COGEMA CANADA LIMITED
BURNTBUSH RIVER PROJECT

FINAL REPORT OF ACTIVITIES 1986
VOLUME 1 of 2

Part II: Detailed Mapping and Lithogeochemistry Results of Outcrop Stripping Program

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SUMMARY OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS

1. At trench 1:

three principal stratigraphic rock units have been mapped. These are, from north to south: a deformed pillow lava with garnetiferous selvages, a massive gabbro sill or flow, and a second pillow lava which may be practically undeformed, strongly stretched and flattened, or very strongly sheared such that individual pillows are no longer recognizable;

the northern two units are separated by a major fault, the contact between the southern two units is probably conformable but is poorly exposed;

foliations are mostly northwest trending and northeast dipping, but at the southeastern part of the exposure, foliations are east-west (and still north dipping). Foliations are mostly parallel to bedding, but in strongly sheared areas minor folds are abundant and primary structures have been destroyed;

mineral lineations (amphiboles), quartz rods and minor fold axes all plunge steeply towards the north;

several generations of dyke rocks and veins crosscut these principal units and a relative age sequence has been postulated based on cross-cutting relationships and the deformations which are present within them;

the highest Au result is 5 ppb from a sheared part of the southern pillow lava.

2. At trench 2:

the principal rock type is an intrusive metagabbro which is mostly strongly sheared. Local areas are less deformed and only here can the original rock type be deduced;

foliations are very variable due to strong minor folding. Most readings are not representative of the area they were taken at, but generally, the dominant trend is close to east-west and north dipping;

quartz rods and fold axes may plunge steeply north, or moderately northeast, or fall between these two extremes;

a few faults with associated brecciation of the metagabbro trend close to east-west and abundant late fractures which may be related to these faults trend closer to northeast;

quartz veins have been strongly deformed and boudinaged, other dyke rocks and veins are much less abundant than in trench 1 and cross-cutting relationships are not exposed;

the sampling coverage is extensive, and many results of 5 ppb Au or greater were found. The best result is 110 ppb which was taken from the northern part of the trench in a local zone of silicification and rusty weathering.

3. At trench 3:

two principal rock units have been mapped. The first unit consists of two thinly interbedded subunits: a dacitic lapilli tuff and a more mafic iron-rich tuff. These have been intruded by a metagabbro which has thermally metamorphosed the tuffs close to the contact zone;

the layered rocks are mostly gently dipping, but some areas are steeply dipping. Steeply dipping rocks strike east-west and most dip north;

minor cm scale folds are abundant in the layered rocks, and the fold axes plunge gently towards the east. The metagabbro is lineated (an amphibole lineation) and its orientation is the same as fold axes in the tuffs;

quartz veins and crystalline calcite veins are the predominant vein types, the latter carry abundant angular fragments of country rock;

Au background values are close to the 5 ppb level, and a sample taken from the thermally altered zone gives 30 ppb.

4. At trench 4:

porphyritic pillow lavas are exposed. Many are undeformed, but flattened and stretched pillows are present in east-west trending bands up to several meters wide;

undeformed pillows are gently dipping (close to flat-lying) and are upright. It could not be determined whether the deformed pillows represent flattened fold limbs, or whether they are upright zones of compression;

all of the lineations plunge gently towards the east. Lineations include abundant quartz rods present in both deformed and undeformed areas, the long axes of deformed pillows and uncommon fold axes from deformed areas;

quartz veins are common but not abundant;

all samples gave <2 ppb Au, the detection limit for the neutron activation method.

5. At trench 5:

mapping was not performed due to inclement weather, including substantial snowfall;

the rock types and deformations strongly resemble those observed at trench 3, with the notable absence of metagabbro;

Au background values are less than 5 ppb, and one sample which showed significant pyrite content gave 110 ppb.

6. It has been interpreted that:

a major structural discontinuity transects the central part of the property in an east-west direction;

that this discontinuity and the rocks south of it may be more likely to host significant Au mineralization.

7. It has been concluded that:

the mechanical stripping program has greatly increased our knowledge of the property geology, and our ability to assess its potential to hold Au mineralization.

8. It has been recommended that:

a similar program be instituted in the vicinity of several outcrops which are poorly exposed due to thick forest cover in the southern part of the property just east of the Burntbush River (outcrops GC-8, 9, 10, 11, 12, 13).

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Note : This report constitutes Part II of the 1986 exploration program. Part I described the results of the summer geological traversing program, while Part III will give results of the airborne geophysical survey flown by Dighem.

1. INTRODUCTION

The Burntbush River project is a joint venture gold exploration program between COGEMA Canada Limited and AMERITEX RESOURCES Limited. The property comprises 312 contiguous mining claims situated in northeastern Ontario.

During the summer of 1986, a program of systematic ground traversing and geological mapping was performed (see Learn, 1986; this report will be referred to within the following text, but will not be further indicated formally). As a follow-up to this program, we contracted Northland Exploration Ltd from Timmins, Ont., to conduct mechanical stripping of several of the larger outcrops. Detailed mapping and sampling of these outcrops was performed and results are presented in this report.

2. LOCATION AND ACCESS

The project area is located within the twonships of Hoblitzell and Noseworthy in northeastern Ontario (49°30'N, 79°50'W, see Map 1).

The heavy equipment was driven to the project area from Timmins, Ont. in the following manner: by truck and trailer to the north end of Tomlinson Road (≈8 km south of the property), then by following the winter road (constructed earlier by Newmont, whose property adjoins the project area to the south), and finally, by "bushcrashing", to the individual work sites.

Personnel and camp gear were flown by helicopter from Timmins, Ont. and from La Sarre, Que.

Two separate camps were erected, and the personnel walked from the camps to the work sites. In the case of work site No. 3, a boat was used to reach the outcrop from the second camp (see Figure 2-1).

3. DESCRIPTION OF FIELD WORK

In total, five outcrop areas were mechanically stripped and cleaned. These areas are indicated on Map 2 and have been previously described as outcrops JL-10 and AM-8 (trench 1), JL-13, 14 and 24 (trench 2), AM-15 (trench 3), GC-7 (trench 4) and GC-1 and 2 (trench 5). Note that detailed

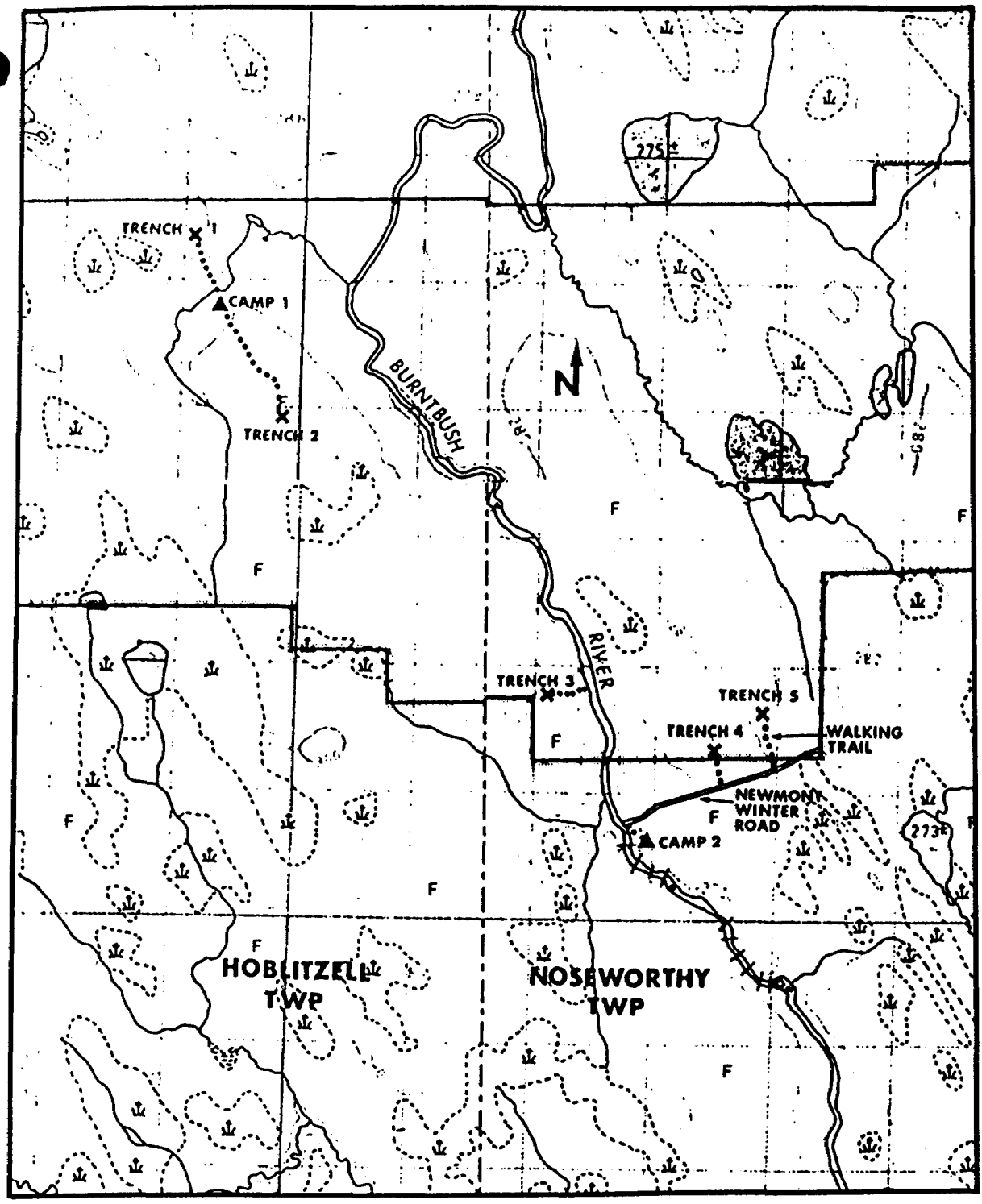


Figure 2-1 : Location of camps and work sites, fall 1986 outcrop stripping program.
Scale 1:50 000

mapping of trench 5 could not be performed due to inclement weather, including substantial snowfall. This last trench will be mapped in July 1987.

The following procedure was adopted at each site:

i) all trees were cut with chain saws and transported manually away from the area to be cleared;

ii) overburden was removed using a backhoe mounted on the rear of a MUSKEG tracked vehicle (Northland Explorations, Ltd). Only areas with thin overburden cover were excavated, the idea being to expose the maximum amount of outcrop in a minimum time frame;

iii) the outcrop area was then washed using Wajax pumps and fire hose with a restricted nozzle. In some cases, running water was present close to the work site and in other cases sumps were dug in order to supply the water required;

iv) when dry, the outcrop was gridded into squares of 5 m x 5 m, the corner of each square is indicated directly on the bedrock surface with permanent fluorescent orange paint, and the sides of the squares are oriented north-south and east-west;

v) each square was identified with an index number, again using fluorescent spray paint;

vi) individual 5 m x 5 m squares were mapped, one at a time, at a scale of 1/50. The mapping included sketches of each individual square, lithological descriptions (with a minimum of repetition, but with careful attention to local variations), and structural measurements. In general, structural measurements were taken in every square, even when the same structure had been measured in an adjoining square;

vii) based on the mapping, samples were taken, described, and sent for chemical analyses and/or thin section.

It should be noted that the above steps were in many cases performed simultaneously over different parts of the same trench. For example, the backhoe was able to start excavating when a sufficient amount of trees had been removed, parts of each trench could be washed while the backhoe was working just 20 m away, and gridding could be performed while washing was being done, etc. In fact, at one point on trench 2, practically all of the above steps were performed at different parts of the outcrop during the same day.

4. RESULTS OF FIELD WORK

4.1 Introduction

Each work site will be individually described. Results from the summer mapping program (sample descriptions, chemistry results, etc.) are included in the text and appendices. Note that structural measurements taken during the summer program were obtained using a SILVA compass, and during the fall program using a BRUNTON compass. Structural measurements taken during the summer are therefore not included in the text and maps.

Hand specimen and thin section descriptions, chemistry results, etc. appear in the appendices of the report.

4.2 Trench 1

Trench 1 comprises outcrops JL-10 and AM-8 which occur in the north (central-west) part of the property at ≈1.4 km west of the Burntbush River. At this site, approximately 3600 m^2 was cleared of trees and ≈1875 m^2 of bedrock was exposed (see Map 3).

Three principal rock units are exposed. At the north end, a strongly deformed and metamorphosed pillow lava occurs, while at the south end we observe a different pillow lava. Between the two units there occurs a lineated massive amphibolite which may represent a gabbro sill (metagabbro) or a massive (pillowed ??) basalt flow.

Subsidiary rock types also described include the faulted contact between the northern pillow lava and the massive amphibolite, as well as the various dyke rocks and quartz veins which crosscut the major lithological units.

4.2.1 Northern pillow lava

This unit has a minimum true thickness of ≈17 m. A northern contact of the unit was not observed. The southern contact with the massive amphibolite is faulted.

In outcrop, pillows and pillow selvages are distinctly different. Pillows are light grey, and are composed mainly of hornblende and plagioclase. The hornblende is elongate and defines a mineral lineation. Selvages are black, somewhat micaceous, and contain dispersed ≈0.5 cm reddish garnet porphyroblasts.

Pillows are flattened parallel to the bedding (≈130/60 NE) and are stretched parallel to the lineation (≈55° at 005) within the bedding plane. On the outcrop (near-horizontal) surface, pillow dimensions range from ≈10 cm to ≈1 m in length, and from ≈1 cm to ≈25 cm in thickness. Deformation, then, is quite strong, considering that the long axis of the pillows plunges fairly steeply.

Pillow selvages are of <1 cm to ≈10 cm thickness and appear to have been affected by shearing (ductile flow).

Finally, in addition to stretching and flattening, the unit has been further deformed in that small scale minor folds are present. The fold axes plunge at ≈55° at 005; the axial traces are close to north-south. Figure 4-1 is an attempt to show the form of these pillows as they appear in outcrop.

The southernmost part of this unit is so strongly sheared that pillows are no longer recognizable. It is mapped as belonging to the northern pillow lava unit due to the presence of garnet porphyroblasts, which are not recognized south of the main fault.

Three samples have been taken from this unit (JL-10-8, TI-6, TI-14). Two of these were sent for thin section (JL-10-8, TI-14). All samples were analyzed for minor elements, TI-14 was analyzed for major elements.

Pillows are composed of principally hornblende and plagioclase (>90% together), and both sections are remarkably fresh. There is a minor amount of sphene, and the plagioclase is very weakly sericitized. Although some pillow selvage was sampled in TI-14, none appears in the thin section.

Trace element analyses yield no Au anomaly. The major element results suggest the rock may be of komatiitic affinity (48.50% SiO_2, 18.00% MgO). But, this result must be checked, since the mineralogy would appear to not support such a high MgO content. On the other hand, it is possible that the pillow selvages, if disproportionately sampled, could account for this. Further sampling, and a thin section of the selvage will be done.

4.2.2 Massive amphibolite:

This unit, where exposed in the trench, has a true thickness of about 32 m. The term amphibolite is here used rather loosely, since the rock contains only ≈50% amphibole.

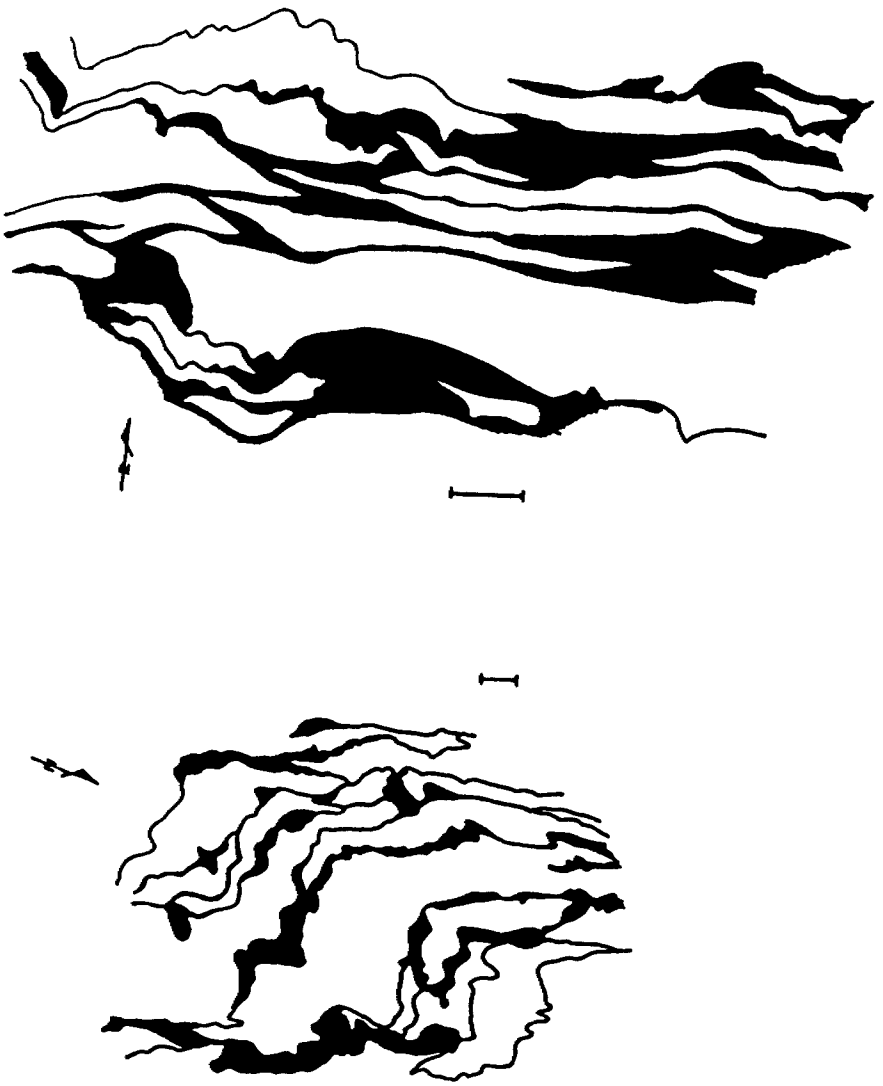


Figure 4-1 : Sketch diagrams of northern pillow lava (traced from photographs); scale bars approximately 10 cm.

The rock is coarse grained and grey and is composed chiefly of plagioclase and hornblende. The most prominent structure present is a very well defined amphibole lineation which plunges at ≈60° at 005 (estimated average of all measures which range from about 50 to 65° at 345 to 030; see Fig. 4-2). There is no apparent foliation except in thin <0.5 m to ≈2 m zones which are interpreted to be discrete shears.

This unit may represent a massive flow or gabbro sill. It is even possible that is is a pillow lava, with pillows on the order of 2 m on the outcrop surface. This is suggested by the presence of thin (2 to 10 mm) feldspar-chlorite-quartz veinlets which may or may not be pillow selvages.

Discrete shears within the massive rock are of variable intensity and orientation, but are always relatively thin. One of the best examples is found on the southeastern part of the unit (squares 5 and 6, see Map 3). The north part of this shear (≈90 cm) is characterized by a thin interbanding of undeformed rock, and rock with a well defined foliation and reduced grain size. Also present are thin tightly to weakly folded discontinuous and continuous feldspar-chlorite-quartz veinlets and quartz veinlets. The south part of the shear (≈60 cm) contains less strongly deformed rock, and much more free quartz veins having a maximum thickness of ≈20 cm. There is local minor carbonate and pyrite.

Also interpreted as shears, but of much weaker intensity, one may observe more or less undeformed rock invaded by thin discontinuous to continuous feldspar-chlorite-quartz veinlets at very close spacing over ≈10 cm to ≈1 m. There is a complete gradation between the two described examples within the trench.

These shear zones generally trend southeast and dip steeply northeast, but locally can be found to trend east-west and dip north, or north-south and dip east (see Fig. 4-3). The veinlets, where folded, have fold axes of the same orientation as the mineral lineation. Uncommonly, the foliated amphibolite is folded, and these folds have similar plunges. In a few cases, quartz rods plunging also ≈55° at 005 were observed (see Fig. 4-4).

In total, five samples have been taken from this unit, two are undeformed (JL-10-5, JL-10-12) and three are from sheared areas (JL-10-6, TI-1, TI-4). No new thin sections were prepared, all have been analyzed for trace elements, JL-10-5 was analyzed for major elements.

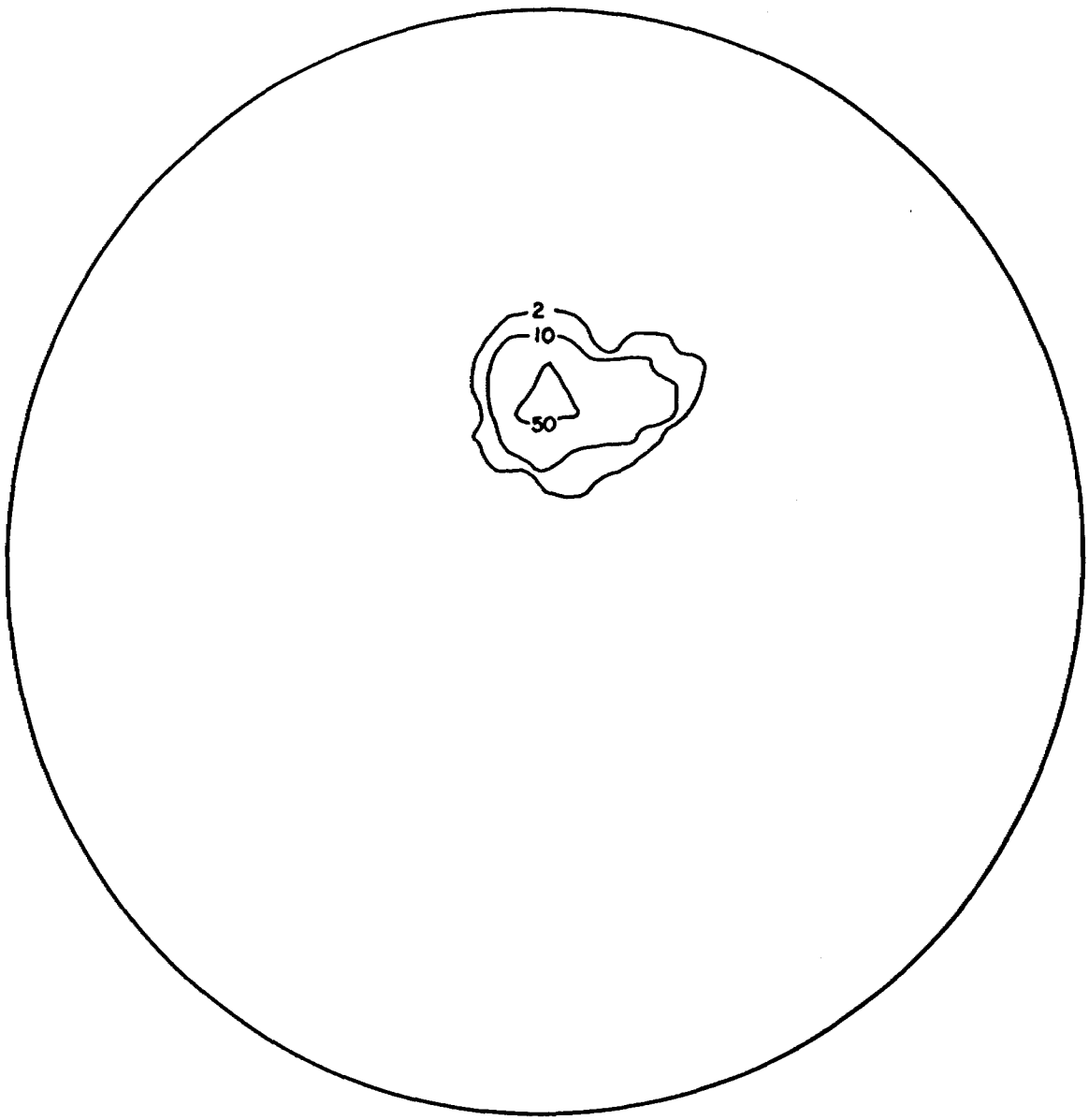


Figure 4-2 : Stereographic projection (lower hemisphere projection on a Wulff net) of amphibole lineations from Trench 1. Note that some measures come from outside the massive amphibolite unit, but that the data cluster well around a mean value of 59° at 006. Only 2% of the data fall outside the 2% contour, while 50% of the measures fall within the 50% contour. Total number of measures plotted is 26.

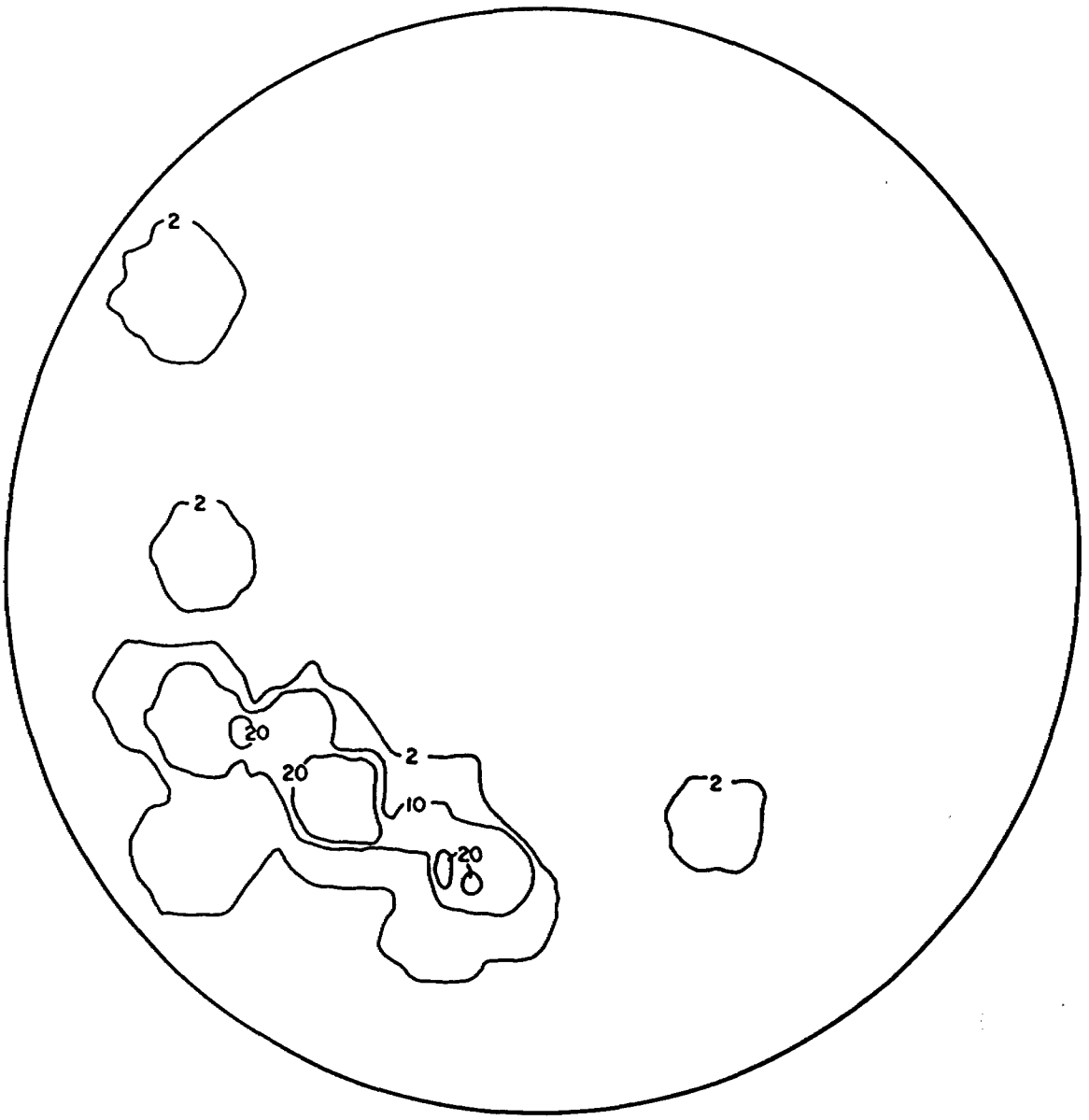


Figure 4-3 : Stereographic projection (as in Fig. 4-2) of shear (foliation) measurements from Trench 1. Poles to shear planes are contoured at 2%, 10% and 20%. Note that most measures come from the southern pillow lava. Total number of data points is 34.

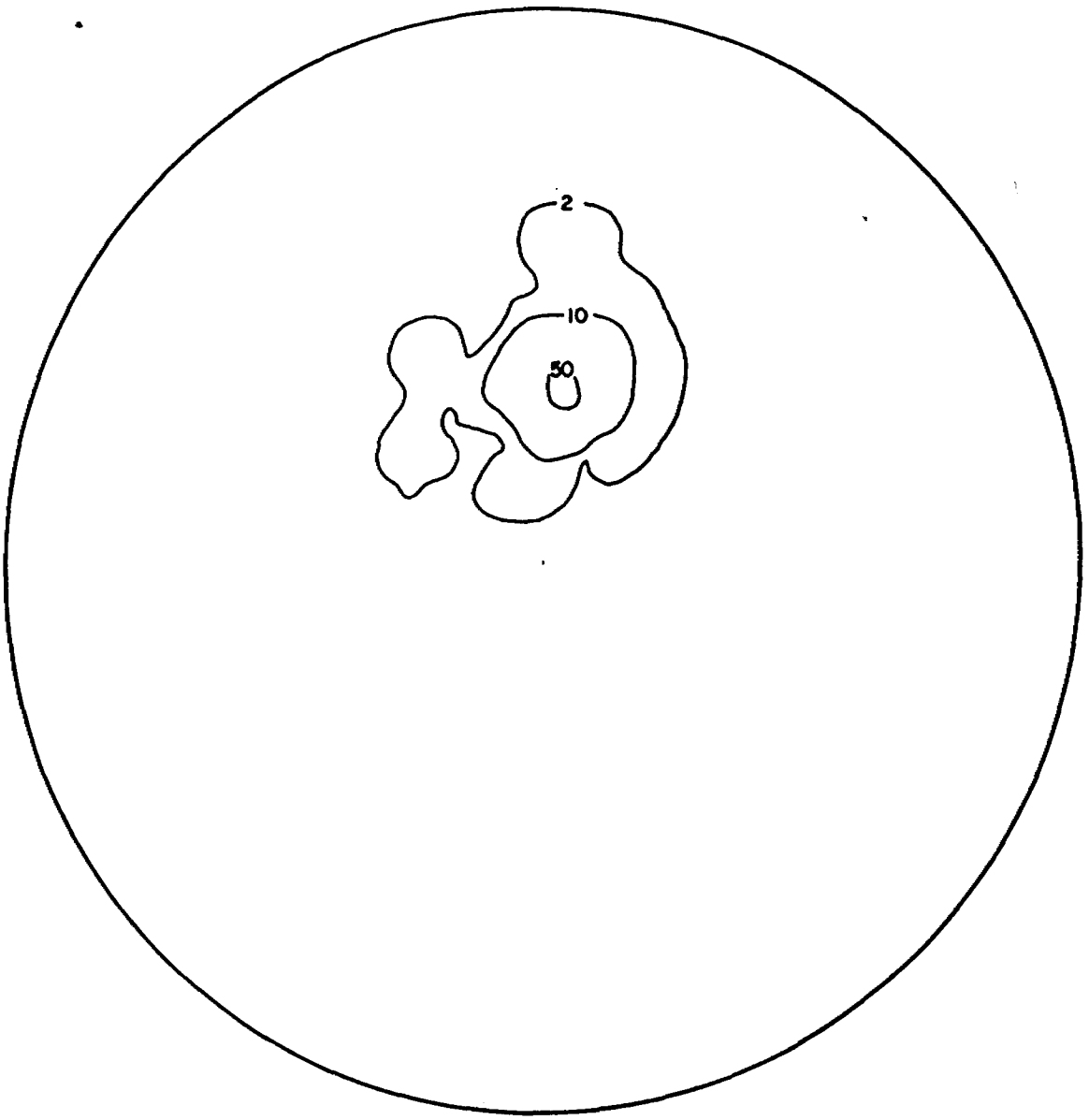


Figure 4-4 : Stereographic projection of fold axis measurements from Trench 1. Fold axes were measured directly from minor (cm scale) folds, from folded veinlets and from quartz rods. A few data points were found by plotting limbs of metre scale folds from the southern pillow lava. Total number of measures is 40.

Hornblende and plagioclase comprise >90% of the rock, and there is minor sphene and local minor quartz. The samples are well crystallized and very fresh. The field interpretation that the foliated zones are thin shears is supported by the grain size reduction seen in sample JL-10-6 relative to the undeformed samples.

The trace element data are not anomalous in their Au content. Major elements from JL-10-5 indicate a basalt composition.

4.2.3 Southern pillow lava

This unit has a minimum true thickness of ≈27 m. A southern contact was not observed, and the northern contact with the massive amphibolite is very poorly exposed. This particular lithology is more heterogeneous than the other two principal rock types and may represent more than a single flow unit.

In outcrop, pillow forms are commonly well preserved, but much of the exposure is interpreted from field observations to be strongly sheared. Pillow forms are completely obliterated where shearing is intense. Unlike the northern pillow lava, no mineralogical difference has been noted between pillows and pillow selvages. Overall, the rock is much finer grained than the previously described units, and it is dark grey to black in colour.

The degree of deformation of the pillows is variable. One block of undeformed pillow lavas, bounded by intensely sheared rock, contains lozenge shaped pillows of about meter scale. More commonly, pillows are stretched or stretched and flattened parallel to the previously described mineral lineations, fold axes etc. and the bedding plane. Bedding on the west side is close to 130/60NE (i.e. similar to the northern pillow lava) while at the southeast (AM-8), bedding is closer to 095/55N. Deformed pillows are generally <50 cm to <10 cm long in the outcrop (near-horizontal) plane and have length to width ratios of 10:1 to 1:1. The long axis, is however, steeply plunging. An amphibole lineation is also present, but is not so clearly evident, due to the finer grain size.

Where the unit is strongly sheared and pillow forms obliterated, the rock is well foliated and locally strongly and erratically folded at cm to meter scale. All fold axes plunge at ≈55° at 005 (see Fig. 4-4). Fold axes have been measured directly from cm scale folds, from folded boudinaged veinlets, from quartz rods and have been deduced from stereonet plots of limbs from metric scale folds.

Numerous samples have been taken from this unit due to its heterogeneity and the intensity of shearing (JL-10-2, 3, 4, 13, AM-8-1, 3, JL-25-9, 10 have been previously reported; new samples include TI-7 through TI-13). In total there are seven thin sections (JL-10-2, 3, 4, 13, AM-8-1, 3 and TI-12), and fourteen trace element analyses (all but JL-10-13). One major element analysis has been performed (TI-12).

The unit is again composed of chiefly hornblende and plagioclase (>90%). Very minor biotite was observed in AM-8-1 and significant biotite (≈7%) was observed in TI-12. The samples show only a weak planar fabric (or none at all) in thin section, even though they are clearly foliated on the outcrop.

Trace element results give low values for Au except for sample TI-13 from the extreme southeast part of the trench, which shows 5 ppb.

The major element analysis result from sample TI-12 poses a problem. This sample was taken from what was mapped as sheared pillow lava in the outcrop. This particular spot was recognized as being anomalously micaceous, which is confirmed in thin section. It was not, however, recognized as being siliceous. The major element analysis gives 73.10% SiO_2, which is unrealistic for a pillow lava. The thin section suggests a low quartz content for the rock, but in fact, plagioclase is not easily distinguished from quartz in any of the rocks from this outcrop for two reasons: plagioclase is only rarely twinned and much of the plagioclase (and quartz) is too fine grained to obtain an optical figure with the polarizing microscope. A number of possible explanations may be put forward, for example, free quartz may have been sampled, thus rendering inaccurate the analysis; this is a sheared dyke rock; the analysis is incorrect.

4.2.4 Faulted contact

As was mentioned earlier, the contact between the northern pillow lava and the massive amphibolite appears to be a faulted contact. This zone comprises an approximately 50 cm thick fissile schistose unit. The field interpretation that it represented a thin interflow sediment (mudstone) has been abandoned.

One sample was taken (TI-5) and was sent for thin section and major and minor element analyses.

In thin section, the rock is extremely fine grained (mylonitic) and is strongly altered and tectonized. Granular plagioclase is the major constituent (≈50%). A few garnets remain intact, most are strongly fractured and altered to chlorite and epidote. Fracturation may be strong enough that transposition of the altered constituents can be observed. Biotite, epidote and chlorite are probably derived from hornblende. Chlorite may be grungy, in which case it is a direct product of hornblende alteration, or it may pseudomorph biotite.

The sample is not anomalous in Au. The major element analysis is more or less identical to JL-10-5, an undeformed massive amphibolite.

