## AMERICAN BARRICK RESOURCES CORPORATION LTD.

An Annual Report on Exploration Activity for the Year 1985 on the

## Newmex Option

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R. Brian Alexander
A.W. Workman

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839-24-4
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839-24-5
839-24-6

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839-24-7
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839-24-9

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839-24-18

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839-24-19
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1985 DIAMOND DRILL LOGS Mc.85-242
Mc.85-243
Mc.85-244

## INTRODUCTION

The NEWMEX Option is located in Harker Township, Ontario, approximately midway between Holtyre, Ontario and Duparquet, Quebec. The optioned property is approximately 4.2 km , west, along strike, from the McDermott Deposit of Barrick Resources.

Access to the property is by gravel road, 1.6 km . south, from highway 101.

## HISTORY

In 1936, Toronto Harker Mines Ltd. reported one diamond drill hole intersecting some schist and greenstone under considerable esker cover. This was carried out in the north-wester corner of the claim block. This claim block is composed of claims L31732 to L31736, and L31740.

In 1942, surface work and a diamond drilling program of four holes was carried out, by Imperial Reserves Mines Ltd., in the north-eastern corner of the claim block.

In 1947, surface grab samples were taken by F.R. Joubin and returned .01 to .17 ounces of gold per tonne from pyritized sediments on claim L27600. Joubin also reported previous trenching and diamond drilling on claim L113407, which showed two mineralized zones, 8 and 10 ft . wide, with average gold assays of $.06 \mathrm{oz} . /$ tonne.

Consolidated Mining and Smelting held the ground during the late 1950's, followed by Valhalla Mines in the period from 1961 to 1965.

In 1975, Newmex Gold Resources acquired the land. The company drilled five diamond drill holes, NX-1 to 5, on the claims designated al L430919, L430918, and L4414447. The total cumulative depth of the drill program was 453.5 metres of $A Q$ size drill


core.

In 1978, Amax Potash Ltd. staked claims, L525472 to L525474 around Imperial Lake, based upon input airborn EM survey results.

In 1979, Amax Potash Ltd. conducted a geological and prospecting survey on the above mentioned claims, followed by a geophysical survey in 1980. In 1981, Amax conducted an exploration program on the claim block, which included the eleven claims held under option from Newmex Gold Resources Ltd. The program included nineteen diamond drill holes totalling 1498.8 meters. The option was later dropped.

In 1983, Camflo Mines Ltd. acquired the option, established a grid, conducted ground geophysical surveys and a geological mapping program.

## LINE-CUTTING

In order to establish ground control for the purpose of geological mapping during 1985, a portion of the 1983 Camflo grid system was re-established. The grid was recut from line 2800 to 3600 west, with a 50 meter line spacing and 25 meter stations. The lines were orientated at 344 degrees and were approximately 575 meters in length. (Refer to Table 1)

## SURVEYING

For the purpose of geological correlation, 1981 diamond drill collars are in the process of being surveyed. The three 1985 drill hole collars, as well as the perimeter of the claim block were surveyed. (Refer to Table 1)

## AIRBORNE GEOPHYSICAL SURVEY

The contract was awarded to Geophysical Surveys Inc., of St. Foie, Quebec. The survey was flown in July, 1985, using a helicopter-born gradiometer. Two cesium vapour magnetometers, of 0.005 gamma resolution and vertically separated by 2 meters, were towed under a helicopter at an average height of 45 meters above ground. The average traverse spacing was 200 meters and the flight path recovery was effected using a video tape, recorded by a vertically mounted camera inside the helicopter.

The accessory equipment consisted of:

1) a VLF-em from Herz Industries, the TOTEM-2A, measuring the total field and quadrature component of the electromagnetic field at two frequencies.
2) a Sonotek SDS-1200 digital data acquisition system.
3) a radar altimeter, King KRA-10.

The Newmex option was covered by 8940 meters of flight line.

## Total Field Magnetics

The total field magnetometer survey indicates a high magnetic profile of greater than 60,000 gammas over much of the Newmex Option. This is undoubtably due to intrusive activity, a fact confirmed by reference to Satterly's Harker Township geological map (1951). A discontinuity is apparent near the eastern margin of the property. It strikes




195-200 degrees. This is apparently the position of the Teddy Bear Creek Fault.

## Gradient Survey

Two striking features are noticeable from this survey: the first is a break in the magnetics which trends 055 degrees from the south central boundary areas to the northeast corner of the property. West of this break might be dominantly intrusive terrain. A similar break, described under "Total Field Magnetics" is confirmed near the eastern property margin.

## VLF Survey

A number of relatively strong electro-magnetic cross-overs are noted on this property. They have an apparent strike of about 100 degrees, and probably have a structural affinity. However, their discontinuity is somewhat disturbing, possibly the result of cross-faulting in a north-south direction. These features have been noted on other Barrick properties in the immediate vicinity and remain unexplained. It is unlikely that mineralization will be associated with structures in this direction.

## AERIAL PHOTOGRAPHY

Aquarius Flight Inc. have completed a series of flight lines over the Newmex option for Barrick Resources. Air photos were produced on two scales, 1:10,000 and 1:20,000. These photos were used to facilitate ground control for the geological mapping program, and to prepare a photo mosaic for the helicopter-born gradiometer survey.

## TOPOGRAPHIC SURVEY

The topographic survey was done in conjunction with the interpretation of the air photos by Northway Map Technology Ltd. The area was mapped digitally and the final cronaflex sheets were plotted at a scale of 1:5000. The map provides 10 meter index
contours, with a 2 meter contour interval. Contours in areas of heavy relief were limited to a 5 mm spacing.

## REGIONAL GEOLOGICAL SETTING

The volcanic rocks of Harker and Holloway Townships are of Archean age and belong to the Superior Province of the Canadian Shield. This particular region is referred to as the Lightning River Area of the Abitibi Belt. The stratigraphy has been sub-divided as follows (Jensen, 1982):

| UPPER | (Timiskaming Group <br> SUPERGROUP <br>  <br>  <br>  <br> (Blake River Group <br> (Kinojevis Group <br> (Stoughton-Roquemaure Group |
| :--- | :--- |
| SUWER | (Porcupine Group |
| (Hunter Mine Group |  |
| (Wakewada Group |  |

The two supergroups represent successive volcanic cycles from ultrabasic komatiitic volcanism to acid calcalkalic volcanism. Each cycle is topped by a dominantly sedimentary (tuffaceous), sequence which reflects relative quiescence in extrusive activity.

The tectonic regime in which the majority of these rocks are located is one regional subsidence. The formation of a broad, east-west trending synclinal basin is attributable to this subsidence. The Destor-Porcupine Complex forms the north boundary of this basin, and the south side is marked by the Larder Lake Complex.

A few later instrusives have been emplaced into the volcanic succession. Compositionally, these rocks range from pyroxenite, diabase and lamprophyre, to diorite, granite and syenite. The mafic and ultramafic varieties tend to be found as
narrow dykes whereas the intermediate and felsic varieties are more common as larger, more rounded bodies.

The Destor-Porcupine Complex strikes approximately 075 degrees across Harker and Holloway Townships in the same approximate position as highway 101. Rocks to the south of this complex, or zone of dislocation, have approximately the same strike and dip 75 to 85 degrees south. All units top south - there has been no reported evidence of overturning in this area.

The zone of interest which hosts gold mineralization is of tectonic origin. It crosscuts volcanic stratigraphy at a shallow angle. Present studies indicate that volcanic rocks cut by this zone are iron-rich and magnesium-rich basalts of the Kinojevis Group.

## LOCAL GEOLOGY

Surface geology was mapped on a scale of 1:2,500, utilising the surface grid and air photos for control.

The claim block was found to be underlain by tholeiitic basalts and sediments of the Kinojevis Group (Satterly, 1951). The sediments are striking north 70 to 75 degrees east, and are generally dipping steeply to the south.

The area mapped was between line 2800 west and line 3600 west, and north of the baseline as far as tieline 575 north. Particular interest was paid to the east/west trending Imperial fault, located slightly south of the tie line. Anomalous gold assays have been associated with this trend.

The Imperial Fault has been interpreted as a normal, steep southerly dipping fault. Generally, the footwall has been noted to contain chlorite-carbonate schist. Tholeiitic basalts are found further to the north. The hanging wall was composed of strongly magnetic, iron-rich tholeiitic basalts containing an alteration package, directly overlying the Imperial fault.

The host rock to gold mineralization is best described, on a general basis, as a silicified, annealed breccia. The east/west trend of the annealed breccia appears to be slightly disjointed, or possibly displaced across the north/south trending Teddy Bear Creek Fault. The geological characteristics of the alteration and breccia also change abruptly across this fault zone.

The Teddy Bear Creek Fault Zone was noted in the field mapping program to consist of predominantly north/south faulting post dating earlier east/west faulting. This interpreted pattern of block faulting became evident when considering the topography and the stream pattern followed by the Teddy Bear Creek, in conjunction with the structural geological data gathered in the field.

Further characteristics of the local geology are discussed under the section entitled "STRUCTURAL GEOLOGY".

## GENERAL LITHOLOGIES

The following broad generalizations can be made with respect to the major rock types.
a) Hanging wall basalts are strongly magnetic, tholeiitic massive and pillowed flows. Compositionally, they are iron-rich. They vary in colour from dark grey to dark green-grey to black, and are very fine to medium grained. Generally, these basalts have a greater inherent hardness than the non-magnetic footwall basalts.
b) Footwall basalts are tholeiitic, massive and pillowed flows, which are generally non-magnetic to locally weakly magnetic. These rocks are less iron-rich than the magnetic varieties. They vary in colour from dark green to dark grey, and are usually moderately to strongly chloritized. The transition from magnetic to non-magnetic basalt occurs across the chlorite-carbonate schist horizon, underlying the Imperial fault.
c) Chlorite-carbonate schist has also been called a foliated basalt, and generally occurs in the footwall directly under the Imperial fault. The rock varies in colour from dark green to pale green, and, according to Allen (1985), it is composed of alternating bands of highly chloritized and sheared basalt and/or quartz - diorite, and carbonate veinlets that are elongated in the plane of shearing. Generally the amount of carbonate and the intensity of the foliation decreases down section. This probably reflects a transition from an intrusive (dioritic), lithology to less deformed and altered basalt (greenschist). The lower contact with massive, non-magnetic basalt, is locally sheared in the plane of the foliation; but, it is gradational in its overall appearance.
d) The Main Mineralized Zone (MMZ) has been used as the name for the complete alteration package, including its three subdivisions or members. The three members are: the Upper Transitionally Silicified Zone (UTSZ), the Main Silicified Zone (MSZ), and the Lower Transitionally Silicified Zone (LTSZ). The MMZ consists of varying amounts of silicified breccia with fragments of variable size and composition. Alteration makes the recognition of original lithologies impossible without detailed petrographic investigation. These fragments may be composed of basalt, diorite, syenitic intrusive, cherty laminated sediments, or possibly tuffaceous sediments. The most highly altered sections are dioritic
according to Allen (1985). Due to the intensely altered and brecciated nature of the $M M Z$, it is characterized on a predominantly descriptive basis. The $M M Z$ is subdivided by the amount of silicification present. The TSZ would characteristically contain between 5 and 95 per cent silicification, and the MSZ would be greater than 95 per cent. The MMZ has undergone several phases of alteration, imposed upon a zone of multi-stage brecciation. The alteration and its relationship to the structural geology is further described under the sections entitled "Silicification and Pyritization", "ALTERATION AND MINERALIZATION OF THE NEWMEX OPTION", and "STRUCTURAL GEOLOGY".
e) Sediments in the area have been described as dark to pale grey in colour, aphanitic to very fine grained, and weakly foliated or laminated with alternating cherty and argillaceous bands. These $1-2 \mathrm{~mm}$ laminations may be locally contorted and may indicate soft sediment deformation. Locally, some thicker horizons of greywacke have been noted. One horizon in particular is greater than 100 meters in thickness and has formational-style continuity.

NOTE: The following intrusive lithologies have been tentatively identified by the visually observed characteristics. These field terms may not be mineralogically correct.
f) Syenitic intrusives have been described with a pink to reddish- brown, aphanitic to very fine grained, siliceous groundmass, and with up to $50 \%$ euhedral to subhedral feldspar phenocrysts. The phenocrysts are usually white to pink in colour and range in size up to 5 mm .
g) Monzonitic intrusives are generally described as pinkish-grey colour, with an aphanitic to very fine grained, massive, crystalline texture. Quite often the intrusive is pervasively carbonatized and may have a variable magnetic character.
h) Dioritic intrusives are generally a dark green-grey colour, fine to medium grained and locally magnetic. Pervasive carbonatization may also be present. The diorite is identified in the field by the presence of laths of feldspar in a mafic groundmass, forming a sub-ophitic texture. Occasionally, sections of the diorite may contain a decussate texture, formed by randomly orientated chlorite in a finer grained, massive groundmass.

## GENERAL ALTERATION AND MINERALIZATION

## Varieties of Alteration

Silicification and carbonatization are the most prevalent forms of alteration in the rocks making up the mineralized zone. Albitization, hematization and pyrite formation are also pronounced. All forms of alteration overlap and boundaries are entirely gradational.

The alteration sequence of events is as follows:

1) chloritization and the release of iron as magnetite into intergranular spaces;
2) replacement of magnetite by bladed hematite;
3) silicification as an ongoing multi-stage process coupled with each brecciation event, sulphidation of hematite to pyrite (with probable introduction of gold), albitization; and,
4) carbonatization - ferroan dolomite near ore and calcite in more distal areas (with leaching and re-distribution of gold).

