SOME OBSERVATIONS ON,
and a POSSIBLE WORK PROGRAM FOR,

THE GREAT BURNT LAKE PROJECT
Central Newfoundland

prepared for:

CELTIC MINERALS LTD.

October , 2000

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GREAT BURNT LAKE REPORT

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SUMMARY

Observations on drill core from, and on outcrops at, the Great Burnt Lake Project of Celtic Minerals Ltd. are described. These observations suggest there is considerable untested potential on the Property.

Six zones of copper, copper-gold or gold-copper mineralization have been identified within mafic volcanic rocks along a strike length of ±16 km in the western portion of the property. Only two of these zones have had sufficient drilling to provide a tonnage/grade estimate. All of the zones subcrop and hence are amenable to open pit mining, at least initially. All of the known zones are open at depth, both down dip and also along strike down the plunge. All six zones should be further drill tested and representative samples should be obtained for mineralogical and metallurgical testing in order to maximize gold and copper recoveries from a central processing plant.

Besides the known mineralized zones there are a number of airborne and ground geophysical and soil geochemical anomalies that have not yet been drill tested. Many of these anomalies are coincident with the same package of mafic volcanic rocks that host the six known mineralization. These anomalies should be drilled. Due to structural disruptions of the mafic volcanic sequence there may well be repetition and/or offset down plunge of both the known and of other, unknown or "blind" mineralization. Thus further ground geophysics with deep (to at least 300 m depth) sounding EM and/or IP together with a high quality digital magnetic surveys are recommended along the entire 16 km strike of the favourable mafic volcanic horizon. A comprehensive lithogeochemical program is also recommended in order to characterise this particularly favourable mafic volcanic horizon(s) versus other apparently similar horizons and then to identify any significant zones of hydrothermal alteration along strike and/or down dip within them. This lithogeochemical program should be extended into the adjacent felsic volcanics and volcaniclastic rocks as well for these rocks are relatively under explored. Possible work programs, and "order of magnitude" budgets are proposed to cover both the evaluation of the six known zones of mineralization and also to explore the remainder of the favourable ground underlain by volcanic rocks.

INTRODUCTION

During the summer of 2000 the Author was invited by Celtic Minerals Ltd. to make a site visit to their Great Burnt Lake Property and also to view drill core from the Great Burnt Lake Copper Deposit. During these visits the Author also had access to some of the material available from the very extensive database that pertains to the Property.

From a limited inspection of drill core seen at the Newfoundland Government diamond drill core storage facility at Buchans, and a brief one day site visit to the actual Property, the Author has made a number of observations that are relevant to the future exploration of the property. He has thus suggested a "possible future work program" for the Property and has provided "an order of magnitude" budget for this program.

Note, the Author has only viewed material related to the various zones of copper-gold mineralization associated with volcanic rocks occurring in the western portion of the Property. He has not reviewed any data relevant to chrome, PGE and/or gold mineralization occurring in the Pipestone Pond Ophiolite Complex which occurs in the eastern portion of the Property.

No attempt has been made to review or synthesize all of the previous data from the Property as excellent published material is readily available, this includes (i) a comprehensive synthesis of the entire Property by Barry Greene of Celtic Minerals Ltd. (Greene, 2000); (ii) a detailed description of the South Pond area by Desnoyers (1991) and (iii) the overall geological setting has been described in detail by Scott Swinden (1988).

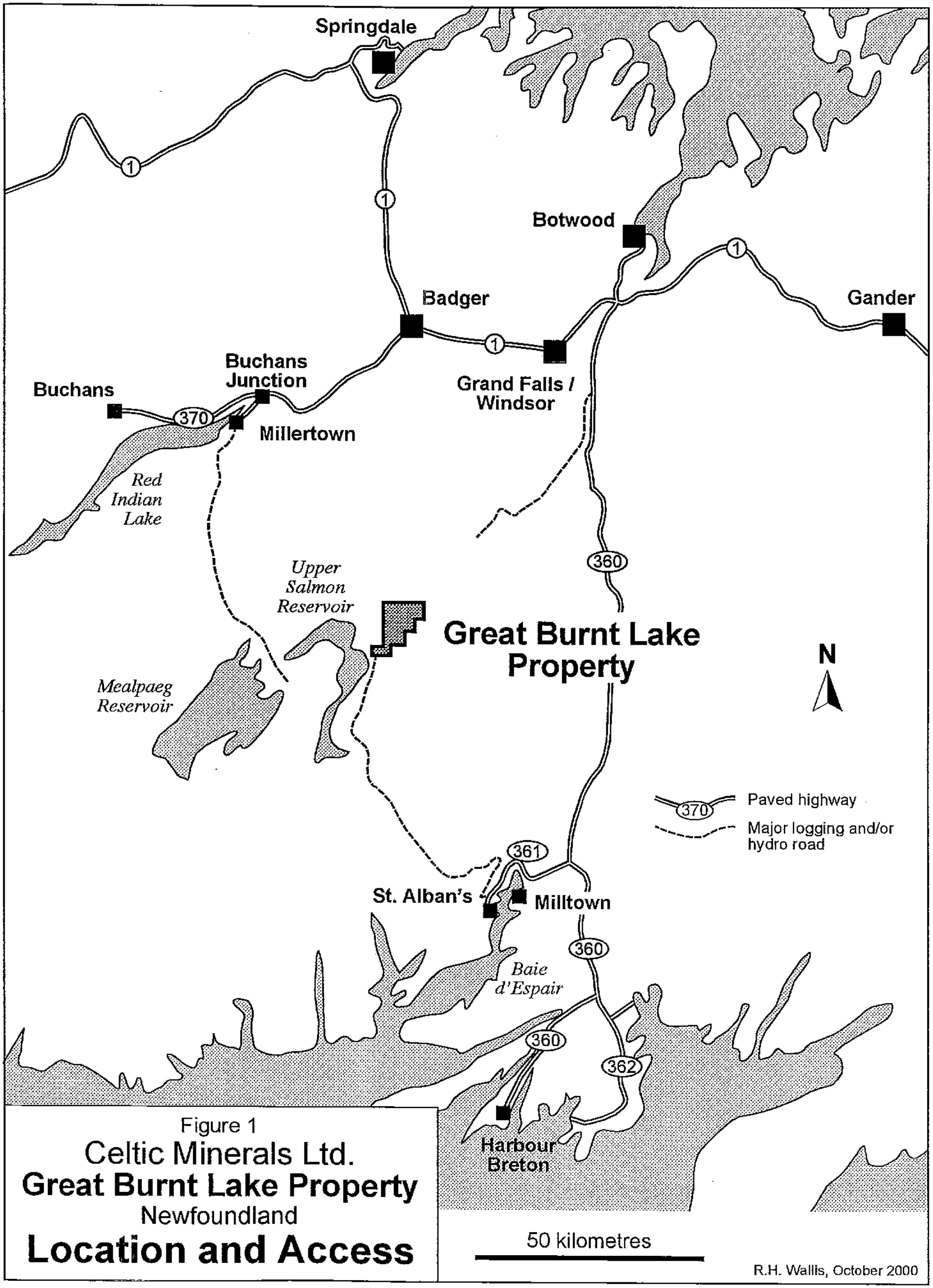

Figure 1
Celtic Minerals Ltd.
Great Burnt Lake Property
Newfoundland
Location and Access

LOCATION and ACCESS (See Figure 1)

At the present time access is by an all weather gravel road that terminates 3 km into the southern part of the property almost extending to the location of the Great Burnt Lake Copper Deposit. This gravel road begins at the Newfoundland Hydro Facility near the village St. Albans on Bay d'Espoir. It is approximately a 60 km drive from St. Albans.

The gravel road is well maintained by Newfoundland Hydro as it is used to service the extensive installations associated with the Upper Salmon Hydro Development. It is also the only access to the main outlet dam facility for the actual Upper Salmon Reservoir. Note: the "original" Great Burnt Lake no longer exists. It was flooded during the Upper Salmon Hydro Development and thus became part of the Upper Salmon Reservoir.

The Great Burnt Lake Property may become much more accessible from the north if the major logging roads extending from Millertown and/or Grand Falls/Windsor are developed further into the interior. Both of these logging roads are currently within 25 km of the property, see *Figure 1.*

On the property currently there is no suitable trail for summer 4 wheel vehicle access to the 13 km of strike lying beyond the termination of the gravel road. However, the property can be traversed by skidoo and muskeg tractor in the winter.

GENERAL PROPERTY GEOLOGY (See Figure 2)

The Great Burnt Lake Property covers a 16 km long portion of a NNE-SSW striking composite Lower Ordovician ophiolitic and bimodal volcanic belt.

On Figure 2, Units 1-5 and 10 form the Pipestone Pond Ophiolite Complex of Swinden (1988). These rocks have a U-Pb zircon date of 494 (+ 2.4/-1.9) My (Dunning and Krogh, 1985) and are thus Tremadocian in age. The ophiolitic rocks are considered to be in structural contact with the bimodal volcanic and volcaniclastic package lying to the east. This package, Units 6-8 on Figure 2, forms the Cold Spring Pond Formation of Swinden (1988). This unit is undated but is considered to be Upper Arenig in age (± 475 My) by Swinden and Kean (1988), or Lower Arenig (± 485 My) by Swinden (1991 a).

The Pipestone Pond Ophiolite Complex is bounded to the east by a variably metamorphosed sequence of sandstones, siltstones and shales belonging to the Spruce Brook Formation of Swinden (1988). These rocks are Unit 9 on Figure 2. Fossils occurring within the Spruce Brook Formation date this unit as being Llanvirn, i.e. 470-465 My.

To the west of the Cold Spring Pond Formation lies an igneous/metamorphic terrane composed mainly of foliated megacrystic granitic rocks, Unit 11 on Figure 2.

In a ***general sense*** the Lower Ordovician igneous and volcanic rocks apparently (?) form a ***simple west facing homocline*** in which the ophiolitic and ultramafic rocks of the Pipestone Pond Complex presumably (?) form the base of the sequence and occur in the east; the gabbro's and trondjemites forming the uppermost part of the ophiolitic package occur in the centre of the Property, and most of the mafic and felsic volcanics and volcaniclastics, the Cold Spring Pond Formation, occur in the western part of the Property. The volcanic/volcaniclastic sequence could presumably (?) represent some of the uppermost part of the overall igneous to volcanic sequence found on the Property. However, Swinden (1988) has shown that, in detail, the geological situation is much more complex than this simple overall interpretation would suggest. This is because each individual package of rocks appears to be bounded **by structural,** not stratigraphic, contacts.