4.2.5 Alterations in the principal rock types

The northern pillow lava and massive amphibolite units are, in general, very fresh, unaltered rocks. The faulted contact between them is the most strongly altered part, with significant chloritization and epidote. Adjacent to this fault, both rock types are strongly sheared, but, the alteration observed within the fault diminishes quickly away from it.

Discrete shears within the massive amphibolite similarly show very weak alteration. There may be a slight increase in pyrite and carbonate content, but the rocks are still quite fresh.

The southern pillow lava is commonly very strongly sheared, but chloritization is weak, and the foliation appears to be structural, with little mineralogical changes, i.e. few micaceous minerals. Pyrite and carbonate content may increase slightly where the rock is strongly sheared.

At the southeast end of the trench, there may be a weak to moderate silicification detected (TI-12), but this zone is limited in extent.

At the south side of JL-10, a brownish colouration which discontinuously follows the bedding was first conjectured to be an Fe carbonate alteration, but a thin section (JL-13) revealed it to be due to an abundance of Ti-oxides.

4.2.6 Late dykes and veins

Numerous different dyke rocks and veins have invaded the principal rock types. These are generally <1 m thick. Many, but not all of the cross-cutting relationships are exposed in the outcrop area.

It should be noted at this time, that the stripped outcrop surface undulates substantially, i.e. only locally approaches a near-horizontal surface. When veins and dyke rocks which dip moderately (eg 40 to 65°) are sketched, this topographic effect tends to suggest that veins curve, or are folded (see Map 3) when in fact they are commonly quite linear.

i) sheared mafic to intermediate dykes (m.d.s.)

The earliest dyke rocks would be those that pre-date the shearing, and are themselves sheared. Two such dykes are mapped: both trend northwest, they may or may not be of the same family. Both were sampled (JL-10-11, TI--3) and sent for minor element analysis, only TI-3 was sent for thin section.

The thin section of sample TI-3 is composed chiefly of plagioclase (≈50%), with biotite and hornblende present in approximately equal proportions (total ≈40%). There is a compositional banding in the dyke (biotite rich bands) and a preferred orientation of biotite grains. The rock is medium grained; hornblende and plagioclase are anhedral. This lack of intrusive texture is interpreted to be due to shearing. Chlorite is present at nearly all grain boundaries and locally takes the form of thin discontinuous veinlets. Plagioclase is locally completely saussuritized, feldspar and/or chlorite have invaded the biotite cleavages.

Neither sample is anomalous in its Au content.

ii) lineated porphyry dykes (+)

Two of the dyke rocks are lineated, and locally, may be weakly sheared. These dykes are more felsic, and may therefore pre-date the shearing if they were strong enough to resist being strongly sheared themselves.

The first example occurs at the southern part of JL-10. This dyke was sampled during the summer program (JL-10-10) and was thin sectioned on two perpendicular planes. These sections clearly show that both quartz and feldspar phenocrysts are elongated, i.e. stretched. The orientation of this lineation is probably steeply dipping since it was not recognized on the outcrop surface, but was quickly recognized in hand specimen.

The second example occurs at AM-8. This dyke weathers purplish and has a very hard siliceous matrix. This dyke was also sampled during the summer program (AM-8-2).

Neither sample is anomalous in its Au content.

iii) undifferentiated mafic to intermediate dykes (m.d.)

Numerous mafic to intermediate dykes which are not sheared have been mapped. Most may be said to trend northeast but other orientations are present. Some of these dykes cross-cut each other. They have not been differentiated (nor were they sampled) because they weather in relative to the host rock and are therefore more difficult to study in detail.

One such dyke crosscuts a sheared mafic dyke and the lineated porphyry dyke at the south part of JL-10. In this area it has been slightly folded, but is otherwise undeformed. It is possible that some (or all) of these dykes are lineated since this would not be apparent on the outcrop (near-horizontal) surface.

iv) concordant feldspar porphyry dyke (■)

This dyke occurs in the southern part of JL-10, and was sampled during the summer program (JL-10-1). It is not lineated, and would therefore be younger than the sheared and lineated dykes, but its relationship to undeformed dykes can only be guessed at. It is, however, older than the chloritic porphyry dykes (see later).

It is not anomalous in its Au content.

v) irregular quartz-feldspar porphyry veins (QFP)

Cross-cutting relations indicate that the thin (almost always <20 cm), irregularly oriented quartz-feldspar porphyry veins are one of the youngest present. They are usually intersected by, but locally cross-cut, the east-west family of quartz veins (see later). These veins commonly carry small (<5 cm) angular fragments of host rock within them.

No samples were taken.

Note the presence (at AM-8) of a small pod of brecciated porphyry dykes. This pod consists of a mixture of this family of veins, as well as some of the purplish lineated dyke rock and a third greenish (porphyritic) dyke rock.

vi) east-west quartz veins (——)

A very distinctive family of late quartz veins is present in the outcrop area. The most striking feature of these veins is the presence of an alteration envelope within the host rock and immediately adjacent to the quartz. This alteration envelope clearly distinguishes this family of quartz veins from any other free quartz present in the outcrop.

The vein itself is composed of white quartz which may be locally slightly transparent. It is coarse-grained and comprises >99% of the vein material. Generally, minor amounts of a soft white mineral are present, and this is interpreted to be altered feldspar. Also, there is ubiquitous minor amounts of millimetric pyrite cubes. In one place, minor fine-grained tourmaline was observed, and in another place, a few flakes of molybdenite were seen. Vein thicknesses range from a few mm to a few cm and vary considerably along the same vein.

The alteration envelope can be described as a bleaching of the host rock. The altered host rock weathers in greatly relative to the unaltered host rock and the quartz vein. In a few spots, the alteration envelope is micaceous and fissile.

Veins strike at 060 to 120 and all dip north at 40 to 65°. They are continuous over distances of several meters to tens of meters but commonly pinch out. Locally, bifurcation, or splitting of veins may be observed.

Three samples of vein material were taken (JL-10-7, JL-10-9, TI-2) and no anomalous Au content is indicated.

vii) chloritic feldspar porphyry (Δ)

Throughout the outcrop area, a chloritic feldspar porphyry occurs. The main characteristic of this rock is its commonly brecciated texture. The porphyry itself has this texture and not the host rock that encloses it, nor are there fragments of host rock in the porphyry.

The rock is greenish and contains abundant feldspar phenocrysts. Where it has brecciated texture, fragments of mm to 10 cm size, which may be angular to rounded, occur in a fine-grained matrix of either soft white material (altered feldspar ?) or light grey siliceous material.

This rock type clearly cross-cuts the concordant feldspar porphyry dyke. Within the massive amphibolite it is in contact with a thin quartz-feldspar porphyry vein. This contact may indicate that the breccia dyke is younger, but alternatively, the quartz-feldspar porphyry vein may simply abut against the breccia dyke. At this same spot, the breccia dyke is clearly younger than the shear zone adjacent to it since the dyke dips south, whereas the shear zone dips north.

No samples of this rock type were taken.

4.2.7 Late structures

These include minor faults, a well-defined fracture cleavage and late fractures.

Minor faults are indicated on the geologic map where dyke rocks, shear zones etc. have been clearly offset. The displacement is <1 m. One such fault will be discussed briefly below.

Within the massive amphibolite, at the southeast side, a shear zone shows a displacement of about 1 m. At first glance, the displacement seems to be sinistral, but in fact, this is not the case since on the northwest side of the fault, the shear zone is deformed (curves), and this curvature indicates a dextral movement. Since this shear zone dips at ≈55° to the north, the problem may be resolved by interpreting a vertical component to the fault.

Another late structure which is present within the exposed area is a fracture cleavage. The cleavage surface is smooth, but clearly is not a mineral orientation. This cleavage is locally very closely spaced and is a prominent feature, but elsewhere it may not even be present. Generally, it trends southeast and dips very gently to the southwest. Locally, it approaches the horizontal or trends north-south and dips gently west.

Late fracturation is common over the exposure. Occasionally, discrete fractures of various orientations are present, and a few of these were measured and plotted on the geologic map. These fractures are of local importance and have no apparent regional significance.

Other late fractures over the exposure could be described as thin light coloured lines traversing the outcrop. The host rock is never broken, but they clearly were (or still are ?) fluid passageways. These are everywhere present over the outcrop at densities of 0 to 20 fractures/metre, and as such, are interpreted to be a late regional fracturation event. They trend at 000 to 030, and have not been plotted on the geologic map.

4.3 Trench 2

Trench 2 comprises outcrops JL-13, 14 and 24 which are situated in the central (west) part of the property, at ≈1.0 km west of the Burntbush River. At this site, approximately 7400 m^2 was cleared of trees and ≈2800 m^2 of bedrock was exposed (see Maps 4 and 5).

Only one principal rock type is mapped over the outcrop exposure. It is interpreted to be a sheared metagabbro.

Free quartz is common, and locally very abundant in the outcrop area. Other late dyke rocks are present, but are less abundant than in Trench 1.

4.3.1 Sheared metagabbro

The principal rock type is mapped as sheared metagabbro, i.e. this unit is non-stratigraphic. The outcrop extends for about 150 m north-south and ≈170 m east-west.

In outcrop, the rock is generally fine-grained and well foliated. The foliation, where present, may be roughly linear to gently curvilinear, but is more commonly strongly minor folded at cm to m scale.

The dominant foliation trend is approximately east-west and dips ≈60° north, but many northeast and southeast trending measures were taken (see Fig. 4-5). But, the foliation is commonly so strongly folded that individual measures may not really be representative of the range of orientations present in even a very small area.

Fold axes measurements (including direct measures on cm scale folds, boudined folded veinlets, quartz rods, and fold axes determined from stereonet plots of fold limbs from m scale folds) are less consistent than in Trench 1. Many axes plunge steeply towards the north (as in Trench 1), but there is a strong dispersion away from this trend extending towards shallower plunges more towards the northeast (see Fig. 4-6).

Some areas of the outcrop have a more massive appearance. These unfoliated to weakly foliated areas are somewhat coarser grained and individual amphibole and plagioclase grains can be identified. There may be a steeply plunging lineation present, since the (near-horizontal) outcrop surface is speckled, but the low rounded nature of the exposure prevented an unequivocal interpretation.

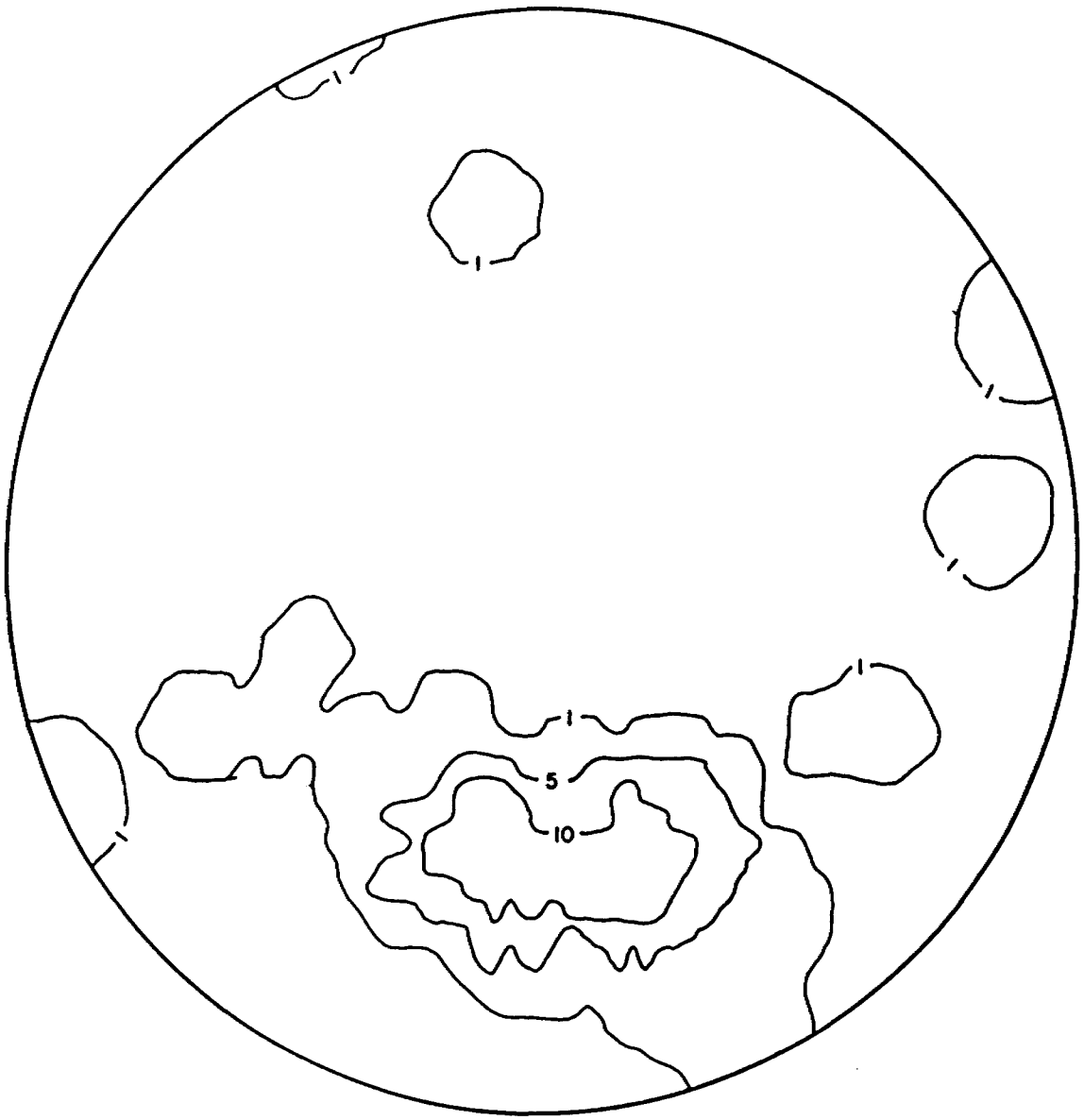


Figure 4-5 : Stereographic projection of foliation measurements from Trench 2. Poles to the plane are plotted; total number of measures is 98.

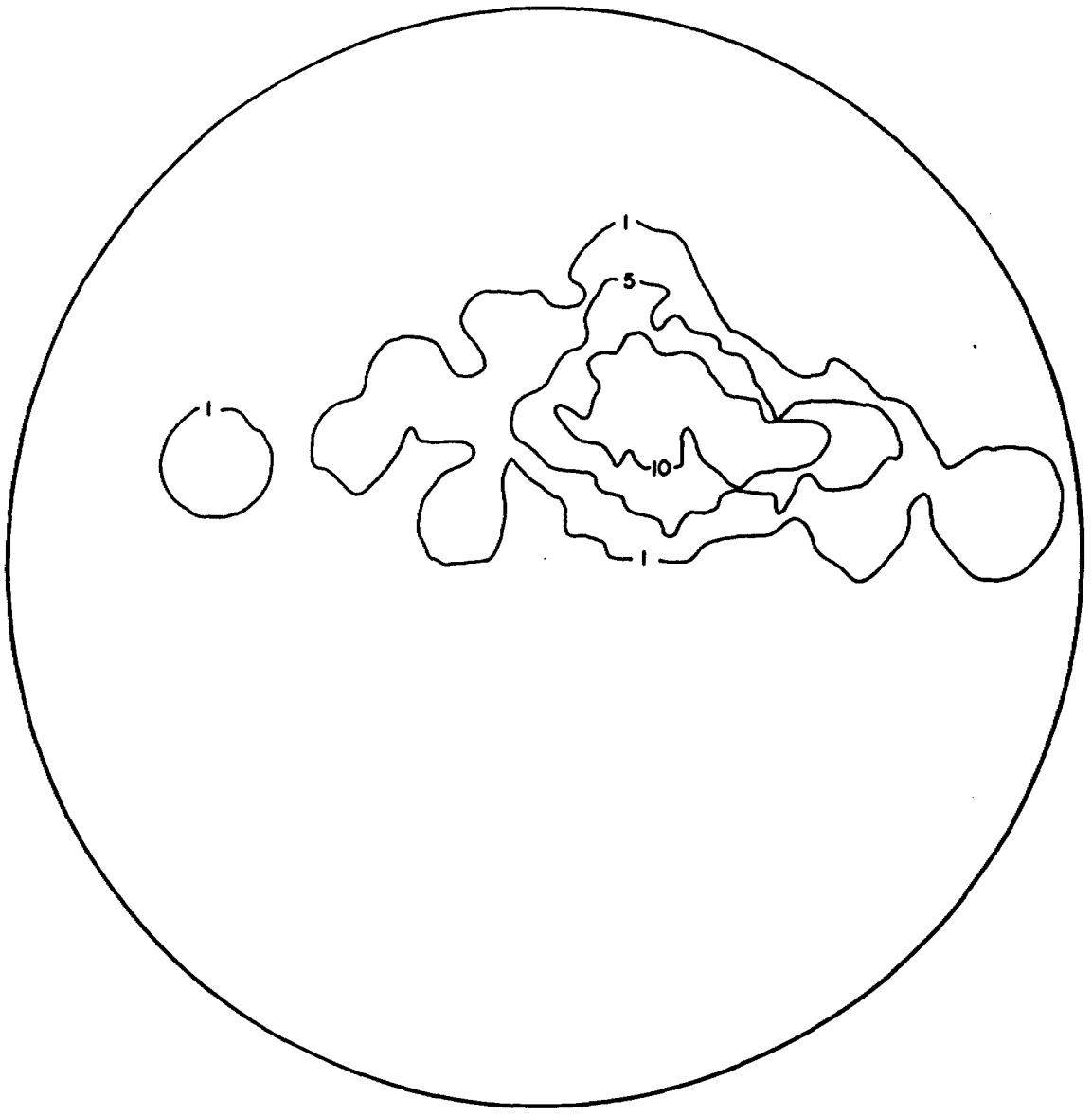


Figure 4-6 : Stereographic projection of fold axis measurements from Trench 2. Fold axes were measured directly from minor (cm scale) folds, from folded veinlets and from quartz rods. A few data points were found by plotting limbs of metre scale folds. Total number of measures is 100.

The outcrop surface is generally weathered to a dull greenish colour, and structural features are best observed in these areas. Locally, the outcrop is well polished and scratched with glacial striae, and here the outcrop surface is blackish and structures are less apparent. The fresh surface is grey to dark grey and is usually somewhat harder than the dull greenish weathered surface.

One small area in the northern part of the trench deserves special mention (square 49, Map 4). Here, there occurs some gabbroic rock which is weathered, but is light grey rather than greenish. The massive quartz which is adjacent to it may have protected it from the alteration which causes the greenish colouration. This rock strongly resembles the massive metagabbro exposures at ≈200 m to the northwest (outcrop JL-17). Additionally, a few small blocks of porphyry in this area are interpreted to be xenoliths.

From the above field observations, I have interpreted that the main rock type is a sheared metagabbro, and that the intensity of shearing is variable across the exposure.

A total of 53 samples of "representative" sheared metagabbro have been taken. Twelve thin sections were prepared and all samples were sent for trace element analyses.

Hornblende and plagioclase are the dominant minerals present (>90% together). Biotite is present in only half of the sections, and exceeds 5% by volume in only two slides. Similarly, chlorite is less common than was supposed from field observations. The well defined foliation is not due, then, to an abundance of micaceous minerals, and this observation supports the field interpretation that it is due to shearing.

Sphene and opaque minerals are ubiquitous as minor constituents. Clinozoisite and epidote were noted in small quantities and are the result of the alteration of plagioclase and hornblende.

Of the 53 samples tested, 13 give 5 to 10 ppb Au and three give >10 ppb Au. It is interesting to note that 51 of 53 samples give between 150 to 600 ppm Cr, 30 to 60 ppm Co, 30 to 110 ppb Ni and <10 ppm La. The two remaining samples give somewhat higher Cr (1200 and 650 ppm) and Ni (250 and 150 ppm) contents.

4.3.2 Alterations in the metagabbro

When first observed, this outcrop was thought to be fairly uniformly, and strongly, chloritized. The greenish weathered surface is only an alteration or weathering rind and may be a conversion of hornblende to actinolite. Chlorite is present in much of the rock, but is not at all a pervasive alteration type, comprising generally 0 to 5% of the rock volume.

The sheared metagabbro almost everywhere contains minor pyrite and/or pyrrhotite. It is supposed that most of these sulfide minerals are a primary feature, but locally, they are more abundant and probably represent a weak mineralization.

For example, rocks which appear to have undergone late stage silicification tend to weather a rusty colour. Five samples were taken in localized areas of silicification (JL-14-7, JL-25-4, JL-25-6, T2-28, T2-54) and two of these samples give Au results of >10 ppb.

Calcite is not uncommon in these rocks, but is widely absent as well. Calcite was observed in thin section to be a late stage mineral filling microfractures and veinlets (along with other minerals such as plagioclase, chlorite, quartz). No pervasive carbonate alteration was recognized, but the outcrop surface is locally pitted, which is probably a result of local stronger calcite alteration.

The network of late fractures will be discussed later. However, the alteration associated with these fractures, is perhaps, more appropriately discussed here.

A single late fracture is almost always accompanied by a thin mm scale alteration halo which discolours the greenish weathered surface to a light orange to brownish colour. This bleaching is not visible below the weathered rind, or in areas of strong glacial polish.

This bleached zone locally attains thicknesses of 50 cm, where late fractures are extremely abundant and closely spaced. Four samples were taken from such zones (JL-25-1, T2-55, 56, 57) and two give results between 5 and 10 ppb Au. Note that the only chemical difference between these samples and "representative" samples that has been so far detected is a slightly lower CaO result.

Finally, one sample (T2-37) was taken from the strong zone of brecciation south of the major fault in the southwest part of the trench. It gives a low Au result.

4.3.3 Late dykes and veins

Free quartz is common, and locally very abundant in the outcrop exposure and probably accounts for >80% by volume of the subsidiary rock types. Several generations of dyke rocks are also present. They are of diverse types, and the picture is less coherent, and their abundance diminished relative to Trench 1.

In total 12 samples have been taken, only one of these represents quartz vein material. None of the ten samples analyzed for trace elements yielded an important Au result.

i) undifferentiated mafic to intermediate dykes (m.d.)

These dykes surely represent more than one intrusive event. Most have been sheared and boudinaged, and strongly resemble the sheared metagabbro. It can therefore be very difficult to recognize or trace these dykes on the outcrop surface.

Sample T2-1 was taken from a deep part of the trench which was later flooded with water. This sample is notable in that it was the only one observed to contain chalcopyrite. It was originally interpreted to be a sample of sheared metagabbro, and the thin section, which is strongly sheared, does not refute this identification. But, the trace element geochemistry (low Cr, Co, Ni, high La) suggests it may be a late dyke.

Sample T2-42 was taken from the southernmost part of the trench, in an area of blocky fracturation. Due to its relative hardness, it is not strongly deformed (i.e. no development of a foliation), but the thin section reveals some shearing has occurred (fracturation and transposition of hornblende poikiloblasts).

Sample T2-45 was also taken from a deep part of the trench which was later filled with water. It too was originally interpreted to be metagabbro, but the porphyritic texture and similarity to T2-42 suggest it is a dyke rock.

ii) "grey rock" (Gy)

This dyke rock is easily recognized on the outcrop surface because of its colour. It is generally thin (<20 cm) and is somewhat more abundant than indicated on the detailed map because many of the thinner occurrences were not sketched. This rock is generally strongly folded and relatively continuous along its length, but will pinch out and reappear later along the same "horizon".

In thin section (T2-58), it is observed to contain principally plagioclase, quartz and hornblende. It is finer grained than the enclosing sheared metagabbro and is itself strongly sheared.

iii) "green rock" (Gn)

This rock is not common, occurring only locally in the extreme northern and central (south-eastern) parts of the trench. It is present only as metric size nodules in the sheared metagabbro, i.e. it has been strongly boudinaged. It weathers in strongly relative to the host rock and although it has a massive, fine-grained appearance on the weathered outcrop surface, it is in fact extremely fissile.

In thin section (T2-11B), the rock is extremely fine-grained and composed mainly of a fibrous amphibole, with appreciable biotite and chlorite.

In the northern part, this "green rock" encloses a banded, brecciated horizon of alternating fine and very fine-grained quartz-feldspar rock (T2-11A).

iv) felsic to intermediate porphyritic dykes (+)

These dykes occur in the southwest part of the trench and commonly exceed 1 m in thickness. They are characterized by up to 1/2 cm feldspar phenocrysts. They may be fairly continuous along their length, or they may terminate abruptly. Deformation is weak in the dykes to the north, but they are strongly deformed further south, close to a major fault.

Sample JL-14-6 was taken where deformation is strong; the relict porphyritic texture is only weakly preserved.

v) rusty siliceous dyke (r.s.d.)

In the northwest part of the trench, a rusty weathering, siliceous dyke clearly crosscuts the sheared metagabbro. This sample (JL-25-5) does not represent altered (silicified) host rock as was originally supposed.

vi) free quartz (—)

Free quartz is very abundant in some parts of the exposure. It is always present, commonly as cm thick veinlets and nodules, and the smaller segregations, even where numerous, have not been sketched and do not appear on the detailed map. It is always strongly deformed, it may be boudinaged, folded, etc. The quartz is white and massive to brecciated and may be intricately mixed with country rock. There is generally minor amounts of a soft white mineral (altered feldspar ?) and occasional mm pyrite cubes.

Some of this quartz represents the deformed remnants of the east-west family of quartz veins described at Trench 1 since:

1) the quartz, where it can be traced for distances of a few metres, trends approximately east-west and dips north; and
2) the quartz is locally accompanied by an increase in micaceous minerals in the adjacent country rock, and these represent vestiges of the alteration envelope seen in undeformed state at Trench 1.

Free quartz in the trench is commonly accompanied by very fine-grained black tourmaline. The tourmaline, though, appears to be a late mineral filling fractures in the quartz, and no carbonate minerals were seen in association with quartz and tourmaline.

4.3.4 Late structures

A late fracture cleavage is commonly observed in the exposure. It is locally very closely spaced, and locally absent. Similar to trench 1, its orientation is generally southeast, with a gentle southwest dip. Note that this feature was observed in the porphyritic dyke at the southwest side of the trench, and is therefore not restricted to the metagabbro.

Late fracturation is very widespread over the exposure. These features are characterized by their thin alteration envelope which can attain thicknesses of >50 cm where the fracturation is closely spaced and dense. A typical 25 cm zone could contain >50 thin fractures.

Where these fractures cross quartz veins, the hair-line crack is visible in the quartz, and rarely, the quartz is coloured blue over widths of a few cm.

Late fracture orientations are variable (and have not been plotted on the detailed map). When compiled oon a histogram, though, they form a distribution which closely approximates a normal curve (see Fig. 4-7). The mean value is close to 055 (dips were not systematically measured). Only about 1/3 of the late fracture orientations fall outside of the range 030 to 080. Note also that the thicker bleach zones indicated on the detailed map generally trend northeast.

It was locally observed that these late fractures form the axial plane to some minor folds in the foliated metagabbro. In rare instances, tight folding resembles a crenulation cleavage.

In general, late fracturation densities vary widely. As previously mentioned, up to 50 cm thicknesses may be extremely strongly fractured. But, at a larger scale, it can be stated that overall late fracturation density is higher close to areas where fault breccias have been described.

Fault breccias are of two types. In the southwest part of the trench, a major fault has been mapped. The fault plane is a clear linear feature on the outcrop surface. To the south of the fault, the country rock is strongly brecciated, and this brecciation dissipates with increased distance away from the fault. Minor, much more restricted brecciation is also present north of the fault.

Elsewhere, towards the northeast, faults have a slightly different appearance. Brecciation occurs as a mappable discrete band bounded by clearly defined planes. The brecciation is strong within the fault, but no brecciation occurs in the adjacent sheared metagabbro. Their thickness is generally <15 cm but varies along the length of the zone.

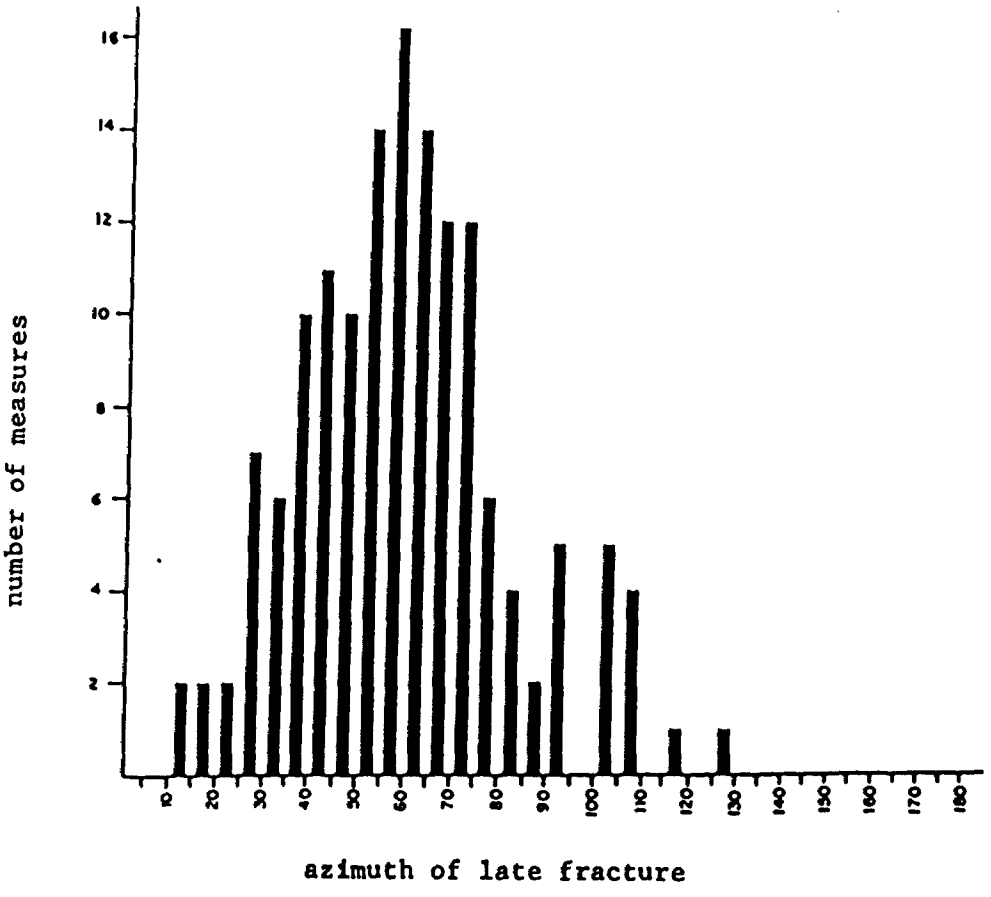


Figure 4-7 : Histogram of late fracture orientations from Trench 2 (azimuth only). Total number of observations is 146.

Host rock fragments in the brecciated zones are angular and make up over 70% of the total rock volume. The matrix to the breccia appears to be very fine-grained ground up country rock. Locally, there may be strong veining of a soft white mineral (altered feldspar ?).

Faulting may not be accompanied by brecciation. A low angle reverse thrust was observed on the west side of the outcrop area.

4.4 Trench 3

Trench 3 comprises outcrop AM-15, situated in the south-central part of the property at ~0.4 km west of the Burntbush River. At this site, approximately 2725 m^2 was cleared of trees, and ~1175 m^2 of bedrock was exposed (see Map 6).

Two principal rock units are exposed. The first unit comprises thinly interbedded (cm scale) tuffs of two types: one is a dacitic lapilli tuff to agglomerate with abundant lithic fragments, the second approaches an iron-formation in composition and contains significant iron-rich silicate minerals and magnetite.

The second principal rock unit is an intrusive metagabbro, composed mainly of plagioclase and hornblende. The tuffs which it intrudes have been locally thermally metamorphosed.

Subsidiary rock types include quartz ± tourmaline veins, crystalline calcite veins, and local minor quartz + calcite veins and epidote ± quartz ± pyrite veinlets.

4.4.1 Thinly interbedded tuffs

It is difficult to estimate the stratigraphic thickness of exposed rock of this unit because the rocks are variously steeply dipping and close to the horizontal.

In outcrop, the interlayered tuffs are composed mainly of two clearly distinct lithologies: a dacitic lapilli tuff to agglomerate, and an iron rich tuff. These are thinly interbedded (see Fig. 4-8) and have not been individually mapped.

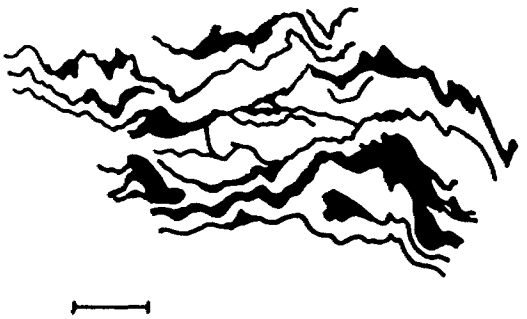


Figure 4-8 : Sketch diagram of thinly interbedded tuffs at Trench 3 (traced from photograph). This is a ~ north-south trending vertical face, looking east. Dark bands are iron-rich tuff, light bands are dacitic tuff. Scale bar approximately 10 cm.

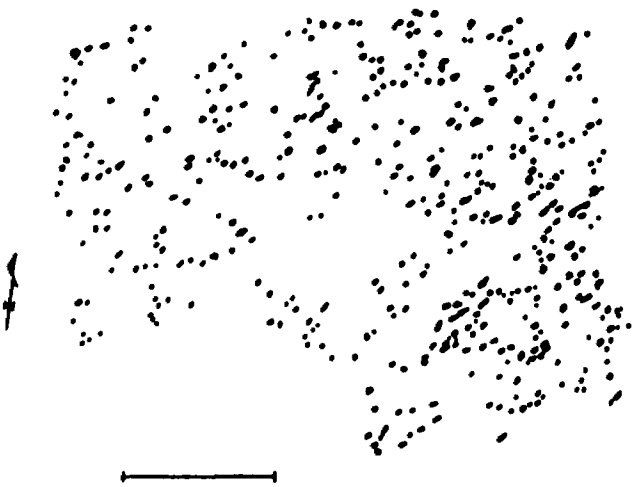


Figure 4-9 : Sketch diagram of a dip face of iron-rich tuff with abundant garnet (traced from photograph taken at Trench 5, but rock type is exactly the same as at Trench 3). Scale bar approximately 10 cm.

However, three domains have been separated based on the volumetric abundance of iron-rich layers at surface. Note that this may be a misleading subdivision with respect to absolute volumetric abundances since the dip surface is commonly exposed, thus one or the other rock type may not be observed even though it could be present at only a few cm depth.

The iron-rich tuffs are characterized by their medium to dark green coloured fine-grained groundmass which almost always contains abundant ~0.5 cm reddish garnet porphyroblasts (see Fig. 4-9) and mm size euhedral magnetite crystals. Garnet content is estimated at 5 to 10%, magnetite content at 2 to 4%, but magnetite content may be locally higher, eg ~10% when garnet content decreases (to as low as 0%).

The dacitic clast-bearing tuffs are easily distinguished from the iron-rich layers by their weathered buff colouration. The abundant lithic clasts are generally <5 cm but are occasionally up to 1 m in length. Clasts are elongate and mostly of two types: the most common type contains elongate feldspar crystals (up to ~3 mm long) set within a fine-grained bluish grey groundmass; less common are streaky biotite-bearing clasts which also contain elongate feldspar crystals. These clasts are set in a fine-grained groundmass which also contains elongate feldspar crystals. Due to the similarity between the tuff matrix and clasts, it is locally difficult to estimate clast abundance, depending on the quality of the weathered surface exposed. These tuffs are locally magnetic, though no individual magnetite crystals could be found.

On some exposed dip surfaces of the dacitic lapilli tuff, vugs of about 3-5 cm size were observed to contain coarse crystalline quartz and 3-5 mm muscovite and/or chloritized biotite flakes.

Note also that the iron-rich tuffs weather up relative to the lapilli tuff on the cleanest weathered surface.

In addition to the iron-rich and dacitic lapilli tuff lithologies, local areas within this unit are described as being cherty. In outcrop, these cherty areas comprise weakly to moderately thinly banded very siliceous rock, i.e. the banding is generally not clearly defined or continuous. The colour of this cherty rock is whitish to bluish grey.

These layered rocks are commonly oriented very close to the horizontal and are tightly folded at cm scale (see again Fig. 4-8). These minor folds plunge very gently towards the east (see Fig. 4-10). Due to the small size of the fold limbs and fold hinges it is very difficult to measure the orientation of these limbs: the north limbs (of antiforms) strike southeast and dip gently northeast, the corresponding southern limbs strike northeast and dip gently southeast. At fold hinges the orientation would be close to north-south, with a gentle easterly dip direction.