## Mechanism of Alteration

The development of alteration was dependent upon two factors: firstly, the permeability afforded by brecciation; and secondly, the ability of altering fluids to penetrate radially away from micro-conduits into non-brecciated rocks. It is the former of these two that is critical. Without fine brecciation on a maximum scale of 1 cm. . complete alteration is retarded and penetrative fragment rim alteration is the result. Spatially, the higher levels of alteration in stages 3 and 4 are proximal to the actual plane(s), of brecciation and movement within this altered zone. Stages 1 and 2, as well as albitization are found beyond the limitations of extreme brecciation.

Enhanced permeability through multi-stage, brittle deformation, allowed altering hydrothermal fluids better access within diorite than they were afforded in the quartzdiorites. At least 3 early stages of brecciation have been inferred through the examination of breccia fragments. Each stage has been accompanied by silicification, pyritization, and albitization, to form an aphanitic highly siliceous rock.

## Silicification and Pyritization

Silicification and pyritization are thought to be the critical elements of alteration with respect to gold content. Hence, for correlation purposes, the alteration zone was sub-divided on the basis of silicification into the Main Silicified Zone with quantitatively greater than $95 \%$ silicification, and flanking Transitionally Silicified Zones with lower amounts of silicified rock. These zones are collectively referred to as the Main Mineralized Zone. A well developed Main Silicified Zone is a necessary feature for good mineralization.

Pyritized rock is found throughout the Main Mineralized Zone. Pyrite contents can locally reach $30 \%$. These highs are associated with silica flooding in the most highly silicified sections. Within the Main Silicified Zone, pyrite commonly averages 3-5\%. It is found as a very fine dissemination, as $1-2 \mathrm{~mm}$. cubes and as $1-3 \mathrm{~mm}$. blebs, often forming aggregates in the siliceous matrix to breccia. Coarse, $1-3 \mathrm{~cm}$. clots are noted which may encompass breccia fragments. Pyrite is common as a filling in healed fractures of various ages. Pyrite was initially deposited throughout the rock as indicated by very finely disseminated grains within early breccia clasts. Later stages of pyrite, including some grains which were subsequently brecciated, were confined largely to the matrix between individual breccia fragments. To some degree, pyrite was probably in a constant state of re-distribution during the brecciation silicification events.

## Albitization

Albitization is evident in thin section as euhedral, twinned plagioclase laths. These crystals could not have survived the stress imparted on this sequence of rocks. Albite has of ten been partially or completely replaced by carbonate.

## Carbonatization

Carbonatization was the final alteration process. Proximal to the relatively higher grade gold mineralization, this event formed dolomite, while in more distal altered sections, calcite was deposited. The availability of iron, which was probably mobile throughout progressive alteration, aided in the formation of ferroan dolomite or ankerite. This carbonate can be easily seen on the weathered bedrock surface as an alteration invading a late brecciation event. In drill core, dolomite is frequently seen as a buff alteration penetrating dark purple-grey silicified breccia in the main silicified zone.

## ALTERATION AND MINERALIZATION ON THE NEWMEX OPTION

Locally, the upper transitionally silicified zone and the main silicified zone are contained within the hanging wall of the east/west trending Imperial Fault. The Imperial Fault plane directly underlies the main silicified zone. The lower transitionally silicified zone is generally narrow and contained within the footwall chlorite-carbonate schist horizon, directly under the Imperial Fault plane.

The main mineralized zone is exposed on surface, between line 3250 west and 3300 west, at approximately 560 meters north of the base line. At this locality, the main silicified zone appears to have another east/west trending shear forming the upper boundary within the hanging wall of the Imperial Fault.

On a larger scale, the western portion of the Imperial Fault was found to contain a considerably wider alteration package between lines 3200 west and 3450 west. Silicification and pyrite content also increased significantly to the west. Carbonatization is also noted to be a major component of the alteration process in this immediate area.

The eastern portion of the alteration zone, associated with the Imperial Fault, from lines 2800 west to 3000 west, was noted to be very narrow, and poorly developed on surface. Some of the alteration was postulated to be, at least in part, due to the close proximity of a feldspar porphyry intrusive. This east/west trending dike was identified in the field, on a visual basis, to be of syenitic composition. The contacts of the intrusive with its host rock and the associated alteration, may provide a site for locally improved gold mineralization. This may explain the isolated occurences of anomalous gold assays associated with syenitic intrusive contacts in this area.

## STRUCTURAL GEOLOGY

Faulting in the area has been classified by Satterly, (1951), as: a) strike faults trending east/west; and, b) cross faults striking to the east or west of north, which offset the rock formations and strike faults. Recent diamond drill results in the area have shown the east/west striking faults to be crosscutting the stratigraphy at a very small, acute angle. Therefore they can not be termed strike faults in the classical sense.

The Imperial Fault is marked by a gritty, clay fault gouge and represents the latest stage of movement in the earlier, east/west trending annealed tectonic breccia. This earlier stage of brecciation is postulated to be initially caused by brittle shattering or dislocation due to subsidence of the regional volcanic basin. The Imperial Fault may be composed of more than one subparallel fault plane containing gritty, clay gouge.

Locally, the Imperial Fault trend was measured as striking North 68 degrees West, with an 82 degree south-westerly dip. Within close proximity to the south, the shearing or fracture trend, separating the upper transitionally silicified zone and the main silicified zone, was measured as striking North 80 degrees West, with an 84 degree northerly dip. Therefore, the main silicified zone appears to be narrowing with depth and along strike to the east. It must be emphasized at this point that these trends are measured in only one locality on surface and must be considered hypothetical even on a local scale.

A north-easterly trending fault, with a steep north-westerly dip, was noted between lines 3000 west and 2950 west at approximately 465 meters north of the base line. This normal fault offsets the youngest, feldspar porphyry dike of syenitic composition. The hanging wall shows some degree of right lateral movement.

Northerly trending cross faults, such as the Teddy Bear Creek Fault, have been postulated to postdate alteration, mineralization, and all previously mentioned fault trends. Although the movement on individual fault planes may be small, the total displacement on a whole series of closely spaced, parallel faults is probably cumulative and quite large. Therefore geological correlation along strike becomes complicated and disjointed.

## DIAMOND DRILL PROGRAM

Prior to the start of Barrick's 1985 diamond drilling, the following 1981 drill holes were relogged at the Ontario Ministry of Natural Resources Core Library, Kirkland Lake, Ontario:

839-24-2 to 7, 839-24-9 to 11 , and 839-24-14 to 19.

These diamond drill logs are included in the appendix of this report, as well as in a table summarizing the 1981 diamond drilling results and significant assays.

Significant assay results could not be correlated from drill hole to drill hole or from section to section. Therefore, the estimated ore grade of 3.58 grams per tonne over 2.3 meters; and the probable and inferred tonnage of 150,000 tonnes suggested in the earlier report by Amax Minerals cannot be confirmed.

Anomalous gold assays were generally obtained from the following:
a) Silicified and annealed breccia in the Main Mineralized Zone west of the Teddy Bear Creek Fault.
b) Contacts between intrusives of syenitic composition and the intruded basalts.
c) Sheared contacts between the TSZ and the MSZ, or basalt and the TSZ.
d) Silicified and annealed breccias resulting from initial brecciation and secondary mineral enrichment due to hydrothermal fluid injection; in the magnetic hanging wall basalts.
e) Late stage, carbonate/quartz veining cross-cutting the MMZ.

Due to the lack of continuity, in the correlation of anomalous assays, emphasis should be placed upon the silicified and annealed breccia of the Main Mineralized Zone. This zone is correlatable over an extended strike length and can be shown to yield anomalous gold assays on a consistant basis. These characteristics provide a larger exploration target.

Thin section petrography (Allen, 1985), has shown relic igneous textures existing, in the least deformed and brecciated patches or pockets, within the Main Mineralized Zone. The original intrusive is thought to be of dioritic composition. Progressive stages of brecciation, silicification and albitization, has left a rock termed an annealed, breccia in the Main Mineralized Zone. Sections of this breccia have a vague 'syenitic' appearance.

The following generalized observations were noted from the relogging of the 1981 diamond drill core:

1) A foliated zone, FOZ, was noted in drill holes 839-24-7, 16, and 19 on section 470 East of the Canamax grid system. This foliated zone is correlatable on section and has been tentatively equated with a silicified, brecciated diorite that has been albitized to a "syenitic" composition. No visible basalt characteristics were noted in the drill core.
2) The MMZ was also noted to contain interflow sediments. The sediments are generally brecciated and silicified, but what appear to be relic bedding laminations are visible locally. These rocks have been tentatively identified as argillaceous sediments intercolated with cherty, siliceous beds. Anomalous assays may be, in part, associated with increasing sulfide content, due to pyrite replacement of smaller, siliceous (cherty) beds or fragments within the MMZ.
3) The basalt flows contain vesicular flow tops and flow breccia textures that indicate the basalt stratigraphy to be younging to the south.
4) A high degree of dolomitization or carbonatization has been observed within the $M M Z$ in both the diamond drill logs and the thin section petrology. This late stage alteration post dates most of the silicification and brecciation, and has been postulated (Workman, 1985), to leach out the gold into migrating hydrothermal solutions.
5) A feldspar porphyry intrusive of syenitic to monzonitic composition has cut the MMZ. This intrusive is the youngest lithology noted on the property. At the time of intrusion, the tectonic zone (represented by the annealed breccia) was still active, but the intrusive is only fractured by late stage faulting rather than an earlier brecciation event.
6) Diamond drill holes $839-24-10,4$, and 9, were drilled east of the Teddy Bear Creek Fault. Diamond drill core has shown the MMZ continues east of the fault but is composed of transitionally silicified rock and appears to be a much narrower sequence to the east. This silicification occurs in the chloritecarbonate schist and the silicified, annealed breccia is not present east of the fault.

The 1985 diamond drill program consisted of three holes for a total cumulative depth of 652.1 meters. The three holes were designated Mc.85-242 to 244 , and were drilled at an azimuth of 360 degrees, with a dip of minus 50 degrees.
Mc.85-242 and 244 were drilled 50 and 100 meters (respectively) south of Canamax's drill hole 839-24-11. Both holes encountered a single alteration zone, located predominantly in the hanging wall of the east/west trending Imperial Fault. Mc.85-242 intersected a syenitic intrusive with the lower margin assaying $5.14 \mathrm{gm} /$ tonne of gold over 1 meter. Mc.85-244 intersected the same intrusive at depth, but no significant mineralization was associated with the contacts.
Mc.85-243 was drilled 50 meters south of Canamax's drill hole 839-24-6. The core shows several alteration zones, as well as two minor laminated cherty sediment horizons within the above alteration zones. Therefore correlation in an east/west direction between 1985 drill holes was not possible with the information presently available.

The diamond drill core was sampled, split and assayed for gold. A total of 136 samples were sent to Assayers Limited in Rouyn, Quebec, for analysis by the fire assay method.

## CONCLUSIONS AND RECOMMENDATIONS

Anomalous gold assays have been predominantly found in the silicified and annealed breccia of the MMZ, and the contact aureoles of the feldspar porphyry intrusive of syenitic composition.

The higher gold assays could not be correlated from drill hole to drill hole, or from section to section. Therefore, previously estimated grade and tonnage figures could not be reproduced or confirmed. Due to the lack of continuity in the correlation of anomalous assays from diamond drilling results, emphasis during further exploration should be placed upon the larger exploration target provided by the annealed breccia of the MMZ. This zone can be shown to be correlateable over an extended strike length and has produced consistantly anomalous gold assays.

The east/west trend of the MMZ appears to be disjointed, or possibly displaced in a north/south sense across the Teddy Bear Creek Fault zone.

The Teddy Bear Creek Fault was noted, in the process of geological mapping of outcropping bedrock, to consist predominantly of a north/south series of parallel fault planes. This series of fault planes offset earlier, east/west structures. This interpreted fault block pattern is further supported by the course taken by Teddy Bear Creek, local topography, and the measurement of fracture directions that are shown on the 1:2500 scale geology map. The Teddy Bear Creek Fault trend was previously recognized as being northeast/southwest.

In spite of structural complications, diamond drilling data and outcrop data suggest that the MMZ narrows with depth and is generally narrower to the east of Teddy Bear Creek. This fluctuation in the width of the $M M Z$ has been postulated to represent the pinch and swell of the brecciation and alteration, in both the vertical and horizontal planes.

It has been observed that the degree of alteration and brecciation, within the $M M Z$, proves the area to be appropriate for gold mineralization. The style of mineralization is in accordance with the model provided by the McDermott Project, of Barrick Resources Corp., in Holloway Township.

The MMZ is a zone of multi-stage brecciation which has had several phases of silicification, pyritization, albitization, and carbonatization imposed upon it. The carbonatization was shown to be the latest stage of alteration, penetrating along fractures, in both the diamond drill core and the bedrock geology. It has been suggested (Workman, 1985), that the carbonatization was active in leaching out some of the gold. This may account for the local absence of correlatable, ore grade gold mineralization. Therefore, further core logging or geological mapping should pay particular attention to the limits of this alteration.

The MMZ was locally noted to contain what seem to be interflow sediments, generally brecciated and silicified, but occasionally containing features which resemble relic bedding laminations. Anomalous assays may be, in part, associated with increasing sulfide content, due to pyrite replacement of smaller, siliceous (cherty) beds or fragments within the MMZ.