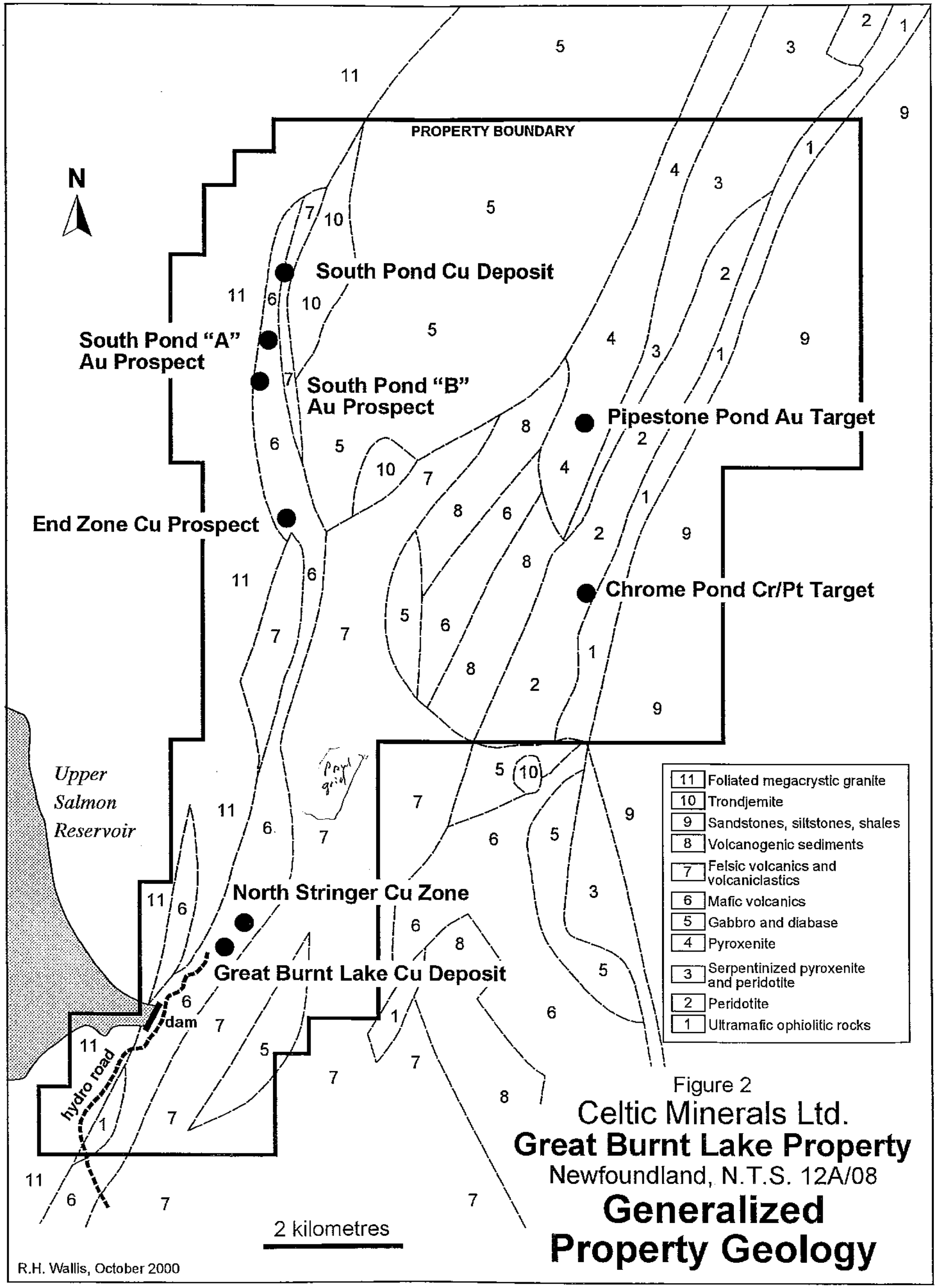

Figure 2
Celtic Minerals Ltd.
Great Burnt Lake Property
Newfoundland, N.T.S. 12A/08
Generalized Property Geology

Swinden (1988) and Colman-Sadd and Swinden (1984) have proposed a structural sequence that begins with eastward dipping thrust faults that juxtaposes the older (?) Pipestone Pond Ophiolite Complex to lie above the younger (?) Cold Spring Pond Formation. This early thrusting episode is followed by a regional deformation event best demonstrated by a pervasive, regional, N-S, penetrative foliation.

Finally a later generation of reverse faults postdates this regional deformation episode. These faults juxtapose the Cold Spring Pond Formation against the western igneous/metamorphic domain of foliated megacrystic granitic rocks. These late reverse faults are often accompanied by slivers of ultramafic rocks.

An obvious general observation that can be made from Figure 2 is that in the north of the property the ultramafic and gabbroic rocks (Units 1-5) occupy +/- 90% of the outcrop width whilst 16 km south the same ultramafic and grabbroic rocks (Units 1-5) occupy only <20% of the outcrop width whilst Unit 7, the felsic volcanics and volcaniclastics occupy +/- 60% of the outcrop width.

The conventional interpretation of this rocktype distribution would be that this is due to the complex sequence of structural disruptions leading to the formation of a number of fault bounded packages and that their present day outcrop width is simply dependent on the current erosion level.

However, alternative interpretations, in whole or part, could be either that:

(i) the entire sequence **is plunging gently to the south** and thus a much greater percentage of the basal ophiolitic units would occur in the north and that the greatest percentage of the uppermost felsic volcaniclastic units would occur in the south, or that:

(ii) the present distribution of rocktypes reflects, at least in part, the original amounts and distribution of rocktypes **within the original depositional igneous and volcanic environment.**

All three possible interpretations have some profound economic implications related to the distribution any massive sulphide deposits that maybe present on the Property.

In order to make any substantial advances in our understanding of the geological framework of the Property, and also of the specific geological controls of the known mineralization and thus our ability to find more mineralization, will demand a sustained effort to geologically map the property in detail, (at 1:5,000 or smaller scale) with emphasis on lithology, structure and alteration. A viable geological framework will also require a substantial whole rock lithogeochemical data base and also a data management system with which to integrate these geological data sets together with new property wide digital magnetic, EM and IP surveys.

The currently known Cu, Cu-Au and Au-Cu deposits/prospects apparently lie within the same (?) stratigraphic unit of mafic volcanics. Is this really so? If it is, then what is the geochemical significance of this particular horizon? Does such a horizon occur elsewhere on the property? and if so has it been sufficiently explored? However, even if it is shown that the north and south mineralized zones (South Pond and Great Burnt) are hosted by mafic volcanics **with quite different geochemistries** then all the same questions will still have to be answered.

The area of the Property underlain by felsic volcanics and volcaniclastics is very substantial. Is there a sufficiently comprehensive whole rock lithogeochemical database and/or ground geophysical coverage to indicate if there are any zones of hydrothermal alteration within the felsic volcanics which may indicate mineralization at depth? The same questions could be asked concerning the extent of the lithogeochemical database and ground geophysical coverage of the adjacent ophiolite package where it occurs on the eastern side of the Great Burnt Lake Property.

OBSERVATIONS on DRILL CORE and OUTCROPS

(See Figures 3 to 7)

As mentioned in the Introduction the author has only seen a limited amount of drill core and only from one deposit - the Great Burnt Lake Copper Deposit, and he has only spent part of one day on the Property when studying outcrops in the vicinity of the Great Burnt Lake Copper Deposit.

However, even from this limited study a number of useful observations were made.

The Drill Core June 15, 2000

The drill core studied came from some holes that intersected one of the "thicker/higher grade" zones shown on Figure 3 as having a "% Cu x core length (m) of >25%/m".

All of the sulphide mineralization seen was massive, i.e. >75% total sulphide.

As seen in these drill cores the Great Burnt Lake Copper Deposit mineralogy "appears" to be quite coarse grained. It also "appears" to be a simple mixture of chalcopyrite, pyrite and pyrrhotite. The nature, location and recoverability of any gold content within this mineralogy is unknown. Some previous descriptions of the Great Burnt Lake Deposit infer that there is an increasing zinc content with depth. No sphalerite was observed in the drill core studied and thus the tenor, nature and recoverability of zinc is also unknown.

No obvious deleterious minerals, e.g. sulphides or sulphosalts containing selenium, bismuth, arsenic, etc. were observed in the drill core. It is not known whether the drill core has been analysed for such elements or what level of detailed polished thin section mineralogical examination has been carried out.

Therefore, at the very beginning of any Great Burnt Lake program, it might be very worthwhile to drill a number of NQ (or even PQ) ddh to provide a reasonably large and representative sample of mineralization to go to Lakefield Laboratories, (or other suitable facility) for a bench test on Cu/Au/Zn recoveries and to ensure that there are no surprise deleterious elements, e.g. Se, Bi, As, etc.

