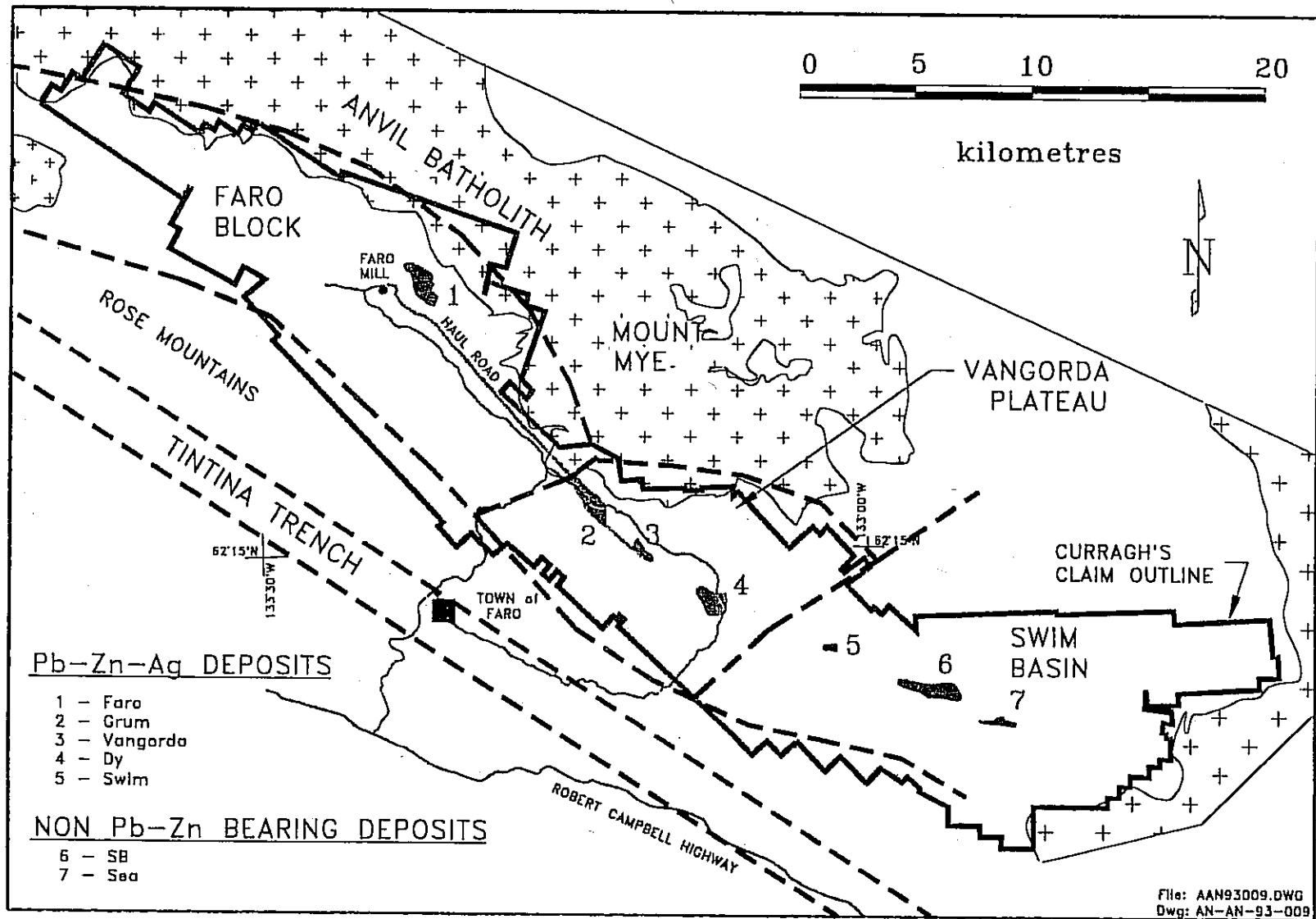


Figure 1. Location of the Dy Deposit (No. 4) Relative to the Other Zn-Pb-Ag Deposits of the Anvil District

GENERAL GEOLOGY

The Dy deposit is hosted by the same phyllites, and is at the same general stratigraphic position as all other Anvil District deposits. The Dy drillholes provide some of the best examples of Vangorda formation, and the Blind Creek road exposures above the Dy deposit are the type locality of the formation. The dominant lithology of the Vangorda formation at Dy is the usual medium to light greenish grey, strongly banded, calcareous metasedimentary phyllite which is so characteristic of that formation. At Dy there are also excellent examples of blocky, medium grained greenstones interlayered with the phyllites. Where the greenstones are thin they are strongly foliated medium olive green, chloritic phyllite, commonly calcareous, and contain quartz and calcite bands that appear to be foliation parallel veins. The greenstones are interpreted to be intrusive sills and show considerable alteration along both their margins. Adjacent to these greenstones, the grey Vangorda formation metasedimentary phyllite is altered to a banded, pale green, chlorite-muscovite-quartz-calcite phyllite, which, in advanced stages of alteration, can be very difficult to distinguish from the foliated sill margins, or, if the sills are thin, from the sill itself. Along the northeast margin of the deposit greenstone, chloritic phyllite, and the pale green chlorite-altered Vangorda formation metasedimentary phyllites are particularly abundant.

The Mt. Mye formation at Dy is also typical of its phyllitic variant elsewhere in the district. It is a medium grey, homogenous, strongly foliated, muscovite-chlorite phyllite which is typically non-calcareous and less distinctly banded than the Vangorda formation phyllite. In deeper holes biotite-muscovite schists of the Mount Mye formation have been intersected. In the deepest holes typical Mount Mye formation coarser grained calcite marble and calc-silicate have been intersected; this is "shut down" rock for the Dy deposit.

Carbonaceous phyllites are present at Dy in both the Vangorda and Mount Mye formations. Carbonaceous phyllite is more abundantly represented in the stratigraphic section toward the southwest edge of the deposit. This is similar to the situation at Vangorda and Grum.

The internal structure of Dy is relatively poorly understood because of lack of data. It is reasonable, however, to expect that the structural complexity of the other more densely drilled Vangorda Plateau deposits (Vangorda, Grum) also exists at Dy. There is evidence of at least five phases of deformation in the district. On Vangorda Plateau the first two are generally most significant in that they are penetrative and affect the overall shape and geotechnical characteristics of the mineralized zone and its host rocks. A well developed, moderately southwest dipping metamorphic cleavage (S_2) is generally subparallel to the sulphide layering. In the phyllite host rocks, S_2 is a well developed micaceous cleavage axial planar to second phase folds in layering. S_2 is generally the most important parting or plane of fissility in the rocks. This cleavage is an important geotechnical consideration for underground development, particularly where S_2 is cross cut by faults and joints. Within massive and disseminated sulphide horizons, S_2 (or S_1) is present as thin compositional bands. The sulphide rock types are generally competent

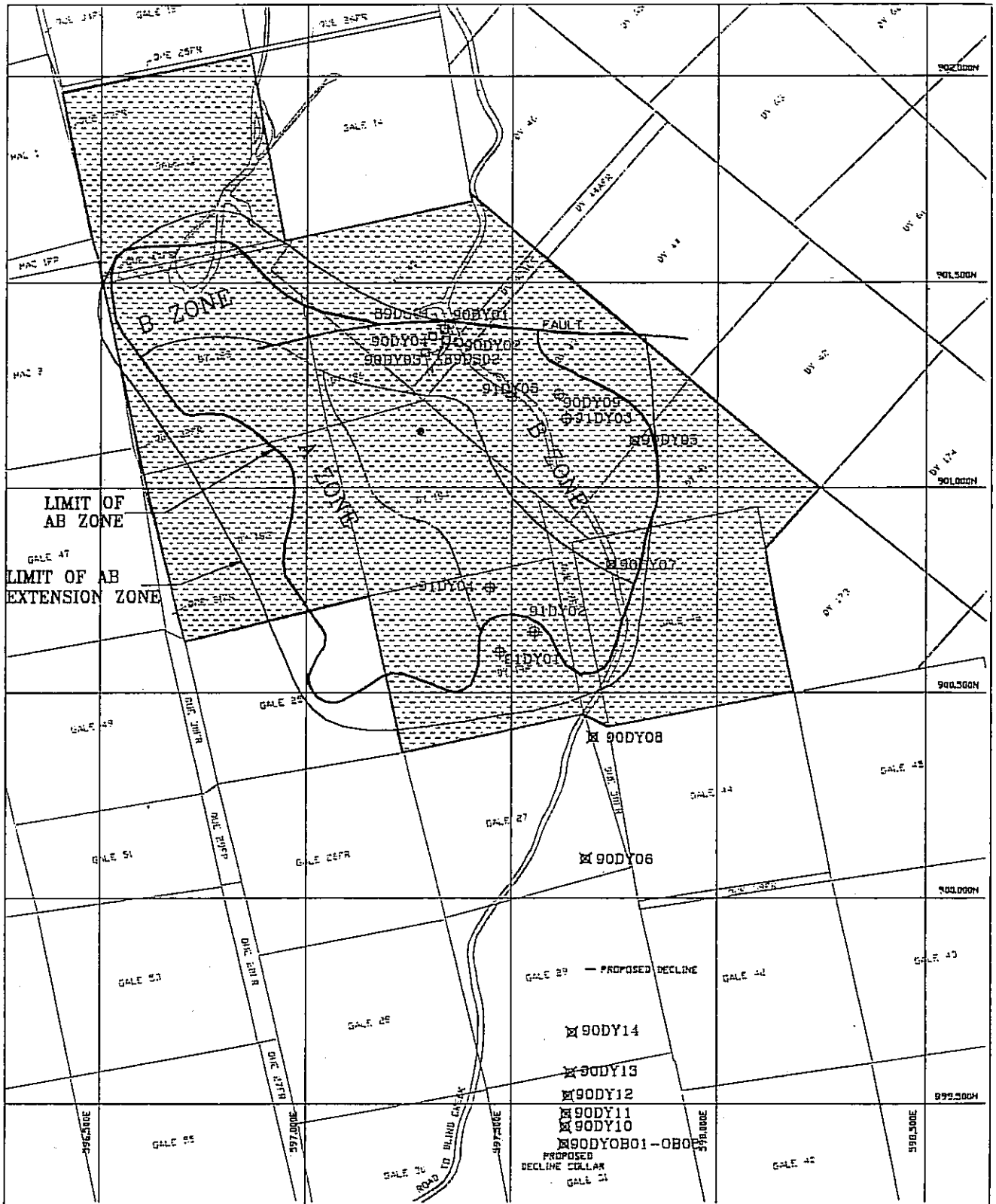
and the foliation does not represent a significant geotechnical concern. A possible exception to this generalization is due to local, carbonaceous partings along S_2 which impart a fissility to some lower grade disseminated sulphide bearing quartzites.