Locally, the UTSZ and the MSZ are contained within the hanging wall of the Imperial Fault. The LTSZ is generally narrower and contained within the footwall of the Imperial Fault, which directly underlies the MSZ.

The Imperial Fault is represented by gritty, clay fault-gouge, representing the latest stage of movement in the earlier, east/west trending annealed breccia of the MMZ.

Between lines $32+50$ and $33+00$ west, limited outcrop data has suggested that the MSZ is bounded by shear planes. The intersection of these shear planes may have some significant relationship to the regional southwesterly plunge of gold mineralization. Further data should be sought in future geological mapping, to either confirm or deny this postulation.

The western portion of the Imperial Fault Zone was shown to contain a wider alteration package, between lines $32+00$ and $34+50$ west. Silicification and pyrite content increase to the west as well.

It is recommended that further trenching and detailed geological mapping should take place in the early spring of 1986, since the geological interpretation of structural data would greatly facilitate the proper placement of any future diamond drill holes.

One area where limited overburden exists is along the Imperial Fault trend, between lines $32+00$ and $34+50$ west. This area would be ideal for further detailed structural analysis, as a significant section across the $M M Z$ could be stripped with minimal trenching.

Future diamond drilling should be designed to further delineate the western extension of the $M M Z$ trend, and also the down dip extension. Short step out drilling along strike is recommended, with fences of drill holes orientated at 360 degrees and collar spacing of approximately 50 meters. To facilitate geological correlation, the angle of the diamond drill holes should remain constant at minus 50 degrees.

Prior to any further work, it is strongly recommended that a new grid system be established for ground control. This grid should be orientated at 360 degrees, with 50 meter line spacing and 25 meter stations. This orientation would be parallel to the previous Canamax grid, and would be close to being perpendicular to the geological strike of the MMZ in this area. This orientation would also be coincident with the azimuths of the 1981 and 1985 diamond drill holes. The new grid should cover the entire property.

Evidence from the airborne geophysical survey suggests that, at present, there is no distinctive geophysical signature to the mineralized zone. It is unlikely that this zone can be traced using conventional methods. However, a custom tailored EM-16 survey utilizing a portable transmitter might prove useful in tracing the zone.

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## APPENDIX

| Sample No. | Location |
| :---: | :---: |
| 20101 | 32+94 West at 562 North |
| 20102 | 32+94 West <br> at $5+62$ North |
| 20103 | 32+94 West <br> at $5+62$ North |
| 20104 | 33+42 West at $5+72$ North |
| 20105 | 33+42 West <br> at $5+72$ North |
| 20106 | $33+42$ West at $5+72$ North |
| 20107 | 33+42 West at $5+72$ North |
| 20108 | $\begin{aligned} & 33+94 \text { West } \\ & \text { at } 5+95 \text { North } \end{aligned}$ |
| 20109 | $\begin{aligned} & \text { 33+94 West } \\ & \text { at } 5+95 \text { North } \end{aligned}$ |

AU Assay gm/tonne

trace

TABLE 3 - SUMMARY OF 1981 DIAMOND DRILLING RESULTS AND SIGNIFICANT ASSAYS

| DDH No. | Section | Interval | Assay (gm/tonne) | Rock Description | Altn* | Pyrite |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 839-24-6 | $1+85 \mathrm{E}$ | 59.0-49.45 | 2.68 | Brecciated V7m in hanging wall | $\sin , \mathrm{cbn}$ | tr |
|  |  | 59.45-60.0 | 2.68 | MMZ upper contact | cbn, sin | 1-5\% |
| 839-24-2 | $2+80 \mathrm{E}$ | 23.0-24.0 | 2.36 | TSZ: cherty fragments in chld matrix. | cbn, sin | 1-2\% |
|  |  | 24.0-25.0 | 1.71 | TSZ: cherty fragments in quartz, carbonate matrix | sin,cbn | 2-3\% |
|  |  | 25.0-26.0 | 1.28 | TSZ (same as above) and TSB | $\sin$ | 2-3\% |
|  |  | 28.0-29.0 | 1.81 | TSZ | $\sin$ | tr-1\% |
| 839-24-3 | $2+80 \mathrm{E}$ | 51.0-51.35 | 2.40 | TSZ: red massive chert locally brecciated | sin, cbn | 1-2\% |
|  |  | 51.35-52.0 | 2.40 | Carbonate vein in V7m (Fault block) |  | tr-1\% |
|  |  | 56.0-57.0 | 1.57 | Brecciated V7m (Fault block) | cbn | tr-1\% |
| 839-24-11 | $3+32 \mathrm{E}$ | 15.0-16.0 | 2.07 | Brecciated V7M | $\sin$ | 5-10\% |
|  |  | 16.0-17.0 | 1.29 | Brecciated $V 7 \mathrm{~m}$ at intrusive contact | cbn, sin | 5-10\% |
| 839-24-5 | $3+75 \mathrm{E}$ | 36.0-37.0 | 1.92 | Brecciated V7m and interflow chert | $\sin$ | tr-1\% |
|  |  | 37.0-38.0 | 4.80 | TSB: magnetic with carbonate/quartz vein | $\sin , \mathrm{cbn}$ | 1-2\% |
| 839-24-14 | 4+38E | 51.0-52.0 | 2.12 | CCS: upper contact with $V 7 \mathrm{~m}$ in the hanging wall | $c b n$ | tr-2\% |
|  |  | 55.0-56.0 | 2.55 | Contact between upper CCS and TS7 | sin, chld | 1-2\% |
| 839-24-7 | $4+70 \mathrm{E}$ | 5.70-7.0 | 2.95 | TSZ: pyritic syenitic breccia | sin,albn | 3-5\% |
|  |  | 7.0-8.0 | 6.70 | Same as above | sin,albn | 3-5\% |
|  |  | 13.0-14.0 | 4.49 | Syenitic breccia with | sin,albn | tr |
|  |  |  |  | chld fragments in martix |  |  |

TABLE 3 - SUMMARY OF 1981 DIAMOND DRILLING RESULTS AND SIGNIFICANT ASSAYS

| DDH No. | Section | Interval | Assay (gm/tonne) | Rock <br> Description | Altn* | Pyrite |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 839-24-16 | $4+70 \mathrm{E}$ | 21.0-22.0 | 4.65 | Brecciated V7m in hanging wall | cbn | 1-3\% |
| 839-24-19 | $4+70 \mathrm{E}$ | 81.05-82.0 | 1.22 | TSZ | cbn, sin | tr |
| 839-24-17 | $4+95 \mathrm{E}$ | 64.0-65.0 | 3.70 | MSZ | sin, cbn | 5-10\% |
| 839-24-15 | $5+20 \mathrm{E}$ | 55.0-56.0 | 3.91 | Contact between upper TSZ and MSZ | $\sin$ | 1-4\% |
|  |  | 56.0-57.0 | 3.84 | MSZ | $\sin$ | 1-4\% |
|  |  | 57.0-58.0 | 5.83 | MSZ | $\sin$ | 1-4\% |
| 839-24-18 | $5+65 \mathrm{E}$ | 28.5-29.5 | 0.36 | Contact between TSZ and syenitic intrusive | sin,albn | tr-2\% |
|  |  | 38.0-39.0 | 0.23 | TSZ: chld fragments in matrix | sin,chld | tr-1\% |
| 839-24-10 | $6+25 \mathrm{E}$ | 31.0-32.0 | 1.05 | Pyritic quartz/ carbonate vein in V 7 m (Hanging wall) | cbn | 2-3\% |
|  |  | 68.0-69.05 | 1.32 | Contact upper TSZ and MSZ (quartz/carbonate breccia and laminated interflow sed. | sin,cbn | tr-2\% |
| 839-24-4 | $7+33 \mathrm{E}$ | 16.0-17.5 | 1.92 | TSZ: $\sin$ of CCS | sin,cbn, chld | $\mathrm{tr}-1 \%$ |
|  |  | 33.0-34.0 | 2.30 | TSZ: $\sin$ of CCS | sin,cbn chld | tr-1\% |
|  |  | 34.0-39.0 | $\begin{aligned} & 1.43 / \\ & 4.0 \mathrm{~m} \end{aligned}$ | TSZ: same as above | sin, cbn chld | tr |
| 839-24-9 | $8+75 \mathrm{E}$ | 51.0-52.0 | 3.27 | TSZ: $\sin$ of CCS, $30 \%$ lost core, minor quartz carbonate vein | sin, cbn chld | tr-1\% |

[^0]
4. 8853.45 HIGH MAG HASALT

Hishly magneticemssijue and fillowed flows,
4.B8 44.40 fillowed flow : spepr to elrey to dark purfle, very fine araincory villowed flow, 1 To 5 rm thick, chloritic phat carhoriate rich selvases are locally weathered rist, ralsins hlorkis, highls frertured rore, lorallus sround corfe Fillow marsins are lorallu varirular find cut hs rumerous whitp carhoriate fijled shririkege fractures. The spes io purfle eolour nf the pillows is ettributed tou weak to moderate silieification arn hematizationg increasiris in iritensitu down sefetion. local bireceiated cories are hishly silirified arid hematized with purite concentrations up to 2 to $3 \%$. The core is strorisl: mashetic throushout. Fillows hecomes less distirict down sertion however weatherfid carhoriate rich seams
 fersist, the rore herones ioraljeffervasively
carbonatiapo down sertion, takiris on a spes hue. The flow spades down edection to a fine srairod massive flow, the comtect is marked bus a 5 rm wide efidotized arid siliceoss, foliated zorie.
44.40 53.00 Massive flow ; dark dreentornew ta deft Furfite roloured, fime dreined, varishls minderately to sirarisis matrietio massive flow. Weatly to moderotifly silicified arid weakls hematized throushout, cut he mumerous efjodoto arid cerhamife filled fierturest 1 to 2\% djesemiriated end putedraj porite throushout. loonal, lirt rurtle coloured, breceiated arid fuyitio zories ajf noted, seriersils less thas s cm think the flow coarsens towards the flow centre, coarser verietias are semerislu jess mastietict
53.00 53.45 Flow contart zone, Fossihls with minor interflow sediment in the lower 15 on of tio zorie. Jiark furfle roloured and wealils brecoisted with rarbonate filled fractures. The lnwer 15 rmis fervasivels calbonatianed with 20 to $30 \%$ discemimsted fysite arid it monimasnetic.

| 19387 | 15.50 | 18.80 | .70 | 2-3 | . 17 | . 12 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19398 | 18.20 | 17.28 | 1.08 | 1 | .17 | .16 |
| 19389 | 17.28 | 18.11 | . 83 | 1 | t, $r$ | to |
| 19.390 | 18.11 | 19,50 | 1.35 | 1~2 | t. | t. r |
| 19391 | 27.98 | 29.10 | 1.12 | 1-2 | tr | tr |
| 1939 ? | 29.10 | 30.12 | 1.0? | 1-2 | t.r | t. |
| 19393 | 30.12 | 31.00 | . 88 | 1-2 | tr | ir |
| 19394 | 53.00 | 53.00 | 1.00 | 1 | tr | tr |
| 19355 | 53.60 | 53.45 | . 45 | 15-20 | , 34 | . 15 |

Flow top breccie : dark speen, very fine grained flow tof hreceia, fossinis a flow hrecejated fillowed flow. Medium to dark sreen, roumder to sutorourided hasaltic frasments generelly with dark grepn to dark furfle coloured peaction rims. Very fine stainer, derk green to locally dart furple roloured midiry frasients eve commoriy variolitir, larger frodmerits are firely fractured, the unit is nomamestietic with ilece ta $1 \%$ disseminated furite sefrerally slons fractures. lofal weak silicification and limmatitir siveat are moted, mon-rarbonatizes. Below 61.0 neters the desree of brecrietion drofs off, heroming a very fine sifiried massive flow witio weak flow breceintiol, the flow is rot by riumermus hiown risponate ind euhedraj forite filled voirts. jhese vojd heve distirirt fale arefro, silicified alteratiar halas 0.5 to 1.5 fm thich. 68. 70 meters : sharf contact with the uriderlsiras suenite.

6B.78 80.06 SYENITE
Fink to red-brown medium srajmed to porphoritif syenitir intrusive. Affrasinately $50 \%$ mbladral 1.0
 Fhenocrusts in a red-brown to pirbl vers fine grairied, vers hard miatris. Rlocks, hishly fractured core, locally arnund rore, rut hu rimmerous carbonate filled fractures. Nonmmstretio with treae dissenirizted furite throushout, The intrusive cortacts ire shatr howevet no chilled marsins are noted.
80.06 95.50 HIGH MAG KASAI.T

Massivo flow : Hart stefer fo locally grem, finf to very fine srajried, highly mashifir messive flow, fut bu numerous cerbonate fillen frictures end minor rarhoribte, efidote filled frartures, loral histhle carbometizedes halos to vissur rarhonste veins prits brectia acomes Hishly masnetic throushout with trace to $1 \%$ risseminatad marite, locells wezty lo moderataly silicified ascocjated with frectured, grey hufd riatrhes. fiflow 90.8 mfters sffroximetely the core tabke the arey hue
 incfeasirills fractururl with 1 to a\% furiff comeentiated alona friatures.
 rifll: lineatud fratisty forvasively





| 19397 | 68.78 | 69.78 | 1.00 | $T E-1$ | $t r$ | tr |
| :--- | :--- | :--- | :--- | :--- | ---: | ---: |
| 19.398 | 69.78 | 70.78 | 1.00 | $16-1$ | $t$. | $t r$ |
| 19397 | 78.09 | 79.06 | .97 | $T E-1$ | .17 | .16 |
| 17400 | 77.06 | 00.06 | 1.00 | $T 6-1$ | 5.14 | 5.14 |


| 18701 | 93.60 | 94.50 | .50 | $1-2$ | $t r$ | tr |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18902 | 94.50 | 95.50 | 1.00 | $1-2$ | $t$. | tr |

masrietism is noted across the contact with the overlaing carbonetifed meters.