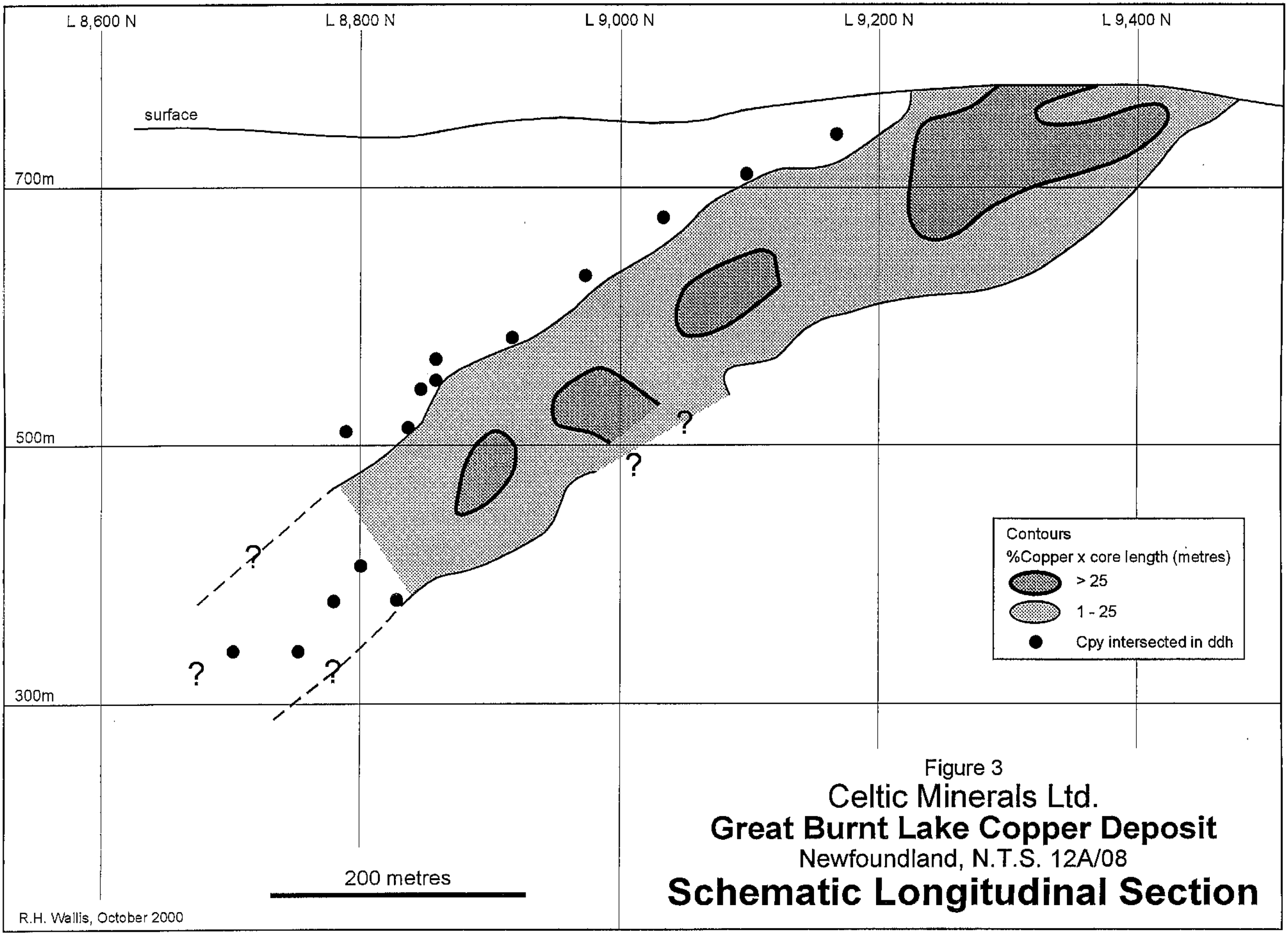

Figure 3
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08
Schematic Longitudinal Section

Within the drill core some other, rather unusual features were noted:

(i) there was an extremely sharp cut off between the massive sulphides and the bounding chloritized mafic volcanics. This sharp cutoff occurred both above and below the massive sulphides.
Thus it was not at all apparent which were the hanging or footwalls to the mineralization.

(ii) No disseminated and/or stringer po-py-cp mineralization was observed in the chloritized mafic volcanics in the immediate (+/- 10 m) of the massive sulphides that might have indicate the presence of a footwall stringer zone in direct contact with the massive sulphides.

(iii) The mafic volcanics below and above the massive sulphides appeared to be equally chloritized. Again it was not obvious that there was any significance difference in the intensity of visible alteration, i.e. black chlorite, or pink feldspar, or silica, or sericite, or biotite or epidote to suggest that one side rather than the other was the footwall hydrothermal system to the massive sulphides.

Rather the massive sulphide appeared to occur as a separate and independent unit from the bounding mafic volcanics and thus not necessarily to be directly associated with them. However, as Barry Greene pointed out, there is no especially pronounced shearing or faulting at the contacts between the bounding mafic volcanics and the massive sulphides.

Greene (2000) has stated that "*within 30-40m to the east of the Great Burnt Lake Copper Deposit, the volcanic sequence exhibits widespread though not particularly intense alteration. Black chloritization with associated stringers of py, po and cp and local silicification is the principal alteration effect*".

Thus it would be worthwhile to restudy and relog all of the existing drill core to verify these preliminary observations, with regard to the nature of massive sulphide contacts and to the distribution of alteration parameters.

The Site Visit **(July 6, 2000)**

A number of outcrops were studied during the admittedly rather brief site visit. All of these outcrops possessed a very strong, well developed, N-S striking, steeply dipping, penetrative foliation. Various lithological units were observed during the traverse, these included: mafic volcanics, mafic tuffs, sediments and coarse felsic pyroclastics. All of these rocktypes were equally effected by the strong N-S penetrative foliation. This style of strong penetrative foliation often occurs when the original bedding (S_0) is translated in an oblique stress field into the plane of foliation i.e. $S_0 = S_1$, similar to the "shuffling of a pack of cards".

All the outcrops visited possessed a prominent 30° S to SSW plunging lineation that occurs on the strongly developed N-S striking foliation plane (See Figure 4). It was also noted that on some outcrops there is a less obvious, but steeper, 70° south plunging lineation, Figures 4 and 5. These observations on the presence of two lineations made during the site visit, were made quite independently of the contoured drill "thickness/grade" longitudinal sections which demonstrate the identical 30° SE plunge both at the Great Burnt Lake and the South Pond Copper Deposits. In fact, Greene (2000) states that all six known zones of mineralization have this prominent 30° S plunge.

Note that "with some imagination" one can discern on the longitudinal sections e.g. Figure 3, of the Great Burnt Lake and the South Pond Copper Deposits the superimposed 70°S rake within the thickening and thinning of the grade/thickness contours, this interpretation is shown on Figures 6 and 7.

A number of large and well exposed outcrops of a coarse grained, large clast size, fragmental, felsic pyroclastic demonstrated a 10:1 length to thickness aspect ratio of the clasts within the plane of foliation. Though of course the original clast length/width ratio is not known, the degree of flattening seen in these outcrops would suggest that the massive sulphide mineralization may well extend much further along strike and down plunge than is presently known at the Great Burnt and South Pond Copper Deposits e.g. by at least x 5 of the original long dimension of the deposit, see Figures 6 and 7.

For further discussion on some of the implications of these observations, see the next section.

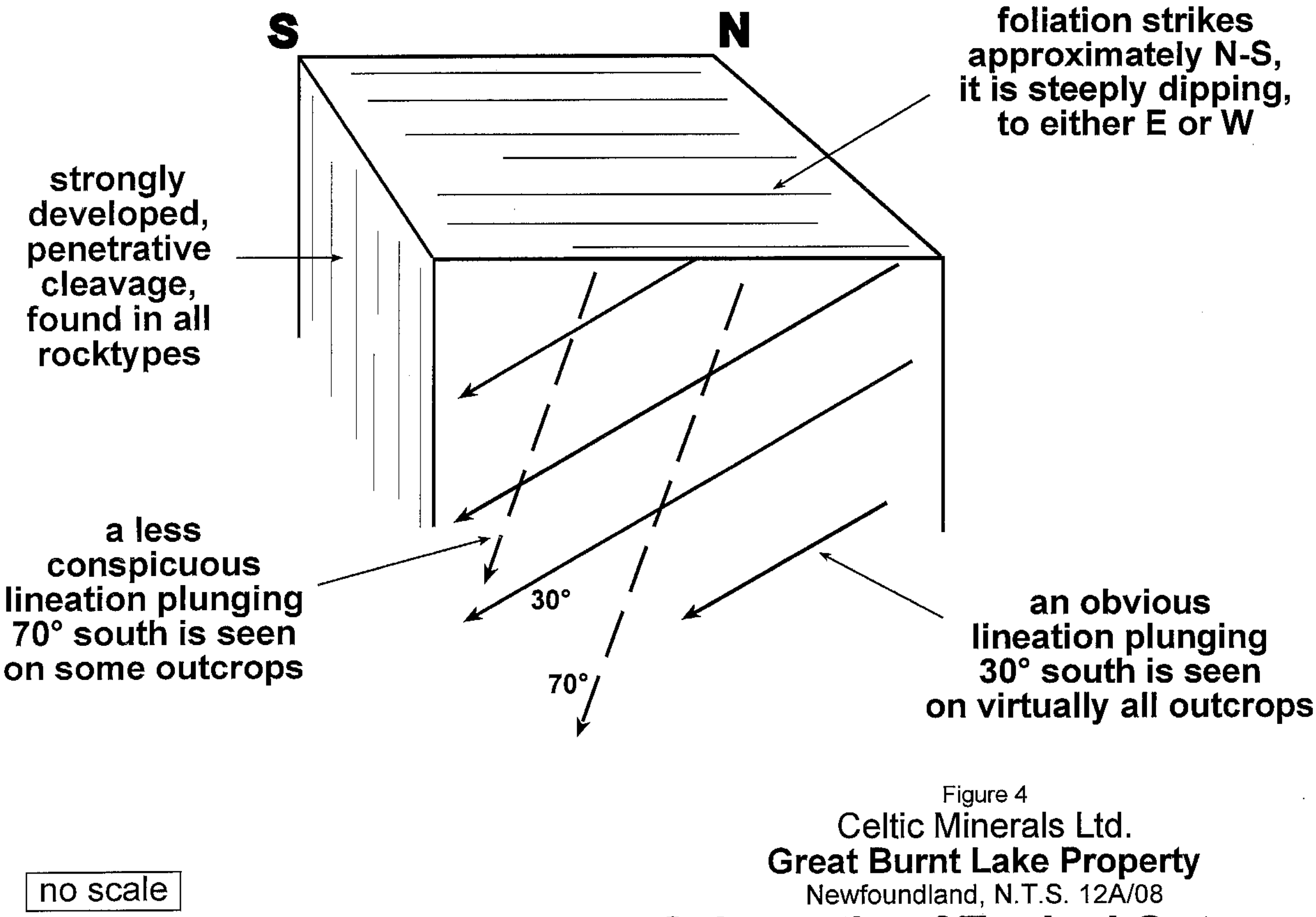

Figure 4
Celtic Minerals Ltd.
Great Burnt Lake Property
Newfoundland, N.T.S. 12A/08