Metamorphic facies at Dy is mainly greenschist and all host rocks in the vicinity of the deposits are phyllites. The ores are the typical fine-grained sulphide assemblages of the other Vangorda Plateau deposits. As noted above, deeper holes have intersected amphibolite facies schists, but these are not generally associated with the sulphides.

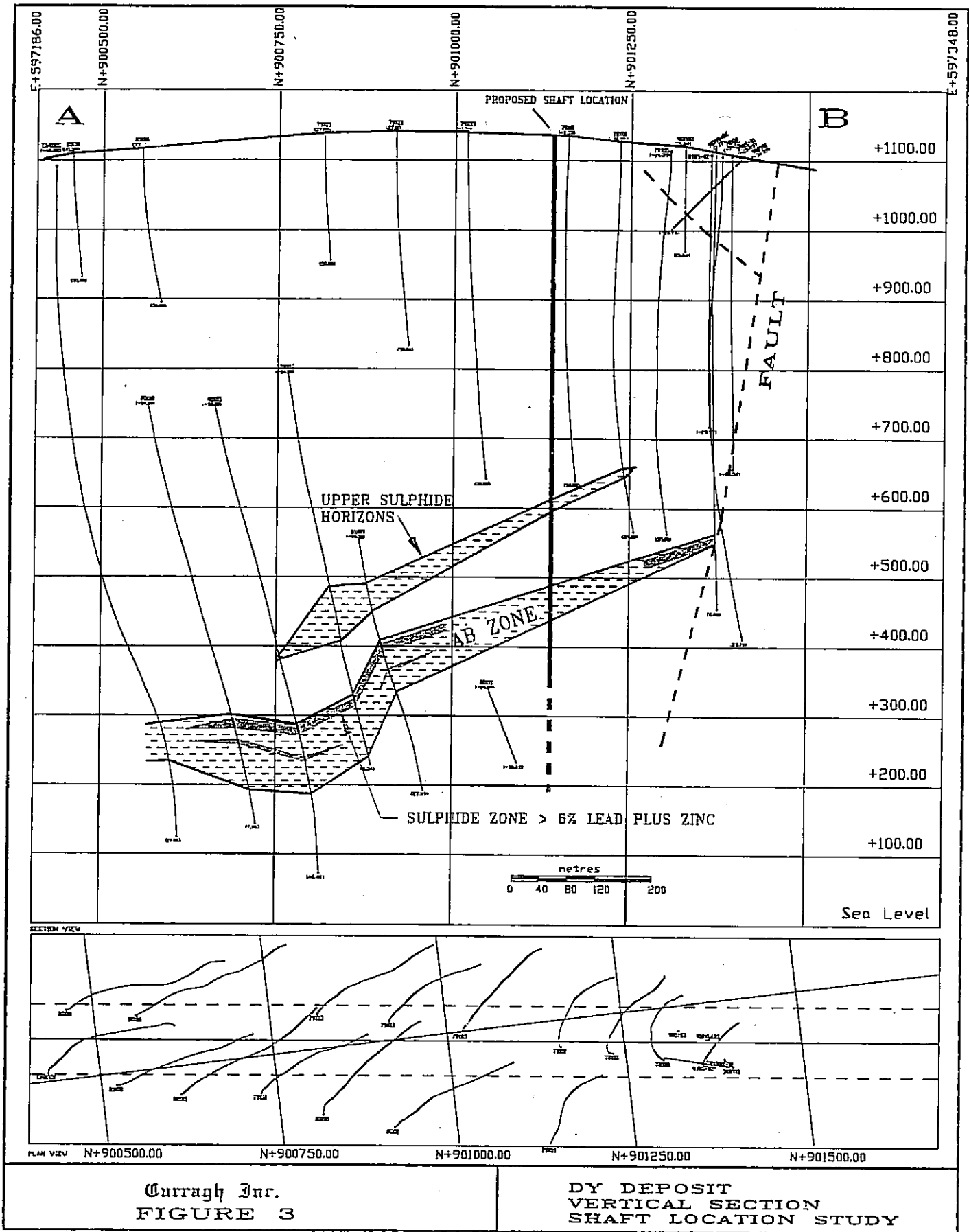
Several important post-metamorphic dykes are present at Dy. Most of the dikes are hornblende-bearing quartz diorite. Quartz-feldspar porphyry dykes are also present. The Dy dykes seem to combine features of both members of the Anvil Dyke Suite. These dykes are generally porphyritic and on the order of 10m to 30m thick. Most dykes with known orientations dip moderately toward the southeast. One set of hornblende diorite dykes, intersected by most holes above the sulphide deposit, has been interpreted to intersect the ore horizon at the east edge of the known Dy deposit. Because of this possible dike interference, drilling was not continued in that direction by Cyprus Anvil after one disappointing hole. This dyke rock is very competent and is a logical choice for a location of an upper shaft pump station.

There are numerous steep faults which cut the deposit and there are important, shallowly dipping faults present beneath the deposit. Many of these faults, especially the steeply dipping ones, contain significant clay/mud gouge, and the fractured zone adjacent to the fault is water bearing. The current drilling density precludes the possibility of resolving frequency of occurrence or orientation and displacement on most of these faults. Two important faults were detected in the 1990 hole drilled to test the shaft site proposed at that time. The upper one strikes northeast-southwest and dips moderately northwest. The lower fault is perhaps more significant in that it may truncate the ore zone along its northeast boundary (the straight portion of the outline northeast of DDH 90DY04 in Figure 2). It is suspected to strike east-northeast/west-southwest and dip steeply south (Figure 3).

Several shallowly dipping extensional faults are thought to exist beneath the deposit. These are represented by a strongly foliated carbonaceous phyllite with an augen texture and clasts of vein quartz and carbonated greenstone. Quartz porphyry dykes are associated with some of these low angle structures. The most important of these structures crops out in the headwaters of Dixon Creek, between Dy and Vangorda, and appears to have downdropped Dy from the up-plunge extension of Vangorda (now eroded), a separation of nearly 2,000m. The shallowly dipping faults are generally marked by intact fault rock and may not pose a significant geotechnical concern.



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| | | Curragh Inc. | | LEGEND: DECLINE DRILLHOLE COLLAR LOCATION INFILL DRILLHOLE COLLAR LOCATION SHAFT DRILLHOLE COLLAR LOCATION PROPOSED SHAFT LOCATION MINING LEASE |
| | REVISIONS: 03/06/93 | DY PROPERTY DY AREA - MINING LEASE | | |
| REPORT No: N/A FILE No: 2 DRAWN BY: CWR DATE: OCT 21 91 M.S.: 1020 CHECKED BY: FILE: DTHRMAP3 | | | | |



DEPOSIT GEOLOGY

The Dy deposit is similar to the other Anvil District deposits in that it is a multi-layered, polydeformed, sediment hosted sequence of exhalative, massive and disseminated pyritic sulphides. Sulphide layers are variably mineralized and commonly interbanded with metasedimentary and lesser metavolcanic or meta-intrusive phyllites. The enclosing rocks are muscovite-chlorite-quartz \pm calcite phyllites which are locally altered near the deposit, to pale coloured bleached muscovite \gg chlorite \pm quartz \pm pyrite phyllites.

The known mineralized zone ranges up to 200 m thick in aggregate, has a strike length of approximately 2200 m, and a width up to 1800 m. The horizons of the Dy deposit span a poorly defined transition zone from the Mt. Mye formation to the younger, calcareous Vangorda formation. The deposit is amoeboid shaped in plan view and is unusual for the Anvil District in that it has two distinct zones (Figure 2) of varying lead to zinc ratio; in the southwest, the A Zone which is relatively lead rich and, in the northeast, the B Zone which is relatively zinc rich. Between the A and B zones is a central area characterized by nearly barren massive pyrite, pyritic quartzite and semi-massive quartz bearing pyrite. This unit is significant as it is the target for shaft development into the centre of gravity of the ore deposit.