MAIN MINEKAI ITEII 7 ONE : $95.50112,00$ meters.
The zorie is hased uFon sinourit aris despee of silicification arid jt is composed of thref members, A.ll zories are well devolofed hut reletively thir, however this mas he normat for the Newnes froferts. firfite values rarise from 1 to $2 \%$ uF to 15 to $30 \%$ Jocallus serierally at fine dissemiriations, The Mrifentiafandt is fourid ist the bese of the zone. 111.68 IMFERIAI. FAlII.T FIANE,
95.50 96.OB TRANSTTIONAIIY SIITRIFIFI FASAIT

Hark farele coloured, hiehly tirecociated hasalt with mirior dark red, hiahle silicified frasments. Stionsit hematized, monerately silirifiod arid pervasively carhonatized throushout. Weakju to moderatels mashetic with $1.02 \%$ dissemiriatud furite. A sharf iricrease ja desree of sijicification je rioted helow g6.0f nieters however the colour and texlise of the uriderlyins roct remains the same.

### 96.08110 .03 MAIN SIIICIFIEU ZONE

[bark furfle colourad, histily silicified, very firiels brecriated materiaj with rumprous white, juristinct, subarisularg wu scale frasments, fossibly rrustel frasmerits.
The zone is based on intenise silicification however is made uf of several distimet jitholosies. The urfer 2.03 meters js marle uf of dert furfle coloured, weakly to moderatels masretic, brecriated basalt which is lorayly fervasiveju carboriztized. A monzonitir iritrusive is also fourid withiri this zorie. This urijt jacke the white frasments common to munh of the anome kelow 98.10 a sudden chanse is noted arid the rock is as descrined above : a dark firfole, hishly silieifiod breccia with atundarit white fresmerits. This urijt mas be intrusive int orisin. Ihis binit is morimastietic, morimestorietized and very unifornjes textured. Minor satche seljow to huff coloured siteration is moted wilin associeted furite velues up to $20 \%$, Furite js hishly valianle frrm? to 20\% gerierally asi firie dissomitiotionse Felow 103.6 Heters the rack teromes jese uniformbe textured end weakly to morteratuly masnetirn hmuever no abruht contact is riotied.
96.0896 .80 llart. purfieg vors fine arajred, hollatized
$1870355.50 \quad 96.08 \quad .58 \quad 1 \cdots 2.17 \quad .10$

| 18704 | 96.08 | 96.80 | . 72 | 3-5 | . 34 | . 24 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18705 | 96.80 | 97.70 | . 90 | TR-1 | . 17 | . 15 |
| 10706 | 97.70 | 98.11 | . 41 | 5-7 | . 34 | . 14 |
| 10707 | 913.11 | 99,31 | 1.00 | $2 \cdot 4$ | . 17 | +17 |
| 10708 | 99.11 | 100.11 | 1.00 | 2-4 | tr | $t r$ |
| 18709 | 100.11 | 101.11 | 1.00 | 2-4 | tr | $t \mathrm{r}$ |
| 18710 | 101.11 | $102 \cdot 11$ | 1.00 | 2-4 | tr | tr |
| 18711 | 102.11 | 103.01 | . 90 | 2-4 | tr | $t r$ |
| 18712 | 103.01 | 103.80 | .79 | 2-4 | tr | tr |
| 18713 | 103.80 | 104.23 | . 4.3 | 15.20 | . 17 | . 07 |
| 18714 | 104.23 | 105.12 | +89 | 3-5 | tr | tr |
| 18715 | 105.12 | 106.14 | 1.02 | 2-3 | +17 | +17 |
| 18716 | 106.14 | 107.07 | .93 | ? - 3 | . 17 | . 16 |
| 18717 | 107.07 | 108.07 | 1.00 | 10 | . 17 | . 17 |
| 18718 | 108.07 | 104.16 | 1.09 | 58 | . 17 | .19 |
| 18719 | 109.16 | 110.03 | . 87 | $5 \cdots 6$ | . 17 | . 15 |

Hjshou varishle moit mede wo af foliatert moteriaj, FGisitule hasajtir, pale ypllow to pirit. hrecria and firik. silicified frasmerits in a chloritic matrix and firik to ged, hishly sjifrified zones which mp fossibly
and hishis silicified, went.ls to moderately
matnetic hasslt. locally westly fervasively cartonatized with 3 to $5 \%$ dissemiriated forite
96.80 97.70 Felsic iritrusiva - morizonitir : red-brown with jndistinct derk sreen mufics pervasivels rerboriatized arid weakly to moderately masmetir. Fractured and weably breceiator with foliated marsins. llffer contact at 50 desrees to the core exis. lower rontant ist 10 deerees to the core axis 97.7098 .11 .45 descrithed bhove fromi 96.08 to 96.80 meters with 5 to $7 \%$ disseminnted fyrite end miroor brown rolnured alteration.
98. 11 103.80 liart furfle, hishly filicifjed trercia with abomorat indistinct white frasments throushout, rossibles rrestal frasments. Non-marhonatized and rinn-mestietic with 2 to $4 \%$ fisseminated purite throughout. Below 102.6 meters arfornimetels the hrercia becomes les: mouformly tentured and white frasmerits are lpes ahuridarit.
103.80105 .12 As described above from 96.08 to 96.80 meters end 97.70 to 98.11 meters. Hiahle brecriated and silicified with forite values up to 15 to $20 \%$. Veriatily masmotic: from rion-marietio to strorisle mestretice, nori-carboriatijafd.
105.12 107.07 Ariproximately 9t\% injetily silicified, ares to furfle treecia with minor red coloured hishly silicified rpasherits. lacally cut by 1 to 5 cm thick, white to red audrtz veinlets. $5 \%$ dark stem, relativelu urialtered material. Fossibly basaltic, locally foorly folisted. Genfrall: hori-mastietir, localls vers $\quad$ bealis mastietic, Furilu qumerally 2 to $3 \%$ locally uF to s\% as firie disspmifiations.
107.07 110.03 tark furfle fuloured, afharitis, hisifles silirified arid hemetjecd buercie. Miriot brown coloured, reting zlteration with purite values uf to 15 to $20 \%$ serierally to 8\% RE firite Jisswmiribtions. Nori-magrietic arid rut bis minor white carbonate fillad fracturte. The lower asi cin of the zorie is disturbed by $35 \%$ ]ite staqe nuartz veirims.

| 18720 | 110.03 | 110.63 | .60 | $3-5$ | .17 | .10 |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- |
| 18721 | 110.63 | 111.69 | 1.04 | 2.3 | .17 | .10 |
| 18722 | 111.69 | 112.00 | .31 | $5-7$ | .34 | .11 |

### 112.00117 .97 FOLIATEI HASALT

Greeny fige srained, hishly foliatad haselt, seriterills moderately masnetirg locally highly mastietice alons magrietite rich harids ... seams. Affroximetely 30 to $40 \%$ of the rore is wispy white to pirik rarbonate srowth hishlighting the folistiong foliation is locells weatls contorted. Amount of carbomate and intensits of foliation decrebses Hown epetion less than $1 \%$ silicification or carbomate laminaticros is roted. felow 116. 80 meters the mastietish drofs off and the foliation is foorly developed. Deneralls 1 to $2 \%$ disseminated Fyrite throughout. Faliation: 112.10 meters ot oo
 the core abis and 1 to. 7 t; metere at so fearees to the corp Rxis.

| 18723 | 112.00 | 113.00 | 1.00 | 1.3 | 60 | t |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18724 | 1.13,00 | 114.00 | 1.00 | 1-2 | +17 | . 17 |
| 18725 | 114.00 | 115.00 | 1.00 | 1-2 | t. | tr |
| 18725 | 115.00 | 116.00 | 1.00 | 1-2 | +17 | . 17 |
| 16727 | 116.00 | 117.00 | 1.00 | 1-2 | .17 | . 17 |
| 18728 | 117.00 | 117.97 | . 97 | TK. 1 | $t r$ | $t$ |

Fine to vers fine srained, locally rarbonatizen and epidotized massive flows.
117.97119 .50 Frecciated missive flow, Fossithy a flow tor breccia. liark sreen to gres hued, vers firie srained to afharitict inshis fracturad and Ionally brenciated massive flow. lacal? to 3 cm thick seame of folisted miteriel with minor siljcification, miatretite arid 3 to $5 \%$ fyrite are rioted, fossibly interflow sediment. Abundant carhonate filled fractures arni minor wispy carboriate srowth. Giprerally rori-masrielis with tidere to $1 \%$ disseminated purite.
119.50 12A. 80 Hishly weathered blocks, hishlu frartured core, locially sfoumd rofe. Greeriq vers firif arairied, massive fiow to possitigy Fillowed flow with $50 \%$ fale sreern eltered patches arourid brown vusse cartoriate arid weatherad zories. Aburidarit late stase white rartunate filled fractures numerous efidote foliaten fractures. Nori-masnetic with trace to $1 \%$ dissemimated purjte.
126.80 143.82 Massive flow to forfhsritic flnw: sreern firie to mediuns srairied, normemestetio massive flow, Fatcine carbonatization arid epjdotization tapers off down seotion. Nori-mastretion with trace to $1 \%$ dissemineted fyrjte, Cut be rumernus efidote and carthonte filled fractures. The flow is porfheritice from 133.6 to 141.1 meters with ? ma to ? rm dizater euhedral feldsfar phemorrusts
143.82 143.87 Flow contart zorie ; very firiesiaired, sheared flow contart zorieg faliated at 50 destefs to the core $\quad$ cois.
143.87 158.84 Massive flow : dark areeriv firie grained, relativelu urialtered, mom-magnetic massive flow. Minor pfidote and rarbonate filled frartures, trace to $j \%$ disseminated pyrite.
158. 84162.96 Flow top hreccia; srepr to fale sreerin BFharitice weilly to moderately silicified, ensular to rourded haseltic: fresmerits in a griay rabhonete matrio.
162.96 363.35 Massive flow to pillowed flow : medjum sreeri, verc fine arainad pasalt.
18729117.97115 .00 1.03 1..
163.35 ENT OF HOIE.


```
0.00 12.19 OUFFRURIIEN.
12.19 26.F8 TKANSITJONAII.Y SII.IOIFIF.I ZONE,
26.5B 74.96 HIGH HAG FASALT.
    74.96 79.65 GYFNITE.
    79.65 89,50 H1GH MAG HASALT.
    89.50 107.63 UPFFE MINFEALIZFFI ZONE.
    B9.50 93.36 TRANSITIGNALIY SII.ICIFJEII ZONE,
    93.36 99.32 UFFHK SJITCTFIFII ZONF.
    99.32 107.63 TRANSITIONAILY SNLJCIFIEII ZONE.
    107.63 131.70 H3GH MAG [ASAI).
    131.70 148.38 MAIN MINEKAI.JZFI 7ONF.
    131.70 148,38 TKANSITIONAII.Y GTI.ICIFIFII 2ONE.
    148.3R 152.54 FOLJATETI IASAIT.
    152.34 ?58,04 HASAIT,
    258.04 FM! OF HOLE.
```

12.19 26.58 TRANSITIONALIY SIIICIFIFII TONE

Fink - sreph silicified zorie. locally ibmirated rherta. rock. Ajteration hrecria alons fractures with rarbonate. Silicification is pervasive riot brecria related. Stronsly masnetic.
12.19 14.10 Green - pirk massive silicifien roct. Carbonate asteration alons frartures with chlorite.
14.10 15.20 Very firie arained areeri - pink 1 aminated silicified zorie Eytansive elteration treccia, Alteration invades rort from fractures. Coritorter lamiriations locally. Laminated 60 dedrees to the core $a x i s, 110$ $3 \%$ furjtie as disseminations and barids aloris fractures.
15.2017 .08 fink - sreef very firie stairied massive silicified zone, riarhonate alferalion alons fractures. locial alterstion hreccis. 1 to $2 \%$ purite.
17.08 18.58 Grey gres-green fine srairied silicified porfheritic rock. May he syenite, UF to $10 \%$ white feldsfars pheriorerusta to 1. it mu.
18.5821.19 Very fine srainen mastivefirk .. srey-green rock with riarrow zolles of pirit. - srey-sreen silicified porfheritir rock 2 to $4 \%$ furite as fracture fillinss arid disseminations.
21.1826 .58 very fine steimed sreen .. firik silicified rock, locally jutense alteration breceia. Carbonate along fractures with chlorite ario efidote, Alteration decreass at buse. Huff alteratiun alons frartures.
26.58 74.96 HIGH MAG HASALT

Lark areen to pale gresi fine grained with both coarse and very finf grairied to aphanitio phisses. Flow rarks are massive with well zorod coaraor centres and chilled, brerciated tofs. Hepreiated vesirular flowtop, Grain size iricreaces down section. Strorisig masretic. Fare cartoriate - allartz stifinters. Trace fyrite. 27.43 To 29.12 meter; : some of cirfiomate alteration arid efidotization. llf to to $2 \%$ furjte as fracture fillings. 54.5058 .67 Gres weathered zoneg most iriterise alons fractures. Ground core at top.