However, the rocks are also commonly steeply dipping, and here the S_1 foliation (coplanar with So bedding) generally strikes east-west and dips north. Locally, south-dipping rocks also occur (see Fig. 4-11).

Samples taken from this unit have been subdivided into five groups and the results of thin section studies and geochemistry analyses will be discussed separately below for each group:

Group a) iron-rich tuff;
b) dacitic lapilli tuff;
c) mixed iron-rich and dacitic lapilli tuff;
d) cherty band;
e) tuffs within the thermal aureole of the metagabbro (discussed in section 4.4.2).

One sample of the iron-rich tuff was taken where it attained a thickness of ~10 cm. This particular sample (T3-1) was dark green on the weathered surface and strongly magnetic but contained no garnets. On the fresh surface it was dark grey to blackish. In thin section it is observed to contain ~50% hornblende as mm poikiloblasts set in a fine-grained plagioclase-quartz groundmass. Plagioclase inclusions in the hornblende are weakly sericitized and zoned, while in the groundmass sericitization is stronger. There is some biotite present and some replacement of hornblende and biotite by chlorite. Major elements results on this sample include 56.70% SiO_2 with 14.90% Fe_2O_3 suggesting andesitic tholeiitic composition and affinity. Au content is 5 ppb.

Five samples of the lapilli tuff were taken. It is generally a very fine-grained rock composed mainly of plagioclase and quartz. Minor biotite is well aligned and defines the foliation, but many biotite laths are oriented approximately perpendicular to the foliation, presumably in response to the tight minor folding. There is also minor garnet and

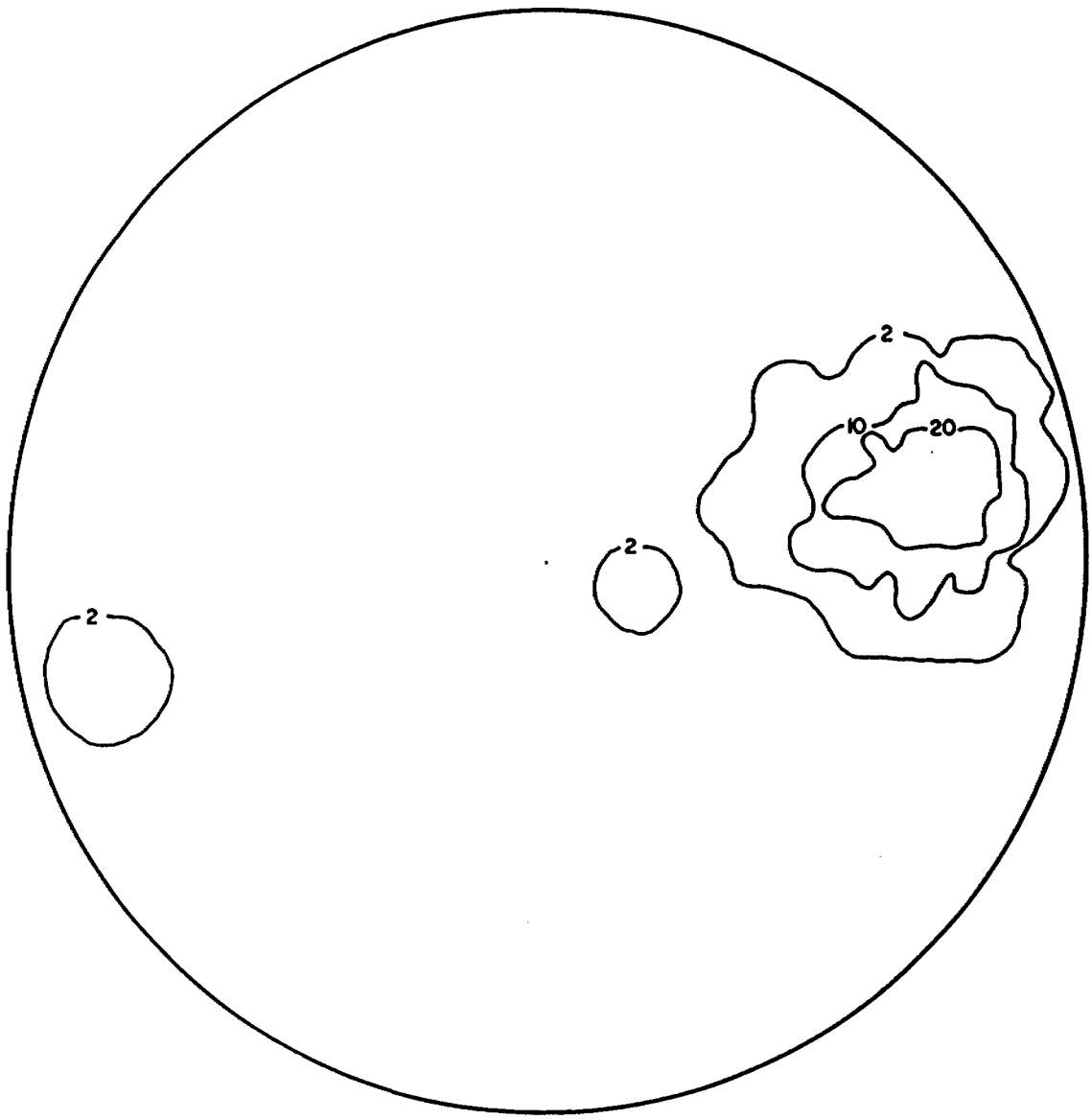


Figure 4-10 : Sterographic projection of minor fold axis measures from tuffs at Trench 3. Total number of measures is 35; mean result is 25° at 080.

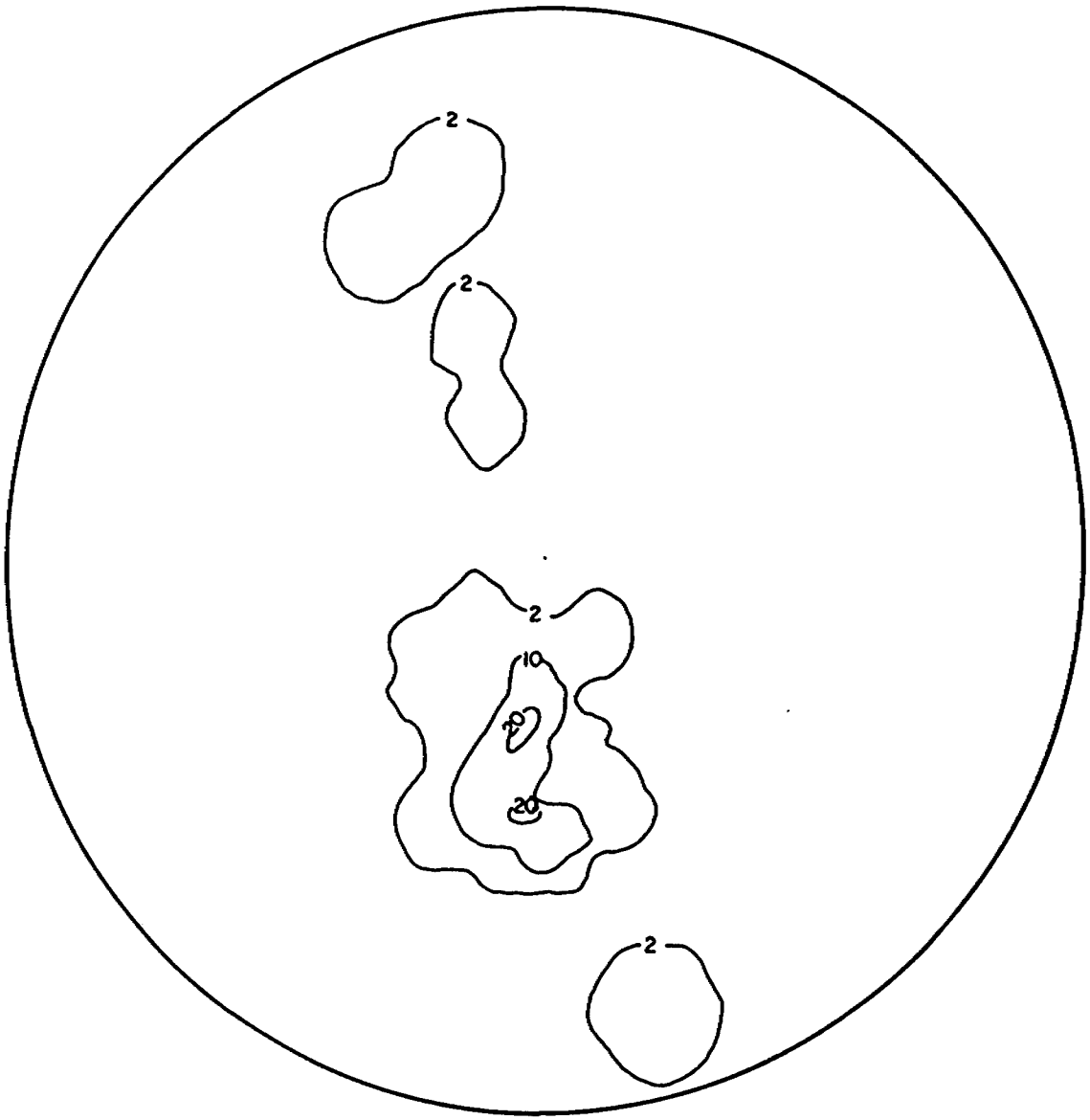


Figure 4-11 : Stereographic projection of S_1 foliation measures from tuffs at Trench 3. Poles to plane are plotted. Total number of measures is 32.

magnetite. Major elements results (from Sample T3-13) include 67.60% SiO_2 and 4.62% Fe_2O_3. Au analyses were performed on four of the samples and two are very weakly anomalous: results range from 3 to 6 ppb.

Two samples are described as being mixed iron-rich and lapilli tuff. Thin section studies of these samples show that hornblende and garnet do concentrate along the same bands parallel to the foliation, but hornblende/ garnet-bearing layers have groundmass composition very similar to layers which do not contain these iron-bearing minerals. It is less easy to distinguish the iron-rich and lapilli tuff layers in these thin sections than it is in outcrop. The major element analysis performed on sample AM-15-1 gives 66.50% SiO_2 and 4.39% Fe_2O_3 which is very similar to sample T3-13 (see above). Au content is 4 ppb.

One sample was taken of a banded cherty-looking rock, but the thin section might suggest an alternate interpretation, i.e. a silicification from adjacent quartz-tourmaline veins. It assayed 6 ppb Au.

4.4.2 Layered rocks within the thermal aureole of the metagabbro

The metagabbro has caused visible physical changes to the tuffs. Both the iron-rich and lapilli tuffs become noticeably darker grey to blackish in colour and weather slightly to moderately rusty. During the field mapping, it was interpreted that the lapilli tuff became indurated while the iron-rich tuff became soft and fissile, thus reversing the relative resistance to weathering of the two rock types.

The true extent of the contact aureole with respect to absolute distance from the metagabbro is difficult to estimate because the metagabbro may be exposed close to its roof. The contact may lie vertically below exposure mapped as tuffs at an unknown, but perhaps locally insignificant depth.

Two samples of altered tuffs were studied in thin section. The main result seems to be that there is little mineralogical difference between unaltered and altered samples. The thin soft fissile layers are now interpreted to be quartz-carbonate-muscovite veinlets. For this reason, mapping of the proportions of the different tuff lithologies in the thermal aureole may be incorrect, and more a reflection of the abundance of these veinlets.

The major element geochemistry on sample T3-8 has been affected by these veinlets (high CaO, CO_2) and cannot be used to assess chemical changes due to thermal metamorphism. Au content is 30 ppb on this sample, which is the highest result of all rocks taken from this trench. Meanwhile, sample T3-10B, also taken from the contact zone gives only 4 ppb.

4.4.3 Metagabbro

The metagabbro exposed in this trench is medium to coarse grained and composed chiefly of hornblende and plagioclase. It is well lineated, and therefore may have a speckled or streaky aspect, depending on the surface observed. It weathers greenish but the amphiboles are black on the fresh surface.

There is local development of small mm actinolite grains which are late minerals generally found adjacent to veins. These actinolites have grown across the lineation and are approximately perpendicular to it, with a weak radiating aspect.

The lineation is oriented the same as the minor fold axes in the tuffs, i.e. plunging ~20° at 075 (see Fig. 4-12). Note that this lineation is not as strongly developed here as at JL-17 or the first trench.

The gabbro-tuff contact is (poorly) exposed at the northeast corner of the trench. It is not clearly cross-cutting; there may be a doming effect on the tuffs due to the intrusion of the gabbro, i.e. this gabbro may be exposed at or near its roof. For this reason, it is difficult to say whether some occurrences of altered tuff close to the gabbro-tuff contact are xenoliths, or roof pendants, or if the gabbro-tuff contact is exposed at more places than just the northeast corner.

Thin sections of the metagabbro are remarkably different. Sample AM-15-2, taken furthest from the contact zone is composed mainly of hornblende poikiloblasts set in a plagioclase groundmass and is only weakly altered. Sample T3-12, taken at ~5 m from the contact zone is also poikiloblastic, but the proportion of hornblendes is cut by about half. The matrix contains abundant chlorite needles, and there is some alteration of the hornblende to chlorite + calcite. Sample T3-10B, taken very close to the contact may

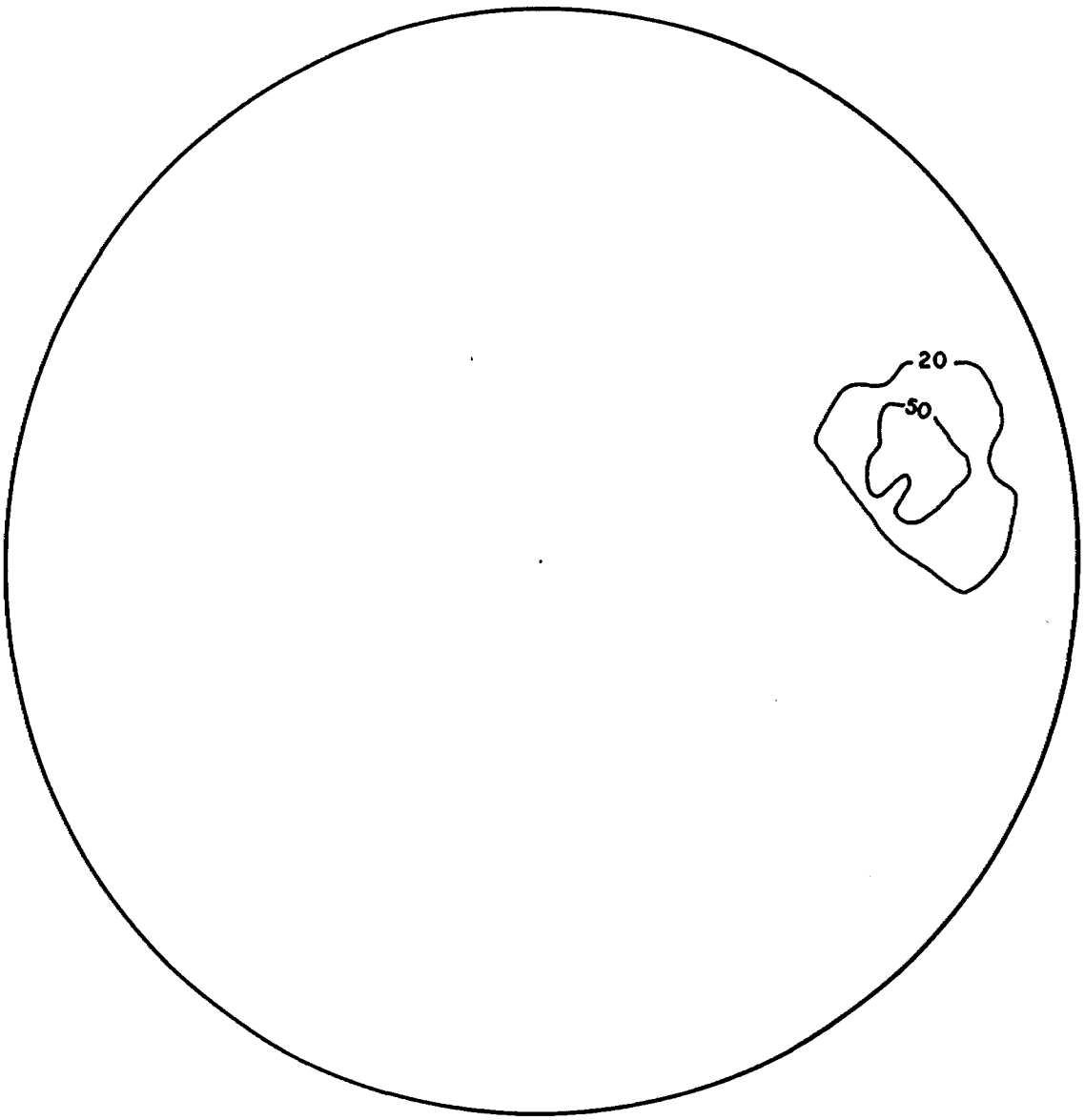


Figure 4-12 : Stereographic projection of amphibole lineations measured in metagabbro at Trench 3. Total number of measures is 5.

have contained hornblende poikiloblasts; the only possible evidence of this is the patchy distribution of zoisite, which, along with chlorite, biotite and muscovite, might be the end alteration products. The groundmass is similar to T3-12 in that there are abundant chlorite needles dispersed along with plagioclase grains, but there is also abundant fine muscovite.

A major element analysis on T3-12 is very similar to one already reported for AM-15-2. For five samples analyzed for Au, two give very weakly anomalous results of 6 ppb. One of these (AM-15-3) was taken from an area of weak pyrite mineralization, and it is now recognized that there is strong calcite veining in the outcrop there.

4.4.4 Alterations in the principal rock types

Disregarding the specific alterations which are related to veining (eg silicification, local weak pyritization), thermal metamorphism, and alterations clearly related to late fractures (eg bleaching, see later), this outcrop is, in general, remarkably fresh.

Local patches of higher carbonate content with weak pyritic alteration not clearly related to veining or fractures, were however, found in the tuffs.

4.4.5 Late veins

Two major vein types are distinguished: quartz ± tourmaline veins and crystalline calcite veins. These are generally thin (<1 m) and may be relatively continuous along their length, or boudinaged, i.e. discontinuous. One vein mapped as a quartz-calcite vein may be an occurrence whereby both vein types have filled the same fracture, and not be a distinct vein type. No relative age determination has been made since neither type cross-cuts the other in the exposure.

Free quartz (± tourmaline) in the outcrop is fairly common and is probably of more than one generation since some is strongly deformed, and some is more or less straight and continuous. A soft white mineral (altered feldspar ?) is present in small amounts and pyrite is locally observed.

There is no apparent alteration envelope adjacent to the quartz veins but their orientation is similar to east-west quartz veins described at Trench 1 (except perhaps the dips are generally steeper).

One sample was taken of a quartz-tourmaline vein where wall-rock alteration (including ~1-2% pyrite mineralization) was judged to be strongest. Note that significant wall-rock was incorporated into the sample. It assayed 14 ppb Au.

Coarse crystalline (~3 mm size) orange brownish calcite veining is found locally in the tuffs, more commonly in the metagabbro. They are thin (<30 cm) and weather in deeply relative to the host rock. They contain up to 10% angular fragments of altered host.

In the northwest part of the trench, within the metagabbro, these veins are very thin and closely spaced and impart an apparent foliation (which does not exist) to the metagabbro. There is weak pyrite mineralization here.

The veins trend ~east-west and may dip either north or south.

A third group of veins occurs, but these are of very minor importance. They consist primarily of epidote, with lesser amounts of quartz and epidote. Most are very thin (<5 cm), and the contact with the tuffs as seen in thin section (in sample T3-9) is abrupt.

Finally, in the southern part of the trench, a quartz-epidote vein breccia was mapped and sampled. The thin section shows euhedral epidote crystals growing across the quartz-plagioclase groundmass typically seen in the tuff samples. Local coarse chlorite and carbonate occur with the epidote. No evidence of brecciation was seen in the thin section, but in outcrop, the occurrence appears to be related to late fractures and does have the appearance of a vein breccia. This could be due to carbonate which has weathered out of the vein. The samples gave 3 and 5 ppb Au, the higher value corresponds to the sample with more incorporated tuff.

4.4.6 Late structures

In one cherty part of the trench, closely spaced gently dipping fractures were observed to have the same orientation as the fracture cleavages which were commonly seen in trenches 1 and 2.

Late fractures are common here as they are in the first two trenches. They are best described as discrete lines running across the outcrop surface which weather neither up nor down relative to the host rock. Dips are generally impossible to guess at. Measured orientations are summarized in Figure 4-13. The range of orientations is much wider than in the first two trenches but ~60% of the measures fall in two groups: the first group is slightly east of north (010 to 035), the second is slightly west of north (145 to 165). Minor dislocations of mm to cm scale are not uncommon.

Bleaching along walls of some of the fractures occurs, particularly in the metagabbro, but unlike at trench 2, this bleaching does not correspond to an increase in fracture density. Wide (eg >50 cm) bleached zones are due to a more pronounced effect from a single fracture.

On a few discrete fracture surfaces, coarse (up to 5 mm) chloritized biotite flakes were observed. Such occurrences were observed in both the metagabbro and the tuffs.

4.5 Trench 4

The fourth area chosen to be trenched was outcrop GC-7. It is located just inside the southern limit of the property at ~550 m east of the Burntbush River. Approximately 1300 m^2 was cleared of trees here, and ~800 m^2 of bedrock was exposed (see Map 7).

The main rock type here is a pillow lava. Many of the pillows are undeformed, and much time was spent hand stripping this outcrop during the summer program in an attempt to obtain a facing direction. Our observations were not conclusive, so we returned with the mechanical equipment to improve the exposure.

Subsidiary rock types include a thin feeder dyke of the same mineralogy, and quartz $\pm$ tourmaline veins.

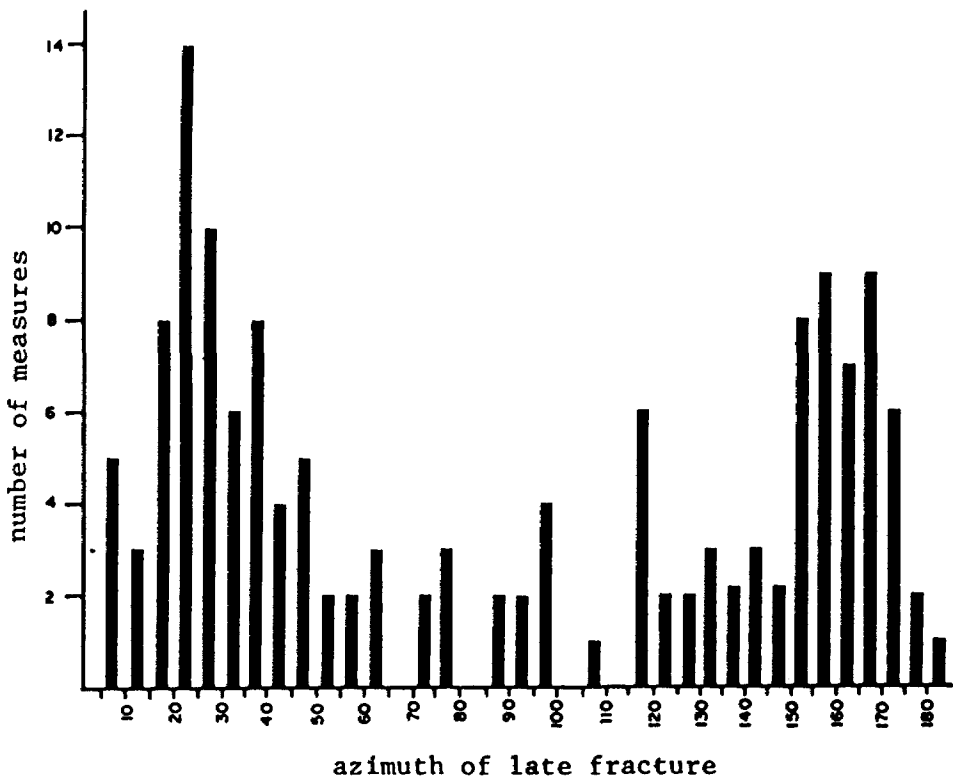


Figure 4-13 : Histogram of late fracture orientations from Trench 3 (azimuth only). Total number of observations is 146.

4.5.1 Pillow lava

This unit is variously near-horizontal and near vertical in the exposure, and no other major unit is present. A north-south distance of about 30 m is continuously exposed, and a second smaller outcrop occurs at ~20 m to the south. The western side of the outcrop is a vertical face about 10 m high. The absolute minimum thickness, then is ~10 m.

Many of the pillows in the outcrop are nearly completely undeformed. They are lozenge shaped and are ~1 m in size. The pillows weather a light green colour, while 1 to 10 cm thick selvages weather slightly darker green. On the fresh surface, both are dark green. They are fine-grained and commonly (but not always) contain 1 to 3 mm feldspar phenocrysts. Tiny euhedral magnetite crystals are everywhere present and are generally more abundant in the selvages.

The pillows were locally observed to carry <5 mm spherical epidote amygdales, and these amygdular zones weather up and are whitish rather than green on the weathered surface. The rock has a frothy appearance where the amygdales are found.

In addition to epidote amygdales, there are very numerous quartz-filled vesicles (?). I question the use of the term vesicles since these may be several cm in diameter, and there is a regular orientation which is clearly apparent, i.e. they may be quartz rods. The length of the quartz rods down-plunge could not be determined.

Structurally, the outcrop is deceivingly simple, nonetheless it took quite some time to understand. During the summer mapping program, the only structural measurement taken was an east-west trending, steeply dipping foliation. When we returned to determine the facing direction of the pillows, we assumed that we were looking for a north-facing or south-facing section. The following summary explains why no conclusive result could be agreed upon.

Two main features in the outcrop provide the only common structural features which have been systematically measured in the pillow lava. First, there are continuous linear zones from 1 to several meters wide where pillows have been strongly flattened and stretched, and in these areas, a steeply dipping, east-west trending foliation is easily measured. Second, the numerous quartz rods which occur in both deformed and undeformed areas all plunge ~30° at 080 (see Fig. 4-14).

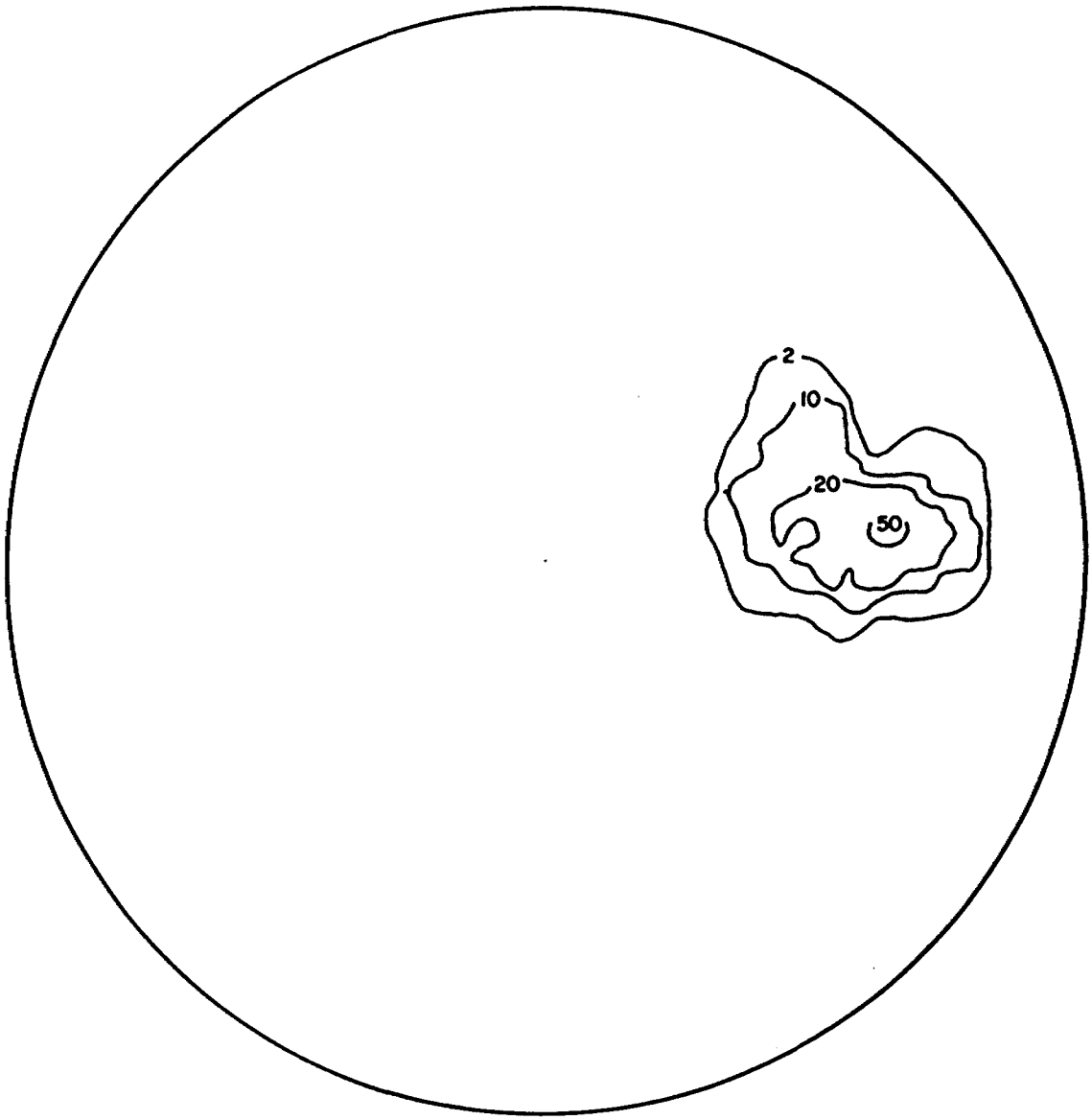


Figure 4-14 : Stereographic projection of quartz rods from trench 4. Total number of measures is 24. Mean value is ~35° at 085.

In fact, the original So bedding plane is near horizontal, the lavas are gently folded and plunge shallowly towards the east. They are right-side up, but a vertical exposure is required to understand this. On the near-horizontal outcrop surface, one cannot observe cross-sections of the pillows.

In zones where pillows are stretched and flattened, the long axis of the pillows also plunges gently to the east. It is not yet clearly understood if these represent flattened limbs (i.e. are pillows here flattened parallel to the original bedding?) or whether the pillows have been tectonically flattened parallel to their original vertical axes. See Figure 4-15. Stretched and flattened pillows may be >2 m long x 50 cm wide x 10 cm thick.

In addition to the main structural features mentioned above, a few minor fold axes plunging gently towards the east were taken in flattened areas. Also, a weak schistosity (much more subtle than the penetrative foliation seen in flattened areas) can be found in pillow selvages of undeformed pillows. The orientation of this schistosity is dependant on the orientation of the pillow outline adjacent to where the measure is taken, and explains the wide range of foliations in Figure 4-16. On the detailed geologic map, the two classes of schistosity have not been differentiated.

In one of the areas of flattened pillows, it has been interpreted that a c/s fabric is present. Thus, minor shearing in these areas has taken place. Note also, that abundant quartz-tourmaline veining occurs in flattened areas to a much greater extent than in undeformed areas (see later).

In thin section, pillows are composed of weakly sericitized plagioclase phenocrysts set in a fine-grained groundmass of plagioclase, chlorite and lesser biotite, calcite and zoisite. Magnetite crystals are relatively abundant. The pillow selvage has similar mineralogy, but phenocrysts and magnetite crystals are smaller. Patches of chlorite, biotite and zoisite lacking fine-grained plagioclase may suggest that the selvage originally contained a few hornblende or clinopyroxene phenocrysts.

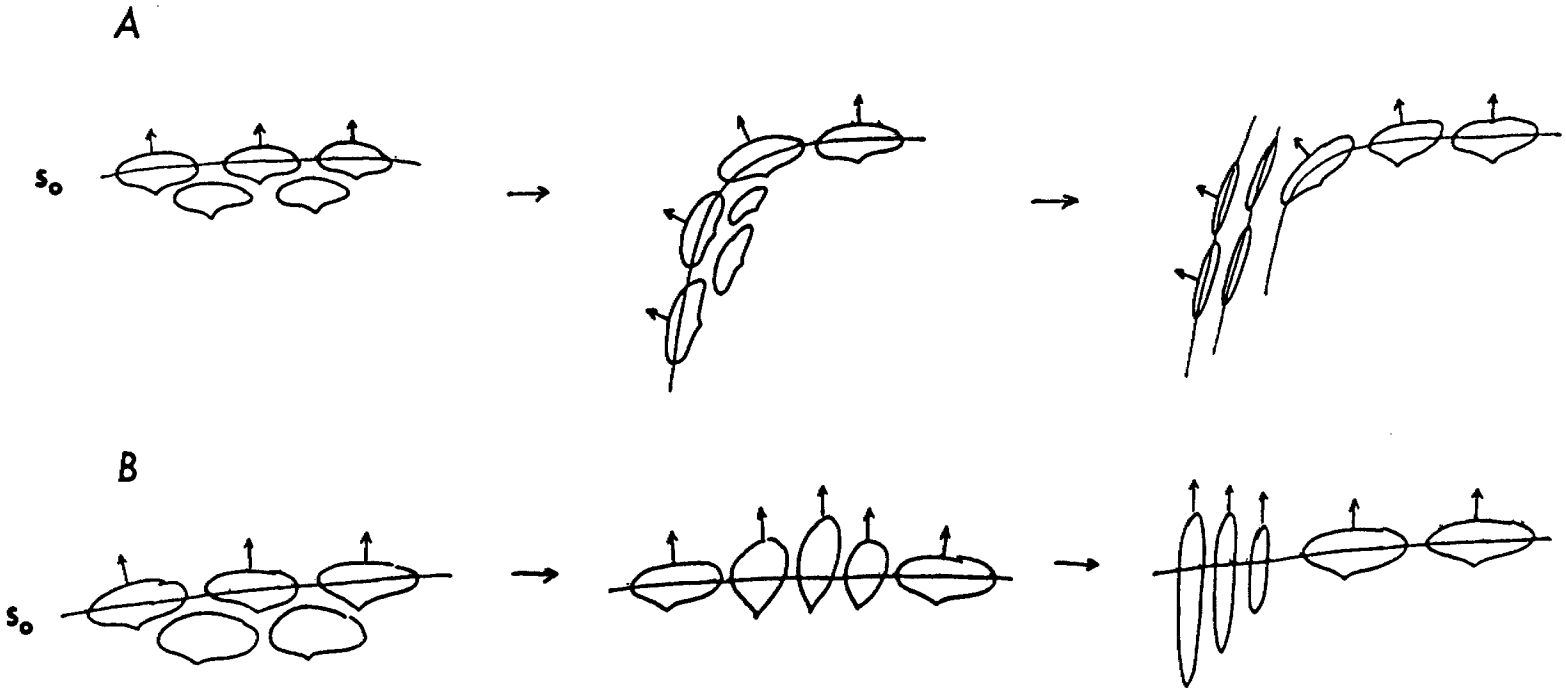


Figure 4-15 : Two possible deformation paths at trench 4.