There are several sulphide lithofacies which comprise all of the Anvil District deposits. Two principal subdivisions exist; massive and disseminated pyritic sulphides. The proportion of each type varies from deposit to deposit. The distribution and proportion of each is not well known at Dy. Drilling to date indicates that the bulk of the higher grade material is massive sulphide, but some disseminated sulphide-bearing quartzites are also high grade. All rock code references in the following sections are to the old Cyprus Anvil lithostratigraphic code since all Dy drillholes are logged in this format.

Massive Sulphides

The dominant rock type in the massive sulphide lithofacies is massive pyritic sulphide (4E) which is gradational into barite bearing massive sulphide (4G). Massive pyritic sulphide consists of homogeneous to finely banded, usually weakly foliated, fine grained massive pyrite with lesser sphalerite and galena. Total sulphide content is at least 60%, generally greater than 80%, and commonly near 100%. Gangue consists of quartz \pm barite (less than 10%) \pm carbonates (calcite, dolomite, ankerite, siderite). Accessory minerals include pyrrhotite, magnetite, chalcopyrite, arsenopyrite and marcasite.

The baritic massive sulphides (4G) are a well banded rock consisting of alternating barite poor and barite rich bands on a scale of a few millimetres. Barite content is at least 10% and generally near 30%; rarely is there more than 50% barite by volume in this rock type. The baritic massive sulphides are usually high grade. They tend to be slightly more lead and silver rich than other rock types. The barite lithofacies commonly contains fine magnetite and less commonly is carbonate bearing.

Other less important massive sulphide lithofacies at Dy contain up to 70% pyrrhotite (4H), or up to 50% carbonate as flesh-coloured blebs or rounded clasts in barren pyrite (4K).

Disseminated Sulphides in Quartzite

The dominant rock type in the quartzose, disseminated sulphide lithofacies is ribbon banded graphitic quartzite (4A). This unit is dark grey to black, moderately hard to very hard, well banded, fine grained, sulphide bearing, carbonaceous, locally micaceous quartzite. Compositional bands usually range from 1 mm to 2 cm thick. The bands are alternating dark grey to black, very fine grained, locally micaceous quartzite interbanded with light grey to locally red-brown, fine grained, quartz-sulphide bands. Pyrite is usually the dominant sulphide species with lesser sphalerite and galena. Locally, lead-zinc sulphides, particularly light red-brown sphalerite, are dominant. Locally, pyrrhotite is present rather than pyrite but is only a minor constituent overall. Carbon content is normally within the $\frac{1}{4}$ to $\frac{1}{2}$ % range and generally occurs in thin coatings concentrated on cleavage surfaces.

Chalcopyrite occurs locally in traces as small blebs and infills of hairline fractures. Total sulphide content varies from 15% to 30% and may locally range up to 60%.

An important variant of the disseminated sulphides (4D where $> 4\%$ Pb+Zn, or 4C where $< 4\%$ Pb+Zn) is lighter coloured, deficient in carbon, less well banded and more sulphide (particularly pyrite) rich than the ribbon banded quartzites. Major sulphide minerals are pyrite, galena and sphalerite. Total sulphide content is generally in the range 30 to 60%. Gangue is quartz with lesser carbonate. Accessory minerals are magnetite, chalcopyrite and/or pyrrhotite. 4A is completely gradational to 4D/4C and some pyritic quartzites appear to be related to 4A by alteration involving decarbonation adjacent to greenstone sills/dykes.

Several types of altered phyllite (4L) are present at the Dy deposit. The most common are light greenish-grey chlorite muscovite phyllites with blebs of pyrrhotite and/or pyrite. More intensely bleached muscovite $>>$ chlorite phyllites are also common; locally these are siliceous and pyrite bearing. Intensely altered phyllites are particularly abundant toward the southwest edge of the Dy deposit.

MINERAL INVENTORY CALCULATION

Drillhole Database

The current mineral inventory calculation uses all previous drillhole information some of which was corrected prior to quantification.

In 1989 and 1990, Curragh Resources Inc. (CRI) drilled sixteen holes to test ground conditions at locations proposed for shaft and ramp access to the deposit. Four of these holes intersected the Dy deposit and returned high grade intersections from the B2 horizon.

Five additional delineation holes were drilled in 1991. Hole locations are given in Figure 2. Three holes, located to test the southeastern part of an upper horizon, failed to intersect high grade mineralization (i.e. 9% lead + zinc over 3.5 m), although the holes were not continued to test deeper horizons. Two holes targeted to intersect the B2 horizon were successful.

The new mineral inventory incorporates the 1990-1991 drill results.

All drillhole data in the vicinity of the Dy deposit was entered into a computer database using GEMCOM PCXPLORE database software. All data was visually verified and corrected as necessary including field and office checks on selected surveyed collar locations. Data includes all collar survey information, downhole survey information, downhole lithologies, assays (Pb, Zn, Ag, Au, Cu, BaSO₄, Fe_{sol}, Fe_{insol}, Pulp SG), and structural observations.

The locational information for Dy drill holes is in particularly good order since all collars have been surveyed and most downhole surveys have been done by gyroscopic methods to avoid magnetic interference.

| Table 1. Summary of Drill Holes | | |
|---------------------------------|-----------|---------------|
| Year | Number | Metres |
| Cyprus Anvil 1976 | 1 | 1,192 |
| 1977 | 11 | 12,175 |
| 1978 | 11 | 12,039 |
| 1979 | 17 | 18,999 |
| 1980 | 13 | 14,613 |
| 1981 | 3 | 3,222 |
| Sub-Total | 56 | 62,240 |
| Curragh 1989 | 2 | 2,214 |
| 1990 | 22 | 20,549 |
| 1991 | 5 | 5,426 |
| Sub-Total | 29 | 28,189 |
| GRAND TOTAL | 85 | 90,428 |

Calculation Method

Using the above database, vertical cross and longitudinal section drawings were plotted at 50 metre intervals at 1:1250 scale. Cross and long section grids are at azimuth 63° and azimuth 153° respectively. The orientation of the cross sections was chosen to be at right angles to the long dimension of the A Zone portion of deposit. The orientation of the section grid differs greatly from the earlier Cyprus Anvil exploration grid which was more closely perpendicular to the strike of the deposit and of the second phase lineation. The new section orientation reduces drillhole offset and projection problems; as a result the deposit appears to have better continuity.

The bulk of high grade mineralization was observed to occur largely in one thick layer termed the AB Zone. The AB Zone includes both the A2 and B2 horizons identified by Rollings (1982). The inventory calculated in this study are focused on the AB Zone. The AB Zone is not fully delineated by diamond drilling; an attempt has been made to quantify possible lateral extensions to the AB Zone

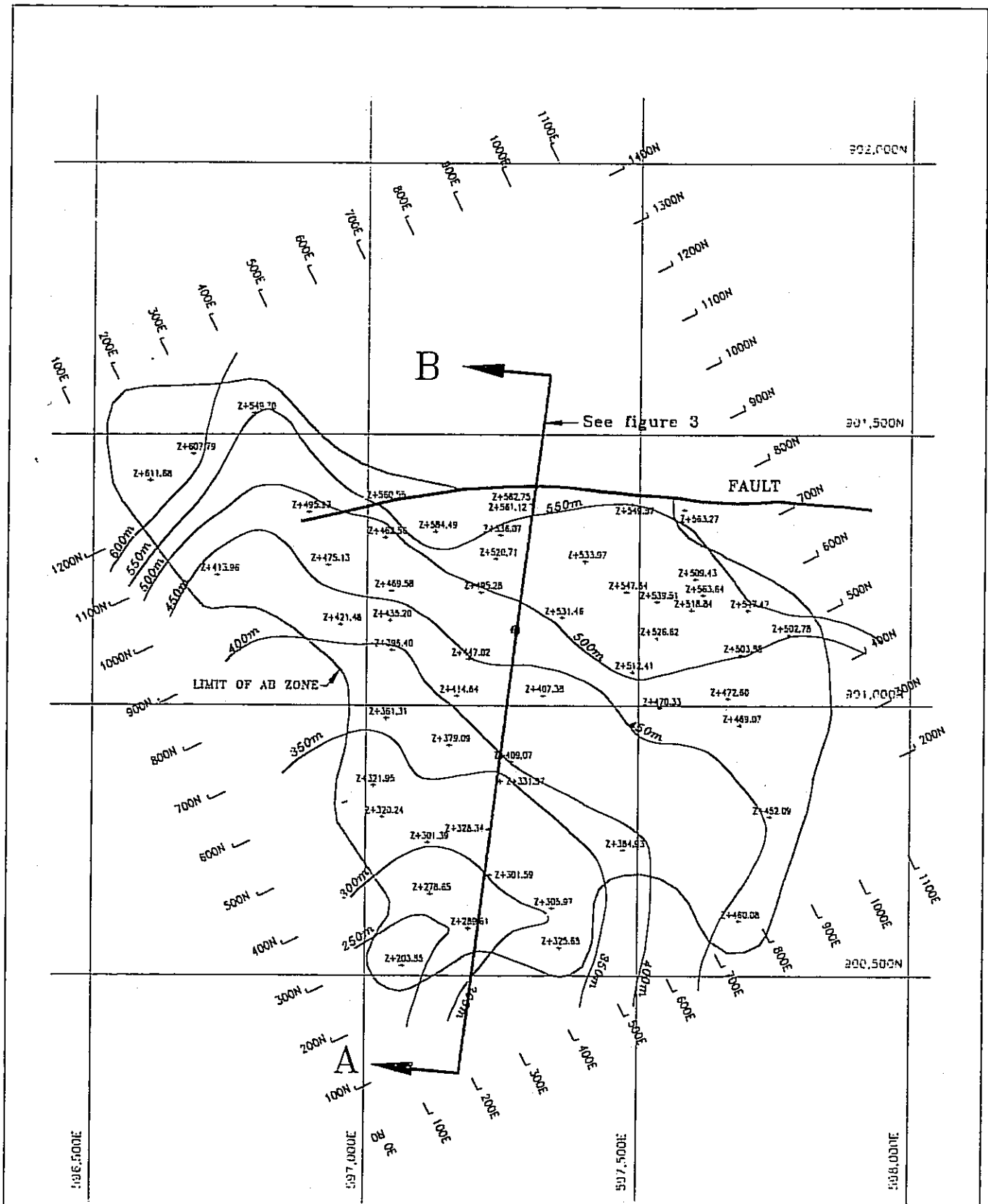
(termed the AB Extension Zone). Mineralization intersected above and below the AB zone possibly represents fold repeats, fault dislocations or lateral extensions of the layer, or additional separate layers. This material is considered as additional potential and is also separately quantified (as the above AB Zone and below AB Zone). The northeast portion of the AB Zone corresponds to the A-Zone mentioned previously; the west portion corresponds to the B-Zone.