| 19967 | 17.19 | 13.19 | 1.00 | 1-3 | . 07 | . 07 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19968 | 13.19 | 14.10 | .51 | 1 | nil | [i] 1 |
| 19969 | 14.10 | 15.20 | 1.10 | 1-3 | nii] | ri] |
| 19970 | 15.20 | 16.20 | 1.00 | 1-7 | .07 | .07 |
| 19971 | 16.20 | 17.08 | . 88 | 1-2 | ni] | nil |
| 19972 | 17.08 | 18.08 | 1.00 | 1-7 | riil | ris 1 |
| 19973 | 18.08 | 18.58 | +50 | 1-2 | nil | nis |
| 19974 | 18.5B | 19.513 | 1.00 | 2-4 | +07 | . 07 |
| 19975 | 19.58 | 20.58 | 1.00 | 2-3 | nij | nil |
| 19976 | 20. 58 | ? 1.18 | . 60 | 2.3 | riil | nil |
| 19977 | 21.18 | $22 \cdot 18$ | 1.00 | 3-5 | nij | nil |
| 19978 | 27.18 | 23.28 | 1.10 | $2 \cdots 4$ | riil | nil |
| 19979 | 23.28 | 24.38 | 1.10 | 1 | ni] | nil |
| 19980 | 24.38 | 25.48 | 1. 10 | TK- 1 | nil | ri] |
| 19981 | 25.48 | 26.58 | 1.10 | 1-3 | nil | nil |


| 19982 | 28.58 | 27.58 | 1.00 | TK-2 | nil | nil |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 19983 | 27.58 | 29.12 | 1.54 | $T k-?$ | nil | Hil |
| 19984 | 29.12 | 30.12 | 1.00 | $7 k-1$ | .43 | .43 |

 30\％of rock．Sharf eontacti．Weakly mashetic．No fyrite．
79.65 B9．50 HJGH MAG EASAL．T

Medium freined ferk furfle－srey missive flow． Contiriuation of nverlsiris unit．Stronsly masnetic．fines at base to very firie arairied．Sharf contact with underlying alteration zone．

UFFER MINERALITED ZONF：B9． 50 ． 107.63 meters．
Zone is centered on a foorly lamiriated chert． Silicification is forvasive with mirior alteration breccie often acoomfanied by rarbonate alteration overfrimtiras． 3 Zorese moted or，hasis of silicification， UF to $10 \%$ parjte in brectiated，lamiriated zones．

89．50 93．36 TKANSITIONALI．Y SII．ICIFIEO ZONE
$75 \%$ silicified，grey－steen lotallusforsilicified rock． Green unaliered shases resemble vers firie sraifers basalt．Strongly masmetio．Carboriate alteration overfrintiris sijicification 47 rm 7 one at 90,0 meters resembles silidified variolites．Fossible flow breccie． Gase sradational to underlyims zonf．$\quad$ to $10 \%$ fyrjte as fine grairied dis\％eminations and frecture filliriss．

### 93.36 9ず． 32 UFFFR SII．ICIFIEII 7ONE

 to 1 aniriated＇cherte＇zone．Inark firk zones ave slishtis softer．Contorted lamiriationc are rioted．Carboriate alteration overfrintifis siljrifiration in hreceiated zories．Weakly mesmetir． 1 lo $10 \%$ rurife as disseminatinns，hands，amf fracture fillings．

 sjlirified zorie．Mirior hreccietiori．stionsjumesnetic．


| 19986 | 89.50 | 90.50 | 1.00 | $1-2$ | nij1 | nii1 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 19987 | 90.50 | 91.50 | 1.00 | $1-2$ | .51 | .51 |
| 19988 | 91.50 | 92.50 | 1.00 | $2-5$ | .07 | .07 |
| 19999 | 92.50 | 93.36 | .38 | $5-10$ | .07 | .06 |


| 19990 | 93.36 | 94.36 | 1.00 | 1 | ni1 | rii1 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 19991 | 94.36 | 95.36 | 1.00 | 2.3 | .51 | .51 |
| 19992 | 95.36 | 96.36 | 1.00 | $2-3$ | .51 | .51 |
| 19993 | 96.36 | 97.36 | 1.00 | 5.10 | .07 | .07 |
| 19994 | 97.36 | 98.36 | 1.00 | $5-10$ | .07 | .07 |
| 19995 | 98.36 | 99.32 | .96 | 2.5 | nid | nil |


| 19998 | 99.32 | 100.32 | 1.00 | $2 \cdots 3$ | rij1 | nil |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 19997 | 100.32 | 101.32 | 1.00 | 1.2 | nil | nil |
| 19998 | 101.32 | 102.32 | 1.00 | 1 | rill | nil |


| Sample | Fromi | 10 | Lensth | \% Sul | Au | GW |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19999 | 102.32 | 103,32 | 1.00 | 1 | .17 | .17 |
| 20000 | 103. 32 | 104.32 | 1.00 | 1 | rij 1 | nill |
| 20001 | 104,32. | 105i, 32. | 1.00 | 1-2 | riil | nil |
| 2000 ? | 105.32 | 106.32 | 1.00 | 1-2 | .17 | . 17 |
| 20003 | 106,32 | 10\%.00 | . 68 | 2-3 | .07 | . 05 |
| 20004 | 107.00 | 107.63 | . 63 | 1-2 | .43 | . 27 |
| 20005 | 107.63 | 108.63 | 1.00 | TR-1 | . 07 | . 07 |
| 20005 | 129,70 | 130.70 | 1.00 | TR-1 | .07 | . 07 |
| 20007 | 130,70 | 131.70 | 1.00 | TFi | ni] | nil |

131.70 148.38 MAIN MINERAI.I7.EII 7INF.

The zorie, hased on nevelopment of silicificationg is composed of only tramsitional-tupe alteration. The Main Siliejfied Zone is not fresent; individusi fockets of silicificatiori selóm excefor 50rm. Average firite content is thus murh less than mormal. Mirior iricreases noted in silicified rock.
146.1 .1 IMPEKIAL FALII. 1 FLANE.
131.70 148.38 TRANSITIONALI.Y SJIJCJFIEII ZONE


20008 131.70 132.70 $20009132.70 \quad 133.41$ 20010 133.41 134.41 20011134.41135 .44 20012 135.44 136.44 20013 136.44 137,32 20014 137.32 138.32 20015138.32139 .32 $20016 \quad 139.32140 .32$ 20017 140.32 141.40 20018141.40142 .40 $20019 \quad 142.40 \quad 143.40$ $20020143.40 \quad 141.35$ 20021144.35145 .35 20022 145.35 146.11 20023146.11147 .21 20024147.21148 .38
1.00
.71
1.00
1.03
.00
.00

- 88
.00
1.00
1.00
1.00
1.08
.00
.00
.00
.00
.45
.95
.76
.70
1.10
1.17

| $1-2$ | .07 | .07 |
| ---: | ---: | ---: |
| $1-2$ | .17 | .12 |
| 1 | .17 | .17 |
| $1-2$ | .07 | .07 |
| $1-2$ | .17 | .17 |
| $1-2$ | 1.51 | 1.36 |
| $2-3$ | .17 | .17 |
| $1-2$ | .07 | .07 |
| 1 | .07 | .07 |
| $1-2$ | .07 | .08 |
| $1-2$ | .07 | .07 |
| $2-3$ | .34 | .34 |
| $2-3$ | .34 | .32 |
| $T K-1$ | .34 | .34 |
| $1 K-1$ | .07 | .05 |
| $1-2$ | .64 | .70 |
| $1-2$ | .17 | .20 |

zone adiacent to fault zone. 1 to $2 \%$ fyrite $137.32141 .1045 \%$ silicifiration in furfle poliated to massive brecciated rock. Fervasive carbonate Biteratione kork is firiels brecciated chloritic fragments and matri\%

Rare yellow-brown alteration zories. Fractures farallel faliation oftef coritajn clas. Foliation 40 . 50 desrees to the core anis. 1 to $2 \%$ etrite. 138.25 To 139.29 meters : 0.80 meters core recovered.
141.40 144.35 $10 \%$ silicification. Furfle $\quad$ gres with Fink syeritic frasmerite. Silicified frasments in charitic matrix. Fixterisive sheariris. silicified oreccia frasmerits at base. Fervasive carboriate alteration Masrietite fracture filliris. 1 ro $3 \%$ fyrite in frasments arid matrix adazecnt to fault zone. $141 . \sin$ meters : 10 mm clag-grit sean to destres to the tore anis. 143.24 meters: clay-srit seami 60 desrees to the core awis. 143.70 to 144.00 meters : quartz veir.
144.35 $146.1115 \%$ silicified intensely foliated brecria. carbonate and silicified frasments in chloritic shear zorie matrix. Fiasmentis stretched. Foliation often contorted. Numerous claw-srit seams, Fault zorie at 144.12 meters as a clayhall, 145.30 to 146.11 meters : hlocks; hishly fractured core, 0.70 meters care recovery. Trace to $1 \%$ fyrite.
146.11 $148.3855 \%$ silicififid Furfje - srey fresmerits ir a srepri rhloritir matri\%. Frasmerits Bre brecciated foliation harids. Nrimmanfietic. Fervasive carbonate alteration, Intensels folizted. Foliation is hishly contorted, locally forms circalar structures, 1 to $2 \%$ pyrite as disseminations in freaments arid matrix. 146.11 To 146.45 meters i hones sellow brecoisted foliated zone withina furfle matris.

### 148.38152 .54 FOLIATEI BASALT

Firie drairied dark greti foliatod rork with white
carbonate alteration aloris foliatiori. Wisps to complete
cartonate reflacement uf foliztion. Fare silicification
of rarhoriatip alteration rinted. Nonmadrietic. Foliation
60 Hesteps lo tine crif aide lopelly rontorted.
loliztion decreases down sertiori. firades to massive
basalt.
Fiale sreon to medium srey-grpen with few dark speen
fhases and usually fine to very firie srained. Finer
stained fillowed flows arid relatively coarser greiried
massive flows are fourid in the sertion fjows arewela
structured with vesicular" often arisularly brecriated
tofs and less braken interinrs. Vesicular pillowed rones
are occasionally fourd is the , JFFermost section in
otherwise massive flows. These rorks exhinjt wrat
shrirkase-tupe fracturing locally. The treaks are white
carhonate filjed, Fincks are rionimisnetio with a trace
locally.
152.54 169.45 Green firie arajried minssive flow, foorly
develofed isolated folizted zones. Fifies
at. base. Minor leuconene notied.
Normmashetic. Trace to $1 \%$ purite. 155.97
To 156.66 meters : rarbonate . auarta
veirins with carhonete leached. Elockus
hishly fractured rore, 159,72 meters ;
limorite cozted fractures with mirior relay,
168.4J to 168.80 meters : rarhonate
veining with euhedral auarta.
169.45 173.47 Flow coritart zorie. Flow rreccia with
ansular frasmerits. No reaction rins. Locaj
uas breccia with eridote - carboriate -
auartz matiris. Non-masrietic.
173.47 179.30 Very firie srained - medium srairied misesive
flow. Normmastietic.
179.30 184,85 Forfhyritic massive flnw, Continuation of
overlyiris urit. Feldsfar sheriorrysts to 30
mm form $1.02 \%$ of core.
184.85 194.79 Green fire $\cdots$ medium srairied massive flow
continuation of overlyirig urit. Ffidote -.
carbonste fricture fillins commori.
Iricrease in carboriate veinlets towards base
194.79198 .13 liak steen, very fine .. fine stained flow
coritact zone, Nun-masnetic, Chlorite ario
speruler hemetite fracturefillings. Firf.
white carhorete veirlets with
$\begin{aligned} & \text { chalcofurite commori. } \\ & \text { ciary greeri firie grajried massive flow. }\end{aligned}$
Mirior locel flow breccib. Ffinote fracture
filling, Non-masnetic.
211.21258 .04 Dark sreen verts fine grained -- afhanjtic
fillowed fiow. Erecriated flow taf, Fuff
silicifiestion of Fillows roted, Chlofite
and specular hematite fracture fillings.
Fillowed flows poinibit well develofed
glasses selvases and iriteriors with well
develored vecirlas. fiare rartonate -
quartz strinsers with perite.
258.04 ENI OF HOLE.

0.006 .40 DUERFURTIREN.
6.40140 .56 HIGH MAG RASAIT.
140.56144 .19 SYENITE.
144.19 147.55 MONZONITE.
147.55 151.33 MAIN MINEKAL IZEI ZONE,
147.55159 .33 TKANSITIONALLY SIIICJFIEII ZINNF.
151.33163 .75 CHIORITE - CAREDNATE SCHIST,
163.75230 .73 RASAI.1.
230.73 ENI OF HOLE.
6.40140 .56 HIGH MAG EASALT


| 18681 | 34.50 | 35.25 | . 75 | 1 | $t r$ | tr |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18682 | 35.25 | 36.00 | . 75 | $2 \cdots 3$ | tr | tr |
| 18663 | 36.00 | $3 \% .00$ | 1.00 | 1 | tr | tr |
| 18664 | 37.00 | 38.00 | 1.00 | 1 | t.r | tr |
| 18665 | 38.00 | 39.00 | 1,00 | 1-2 | $t r$ | tr |
| 18666 | 39.00 | 39.43 | . 43 | 1 | tr | tr |
| 1866.7 | 39,43 | 40.00 | . 57 | TK-1 | tr | tr |
| 18663 | 62.66 | 63.56 | . 90 | 3-4 | tr | tr |
| 18669 | 90.91 | 91.182 | .91 | TK-1 | tr | tr |
| 18670 | 139.60 | 140.56 | . 96 | TK-1 | tr | t |

89.39 90.22 Interflow sediment : sediments sre dark Grey to black, very fine grairied, and folisted st 59 desrees to the core axis. Furite reflicement is noted in cherty laminations. Lower contiact is sheared ist 54 desrees to the rore sixis.
90.22 140.56 Massive flow ; flow is datly steen - strey ver:s fine grairied to medium grained, arid stronsly masnetic. Gradual conerserimg trend dowri-hole. Interval from 90.91 to 91.82 meters contajns silicified breccia with abundant overfrintins oolomite alteration. Iisseminated furite is noted; localls up to $1 \%$. Ereccia cnntairis yellow brown to fale srey, ansular, dolomitized frasments in a dark sreeri -- sros, basalt matrix. Locelly a vusss texture is rioted.
140.56144 .19 SYENITE

Fed-browng fine srained syenitic intrusive with white euhedral feldspar phenocrests uf ta 3 min. Upper anid lower contact.a are sharf arid irresular.