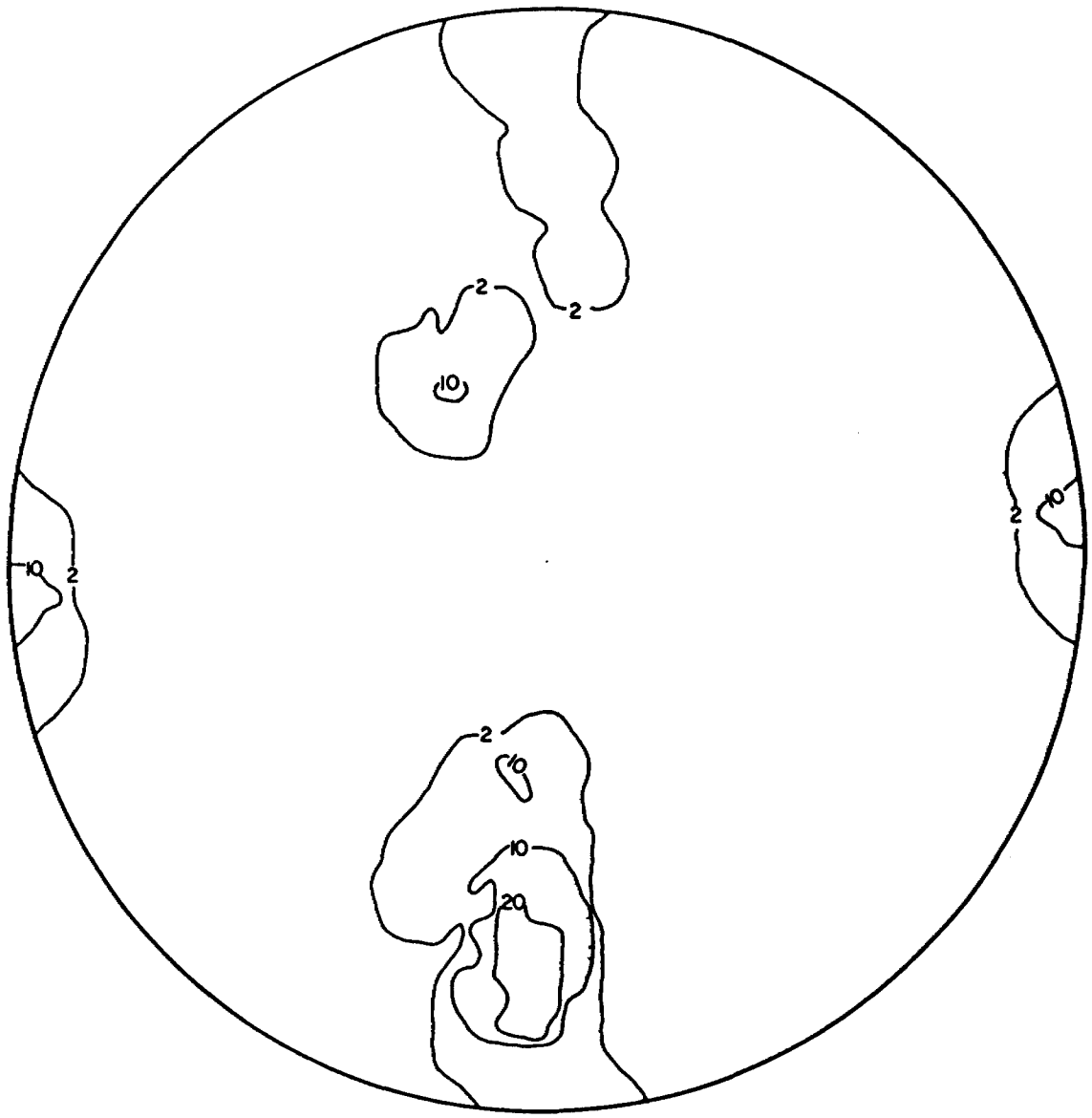


Figure 4-16 : Stereographic projection of foliation measures from trench 4. Poles to planes are plotted; total number of measures is 33.

The groundmass of the amygdaloidal sample is composed predominantly of zoisite mixed with chlorite, along with lesser plagioclase, carbonate and abundant tiny actinolite needles. The amygdales consist of zoisite, carbonate and lesser plagioclase, but the relative proportions of these minerals vary widely in different vesicles eg 100:10:1, 10:100:1, 4:1:2.

Major element analyses were performed on samples taken from a pillow, a pillow selvage, and the amygdaloidal part of a pillow. The pillow gave 57.20% SiO_2, the selvage gave 46.20% SiO_2 and the amygdaloidal sample gave 50.60% SiO_2. Thus, these may be pillowed andesites.

Au analyses are all below the detection limit for the neutron activation method (2 ppb).

4.5.2 Alterations in the pillow lava

The outcrop is pervasively calcite and chlorite-bearing, but these minerals appear in thin section to be part of the metamorphic (greenschist) assemblage.

Pyrite was found in small amounts in a very few places, but in general it is conspiciously absent.

4.5.3 Feeder dyke (■)

One steeply dipping, east west trending ~25 cm thick dyke stretches across the northern part of the exposure. Its porphyritic texture, euhedral magnetite content and weathered colour resemble exactly the adjacent pillow lavas.

It occurs in pillow lavas which are stretched and flattened (and also steeply dipping), so if in fact it is a dyke and not a thin sill, it may support deformation path B in Figure 4-15. Note that the combination of its dip and topography on the outcrop cause it to appear less linear and straight on the detailed map than it really is.

In thin section, the dyke rock resembles more or less exactly the pillow lava.

Major elements results include an SiO_2 value of 56.60% which confirms the intermediate composition suggested for the pillow lavas.

The Au result is again below the detection limit of 2 ppb.

4.5.4 Late_veining

Two generations of free quartz veins comprise the major subsidiary rock types found in the outcrop. The previously discussed quartz rods represent a third type of free quartz and will not be further described.

The oldest quartz comprises thin mm to cm veinlets which are generally folded, giving shallow easterly plunging fold axes. These may be found in deformed or undeformed parts of the outcrop and are generally uncommon.

Later quartz is more restricted to areas of flattened pillows and contains up to 5% fine-grained tourmaline. The veins are irregular, but approximately linear and are strongly boudinaged. They are up to 1 m thick and may be intricately mixed with wall rock. Minor pyrite and/or soft white altered feldspar (?) may be present.

Since these veins are most abundant where the lavas are flattened and steeply dipping, along with the presence of a c/s fabric close to where sample T4-4 was taken, I interpret that these are related to weak to moderate thin shear zones.

Au content of sample T4-4 is again below the detection limit of 2 ppb.

Note also that a minor occurrence of folded crystalline calcite similar to that described at trench 3 was found. It, too contains angular fragments of the host rock.

4.5.5 Late_structures

Late fracturation in this outcrop is widely spaced in comparison to all of the previous trenches. The orientation of these fractures are similar to those at trench 3 (see Fig. 4-17).

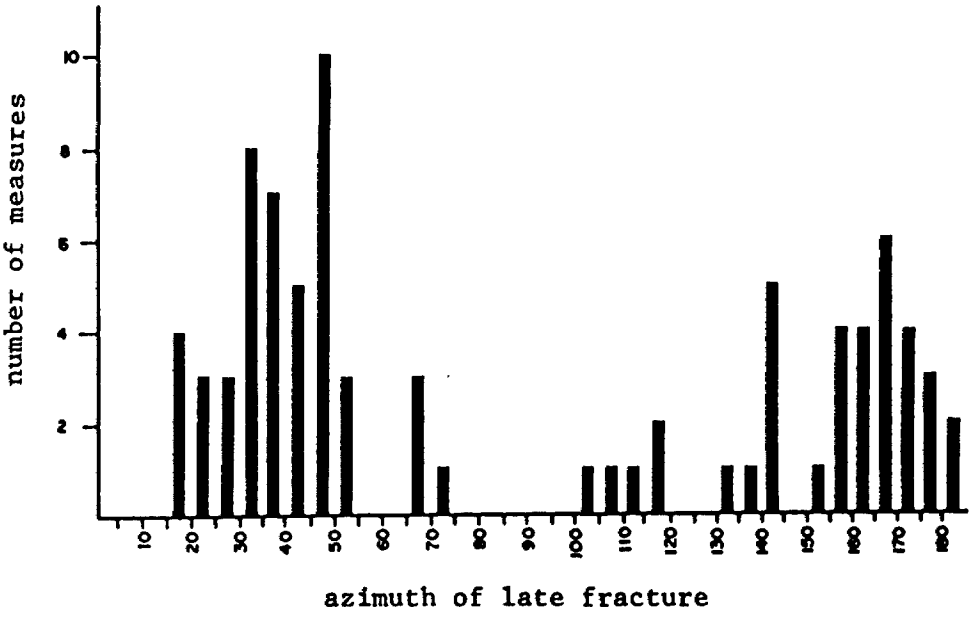


Figure 4-17 : Histogram of late fracture orientations (azimuth only) at trench 4. Total number of observations is 83.

4.6 Trench 5

Trench 5 consists of two parts, a northern part (outcrop GC-1) and a southern part (outcrop GC-2), which are separated by about 70 to 80 m (see Fig. 4-18). Approximately 30 squares (5 m x 5 m) were gridded before work was suspended due to inclement weather including substantial snowfall. The trenches will be mapped in July, 1987 but the following preliminary observations are given.

The northern part strongly resembles trench 3, with the notable absence of metagabbro. The proportion of dacitic tuffs to iron-rich tuffs may be somewhat higher, but extensive iron-rich tuffs are present, especially on the northwest side. The dacitic tuffs may carry fewer clasts, and contain more feldspar phenocrysts, as well as some garnets.

Much of the outcrop is near flat-lying, with minor fold axes plunging gently towards the east. But, steeply dipping sheared and/or flattened rocks are more common here than at trench 3.

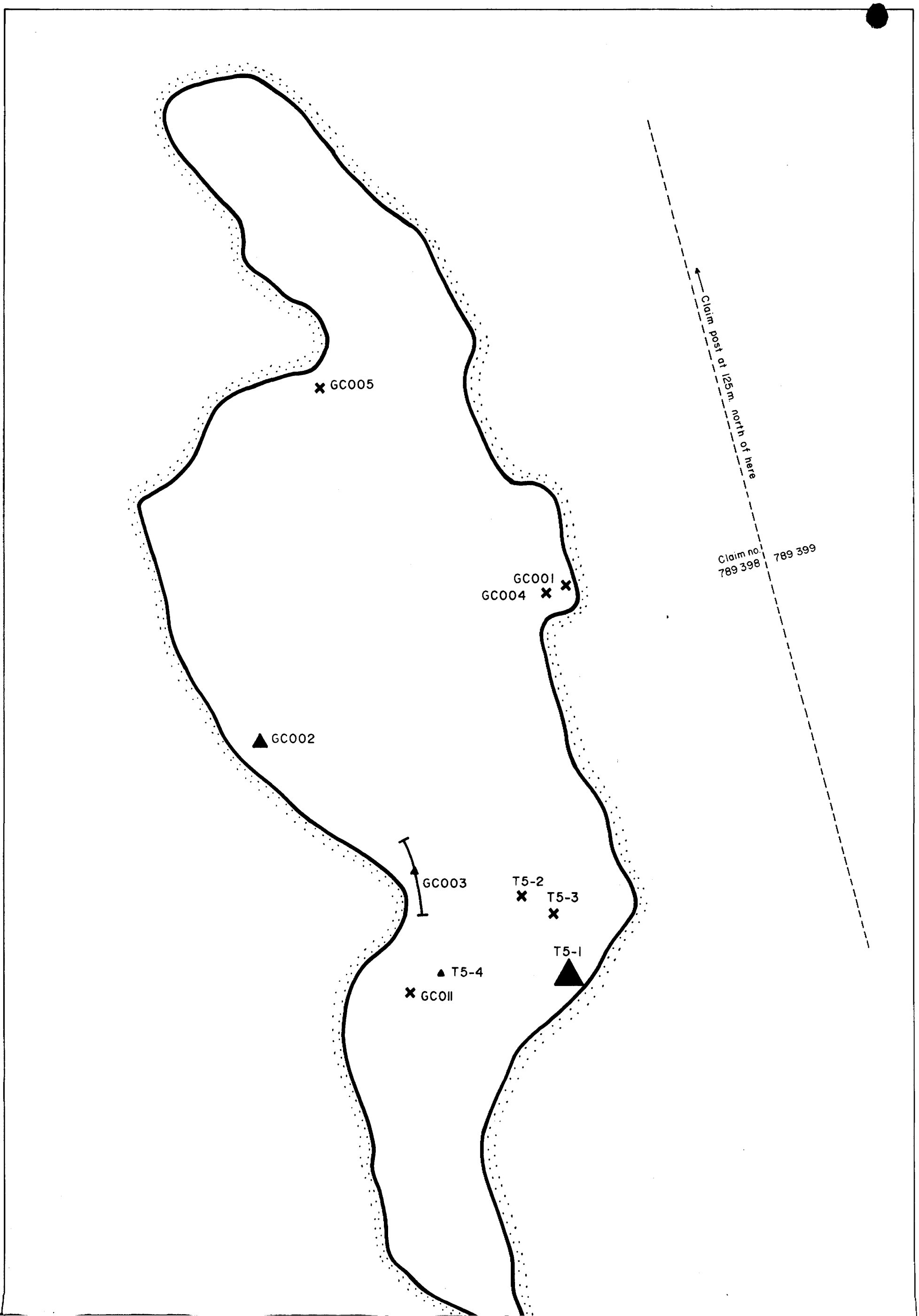
Boudinaged quartz-epidote veins are common.

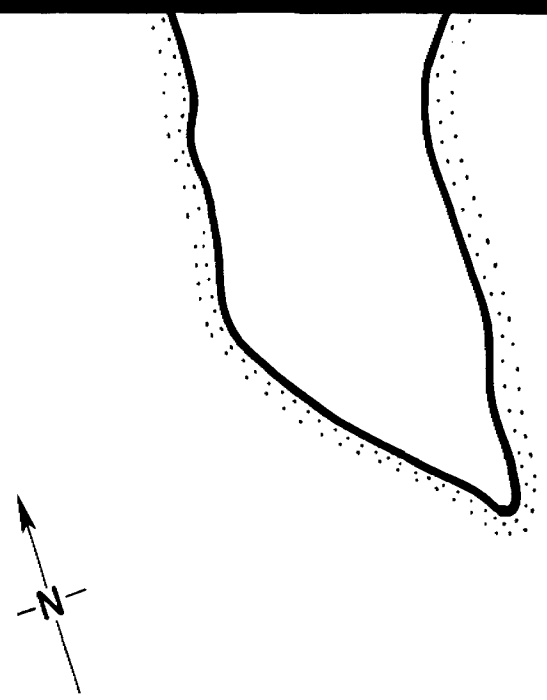
The southern part is composed of two major rock types. One is similar to the dacitic crystal tuffs described above, but the northwestern part consists of very thinly foliated strongly chloritized rock. This rock may be a thinly bedded mafic tuff, but I interpret it to represent a shear of minimum ~20 m thickness.

The rocks in the southern part of trench 5 are east-west trending, and steeply dipping. The only fold axes present are found in boudinaged quartz veins.

Note that a diabase dyke is present at the easternmost parts of both the northern and southern parts of trench 5.

A few new samples were taken from the northern trench. The most important new information that was gained from these few samples is a result of 110 ppb Au from a locally strongly pyritiferous sample of the ashfall tuff. The pyrite mineralization was fairly coarse (eg 1 to several mm) and flattened within the foliation, and appeared to be related to the intersection of two late fracture systems.


Claim post at 125m. north of here
Claim no.
789 398
789 399
GC005
GC001
GC004
GC002
GC003
T5-2
T5-3
T5-1
T5-4
GC011



LEGEND

- Blazed claim line
- Approximate limit of cleared area
- Approximate limit of mechanical stripping
- Water filled depressions
- T5-2 — Sample location
- 5 - 10 ppb Au
- 11 - 20 ppb Au
- > 20 ppb Au

Scale: 1/500

0 5 10 m

Note: This sketch map is based on pace and compass, whereas all previous sketch maps are accurate to within <3m. This trench was not gridded and mapped due to inclement weather including substantial snow fall. IT will be gridded and mapped in July, 1987.

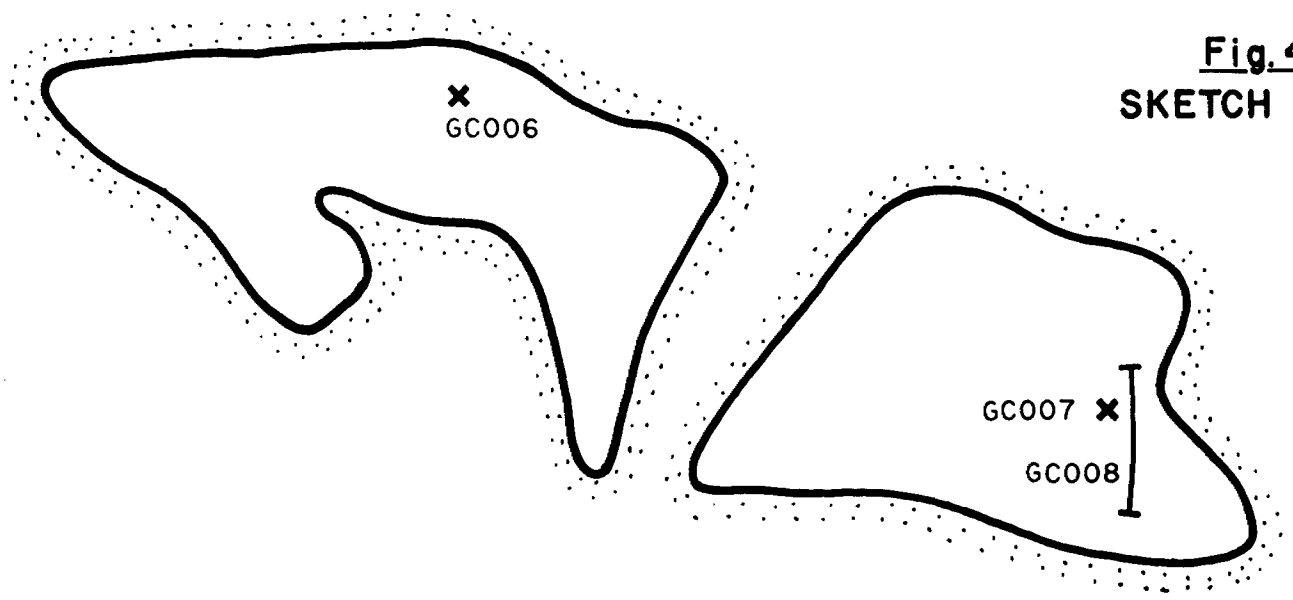


Fig. 4-18 TRENCH 5
SKETCH MAP OF STRIPPED AREA

report : 87-CND-47-01

4.7 Quaternary Geology

At each of the four trenches that were mapped in detail, glacial striae measurements were taken in each 5 m x 5 m square where they were observed.

Most of the measures range between 135° and 145° (see Fig. 4-19). The southeast ice direction has not been determined from field criteria, but is taken from our knowledge of regional ice directions (eg Boissoneau, 1965). Striae trending this direction are common and very abundant at all of the outcrops.

At trench 4, in the small isolated outcrop to the south, two sets of glacial striae (of different ages) were observed. The older striae (again inferred from regional knowledge, eg Veillette, 1986, but also inferred by their scarcity relative to southeast trending striae) trend 230°.

In addition to glacial striae, the trenching also exposed three of the overburden types present on the property.

The oldest exposed glacially deposited unit are pebbly oxidized very compact sandy gravels which probably correspond to the Missinaibi Sediments (Sangamon Interglacial Period, see Werniuk, 1986). These were found caked against depressions within the bedrock exposures.

Trailing south to southeast from trenches 1, 3 and 4 are sandy eskers which correspond to the latest phases of the Matheson Till unit (see Sauerbrei et al. 1985). It is very possible that the eskers formed behind bedrock highs.

Lastly, sumps were dug at each of the trenches to supply water for washing the outcrops. These sumps exposed layered clays deposited at the bottom of Lake Ojibway during the final retreat of the last major ice sheet (Werniuk, 1986, Sauerbrei et al. 1985). The clays are light brown in colour and impermeable. The sumps filled up at trenches 1, 3, 4 and 5 because they were dug where there was some surface runoff. At trench 2, we finally decided to use 300-400 m of water hose to reach an alder filled stream, since the sumps dug at up to 100 m away from the stripping area were not filling up with water at a fast enough rate.

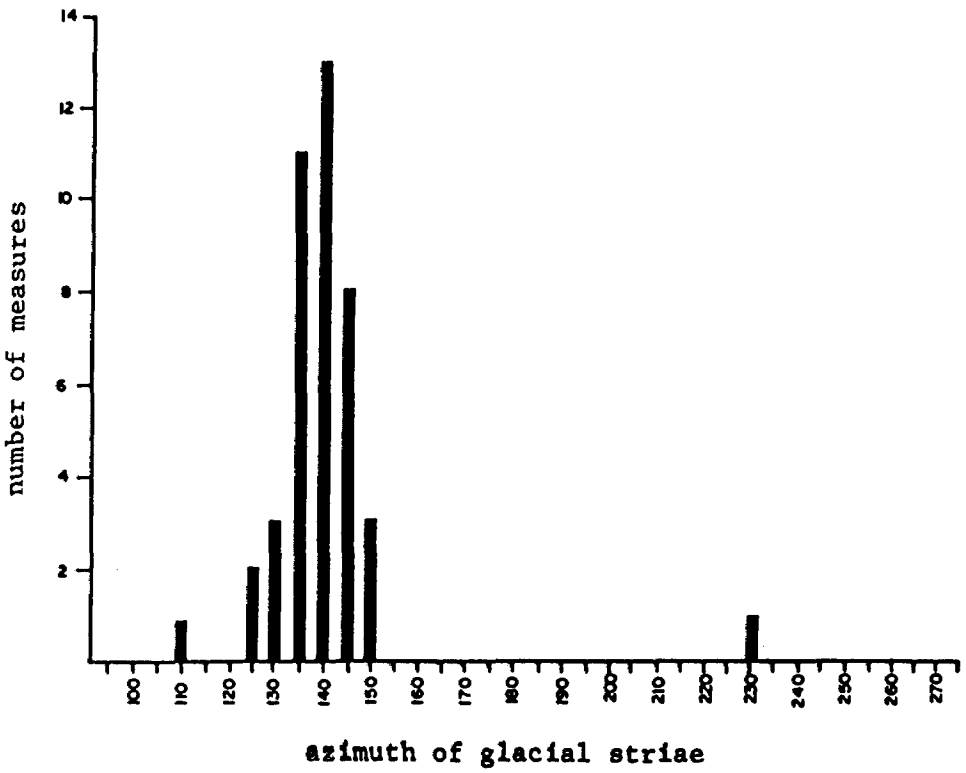


Figure 4-19 : Histogram of glacial striae directions measured at trenches 1, 2, 3, 4. Total number of measures is 42.

5. DISCUSSION OF RESULTS

The mechanical stripping and detailed mapping program has enabled us to:

i) better describe and understand rock types,
ii) better observe deformations within them,
iii) more systematically measure structures, and
iv) obtain a more complete sampling coverage

within the areas described in this report.

The objective of this discussion is not to summarize what has been presented in the previous section, but to use these results as a starting point, and to extrapolate what we have learned to the regional (i.e. property) level. Can we use what we have learned to more efficiently plan future exploration programs, and most important, to more quickly discover economic gold mineralization.

5.1 General Geology of the Burntbush River Property

One of the most important interpretations which I make as a result of this work is the presence of a major east-west structural discontinuity (or discontinuities ?) passing through the central part of the property. This interpretation is based on the following observations:

i) the different rock types which have been reported from the northern and southern parts of the property:

Trench 1 consists of mafic metavolcanic rocks, but most of the northern part of the property is interpreted to be underlain by metasediments (eg outcrops JB-7, JB-8, outcrop of Thomson, 1936, drill holes 165E-1, 165E-2, see report no. 86-CND-47-02, Map 6). The mafic metavolcanic rocks are interpreted to have been emplaced due to a major northwest trending fault which was observed at trench 1.

The southern part of the property is underlain mostly by metavolcanic rocks which include strongly magnetic dacitic crystal tuffs and lapilli tuffs, iron-rich tuffs and other flow rocks;

ii) the major lineations (mineral lineations, quartz rods, fold axes, etc) to the north have consistent orientations which are different from the major lineations to the south, which are also consistent:

Lineations measured in the northern part of the property plunge steeply towards the north. Note that this observation is not restricted solely to trench 1: a minor fold at outcrop JB-8 was measured at 50° at 035 during the summer program.

Lineations measured in the southern trenches plunge gently towards the east, and some of the rocks are nearly flat-lying;

iii) in the central part of the property, a strongly deformed metagabbro has been mapped, and this may correspond to, or be reasonably close to, such a discontinuity:

At trench 2, shearing is widespread, and some brittle faulting has been observed, along with significant quartz veining. Lineations in this outcrop are commonly steeply plunging towards the north, but there is a marked trend away from this, and towards shallower, northeast plunging orientations.

It is significant that some quartz veins at trench 2 have been interpreted to correlate with quartz veins at trench 1, since this would indicate that shearing has been more intense and/or longer lived at trench 2.

Taken together, it is perhaps possible that the northern structural domain is older than the southern structural domain, and that this metagabbro at trench 2 was originally part of the northern domain. Being close to the structural discontinuity between the two domains, lineations have been partly modified and trend towards orientations more typical of the younger units;

iv) metamorphic grade is higher in the northern outcrops:

The northern outcrops are characterized by well crystallized hornblende and calcic plagioclase. Cordierite and garnet co-exist in one sample collected from outcrop JB-7. To the south, garnet is still found, but trench 4 contains a typical greenschist mineral assemblage.

Use of this criterion to support the presence of a major structural discontinuity is made somewhat problematic due to the possible effects of the vast granitic terrane located only 2 to 3 km northwest of the property.

Taken together, the above four points strongly suggest that a major structure which may also correspond to an unconformity, passes south of trench 2, and north of all of the outcrops mapped south of these.

5.2 Gold Geochemistry

Au results from outcrop samples show interesting results in the deformed metagabbro (trench 2) and also in the dacitic tuffs from the southern part of the property. These dacitic tuffs trend westwards onto the adjacent Newmont property, and a recent assessment report describing drilling performed at only ~800 m from our common boundary shows that these are host to significant Au mineralization.

The southern and central parts of the property may deserve first priority in our search for economic Au mineralization.

We should keep in mind, however, that assays as high as 686 ppm have been reported from the holes drilled by Dome (165E-1, 165E-2), in the northern part of the project area.

6. CONCLUDING REMARKS

The mechanical stripping and detailed mapping program has proven very useful for this project, since it provided high quality exposures in an area mostly underlain by thick overburden. These exposures have enabled us to better evaluate the economic potential of the property as a whole.

During this program, five of the largest exposures were stripped, and these areas are well distributed across the property.

There remains one area of poorly exposed rocks which could benefit from a similar program. This area comprises outcrops GC-8, 9, 10, 11, 12, 13. The rocks here appear to encompass several different lithologies and are variable in their intensity of deformation.

These outcrops are, unfortunately covered by much thicker forest than the areas exposed during the fall 1986 program, and this is partly why they were avoided. The area which could be stripped in a similar time frame would be considerably less, since felling and moving trees of 1 m diameter will be very time consuming. Nevertheless, I feel strongly that we should consider these outcrops prime candidates for a similar program.

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020

COGEMA CANADA LIMITED
BURNTBUSH RIVER PROJECT

FINAL REPORT OF ACTIVITIES 1986
VOLUME 2 of 2

Part II: Detailed Mapping and Lithogeochemistry Results of Outcrop Stripping Program

Ref. No. 87-CND-47-01
(Document #0044U)

By: J. Learn
February 1987

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ii) Hand Specimen Descriptions

iii) Thin Section Descriptions

iv) Chemistry Results

SAMPLE STATISTICS TRENCH 1

Lithology and sample numbers	Chemistry * Opt. A	Chemistry * Opt. B	Thin section
Northern pillow lava:			
JL-10-8	X		X
TI-6	X		
TI-14		X	X
Massive amphibolite:			
JL-10-5		X	X
JL-10-6	X		X
JL-10-12	X		X
TI-1	X		
TI-4	X		
Southern pillow lava:			
JL-10-2	X		X
JL-10-3	X		X
JL-10-4	X		X
JL-10-13			X
AM-8-1	X		X
AM-8-3	X		X
JL-25-9	X		
JL-25-10	X		
TI-7	X		
TI-8	X		
TI-9	X		
TI-10	X		
TI-11	X		
TI-12		X	X
TI-13	X		

Opt. A = minor elements, CaO, K_2O, CO_2
Opt. B = major and minor elements

SAMPLE STATISTICS TRENCH 1

Lithology and sample numbers	Chemistry Opt. A	Chemistry Opt. B	Thin section
Faulted contact:			
TI-5		X	X
Late dykes and veins:			
i) JL-10-11	X		
TI-3	X		X
ii) JL-10-10	X		X (2)
AM-8-2	X		X
iv) JL-10-1	X		X
vi) JL-10-7	X		
JL-10-9	X		
TI-2	X		

TOTALS	Opt. A	Opt. B	Thin section
Summer program	16	1	14
Fall program	12	2	4
	28	3	18

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HAND SPECIMEN DESCRIPTION

Sample No.: T-1-1

1. Mineralogy: %, habit, grain size:

grain size >1 mm
amphibole
feldspar
quartz veinlet
pyrite

Strong effervescence with HCl
length of channel sample ≈2 m.

2. Rock Texture, Colour, Hardness, etc.:

dark grey to black
banded
moderately hard

3. Structures: sheared with quartz veinlet parallel to the shearing

4. Alterations: chlorite rare
silicification ??

5. Magnetism: locally slightly magnetic

6. Rock name (Field Designation): sheared gabbro

(Doc. #0015U - 27.10.86)

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HAND SPECIMEN DESCRIPTION

Sample No.: T-1-2

1. Mineralogy: %, habit, grain size:

quartz 99%

pyrite) 1%

chlorite)

grab sample

no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:

white

very hard

3. Structures: massive

4. Alterations:

5. Magnetism: locally weakly magnetic

6. Rock name (Field Designation): quartz vein

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-3

1. Mineralogy: %, habit, grain size:

quartz

mica

hornblende

sericite

grain size >1 mm

no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:

grey to whitish

not very hard

3. Structures: sheared, very friable

4. Alterations: surficial weathering

5. Magnetism: no

6. Rock name (Field Designation): sheared dyke

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-4

1. Mineralogy: %, habit, grain size:
   - Hornblende
   - Feldspar
   - Quartz
   - Sericite
   - Pyrite
   - Local effervescence with HCl
   - Channel sample ≈2 m length

2. Rock Texture, Colour, Hardness, etc.:
   - medium grey
   - moderately hard

3. Structures: Sheared with quartz veins >2 mm parallel to the shearing

4. Alterations: weak carbonatization

5. Magnetism: no

6. Rock name (Field Designation): sheared gabbro

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T1-5

1. Mineralogy: %, habit, grain size:
   grain size <1 mm
   hornblende
   feldspar
   quartz
   sericite
   chlorite
   no effervescence with HCl
   chip sample

2. Rock Texture, Colour, Hardness, etc.:
   very friable
   medium grey to dark
   moderately hard

3. Structures: good schistosity

4. Alterations: chlorite

5. Magnetism: no

6. Rock name (Field Designation): schistose material, interflow mudstone ?

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-6

1. Mineralogy: %, habit, grain size:
   grain size >0.1 mm
   hornblende
   feldspar
   quartz in veinlet
   channel sample of 2 m length across So

   no reaction with HCl

2. Rock Texture, Colour, Hardness, etc.:
   silvery grey to green
   moderately hard

3. Structures: foliated, slightly schistose

4. Alterations: trace of pyrite near quartz veinlet
   locally with oxidation

5. Magnetism: no

6. Rock name (Field Designation): flattened pillow lava

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-7

1. Mineralogy: %, habit, grain size:

grain size >1 mm
amphibole
feldspar
sericite
quartz
pyrite & oxide

channel sample ≃2.8 m
no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:

hardness ≃5
silvery grey with darker bands

3. Structures: sheared ? with slightly schistose zones
crosscut by quartz veinlets (0.5 to 3 mm)

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): amphibolite

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-I-8

1. Mineralogy: %, habit, grain size:
   grain size >0.1 mm
   idem T-1-7 to T-1-11

   channel sample ≈2 m
   no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:
   medium grey to green
   moderately hard

3. Structures: sheared - cut by quartz veins

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): deformed amphibolite

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-9

1. Mineralogy: %, habit, grain size:

grain size <0.5 mm

idem T-1-7 to T-1-11

+ oxide

pyrite

chlorite

channel sample ≈2 m

no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:

medium grey to green with darker bands

moderately hard

3. Structures: banding

deformed

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): amphibolite

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-10

1. Mineralogy: %, habit, grain size:
   very fine grained

   channel sample ≃2 m
   no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:
   hard
   silvery grey

3. Structures: sheared
   numerous quartz veins or lenses

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): amphibolite

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-11

1. Mineralogy: %, habit, grain size:

amphibole

feldspar

sericite

pyrite

oxide

north end of channel

2. Rock Texture, Colour, Hardness, etc.:

hard (difficult to scratch with a knife)

medium grey

3. Structures: schistose (sheared ?)

numerous veinlets with oxide fillings

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): sheared amphibolite

(pillow lava)

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-12

1. Mineralogy: %, habit, grain size:

amphibole

feldspar

sericite

carbonate

pyrite

local effervescence with HCl

channel sample ≃2 m

2. Rock Texture, Colour, Hardness, etc.:

dark grey to black

moderately hard

3. Structures: massive - banded

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): amphibolite

(pillow lava)

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-13

1. Mineralogy: %, habit, grain size:

grain size >0.5 mm
amphibole
feldspar
quartz
carbonate
+ pyrite & oxide

locally effervescence with HCl near quartz veining
channel sample ≃2 m

2. Rock Texture, Colour, Hardness, etc.:

light grey
moderately hard

3. Structures: sheared ??
cut by numerous quartz veins (1-10 mm)

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): sheared pillow lava
amphibolite

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-1-14

1. Mineralogy: %, habit, grain size:

amphibole ≈40%)

feldspar ≈60%) fine to medium grained

minor garnet in pillow selvage

2. Rock Texture, Colour, Hardness, etc.:

lineated amphibolite pillows, flattened, folded

light to medium grey pillows

black selvages - moderately hard

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): pillow lava

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: TI-3

Field Rock Name:

Major Minerals: (% - habit, grain size):

plagioclase	50%	anhedral grains .05 to .2 mm
biotite	20%	sheaths .2 x .1 to .5 to .1 mm
hornblende	20%	anhedral to subhedral grains .05 to .2 mm
chlorite	10%	thin rim on most grain boundaries
opaques	<1%	anhedral grains <.1 mm
leucoxene	<1%	
zircon	trace	tiny needles

Minor Minerals: planar fabric: compositional, i.e. biotite rich and biotite biotite poor bands at mm scale, also a statistical preferred orientation of biotite grains

Veins, Fractures: thin rims of chlorite on most grain boundaries commonly take the form of thin discontinuous veins

Alterations: plagioclase dusty, relatively fresh, except for ≈3% of grains, these grains which are adjacent to biotite may be completely saussuritized, feldspar and chlorite in biotite cleavages

Rock Texture: granolepidoblastic

Rock Name: sheared intermediate dyke

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: TI-5

Field Rock Name: interflow sediment (?) - mudstone

Major Minerals: (% - habit, grain size):

plagioclase	50%	granular <.01 to 0.1 mm
biotite	20%	platy, needles generally <.01 x 0.1 mm
chlorite	20%	needles (after biotite) and grungy masses
epidote	7%	anhedral irregular .01 to 0.1 mm
garnet (fresh)	2%	≈2 mm, poikiloblastic, strongly altered fractured
opaques	<1%	anhedral grains <.05 mm
pumpellyite	<1%	

Minor Minerals:

Veins, Fractures: garnets may be fractured and intact or may be fractured and transposed parallel to foliation

Alterations: plagioclase is fresh to weakly sericitized, biotites appear to be alteration product of hornblende, chlorite is i) pseudomorphed after biotite and ii) is alteration product of hornblende and garnet, epidote is alteration product of hornblende and garnet, pumpellyite found only in altered cores of garnet (and hornblende ?) porphyroblasts

Rock Texture: cataclastic → almost ultramylonitic

Rock Name: strongly faulted and altered amphibolite

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: TI-12

Field Rock Name: sheared pillow lave

Major Minerals: (% - habit, grain size):

hornblende	45%	euhedral to subhedral 0.1 to 0.4 mm
plagioclase	45%	groundmass to hornblende 0.1 to 0.4 mm
biotite	7%	euhedral laths up to 0.3 mm long
opaques	2%	anhedral to subhedral grains ≈0.1 mm
leucoxene	<1%	anhedral grains <0.1 mm
zircon	trace	tiny needles in plagioclase and biotite
apatite	trace	tiny anhedral grains in plagioclase

Minor Minerals: some of the plagioclase may in fact be quartz, but if so plagioclase >>quartz
(this may be unrealistic given the major element result of 73.10% SiO_2)

Veins, Fractures:

Alterations: biotite appears to be a late mineral growing across hornblende crystals.
plagioclase locally dusty
radiogenic haloes in biotite

Rock Texture: more or less granoblastic, no preferred orientation of biotite

Rock Name: sheared pillow lava ?