Schematic of Typical Outcrop

R.H. Wallis, October 2000

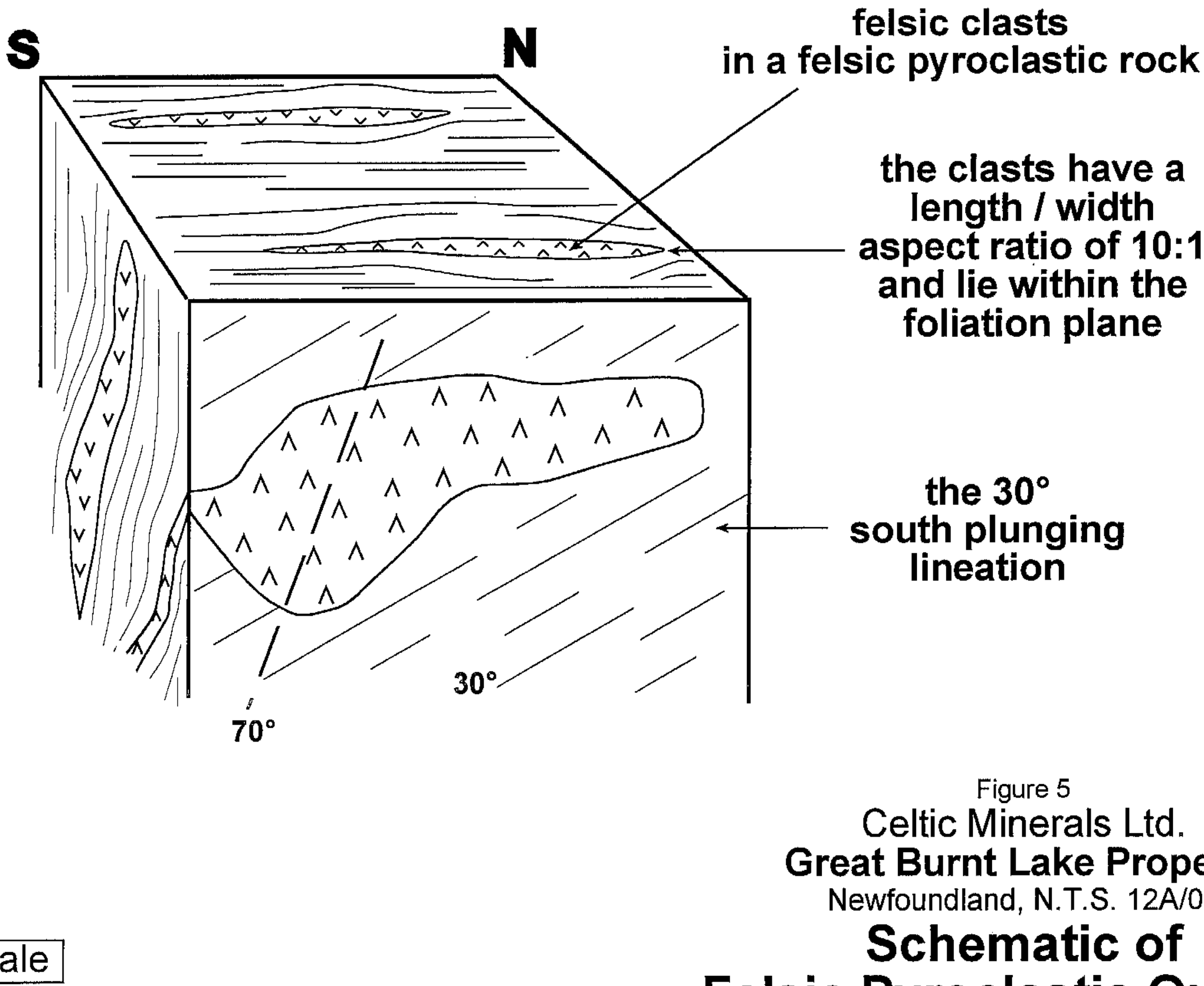

Figure 5
Celtic Minerals Ltd.
Great Burnt Lake Property
Newfoundland, N.T.S. 12A/08

Schematic of Felsic Pyroclastic Outcrop

R.H. Wallis, October 2000

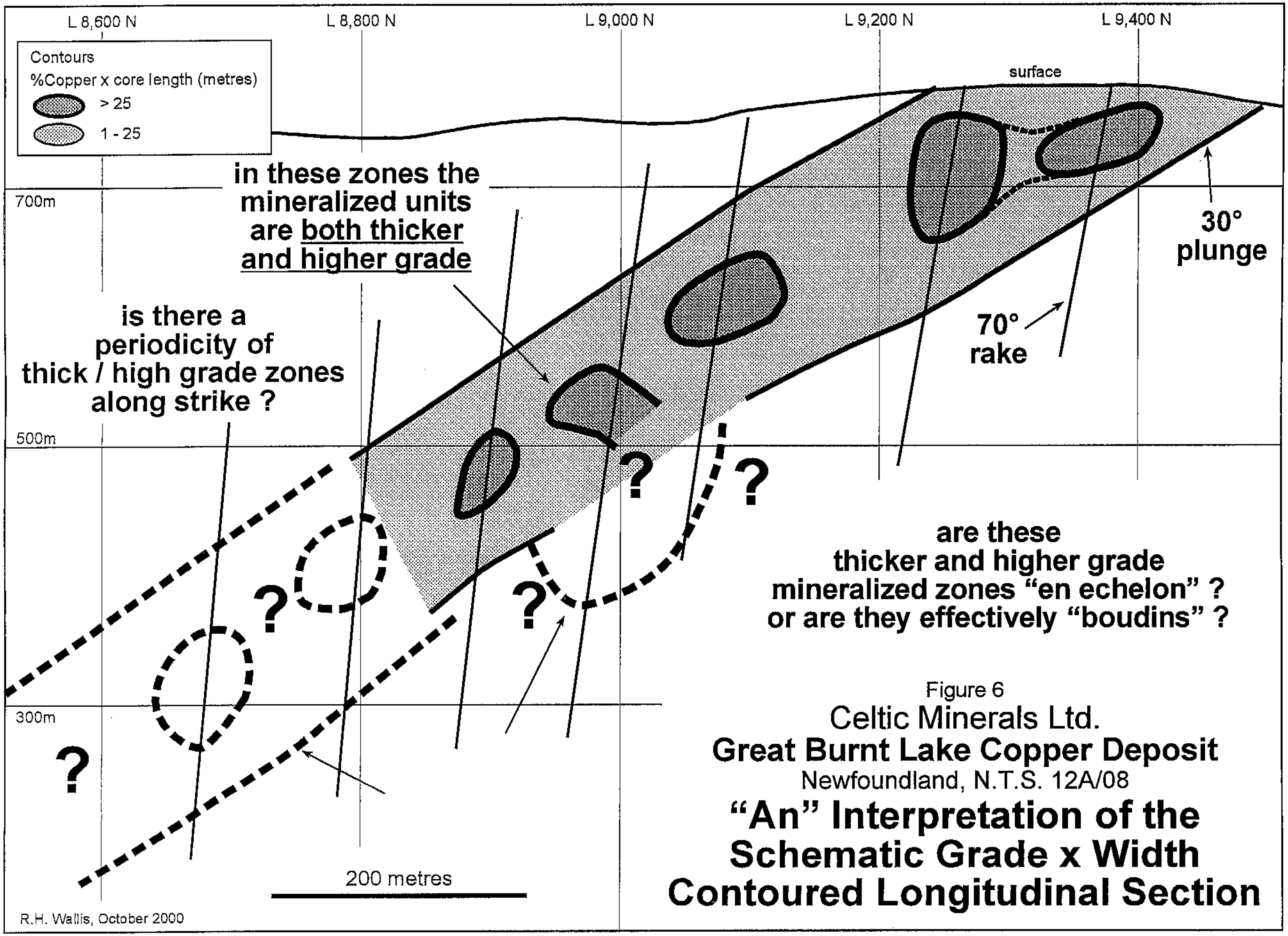

Figure 6
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08
"An" Interpretation of the Schematic Grade x Width Contoured Longitudinal Section

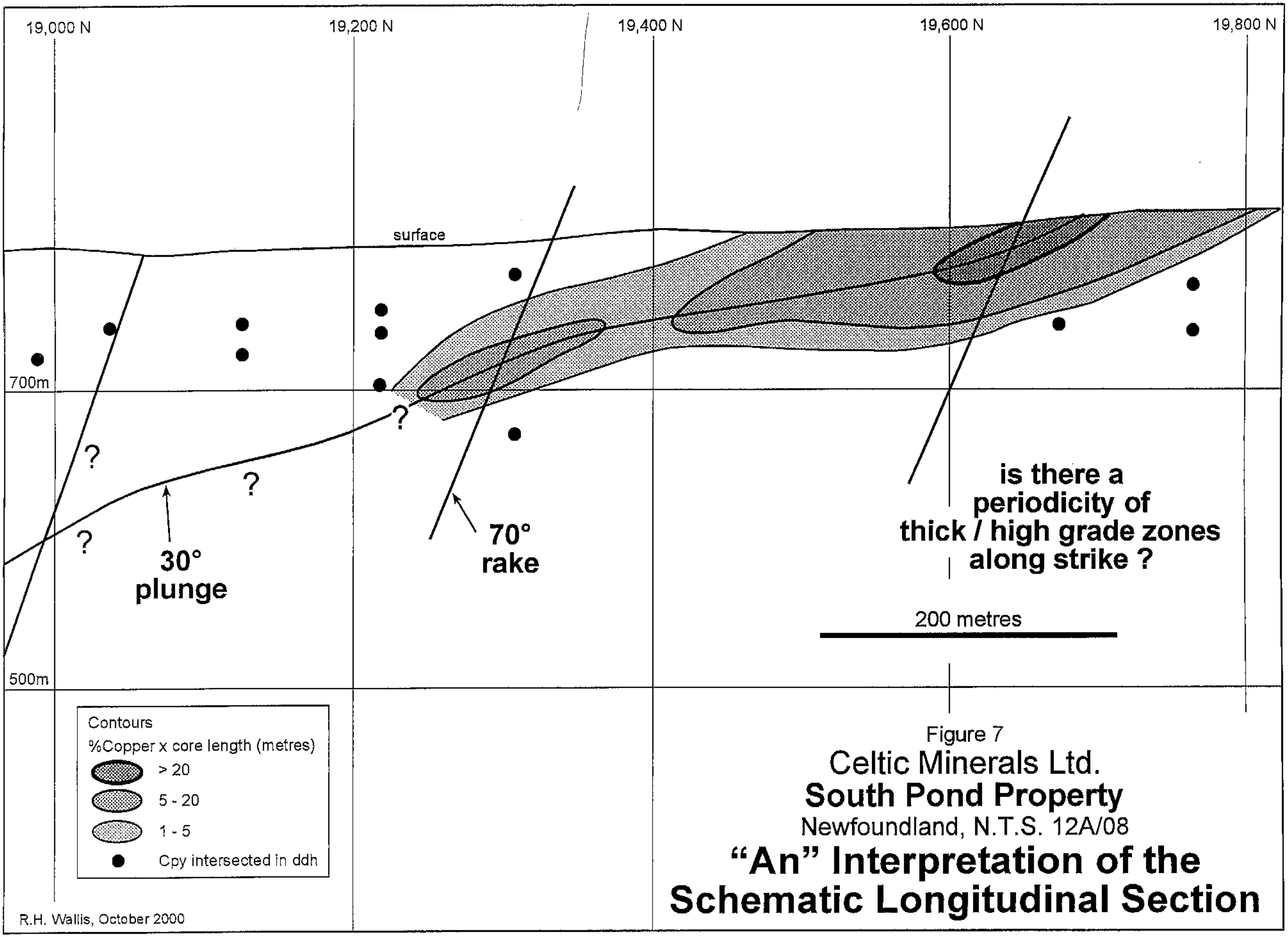

Figure 7
Celtic Minerals Ltd.
South Pond Property
Newfoundland, N.T.S. 12A/08
"An" Interpretation of the Schematic Longitudinal Section

DISCUSSION (See Figures 8-13)

(1) **The regionally extensive 30° S plunge.**

All of the six known deposits are described as having a 30° S plunge (Greene, 2000). Quite independently a prominent 30° S plunging lineation was found to occur on all outcrops studied during the Property site visit, see Figures 4 and 5.

Clearly this significant regional Southerly plunge has to be taken into account during any evaluation and exploration of the Great Burnt Property, e.g.