### 144.19147 .55 MONZONITE

IIER spey to dark green - grest very fine grairied to
fine sraified, strongly magnetic, weakjs chlorjtized and
fervasively carboriatized intrusives. Ahuridarit white to
red-brown rarhoriate filjed fractures are noted. fisite
$\begin{aligned} & \text { trace to } 1 \% \text { in dissemirieted arid fracture fillifis form. }\end{aligned}$
Lower contact is rhilled, hematized, ard silicified,
Lower contart is sheared at hs desrees to the core $3 \% i s$,
Intuusive is prohahly of maric composition anci contaifs
reddish-pirik, fine grained, silicified arid hematized,
puritic assimilated frasments. fyrite trace to $2 \%$ ir
disseminated form.
MAIN MINERAI ITEII ZONE : $147.55-151.33$ meters.
The zorie is thin at 3.78 meters, arid is made uF of
hishly silicified transjtional silicified miaterial. Gerieraljy ? to $3 \%$ disspmiriated furite throushout.
147.55 151.33 TRANSITIONAILY EJI.ICIFIELI ZONE

| lark | sreeri, | vers | fime | grajried | wilt, | ¢elerctive |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | silicification in cartonatized Jaminationsafod clasts.


| 18675 | 147.55 | 148.16 | .61 | $2-3$ | tr | tr |
| :--- | :--- | :--- | :--- | :--- | ---: | ---: |
| 18676 | 148.16 | 149.00 | .84 | $1-2$ | tr | tr |
| 18677 | 149.00 | 149.99 | .99 | $1-2$ | 17 | 17 |

Carhoriatization is indicated by a cream colouration whereas silicification has a sreser hue. Hematization accompanies silicification es a purple tint in more hishly altered rork. Furite coritent averases $1-2 \%$ with UF to 3\% locally in silicified sections.
147.55 148, 16 freccis $: 5$ to $10 \%$ sjlicification arid 2 to 3\% purite in disseminated furm are rioted. Matrin is dark green .. grey, firie srained, stronsly masnetic, chloritized arid pervasivels carbonatized with hotin furfle grey, very fire srairipó silicified, rounded frasments arid reddish-firik' vers fine grained, silicified, subrounded prasmerits. Freccie is localls weakiy foliated at 66 dearees to the core axis.
148.16 149.99 Ereccis : $90 \%$ silicification arid 1 to $2 \%$ Fyrite jn disseminated and fracture filling form sre roled. the desree of silicification bay be descibed as variable. Erercia is dark grey to purfle sres in colourg silicified and felvasively carboriatized, arid is locally masrietic. Breccia contains dark ares, angular silicified frasmerits: uF to 0.5 chit in a Fale ares, very fine grajned to aphanitic, dolomitized arm silicified matrix. locally the breccia contains red-hrown to fink, afharitic, arisular to sutarisular frasments. uF to 0.3 chin which mas be frasmerits of trecciater syeritic iritrusive, A weakly develofed foliation is moted at 47 desrens to the rope $3 \% i s$.
149.99151 .33 Ereceia ; $40 \%$ sijicification and pyrite trace to $1 \%$ in disseminated and fracture fillins form are noted. Freceia is dark sres to dark sreen - gres to fale grey in colour, variatly silicified, locally masnetic arod moderately to stronsly
 Ahundant white to firik carbonate veinlets and carboriate filled fractures are roted. Greccia coritairs dart sres, very firie srained to afharitic, weakly silicified, ansislar frasmerits in a pale srey afhanitic, variably silicified matri\%.
51.33 163.75 CHLORITE-CAREONATE SCHIST

IIart Furple - srey hishly foliated zorie coritairifis siliceous frasmeris of possinle supritic composition. Fyrite contents averame trace to $1 \%$ locally uf to $3 \%$, 159.88 MCKENNA FAlILT FLANF.

| 18678 | 149.99 | 150.60 | .61 | JK-1 | .17 | .10 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| 18680 | 151.33 | 152.10 | .77 | $T F-1$ | $t r$ | tr |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18681 | 152.10 | 152.85 | .75 | 1 | $t r$ | $t r$ |
| 18682 | 152.85 | 153.85 | 1.00 | $1 F$ | $t r$ | tr |
| 18683 | 153.85 | 154.85 | 1.00 | $1 F$ | $t r$ | $t r$ |
| 18684 | 154.85 | 155.85 | 1.00 | $T F$ | $n i 1$ | $n i 1$ |
| 18685 | 155.85 | 156.85 | 1.00 | $T R$ | $t r$ | $t r$ |

Sample From To Leristh \% Sul A
151.33 152.85 2one contains dart to purple - sirey 2 to 3 mm alternatiris bands formins a moderately develofed foliation at 62 desrees to the core axis. Foliation is convolute ano indicates flastic deformation. Zorie coritairis red-hrown to pink, siliceous, subarisular to sutrourided frasmerits of Fossibls brecciated syeritic intrusive. The rock is pervasively cartionatized, arid moderately to stronaly chloritized, Hematite alteration is nated in dark sre: to furfle .. srey coloured bands, Locally hrecciated sectiotis contajn increasins dolomite alteration ario pyrite content. Fyrite trace to $1 \%$ locally uf to $3 \%$.
152.85 158.85 Zorie contains dark srey to dark sreer srey to fale sreden coloured baridsr uf to 3 mint forming a stronsly develofed, corivolute foliation. The rock is serierally rhloritized, with weabls silifified arm hematized barifs. Fervasive carboriatization ario carbonate filled fractures are roted. The zorie is foliated at 32 desrees to the core axis at 155.13 meters, 44 desrees to the core axis at 156.34 neters, and 35 dearees to the core axis at 157,45 meters. The lower conlact is a mulonitic shear at 62 desrees to the core axis.
158.85 159.34 Freccia is foliated at 60 desrees to the core axis and contains redrbrown to pirit., arisular lenticular ssenitic frasments in a rark green to Fale छreern chloritized matris: zorie contairs hemetite alteration, chlorite alteration, arid pervasive carbonatization. Purite trace to $1 \%$ in vers firie arairued, disseminated form. Zone is sjmilar to the interval from 151.33 to 152.85 metars.

4 159.34163 .75 Zone is strongls falieted et 57 degrees to the core a\%is and contains illternating 2 to 3 min tiarids of chlorite and white to red-brown cartonste, The rock is locally brecciated and fervesively carbonatized with increasing fyrite rontent associated. fyrite trace to $1 \%$, Jrealjy up to $3 \%$ ir very pine swained disseminated arid fracture fillins form, Mchermerauli: clay-grit serim is rinted ot 159.88 meters at. 70 destees to the core anis. Mirior shears are noted at 161.97 meters $3 t 70$ destees to the coro avis, at 162.95 metels at A.S degreus tis life core asis abid et 163,75 meters at sia desteps to the core

| 18686 | 156.85 | 157.85 | 1.00 | $T R$ | $t r$ | tr |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18687 | 157.85 | 158.85 | 1.00 | $T R$ | $t r$ | tr |
| 18686 | 158.85 | 159.34 | .49 | $T R-2$ | 17 | .08 |
| 18689 | 159.34 | 159.88 | .54 | $T R$ | .34 | 18 |
| 18690 | 159.88 | 160.90 | 1.02 | $T R-1$ | $t r$ | $t r$ |
| 18691 | 160.90 | 161.97 | 1.07 | $T R \cdots 1$ | $t r$ | $t r$ |
| 18692 | 161.97 | 162.95 | .98 | $T R-1$ | nil | nil |
| 18693 | 162.95 | 163.75 | .80 | $T R-1$ | $t r$ | $t r$ |

## From To

$\qquad$

## axis.

163.75 230.73 BASALT

230.73 ENI OF HOLE.
Sample Fram To leristh Fisl Au GW



# AMERICAN BARRICK RESOURCES CORPORATION LTD. <br> An Annual Report on Exploration Activity for the Year 1985 on the <br> Canamax Option <br> (in part of Harker Township, Ontario) 

# RECEIVED. <br> APR 2: 1986 <br> MINING LANDS SECTION 

N.E. Downey<br>A.W. Workman

November 15, 1985

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## INTRODUCTION

THE CANAMAX OPTION is a 8 claim block located in Harker Township, Larder Lake Mining Division, District of Cochrane, Ontario. The property is about 50 km . east of the town of Matheson. Access is gained by logging road for 2.5 km . south of highway 101.

Barrick Resources' 1985 exploration program included helicopter-borne magnetic and VLF-EM surveys, aerial photography, diamond drilling and boundary surveys. This report will describe these programs.

## HISTORY

The claim group was staked in the name of Amax Potash Ltd. in December, 1978. Extensive gold exploration activity has taken place in the general area of the property since that late 1930's. Of greatest importance is the activity since the acquisition by Amax. In July of 1979, Amax carried out a geological mapping and prospecting program. This work reported the presence of a 50 metre thick flow breccia or mafic tuff horizon on the southwest corner of the property. In November of 1980, Amax conducted a ground magnetometer survey over the property.

In 1983, Camflo Mines (now Barrick Resources), optioned the property under a joint venture agreement with Lenora Explorations. In 1983, Barrick conducted linecutting, geological, VLF-EM, and magnetic surveys over the property.

## REGIONAL GEOLOGICAL SETTING

The volcanic rocks of Harker and Holloway Townships are of Archean age and belong to the Superior Province of the Canadian Shield. This particular region is referred to



# BARRICK RESOURCES CORPORATION 

CANAMAX PROPERTY
1000102000
as the Lightning River District. The stratigraphy of the Abitibi Belt has been subdivided as follows (Jensen, 1980):

| UPPER | (Timiskaming Group <br> SUPERGROUP <br> (Blake River Group <br> (Kinojevis Group <br> (Stoughton-Roquemaure Group |
| :--- | :--- |
| LOWER | (Porcupine Group |
| SUPERGROUP | (Hunter Mine Group <br> (Wakewada Group |

The two supergroups represent successive volcanic cycles from ultrabasic komatiitic volcanism to acid calcalkalic volcanism. Each cycle is topped by a dominantly sedimentary (tuffaceous), sequence which reflects relative quiescence is extrusive activity.

The tectonic regime in which the majority of these rocks are located is one of regional subsidence. The formation of a broad, east-west trending synclinal basin is attributable to this subsidence. The Destor-Porcupine Complex forms the north boundary of this basin, and the south side is marked by the Larder Lake Complex.

A few later intrusives have been emplaced into the volcanic succession. Compositionally, these•rocks range from pyroxenite, diabase and lamprophyre, to diorite, granite and syenite. The mafic and ultramafic varieties tend to be found as narrow dykes whereas the intermediate and felsic varieties are more common as larger, more rounded bodies.

The Destor-Porcupine Complex strikes approximately 075 degrees across Harker and Holloway Townships in the same approximate position as highway 101. Rocks to the south of this complex, or zone of dislocation, have approximately the same strike and dip 75 to 85 degrees south. All units top south - there has been no reported evidence of overturning in this area.

## AIRBORNE GEOPHYSICS

Geophysical Surveys Inc. of Quebec City, P.Q., carried out a helicopter-borne magnetic and VLF-EM survey of 4.3 line kilometres over the property in July 1985. Survey lines were spaced approximately 200 metres apart.

Instrumentation installed in the Astra helicopter was a vertical magnetic gradiometer, a VLF-EM system, a graphic recorder, a radar altimeter, and a video-tape recording system for flight path recovery. The magnetic and EM senors were towed 30 metres below the helicopter at an average height of 45 metres above ground. The total field and quadrature components of the VLF electromagnetic field were recorded simultaneously from NAA, Cutler, Main, and NSS, Annapolis, Maryland.

The following maps, at a scale of 1:12,000, were prepared from the data:

- Isomagnetic contours of total field
- Isomagnetic contours of the vertical magnetic gradient
- The total field and quadrature profiles of the VLF-EM.


## Total Field Magnetics

The Canamax Option is characterized by a generally high magnetic field. In the northern part of the property, contours above 59,500 grams reflect south-westerly striking magnetic basalts. These are very iron-rich tholeiites. An elongated, highly magnetic body in the south-central portion of the property is probably of intrusive origin. Composition is presently unknown.

## Gradient Survey

The gradient survey reveals some irregularity in the contacts between highly magnetic rocks and rocks with relatively lower magnetic properties. This irregularity may be due to north-south faulting. One such example strikes approximately 195 degrees and crosses the baseline at about $38+00 \mathrm{~W}$. This structure may be on extension of the Teddy Bear Creek Fault.