(Doc. #0015U - 27.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: TI-14

Field Rock Name: pillow lava

Major Minerals: (% - habit, grain size):

hornblende	50%	subhedral to euhedral .02 to .2 mm
plagioclase	47%	groundmass to hornblende .02 to .2 mm
sphene	2%	euhedral to subhedral .02 mm
sericite	<1%	alteration of plagioclase fine needles
leucoxene	<1%	alteration of sphene ? .02 mm

Minor Minerals:

Veins, Fractures: sericitization of plagioclase more pronounced adjacent to .01 mm remobilization (vein) of plagioclase with very minor quartz

Alterations:

Rock Texture: granoblastic - very subtle grain size variations suggest weak weak foliation present

Rock Name: pillow lava - amphibolite

(Doc. #0015U - 27.10.86)

BURNT BUSH TRENCH 1 MAJOR ELEMENTS 09/02/87

Samole no	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	LOI	TOTAL
JL-10-8	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	10.00	-9.00	0.51	-9.00	0.00	-9.00	-9.00
TI-6	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-14	48.50	0.40	8.52	10.60	0.14	18.00	9.02	0.22	0.04	0.16	0.01	3.60	99.20
JL-10-5	51.40	1.49	14.00	14.30	0.19	6.58	9.33	3.00	0.31	0.28	0.12	0.25	101.13
JL-10-6	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	11.30	-9.00	0.47	-9.00	0.19	-9.00	-9.00
JL-10-12	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	10.50	-9.00	0.33	-9.00	0.03	-9.00	-9.00
TI-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
JL-10-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.51	-9.00	0.36	-9.00	0.00	-9.00	-9.00
JL-10-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	8.56	-9.00	0.53	-9.00	0.00	-9.00	-9.00
JL-10-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	7.00	-9.00	0.20	-9.00	0.03	-9.00	-9.00
JL-10-13													
AM-8-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	8.27	-9.00	0.44	-9.00	0.16	-9.00	-9.00
AM-8-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	10.00	-9.00	0.43	-9.00	0.05	-9.00	-9.00
JL-25-9	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.26	-9.00	0.72	-9.00	0.26	-9.00	-9.00
JL-25-10	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	7.83	-9.00	0.86	-9.00	0.05	-9.00	-9.00
TI-7	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-8	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-9	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-10	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-11	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-12	73.10	0.39	9.90	3.72	0.05	2.85	3.55	3.38	0.26	0.08	0.14	1.35	98.63
TI-13	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
TI-5	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
JL-10-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	3.99	-9.00	1.06	-9.00	0.28	-9.00	-9.00
JL-10-10	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	2.03	-9.00	0.88	-9.00	0.02	-9.00	-9.00
JL-10-11	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.54	-9.00	0.57	-9.00	0.08	-9.00	-9.00
AM-8-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	2.88	-9.00	0.92	-9.00	0.04	-9.00	-9.00
TI-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
JL-10-7	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	0.36	-9.00	0.10	-9.00	0.00	-9.00	-9.00
JL-10-9	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	3.46	-9.00	1.02	-9.00	1.95	-9.00	-9.00
TI-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

BURNT BUSH TRENCH 1 MINOR ELEMENTS 09/02/87 a)

Samole no	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Eu	Hf	Ir	Fe	La	Mo
JL-10-8	1.00	0.05	0.25	82.00	2.50	0.60	210.00	34.00	1.00	3.00	25.00	8.20	5.00	0.50
TI-6	1.50	0.05	0.30	120.00	2.50	0.25	290.00	38.00	2.00	3.00	25.00	11.00	4.00	0.50
TI-14	1.50	0.30	0.25	79.00	2.50	0.25	290.00	42.00	1.00	3.00	25.00	10.00	5.00	0.50
JL-10-5	3.00	0.05	0.25	25.00	2.50	0.60	120.00	35.00	0.50	2.00	25.00	9.30	2.00	0.50
JL-10-6	1.00	0.05	0.25	110.00	2.50	0.25	220.00	34.00	0.50	2.00	25.00	8.10	7.00	0.50
JL-10-12	1.00	0.05	0.25	25.00	2.50	0.25	200.00	29.00	0.50	2.00	25.00	7.50	4.00	0.50
TI-1	1.00	0.05	0.25	190.00	2.50	3.00	180.00	31.00	1.00	2.00	25.00	8.90	7.00	0.50
TI-4	3.00	0.10	0.30	140.00	2.50	1.00	64.00	37.00	0.50	4.00	25.00	12.00	7.00	0.50
JL-10-2	1.00	0.05	0.25	89.00	2.50	0.25	180.00	23.00	0.50	3.00	25.00	8.10	5.00	2.00
JL-10-3	1.00	0.05	0.25	150.00	2.50	0.80	130.00	29.00	2.00	3.00	25.00	9.10	3.00	7.00
JL-10-4	1.00	0.05	0.25	25.00	2.50	0.25	170.00	34.00	0.50	3.00	25.00	8.40	3.00	0.50
JL-10-13														
AM-8-1	1.00	0.40	0.25	88.00	2.50	1.50	72.00	27.00	2.00	3.00	25.00	6.40	5.00	0.50
AM-8-3	2.00	0.05	0.25	25.00	2.50	0.25	180.00	21.00	0.50	3.00	25.00	8.00	4.00	0.50
JL-25-9	1.00	0.05	0.25	61.00	2.50	1.00	170.00	24.00	0.50	3.00	25.00	6.80	3.00	3.00
JL-25-10	1.00	0.05	0.25	230.00	2.50	1.70	180.00	27.00	1.00	3.00	25.00	7.10	3.00	2.00
TI-7	1.50	0.05	0.30	160.00	2.50	1.60	240.00	33.00	1.00	4.00	25.00	9.10	8.00	0.50
TI-8	3.00	0.05	0.30	58.00	2.50	0.60	240.00	39.00	0.50	4.00	25.00	8.60	7.00	0.50
TI-9	1.50	0.05	0.30	25.00	2.50	0.25	240.00	43.00	2.00	4.00	25.00	9.00	9.00	0.50
TI-10	1.00	0.60	0.50	25.00	2.50	0.25	210.00	37.00	0.50	3.00	25.00	8.90	6.00	0.50
TI-11	1.00	0.05	0.80	53.00	2.50	0.25	230.00	36.00	0.50	3.00	25.00	9.40	6.00	0.50
TI-12	1.00	0.05	0.25	200.00	2.50	2.50	680.00	40.00	1.00	2.00	25.00	7.40	5.00	0.50
TI-13	5.00	0.05	0.25	280.00	2.50	5.00	230.00	40.00	0.50	4.00	25.00	10.00	7.00	0.50
TI-5	1.00	0.10	0.80	25.00	2.50	0.90	220.00	26.00	0.50	3.00	25.00	8.70	4.00	0.50
JL-10-1	1.00	0.50	0.25	490.00	2.50	2.30	10.00	6.00	0.50	2.00	25.00	2.00	4.00	0.50
JL-10-10	1.00	0.05	0.25	300.00	2.50	0.80	10.00	2.50	0.50	2.00	25.00	0.30	1.00	0.50
JL-10-11	1.00	0.05	0.25	160.00	2.50	1.20	170.00	14.00	3.00	3.00	25.00	2.80	25.00	0.50
AM-8-2	1.00	0.05	0.25	610.00	2.50	1.20	27.00	2.50	0.50	2.00	25.00	0.30	5.00	0.50
TI-3	4.00	0.05	0.90	1000.00	2.50	1.30	770.00	26.00	0.50	5.00	25.00	4.50	29.00	0.50
JL-10-7	1.00	0.05	0.25	25.00	2.50	0.25	10.00	2.50	0.50	0.50	25.00	0.20	1.00	0.50
JL-10-9	1.00	0.05	0.25	110.00	2.50	2.90	49.00	8.00	0.50	0.50	25.00	2.10	3.00	0.50
TI-2	3.00	0.05	0.25	25.00	2.50	0.25	10.00	2.50	0.50	0.50	25.00	0.30	1.00	0.50

BURNT BUSH TRENCH 1 MINOR ELEMENTS 09/02/87 b)

Samole no	Ni	Rb	Sc	Se	Ag	Ta	Tb	Th	W	U	Yb	Zn	Na
JL-10-8	45.00	11.00	29.90	2.50	1.00	0.25	0.80	0.40	0.50	0.10	4.00	50.00	1.60
TI-6	71.00	10.00	45.30	2.50	1.50	0.25	1.10	0.10	1.00	0.10	5.00	240.00	2.31
TI-14	70.00	28.00	45.00	2.50	1.50	0.60	1.40	0.40	0.50	0.10	6.00	180.00	2.50
JL-10-5	45.00	15.00	32.50	2.50	1.00	0.25	0.60	0.30	0.50	0.10	3.00	50.00	2.01
JL-10-6	59.00	7.00	32.70	2.50	1.00	0.25	0.90	0.40	0.50	0.10	4.00	50.00	1.00
JL-10-12	39.00	3.00	30.40	2.50	1.00	0.25	0.60	0.30	0.50	0.10	3.00	50.00	2.02
TI-1	53.00	39.00	38.90	2.50	1.50	0.25	1.00	0.40	0.50	0.20	5.00	200.00	2.90
TI-4	31.00	27.00	44.80	2.50	1.50	0.60	1.70	0.10	1.00	0.10	7.00	200.00	2.24
JL-10-2	40.00	2.50	31.90	2.50	1.00	0.25	0.70	0.30	0.50	0.20	4.00	50.00	1.40
JL-10-3	47.00	15.00	30.70	2.50	1.00	0.25	0.60	0.30	0.50	0.10	3.00	50.00	1.40
JL-10-4	48.00	9.00	29.30	2.50	1.00	0.25	0.80	0.40	0.50	0.10	3.00	50.00	2.00
JL-10-13													
AM-8-1	37.00	9.00	26.20	2.50	1.00	0.25	1.00	0.30	0.50	0.20	3.00	50.00	2.00
AM-8-3	36.00	3.00	30.60	2.50	1.00	0.50	0.90	0.50	0.50	0.10	3.00	50.00	1.60
JL-25-9	36.00	21.00	28.40	2.50	1.00	0.25	0.90	0.40	0.50	0.10	3.00	50.00	1.10
JL-25-10	40.00	24.00	33.20	2.50	1.00	0.25	0.70	0.30	0.50	0.10	4.00	50.00	1.40
TI-7	53.00	30.00	39.80	2.50	1.50	0.25	1.50	1.00	1.00	0.30	6.00	160.00	2.16
TI-8	65.00	19.00	43.90	2.50	1.50	0.25	1.40	0.10	1.00	0.10	5.00	210.00	1.90
TI-9	58.00	4.00	42.40	2.50	1.50	0.25	1.20	0.30	1.00	0.10	7.00	290.00	1.80
TI-10	49.00	5.00	41.20	2.50	1.50	0.25	1.00	0.10	0.50	0.10	5.00	280.00	1.70
TI-11	36.00	21.00	42.10	2.50	1.50	0.60	1.20	0.40	3.00	0.10	6.00	250.00	2.00
TI-12	100.00	27.00	42.70	2.50	1.50	0.25	1.10	0.10	0.50	0.10	4.00	280.00	2.45
TI-13	52.00	66.00	42.50	2.50	4.00	0.25	1.00	0.30	0.50	0.10	6.00	170.00	2.35
TI-5	32.00	18.00	33.50	2.50	1.50	0.25	1.20	0.10	0.50	0.10	4.00	190.00	2.37
JL-10-1	22.00	37.00	2.90	2.50	1.00	0.25	0.25	0.70	0.50	0.50	1.00	50.00	2.27
JL-10-10	10.00	23.00	1.20	2.50	1.00	0.25	0.25	0.30	0.50	0.20	1.00	50.00	4.10
JL-10-11	91.00	17.00	6.20	2.50	1.00	0.50	0.25	3.40	0.50	0.80	1.00	50.00	2.09
AM-8-2	10.00	29.00	1.50	2.50	1.00	0.25	0.25	1.00	0.50	0.50	1.00	50.00	3.40
TI-3	120.00	32.00	15.00	2.50	4.00	0.25	0.70	6.20	0.50	1.70	1.00	230.00	3.31
JL-10-7	10.00	2.50	0.40	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	0.50
JL-10-9	10.00	42.00	6.80	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	1.50
TI-2	10.00	2.50	0.60	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	2.18

A P P E N D I X II

RESULTS TRENCH 2

i) Sample Statistics

ii) Hand Specimen Descriptions

iii) Thin Section Descriptions

iv) Chemistry Results

SAMPLE STATISTICS TRENCH 2

Rock Type and Sample Number[1]	Chemistry[2] Opt. A	Chemistry[2] Opt. B	Thin section
Sheared Metagabbro:			
Group 1:			
a) JL-13-1	X		X
JL-14-1	X		X
JL-14-2	X		X
JL-14-3	X		
JL-14-4	X		X
JL-14-5	X		X (2)
JL-24-1	X		X
JL-25-2	X		
JL-25-3	X		
T2-2	X		
T2-3	X		
T2-4	X		
T2-5	X		
T2-6	X		
T2-7	X		X
T2-8	X		
T2-9	X		
T2-10	X		
T2-12	X		
T2-14	X		X
T2-15	X		
T2-16	X		
T2-18	X		
T2-19	X		
T2-20	X		
T2-21	X		
T2-22	X		
T2-23	X		
T2-25	X		
T2-26	X		

[1] See notes at end
[2] Opt. A = minor elements, CaO, K_2O, CO_2
Opt. B = major and minor elements

SAMPLE STATISTICS TRENCH 2

Rock Type and Sample Number		Chemistry Opt. A	Chemistry Opt. B	Thin section
	T2-27	X		
	T2-29	X		X
	T2-30	X		
	T2-31	X		
	T2-32	X		
	T2-33	X		X
	T2-34	X		
	T2-35	X		
	T2-36	X		
	T2-38	X		
	T2-39	X		
	T2-43	X		
	T2-44	X		
	T2-46	X		
	T2-47	X		
	T2-48	X		
	T2-49	X		
	T2-50	X		
	T2-51	X		
	T2-52	X		
	T2-53	X		
b)	T2-17	X		X
	T2-24	X		
Group 2:				
a)	JL-14-7	X		X
	JL-25-4	X		X
	JL-25-6	X		
	T2-28	X		X
	T2-54	X		
b)	JL-25-1	X		
	T2-55	X		
	T2-56	X		
	T2-57	X		
c)	T2-37	X		

SAMPLE STATISTICS TRENCH 2

Rock Type and Sample Number	Chemistry Opt. A	Chemistry Opt. B	Thin section
Dyke rocks:			
i) T2-1		X	X
T2-42		X	X
T2-45		X	X
ii) T2-58			X
iii) T2-11A		X	X
T2-11B		X	X
iv) JL-14-6	X		X
v) JL-25-5	X		
vi) JL-24-2	X		
JL-14-4A			X
Other:			
T2-13	X		
T2-40	X		
T2-41	X		

TOTALS	Opt. A	Opt. B	Thin section
Summer program	16	0	11
Fall program	54	4	12
	70	4	23

Notes on grouping of samples:

Sheared metagabbro:

Group 1 refers to "representative" samples
Group 1a samples all have 150 to 600 ppm Cr, 30 to 60 ppm Co,, 30 to 110 ppm Ni and <10 ppm La
Group 1b samples have high Cr, Ni
Group 2 refers to altered samples
Group 2a are silicified
Group 2b are bleached by late fractures
Group 2c is strongly brecciated

Dyke rocks:

in the order they are discussed in the text
JL-14-4A is a thin vein not separately discussed in the text

Other:

These samples were intended to be useful but:
T2-13 is metagabbro contaminated by "green rock"
T2-40 and T2-41 appear to be mixed metagabbro and dyke material.

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-1

1. Mineralogy: %, habit, grain size:

mica (biotite/chlorite) 30%) fine to medium grained
feldspar 40%)
quartz 30%)

pyrrhotite ≃1 mm >1%
chalcopyrite <1 mm <1%
as discrete grains within schistosity

$CaCO_3$ → effervescence

2. Rock Texture, Colour, Hardness, etc.:

schistose
greenish weathered, grey fresh
quite hard

3. Structures:

4. Alterations: silicified, chloritized
po, cpy

5. Magnetism: yes - po

6. Rock name (Field Designation): silicified chloritic schist

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-2

1. Mineralogy: %, habit, grain size:
   chloritic shear zone
   very minor py
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (<5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-3

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor py
   local strong effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard <5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-4

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor py
   effervescence - yes

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard <5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-5

1. Mineralogy: %, habit, grain size:

chloritic shear

very minor pyrrhotite, pyrite

minor effervescence plus minor $CaCO_3$ veins

2. Rock Texture, Colour, Hardness, etc.:

moderately hard >5

3. Structures:

4. Alterations: weakly silicified

5. Magnetism: yes - minor po

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-6

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor py
   local effervescence and local strong effervescence in fx

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-7

1. Mineralogy: %, habit, grain size:

chloritic shear

minor py

very minor effervescence - a few strong react. in fx

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-8

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor py
   local minor effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (<5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-9

1. Mineralogy: %, habit, grain size:
   chip sample from micaceous zone adjacent to quartz
   very minor py
   local strong effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately soft

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-10

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor py
   effervescence - yes

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (≥5)

3. Structures:

4. Alterations: silicified

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-11A

1. Mineralogy: %, habit, grain size:
   fine grained banded horizon in green dyke
   very fine grained feldspar/quartz (?)
   with broken quartz lenses

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (≥5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-11B

1. Mineralogy: %, habit, grain size:

green dyke (?) rock

enclosing sample T-2-11A

massive appearance in o/c but very fissile when broken

no effervescence

2. Rock Texture, Colour, Hardness, etc.:

very soft

soapy feel on schist planes

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-12

1. Mineralogy: %, habit, grain size:

chloritic shear but chloritization less strong than most previous samples

→ amphibole rich

→ very minor py, if any

→ very local effervescence

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (≤5)

black on fresh sfc.

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-13

1. Mineralogy: %, habit, grain size:

chip sample

chloritic shear and there appears also to be some

chloritic material similar to T-2-11B incorporated in sample

very minor py

good effervescence (shear only)

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (shear)

soft (greenish micaceous rock)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-14

1. Mineralogy: %, habit, grain size:

chloritic shear

amphibole rich

very minor pyrite

good effervescence

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (<5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-15

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor pyrite, if any
   very minor local effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-16

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-17

1. Mineralogy: %, habit, grain size:

chip sample

black, rusty weathering mica rich zone

no visible pyrite

no effervescence

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (<5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-18

1. Mineralogy: %, habit, grain size:

chloritic shear

very minor pyrite

minor po

moderate effervescence

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (≤5)

3. Structures:

4. Alterations:

5. Magnetism: yes - po

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-19

1. Mineralogy: %, habit, grain size:
   chip sample shear zone
   very minor pyrite, if any
   moderate effervescence, locally

2. Rock Texture, Colour, Hardness, etc.:
   moderately soft (H <<5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-20

1. Mineralogy: %, habit, grain size:
   chip sample
   chloritic shear, a bit rusty
   no visible pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≃5)

3. Structures:

4. Alterations: silicified (?)

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-21

1. Mineralogy: %, habit, grain size:
   2 m across shear
   very minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H <5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-22

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor pyrite, if any
   local strong effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H <5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-23

1. Mineralogy: %, habit, grain size:
   chip sample
   black micaceous material
   rusty weathered
   minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H <5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-24

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-25

1. Mineralogy: %, habit, grain size:
   chip sample across chloritic shear
   very minor pyrite
   strong effervescence locally

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-26

1. Mineralogy: %, habit, grain size:
   2 m across chloritic shear
   minor pyrite
   strong effervescence on some fx

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H <5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-27

1. Mineralogy: %, habit, grain size:
   2 m across shear
   minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   hard (H >5)

3. Structures:

4. Alterations: silicified

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-28

1. Mineralogy: %, habit, grain size:
   chips sample across rusty silicified zone
   minor pyrite <1%
   some effervescence on fx

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≥5)

3. Structures:

4. Alterations: silicified

5. Magnetism: yes - locally

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-29

1. Mineralogy: %, habit, grain size:
   chloritic shear
   very minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≃5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-30

1. Mineralogy: %, habit, grain size:
   chip sample chloritic shear
   very minor pyrite
   no effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≃5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-31

1. Mineralogy: %, habit, grain size:
   chloritic shear
   minor pyrite
   fairly strong effervescence everywhere
   very minor po

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≥5)

3. Structures:

4. Alterations: silicified

5. Magnetism: yes - po

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-32

1. Mineralogy: %, habit, grain size:
   chloritic shear
   minor pyrite <1%
   strong effervescence everywhere

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≃5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-33

1. Mineralogy: %, habit, grain size:
   chloritic shear
   minor po, py ≤1%
   moderate effervescence
   (thin calcite fx // schistosity)

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≃5)

3. Structures:

4. Alterations:

5. Magnetism: weakly magnetic

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-34

1. Mineralogy: %, habit, grain size:
   chip in chloritic shear (≃2m)
   minor py ≃1%
   significant quartz ≃10%
   good $CaCO_3$ adjacent to quartz only

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard but H <5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-35

1. Mineralogy: %, habit, grain size:

≃2 m across glacially polished shear

minor pyrite

minor $CaCO_3$

2. Rock Texture, Colour, Hardness, etc.:

hard H ≥5

3. Structures:

4. Alterations: silicified (weakly ?)

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-36

1. Mineralogy: %, habit, grain size:
   ≃2 m across shear
   minor py, po ≃1%
   moderately calcareous

2. Rock Texture, Colour, Hardness, etc.:
   hard H >5

3. Structures:

4. Alterations: silicified

5. Magnetism: yes - locally

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-37

1. Mineralogy: %, habit, grain size:

≈2 m across fault breccia

minor py, po <1%

no reaction with HCl noted

2. Rock Texture, Colour, Hardness, etc.:

hard (H >5)

3. Structures:

4. Alterations: silicification, fault breccia

5. Magnetism: fairly magnetic compared to other T-2 samples

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-38

1. Mineralogy: %, habit, grain size:

≃2 m across sheared rock not so brecciated but close to same fault as T-2-37

very minor pyrite

very minor $CaCO_3$

2. Rock Texture, Colour, Hardness, etc.:

moderately hard H ≤5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-39

1. Mineralogy: %, habit, grain size:

chip sample from strongly weathered southwestern trench

minor pyrite

no reaction with HCl detected

2. Rock Texture, Colour, Hardness, etc.:

alternating hard H ≃5 and fairly soft, fissile material

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-40

1. Mineralogy: %, habit, grain size:

chip sample across ≃2 m in alternating hard and fissile material in strongly altered southwest part of exposure

minor py, po

strong effervescence in hard rock

2. Rock Texture, Colour, Hardness, etc.:

hard rock H >5

fissile rock strongly weathered, soft

3. Structures:

4. Alterations: silicification

5. Magnetism: yes in hard rock

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-41

1. Mineralogy: %, habit, grain size:
   ≃2 m chip sample adjacent to T-2-40 (continue in southerly direction)
   approx. same rock type

   very minor py
   no effervescence detected

2. Rock Texture, Colour, Hardness, etc.:
   alternating hard (H ≃5) and soft (fissile)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-42

1. Mineralogy: %, habit, grain size:
   blocky fractured rock - dyke ?
   py and po slightly greater than 1% say 2%
   moderately calcareous bands present

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H <5)

3. Structures:

4. Alterations:

5. Magnetism: yes, moderately magnetic (pervasively)

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-43

1. Mineralogy: %, habit, grain size:
   ≈2 m across strongly folded shear
   minor py, po
   moderately to strongly calcareous in the schistosity planes (cracks)

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard H ≤5

3. Structures:

4. Alterations:

5. Magnetism: yes, locally

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-44

1. Mineralogy: %, habit, grain size:

≃2 m across glacially polished shear locally strongly silicified

no py observed

locally calcareous in unsilicified parts

2. Rock Texture, Colour, Hardness, etc.:

H >5 over most of samples

but H <5 over some

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-45

1. Mineralogy: %, habit, grain size:
   grab sample from part of trench which later was
   flooded with water
   granular texture
   no py observed
   no effervescence observed

2. Rock Texture, Colour, Hardness, etc.:
   very soft H ≈2-1/2

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-46

1. Mineralogy: %, habit, grain size:

≃2 m across shear

very minor pyrite

no effervescence detected

2. Rock Texture, Colour, Hardness, etc.:

quite hard H ≥5

3. Structures: fracture cleavage prominent

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-47

1. Mineralogy: %, habit, grain size:
   chloritic shear ≃2 m sample
   minor pyrite
   moderately calcareous
   strongly so in fractures

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-48

1. Mineralogy: %, habit, grain size:

≃2 m over chloritic shear

very minor pyrite

no effervescence detected

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (H ≤5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-49

1. Mineralogy: %, habit, grain size:

≈2 m across shear

very minor pyrite

no effervescence detected

2. Rock Texture, Colour, Hardness, etc.:

moderately hard (H ≤5 locally H >5)

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-50

1. Mineralogy: %, habit, grain size:
   ≈2 m across shear
   very minor pyrite
   firmly crystalline calcite in vug with py

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard H ≤5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-51

1. Mineralogy: %, habit, grain size:

≃2 m across shear

minor disseminated pyrite

no effervescence detected

composite chip sample from this area gave 20 ppb Au

last summer's sampling

2. Rock Texture, Colour, Hardness, etc.:

moderate hardness H ≤5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-52

1. Mineralogy: %, habit, grain size:
   ≃2 m across shear
   minor pyrite
   minor local moderate effervescence

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard H ≤5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-53

1. Mineralogy: %, habit, grain size:

≃2 m across shear

minor pyrite

moderately calcareous but mostly fracture related

2. Rock Texture, Colour, Hardness, etc.:

moderately hard H ≥5

3. Structures:

4. Alterations: silicified (?)

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-54

1. Mineralogy: %, habit, grain size:

≃2 m across rusty weathered shear

sample from this same area ≃1 m away gave 110 ppb Au

(selective sample in rusty weathered silicified zone)

finely disseminated pyrite and coarser pyrite in fractures

no effervescence detected

2. Rock Texture, Colour, Hardness, etc.:

moderately hard and variable H ≤5 but locally H >5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-55

1. Mineralogy: %, habit, grain size:

chip sample from bleached alteration zone in late fracture system

rusty surfaces but no fresh pyrite observed

strongly calcareous in fractures and in microfractures

2. Rock Texture, Colour, Hardness, etc.:

fairly soft especially where fissile sample not completely fissile

note fresh surfaces do not appear bleached

medium to dark grey

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-56

1. Mineralogy: %, habit, grain size:

chip sample from bleached alteration zone adjacent to late fractures

rusty surfaces but no pyrite observed

strongly calcareous in fractures

2. Rock Texture, Colour, Hardness, etc.:

may be very hard H >>5 but fissile sections fairly soft H <<5

note fresh surface does not appear bleached

medium to dark grey

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-57

1. Mineralogy: %, habit, grain size:

chip sample from bleached zone related to dense late fracturation

this sample visually much more strongly altered than T-2-55, T-2-56

very rusty fracture surfaces, minor pyrite observed

strong effervescence in fractures

2. Rock Texture, Colour, Hardness, etc.:

very hard H >5 except fissile sections

quite soft H <5

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-2-58

1. Mineralogy: %, habit, grain size:

thin section only of doubly folded dyke (grey rock)
this piece was sawed out to measure limb orientation (dips)
same grey band (dyke) should appear twice in thin section
adjacent to chloritized schist

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism:

6. Rock name (Field Designation):

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-1

Field Rock Name: silicified chloritic schist

Major Minerals: (% - habit, grain size):

plagioclase > quartz	principal constituent (~An 40 andesine)
hornblende	principal constituent
biotite	major constituent: alteration of hornblende
chlorite	major constituent: alteration of hornblende, biotite
opaques	minor constituent
sphene	minor constituent
calcite	minor constituent (late mineral)
clinozoisite	only found in cores of altered plagioclase
apatite	trace mineral perhaps 0.5%
zircon	trace mineral

Minor Minerals:

→ mineral percentages and grain sizes vary considerably within thin section; plagioclase-rich, hornblende-rich and biotite-rich domains are present as compositional bands; less sheared

Veins, Fractures: parts with weakly altered grains are coarser than strongly sheared finer grained (better oriented) parts

Alterations: plagioclase may be weakly sericitized, or weakly to strongly saussuritized, strongly altered examples may have clinozoisite cores hornblende to biotite to chlorite (all stages present)

Rock Texture: cataclastic

Rock Name: sheared metagabbro

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-7

Field Rock Name: chloritic shear

Major Minerals: (% - habit, grain size):

hornblende	68%	subhedral, poikiloblastic ≤0.2 mm
plagioclase	24%	lightly sericitized ≤0.1 mm
biotite	2%	some are zoned ≤0.1 mm
chlorite	5%	pseudomorphs biotite
sphene	<1%	
opaques	<1%	.
calcite	<1%	in fractures

Minor Minerals:

Veins, Fractures: thin plagioclase fractures with minor calcite

Alterations:

Rock Texture: weakly oriented, weakly sheared

Rock Name: weakly sheared amphibolite (metagabbro)

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-11A

Field Rock Name: fine-grained banded horizon in green dyke

Major Minerals: (% - habit, grain size):

quartz >> feldspar	85%	
actinolite	3%	
biotite	5%	
chlorite	7%	pseudomorphs actinolite, biotite, also in fractures
sphene	<1%	

Minor Minerals: → alternating fine-grained (~0.5 mm) bands and very fine-grained (~ <.05 mm) bands

Veins, Fractures: chlorite veinlets

Alterations: grain boundaries clearly indicate total recrystallization in both fine-grained and very fine-grained domains

Rock Texture:

Rock Name:

(Doc. #0031U - 04.02.87)

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BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-11B

Field Rock Name: green dyke rock (??)

Major Minerals: (% - habit, grain size):

- principal constituent is a very fine-grained, colourless, fibrous amphibole
- there is also appreciable biotite which is largely chloritized and slightly coarser, but still very fine-grained
- minor sphene and opaques
- much of slide is colourless chlorite as groundmass to fibrous minerals and as irregular patches

Minor Minerals:

Veins, Fractures: chlorite veinlets

Alterations:

Rock Texture: very well oriented and very fine-grained

Rock Name: probably a sheared dyke rock

T2-11A and T2-11B taken together may suggest a sheared, zoned vein

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THIN SECTION DESCRIPTION

Sample No.: T2-12

Field Rock Name: chloritic shear

Major Minerals: (% - habit, grain size):

hornblende	70%
plagioclase	20%
clinozoisite	9%
sphene	<1%
opaques	<1%
calcite	<1%
chlorite	<1%

Minor Minerals: texture and grain size very similar to T2-7 (except for lack of biotite and alteration of plagioclase)

Veins, Fractures: minor chlorite veinlets

Alterations: clinozoisite and calcite appear to be alteration products of plagioclase

Rock Texture:

Rock Name: weakly sheared amphibolite

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T2-17

Field Rock Name: mica rich zone in sheared metagabbro

Major Minerals: (% - habit, grain size):

hornblende	65%	subhedral to anhedral grains ~.05 mm
plagioclase	30%	anhedral grains ~.05 mm
chlorite	4%	hornblende alteration and veinlets
clinozoisite	<1%	alteration of plagioclase adjacent to veinlets
sphene	<1%	
opaques	<1%	

NO MICA!

Minor Minerals:

Veins, Fractures: chlorite veinlets and microfractures
microfractures nearly perpendicular to grain orientation

Alterations:

Rock Texture: very good planar orientation - sheared

Rock Name: moderately to strongly sheared amphibolite

(Doc. #0031U - 04.02.87)

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BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T2-28

Field Rock Name: rusty silicified zone in sheared amphibolite (metagabbro)

Major Minerals: (% - habit, grain size): alternating bands of very fine-grained (~.05 mm) and medium to coarse grained (0.2 to 0.5 mm) nature

fine grained bands:		coarse grained bands:	
hornblende	45%	quartz	45%
plagioclase	32%	plagioclase	40%
quartz	15%	epidote	10%
opaques and Ti-oxides	5%	hornblende	5%
sphene	<1%	sphene	<1%
chlorite (veinlets mostly)	~3%	opaques	<1%

Minor Minerals:

Veins, Fractures: chlorite veinlets and microfractures of variable orientation
Ti-oxides generally in thin bands (veinlets ?)

Alterations:

Rock Texture: sheared rock invaded by quartz-plagioclase-epidote veins along the shear fabric / foliation

Rock Name: sheared amphibolite with significant veining

(Doc. #0031U - 04.02.87)

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BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-29

Field Rock Name: chloritic shear

Major Minerals: (% - habit, grain size):

hornblende	58%	
plagioclase	35%	grain size ~0.05 mm
clinozoisite	4%	
sphene	1%	
opaques	<1%	
chlorite	1%	) alteration of hornblende
biotite	1%	)

Minor Minerals:

Veins, Fractures: a few coarser grained lenses with plagioclase (~60%), quartz (~30%), epidote (~7%), opaques, sphene

Alterations:

Rock Texture: well foliated - a shear fabric

Rock Name: sheared amphibolite

(Doc. #0031U - 04.02.87)

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BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T2-33

Field Rock Name: chloritic shear

Major Minerals: (% - habit, grain size):

→ texturally very similar to T2-28 i.e. fine-grained sheared amphibolite (hornblende dominant ~60%) with coarser grained veins of plagioclase-quartz, but coarser grained veins contain calcite > epidote

→ also some calcite veining

→ hornblende alteration to biotite and then to chlorite is more pronounced

→ opaques more abundant, sphene still present

Minor Minerals:

Veins, Fractures: the whole has then been strongly microfractured at approximately perpendicular to the shear fabric

Alterations:

Rock Texture:

Rock Name: sheared and fractured amphibolite

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T2-42

Field Rock Name: blocky fractured rock (dyke ?)