The AB Zone

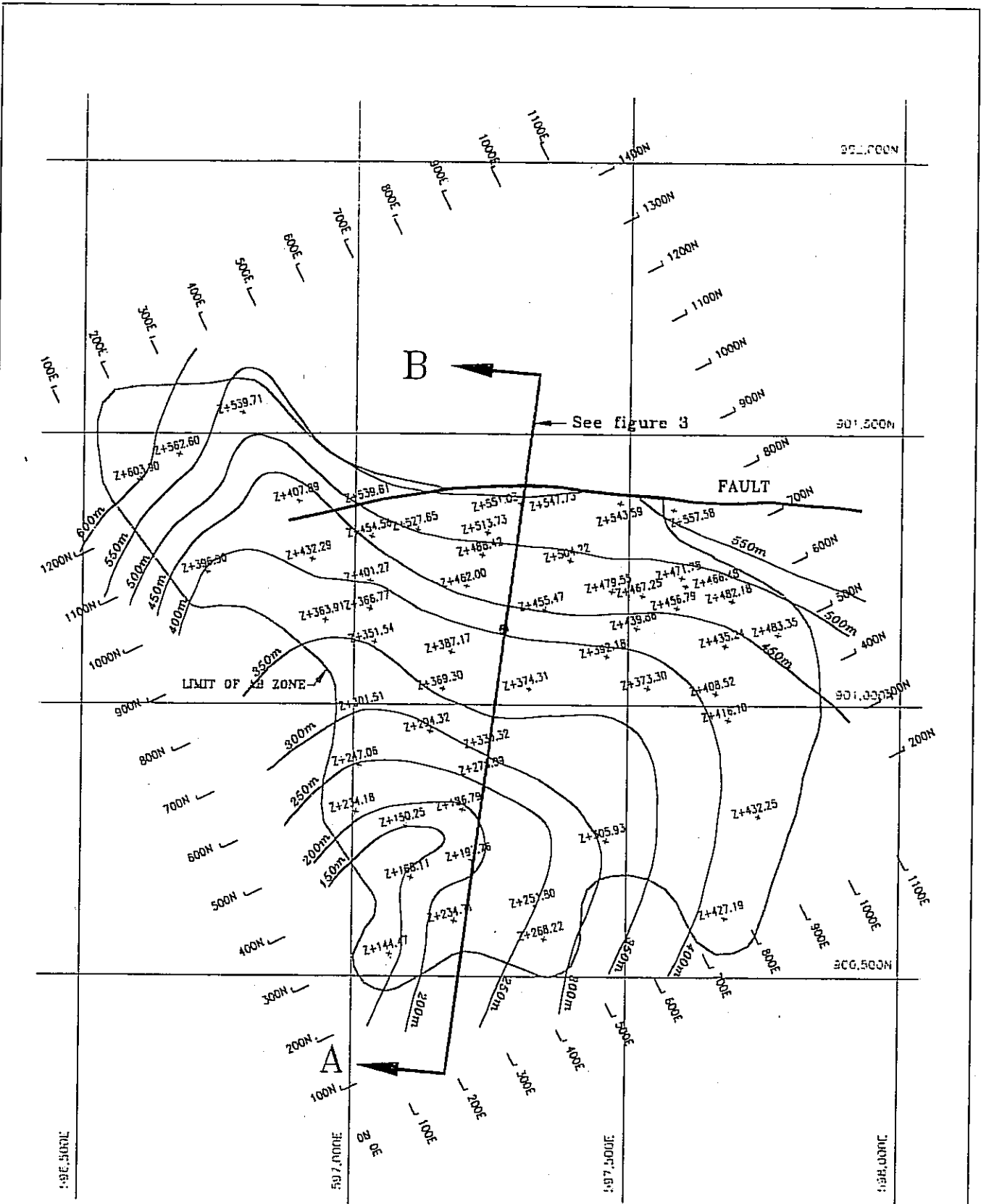
The AB Zone is a broad vertical interval consisting of sulphide rock types and/or altered rock, which collectively may be exhalite and/or chemical sediments. Some may simply be altered phyllitic wall rock. Lesser amounts of unmineralized, unaltered wall rock and intrusive are locally included. In a very general way the rocks above the AB Zone belong to Vangorda formation, and those below it to Mount Mye formation. The AB Zone thus corresponds approximately to the transition zone between the two formations, however, this is an oversimplification. One or more sulphide horizons variably enriched in lead and zinc are usually present.

It is important to realize that the AB Zone is a broad zone that hosts subordinate sulphide lenses; most of it is phyllite. In some places the lenses may be at the AB Zone hanging wall, and elsewhere at the footwall. Contours of the AB Zone hanging wall and footwall elevation are given in Figures 4 and 5, respectively. In general the zone dips southwest from 20 to 35°. The zone is up to 160 metres thick but is mostly 40 to 75 metres or less thick. The inventory within the AB Zone was calculated at Pb+Zn cutoffs of 6%, 8% and 9% over a minimum core length of 3.5 metres. Due to the angle of intersections between the drill holes and the mineralized horizons the core length closely approximates the true thickness of the mineralization.

Assay composites were calculated over a minimum core length of 3.5 metres. If a drillhole intersected more than one qualifying intersection separated by a waste zone greater than 3.5 metres thick, the waste zone was excluded from the composite. If thin internal waste intervals were present (generally less than 3.5 metres in length) they were included in the composite. Low grade or waste was included in some composites to establish a minimum 3.5 metre core length provided that the composited grade for the 3.5 metres was still greater than the cutoff. Composites were calculated by weighting each individual assay interval by its length. There was no consideration given for lost core recovery; however core recovery is generally very good. Due to software limitations there is only