## VLF Survey

In general, the VLF survey offers a confusing picture. Some strong cross-overs and near cross-overs indicate the possibility of conductors striking more east-westerly than north-southerly. Indeed, north-westerly trending conductors have been noted on other Barrick Options and claim blocks. However, these features remain unexplained. Diamond drilling on other properties held by Barrick has failed to adequately explain their affinity. Despite this, these conductors are almost assuredly of structural rather than formational or lithological relation.

## AERIAL PHOTOGRAPHY

In May of 1985, Aquarius Flight Inc. conducted an airborne photographic survey of the property. The purpose of this program was to develop detailed topographic maps and provide photographs for accurate field control. Air photos at scales of 1:10,000 and 1:20,000 were produced. Mosaics were constructed as a base for the airborne geophysical program. A topographic map at a scale of $1: 5,000$ was produced by Golder Associates in June of 1985.

## DIAMOND DRILLING PROGRAMME

A total of 3 diamond drill holes was completed by Barrick Resources in 1985, for a total of 794.37 meters of drilling. The purpose of the program was to evaluate areas of low magnetics and establish stratigraphic control in an area lacking outcrop. All drilling was conducted by Philippon Diamond Drilling Inc. of Rouyn, P.Q., using BQ wireline equipment.

DDH Mc. $85-245$ collared at $46+00 \mathrm{~W} ., 1+25 \mathrm{~N}$., and was drilled to a final depth of 260.36 metres. This hole was collared in a weak magnetic low to evaluate an area of abundant intrusive activity. The hole encountered a series of massive, locally glomeroprophyritic, and pillowed basaltic flows. these were cut by numerous dioritic and granitic intrusives. No significant alteration was encountered. A total of 23 samples were assayed. One sample returned a value of $0.34 \mathrm{gms} . /$ ton.
Mc.85-256 was collared at $39+64 \mathrm{~W} ., 10+25 \mathrm{~S}$., on the southeast corner of the property of evaluate a magnetic low and intersect a suspected sedimentary horizon. the hole was drilled to a final depth of 422.45 metres. The drill hole intersected a series of massive and pillowed basaltic flows, dioritic and monzonitic intrusives. Narrow sections of interflow sediments were encountered above 91.89 metres. Alteration zones were encountered from 62.89 to 65.31 metres and 82.71 to 92.23 metres. These zones were marked by brecciation and silicification with increased pyrite concentrations. A 0.48 metre wide sample taken at 91.41 assayed $4.80 \mathrm{gms} / \mathrm{ton}$. A 1.08 metre sample with quartz veining taken from 238.26 metres gave a value of 2.15 gms./ton. All other samples were less than 0.69 gms . A total of 72 samples were assayed for gold.


## BARRICK RESOURCES CORPORATION

CANAMAX DRILL HOLE LOCATIONS


DDH Mc. 85-246 was collared at $39+63$ W., $8+45$ S. to over cut hole Mc. $85-256$ and extend the stratigraphic section. The hole was drilled to a final depth of 111.56 metres. The hole encountered a series of massive basaltic flows cut by dioritic intrusives. A narrow breccia horizon was encountered from 100.05 to 110.47 metres. No significant alteration was encountered. One 1.08 metre sample was taken for assay. It returned a gold assay of $0.34 \mathrm{gms} /$ ton.

## SURVEYING

To accurately define the location of the claim block Barrick personnel undertook to cut and survey the perimeter of the property. In addition to this surveying, several leveled points were established to provide ground control for the aerial photography.

## CONCLUSIONS/RECOMMENDATIONS

An alteration zone was detected by drilling near the south boundary of the property. This zone dips onto adjoining property to the south. Its depth potential on this property is thus limited. Nevertheless, its strike extend is uncertain.

The northern portion of the property overlies the down dip extension of the alteration zone detected on the adjacent property to the north. Additional drilling is required to determine the nature of the alteration zone underlying the northern portion of the property and to determine its gold content.

The location and extension of the zone on the southern boundary can best be determined by surface geological methods.

## REFERENCES

Conquer S. and Workman A., Summary Report on the Lenora Exploration Ltd. Harker Township Property, 1985.

Jensen L.S. and Langford F.F., Geology and Petrogenesis of the Archean Abitibi Belt in the Kirkland Lake Area, Ontario; O.G.S. Open File Report 5455, 1983.

Workman A.W., The McDermott Gold Deposit, C.I.M. Distribution, 1985.

## HARFICK RESOURCES COKFORATION


0.0040 .35 OUFREUKHFN.
40.3571 .98 EASALT.
71.98 BO.52 GFANITE

BO.52 B2. 2 B B HASALT.
02.28 84.6? GRANITE.
84.62 39.60 HASAI.T.
89.6094 .98 GRANITE
94.9899 .11 FASAL. 1.
$99.11 \quad 102.45$ GKANIII
$102.15 \quad 133.10$ HASAI.T.
133.10139 .27 HJOFITE.
139.27144 .23 HASALT.
$144.23 \mathrm{~B}, 23$ GKANIIE.
152.:3 173. AE HASALT.
173.45 201. E2 HIGH MAG HASAI.I
201.52 2BO.3S HASALT.
260.36 ENI OF HOLE.

From To
To
0.00 40.35 OUEREUFIUEN

## $40.35 \quad 71.98$ BASALT

Massive flow Fossibly basaltic composition intrusive or suh-volcanic intrusive $:$ dark grepry firie tomedium srained, euhedril to subhedral greriular, subofhitic texiture of dark sreen mafics and fine white iriterstial feldspar. The sramular testure is lost, alons 1 to 5 cin thick halos to cartonate aridefidote filled fractures and alons rumerous 0.1 to 20 em thick sranitiref felsic intrusives, Felsic jntrusives are pirity to red, very firie srained to coarse sraimen and mesmetic with sharr coritacts, carbariatized halos ard trace to $3 \%$ dissemiriated furite. Generalle: non-masrietic throushout with trace to i\% dissemiriated furite. The core is blocky hishla fractisred arid locally srourid with ifttle core loss. Gradual roarsening trend down-hole. 69. 11 to 69.7月 meters araritio intrusjve at 65 to 75 desress to the core anis.
71.98 RO. E2 GRANITE

Granitic composition intrusive ; qimp io red afhanitic to localls fesmatitic, siliceous intrusive. Aburidarit muscovite a! subhedral masses arif blehs arid firie dissemiriations with associated minor rarboriate arid quartz noted throushout. locally larser masees of felted muscovjte are invaded hy cm srale feldsfar crystals - fesmatific. Flourife efid masfietite are rioted as accessory mirierals, 0 to trace purjte, Numerous chlorite roated slif faces resultiris iri blocks, hishly Practured core. The interior of the iritrusive hecomes pale Hellow coloured and hishly siliceous with a finte white oversrowth $-\cdot$ Fossithy alhite Variahly masrietic from non-mashetio to hishly masfotio assoriated with srowth of acicular minsrietite crustals. Intrusive contarts ara sharf arid well develoferi, chilled mersiris are noted. Upfer contact at 70 dearees to the core axise lower contsct at 40 desrees to the core axis afproximately,
llark sreeri, mpdium grained, suthorbitic textured missive flow - basaltic comfusitinn intrisive as described above

| 18731 | 71.98 | 72.98 | 1.00 | TK-1 | nil | nil |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 18732 | 72.98 | 73.97 | .99 | $T k-1$ | nil | nil |
| 18733 | 78.52 | 79.52 | 1.00 | $7 k-1$ | nij | nil |
| 18734 | 79.52 | 80.52 | 1.00 | Tk-1 | nil | nil |

from 40.35 to 71.98 meters. Normmannetic witi tidef to $1 \%$ disseminated fyrite.

### 82.28 84.62 GRANITE

Firik tos red, medium arainfe afznitic intrusive os described ehove from 71.98 to 80.52 meters. Unjike the ahove iritrusive no fale yellow coloured, altered centre is rioted, the intrusive js relativels uriformis textured throushout, Generalls strongls masrietic with mashetite crystals throushout. O tra trace ryrite. Uffer contact at 45 desrees to the core anis, jower coritact at 40 despees to the core $3 x i s, \quad 82.43$ ro 82.80 meterg soft. rark sreeri to black, hiotite rich, rormasmetic mific intrusive.

### 84.62 89.60 HASALT

Medium stained to localls roarse stained, massive fiow to basaltic composition intrusive as described above from 40.35 to 71.98 meters. seversl thirigraritic intrusives are noted includins a 45 cm thick intrisive from 88.51 to 88.96 metere at 45 desreps to the core axis apfrosimately.

B9.60 94.98 GFANITE
As descrihed athove from 71.98 ta RO. 52 meters includins a Fale yellow sreen altered centre and locis weakly epidotized zories. Locally fesmatitir with feldspar crustals uf to 1.5 cmi loris, The iritrusive ceritre is
 to the core axis, lower contact at 50 dearees tio the

4 core axjm.
$94.98 \quad 99.11$ EASALT
Dark greeri to hleckg fine to very firie srairied, glomeroforfhoritio massive flow, ciusters of white to Fale orarise, euhedral to aritiodrai, 1 mim to 1 cm diameter feldifar pherioresste noted throushout. Relatively unaltered with minor carhoriatization alons rontacts with
 frartures. Normasmetir with trace tor i\% disseninated fyrite.

From To
99.11 102.45 GFANITE

As described ahove from 71.98 to 80.52 meters, Gerierally nonmastietic with o to trace fyrite, flockut lishly fractured core arid locally ground core obscurins contacts

### 102.45133 .10 EASALT

[lark sieen to black, fine to very firie grained, missive flow hecomins forfistitic to slomeroforfhyritic dowri section 3 as described shove from 94.98 to 99.11 meters. Fatches of biotite rioh material with included hasaltio frasments rioted throushout. lidistinct feldsfis phenocrusts are noted below 104.2 meters apfroximistels, increasing in size and freauencs down section taperins off ssin below 113.5 meters. Nom-masnetic with trace to $1 \%$ disseminated fyrite associated with biotite pirf zones. Minar carboriate filled fractures arid locallw wealy cartonate brecciated, Numerous chicale, staritic intrusives cut the core. 126.33 to 127.31 and 130.79 to 131.18 meters : sranitic iritrusives.

### 133.10139 .27 [IIDETTE

Horribleride diorite with affrosimetely 70 to $80 \%$ mafics, predominarity horntilende - apfiritie. Ilark green to black, fine srained with sharp intrusive contacts arid foorly develofed chilied marsiris. The upfer and lowet 50 to 60 che of the iritrusive exhibit distiricte rounded, mm to cm scajeg vesicular like bodies fijled with sraritic material. Thrse are carbariatizad andmasnetic with acicular masnetite crustals. Numerous 0.5 to 4 cm dismeter subrourifed basaltio frasments are included throushout the intrusive. Fervasivels carboriatized throushout, rori-masmetic becomins weakls masnetic below 137.8 meters affroximatels. Trace to $1 \%$ dissemiriated purite.

### 139.27144 .23 EASAL

> Very fine stajned, glomeroporghuritic massive flow as described ahove from 102,45 to 133.10 meters Non-magrietic and relatively unaltered with trace dissemiriated fyrite throushost.

| 18735 | 133.10 | 134.10 | 1.00 | $T F-1$ | tr | tr |
| ---: | :--- | :--- | :--- | :--- | ---: | ---: |
| 18736 | 134.10 | 133.10 | 1.00 | $T K-1$ | ni1 | ni1 |
| 18737 | 137.27 | 138.27 | 1.00 | $T F-1$ | tr | tr |
| 18738 | 138.37 | 139.37 | 1.00 | $T F-1$ | $t r$ | $t r$ |

From 10
Smiple From To Leristh \% Sul Au GW
152.23173 .45 EASALT


| 18739 | 158.36 | 159.36 | 1.00 | $T K-1$ | $t r$ | $t r$ |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18740 | 159.36 | 160.67 | 1.31 | $2-3$ | $t r$ | $t r$ |
| 18741 | 160.67 | 161.67 | 1.00 | $T K-1$ | $t r$ | $t r$ |
| 18742 | 163.66 | 164.41 | .75 | $T F-1$ | .51 | 138 |
| 18743 | 164.41 | 165.41 | 1.00 | $2-4$ | $t r$ | $t r$ |
| 18744 | 165.41 | 166.39 | .98 | $2 \cdots 4$ | $t r$ | $t r$ |
| 18745 | 169.66 | 170.58 | .92 | 2 | $t r$ | $t r$ |

rark sreen to black, firie areined tecomins medium srained down section, masnetic massive flow, locally 1 to 5 mm dianeter white feldspar fhenocrusts are noted. Fine srained chilled mersins several meters thicke no flow top or flow bottom precciation is rioted, Variatily Weakiy to stronsiy masmetic throushout, Relatively unaltered and virtualls nori-fractured with trace to $1 \%$ disseminated pyrite. Several 2 to 30 cm thick sraritic intrusives cut the unit.
201.35 201,52 Interflow sediment to 'cherty' gediments. furfle-srey very fine greined to aphenitic, hishly silicified or siliceous, nori-foliated interflow sediment Reletively unalteres, non-masnetic with 3 to $5 \%$ furite fic crustalilife lenses arid disseminations. Sherf lower contact with uriderlyiris fillowed flow at 30 degrees to the core axis.