Major Minerals: (% - habit, grain size):

hornblende 45% poikiloblastic 0.1 to 2.0 mm

plagioclase and quartz 40% strongly recrystallized

calcite ~3%

sphene ~1%

chlorite ~1%

muscovite and seritite ~7%

very minor (trace) tourmaline

Minor Minerals:

Veins, Fractures: hornblende fractured and bent and commonly transposed along fractures

- numerous dusty microfractures

Alterations: plagioclase weakly to moderately saussuritized

muscovite and sericite may also be derived from plagioclase

Rock Texture:

Rock Name: may be strongly fractured dyke rock but may also be less sheared, moderately to weakly silicified, strongly fractured amphibolite

(Doc. #0031U - 04.02.87)

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BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-45

Field Rock Name:

Major Minerals: (% - habit, grain size):

undeformed, weakly altered example of T2-42
coarse hornblende poikiloblasts up to 3 mm
(local minor alteration to biotite, chlorite) set in a groundmass of
plagioclase and lesser quartz (~.1 mm)
minor sphene (~2%) in clusters and very few opaques
(i.e. opaques in T2-42 may be a late mineralization)
abundant tiny zircon needles

Minor Minerals:

Veins, Fractures:

Alterations:

Rock Texture: porphyritic

Rock Name: intermediate dyke

(Doc. #0031U - 04.02.87)

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BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T2-58

Field Rock Name:

Major Minerals: (% - habit, grain size):

grey bands:		green bands:	
plagioclase > quartz	73%	hornblende	60%
hornblende	25%	plagioclase	30%
opaques and Ti-oxides	1%	clinozoisite	5%
sphene	1%	calcite	4%
		chlorite	<1%
		opaques	<1%
		sphene	<1%

Minor Minerals:

green bands are typical sheared (well oriented) amphibolite but reasonably coarse grained hornblende poikiloblasts i.e. ~1 mm x 0.3 mm

Veins, Fractures: grey bands are finer grained i.e. ~0.05 to 0.1 mm; plagioclase/quartz grain boundaries indicate complete recrystallization - hornblende grains are smaller eg ~0.4 mm x 0.1 mm have weak birefringence and weak pleochroism i.e. they are altering uniformly to chlorite

Alterations: i.e. grey rock is not less deformed amphibolite but is sheared intermediate dyke rock or migmatitic sweat

Rock Texture:

Rock Name:

(Doc. #0031U - 04.02.87)

BURNT BUSH TRENCH 2 MAJOR ELEMENTS 09/02/87

Sample no	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	LOI	TOTAL
JL-13-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	8.87	-9.00	0.32	-9.00	0.08	-9.00	-9.00
JL-14-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	11.90	-9.00	0.31	-9.00	0.13	-9.00	-9.00
JL-14-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	11.60	-9.00	0.26	-9.00	0.34	-9.00	-9.00
JL-14-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.00	-9.00	0.20	-9.00	0.22	-9.00	-9.00
JL-14-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.83	-9.00	1.23	-9.00	0.38	-9.00	-9.00
JL-14-5	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	8.81	-9.00	0.44	-9.00	0.62	-9.00	-9.00
JL-25-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	8.74	-9.00	0.33	-9.00	0.53	-9.00	-9.00
JL-25-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	11.20	-9.00	0.26	-9.00	0.06	-9.00	-9.00
T2-02	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-03	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-04	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-05	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-06	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-07	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-08	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-09	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-10	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-12	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-14	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-15	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-16	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-18	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-19	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-20	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-21	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-22	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-23	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-25	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-26	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-27	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-29	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-30	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-31	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-32	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-33	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-34	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-35	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-36	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-38	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-39	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-43	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-44	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-46	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-47	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-48	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-49	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-50	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-51	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-52	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-53	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-17	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-24	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

BURNT BUSH TRENCH 2 MAJOR ELEMENTS 09/02/87

Sample no	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	LOI	TOTAL
JL-14-7	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	51.90	-9.00	1.93	-9.00	0.13	-9.00	-9.00
JL-25-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.54	-9.00	0.26	-9.00	1.89	-9.00	-9.00
JL-25-6	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.75	-9.00	0.49	-9.00	0.26	-9.00	-9.00
T2-28	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-54	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
JL-25-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	4.15	-9.00	0.42	-9.00	0.90	-9.00	-9.00
T2-55	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-56	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-57	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-37	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-01	58.20	0.67	16.80	8.67	0.07	3.44	1.47	2.05	2.75	0.31	0.26	3.00	97.43
T2-42	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-45	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-58													
T2-11A	65.70	0.36	15.80	2.61	0.05	1.00	2.49	6.23	1.79	0.21	0.03	2.20	98.44
T2-11B	51.70	0.34	10.03	8.34	0.16	13.40	9.51	2.05	0.66	0.18	0.02	1.55	97.92
JL-14-6	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	3.52	-9.00	0.69	-9.00	0.18	-9.00	-9.00
JL-25-5	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	6.53	-9.00	0.29	-9.00	0.00	-9.00	-9.00
JL-24-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	0.55	-9.00	0.04	-9.00	0.14	-9.00	-9.00
JL-14-4A													
T2-13	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-40	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T2-41	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

BURNT BUSH TRENCH 2 MINOR ELEMENTS 09/02/87 a)

Samole no	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Eu	Hf	Ir	Fe	La	Mo
JL-13-1	20.00	0.05	0.60	25.00	2.50	4.00	300.00	41.00	1.00	1.00	25.00	8.60	2.00	0.50
JL-14-1	1.00	0.05	0.25	61.00	2.50	2.20	290.00	40.00	1.00	2.00	25.00	9.00	3.00	0.50
JL-14-2	4.00	0.05	0.25	51.00	2.50	2.20	260.00	37.00	0.50	1.00	25.00	7.40	3.00	0.50
JL-14-3	5.00	0.10	0.50	25.00	2.50	1.30	180.00	33.00	0.50	1.00	25.00	8.00	2.00	0.50
JL-14-4	1.50	0.20	0.25	70.00	2.50	96.40	230.00	36.00	1.00	0.50	25.00	12.00	5.00	0.50
JL-14-5	1.50	0.10	0.25	93.00	2.50	7.20	170.00	35.00	0.50	2.00	25.00	8.60	3.00	0.50
JL-25-2	5.00	0.05	1.60	65.00	2.50	1.50	180.00	40.00	0.50	1.00	25.00	8.70	2.00	0.50
JL-25-3	1.00	0.05	0.50	25.00	2.50	1.40	320.00	27.00	0.50	2.00	25.00	7.30	2.00	2.00
T2-02	1.50	0.40	0.25	25.00	2.50	2.10	300.00	37.00	0.50	2.00	25.00	9.40	3.00	0.50
T2-03	34.00	0.10	0.70	25.00	2.50	2.30	460.00	52.00	0.50	2.00	25.00	10.00	3.00	0.50
T2-04	3.00	0.30	0.50	61.00	2.50	1.50	450.00	45.00	0.50	2.00	25.00	11.00	4.00	0.50
T2-05	1.00	0.10	1.40	100.00	2.50	1.30	480.00	43.00	0.50	1.00	25.00	10.00	4.00	0.50
T2-06	1.50	0.70	0.60	170.00	2.50	7.80	300.00	45.00	1.00	3.00	25.00	10.00	3.00	0.50
T2-07	4.00	0.05	0.60	170.00	2.50	3.60	430.00	39.00	0.50	1.00	25.00	10.00	2.00	2.00
T2-08	7.00	0.05	0.25	88.00	2.50	9.10	270.00	42.00	0.50	2.00	25.00	8.40	1.00	3.00
T2-09	1.50	0.40	0.25	260.00	2.50	31.00	410.00	43.00	0.50	0.50	25.00	9.40	4.00	0.50
T2-10	7.00	0.10	0.60	72.00	2.50	5.90	510.00	44.00	0.50	2.00	25.00	9.20	3.00	10.00
T2-12	4.00	0.10	0.25	88.00	2.50	2.80	400.00	40.00	0.50	3.00	25.00	8.80	3.00	0.50
T2-14	1.50	0.10	0.25	170.00	2.50	6.50	550.00	51.00	1.00	2.00	25.00	10.00	3.00	3.00
T2-15	1.50	0.05	0.25	25.00	2.50	1.30	360.00	46.00	0.50	1.00	25.00	10.00	3.00	0.50
T2-16	9.00	0.05	0.80	75.00	2.50	2.60	510.00	48.00	0.50	2.00	25.00	9.30	3.00	0.50
T2-18	1.00	0.05	0.25	25.00	2.50	0.80	270.00	46.00	1.00	3.00	25.00	10.00	3.00	0.50
T2-19	6.00	0.05	0.60	130.00	2.50	8.20	400.00	45.00	0.50	2.00	25.00	10.00	3.00	0.50
T2-20	4.00	0.05	0.25	25.00	2.50	1.60	300.00	41.00	0.50	3.00	25.00	11.00	4.00	0.50
T2-21	6.00	0.05	0.25	25.00	2.50	13.00	280.00	34.00	1.00	1.00	25.00	10.00	1.00	0.50
T2-22	1.00	0.10	0.25	25.00	2.50	2.80	260.00	40.00	0.50	2.00	25.00	9.00	3.00	0.50
T2-23	1.00	0.05	0.70	66.00	2.50	1.50	560.00	51.00	0.50	2.00	25.00	9.10	3.00	0.50
T2-25	6.00	0.10	0.70	96.00	2.50	2.50	500.00	47.00	0.50	2.00	25.00	9.40	2.00	0.50
T2-26	6.00	0.20	2.40	99.00	2.50	1.40	380.00	39.00	0.50	1.00	25.00	8.80	3.00	4.00
T2-27	14.00	0.10	0.80	52.00	2.50	4.90	410.00	34.00	1.00	2.00	25.00	10.00	3.00	0.50
T2-29	1.50	0.10	0.80	25.00	2.50	3.70	550.00	49.00	0.50	0.50	25.00	10.00	3.00	0.50
T2-30	1.50	0.10	0.25	150.00	2.50	6.10	490.00	51.00	0.50	2.00	25.00	10.00	3.00	0.50
T2-31	1.50	0.05	0.25	25.00	2.50	2.70	250.00	44.00	1.00	3.00	25.00	10.00	5.00	0.50
T2-32	1.00	0.10	0.25	100.00	2.50	1.70	210.00	36.00	0.50	1.00	25.00	10.00	3.00	0.50
T2-33	1.00	0.05	0.60	57.00	2.50	2.90	210.00	43.00	2.00	2.00	25.00	10.00	2.00	1.00
T2-34	1.00	0.05	0.70	70.00	2.50	2.60	230.00	34.00	0.50	1.00	25.00	6.80	2.00	2.00
T2-35	2.00	0.05	0.90	76.00	2.50	4.10	200.00	43.00	0.50	2.00	25.00	10.00	4.00	0.50
T2-36	1.00	0.05	0.25	96.00	2.50	3.00	240.00	39.00	0.50	1.00	25.00	8.70	3.00	0.50
T2-38	1.00	0.30	0.25	93.00	2.50	5.00	200.00	33.00	0.50	2.00	25.00	8.70	7.00	3.00
T2-39	5.00	0.05	0.25	610.00	2.50	36.00	320.00	39.00	0.50	0.50	25.00	11.00	6.00	0.50
T2-43	1.00	0.10	0.25	65.00	2.50	2.00	220.00	43.00	0.50	0.50	25.00	10.00	3.00	0.50
T2-44	1.00	0.20	0.70	25.00	2.50	1.20	230.00	53.00	2.00	2.00	25.00	10.00	6.00	1.00
T2-46	4.00	0.10	1.00	25.00	2.50	12.00	200.00	38.00	0.50	2.00	25.00	10.00	3.00	3.00
T2-47	1.00	0.05	0.25	130.00	2.50	7.20	280.00	32.00	0.50	3.00	25.00	8.40	7.00	3.00
T2-48	1.00	0.05	0.25	180.00	2.50	15.00	340.00	42.00	0.50	0.50	25.00	9.00	5.00	0.50
T2-49	8.00	0.05	0.25	25.00	2.50	3.10	250.00	44.00	1.00	2.00	25.00	9.10	3.00	0.50
T2-50	1.00	0.05	0.25	51.00	2.50	1.40	260.00	43.00	2.00	2.00	25.00	9.10	1.00	0.50
T2-51	8.00	0.05	0.25	53.00	2.50	4.30	270.00	46.00	0.50	0.50	25.00	10.00	3.00	0.50
T2-52	1.00	0.05	0.25	170.00	2.50	2.40	340.00	48.00	0.50	2.00	25.00	9.10	3.00	0.50
T2-53	7.00	0.05	0.25	96.00	2.50	4.40	310.00	46.00	2.00	2.00	25.00	8.60	3.00	6.00
T2-17	1.00	0.30	0.50	69.00	2.50	0.80	1200.00	60.00	0.50	2.00	25.00	9.20	4.00	0.50
T2-24	3.00	0.05	0.90	64.00	2.50	4.70	650.00	53.00	0.50	2.00	25.00	10.00	3.00	0.50

BURNT BUSH TRENCH 2 MINOR ELEMENTS 09/02/87 a)

Samole no	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Eu	Hf	Ir	Fe	La	Mo
JL-14-7	1.00	0.05	0.25	550.00	2.50	4.30	160.00	16.00	0.50	4.00	25.00	4.10	16.00	0.50
JL-25-4	1.00	0.05	0.50	65.00	2.50	4.80	180.00	34.00	1.00	2.00	25.00	7.70	3.00	1.00
JL-25-6	110.00	0.05	0.25	100.00	2.50	3.50	330.00	58.00	1.00	0.50	25.00	9.10	3.00	2.00
T2-28	17.00	0.10	0.80	74.00	2.50	18.00	45.00	22.00	1.00	6.00	25.00	8.10	14.00	0.50
T2-54	1.50	0.05	0.25	25.00	2.50	0.25	31.00	41.00	2.00	4.00	25.00	10.00	10.00	3.00
JL-25-1	1.00	0.05	0.25	69.00	2.50	9.30	310.00	38.00	0.50	0.50	25.00	8.40	2.00	2.00
T2-55	5.00	0.05	0.25	160.00	2.50	7.60	360.00	37.00	0.50	2.00	25.00	8.70	1.00	0.50
T2-56	1.00	0.10	0.25	75.00	2.50	6.50	250.00	39.00	1.00	2.00	25.00	10.00	3.00	1.00
T2-57	8.00	0.05	0.60	83.00	2.50	1.50	430.00	31.00	1.00	2.00	25.00	8.80	3.00	1.00
T2-37	1.00	0.70	0.25	67.00	2.50	1.40	70.00	16.00	2.00	5.00	25.00	7.30	12.00	1.00
T2-01	1.50	0.05	0.60	320.00	2.50	17.00	52.00	58.00	0.50	4.00	25.00	6.80	13.00	3.00
T2-42	1.00	0.05	0.70	120.00	2.50	1.00	52.00	38.00	0.50	3.00	25.00	8.50	9.00	0.50
T2-45	1.00	0.05	1.00	87.00	2.50	4.60	350.00	51.00	1.00	1.00	25.00	10.00	3.00	2.00
T2-58														
T2-11A	6.00	0.05	1.40	74.00	2.50	5.80	38.00	15.00	0.50	4.00	25.00	2.60	5.00	0.50
T2-11B	2.00	0.05	10.00	25.00	2.50	3.30	3220.00	63.00	0.50	0.50	25.00	8.20	1.00	0.50
JL-14-6	1.00	0.20	0.25	560.00	2.50	8.40	22.00	5.00	0.50	4.00	25.00	3.00	25.00	0.50
JL-25-5	1.00	0.05	0.25	25.00	2.50	1.30	23.00	19.00	2.00	6.00	25.00	6.20	10.00	3.00
JL-24-2	1.00	0.05	0.25	25.00	2.50	0.25	23.00	2.50	0.50	0.50	25.00	0.30	1.00	2.00
JL-14-4A														
T2-13	1.50	0.10	2.50	25.00	2.50	0.80	1900.00	64.00	0.50	1.00	25.00	8.30	2.00	0.50
T2-40	3.00	0.70	0.25	650.00	2.50	33.00	580.00	46.00	0.50	0.50	25.00	12.00	19.00	1.00
T2-41	1.50	0.05	0.60	430.00	2.50	16.00	230.00	34.00	2.00	3.00	25.00	6.20	27.00	3.00

BURNT BUSH TRENCH 2 MINOR ELEMENTS 09/02/87 b)

Sample no	Ni	Rb	Sc	Se	Ag	Ta	Tb	Th	W	U	Yb	Zn	Na
JL-13-1	50.00	12.00	35.40	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	1.30
JL-14-1	110.00	8.00	34.20	2.50	1.00	0.25	0.50	0.20	31.00	0.10	2.00	50.00	1.20
JL-14-2	47.00	2.50	29.30	2.50	1.00	0.25	0.25	0.10	6.00	0.10	2.00	50.00	0.85
JL-14-3	65.00	2.50	31.70	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	1.10
JL-14-4	45.00	81.00	39.90	2.50	1.00	0.25	0.70	0.50	0.50	0.10	1.00	50.00	0.55
JL-14-5	40.00	21.00	36.30	2.50	1.00	0.25	0.25	0.10	51.00	0.10	1.00	50.00	1.50
JL-25-2	40.00	10.00	33.80	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	110.00	1.50
JL-25-3	48.00	2.50	35.50	2.50	1.00	0.25	0.25	0.30	0.50	0.10	1.00	50.00	1.50
T2-02	37.00	16.00	47.40	2.50	1.50	0.25	0.90	0.10	0.50	0.10	3.00	180.00	2.03
T2-03	100.00	5.00	45.20	2.50	1.50	0.25	0.90	0.10	0.50	0.10	3.00	180.00	1.90
T2-04	77.00	20.00	51.70	2.50	1.50	0.25	0.50	0.10	0.50	0.10	2.00	420.00	2.02
T2-05	92.00	5.00	45.90	2.50	1.50	0.25	0.25	0.80	0.50	0.10	3.00	190.00	2.06
T2-06	58.00	44.00	48.00	2.50	1.50	0.25	0.70	0.10	0.50	0.10	3.00	50.00	2.15
T2-07	61.00	38.00	47.70	2.50	1.50	0.25	0.70	0.10	0.50	0.10	3.00	210.00	2.11
T2-08	60.00	31.00	37.90	2.50	1.50	0.25	0.80	0.20	1.00	0.10	2.00	280.00	1.60
T2-09	68.00	120.00	45.60	2.50	1.50	0.50	0.70	0.10	0.50	0.30	1.00	310.00	2.36
T2-10	100.00	11.00	44.90	2.50	1.50	0.25	0.25	0.10	1.00	0.10	3.00	250.00	1.90
T2-12	97.00	4.50	42.30	2.50	1.50	0.25	0.25	0.10	3.00	0.10	4.00	130.00	1.70
T2-14	92.00	43.00	45.10	2.50	1.50	0.25	0.60	0.10	0.50	0.10	4.00	230.00	1.90
T2-15	68.00	4.50	46.70	2.50	1.50	0.25	0.80	0.10	0.50	0.10	4.00	150.00	1.90
T2-16	85.00	4.50	46.10	2.50	1.50	0.25	0.60	0.10	0.50	0.10	4.00	320.00	1.80
T2-18	52.00	15.00	44.60	2.50	1.50	0.25	0.80	0.10	2.00	0.10	3.00	150.00	1.60
T2-19	61.00	25.00	45.50	2.50	1.50	0.25	0.60	0.10	2.00	0.10	3.00	230.00	2.00
T2-20	49.00	23.00	49.70	2.50	1.50	0.25	0.25	0.10	0.50	0.10	3.00	210.00	1.70
T2-21	54.00	27.00	46.30	2.50	1.50	0.25	0.80	0.20	0.50	0.10	4.00	190.00	1.90
T2-22	78.00	12.00	42.30	2.50	1.50	0.25	0.60	0.10	0.50	0.10	4.00	180.00	1.50
T2-23	110.00	4.50	45.50	2.50	1.50	0.25	0.25	0.10	0.50	0.10	2.00	160.00	1.60
T2-25	100.00	14.00	45.30	2.50	1.50	0.25	0.50	0.10	0.50	0.10	3.00	190.00	1.80
T2-26	81.00	15.00	38.40	2.50	1.00	0.25	0.60	0.10	0.50	0.10	3.00	210.00	1.20
T2-27	50.00	19.00	47.00	2.50	3.00	0.25	1.00	0.10	0.50	0.10	4.00	160.00	1.50
T2-29	86.00	25.00	45.00	2.50	1.50	0.25	0.90	0.10	24.00	0.10	2.00	170.00	1.60
T2-30	100.00	18.00	49.20	2.50	1.50	0.25	0.60	0.10	2.00	0.10	4.00	240.00	1.80
T2-31	57.00	15.00	45.40	2.50	1.50	0.60	0.80	0.30	0.50	0.10	4.00	220.00	2.01
T2-32	76.00	3.50	36.50	2.50	1.50	0.25	0.25	0.40	0.50	0.10	1.00	50.00	1.40
T2-33	94.00	17.00	40.40	2.50	1.50	0.25	0.50	0.20	0.50	0.10	1.00	50.00	1.60
T2-34	77.00	17.00	28.20	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	1.40
T2-35	78.00	3.00	39.40	2.50	1.00	0.25	0.50	0.30	0.50	0.10	3.00	100.00	1.50
T2-36	50.00	14.00	39.00	2.50	1.00	0.25	0.50	0.20	0.50	0.10	3.00	50.00	1.80
T2-38	69.00	18.00	36.00	2.50	1.00	0.25	0.25	0.50	0.50	0.10	3.00	50.00	2.19
T2-39	61.00	170.00	44.50	2.50	1.50	0.25	0.25	1.00	0.50	0.10	3.00	150.00	2.05
T2-43	75.00	3.00	39.90	2.50	1.00	0.25	0.70	0.10	0.50	0.10	2.00	50.00	1.40
T2-44	71.00	15.00	41.00	2.50	1.00	0.25	0.70	0.30	0.50	0.10	3.00	50.00	1.20
T2-46	76.00	17.00	40.90	2.50	1.00	0.25	0.50	0.10	1.00	0.10	3.00	50.00	0.70
T2-47	72.00	21.00	32.60	2.50	1.00	0.25	0.90	0.70	1.00	0.10	4.00	50.00	1.50
T2-48	67.00	20.00	48.90	2.50	1.00	0.25	0.60	1.10	0.50	0.10	3.00	50.00	1.50
T2-49	38.00	11.00	43.00	2.50	1.00	0.25	0.25	0.30	0.50	0.10	3.00	50.00	1.60
T2-50	47.00	10.00	42.30	2.50	1.00	0.25	0.25	0.10	0.50	0.10	3.00	50.00	1.60
T2-51	47.00	14.00	44.90	2.50	1.50	0.25	0.80	0.10	2.00	0.10	3.00	50.00	1.60
T2-52	69.00	10.00	38.20	2.50	1.00	0.25	0.50	0.30	0.50	0.10	2.00	130.00	1.20
T2-53	75.00	12.00	37.40	2.50	1.00	0.25	0.25	0.10	1.00	0.10	2.00	50.00	1.50
T2-17	250.00	4.50	43.40	2.50	1.50	0.25	0.80	0.30	0.50	0.10	2.00	230.00	2.01
T2-24	150.00	11.00	44.20	2.50	1.50	0.25	0.60	0.10	0.50	0.10	4.00	290.00	1.70

BURNT BUSH TRENCH 2 MINOR ELEMENTS 09/02/87 b)

Sample no	Ni	Rb	Sc	Se	Ag	Ta	Tb	Th	W	U	Yb	Zn	Na
JL-14-7	54.00	71.00	11.00	2.50	1.00	0.25	0.25	7.40	0.50	1.50	1.00	50.00	2.13
JL-25-4	37.00	8.00	36.00	2.50	1.00	0.25	0.25	0.10	2.00	0.10	1.00	50.00	2.00
JL-25-6	45.00	14.00	37.00	6.00	1.00	0.25	0.25	0.20	1.00	0.10	1.00	50.00	1.20
T2-28	10.00	26.00	34.40	2.50	1.50	0.25	1.30	1.30	3.00	0.50	6.00	240.00	2.20
T2-54	47.00	9.00	39.70	2.50	1.50	0.50	1.00	1.10	0.50	0.10	5.00	50.00	2.04
JL-25-1	110.00	15.00	34.40	2.50	1.00	0.25	0.60	0.10	0.50	0.10	1.00	50.00	1.50
T2-55	54.00	26.00	39.90	2.50	1.00	0.25	0.60	0.40	0.50	0.10	3.00	50.00	2.03
T2-56	48.00	17.00	44.60	2.50	1.00	0.25	0.60	0.40	0.50	0.10	3.00	50.00	1.30
T2-57	51.00	29.00	41.00	2.50	1.00	0.25	0.60	0.10	2.00	0.10	1.00	50.00	1.90
T2-37	23.00	12.00	25.70	2.50	1.00	0.60	1.00	0.90	0.50	0.10	4.00	220.00	2.31
T2-01	62.00	71.00	24.70	2.50	1.50	0.25	1.10	1.00	2.00	0.40	4.00	160.00	3.77
T2-42	53.00	23.00	30.20	2.50	1.00	0.60	0.90	0.40	0.50	0.20	4.00	210.00	0.00
T2-45	59.00	18.00	42.00	2.50	1.50	0.25	0.25	0.20	0.50	0.10	3.00	50.00	1.90
T2-58													
T2-11A	41.00	15.00	7.30	2.50	1.00	0.25	0.25	1.60	0.50	0.50	1.00	50.00	2.68
T2-11B	900.00	19.00	23.70	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	140.00	0.36
JL-14-6	10.00	35.00	6.30	2.50	1.00	0.60	0.25	4.30	2.00	0.70	1.00	50.00	3.09
JL-25-5	10.00	3.00	25.80	2.50	1.00	0.80	0.80	1.20	0.50	0.20	4.00	50.00	2.36
JL-24-2	10.00	2.50	1.10	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	50.00	0.12
JL-14-4A													
T2-13	540.00	17.00	34.40	2.50	1.00	0.25	0.25	0.10	0.50	0.10	1.00	200.00	1.10
T2-40	110.00	160.00	38.20	2.50	1.50	0.25	0.60	4.20	4.00	0.60	3.00	120.00	1.60
T2-41	98.00	77.00	22.80	2.50	1.00	0.50	0.70	2.60	0.50	0.50	3.00	50.00	2.85

A P P E N D I X III

RESULTS TRENCH 3

i) Sample Statistics

ii) Hand Specimen Descriptions

iii) Thin Section Descriptions

iv) Chemistry Results

SAMPLE STATISTICS TRENCH 3

Rock type and sample numbers	Chemistry * Opt. A	Chemistry * Opt. B	Thin section
1. LAYERED ROCKS:			
a) iron-rich tuff			
T3-1		X	X
b) dacitic lapilli tuff			
AM-15-4	X		
T3-13		X	X
T3-3 (py)	X		
T3-6 (close to cherty band)	X		
T3-9 (with epidote veinlet)			X
c) mixed iron-rich and lapilli tuff			
AM-15-1		X	X
T3-7			X
d) cherty band			
T3-5	X		X
e) thermally altered			
T3-8		X	X
T3-10B	X		X

Opt. A = minor elements, CaO, K_2O, CO_2
Opt. B = major and minor elements

SAMPLE STATISTICS TRENCH 3

Lithology and sample numbers	Chemistry Opt. A	Chemistry Opt. B	Thin section
2. METAGABBRO:			
AM-15-2		X	X
AM-15-3 (py)	X		
T3-10A (close to contact)	X		X
T3-11 (rusty fracture zone)	X		
T3-12		X	X
3. LATE VEINS:			
a) quartz + tourmaline with adjacent altered tuffs			
T3-4	X		
b) epidote vein			
T3-2A	X		X
T3-2B	X		

TOTALS	Opt. A	Opt. B	Thin section
Summer program	2	2	2
Fall program	9	4	10
	11	6	12

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-1

1. Mineralogy: %, habit, grain size:
   amphibole
   feldspar (?) if so it is calcic plag. (black)
   enhedral magnetite
   very minor quartz vein, and calcite vein walls
   (calcite vein removed, but some vein wall remains)
   fine to medium grained
   This sample was an attempt to get uncontaminated iron formation
   which is generally in cm beds with garnets; this bed was ≃10 cm
   but does not contain garnets

2. Rock Texture, Colour, Hardness, etc.:
   weathers green, fresh surface black
   moderate hardness H ≃4
   density is not extremely high but is high

3. Structures:

4. Alterations:

5. Magnetism: strongly magnetic

6. Rock name (Field Designation): iron formation - silicate facies but with ≃1-2% magnetite

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-2

1. Mineralogy: %, habit, grain size:

quartz ≃50%

epidote ≃45%

calcite ≃ 5%

minor pyrite

Sample 2A is much less contaminated with wall rock than sample 2B

This sample is from vein or breccia in tuffs seemingly related to late fracturation

2. Rock Texture, Colour, Hardness, etc.:

relatively coarsely crystalline

light lime greenish yellow (epidote)

hard eg H ≃7

3. Structures: fragments of wall rock in vein

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): quartz-epidote vein/breccia

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-3

1. Mineralogy: %, habit, grain size:
   localized zone of py/$CaCO_3$ mineralization/alteration in tuffs

   ≃ 1% py
   ≃ 1% $CaCO_3$

2. Rock Texture, Colour, Hardness, etc.:
   quite hard H ≃5

3. Structures:

4. Alterations:

5. Magnetism: non-magnetic except for strong magnetism on very minor part of sample

6. Rock name (Field Designation): tuff

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-4

1. Mineralogy: %, habit, grain size:

chip sample of quartz-tourmaline vein and associated strong wall rock alteration including pyrite

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism:

6. Rock name (Field Designation): vein

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-5

1. Mineralogy: %, habit, grain size:

chert (?)
weakly banded
microcrystalline

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism:

6. Rock name (Field Designation): chert ?

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-6

1. Mineralogy: %, habit, grain size:

this was an attempt to sample the tuff with no contamination of iron formation, unfortunately due to shallow plunge, examination of hand specimen suggests there is iron formation in this sample

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: mostly strongly magnetic

6. Rock name (Field Designation): tuff

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-7

1. Mineralogy: %, habit, grain size:

thinly interbedded (cm) scale iron formation and tuff

thin section only

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism:

6. Rock name (Field Designation): iron formation and tuff

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-8

1. Mineralogy: %, habit, grain size:

thermally metamorphosed equivalent of T-3-7

chemistry sample contains only minor altered iron formation

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism:

6. Rock name (Field Designation):

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-9

1. Mineralogy: %, habit, grain size:

epidote quartz pyrite veinlet in tuff

thin section only

any wall rock alteration ?

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism:

6. Rock name (Field Designation): vein

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COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-10A

1. Mineralogy: %, habit, grain size:

gabbro right at contact with tuffs

compare grain size with fresh gabbro

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): gabbro

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-10B

1. Mineralogy: %, habit, grain size:

tuff right at contact with gabbro

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): tuff

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-11

1. Mineralogy: %, habit, grain size:

chip sample from rusty fracture zone in gabbro close to contact
OR is this a xenolith of tuff in gabbro?

minor pyrite
no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: moderately to strongly magnetic

6. Rock name (Field Designation): gabbro

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-12

1. Mineralogy: %, habit, grain size:

amphibole ≃50%

feldspar ≃50%

magnetite ≃ 1%

pyrite < 1%

"fresh" gabbro at ≃5 m from contact

medium grained crystalline

2. Rock Texture, Colour, Hardness, etc.:

black but weathers green

3. Structures:

4. Alterations:

5. Magnetism: magnetic fairly strong

6. Rock name (Field Designation): gabbro

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-3-13

1. Mineralogy: %, habit, grain size:

thinly bedded fine grained tuff

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: moderately to strongly magnetic

6. Rock name (Field Designation): tuff

(Doc. #0016U - 28.10.86)

Additional comments thin section
AM-15-1 not made in report No. 86-CND-47-02

- difficult but possible to distinguish garnet/amphibole bearing layers from buff weathering tuff layers
- plagioclase-quartz-biotite groundmass appears in thin section to be dominant constituent of both layers

- sericite content underestimated, must be 5%

- garnets may be fractured or nearly undeformed poikiloblasts, plagioclase inclusions are zoned
- fracturation in garnets parallels schistosity and may give length: width of 2:1

- hornblende habit similar to garnet with length: width as high as 3:1, rarely 4:1
- pleochroism of hornblende turquoise coloured, may be sodic hornblende or actinolite

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-1

Field Rock Name: iron formation - silicate facies

Major Minerals: (% - habit, grain size):

hornblende	53%	up to 2 mm poikiloblasts
plagioclase	19%	inclusions in hornblende ~0.03 mm, zoned; in groundmass strongly sericitized ~0.1 mm
quartz	14%	anhedral grains ~0.02 to ~0.05 mm, minor coarse patches, these may be quartz rods, none of the quartz is strained
calcite	5%	alteration product of hornblende and in veinlets
biotite	4%	euhedral laths ~0.05 to 0.1 mm long
chlorite	3%	alteration product of hornblende, biotite
opaques	2%	euhedral to subhedral magnetite
muscovite	trace	

Minor Minerals: also radiogenic haloes around an accessory mineral within hornblende poikiloblasts

Veins, Fractures:

Alterations: sericite content about 8% included in plagioclase estimate above

Rock Texture: poikiloblastic, moderate planar fabric

Rock Name: intermediate iron-rich (tholeiitic ?) tuff

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-2A

Field Rock Name: quartz-epidote vein/breccia

Major Minerals: (% - habit, grain size):

quartz	~20%	fine-grained granular groundmass,
plagioclase	~30%	remnants of country rock in vein breccia
zoisite	~40%	acicular (up to .5 mm long) and tabular (up to 2 mm) crystals
chlorite	5%	locally distributed in slide, not
carbonate	4%	everywhere present
opaques	1%	

Minor Minerals:

Veins, Fractures: no real brecciation observed in slide

Alterations:

Rock Texture:

Rock Name: epidote vein with chlorite and/or carbonate and significant tuff remnants

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-5

Field Rock Name: chert (?)

Major Minerals: (% - habit, grain size):

quartz	95%	equigranular 0.03 to 0.3 mm
chlorite	2%	mostly thin veinlets
sericite	2%	fine flakes 0.01 mm
tourmaline	1%	fine grains 0.02 mm

Minor Minerals:

Veins, Fractures: tourmaline grains cluster along quartz grain boundaries and in thin discontinuous chlorite veinlets

Alterations:

Rock Texture: granoblastic - no apparent banding in thin section, quartz grain size variations do not give planar fabric

Rock Name: quartz vein

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-7

Field Rock Name: interbedded iron formation and tuff

Major Minerals: (% - habit, grain size):

quartz, plagioclase	65%	quartz predominant ? fine grained anhedral equidimensional; stretched and equidimensional porphyroblasts
biotite	13%	laths up to 0.2 mm long
hornblende	10%	poikiloblasts
garnet	5%	poikiloblasts
sericite	3%	alteration of plagioclase
opagues	4%	euhedral to subhedral magnetite up to 0.5 mm

- groundmass 0.01 to 0.05 mm, poikiloblasts 0.5 mm to 2 mm

Minor Minerals: - difficult to differentiate iron-rich layers from buff weathering tuff layers in thin section (similar to AM-15-1)

- foliation is more planar than AM-15-1 or T3-1, less bending due to later deformational event

Veins, Fractures:

Alterations:

Rock Texture: granolepidoblastic

Rock Name: intermediate to felsic tuff

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-8

Field Rock Name: thermally metamorphosed tuff

Major Minerals: (% - habit, grain size):

plagioclase)	70%	plagioclase >> quartz
quartz)		fine-grained groundmass 0.03 to 0.1 mm
biotite	20%	euhedral to subhedral laths
hornblende	5%	0.5 to 1 mm poikiloblasts
opaques	2%	tiny euhedral
chlorite	2%	alteration of biotite mostly along cleavage
carbonate	1%	alteration of hornblende

Minor Minerals: biotites along bands // foliation but many of the crystals grow approximately perpendicular to foliation

Veins, Fractures:

Alterations:

Rock Texture: granolepidoblastic

Rock Name: intermediate tuff

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T3-9

Field Rock Name: epidote quartz pyrite veinlet in tuff

Major Minerals: (% - habit, grain size):

host rock:	plagioclase)	77%	plagioclase >> quartz
	quartz)		
	chlorite	10%	pseudomorphs biotite
	biotite	4%	
	garnet	4%	poikiloblasts partially or completely altered to epidote
	opaques	3%	euhedral to subhedral magnetite
	sericite	2%	

grain size 0.01 to 0.1 mm

Minor Minerals:

Veins, Fractures: veinlet: zoisite 70% acicular radiating crystals up to 2 mm
calcite 15% up to 1 mm
quartz) 15% 0.05 to 0.1 mm
plagioclase)

also thin quartz-plagioclase filled fractures which break through garnet poikiloblasts

Alterations: veinlet walls abrupt - no apparent alteration except that chloritization of biotite very strong closer to veinlet

Rock Texture: granolepidoblastic

Rock Name: intermediate to felsic tuff

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-10A

Field Rock Name: metagabbro very close to contact zone

Major Minerals: (% - habit, grain size):

plagioclase	50%	reasonably fresh, anhedral, zoned, ~.02 - .1 mm
chlorite	25%	mostly fine needles dispersed in groundmass
muscovite	15%	tiny needles to .3 mm grains
biotite	8%	fine grained
zoisite	1%	patchy distribution
opaques	1%	tiny
tourmaline	trace	

abundant accessory zircon needles

Minor Minerals:

Veins, Fractures:

Alterations:

Rock Texture: very fine grained and altered, orientation of chlorite, biotite and muscovite needles suggests weak planar fabric

Rock Name: metagabbro

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T3-10B

Field Rock Name: thermally altered tuff

Major Minerals: (% - habit, grain size):

plagioclase	62%	plagioclase predominant
quartz		
biotite	15%	
muscovite	5%	
opaques	5%	
garnet	5%	
carbonate	5%	
hornblende	3%	

Minor Minerals: grain size .01 to .1 mm with micas, garnet and hornblende to 1 mm chlorite content is ~10% since garnets and hornblende are both completely chloritized, some biotite is chloritized; biotite crystals mostly // to foliation, but some are perpendicular to foliation

Veins, Fractures: 2 mm veinlet of coarse quartz, calcite, muscovite, chlorite (most carbonate and muscovite in host rock - see above - is adjacent or reasonably close to this vein)

Alterations:

Rock Texture: granolepidoblastic - good planar fabric is weakly crenulated

Rock Name: intermediate tuff

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-12

Field Rock Name: metagabbro

Major Minerals: (% - habit, grain size):

plagioclase	52%	fine-grained groundmass .02 to .2 mm
hornblende	20%	poikiloblasts up to 2 mm
chlorite	20%	mostly fine needles in groundmass
biotite	5%	up to .5 mm, cross-sections and basal sections
muscovite	1%	
opaques	1%	not as tiny as in T3-10A
carbonate	1%	

abundant accessory zircon

Minor Minerals:

Veins, Fractures:

Alterations: some hornblende poikiloblasts altered to chlorite + calcite

Rock Texture: poikiloblastic - no orientation of platy minerals

Rock Name: metagabbro

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T3-13

Field Rock Name: tuf

Major Minerals: (% - habit, grain size):

quartz	79%	prédominance plagioclase
plagioclase		
biotite	10%	
grenat	1%	chloritisé
carbonate	3%	
opaques	3%	
apatite	>>1%	
chlorite	3%	

Minor Minerals: texture microcristalline avec une orientation de l'allongement des grains phylliteux (sériciti sation de plagioclase n'est pas forte) - granulométrie 0.01 mm to 0.05 mm
Les minéraux sont xénoblastiques et la biotite et le chlorite sont aciculaires.