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| <p style="text-align: center;">0m 150m 300m</p> <p style="text-align: center;">REVISIONS:</p> <p style="text-align: center;">04/06/93</p> | <p>Curragh Inc.</p> <p>DY PROPERTY</p> <p>AB ZONE HANGINGWALL CONTOURS</p> <p style="font-size: small;">N/A 4</p> <p style="font-size: x-small;">CVR 10543 10543</p> <p style="font-size: x-small;">ARCON733.DWG</p> | <p>LEGEND:</p> <p>Contour interval = 50m</p> <p>Contours are metres above sea level</p> <p>● PROPOSED SHAFT LOCATION</p> |
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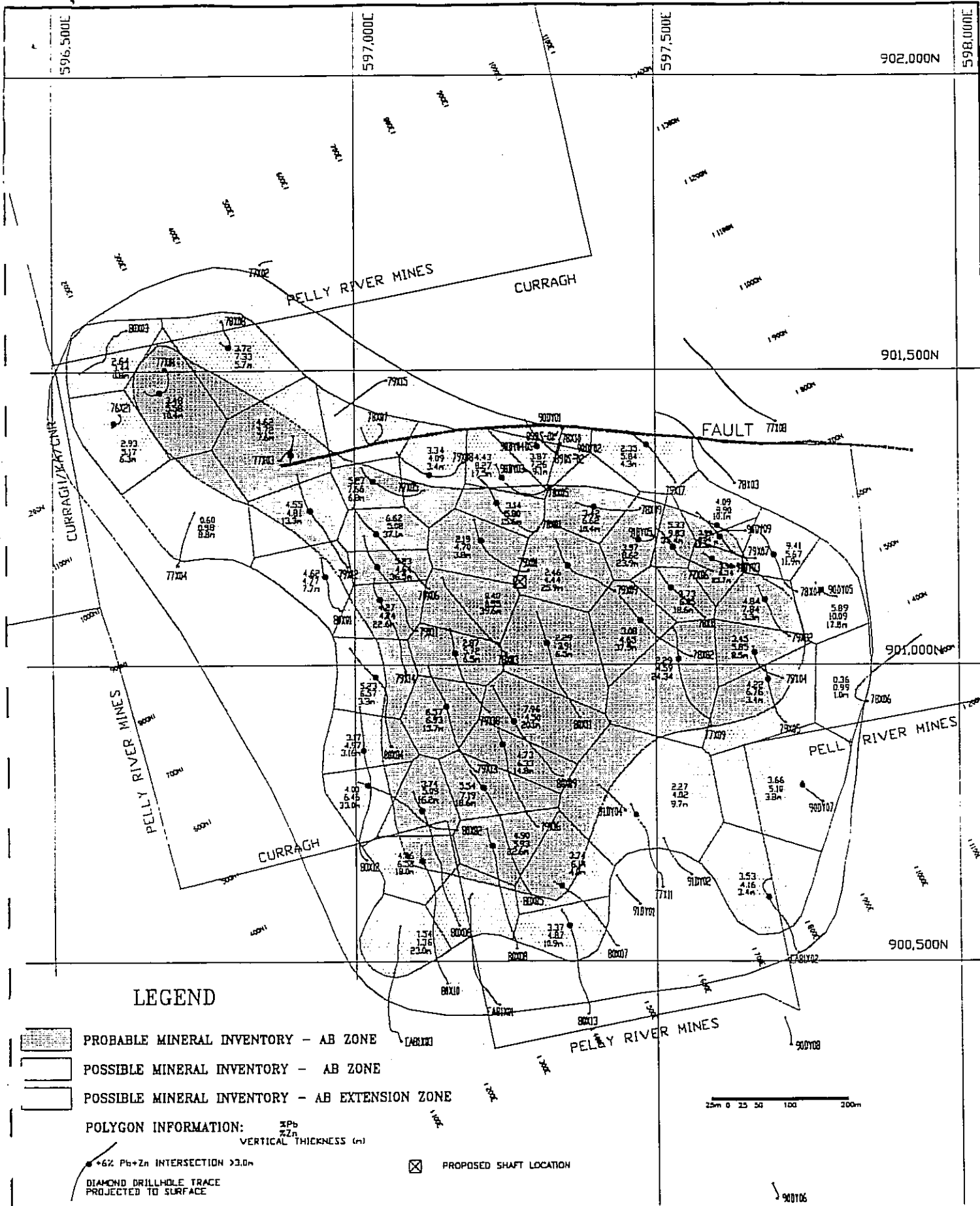
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| <p>0m 150m 300m</p> <p>REVISIONS:</p> <p>04/08/93</p> | <p>Curragh Inc.</p> <p>DY PROPERTY</p> <p>AB ZONE FOOTWALL CONTOUR</p> <p>Drawn by: N/A Date: 5</p> <p>Checked by: DVB Date: OCT 21, 91 Scale: 1:5000</p> <p>Project: ABCONTSA.DWG</p> | <p>LEGEND:</p> <p>Contour interval = 50m</p> <p>Contours are metres above sea level</p> <p>⊙ PROPOSED SHAFT LOCATION</p> |
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one composite allowed per drillhole. A number of drillholes had more than one qualifying intersection within the AB Zone; these were summed for the drillhole to make up one composite. The composite location plotted on Figures 6, 7 and 8 is the vertical projection of the centre of the total interval. This location will be slightly different for a given drillhole depending on what cutoff grade is used. The location of drillholes which did not intersect the mineralized zone were also plotted on each plan.

In plan, the area of influence of a drillhole intersection is considered to be halfway (maximum of 150 metres) to the adjoining drillhole where the deposit is reasonably defined by drilling. At the edges of the ore zone the area of influence was arbitrarily defined as 60m beyond the most outboard drillhole. Extensions of the AB Zone beyond the arbitrary 60m limit are likely, especially along the west and south edges of the drilling area, and an effort to quantify this material is made below. The outline of the AB Zone thus interpreted is shown on Figures 6, 7 and 8.

Polygon limits (Figures 6, 7 and 8) are defined by the perpendicular bisectors of lines drawn to nearby drillholes. Polygon limits were clipped against the interpreted outline of the AB Zone as defined above. Polygon areas are calculated in the horizontal plane. Polygon limits and areas were calculated and plotted using Gemcom's GEOMODEL software. Since composite locations vary slightly for each drillhole it will be noted that polygon areas also are slightly different for each drillhole depending on the cutoff grade.

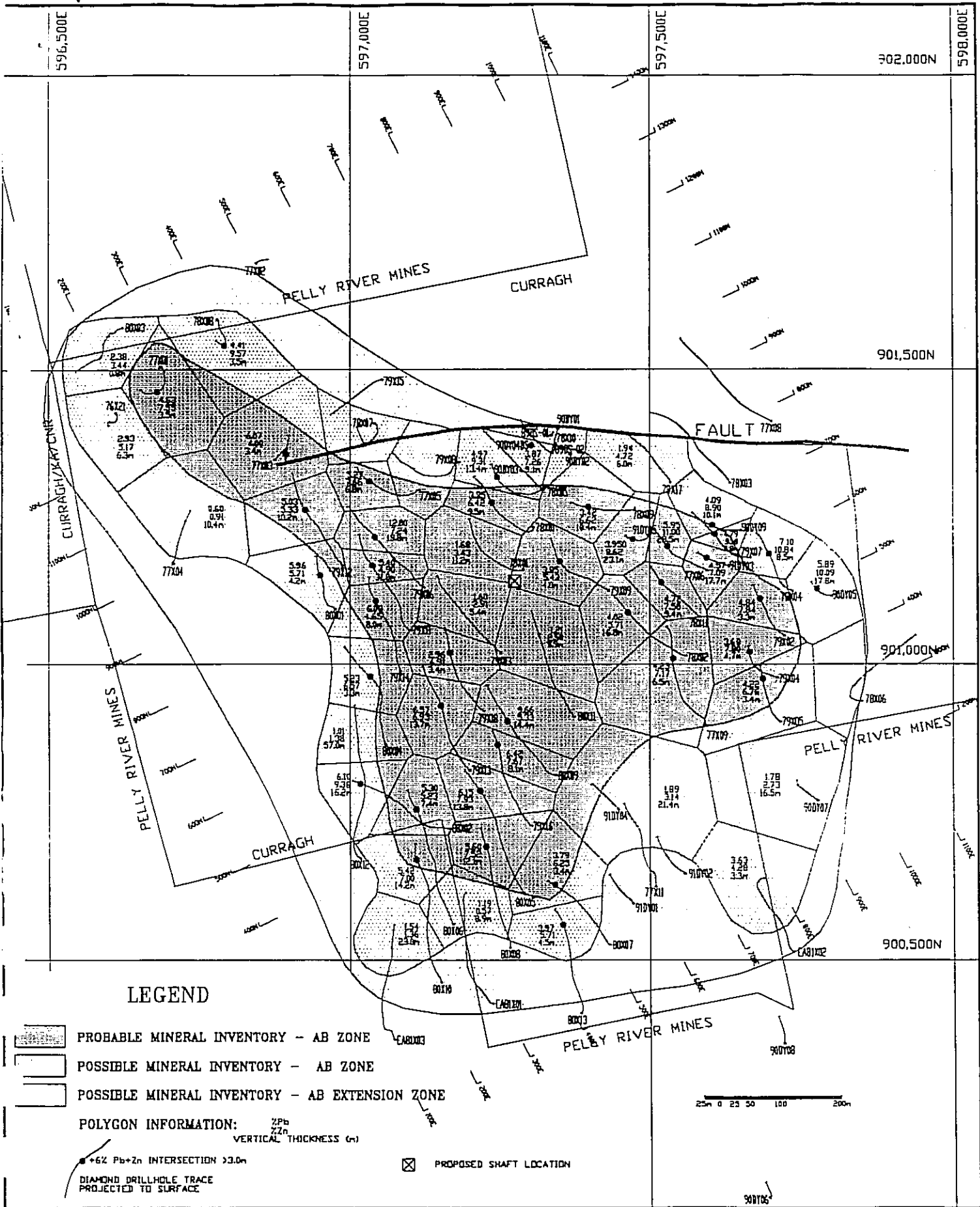
Polygon volumes were calculated by multiplying the vertical thickness of the composites by the polygon area. The vertical thickness for each composite is derived (by GEOMODEL) by attempting to correct for the deviation of each drillhole from vertical at the location of each composite centre; essentially GEOMODEL subtracts the elevation of the lower end of the composite from the elevation of the higher end. Vertical thickness is thus generally less than the composite length. In gently dipping orebodies, like Dy, the vertical thickness is generally slightly greater than true thickness. The exaggerated thickness is compensated for by measuring areas in the horizontal plane where they are slightly smaller by the same factor (cosine of dip) than they would be if measured in the plane of the orebody. This results in the volume calculated being a close approximation of the volume of the dipping ore layer. In the case of the Dy deposit, the software's misleading use of "vertical thickness" leads to a conservative volume since most drillholes, due to their great length, tend to deviate until they are close to perpendicular to S_2 and consequently also the ore layers; the composite lengths are thus relatively close to true



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FIGURE 6

DY DEPOSIT - MINERAL INVENTORY
POLYGONAL ESTIMATE
6% LEAD + ZINC CUTOFF



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FIGURE 8

DY DEPOSIT - MINERAL INVENTORY
POLYGONAL ESTIMATE
9% LEAD + ZINC CUTOFF

thicknesses and the conversion to "vertical thickness" by the GEOMODEL software reduces them rather than enlarging them.