(i) when drilling off the known deposits along strike. For example it appears that the pierce points, on the along strike drilling of the South Pond Copper Zone, are ± 100 M **too shallow** to reach the down plunge continuation of the deposit, see Figure 7.

(ii) In exploring for "unknown/buried" deposits then the 30° S plunge must be borne in mind when planning and then interpreting any ground geophysical data sets, i.e. on how many 200m cross lines would one expect to see such a body at >300m depth?

(iii) Again in exploring for "unknown/buried" deposits the "up plunge" geochemical signature **maybe quite small**, but it would still be significant.

(2) **The 70°S rake, i.e. the plunge of the second cleavage and its possible structural effects.**

Desnoyers (1991) noted that a crenulation style of fold, which crenulated the earlier pervasive and penetrative foliation occurs frequently in the vicinity of the South Pond gold deposits. Desnoyer describes this crenulation fold set **to have a 60-80° plunge**, to either the NE or SW. Quite independently, during the Property site visit, such a second lineation was observed with a 70°S plunge on many of the outcrops studied, see Figures 4 and 5.

It is possible that this second structural episode could provide fold interference patterns that creates the zones of "thicker/high grade" mineralization noted on the longitudinal sections of the Great Burnt Lake and South Pond Copper Deposits, see Figure 3, and as interpreted in Figures 6 and 7.

The original massive sulphide lens may well have been highly flattened and thus extended along strike within the penetrative foliation, i.e. in a way similar to the felsic pyroclasts shown in Figure 5. Such a massive sulphide sheet could then have been cross folded by the second phase crenulation folds to form a set of thicker/higher grade sigmoids, with a 70°S rake, which would lie within the dip plane of the mineralization, see Case A, Figure 13.

If Case A actually occurs at Great Burnt Lake it would greatly increase both the tonnage and grade of the deposit. Especially so in comparison to some other possible alternative structural results: e.g. boudinage of the orebody, see Case B, Figure 13, or an echelon separation of the orebody, see Case C, Figure 13.

An important further structural question also with significant economic implications is to establish whether is there a particular **periodicity** to this second phase structural interference. This would be important to be aware of in delineation drilling so as not to either **under or over estimate** quantities in tonnage/grade calculations.

(3) **Fold repetition versus shears separation of the Great Burnt Lake Copper Deposit and the North Stringer Copper Zone.**

The unusual features of the deposit noted whilst viewing the Great Burnt Lake Copper Deposit drill core were:

a) *the incredibly sharp boundaries between the sulphide mineralization and the hanging and footwall rocks, i.e. there was no stockwork veining in the immediate footwall and there was no interdigitation of thin layers of fine grained sulphide within the hanging wall rocks.*

b) *the lack of any visibly obvious alteration in either the immediate footwall or the hanging wall, e.g. there was no obvious black chlorite; or sericite, or quartz, or epidote, etc.*

The field observations made during the Property site visit provide a possible and reasonable explanation for both of these drill core observations.

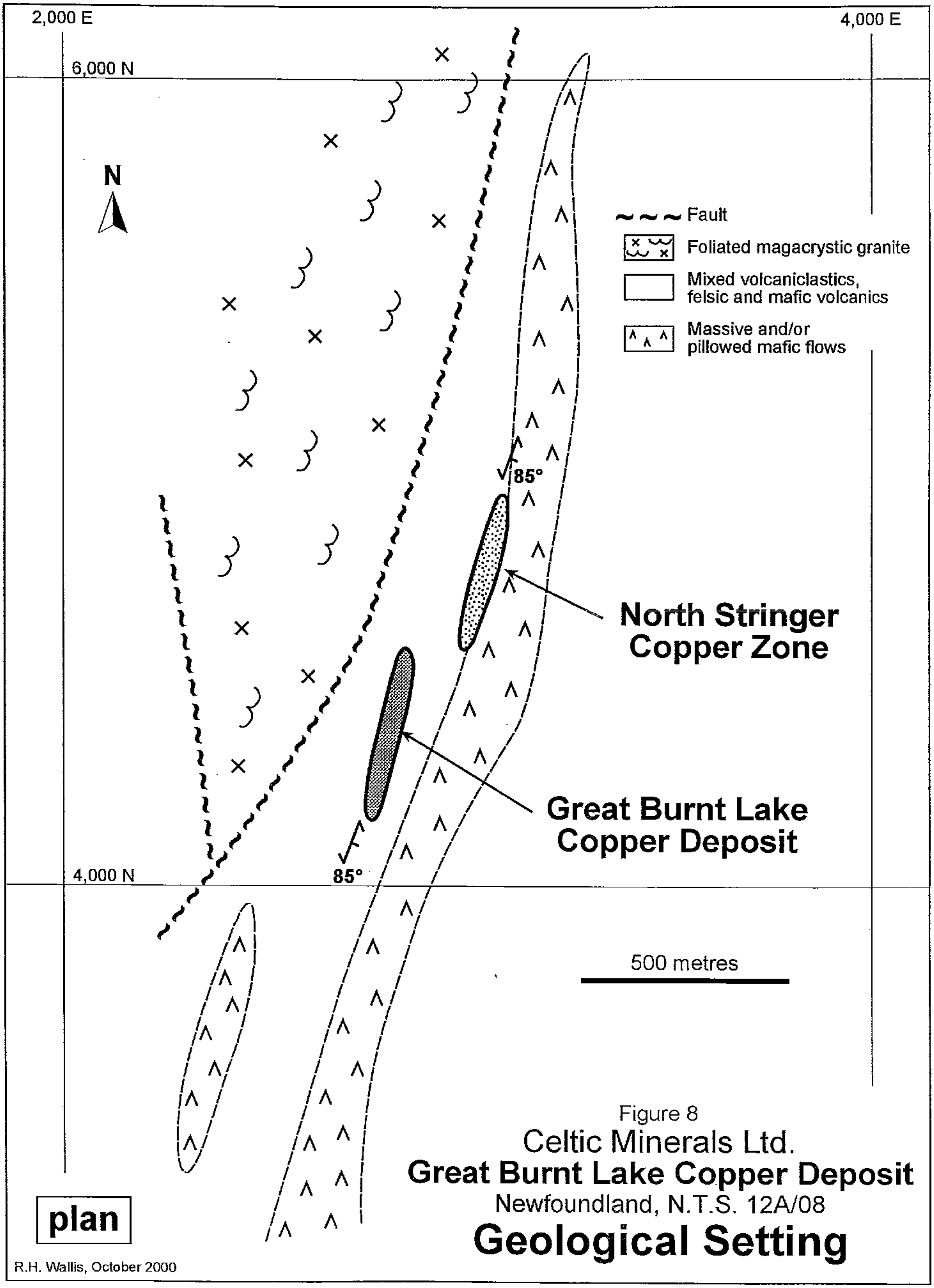

Figure 8
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08
Geological Setting

The extreme flattening and translation of the primary S_0 features into the S_1 foliation, i.e. the shuffling of a "pack of cards" effect described earlier, has effectively produced a sheet of massive sulphide which has first been rotated and then has been "**detached"** from its original position in relationship to its hanging and footwall rocks.

An obvious outcome that might be expected to result from this style of detachment/displacement tectonics is that the detached footwall stockwork zone might be found somewhere along strike. In fact one does, this is the "North Stringer Copper Zone". This mineralization lies along strike to the **North** of the massive sulphide deposit and it **lies to the East** of the deposit, see Figure 8.

This geometry demonstrates (i) the local "way up" of the stratigraphic units, i.e. tops are to the west; and (ii) this agrees with the overall way up of the entire stratigraphic pile with ultramafic rocks to the east and volcanics and volcaniclastics to the west.

The previous, and alternative, explanation for the physical separation of the massive sulphides from their apparent footwall stringer zone was to invoke a very tight, isoclinal fold with the massive sulphides occurring on the western limb and the stringer sulphides appearing on the eastern limb, see Figure 10. The attractiveness of the "fold hypothesis" is that there could be fold repetition of the massive sulphides. However, from the outcrops observed during the Property site visit, the "transpressional" flattening/sinistral strike slip, detachment/displacement "structural scenario is certainly a viable alternative possibility, see Figures 11 and 12. Again detailed relogging of all of the Great Burnt Lake Copper Deposit drill core might well provide some specific geological control to decide between these alternatives.

Otherwise the best test of the two alternative interpretations is by detailed surface mapping and very detailed ground geophysics which would either demonstrate the repetition of lithological units and demonstrate a fold closure or it would not.

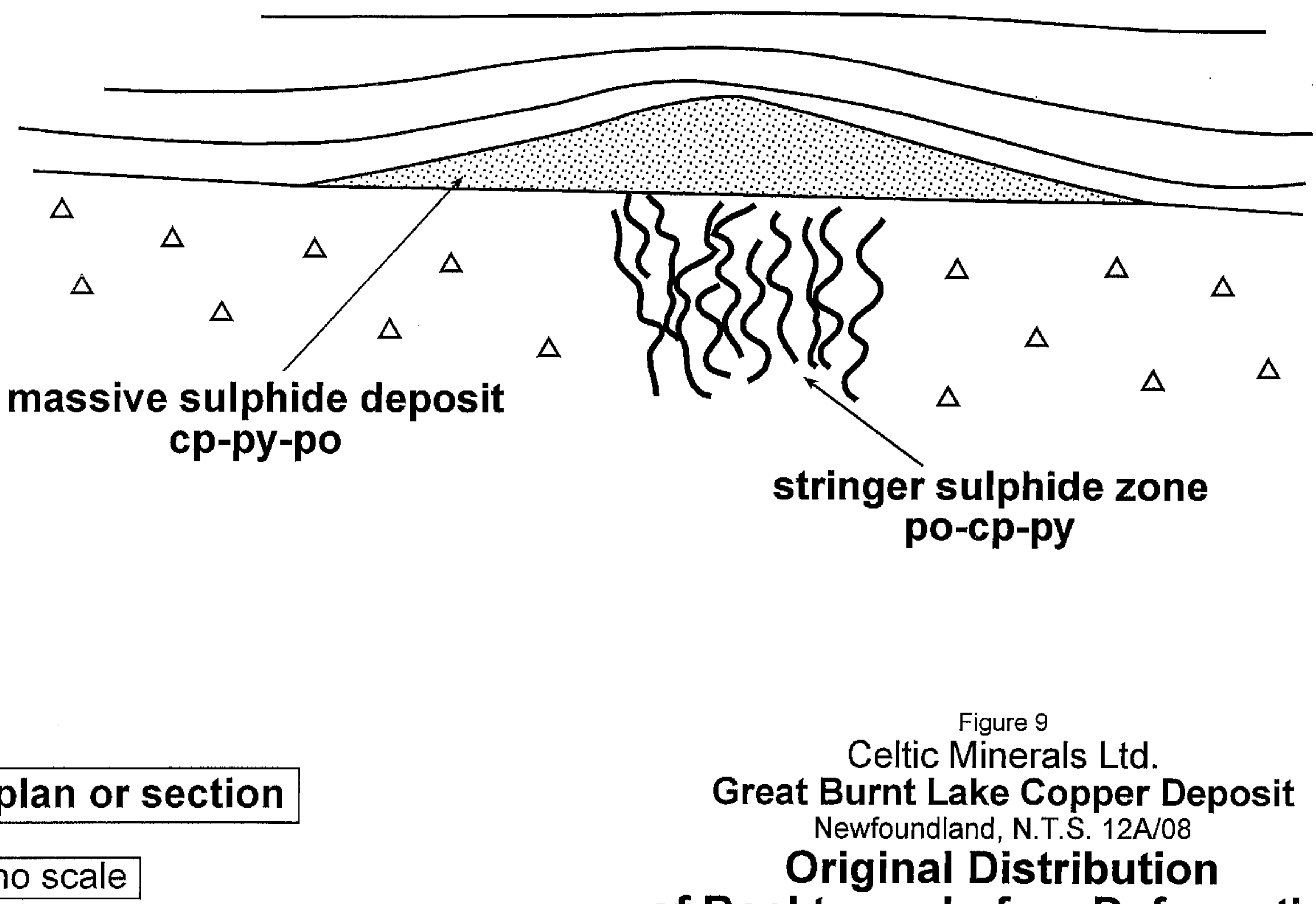

Figure 9
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08
Original Distribution of Rocktypes before Deformation