Veins, Fractures:

Alterations:

Rock Texture: granolepidoblastique

Rock Name: tuf - intermédiaire à felsique

(Doc. #0031U - 04.02.87)

BURNT BUSH TRENCH 3 MAJOR ELEMENTS 18/02/87

Sample no	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	LOI	TOTAL
T3-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
AM-15-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	4.37	-9.00	1.61	-9.00	0.06	-9.00	-9.00
T3-13	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-6	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-9													
AM-15-1	66.40	0.54	14.50	4.39	0.12	0.91	5.42	1.88	1.37	0.01	0.68	1.70	97.23
T3-7													
T3-5	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-8	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-10B	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
AM-15-2	50.80	0.97	15.90	9.23	0.11	4.74	8.53	3.90	0.16	0.06	0.81	2.85	97.25
AM-15-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	9.91	-9.00	0.49	-9.00	5.78	-9.00	-9.00
T3-10A	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-11	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-12	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-2A	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T3-2B	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

BURNT BUSH TRENCH 3 MINOR ELEMENTS 18/02/87 a)

Samole no	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Eu	Hf	Ir	Fe	La	Mo
T3-1	5.00	0.10	0.25	150.00	2.50	0.80	10.00	16.00	0.50	3.00	25.00	12.00	9.00	0.50
AM-15-4	4.00	0.05	0.25	430.00	2.50	3.50	10.00	8.00	1.00	4.00	25.00	3.00	9.00	0.50
T3-13	3.00	0.05	0.25	690.00	2.50	3.70	50.00	13.00	0.50	5.00	25.00	3.20	15.00	0.50
T3-3	5.00	0.05	0.25	400.00	2.50	2.60	10.00	10.00	0.50	4.00	25.00	4.30	10.00	0.50
T3-6	6.00	0.05	0.25	290.00	2.50	3.30	10.00	8.00	1.00	3.00	25.00	3.30	9.00	0.50
T3-9														
AM-15-1	4.00	0.10	0.25	390.00	2.50	3.40	10.00	7.00	0.50	4.00	25.00	2.70	10.00	1.00
T3-7														
T3-5	6.00	0.05	0.25	100.00	2.50	1.30	10.00	2.50	0.50	0.50	25.00	1.40	3.00	0.50
T3-8	30.00	0.10	0.25	600.00	2.50	6.10	80.00	60.00	0.50	4.00	25.00	7.90	14.00	8.00
T3-10B	4.00	0.20	0.25	470.00	2.50	1.90	50.00	23.00	0.50	5.00	25.00	3.40	15.00	2.00
AM-15-2	1.00	0.20	0.25	80.00	2.50	0.25	160.00	33.00	2.00	4.00	25.00	6.10	10.00	1.00
AM-15-3	6.00	0.05	0.25	110.00	2.50	0.70	70.00	20.00	1.00	3.00	25.00	5.00	9.00	2.00
T3-10A	1.00	0.10	0.25	410.00	2.50	3.80	280.00	30.00	2.00	3.00	25.00	7.30	13.00	1.00
T3-11	1.50	0.20	1.20	110.00	2.50	0.90	240.00	19.00	2.00	3.00	25.00	5.40	10.00	1.00
T3-12	6.00	0.20	0.25	140.00	2.50	2.20	250.00	39.00	1.00	3.00	25.00	7.20	13.00	0.50
T3-4	14.00	0.10	0.25	680.00	2.50	4.80	10.00	10.00	1.00	6.00	25.00	3.60	15.00	2.00
T3-2A	3.00	0.70	0.50	25.00	2.50	0.25	10.00	6.00	1.00	3.00	25.00	5.60	11.00	0.50
T3-2B	5.00	0.60	0.60	25.00	2.50	0.25	10.00	9.00	0.50	3.00	25.00	6.20	9.00	0.50

BURNT BUSH TRENCH 3 MINOR ELEMENTS 18/02/87 bl

Sample no	Ni	Rb	Sc	Se	Ag	Ta	Tb	Th	W	U	Yb	Zn	Na
T3-1	10.00	19.00	9.00	2.50	1.00	0.25	0.25	1.10	0.50	0.20	2.00	280.00	0.00
AM-15-4	10.00	43.00	8.20	2.50	1.00	0.25	0.25	1.10	0.50	0.30	1.00	50.00	1.40
T3-13	24.00	62.00	18.00	2.50	1.00	0.25	0.60	2.20	0.50	0.70	4.00	150.00	0.00
T3-3	10.00	41.00	10.00	2.50	1.00	0.25	0.25	1.40	0.50	0.40	1.00	50.00	1.80
T3-6	10.00	48.00	7.30	2.50	1.00	0.25	0.25	1.10	0.50	0.20	1.00	110.00	0.84
T3-9													
AM-15-1	10.00	36.00	8.80	2.50	1.00	0.25	0.25	1.40	0.50	0.30	1.00	120.00	1.40
T3-7													
T3-5	10.00	17.00	2.20	2.50	1.00	0.25	0.25	0.30	0.50	0.10	1.00	50.00	0.14
T3-8	110.00	73.00	30.80	2.50	1.50	0.25	0.80	0.80	0.50	0.10	4.00	410.00	0.00
T3-10B	51.00	53.00	18.00	2.50	1.00	0.25	0.70	1.30	0.50	0.30	3.00	50.00	1.40
AM-15-2	93.00	10.00	24.10	2.50	1.00	0.25	0.60	0.70	0.50	0.10	2.00	50.00	3.03
AM-15-3	66.00	10.00	17.00	2.50	1.00	0.60	0.25	0.60	2.00	0.20	1.00	50.00	2.30
T3-10A	140.00	88.00	28.20	2.50	1.00	0.25	0.50	0.80	0.50	0.10	2.00	260.00	1.30
T3-11	54.00	27.00	28.60	2.50	1.00	0.70	0.80	1.50	0.50	0.30	3.00	50.00	3.99
T3-12	130.00	20.00	34.50	2.50	1.50	0.60	0.50	0.50	0.50	0.10	4.00	240.00	0.00
T3-4	10.00	87.00	12.00	2.50	1.00	0.50	0.25	2.30	7.00	0.70	3.00	50.00	1.80
T3-2A	10.00	2.50	10.00	2.50	1.00	0.25	0.80	0.90	0.50	0.40	3.00	120.00	0.00
T3-2B	10.00	2.50	10.00	2.50	1.00	0.25	0.80	1.00	0.50	0.40	3.00	120.00	0.00

A P P E N D I X IV

RESULTS TRENCH 4

i) Sample Statistics

ii) Hand Specimen Descriptions

iii) Thin Section Descriptions

iv) Chemistry Results

SAMPLE STATISTICS TRENCH 4

Rock type and sample numbers	Chemistry * Opt. A	Chemistry * Opt. B	Thin section
Pillow lava			
GC-018	X		X
GC-019	X		X
GC-020	X		X
T4-1 (selvage)		X	X
T4-2		X	X
T4-5 (amygdales)		X	X
Feeder dyke			
T4-3		X	X
Quartz-tourmaline vein and adjacent pillow lava			
T4-4	X		

TOTALS	Opt. A	Opt. B	Thin section
Summer program	3	0	3
Fall program	1	4	4
	4	4	7

Opt. A = minor elements, CaO, K_2O, CO_2
Opt. B = major and minor elements

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-4-1

1. Mineralogy: %, habit, grain size:

pillow selvage

chloritized amphibole cpx ?

plagioclase feldspar

streaky chlorite

no effervescence with HCl

2. Rock Texture, Colour, Hardness, etc.:

moderately soft H ≃3

3. Structures:

4. Alterations:

5. Magnetism: not magnetic but most pillow selvages more strongly magnetic than pillows

6. Rock name (Field Designation): pillow selvage

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-4-2

1. Mineralogy: %, habit, grain size:

pillow

chloritized amphibole cpx ?

plagioclase feldspar

enhedral magnetite ≃1%

calcite

2. Rock Texture, Colour, Hardness, etc.:

moderately soft H ≃3

3. Structures:

4. Alterations:

5. Magnetism: yes

6. Rock name (Field Designation): pillow lava

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-4-3

1. Mineralogy: %, habit, grain size:

basalt "dyke"

mineralogically identical to pillow basalt

no effervescence detected

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: yes

6. Rock name (Field Designation): dyke

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-4-4

1. Mineralogy: %, habit, grain size:

chip sample from quartz-tourmaline vein and adjacent sheared basalt

strongly calcareous

2. Rock Texture, Colour, Hardness, etc.:

3. Structures:

4. Alterations:

5. Magnetism: non-magnetic wall rock demagnetized ?

6. Rock name (Field Designation): quartz vein

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-4-5

1. Mineralogy: %, habit, grain size:
   zone of epidote filled amygdales from pillow
   moderately to strongly calcareous

2. Rock Texture, Colour, Hardness, etc.:
   moderately hard (H ≃4)

3. Structures:

4. Alterations:

5. Magnetism: strongly magnetic

6. Rock name (Field Designation): pillow lava

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T4-1

Field Rock Name: pillow selvage

Major Minerals: (% - habit, grain size):

plagioclase	55%	about 25% is 0.1 to 1 mm phenocrysts
chlorite	33%	
biotite	5%	
opaques	5%	very tiny .01 mm
zoisite	2%	

- very fine grained .01 to .05 mm
- some chlorite + biotite + zoisite patches suggest former presence of hornblende phenocrysts

Minor Minerals:

- plagioclase An_{10} to An_{15} (Michel-Levy method)

Veins, Fractures:

Alterations: plagioclase phenocrysts weakly to moderately sericitized

Rock Texture: porphyritic - weak preferred orientation of chlorite, biotite

Rock Name: pillow selvage

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T4-2

Field Rock Name: pillow

Major Minerals: (% - habit, grain size):

plagioclase	55%	about 25% is phenocrysts 0.5 to 3 mm
chlorite	30%	
biotite	4%	
carbonate	3%	
opaques	3%	some are large ~1 mm and euhedral
quartz	3%	(quartz rods)
zoisite	2%	

Minor Minerals:

Veins, Fractures:

Alterations: plagioclase phenocrysts weakly sericitized

Rock Texture: porphyritic - weak to moderate preferred orientation of chlorite, biotite, wraps around phenocrysts but no pressure shadows

Rock Name: pillow lava

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T4-3

Field Rock Name: basalt dyke

Major Minerals: (% - habit, grain size):

plagioclase	60%	about 30% is phenocrysts 0.5 to 2 mm
chlorite	25%	
biotite	5%	
opaques	5%	
quartz	3%	(quartz rods)
zoisite	1%	
carbonate	1%	
		fine grained .03 to .1 mm

Minor Minerals:

Veins, Fractures: thin quartz vein
some phenocrysts fractured

Alterations: weak sericitization of plagioclase phenocrysts

Rock Texture: porphyritic

Rock Name: mafic to intermediate dyke

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T4-5

Field Rock Name: amygdaloidal section of pillow

Major Minerals: (% - habit, grain size):

groundmass (~65% of rock):		amygdales (~35% of rock):	
zoisite	~45%	calcite	major constituent
chlorite	~30%	zoisite	major constituent
plagioclase	~15%	plagioclase	minor constituent
carbonate	~ 5%		
actinolite	~ 5% tiny needles		

very fine grained dusty texture except for euhedral actinolite, grain size .01 to .05 mm

Minor Minerals:

amygdales up to 5 mm, grain size in amygdales up to 2 mm, calcite or zoisite may be predominant. plagioclase always <25% of amygdale, to as low as 3%

Veins, Fractures: a few very thin quartz veinlets

Alterations: zoisite and chlorite intricately mixed gives very dusty texture to groundmass

Rock Texture: amygdaloidal

Rock Name: amygdaloidal pillow lava

(Doc. #0031U - 04.02.87)

URNT BUSH TRENCH 4 MAJOR ELEMENTS 18/02/87

Samole no	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	LOI	TOTAL
GC-018	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	4.01	-9.00	0.56	-9.00	1.68	-9.00	-9.00
GC-019	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	2.74	-9.00	0.63	-9.00	0.66	-9.00	-9.00
GC-020	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	5.52	-9.00	0.74	-9.00	1.64	-9.00	-9.00
T4-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T4-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T4-5	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T4-3	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T4-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

BURNT BUSH TRENCH 4 MINOR ELEMENTS 18/02/87 a)

Samole no	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Eu	Hf	Ir	Fe	La	Mo
GC-018	1.00	0.10	0.25	100.00	2.50	2.30	71.00	23.00	0.50	2.00	25.00	5.20	11.00	0.50
GC-019	1.00	0.05	0.25	83.00	2.50	1.70	73.00	21.00	2.00	3.00	25.00	4.70	10.00	0.50
GC-020	1.00	0.10	0.70	230.00	2.50	4.00	64.00	26.00	1.00	3.00	25.00	4.80	10.00	0.50
T4-1	1.00	0.10	0.80	120.00	2.50	1.50	140.00	41.00	0.50	6.00	25.00	9.10	11.00	0.50
T4-2	1.00	0.20	0.70	67.00	2.50	2.40	99.00	25.00	0.50	4.00	25.00	5.20	13.00	0.50
T4-5	1.00	0.60	1.90	95.00	2.50	2.90	100.00	20.00	2.00	3.00	25.00	4.50	11.00	0.50
T4-3	1.00	0.20	1.00	98.00	2.50	2.90	48.00	27.00	1.00	4.00	25.00	5.60	10.00	0.50
T4-4	1.00	0.05	0.25	200.00	2.50	1.90	47.00	10.00	0.50	1.00	25.00	3.00	6.00	0.50

BURNT BUSH TRENCH 4 MINOR ELEMENTS 18/02/87 b)

Sample no	Ni	Rb	Sc	Se	Ag	Ta	Tb	Th	W	U	Yb	Zn	Na
GC-018	71.00	13.00	16.00	2.50	1.00	0.25	0.25	0.70	0.50	0.10	1.00	50.00	2.85
GC-019	44.00	16.00	16.00	2.50	1.00	0.50	0.25	0.70	0.50	0.10	1.00	50.00	3.54
GC-020	59.00	19.00	16.00	2.50	1.00	0.25	0.25	0.80	0.50	0.10	1.00	50.00	2.58
T4-1	130.00	11.00	31.70	2.50	1.50	0.60	0.25	1.10	0.50	0.20	2.00	130.00	0.00
T4-2	64.00	8.00	21.80	2.50	1.00	0.25	0.60	0.70	0.50	0.30	2.00	160.00	0.00
T4-5	57.00	23.00	19.00	2.50	1.00	0.25	0.70	0.80	0.50	0.10	2.00	110.00	0.00
T4-3	61.00	15.00	20.00	2.50	1.00	0.25	0.70	1.00	0.50	0.10	3.00	150.00	0.00
T4-4	33.00	14.00	10.00	2.50	1.00	0.25	0.25	0.50	0.50	0.10	1.00	50.00	1.40

A P P E N D I X V

RESULTS TRENCH 5

i) Sample Statistics

ii) Hand Specimen Descriptions

iii) Thin Section Descriptions

iv) Chemistry Results

SAMPLE STATISTICS TRENCH 5

Rock type and sample numbers	Chemistry * Opt. A	Chemistry * Opt. B	Thin section
Dacitic and iron-rich tuffs			
GC-002	X		X
GC-003	X		
GC-004	X		X
GC-008	X		
GC-011	X		
T5-1 (pyrite)	X		X
T5-3			X (2)
Chlorite schist			
GC-006	X		X
Diabase dyke			
GC-001			
Late veins			
GC-005 (much host rock)	X		X
GC-007 (with host rock)	X		
T5-2	X		X
T5-4 (much host rock)	X		

TOTALS	Opt. A	Opt. B	Thin section
Summer program	8	0	4
Fall program	3	0	4
	11	0	8

Opt. A = minor elements, CaO, K_2O, CO_2
Opt. B = major and minor elements

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-5-1
from SE corner N trench

1. Mineralogy: %, habit, grain size:
   fine grained tuff with strong pyrite mineralization
   ≃3% pyrite localized in elongated masses in the foliation
   (eg. ≃1 mm x 4 mm)

   (sample was high graded to get high pyrite content)
   minor quartz vein
   no $CaCO_3$

2. Rock Texture, Colour, Hardness, etc.:
   black
   moderately hard (H ≃4-1/2)

3. Structures: pyrite mineralization appears to be concentrated in foliation plane but at outcrop scale may be related to late crosscutting fracture

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): tuff

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-5-2

1. Mineralogy: %, habit, grain size:
   epidote quartz pyrite vein in tuffs
   quartz is very fine grained
   no $CaCO_3$

2. Rock Texture, Colour, Hardness, etc.:
   very hard but sulfide content causes vein to weather in

3. Structures: vein is a ≃3 m x 10 cm boudin which crosscuts foliation at low angle

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): quartz vein

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-5-3

1. Mineralogy: %, habit, grain size:

fine grained ashfall tuff

no $CaCO_3$

2. Rock Texture, Colour, Hardness, etc.:

grey, moderately hard (H ≃4-1/2)

2 thin sections are oriented so as to be able to determine if there is only a foliation or if there is both a foliation and a lineation

3. Structures:

4. Alterations:

5. Magnetism: no

6. Rock name (Field Designation): ashfall tuff

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

HAND SPECIMEN DESCRIPTION

Sample No.: T-5-4

1. Mineralogy: %, habit, grain size:
   fine grained tuff
   adjacent to and including quartz vein

2. Rock Texture, Colour, Hardness, etc.:
   hard (H >5)
   black

3. Structures:

4. Alterations: silicification of tuff and very strong coarse pyrite mineralization

5. Magnetism: no

6. Rock name (Field Designation): fine grained tuff

(Doc. #0016U - 28.10.86)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T5-1

Field Rock Name: fine grained tuff with strong py mineralization

Major Minerals: (% - habit, grain size):

chlorite	83%	mostly feathery and very fine grained
quartz	7%	very fine-grained, groundmass to chlorite
zoisite	2%	some garnets altered to chlorite + zoisite
garnet	5%	fresh garnets up to 5 mm, weakly fractured
sphene	1%	
opaques	2%	
biotite	(~3%)	laths up to .1 mm all completely chloritized

Minor Minerals: very fine grained generally <.02 mm

Veins, Fractures:

Alterations:

Rock Texture: porphyroblastic but also with weak to moderate planar fabric

Rock Name: garnetiferous ashfall crystal tuff

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION Sample No.: T5-2

Field Rock Name: epidote quartz pyrite vein in tuffs

Major Minerals: (% - habit, grain size):

vein: epidote	45%	tuffs: quartz and plagioclase	70%
quartz	20%		
chlorite	18%	epidote	15%
carbonate	13%	chlorite	10%
sphene	2%	garnet	5%
opaques	2%	opaques	<1%
		sphene	<1%

Minor Minerals: grain size in the tuffs .03 to .1 mm
garnet porphyroblasts 1 to 4 mm

Veins, Fractures: epidote minerals in the vein include clinozoisite (minor), zoisite and pistacite (both abundant)
grain size .5 to 2 mm, interstitial quartz is finer .03 to .2 mm

Alterations: garnets may be fresh (and fractured) or altered to zoisite + chlorite

Rock Texture:

Rock Name:

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T5-3-1

Field Rock Name: fine grained ashfall tuff

Major Minerals: (% - habit, grain size):

quartz and plagioclase	55%	microcrystalline <.01 to .05 mm
chlorite	25%	feathery, fine grained, well aligned
epidote	12%	alteration of up to 1 mm phenocrysts or porphyroblasts
garnet	5%	fractured and transposed l:w up to 3:1
sphene	2%	
opaques	1%	

Minor Minerals:

Veins, Fractures:

Alterations:

Rock Texture: sheared - porphyroblastic

Rock Name: sheared ashfall crystal tuff

(Doc. #0031U - 04.02.87)

COGEMA CANADA LIMITED

BURNTBUSH RIVER PROJECT

THIN SECTION DESCRIPTION

Sample No.: T5-3-2

Field Rock Name:

Major Minerals: (% - habit, grain size):

this section composed principally of quartz and plagioclase, with chlorite and sericite

slide is not particularly useful since it appears to have been cut // to foliation instead of perpendicular to foliation and to T5-3-1

Minor Minerals:

Veins, Fractures:

Alterations:

Rock Texture: poorly oriented thin section

Rock Name:

(Doc. #0031U - 04.02.87)

BURNT BUSH TRENCH 5 MAJOR ELEMENTS 18/02/87

Samole no	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	CO2	LOI	TOTAL
GC-002	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	4.35	-9.00	1.80	-9.00	0.05	-9.00	-9.00
GC-003	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	3.60	-9.00	0.67	-9.00	0.12	-9.00	-9.00
GC-004	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	3.81	-9.00	1.97	-9.00	0.09	-9.00	-9.00
GC-008	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	4.94	-9.00	0.81	-9.00	0.08	-9.00	-9.00
GC-011	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	7.27	-9.00	0.35	-9.00	0.12	-9.00	-9.00
T5-1	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T5-3													
GC-006	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	5.81	-9.00	1.02	-9.00	2.94	-9.00	-9.00
GC-001													
GC-005	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	3.43	-9.00	0.75	-9.00	0.12	-9.00	-9.00
GC-007	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	7.92	-9.00	0.34	-9.00	0.04	-9.00	-9.00
T5-2	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
T5-4	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

BURNT BUSH TRENCH 5 MINOR ELEMENTS 18/02/87 a)

Samole no	Au	Sb	As	Ba	Cd	Cs	Cr	Co	Eu	Hf	Ir	Fe	La	Mo
GC-002	11.00	0.05	0.50	390.00	2.50	0.70	10.00	14.00	2.00	3.00	25.00	3.50	15.00	0.50
GC-003	7.00	0.10	0.80	220.00	2.50	0.70	10.00	10.00	1.00	3.00	25.00	5.20	9.00	0.50
GC-004	1.00	0.10	0.70	390.00	2.50	0.25	10.00	14.00	1.00	4.00	25.00	5.10	15.00	0.50
GC-008	1.00	0.05	0.80	250.00	2.50	0.25	40.00	16.00	1.00	3.00	25.00	3.50	10.00	0.50
GC-011	1.00	0.30	0.25	75.00	2.50	0.25	35.00	15.00	1.00	3.00	25.00	6.60	18.00	0.50
T5-1	110.00	0.20	7.20	260.00	2.50	0.50	25.00	18.00	0.50	4.00	25.00	12.00	13.00	0.50
T5-3														
GC-006	4.00	0.05	0.25	150.00	2.50	1.30	23.00	14.00	0.50	4.00	25.00	8.10	13.00	0.50
GC-001														
GC-005	1.00	0.20	0.25	150.00	2.50	0.25	10.00	8.00	1.00	4.00	25.00	3.00	13.00	0.50
GC-007	1.00	0.30	2.20	91.00	2.50	0.25	28.00	32.00	1.00	3.00	25.00	8.30	15.00	0.50
T5-2	1.00	0.40	2.70	25.00	2.50	0.25	10.00	11.00	0.50	4.00	25.00	8.30	12.00	1.00
T5-4	10.00	0.20	3.50	130.00	2.50	0.60	32.00	12.00	1.00	5.00	25.00	12.00	14.00	0.50

BURNT BUSH TRENCH 5 MINOR ELEMENTS 18/02/87 b)

Sample no	Ni	Rb	Sc	Se	Ag	Ta	Tb	Th	W	U	Yb	Zn	Na
GC-002	10.00	32.00	10.00	2.50	1.00	0.25	0.25	1.70	1.00	0.30	1.00	50.00	2.91
GC-003	10.00	25.00	8.50	2.50	1.00	0.25	0.25	1.30	1.00	0.30	1.00	50.00	2.16
GC-004	10.00	26.00	13.00	2.50	1.00	0.60	0.60	1.40	0.50	0.30	3.00	50.00	2.22
GC-008	24.00	21.00	14.00	2.50	1.00	0.25	0.25	1.90	0.50	0.40	1.00	50.00	2.89
GC-011	24.00	3.00	15.00	2.50	1.00	0.25	0.50	1.90	0.50	0.40	1.00	50.00	2.87
T5-1	29.00	21.00	14.00	2.50	1.00	0.25	0.25	1.80	0.50	0.30	3.00	150.00	2.17
T5-3													
GC-006	10.00	30.00	14.00	2.50	1.00	0.25	0.25	1.50	0.50	0.40	2.00	50.00	1.40
GC-001													
GC-005	10.00	15.00	13.00	2.50	1.00	0.60	0.60	1.60	0.50	0.30	2.00	50.00	2.07
GC-007	23.00	2.50	16.00	2.50	1.00	0.25	0.25	1.70	0.50	0.40	1.00	50.00	1.40
T5-2	10.00	2.50	8.00	2.50	1.00	0.25	0.25	1.40	0.50	0.40	1.00	50.00	0.12
T5-4	10.00	14.00	14.00	2.50	1.00	0.25	0.70	2.10	0.50	0.50	3.00	620.00	1.90

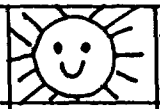
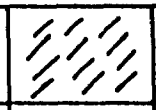
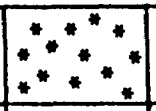
APPENDIX VI

WEATHER LOG

(included for interest only)

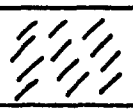
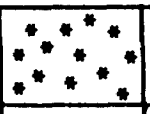
COGEMA Canada Ltée/Ltd.

FICHE DE TEMPÉRATURE

1986 DATE	HEURE						MAX.	MIN.	REMARQUES
13.09	12 h.			X	X				
	20 h.		X						afternoon hail
14.09	08 h.			X					
	19 h.		X						
15.09	08 h.	X							
	19 h.			X	X				
16.09	08 h.		X	X					
	19 h.		X	X					
17.09	08 h.	X							
	19 h.				X				
18.09	08 h.				X				
	19 h.			X	X				
19.09	08 h.			X	X				morning fog
	19 h.		X		X				
20.09	08 h.		X						
	19 h.		X						
21.09	08 h.		X						
	19 h.	X	X						
22.09	08 h.		X						
	19 h.				X				
23.09	08 h.		X						
	19 h.		X		X				

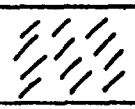
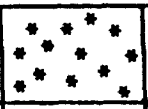
COGEMA Canada Ltée/Ltd.

FICHE DE TEMPÉRATURE

1986 DATE	HEURE						MAX.	MIN.	REMARQUES
24.09	08 h.		X	X					
	19 h.			X					
25.09	08 h.		X	X					
	19 h.			X					
26.09	08 h.			X					
	19 h.	X							
27.09	08 h.	X							
	19 h.			X					
28.09	08 h.			X					
	19 h.			X					
29.09	08 h.			X	X				
	19 h.			X					
30.09	08 h.			X					
	19 h.		X						
01.10	08 h.		X						
	19 h.		X						
02.10	08 h.		X						
	19 h.		X						
03.10	08 h.			X					
	19 h.					X			
04.10	08 h.			X		X			accumulation 3 cm
	19 h.		X			X			

COGEMA Canada Ltée/Ltd.

FICHE DE TEMPÉRATURE

1986 DATE	HEURE						MAX.	MIN.	R E M A R Q U E S
05.10	08 h.			X					snow all melted
	19 h.					X			accumulation 5 cm
06.10	08 h.		X			X			accumulation 7 cm
	19 h.	X	X						accumulation down to 3 cm
07.10	08 h.		X	X					accumulation still 3 cm
	19 h.				X				patches of snow only
08.10	08 h.		X						
	19 h.		X			x			
09.10	08 h.		X	X		x			
	19 h.		X						
10.10	08 h.	X							
	19 h.	X							
11.10	08 h.		X						patches of snow in shaded areas
	19 h.				X				
12.10	08 h.					X			accumulation 3 cm
	19 h.				X				accumulation <1 cm
13.10	08 h.				X				morning fog
	19 h.								
14.10	08 h.				X				morning fog
	19 h.					X			
15.10	08 h.			X		X			accumulation 5 cm

Ministry of Northern Development and Mines
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

Front - Management 453187 2.10545

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s)	Township or Area
GEOLOGICAL MAPPING	HOBLITZELL and NOSEWORTHY

Claim Holder(s)	Prospector's Licence No.
COGEMA CANADA LIMITED	T-4677

Address: 2000 Mansfield Street, Suite 400, Montreal, Que. H3A 2Z1

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
COGEMA CANADA LIMITED	14 09 86 (Day Mo. Yr.) 14 10 86 (Day Mo. Yr.)	X

Name and Address of Author (of Geo-Technical report): John Learn, 2350 Melrose Ave, N.D.G., Montreal, Que. H4A 2R8

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	20
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

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DEC 4 1987
MINING LANDS SECTION

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	789292	
	789305	
	789306	
	789353	
	789377	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

Total number of mining claims covered by this report of work: 5

Expenditures (excludes power stripping)

Type of Work Performed:

Performed on Claim(s):

Calculation of Expenditure Days Credits

Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions: Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
100	Nov 25/87	M.G. Jeerman
	Date Approved as Recorded: 9 Dec 87	Branch Director: A.K. Lord

Date	Recorded Holder or Agent (Signature)
Nov. 13/87	Denis Lesage

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: John Learn, 2350 Melrose Ave, N.D.G., Montreal, Que. H4A 2R8

Date Certified	Certified By (Signature)
Nov. 13/87	John Learn

1362 (85/12)

Land Management

Ministry of Northern Development and Mines

Ontario

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

454/87

2.10545

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s)	Township or Area
LITHOGEOCHEMISTRY and THIN SECTION STUDIES	HOBLITZELL and NOSEWORTHY

Claim Holder(s)	Prospector's Licence No.
COGEMA CANADA LIMITED	T-4677

Address: 2000 Mansfield St., Suite 400, Montreal, Que. H3A 2Z1

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
COGEMA CANADA LIMITED	14 09 86 (Day Mo. Yr.) 14 10 86 (Day Mo. Yr.)	X

Name and Address of Author (of Geo-Technical report): John Learn, 2350 Melrose Ave, N.D.G., Montreal, Que. H4A 2R8

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
RESEARCH OFFICE
DEC 30 1987
RECEIVED

RECEIVED
NOV 25 1987
9.50am

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	789346	7
	789347	7
	789348	7
	789349	7
	789350	7
	789351	7
	789352	7
	789354	7
	789355	7
	789356	7
	789357	7
	789358	7
	789359	7
	789360	7
	789361	7
	789362	7
	789363	7
	789364	7
	789365	7
	789366	7
	789367	7
	789368	7

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	789369	7
	789370	7
	789371	7
	789372	7
	789373	7
	789374	7
	789375	7
	789376	7
	789378	7
	789379	7
	789380	7
	789381	7
	789382	7
	789383	7
	789384	7
	789385	7
	789386	7
	789387	7
	789388	7

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DEC 4 1987
MINING LANDS SECTION

Total number of mining claims covered by this report of work: 41

Expenditures (excludes power stripping)

Type of Work Performed: Section 77(19) Assaying
LITHOGEOCHEMISTRY, THIN SECTIONS

Performed on Claim(s): L789292, L789305, L789306, L789353, L789377, L789398

Calculation of Expenditure Days Credits

Total Expenditures			=	Total Days Credits
$ 4313.50	÷	15	=	287

Instructions: Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
281	Nov 25/87	M. Gashinski
	Date Approved as Recorded: 1 Dec 87	Branch Director: A. Blower

Date	Recorded Holder or Agent (Signature)
Nov. 13/87	Denis Lesage

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: John Learn, 2350 Melrose Ave, N.D.G., Montreal, Que. H4A 2R8

Date Certified	Certified by (Signature)
Nov. 13/87	John Learn

1362 (85/12)

Record	Station	Sample no	SiO2 %	CaO %	K2O %	Al2O3%	Fe2O3%	TiO2 %	MnO %	MgO %	Na2O %	P2O5 %	LOI %	CO2 %
183	T2-41	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
184	T2-42	0	51.50	8.41	0.43	14.70	13.30	1.05	0.21	4.67	1.50	0.22	2.40	0.19
185	T2-43	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
186	T2-44	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
187	T2-45	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
188	T2-46	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
189	T2-47	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
190	T2-48	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
191	T2-49	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
192	T2-50	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
193	T2-51	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
194	T2-52	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
195	T2-53	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
196	T2-54	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
197	T2-55	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
198	T2-56	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
199	T2-57	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
200	T3-1	0	56.70	7.56	0.39	11.00	14.90	0.36	0.30	2.49	0.62	0.12	3.10	1.82
201	T3-2A	0	52.80	16.70	0.03	13.40	7.76	0.31	0.25	0.57	0.02	0.18	6.05	3.75
202	T3-2B	0	57.20	12.70	0.05	13.20	8.26	0.34	0.25	0.83	0.03	0.14	4.15	1.00
203	T3-3	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
204	T3-4	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
205	T3-5	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
206	T3-6	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
207	T3-8	0	47.20	11.70	2.01	15.10	10.20	1.01	0.29	2.10	1.03	0.35	6.30	4.56
208	T3-10A	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
209	T3-10B	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
210	T3-11	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
211	T3-12	0	52.20	4.83	0.57	17.20	9.43	1.12	0.11	4.48	4.44	0.36	3.10	1.04
212	T3-13	0	67.60	3.33	2.65	14.80	4.62	0.72	0.08	1.51	1.46	0.18	1.35	0.02
213	T4-1	0	46.20	2.62	0.59	19.80	11.50	1.09	0.10	6.50	3.74	0.32	4.55	-0.01
214	T4-2	0	57.20	5.48	0.43	14.50	7.24	0.85	0.10	3.48	4.03	0.16	4.25	2.24
215	T4-3	0	56.60	3.82	0.37	15.90	8.20	0.85	0.10	3.81	4.91	0.22	3.30	0.88
216	T4-4	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
217	T4-5	0	50.60	13.60	0.67	14.70	6.61	0.78	0.12	1.83	2.45	0.39	6.00	4.12
218	T5-1	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
219	T5-2	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
220	T5-4	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

Record	Station	Sample no	SiO2 %	CaO %	K2O %	Al2O3%	Fe2O3%	TiO2 %	MnO %	MgO %	Na2O %	P2O5 %	LOI %	CO2 %
183	T2-41	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
184	T2-42	0	51.50	8.41	0.43	14.70	13.30	1.05	0.21	4.67	1.50	0.22	2.40	0.19
185	T2-43	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
186	T2-44	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
187	T2-45	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
188	T2-46	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
189	T2-47	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
190	T2-48	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
191	T2-49	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
192	T2-50	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
193	T2-51	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
194	T2-52	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
195	T2-53	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
196	T2-54	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
197	T2-55	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
198	T2-56	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
199	T2-57	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
200	T3-1	0	56.70	7.56	0.39	11.00	14.90	0.36	0.30	2.49	0.62	0.12	3.10	1.82
201	T3-2A	0	52.80	16.70	0.03	13.40	7.76	0.31	0.25	0.57	0.02	0.18	6.05	3.75
202	T3-2B	0	57.20	12.70	0.05	13.20	8.26	0.34	0.25	0.83	0.03	0.14	4.15	1.00
203	T3-3	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
204	T3-4	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
205	T3-5	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
206	T3-6	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
207	T3-8	0	47.20	11.70	2.01	15.10	10.20	1.01	0.29	2.10	1.03	0.35	6.30	4.56
208	T3-10A	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
209	T3-10B	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
210	T3-11	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
211	T3-12	0	52.20	4.83	0.57	17.20	9.43	1.12	0.11	4.48	4.44	0.36	3.10	1.04
212	T3-13	0	67.60	3.33	2.65	14.80	4.62	0.72	0.08	1.51	1.46	0.18	1.35	0.02
213	T4-1	0	46.20	2.62	0.59	19.80	11.50	1.09	0.10	6.50	3.74	0.32	4.55	-0.01
214	T4-2	0	57.20	5.48	0.43	14.50	7.24	0.85	0.10	3.48	4.03	0.16	4.25	2.24
215	T4-3	0	56.60	3.82	0.37	15.90	8.20	0.85	0.10	3.81	4.91	0.22	3.30	0.88
216	T4-4	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
217	T4-5	0	50.60	13.60	0.67	14.70	6.61	0.78	0.12	1.83	2.45	0.39	6.00	4.12
218	T5-1	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
219	T5-2	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00
220	T5-4	0	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00	-9.00

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M. + S. – MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File

46M 48M 49M 50M 51M 52M 53M 54M

Soucie Cr.
Soucie
East Soucie Lake
Soucie Lake
Soucie Creek
Mikwam R.
Burntbush
Mikwam River
Porphyry Cr.
West Porphyry L.
Porphyry L.
Little Porphyry L.

576268
576269 576270

BLAKELOCK TOWNSHIP
PROJECTED

NOSEWORTHY TOWNSHIP
PROJECTED

PROJECTED
TOMLINSON TOWNSHIP

LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES: TOWNSHIPS, BASE LINES, ETC. / LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES: LOT LINES / PARCEL BOUNDARY / MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" , SURFACE RIGHTS ONLY	◓
" , MINING RIGHTS ONLY	○
LEASE, SURFACE & MINING RIGHTS	■
" , SURFACE RIGHTS ONLY	◨
" , MINING RIGHTS ONLY	◻
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	◔
CANCELLED	⊕
SAND & GRAVEL	◔

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 8, 1913, VESTED IN ORIGINAL PATENTEE, BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 83, SUBSEC 1.