Polygon volumes are converted to tonnage using a density of 3.92 tonnes/cubic metre for all ore types. This density is arrived at through examination of averages of pulp specific gravity data for composites at a 6, 8 and 9% Pb+Zn cutoff. To account for porosity of the in-situ rock the pulp specific gravity average was reduced by 2%. This reduction is based on experience at Faro with similar ores and is an empirical factor which gives a good fit between calculated ore tonnage and pit production tonnage as delineated by blastholes.

The AB Extension Zone

The outline of the AB Zone as defined above by the arbitrary 60m limit has an embayed appearance in the west and south due to a few more outboard holes. The vertical projection of deposit limits in the better known deposits of the district, such as Faro, tends to be smoother. An additional, more generous, deposit outline which extends projection of peripheral holes about 30% and smooths out irregularities in the AB Zone outline has been added to Figures 6, 7 and 8 where it is indicated to be the limit of the AB Extension Zone. This additional, possible, peripheral mineralization is highly subjective, it has been made somewhat more generous where bounding holes are too short or contain some sulphides and indications of fault complications (as in the north) or less generous in areas thought to have difficulties with dykes interfering with the ore zones (as in the east). The estimate of tonnage and grade for this area is made following the above procedures and using the composites described above but enlarging the area of influence for each drillhole to a radius large enough to reach the limit of the extension zone. The estimate is thus provided by the grade and thickness of the peripheral holes that have composites above cutoff grade. Since the zone is expected to thin gradually in this area the tonnage has been reduced by half.

Above and Below the AB Zone

There is additional mineralization above and below that assigned to the AB Zone. Some of this mineralization exceeds the grade/cutoff criteria however continuity of horizons could not be established as the intersections are singular or widely spaced. To reflect the potential that these intersections represent a calculation was made on the basis of a radius of influence of 50m and a thickness equal to the composite length. Composites were calculated as described previously. A specific gravity of 3.92 was used for all cutoffs.

Classification of Mineral Inventory

There are currently no underground openings at Dy; furthermore, drillhole spacing is not adequate to consider any portion of the deposit to be proven. The inventory was categorized as probable or possible based on the following criteria which are influenced greatly by experience with other Anvil District mineral deposits. In these deposits the mineralization in the interiors of the deposit is reasonably continuous on a broad scale although highly unpredictable in detail. Extrapolations of general thickness and tenor along the deposit grain of 60 to 150m are not unreasonable. Extrapolations across the grain, however, show more limited success and approximately 30m is reasonable.

Extensive experience in the Faro and Vangorda deposits shows that, in an open pit context, an average drillhole spacing of at least 30.5m (ideally on a 15 to 23m by 30 to 43m grid basis) is required to confidently and accurately define deposit structure, tonnage and grade.

Experience with Faro, Vangorda and Grum shows that drillhole spacings as broad as 60m by 120m are adequate to broadly outline global deposit tonnage and grade although much refinement is required for local confidence. The edges of deposits are more difficult to estimate. Based on these observations the following definition of probable and possible was developed.

Probable mineralization is that in a sulphide horizon which can be correlated with reasonable confidence and is delineated both up and down dip and along strike by diamond drilling or is limited by a well known structural or topographic discontinuity. The range of extrapolation within the zone can be justified by comparison to other deposits of similar nature in the same region.

In plan view this criteria results in restricting the probable material to that within a limit inside of the last peripheral hole in the drill array. That limit is shown on Figures 6, 7 and 8.

Possible mineralization is the result of a quantitative estimate based on widely spaced drillholes and largely on broad knowledge of the geological character of the deposit and similar nearby deposits. The continuity of mineralization is not necessarily confirmed up or down dip or along strike by drillholes or other sample points.

As applied to the Dy deposit this criteria results in all mineralization beyond the probable inventory limit described in the previous section and all mineralization above or below the AB Zone being classified as possible.

Results

The results of the mineral inventory estimation for the individual zones of the Dy deposit and the total deposit are provided in Tables 2 through 6. Results in all cases are presented for 6, 8 and 9% Pb+Zn sample cutoffs. In all cases the figures quoted are for undiluted, in-situ material. Since the material cannot necessarily be extracted as delineated it is not considered a reserve.

AB Zone

Table 2 gives the result of the estimate for probable and possible material within the limit of the AB Zone defined by the arbitrary 60m extrapolation limit on Figures 6, 7 and 8 (i.e. within the inner two more densely stippled areas on those figures).

AB Extension Zone

Table 3 provides the result for the quantification of peripheral mineralization around the AB Zone. Specifically this includes the material in the outermost, sparsely stippled area, on Figures 6, 7 and 8. All this mineralization is considered possible and is considered less firmly defined than the possible mineralization.

Above and Below the AB Zone

Quantities of mineralization above and below the AB Zone are tabulated on Table 4. The Above AB Zone mineralization is based on scattered intersections that tend to occur just east or northeast of the A Zone. The Below AB Zone mineralization occurs in scattered intersections just southwest of the B Zone. All this mineralization is classified as possible and is comparable in certainty to the AB Extension Zone. Further underground drilling may elevate this material to proven and probable ore locally.

Total Deposit Summary

A summary of all zones for the total deposit is provided in Table 5.

TABLE 2. Mineral Inventory for AB Zone, Dy Deposit In-situ - Undiluted

| | <u>Tonnes</u> | <u>%Pb+Zn</u> | <u>%Pb</u> | <u>%Zn</u> | <u>Ag (g/mt)</u> | <u>Au (g/mt)</u> |
|------------------------|-------------------|---------------|-------------|-------------|------------------|------------------|
| 6% Pb+Zn Cutoff | | | | | | |
| Probable | 24,949,000 | 9.70 | 4.21 | 5.49 | 63.0 | 0.67 |
| Possible | <u>10,348,000</u> | <u>10.43</u> | <u>4.01</u> | <u>6.42</u> | <u>61.3</u> | <u>0.62</u> |
| Total | 35,297,000 | 9.91 | 4.15 | 5.76 | 62.5 | 0.60 |
| 8% Pb+Zn Cutoff | | | | | | |
| Probable | 14,895,000 | 12.06 | 5.43 | 6.63 | 80.0 | 0.87 |
| Possible | <u>6,720,000</u> | <u>12.59</u> | <u>4.84</u> | <u>7.75</u> | <u>73.4</u> | <u>0.80</u> |
| Total | 21,705,000 | 12.23 | 5.25 | 6.98 | 78.0 | 0.84 |
| 9% Pb+Zn Cutoff | | | | | | |
| Probable | 13,133,000 | 12.58 | 5.71 | 6.87 | 83.1 | 0.86 |
| Possible | <u>5,389,000</u> | <u>13.62</u> | <u>5.26</u> | <u>8.36</u> | <u>78.2</u> | <u>0.85</u> |
| Total | 18,522,000 | 12.88 | 5.58 | 7.30 | 81.7 | 0.85 |

TABLE 3. Mineral Inventory for the AB Extension Zone, Dy Deposit In-situ, Undiluted, Possible Mineralization

| | <u>Tonnes</u> | <u>%Pb+Zn</u> | <u>%Pb</u> | <u>%Zn</u> | <u>Ag (g/mt)</u> | <u>Au (g/mt)</u> |
|-----------------|---------------|---------------|------------|------------|------------------|------------------|
| 6% Pb+Zn Cutoff | 3,746,000 | 10.30 | 4.07 | 6.23 | 61.9 | 0.63 |
| 8% Pb+Zn Cutoff | 2,094,000 | 13.39 | 5.28 | 8.11 | 79.4 | 0.94 |
| 9% Pb+Zn Cutoff | 1,904,000 | 13.92 | 5.52 | 8.40 | 82.0 | 0.98 |

TABLE 4. Mineral Inventory Above and Below the AB Zone, Dy Deposit In-situ, Undiluted Possible Mineralization

| | <u>Tonnes</u> | <u>%Pb+Zn</u> | <u>%Pb</u> | <u>%Zn</u> | <u>Ag (g/mt)</u> | <u>Au (g/mt)</u> |
|------------------|----------------|---------------|-------------|-------------|------------------|------------------|
| 6% Cutoff | | | | | | |
| Above | 1,828,800 | 7.77 | 3.81 | 3.96 | 50.6 | 0.36 |
| Below | <u>683,500</u> | <u>9.05</u> | <u>3.60</u> | <u>5.45</u> | <u>58.9</u> | <u>0.56</u> |
| Total | 2,512,300 | 8.12 | 3.75 | 4.37 | 52.9 | 0.41 |
| 8% Cutoff | | | | | | |
| Above | 606,500 | 10.27 | 4.96 | 5.31 | 65.2 | 0.74 |
| Below | <u>541,900</u> | <u>9.78</u> | <u>3.91</u> | <u>5.88</u> | <u>62.9</u> | <u>0.63</u> |
| Total | 1,148,400 | 10.04 | 4.46 | 5.58 | 64.1 | 0.69 |
| 9% Cutoff | | | | | | |
| Above | 606,500 | 10.27 | 4.96 | 5.31 | 65.2 | 0.74 |
| Below | <u>323,300</u> | <u>10.78</u> | <u>4.50</u> | <u>6.29</u> | <u>74.9</u> | <u>0.89</u> |
| Total | 929,800 | 10.45 | 4.80 | 5.65 | 68.6 | 0.79 |