R.H. Wallis, October 2000

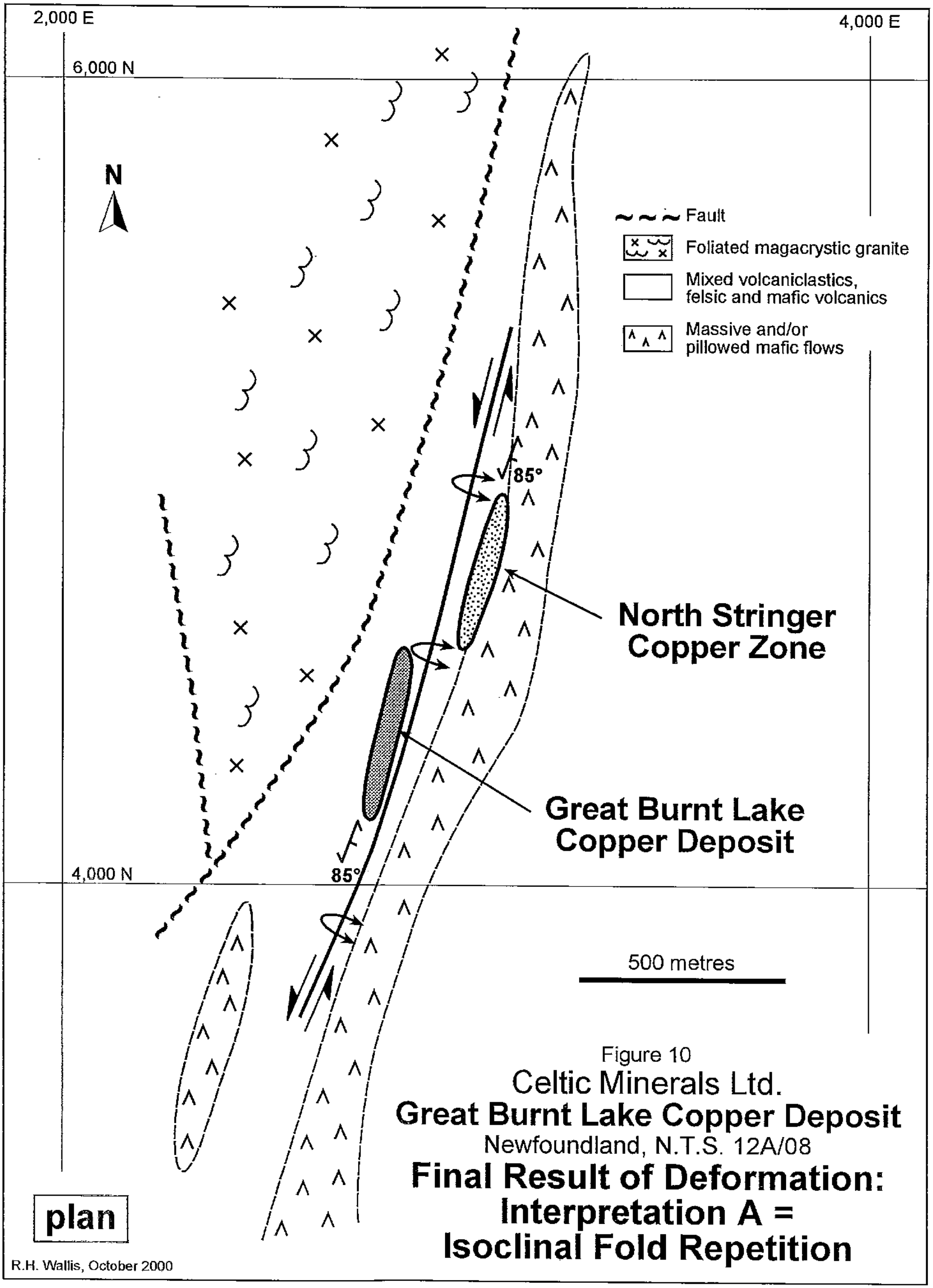

Figure 10
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08
Final Result of Deformation: Interpretation A = Isoclinal Fold Repetition

R.H. Wallis, October 2000

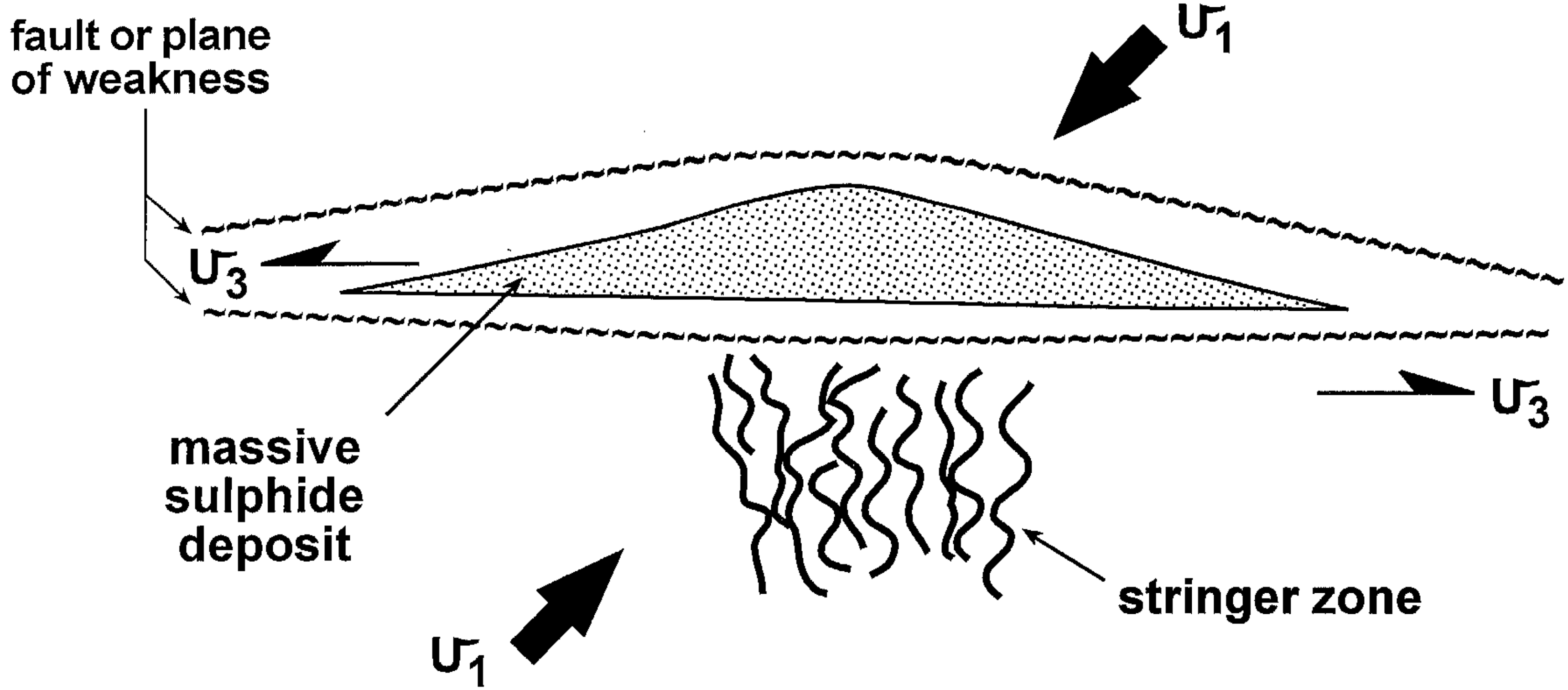

Figure 11
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08
"Transpression" = Compression with Oblique Sinistral Shearing