SCALE
300 Metres 0 1000 Metres
1:20 000

DATE OF ISSUE
SEP 11 1987
LARDER LAKE MINING RECORDER'S OFFICE

Rec'd Nov. 13, 1986

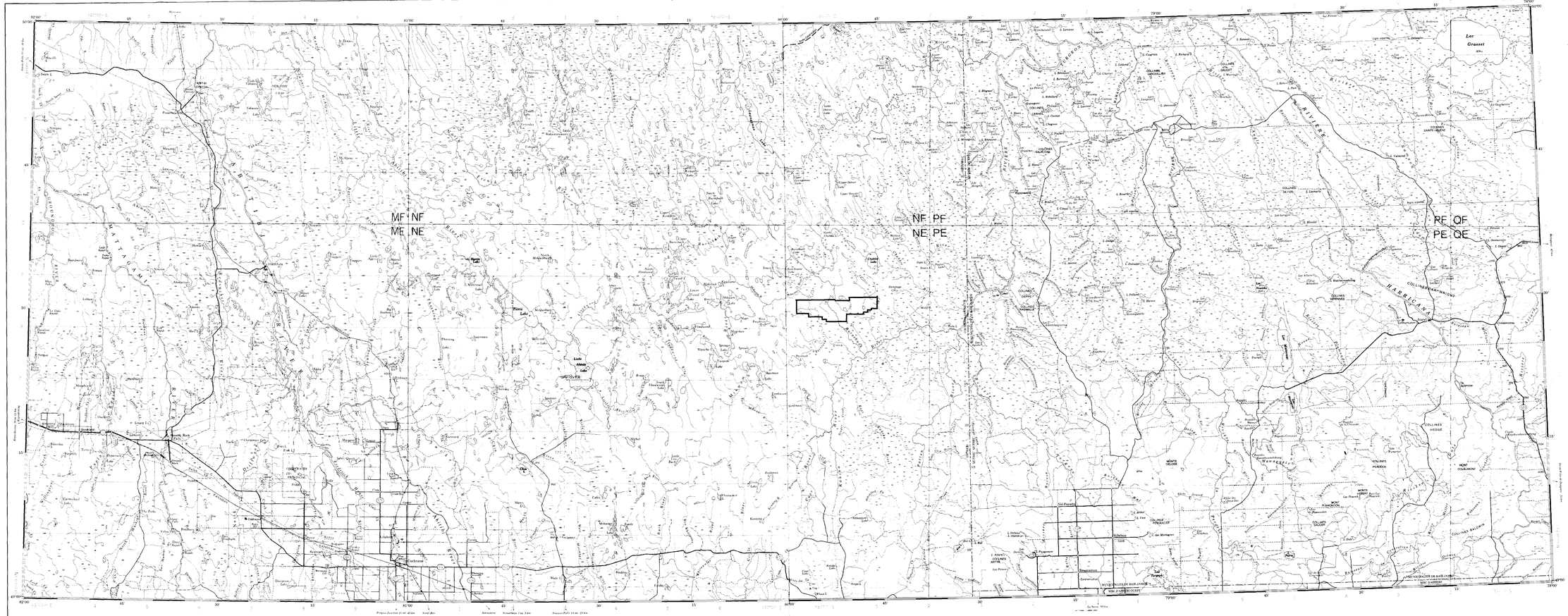
TOWNSHIP
HOBLITZELL

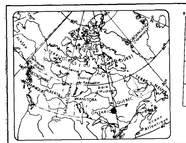
M.N.R. ADMINISTRATIVE DISTRICT
COCHRANE
MINING DIVISION
LARDER LAKE
LAND TITLES / REGISTRY DIVISION
COCHRANE

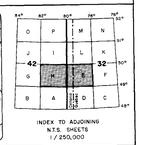
Ontario Ministry of Natural Resources

Date OCTOBER 1986
Number G-3513

32C12SW0042 2.10545 HOBLITZELL 200







INDEX TO ADJOINING N.T.S. SHEETS 1/250,000

COGEMA Canada Ltée/Ltd.

Scale 1: 250,000

BURNTBUSH RIVER PROJECT

LOCATION MAP

Interpretation by: J. Learn	Date
Drafted by: R. Allie	Report no. 87-CND-47-01
Base map:	Areas no.
Revise by:	MAP NO. 1

HOBLITZELL TP

NOSEWORTHY TP

EAST SOUCIE LAKE

CHABBIE LAKE

RAMMAGE

BURNTBUSH RIVER

282±

275±

273±

Trench # 1

Trench # 2

Trench # 3

Trench # 4

Trench # 5

HOBLITZELL TP
TOMLINSON TP

NOSEWORTHY TP
HURTUBISE TP

LEGEND

Claim boundary

Claim post tied to mapping

Approximate position

INDEX TO ADJOINING N.T.S. SHEETS 1/50,000

42H 32E

COGEMA Canada Ltée/Ltd.

SCALE: 1:1/20,000

Metres 0 500 1000 1500 2000 2500

Feet 2000 4000 6000 8000

BURNTBUSH RIVER PROJECT

CLAIMS MAP
LOCATION OF TRENCHES

Interpretation by: J. Leahy	Date	Report no 87-CND-47-01
Drafted by: R. Allie	3/2/87	Annex no
Base map:		MAP NO. 2
Revise by:		

220

LEGEND

PRINCIPAL ROCK TYPES:

NORTHERN PILLOW LAVA

- Strongly deformed, but pillows easily recognized, moderately sheared
- Strongly sheared, pillows not recognizable

MASSIVE AMPHIBOLITE

- Massive, but strongly lineated, not sheared
- Strongly lineated, foliation weakly developed, weakly to moderately sheared
- Foliation well developed, strongly sheared, lineation no longer recognizable

SOUTHERN PILLOW LAVA

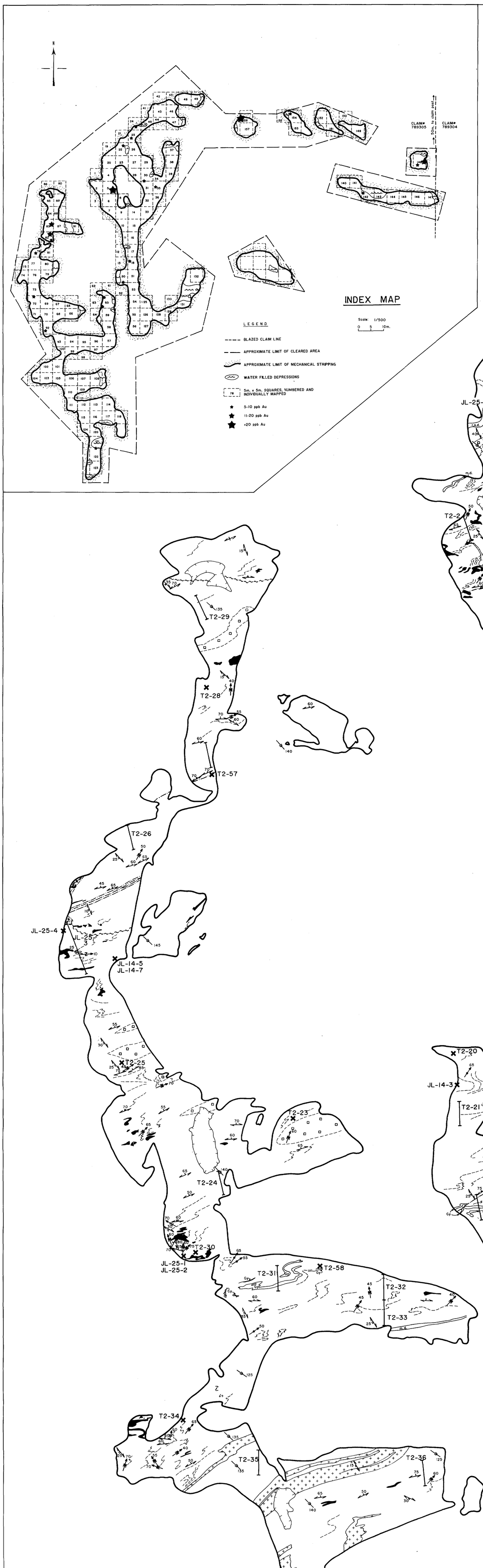
- Undeformed to weakly deformed, pillows easily recognized
- Deformed, weakly to moderately sheared, pillows easily recognized, but they are stretched and flattened
- Strongly sheared, well foliated, pillows not recognizable

LATE DYKES AND VEINS:

- Chloritic feldspar porphyry, mostly with a brecciated texture
- East-west family of quartz veins accompanied by an alteration envelope
- Brecciated mass of three different porphyry dykes
- QFP — Thin, irregular quartz-feldspar porphyry veins, commonly with brecciated host rock fragments
- Sy — Coarse-grained feldspar-rich (syenite?) pod
- Concordant undeformed feldspar porphyry dyke
- m.d. — Undeformed to weakly deformed mafic to intermediate dykes-undifferentiated
- Lineated porphyry dykes (two types not differentiated on map)
- m.d.s. — Sheared mafic to intermediate dykes
- q — Free quartz, some is old and strongly deformed, some is young but not related to east-west family
- f — Feldspar-chlorite-quartz veinlets, always very thin, may be related to primary deposition (pillow sevages), may be migmatitic sweat , or may be related to shearing, or may be a combination of above

SYMBOLS:

- Interpreted geologic contact
- Fault contact between northern pillow lava and massive amphibolite
- 70 — Strike and dip of bedding (from pillows)
- 60 — Strike and dip of foliation (northern pillow lava)
- 68 — Strike and dip of foliation interpreted to be a shear fabric, vertical dip, dip direction known, dip direction not known
- Outcrop trace of foliation in sheared rock, trace of discrete, thin shear zones, or may be a boundary between strongly sheared and weakly sheared rock
- 60 — Azimuth and plunge of mineral (amphibole) lineation
- 55 — Azimuth and plunge of minor fold axis
- 55 — Azimuth and plunge of quartz rod
- 55 — Strike and dip of dykes and veins, dip direction known but not measured
- 30 — Strike and dip of fracture cleavage, near-horizontal fracture cleavage
- 75 — Strike and dip of fracture measured, dip direction known, dip not measured but near vertical
- Minor fault, ↖ on downthrown side
- Sense of movement
- 40 — Strike and dip of fracture interpreted to be a joint
- 130 — Orientation of glacial striae, ice direction inferred from regional knowledge
- JL-10-2 — Sample location
- JL-25-9 — Channel sample location
- Limit of outcrop
- Water or overburden filled depression in outcrop exposure
- Vertical face (≥ 2m high)



Join to east sheet here → 1

Join to east sheet here → 2

PRINCIPAL ROCK TYPE:

METAGABBRO

- A — Weakly altered, undeformed remnant probably lineated
- Weakly deformed, massive to weakly foliated probably lineated
- Strongly sheared, well foliated

LATE DYKES AND VEINS:

- Veins and nodules of free quartz
- r.s.d. — Rusty, siliceous dyke
- Felsic to intermediate porphyry dykes
- Gy — "Grey rock", sheared felsic to intermediate dykes
- m.d. — Undifferentiated sheared to weakly deformed mafic to intermediate dykes
- Gn — "Green rock", boudined mafic dyke, may contain brecciated quartz-feldspar interior
- Porphyry xenolith (?)

SYMBOLS:

- Strike and dip of foliation interpreted to be a shear fabric, vertical dip, direction of dip known, dip direction not known
- Trace of foliation in outcrop, also used as the boundary between massive and foliated areas
- Azimuth and plunge of minor folds, "s folds", "z folds"
- Azimuth and plunge of quartz rods
- Strike and dip of dykes, veins
- Strike and dip of fracture cleavage
- Strike and dip of fractures and fracture zones, dip direction known, dip not measured but near vertical
- Strike and dip of "crenulation cleavage"
- Azimuth and plunge of fold whose axial plane is a "crenulation cleavage"
- Zones of dense late fracturation, with >10cm thickness bleached
- Fault trace
- Brecciation associated with faulting
- Sense of movement
- Orientation of glacial striae, ice direction inferred from regional knowledge
- T2-1 — Sample location
- T2-5 — Channel sample location
- Limit of outcrop
- Water or overburden filled depression in outcrop exposure
- Vertical face (≥ 2m. high)

COGEMA Canada Ltée/Ltd.

Scale: 1/100

0 2 4 6 8m.

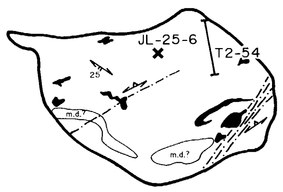
BURNTBUSH RIVER PROJECT

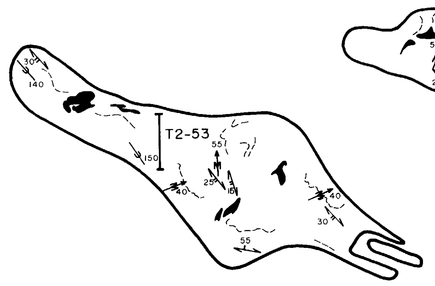
TRENCH 2
DETAILED GEOLOGIC MAP
(west sheet)

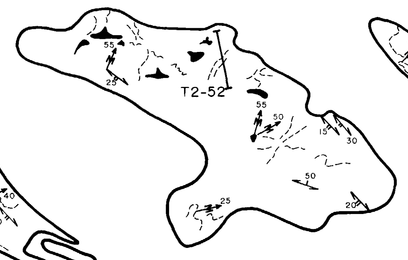
2.10545

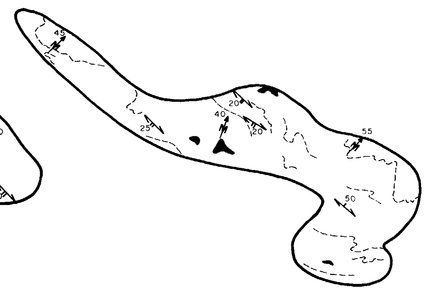
Interpretation by: J. Learn	Date: 20/2/87
Drafted by: R. Allie	Report no. 87-CND-47-01
Base map:	Annex no.
Checked by	MAP NO. 4

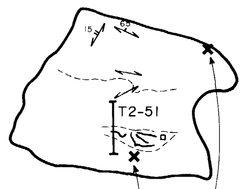
← Join to west sheet here

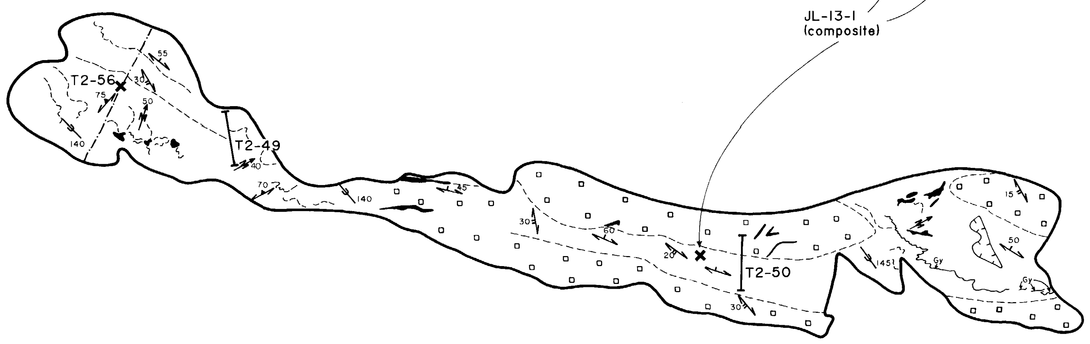


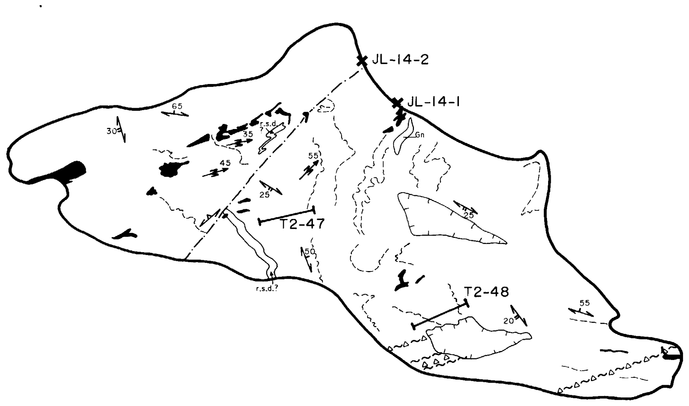












← Join to west sheet here

L E G E N D

PRINCIPAL ROCK TYPE:

METAGABBRO

- A — Weakly altered, undeformed remnant probably lineated
- Weakly deformed, massive to weakly foliated probably lineated
- Strongly sheared, well foliated

LATE DYKES AND VEINS:

- Veins and nodules of free quartz
- r.s.d. — Rusty, siliceous dyke
- Felsic to intermediate porphyry dykes
- Gn — "Grey rock", sheared felsic to intermediate dykes
- m.d. — Undifferentiated sheared to weakly deformed mafic to intermediate dykes
- Gn — "Green rock", boudined mafic dyke, may contain brecciated quartz-feldspar interior
- Porphyry xenolith (?)

SYMBOLS:

- Strike and dip of foliation interpreted to be a shear fabric, vertical dip, direction of dip known, dip direction not known
- Trace of foliation in outcrop, also used as the boundary between massive and foliated areas
- Azimuth and plunge of minor folds, "s folds", "z folds"
- Azimuth and plunge of quartz rods
- Strike and dip of dykes, veins
- Strike and dip of fracture cleavage
- Strike and dip of fractures and fracture zones, dip direction known, dip not measured but near vertical
- Strike and dip of "crenulation cleavage"
- Azimuth and plunge of fold whose axial plane is a "crenulation cleavage"
- Zones of dense late fracturation, with >10cm thickness bleached
- Fault trace
- Brecciation associated with faulting
- Sense of movement
- Orientation of glacial striae, ice direction inferred from regional knowledge
- T2-1 — Sample location
- T2-5 — Channel sample location
- Limit of outcrop
- Water or overburden filled depression in outcrop exposure
- Vertical face (≥ 2m. high)

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COGEMA Canada Ltée/Ltd.

Scale: 1/100

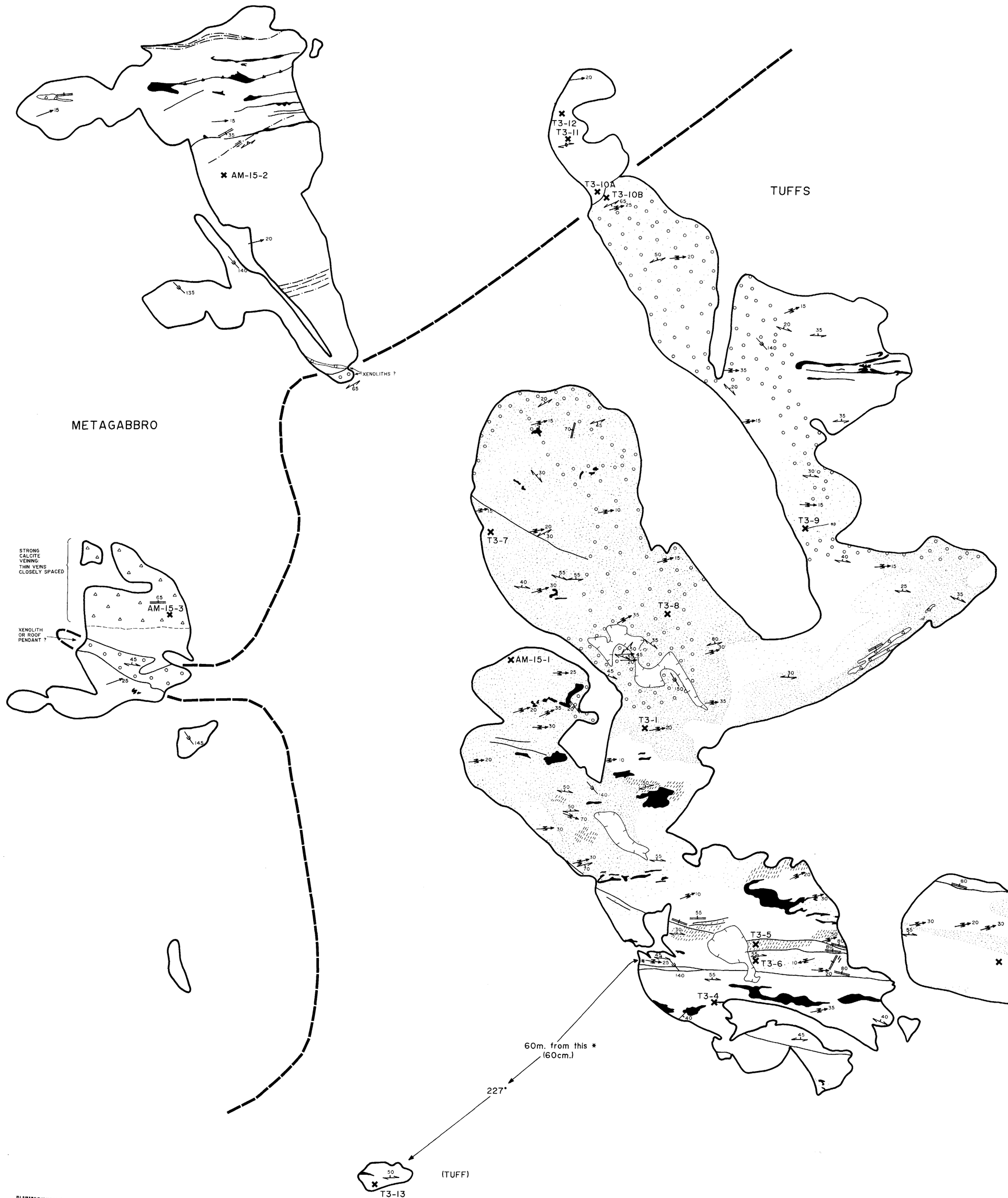
0 2 4 6 8m

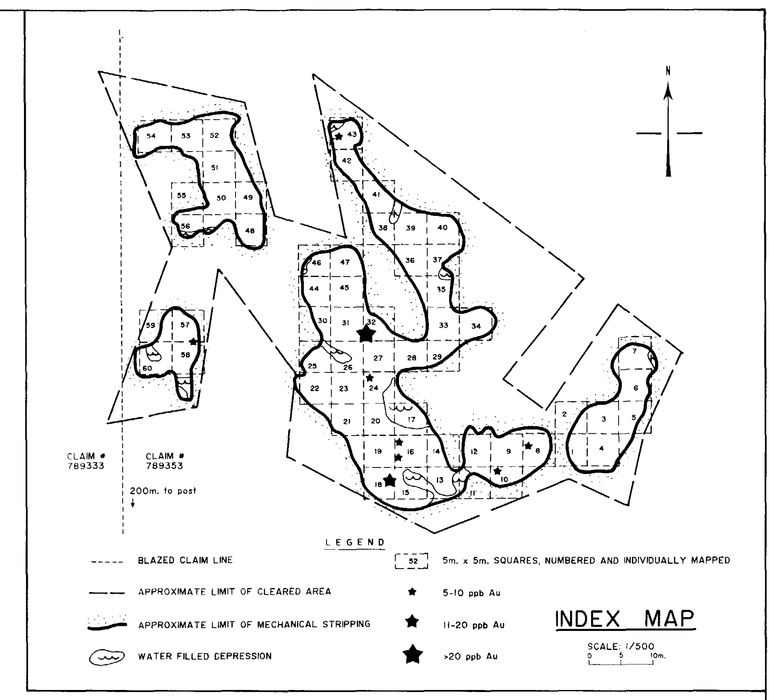
BURNTBUSH RIVER PROJECT

TRENCH 2
DETAILED GEOLOGIC MAP
(east sheet)

2.10545

Interpretation by: J. Learn	Date	Report no. 87-CND-47-01
Drafted by: R. Allie	20/2/87	Annex no.
Base map:		MAP NO. 5
Checked by:		





LEGEND

PRINCIPAL ROCK TYPES:

- Intrusive metagabbro

INTERBEDDED IRON-RICH AND DACITIC LAPILLI TUFFS

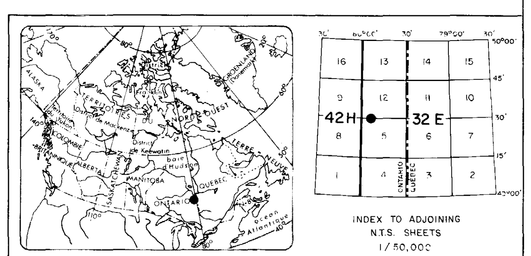
- Mixed tuffs within thermal aureole of the metagabbro
- Mixed tuffs; iron-rich tuffs abundant (>60%)
- Mixed tuffs; iron-rich tuffs common (20-60%)
- Mixed tuffs; dacitic lapilli tuff predominant (>80%)
- Cherty siliceous weakly banded (silicified) tuffs
- Porphyritic clast in tuff >1m.

LATE VEINS

- Quartz ± tourmaline veins and segregations
- Crystalline calcite veins commonly with angular fragments of host rock
- Quartz + calcite vein
- Epidote veinlets

SYMBOLS:

- Geologic contact, observed, interpreted
- Strike and dip of foliation (and bedding)
- Azimuth and plunge of mineral (amphibole) lineation
- Azimuth and plunge of minor fold axis
- Strike and dip of veins, vertical dip, dip direction known but not measured
- Strike and dip of fracture cleavage
- Strike and approximate dip of discrete fractures, vertical, inclined
- Bleached zones due to late fractures
- Sense of movement
- Orientation of glacial striae, ice direction inferred from regional knowledge
- T3-9 Sample location
- AM-15-4 Channel sample location
- Limit of outcrop
- Water or overburden filled depression in outcrop exposure



COGEMA Canada Ltee Ltd.

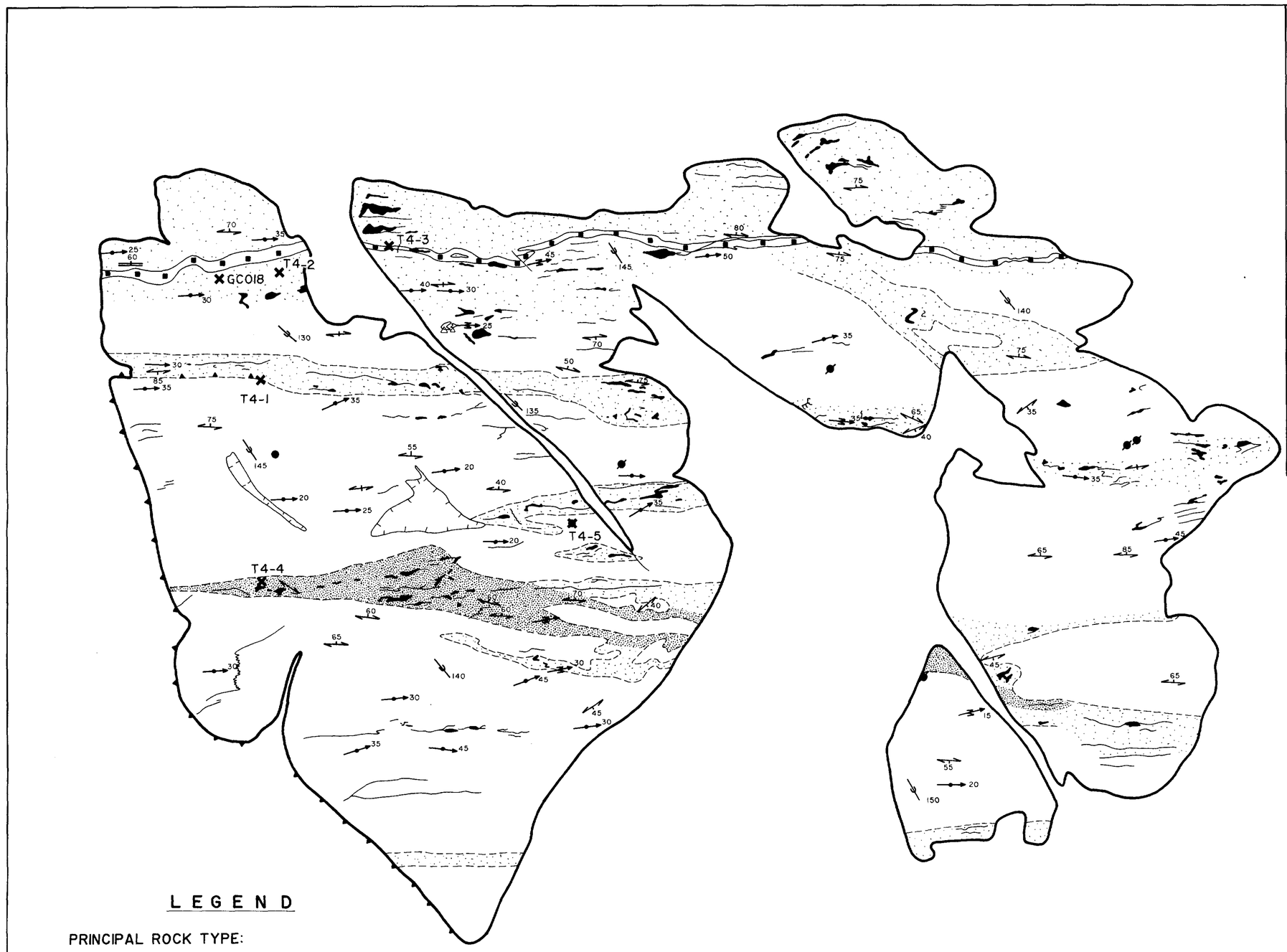
Scale: 1/100

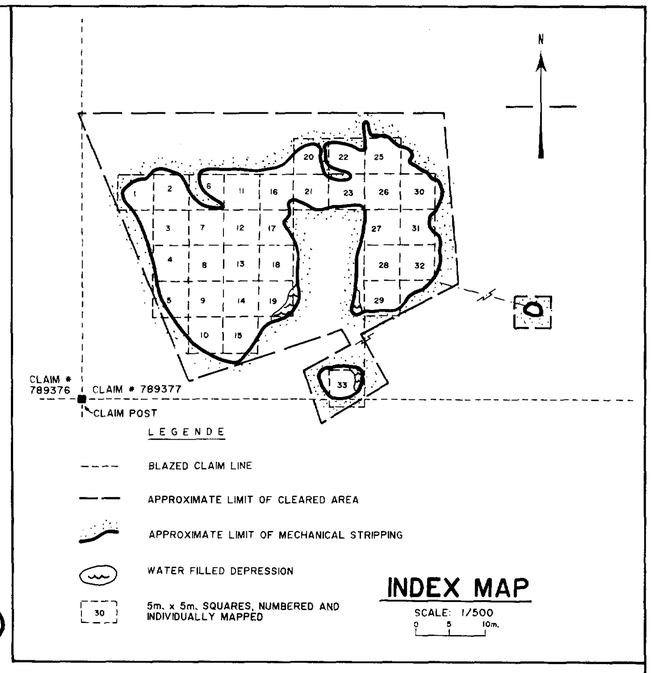
BURNTBUSH RIVER PROJECT

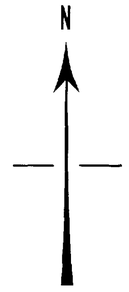
TRENCH 3
DETAILED GEOLOGIC MAP

D. 10545

Interpretation by: J. Learn	Date	Report no. 87-CND-47-01
Drafted by: R. Allie	24/2/87	Annex no.
Base map:		MAP NO. 6
Checked by:		







LEGEND

PRINCIPAL ROCK TYPE:

PILLOW LAVA

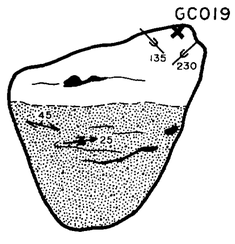
- Undeformed, lozenge shaped pillows, nearly flat-lying
- Flattened and stretched pillows
- Flattened and stretched pillows interpreted to be sheared
- Area of epidote amygdales

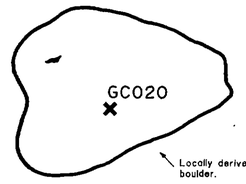
DYKES AND VEINS

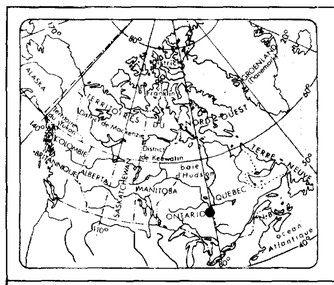
- Feeder dyke
- Quartz veinlets and quartz-tourmaline veins and boudins
- Crystalline calcite with angular host rock fragments

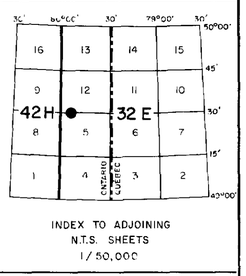
SYMBOLS:

- Well-defined boundary between undeformed and deformed pillow lavas
- 70 Strike and dip of foliation or schistosity, inclined, vertical
- Strike of discordant part of c/s fabric
- 30 Azimuth and plunge of long axis of pillows (also a weak mineral lineation)
- 25 Azimuth and plunge of minor folds
- 35 Azimuth and plunge of quartz rods
- 60 Strike and dip of feeder dyke
- 150 Orientation of glacial striae, ice direction inferred from regional knowledge
- T4-3 Sample location
- Limit of outcrop
- Water or overburden filled depression in outcrop exposure
- Vertical face (≥2m. high)









INDEX TO ADJOINING N.T.S. SHEETS 1/50,000

COGEMA Canada Ltée/Ltd.

Scale: 1/100

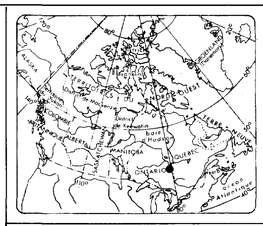
0 2 4 6 8m.

BURNTBUSH RIVER PROJECT

TRENCH 4
DETAILED GEOLOGIC MAP

2,10545

Interpretation by: J. Learn	Date	Report no. 87-CND-47-01
Drafted by: R. Allie	23/2/87	Annex no.
Base map:		MAP NO. 7
Checked by:		



COGEMA Canada Ltee/Ltd.

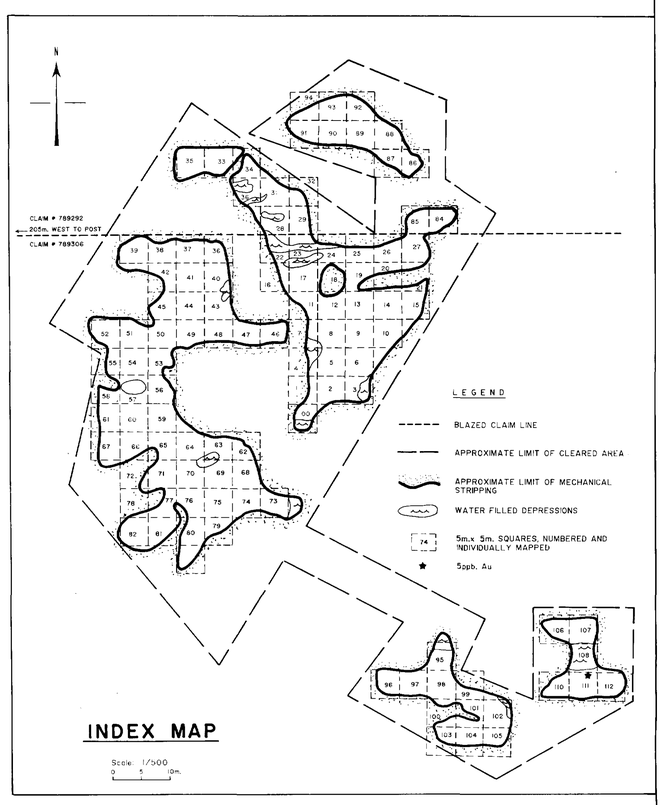
Scale: 1/100

0 2 4 6 8m

BURNTBUSH RIVER PROJECT

TRENCH 1
DETAILED GEOLOGIC MAP

Interpretation by: J. Learn	Date	Report no. 87-CND-47-01
Drafted by: R. Allie	20/2/87	Annex no
Base map:		MAP NO. 3
Checked by		



LEGEND

'PES:

A

, but pillows easily recognized,
d

illows not recognizable

gly lineated, not sheared

oliation weakly developed,
ely sheared

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recognizable

akly deformed, pillows easily recognized

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well foliated, pillows not recognizable

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tz-feldspar porphyry veins, commonly
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akly deformed mafic to intermediate dykes-

dykes (two types not differentiated on map)

ntermediate dykes

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east-west family

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deposition (pillow sevages), may be migmatitic
related to shearing, or may be a combination

SYMBOLS:

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- 60 — Azimuth and plunge of mineral (amphibole) lineation
- 55 — Azimuth and plunge of minor fold axis
- 55 — Azimuth and plunge of quartz rod
- 55 — Strike and dip of dykes and veins, dip direction known but not measured
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- 40 — Strike and dip of fracture interpreted to be a joint
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- JL-10-2 — Sample location
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- Limit of outcrop
- Water or overburden filled depression in outcrop exposure
- Vertical face (≥ 2m high)