**TABLE 5. Dy Deposit Summary of Mineral Inventory for Entire Deposit
In-situ, Undiluted**

| | <u>Category</u> | <u>Tonnes</u> | <u>%Pb+Zn</u> | <u>%Pb</u> | <u>%Zn</u> | <u>Ag (g/mt)</u> | <u>Au (g/mt)</u> |
|------------------|-------------------|-------------------|---------------|-------------|-------------|------------------|------------------|
| 6% Cutoff | | | | | | | |
| AB Zone | Probable | 24,949,000 | 9.70 | 4.21 | 5.49 | 63.0 | 0.67 |
| AB Zone | Possible | 10,348,000 | 10.43 | 4.01 | 6.42 | 61.3 | 0.62 |
| AB Extension | Possible | 3,746,000 | 10.30 | 4.07 | 6.23 | 61.9 | 0.63 |
| Above & below AB | Possible | <u>2,512,000</u> | <u>8.12</u> | <u>3.75</u> | <u>4.37</u> | <u>52.9</u> | <u>0.41</u> |
| Subtotal | Probable | 24,949,000 | 9.70 | 4.21 | 5.49 | 63.0 | 0.67 |
| Subtotal | Possible | <u>16,606,000</u> | <u>10.05</u> | <u>3.98</u> | <u>6.07</u> | <u>60.2</u> | <u>0.59</u> |
| Grand Total | Probable+Possible | 41,555,000 | 9.84 | 4.12 | 5.72 | 61.9 | 0.65 |
| 8% Cutoff | | | | | | | |
| AB Zone | Probable | 14,985,000 | 12.06 | 5.43 | 6.63 | 80.0 | 0.87 |
| AB Zone | Possible | 6,720,000 | 12.59 | 4.84 | 7.75 | 73.4 | 0.80 |
| AB Extension | Possible | 2,094,000 | 13.39 | 5.28 | 8.11 | 79.4 | 0.94 |
| Above & below AB | Possible | <u>1,148,000</u> | <u>10.04</u> | <u>4.46</u> | <u>5.58</u> | <u>64.1</u> | <u>0.69</u> |
| Subtotal | Probable | 14,985,000 | 12.06 | 5.43 | 6.63 | 80.0 | 0.87 |
| Subtotal | Possible | <u>9,962,000</u> | <u>12.47</u> | <u>4.89</u> | <u>7.58</u> | <u>73.6</u> | <u>0.82</u> |
| Grand Total | Probable+Possible | 24,947,000 | 12.22 | 5.21 | 7.01 | 77.4 | 0.85 |
| 9% Cutoff | | | | | | | |
| AB Zone | Probable | 13,133,000 | 12.58 | 5.71 | 6.87 | 83.1 | 0.86 |
| AB Zone | Possible | 5,389,000 | 13.62 | 5.26 | 8.36 | 78.2 | 0.85 |
| AB Extension | Possible | 1,904,000 | 13.92 | 5.52 | 8.40 | 82.0 | 0.98 |
| Above & below AB | Possible | <u>929,800</u> | <u>10.45</u> | <u>4.80</u> | <u>5.65</u> | <u>68.6</u> | <u>0.79</u> |
| Subtotal | Probable | 13,133,000 | 12.58 | 5.71 | 6.87 | 83.1 | 0.86 |
| Subtotal | Possible | <u>8,223,000</u> | <u>13.33</u> | <u>5.27</u> | <u>8.06</u> | <u>78.0</u> | <u>0.87</u> |
| Grand Total | Probable+Possible | 21,356,000 | 12.87 | 5.54 | 7.33 | 81.1 | 0.87 |

Discussion of Inventory

Polygonal calculations are widely recognized to have significant short comings in estimating tonnage and grade of sparsely drilled deposits. This is due to what is essentially a force fitting of the grade distribution for large ore blocks so that it is the same as that of the assay composites. The assay composite population will contain more extreme values than the ore block population which will tend to result in a higher average value above a given cutoff grade from the polygonal calculation than will actually occur in nature. The degree of overestimation has been variously estimated at approximately 10% but, of course, depends on actual grade distributions. The phenomena is known to occur in Anvil District deposits but has not been quantified.

Intuitively it can be appreciated that the polygonal calculation cannot be realistic since it is inherent in the assumptions that the grade of an assay composite can be extrapolated over great distances. A proper range of influence for a drillhole assay composite in any of the Anvil District deposits has not yet been satisfactorily worked out. Preliminary information, however, suggests it may be 30m or less across the deposit grain and twice that along the grain. Experimental semi-variograms at Faro and Vangorda suggest the range may be even smaller than this for drillcore assays. This raises the essential question: "given that it is reasonable to extrapolate ore zones from hole to hole over distances as great as 200m, is it then logical to attempt to weight the grade of ore 100m from a drillhole with the value of assays from that hole if everything indicates the likely range of that hole is well under 30m?". The answer to this question would seem to be no.

An alternative is to assume that the drillholes all have equal weight and to arrive at an average grade for the deposit as the arithmetic average of the grades of all the drillholes in the deposit. This has been done for the AB Zone at an 8% Pb+Zn cutoff giving an even higher grade than the polygonal method. It would appear that the method of global averaging does nothing to refute the applicability of the polygonal calculation; other more complicated calculations have not been attempted. There, of course, remains a possibility that the polygonal calculation will overestimate the inventory, however this may be balanced by the conservatism inherent in the treatment of vertical thickness.

Table 6 compares the results of the 1991 Mineral Inventory to previous work. This table shows that the comparison for tonnage and grade is reasonably good at the 9% cutoff grade. Because of differences in interpreted outline, the AB Zone limit is larger than the limits used previously, but extra tonnage here is compensated by less generous treatment of the Above and Below AB intersections in the 1991 work.

The sensitivity of tonnage to cutoff grade is quite notable. This is due to incorporating more disseminated rock types into the reserve at the lower cutoffs. This sensitivity shows that lower mining costs and, in particular, lower transportation costs to the Faro mill, will pay off not only in greater profits but significant reserve increases.

TABLE 6. Comparison of 1991 Mineral Inventory to Previous Work

| Calculation | Cutoff (%Pb+Zn) | Tonnes | % Pb | % Zn | Pb+Zn | Ag (g/mt) | Au (g/m) |
|----------------------|--------------------|------------|------|------|-------|--------------|-------------|
| CRI 91 | 6 | 41,555,000 | 4.12 | 5.72 | 9.84 | 61.9 | 0.58 |
| CRI 91 | 8 | 24,947,000 | 5.21 | 7.01 | 12.22 | 77.4 | 0.85 |
| CRI 91 | 9 | 21,356,000 | 5.54 | 7.33 | 12.87 | 81.1 | 0.87 |
| Cyprus Anvil Hall 81 | 9 | 21,334,127 | 5.68 | 6.95 | 12.63 | 81.6 | n/a |
| " " Rollings 82 | 9 | 21,059,980 | 5.54 | 6.74 | 12.28 | 83.77 | 0.95 |
| Kilborn 89 | 9 | 20,114,825 | 5.47 | 6.77 | 12.44 | 84.5 | 0.91 |