plan

no scale

R.H. Wallis, October 2000

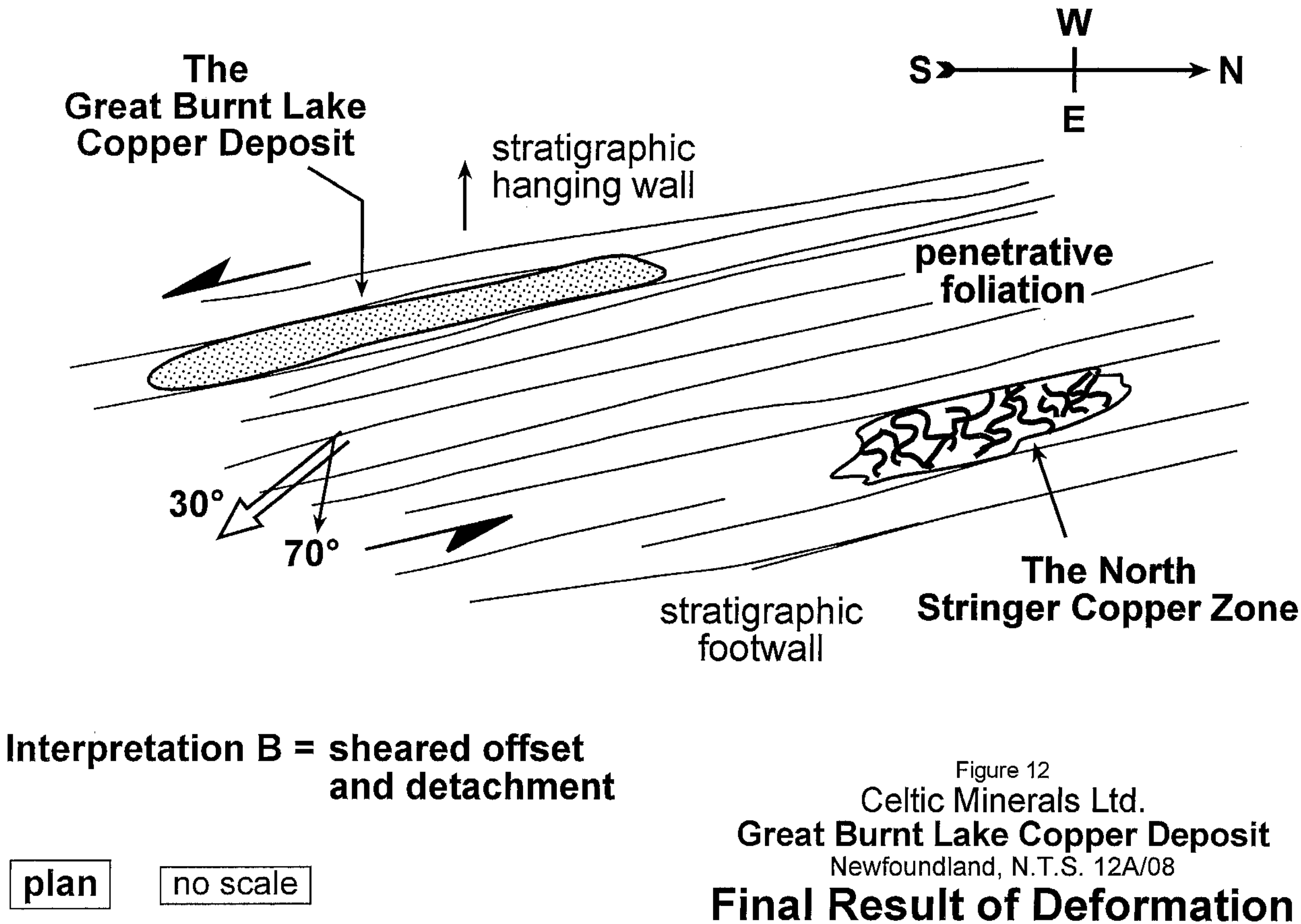

Figure 12
Celtic Minerals Ltd.
Great Burnt Lake Copper Deposit
Newfoundland, N.T.S. 12A/08

Final Result of Deformation

R.H. Wallis, October 2000

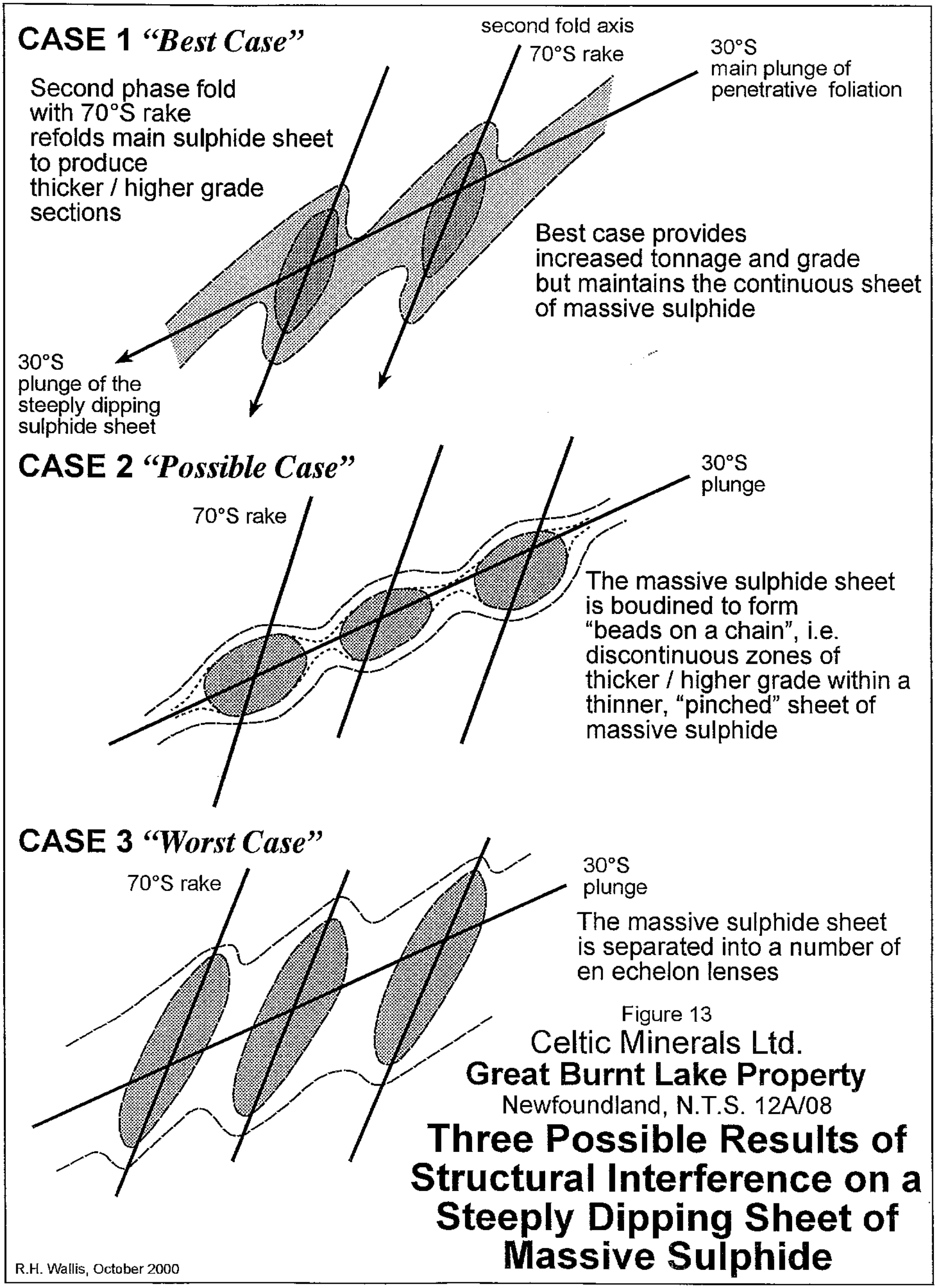

Figure 13

Celtic Minerals Ltd.

Great Burnt Lake Property

Newfoundland, N.T.S. 12A/08

Three Possible Results of Structural Interference on a Steeply Dipping Sheet of Massive Sulphide

RECOMMENDATIONS

A Re-evaluation of the Six Known Cu, Cu-Au, Au-Cu Deposits

- Establish an appropriate data handling system to contain all of the previous and the new data, e.g. Geocom, Datamine, etc.
- Relog all the available existing drill core with particular reference to structure, alteration and stratigraphy in the host rocks.
- Carry out magnetic susceptibility measurements on the existing drill core in order to help model and evaluate ground magnetic surveys.
- Carry out conductivity/resistivity measurements on the drill core, again to help model/evaluate the ground EM/IP surveys.
- Carry out systematic SG measurements on the core, (i) to have sufficient data to carry out tonnage calculations, and (ii) to be able to test density models prior to any attempt to carry out gravity surveys.
- Send some representative drill core material off for analysis and preliminary mineralogy on both potential payable and possible deleterious elements
- Carry out some whole rock lithogeochemistry on the drill core volcanic host rocks (XRF and ICP-MS) in order to be able to "typify" this particularly favourable mafic volcanic host rock and also to be able to define the type and degree of the superimposed hydrothermal alteration.
- Much of the previous drilling of the deposits has only been with EX core and it is probable that these holes were not accurately surveyed. Hence a number of twinned holes would be very valuable to:

    (i) provide the exact location of the mineralized intercepts

    (ii) provide fresh rock and mineralized material for test work as described above

TABLE 1

INFERRED RESOURCES ESTIMATES

Great Burnt Lake Copper Deposit

Source (Date)	Tonnes	Grade (% Cu)
ASARCO (date unknown)	907,000 (1.0 M tons)	2.92
Beavan (1972)	803,933	2.47
Swinden and Kean (1988)	750,000	1.0
Swinden et al. (1991)	680,000	2.0 - 3.0

South Pond Copper Deposit

Beavan (1972)	293,021	1.33
Swinden and Kean (1988)	270,000	1.0

(iii) allow for sophisticated in hole and downhole geophysical logging

(iv) allow for a re-evaluation of the wide variation in tonnage and grade, estimates shown in Table 1.

- All of the six deposits remain open:

  (i) along strike

  (ii) down dip

  (iii) down plunge

  and need drilling off to at least 500 m below surface

- This drill program will not only reveal the continuity, width and grade of the zones but also reveal the degree of metal zoning with respect to Cu:Au, Cu:Zn, etc.

- All of the zones appear to be overturned, i.e. structurally face and dip east but their "tops" are to the west. So it is possible that the mineralization that is currently exposed are Cu or Cu-Au "bottoms" and that conceivably Cu-Zn/Zn-Cu "tops" could occur at depth?

- This along strike/down dip program will also decide between Cases A-C, i.e. whether the mineralized layer is refolded or boudined or forms en echelon ore zones; and it should also be able to define the periodicity of such zones.

- The four Cu-Au/Au-Cu deposits in the South Pond/End Zone area have had very little drilling to depth, e.g. there is only a single tier of drill holes in the two gold zones, so there is no knowledge of their grade and width at depth. Nor is it clear, in 3D, what is the relationship of the Au-Cu mineralization to the South Pond Shear Zone. Which is cause and effect? Did the gold mineralization develop because of the **pre-existing** alteration providing a zone of chemical and mechanical weakness, or did it develop as a **particular high strain zone**, which then became the focus of later Au/SiO_2 fluid flow?

- The actual South Pond Copper Deposit also has only been drill tested with EX core. Also it was drilled from the wrong direction, i.e. the zone dips to the west but it was drilled from east to west. So again there is a degree of uncertainty as to exact position of its component lenses.

- There is very little knowledge of the tenor and distribution of Au within the South Pond Copper Deposit.

- All of this new diamond drilling, at both the Burnt Lake and South Pond areas would provide a base of RQ data from which to make preliminary designs in order to open pit the six known zones.

B **Exploration Program on the remainder of the western (volcanic) portion of the Property**

- Establish an appropriate data handling system for all the previously existing data and all of that which is to be acquired during this exploration program, e.g. Geocom, MapInfo, etc. and a system that is compatible with the data from Program A, the re-evaluation of the known mineralized zones.

- Establish a new "master grid" over the western half of the property

- and then tie in all the "old postage stamp grids", and previous drill holes, to the new "master grid".

- If possible digitize all the previous data sets (geology, geophysical, geochemical) and reformat and manipulate them in relation to the new grid.

- This will indicate the "correct" location of the many, as yet, untested exploration targets and also show areas of prospective ground with little or no geochemical or geophysical coverage.

Celtic Minerals Ltd. have completed most of these steps, especially in the southern part of the property and in the area of the End Zone Copper Prospect.

- The six known zones of mineralization all outcrop or subcrop, and they all have some very clear exploration characteristics, e.g. in soil geochemistry for Cu and Au, and geophysically they contain highly magnetic pyrrhotite, and highly conductive **massive** chalcopyrite-pyrite-pyrrhotite and/or fairly conductive and quite chargeable disseminated or stringer cp-py-po.

Hence, at the very accessible Great Burnt Lake Copper Deposit the presence of both **outcropping/subcropping** massive sulphide mineralization and **mineralization at -400 m** allows some detailed orientation exploration studies for both ground geophysics and soil geochemistry to be carried out to help decide on the most cost effective exploration methods to be used elsewhere along the ± 10 km of highly prospective ground lying between the Great Burnt deposit and the South Pond deposit.

Using Celtic's recently, spring 2000, cut and surveyed grid it might be well worthwhile to compare/contrast, along say 3 cross lines each, over both near surface and deeper mineralization:

- *different types of HLEM, including MaxMin*
- *different IP layouts/arrays*
- *Gravity*
- *very detailed magnetics, say at 10 m stations,*
- *classic soil geochemistry and enzyme leach geochemistry*

There appears to be a significant difference between the mineralization occurring in the southern part of the Property, i.e. the Great Burnt Lake and North Stringer Zone deposits which appear to be **copper only** and the mineralization in the northern part of the Property, i.e. the South Pond Copper, South Pond Gold, End Zone Copper, all of which are **either Cu-Au or Au-Cu.**

It is important to establish if this difference is more apparent than real, i.e. simply due to the presence of the South Pond Shear Zone and its associated quartz rich hydrothermal system **superimposing** an "epigenetic" gold-silica mineralization on **an already existing** "syngenetic" cp-po-py system.

Or, alternatively, are there **two totally separate and discrete** **syngenetic** **mineralized** **horizons** hosted within the western volcanic rocks.

- Clearly it is critical in any future exploration program involving the mafic volcanic host rocks to know whether one is exploring for a single favourable horizon or more than one horizon.

- Probably the easiest way to test these alternatives would be to carry out a reasonably thorough whole rock lithogeochemical program on the mafic host rocks of both the northern and southern mineralized areas.

  This would involve the following:

- define the signature of the mafic volcanic host rocks at South Pond and Great Burnt, what are they? and, are they the same or different from each other?

- sample all other known mafic volcanic horizons on the Property, are there any others identical to South Pond/Great Burnt?

- in the vicinity of South Pond/Great Burnt define the characteristics and 3D distribution of any significant alteration parameters

- Apply these alteration parameters to other mafic volcanics on the property, as defined by the geological mapping program, or the ground magnetic survey, or penetrated in future drill holes.

- At the same time the whole rock lithogeochemical program should also attempt to sample all the felsic volcanics/volcaniclastics in the sequence. Can one define a consistent lithogeochemical background and then distinguish zones of alteration superimposed on this? Are the felsic rocks totally barren or are they simply "under explored"?

- A thorough and comprehensive, high quality, digital, ground magnetic survey would greatly assist in:

  (i) helping to "fill in" the geological map

  (ii) locate further potentially prospective units of mafic volcanics which could be sampled during the lithogeochemical program
  (iii) define high priority zones of pyrrhotite

(iv) distinguish EM/IP conductors which consistently occur in low magnetic units and are most likely to be graphitic in origin

(v) defining contacts between different geological units. These contacts are especially significant in controlling/locating VMS style mineralization.

- From the orientation surveys carried out over the Great Burnt Lake Deposit, and if possible the South Pond Zones, institute thorough and complete ground EM/IP surveys and soil geochemical surveys to cover as much of the western portion of the property as is possible.
- The EM/IP surveys to have specifications allowing them to "prospect" for "blind" mineralization occurring to at least +/- 300 m depth.

POSSIBLE WORK PROGRAMS

There are two separate components involved in any future exploration of the Great Burnt Lake Property:

(A) **A thorough evaluation of the six known zones of Cu, Cu-Au and Au-Cu mineralization**
(B) **Completion of a thorough and comprehensive exploration program of the entire western part of the Property underlain by volcanic rocks.**

Ideally, if the budget allowed, both of these separate but overlapping programs would be carried out at the same time.

A An Evaluation Program of the six known zones of Cu, Cu-Au, Au-Cu mineralization

1. Relog all exsiting holes from the six known deposits (> 100 ddh)

2. Enter all this data into relevant software, produce new longitudinal and cross sections
3. Decide on location of twinning/verification holes and drill them.

4. Complete assay, SG and lithogeochemical sampling programs: carry out detailed inhole geophysical parameter logging surveys and downhole EM surveys; complete mineralogy and bench metallurgical programs.

5. Continue to explore the six known zones by diamond drilling along strike, down plunge and down dip to +/- 500 m level.

6. Obtain all possible RQ data to help plan "starter open pits" and the later UG declines on all six deposits.

B	**An Exploration Program covering the western volcanic portion of the Property**

1. Establish a new master grid covering all of the western part of the Property

2. Tie in all previous "postage stamp" grids and isolated drill holes with a GPS into the new master grid.

3. Complete detailed, systematic geological mapping, focussing especially on lithologies, structure and alteration.

4. Complete a comprehensive, detailed, digital, ground magnetic survey and integrate this with the geological mapping program.

5. Complete a comprehensive whole rock lithogeochemical program.

6. Complete a number of ground geophysical orientation surveys over both the known shallow and deep mineralization at the Great Burnt Lake Copper Deposit and, if possible, also at the South Pond deposits.

7. Evaluate the results of these ground geophysical orientation surveys to the **already presently known** but as yet drill untested geophysical/geochemical targets that occur on the property. Data from the orientation surveys may well help to rank these known but not yet drill tested anomalies.

8. Drill test the most highly ranked of these anomalies and carry out downhole EM surveys.

9. Apply the most cost effective ground geophysical and geological techniques emerging from the orientation studies to the 10 km of highly prospective ground lying between Great Burnt and South Pond and also along strike to S and N of these deposits. Note, unlike the previous exploration programs one is now trying to discern "blind" deposits down to a depth of +/- 300 m. Hence, need high quality digital data sets suitable for inversion interpretation techniques.

10. Then drill test any anomalies resulting from program #9 and carry out downhole EM surveys.

11. Rank any newly discovered mineralization with the six known zones and place any newly discovered mineralization into Program A.

"ORDER OF MAGNITUDE" BUDGETS

A	**EVALUATION OF THE SIX KNOWN DEPOSITS**		
1	Relogging previous core	=	$ 10,000
2	Digitize, enter, produce sections	=	$ 5,000
3	Diamond drilling, twinning/verification program at all six localities 2500 m @ 100/m	=	$ 250,000
4	Programs on the verification drill core and the downhole geophysics	=	$ 150,000
5	Further Exploration of the six known zones by diamond drilling, could be at least 10,000 m @ $100/m	=	$1,000,000
6	RQ work for open pit/decline studies	=	$ 50,000
	TOTAL	=	**$1,465,000**

B	EXPLORATION OF THE WESTERN PORTION OF THE PROPERTY		
1	New grid, 200 km @ $200/km	=	$ 40,000
2	Tie in all previous grids/drill holes, 10 days @ $500/day	=	$ 5,000
3	Detailed Geological Mapping, 50 days @ $600/day	=	$ 30,000
4	Detailed Magnetic Survey, plot integrate, revise geology etc. 200 km @ $100/km	=	$ 20,000
5	Comprehensive lithogeochemical program, 100 samples @ $100 sample	=	$ 10,000
6	Ground Geophysical/Geochemical orientation surveys, say	=	$ 25,000
7	Evaluate presently known, but undrilled tested anomalies	=	$ 5,000
8	Drill test these anomalies 2500 m @ $100/m	=	$ 250,000
9	Apply cost/effective/geophysical/geochemical techniques to underexplored parts of the property and to look to +/- 300m depth 200 km @ $500/km	=	$ 100,000
10	Drill test anomalies from above program, 4000m @ $100/m	=	$ 400,000
	TOTAL	=	**$ 885,000**

GRAND TOTAL FOR A & B	**=**	**$ 2,350,000**

Plus contingency and Administrative overhead, etc.

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Statement of Qualifications and Disclaimer

I, Roger Hugh Wallis do hereby certify that:

1. I reside at 4 Paddington Place, Etobicoke, Ontario, M9R 2T1 and I am a Professional Engineer registered with the Association of Professional Engineers of Ontario since 1970.

2. I am a graduate of the *University of Birmingham (UK)* with a B.Sc. (Honours) degree in Geology (1960), with credits in both Mining Engineering and Civil Engineering, and with a Doctorate in Philosophy (Geology) (1966) and I have practised my profession continuously for the last 40 years.

3. I was Senior Research Associate of the Department of Geology, The *University of Cambridge, UK,* and a member of Staff of *Gonville and Cains College, Cambridge,* from 1963 to 1968.

4. I was a Senior Geologist II, with the PreCambrian Division of the *Saskatchewan Geological Survey,* Regina, Saskatchewan from 1968 to 1970.

5. I was Senior Staff Geologist at *Barringer Research Ltd.*, Rexdale, Ontario, from 1970 to 1972.

6. I was General Manager of *Barringer Fiji Ltd., S*uva, Fiji, from 1971 to 1972.

7. I was Senior Geologist, Chief Geologist, Exploration Manager, Manager of the Minerals Division of *Canadian Occidental Petroleum Ltd.*, Mineral Division, Toronto, Ontario from 1972 to 1984.

8. I was Vice President, Exploration of *Billiton Metals Canada Inc.* Toronto, Ontario from 1984 to 1993.

9. I was the General Manager of *FinNeth Exploration Inc.* An *Outokumpu Ltd./Billiton Metals Canada Inc. Joint Venture Company* from 1985 to 1989.

10. I have been an independent Geological Consultant from 1993 to the present.

11. I am a Registered Professional Engineer of the Province of Ontario since 1970.

12. I am a member of *SEG, GAC, GSA, CIM, PDAC, Geological Society of UK, SEXGeochem, Ass. of Professional Geol. Ont., etc.*

13. I do not own, directly or indirectly, nor do I expect to receive any direct or indirect interest in the properties described in this report, nor do I beneficially own, directly or indirectly, any securities of *Celtic Minerals Ltd.* or of any associated or affiliated company.

14. While the information contained in this report is believed to be accurate, no representation or warranty, expressed or implied, is made as to the accuracy or completeness of the information contained in this report. The author assumes no liablility resulting from use of the information contained herein.

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