EXPLORATION POTENTIAL

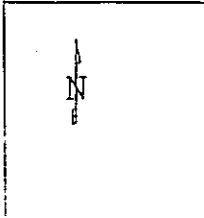
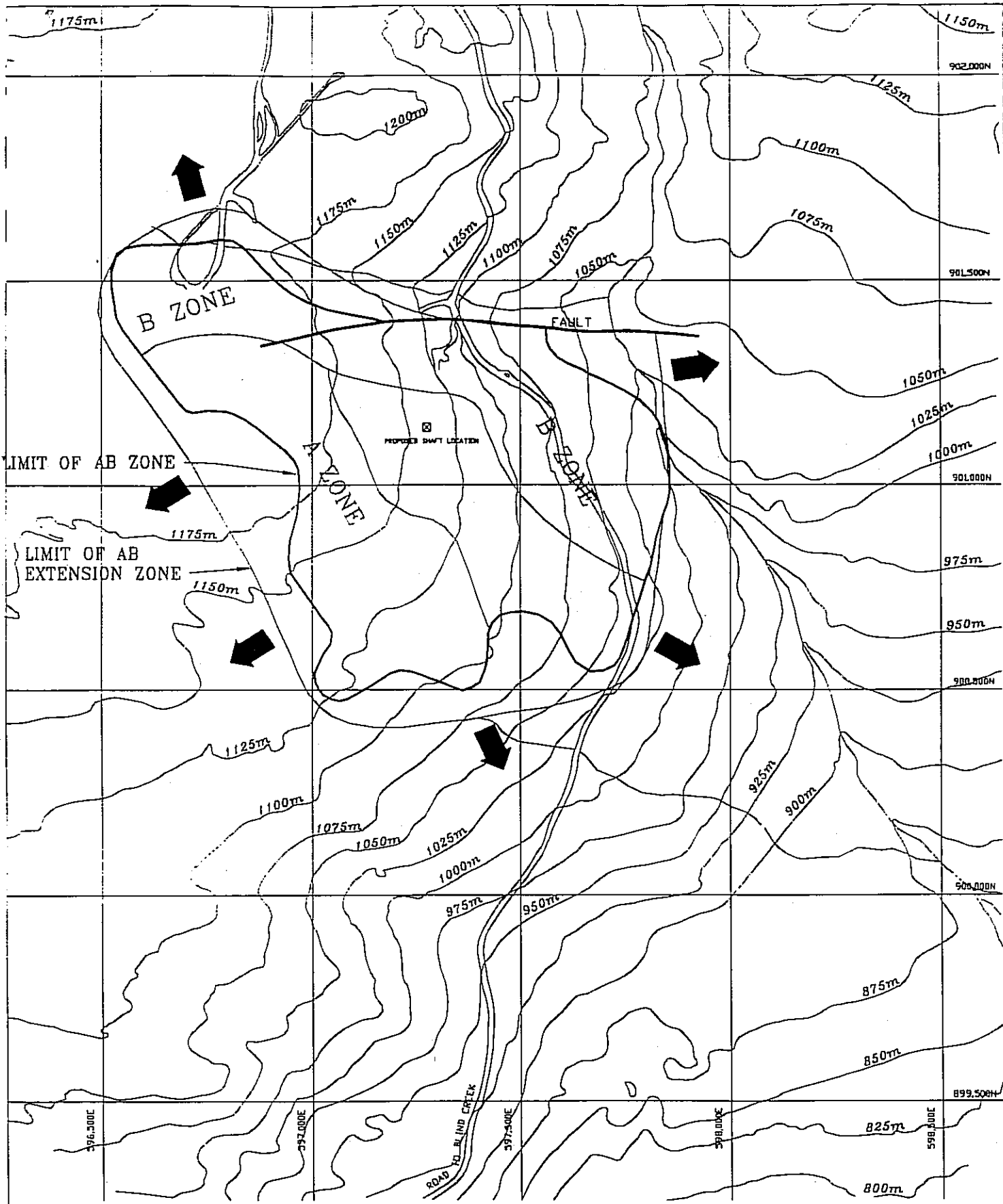
There is considerable potential to extend the deposit by additional stepout drilling. The deposit is closed off by drilling only locally (Figure 9) and it is likely that additional mineralization will be found.

Exploration should proceed to the east of the deposit at least as far as the fault paralleling Blind Creek (not indicated on figures) since some of the peripheral intersections in that area are quite good and drilling in that direction was terminated by Cyprus Anvil because of concern over shallowly dipping dykes or sills interfering with the ore horizons.

Additional stepout drilling will be required to the west and south of the deposit. These areas are deep and larger drills than used to date will be required. This area is of lower priority as this part of the deposit could only be brought into production late in the likely mine life.

In order to quantify the potential additional mineralization that might be added to the Dy deposit, it has been hypothesized that along each of the south and east margins, a 200m further extension is possible along a 600m length of the deposit. No allowance has been made beyond the AB Extension Zone on the north or west because structural complications related to faults are expected in those directions. If average thickness is 5 to 6 metres, this would represent approximately an additional 5 million tonnes of potential mineralization. Approximately 12 holes 600 to 1100m deep (a total of 10,500m or approximately \$1.6 million) would be needed to test this area.


There has been considerable speculation over a second deposit approximately one or two km to the north of the Dy beneath the thick sequence of mafic igneous rich Vangorda formation preserved there. These concepts should be evaluated by deep drilling in that area.



| | | |
|------------|------|------|
| 0 | 250m | 500m |
| REVISIONS: | | |
| 04/06/93 | | |

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|------------------------------|-------------------|----------|-----------|
| Curragh Inc. | | | |
| DY PROPERTY | | | |
| EXPLORATION POTENTIAL | | | |
| REPORT No: | N/A | FIG. No: | 9 |
| DRAWN BY: | C.V.R. | DATE: | OCT 21 91 |
| DRAWING NO: | FILE: DYMRAID.DWG | M.T.S. | 10563 |

LEGEND:



ARROW INDICATES EXPLORATION POTENTIAL

Within the area already drilled much additional drilling will be needed to upgrade confidence in the mineral inventory and further define structure.

Consideration should be given to use of deep penetrating Telluric EM to evaluate its possible use as a guide to locating stepout holes in the future. Borehole geophysics may be worth trying. In light of the highly graphitic environment to the south and southwest of the deposit it may not be helpful there.

MINABLE RESERVE

There have been several preliminary studies of mining of the Dy deposit, including a study by Wright Engineers in 1978 for Cyprus Anvil (very early in the understanding of the deposit), Canadian Mine Development in 1988, and Fox Geological in 1992, both for Curragh. These studies tended to focus on variants of room and pillar mining, and predicted mining recoveries of 75% without backfill, or even higher if backfill were used.

Experience at Faro underground suggests that recovery of 65% of the preliminary mineral inventory is reasonable and justified. Kilborn calculated in-situ mineral inventory of 2.61 million tonnes for the Faro underground, and 1.78 million tonnes was actually recovered by the room and pillar mining method. The Faro underground is similar in style to the second phase fold limbs at Dy. Higher recovery and lower dilution would probably be possible in fold nose areas.

The above noted studies projected dilution in the range of 5% to 10% for the room and pillar method. Dilution of 10% has been selected, which is on the high range of the various studies. Since many highgrade intersections at Dy are bordered by mineralization near cutoff grade, it is assumed that the dilutant will have a combined lead-zinc content of 7.5% (distributed as 4.8% Zn 2.7% Pb), 42 g/t Ag, and 0.35 g/t Au).

A mine quantity has been developed for use for long range planning, using the probable as well as possible inventory for the AB Zone. For the purpose of the calculation the deposit has been divided into three phases, Phases I and II above the elevation of the shaft intersection with the AB Zone, and Phase III below it. Phases I and II represent most of the east and west ends of the zinc-rich B-Zone noted previously. Phase III represents the lead-rich A-Zone and the central barren zone, and a small downdip part of the B-Zone. Table 7 details the diluted and in-situ material in each of these phases. It is emphasized that since possible mineralization is included, this should not be considered a reserve.

Using the above assumptions and the probable portion of the mineral inventory given in Table 2, the minable reserve is 9,390,095 tonnes, averaging 6.62% Zn, 5.50% Pb, 80.3 g/t Ag, and 0.82 g/t Au.

FURTHER WORK

Considerable additional fill-in drilling is required from planned underground openings to more reliably define the deposit. A detailed plan for this underground drilling should be laid out as soon as possible.

Preliminary hydrogeological work indicates that most of the rock mass will not make water. Some fault zones, however, can be expected to be significant aquifers which could discharge large quantities of water into the underground workings until pressure is relieved. Scheduling for underground advance should take cognizance of the likely wet conditions and appropriate dewatering facilities should be in place.

Hydrogeological information has proved to be of great use for environmental purposes and further data should be collected on groundwater flows as the deposit is developed.

The role of S_2 in geotechnical stability should be carefully considered. In light of the weakness of S_2 large horizontal spans may be undesirable.

Potentially acid generating rocks will be encountered at approximately 450m depth in the shaft. At that point particularly, close liaison will be needed between the underground contractor and the environmental staff for solid waste management on surface.

This study benefited greatly from a brief re-interpretation of the geology of the Dy deposit. Further work is warranted particularly to address questions of dyke, fold and fault orientation. Once a better structural interpretation is available then a more sophisticated calculation may be in order.

Study of drill logs makes it clear that Dy lags behind other deposit in quality and consistency of logging. The available drill core should be relogged and brought to a common standard compared to the other deposits. Ideally this should precede any major structural reinterpretation.

Nothing discovered in the course of this study suggests that plans for immediate underground access should be changed. It is still evident that early exploration should concentrate on the B Zone as it is slightly higher grade and more zinc rich than the A Zone.

Once underground exploration commences, geological data collection should begin immediately. The workings should be mapped in detail to help clarify fault patterns.

Holes should be drilled to test rock conditions at proposed shaft site. Five holes including both vertical holes near the shaft location, and angle holes drilled across it, are proposed.

Table 7
 Estimate of Diluted Recoverable Mineralization
 For the Dy Mineplan

| Phase | Tonnes | Pb+Zn (%) | Zinc (%) | Lead (%) | Silver (g/t) | Gold (g/t) |
|-------|------------|-----------|----------|----------|--------------|------------|
| 1 | 4,830,584 | 13.11 | 8.43 | 4.68 | 73.75 | 0.61 |
| 2 | 1,449,697 | 12.94 | 6.97 | 5.97 | 88.93 | 0.87 |
| 3 | 8,298,161 | 12.20 | 6.64 | 5.56 | 78.84 | 0.91 |
| Tota | 14,578,442 | 12.57 | 7.26 | 5.31 | 78.15 | 0.81 |