### 201.52260 .36 BASALT

Gresn, fine to very fine grained, fillowed, massive and slomeroporfhyritic flows. Cut by several graritic intrusives.
intrusives. Fillowed plow green to dark greent very
fine graincd fillowed flow with thifi, senerally less than 1 cm, thicki epidotic selvases arid moderately to hishly silicified fillow cores. Minor cartonate filled fracturas arirl epidotic fatches, generally non-carbonatized arid ron-mssrietio with trace to $1 \%$ dissemiriated perite, 204.97 To 205.75 meters grinitie intrusive et 60 to 85 dearees to the core asis with 5 to 10 cm thick. carbonatized and fyritized halos ifi the surrounding hasalts. 206.30 To 207.83 meters: hishis sheared, fractured arid carhonatized basalt with a thingranitic intrusive from 206.83 to 206.95 meters at BS desrees to the core sxis. This zorie has a distiruct srey hue due to strong carboriatization. Carboriate filled fractures are suh-parallei al 70 desrees to the core akis approximately. $1 \%$ sfecular hematite, moderetely masfietic with 2 to $3 \%$ dissemineted Fyrite throughout, Saveral cm scale granitio: intrusives are noted hetween 212.10 and 213.50 meters. Helow 213.50 metere, affronimatels, the desree of carboriate frarturiris increeses brid fillows are hishly disturbed. The hottom 15 cm is a

| 18748 | 20.7 .97 | 204.97 | 1.00 | $T k-1$ | $t r$ | $t r$ |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18747 | 204.97 | 205.75 | .78 | $T R-1$ | .17 | .13 |
| 18748 | 205.75 | 206.30 | .55 | $T F-1$ | .17 | .09 |
| 18749 | 206.30 | 206.95 | .65 | $2-3$ | .34 | .22 |
| 18750 | 206.95 | 207.83 | .88 | $2-7$ | .17 | .15 |
| 18751 | 207.83 | 208.83 | 1.00 | $T R-1$ | $t r$ | $t r$ |
| 18752 | 219.82 | 220.45 | .63 | $3-4$ | nil | nil |

 plow. predomiriantyy flow tor ureccia. rainedi relativels unaltered and atsive flow. cut hy severa Trace to $1 \%$ dissemiriated fyrite.
260.36 ENJI UF HOLE

NOTE: tetween the 789 and 808 footase narkers 3.24 m of core is misgirig dile to mis-marked core..

The hole ends at 260.36 m however approximatel: 2 peet of hishly sround core is noted below this foint..

BARRICK RESOURCEB CORFOFAIIUN

| Co-ords! | 9154.5 | 5046.6 |  |  | DIAMAND DRILL RECORD |  |  |  |  | HOLE NO.: | HC.85-246 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Azimuth: | 364.5 Des. |  |  |  | 8ection: 3975W |  |  |  |  | Propertyi | Consmar Dption |  |
| Dipl | -60.0 Des. |  |  |  | Core sizel bn |  |  |  |  | Locationt | 39+63W | 84448 |
| Elevation: | 5004.2 |  |  |  |  |  |  |  |  |  |  |  |
|  | 111.6 |  |  |  |  |  |  |  |  | Nate started: Date Completedi Lossed by: | $\begin{aligned} & 17 \text { sept., } 1985 \\ & 20 \text { Sept. } 1985 \\ & \text { N. Howney } \end{aligned}$ |  |
| Lensth: |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mensurament: | Metric |  |  |  |  |  |  |  |  |  |  |  |
| Comments 1 | Casing left in hole |  |  |  |  |  |  | Depth | Azimuth | Mip |  |  |
|  |  | Depth | Azinuth | nip | Depth | Azjmuth | IIP |  |  |  |  |  |  |  |
|  |  | 61.00 |  | -51.0 | 88.70 | 358.0 | -53.0 |  |  |  |  |  |  |  |

0.0036 .56 DUERBURTEN
36.56 48.31 MIORITE.
48.3153 .85 RASALT.
53.8577 .54 DIORITE.
77.5490 .15 BASALT,
$9 \quad 90.15100 .05$ DIORITE,
100.05111 .56 EASALT.
111.56 Meters ENII OF HMIE.
0.00 36.56 DUERRURLIEN
36.56 AB.31 MIORITE

Medium to robrse srained, dzrk sres-grefn - haack
messiva intrisive rock. Chioritized mafics up to 4 me in felsic matrix, Eage is black mornblendite, sharp contact with underlsins baselt. Chililing not evident. Epidote fracture fillins Locsily manetic. Firies at bese, Block:A, hishly practured core.

### 48.31 53.85 BASALT

Fine to very fine arsinedy dark green massive bsagit. Blocky, hiahly fractured coret sresse arid mud covered core, Locally weatily masnetic. Quartz and eridole Practurg Pilling. Foliation noted locelly.
50.2850 .95 liorite, Epidotized metrix. sharfintrusive contacts. Stroridy masnetic.
53.85 77.54 OIORITE

Fine to mediun srained, dark srey-sireeri missjve intrusive rock. Rocks are rion-masnetic with etrace locally. Felsic matrix locally epidotized. Fare auartz epidote practure fillinas. As murh as o.6i meters of around core at 62,79 meters.

77. 5490.15 BASALT

Oreen fine grained massive basalt. Abundant epidnte ouertz frarture fillins. Local epidotized zones. Lacaliy mesnetic. Minor local foliated zones. Fosethle selvases.

### 90.15100 .05 MIORITE

Gres-areen fine sraified massive jutrusive rock. Non-masrietic. Felsic matrix, Fiare carbonate .. martz stririsers. Tof contact is auartz - carbonate veirilet. Firies it bese.

### 100.05111 .56 BASALT

Fale sieen to medium gres-green with few dark sreen phasts and usually fine to vers fine iftined. flow rocks are massive with well zoned coarser centres and chilledg
breciated tors. Lavas are rinnomasietic, iocaliv weakis
to moderately mashetic (flow marsins, selvases, etc,).
 6 cm. Matrix is dark areen chloritic. ofter with epidote arid carmoriate, llffer sertion coriains fractured slasss frasments. Frasmerits develof reaction rims down section and berome indistinct at base. fale epidotized and silicified zone noted. Norimasnetic. Guartz efidate carbonate strinsers.
110.47 111.56 Green fine srained massive flow.

Gradetional to overlying unit. Locally
mesnetic. Qusrtz earbonste erjdote
stringers.
111.S6 END OF HOLE.


## HARRICK REBOURCE CORFORATION



```
0.00 41.15 DUEREUKEEN
41.15 62.89 BASALT
62.B9 65.31 UFFEK MJNERAI.IZF.U ZONE
62.89 64.37 UPFER SILICIFIEII ZONE.
64.37 65.31 TRANSITIONALLY GILICJFIEII BASALT
65.31 75.80 BASALT.
75.80 82.71 CHEFTY SEHIMENTG.
B2.71 92.23 UFFFER MINERALIZEII ZONE.
B2,71 91.89 TRANSITIGNALLY EILICIFIEII ZONE.
91.89 92.23 YRANSIIIONALIY BILICIFIFI GASALT.
92.23 99.20 EASALT
99.20 100.63 HONZONITE.
100.63 129.24 EASALT,
129.24 151.17 U10RITE
151.17 292.93 EASALT.
292.93 298.00 LAMPROFHYRE.
296,00 307.34 n10RITE
307.34 315.09 BASALT.
315.09 317.05 TKANSITIONALLY SILICIFIFI ZONE,
317.05 31.9.45 MONZONITE.
319.45 353.95 EAGALT.
353.95 365.19 IIORITE
365.19 371.50 BASALT.
371,50 393.37 B10KITE
393.37 422,45 HIOH MAG HASAIT.
422.45 END OF HOLE.
```


65.31 75.80 BASALT
Fale areen to medium grey-areeri with few diark areen
phases and usually fine to very firie grejned. The
section is domiriantis fillowed flows with few relatively
coarser srained massive varieties. fillowed flows
exhibit well develofers slassu selvises shdiriteriors
with well developed vesicles Lavas are non-masnetic,
localls weakly to moderately masmetic fflow marairis,
selvases, etc.l. Fillowed flow is moderately to
stronsly silicified, beconing feler coloured with
silicification. Afharitic foliated flow botton with 2 to
$5 \%$ pyrite es laminations arif fracture filliris, Sharf
contact with underjsins sedjments, Fare carbonate -
ausrtz strinsers.
75.80 82.71 CHERTY SEIIMENTS

Werk spes - spey-green with minor bleck bands. Narrow sreen sish beds are noted. Narrow buff bleached ciarhonate elteration zories occur adjecent to fractures. Laminated 50 desrees to the core aris. Zone does not aprear to be silicified. Graded beddins nut present. Trace to $3 \%$ pyrite concentrated alons laminations. Minor carbonate .auartz filled fractures.
B1.65 82.71 lark green very fine drained - fine srained massive flow, Vesicular flow tof, Epidote fracture fillins, Sharp base with UFFEF MINERALITFI TONE. Non-masnetic. Trace furite.
82.7192.23 UFFER MINEGAI.JZEII ZONE.

Zone is dominantis composed of silicified 'cherty' mediments. Fyrite is senerally low, but alteration is well developed. Section is rion-mesrietic, zorie extends into underigins fillowed flaw.
82.71 91.89 TRANSITIONALIS SILICIFIEII ZONE

Grey - dark sreen foliated cherty rock. Amourit of
silicification is untrown hecause of the oilsinal 'chert:' nature of the rock, zone is also srease coated. B2.71 86.41 Fossibly 80 to $90 \%$ silicification in sfay lamiriated 'cherts' rock. Lamination gerierally well perserved at. $4 \pi^{2}$ dearefs to the core ainis. Silica dumifins commori. Drily local brecciation. Frown dolomitization

| 20036 | 65.31 | 66.31 | 1.00 | TR | tr | tr |
| :--- | :--- | :--- | :--- | :--- | :--- | ---: |
| 20037 | 74.80 | 75.80 | 1.00 | $1-3$ | nil | riil |


| 20038 | 75.80 | 76.80 | 1.00 | $1-2$ | tr | tr |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 20039 | 76.80 | 77.80 | 1.00 | $1-2$ | tr | tr |
| 20040 | 77.80 | 78.80 | 1.00 | 0.5 | $n i 1$ | $n i 1$ |
| 20041 | 78.80 | 79.80 | 1.00 | 0.5 | tr | tr |
| 20042 | 79.80 | 80.80 | 1.00 | 0.5 | $n i 1$ | $n i 1$ |
| 20043 | 80.80 | 81.65 | .85 | 0.5 | tr | tr |
| 20044 | 81.65 | 82.71 | 1.06 | 0.5 | $t r$ | tr |


| 20045 | 82.71 | 83.71 | 1.00 | 1 | $t r$ | $t r$ |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 20046 | 63.71 | 84.71 | 1.00 | $2-4$ | .34 | .34 |
| 20047 | 84.71 | 85.71 | 1.00 | $2-3$ | .17 | .17 |
| 20048 | 85.71 | 86.41 | .70 | $2-3$ | .69 | .48 |
| 20049 | 86.41 | 87.41 | 1.00 | $1-2$ | .34 | .34 |
| 20050 | 87.41 | $8 B .41$ | 1.00 | 1 | $t r$ | $t r$ |
| 20051 | 88.41 | 189.41 | 1.00 | $1-2$ | .69 | .69 |
| 20052 | 69.41 | 90.41 | 1.00 | 0.5 | $t r$ | $t r$ |
| 20053 | 90.41 | 91.41 | 1.00 | $2-4$ | .17 | .17 |



| Sanifle From | To leristh $\%$ | Sul | Au | GW |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20054 | 91.41 | 91.89 | .48 | $2-4$ | 4.80 | 2.30 |

91.89 92.23 TKANSITIONALIIY SILICTFIFII RASALT

40\% silicification in very firie grairied grey-sreen variolitic flow tof. Continustion of overlyins silicification. Grey breccia presments. Brown dolomitized rims noted. Silica dumpins noted. Variolites at tof of zone. 1 to $2 \%$ fyrite in matrix.

### 92.2.3 99.20 BASALT

Very fine stained - aphanitic dart. sireen pillowed flow. Fillowed flow: erhibit well fevelofed alisssy selvases and interiors with well develofed vesicles. Selvasta are variolitic. Fillowed flow is moderately to stronsly silicified, becomiris paler coloured with silicificetion.

Narrow huff carboriate alteration zones are roted adjacent to fractures. Nori-masretic. Non-reactive to HCl.
$99.20 \quad 100.63$ MONZONITE
. 1
Mafic intrusive. Firie grained arfu-greer, 30\% dark green chloritized mafie laths uf to 5 mu. Sharf chilled contacts. Nori-msinetic. Non-reactive to HCl.

### 100.63129 .24 BASAL.T

Firie siajned - afhanitic dark sireen fillowed flow, contiriuation of overlyiris urit. Selvases are serieralls variolitic, fillowed flow is moderately to stronajy silicified, becomiris faler colourtad with silicification, Focks are rioni-nasmetic, Mirior guartz veirilets. 107.00118.43 Selvasts are indistinct.

From To
118.43 118.67 Flow breccie, Fragacents are rounded with reaction rims.

### 129.24151 .17 DIORITE


151.17292 .93 GASAL.T

Fale areen to thedium srey-sreen with few daik areen phases arid usually fine to very fine srairied. finer stained pillowed flows and relatively coarser srained massive flows are found in the section. Flows are well structured with vesicularg often anaularly arecciated tofs and less broken interiors. Fillowed fiows exihitit well develofed slassy selvases and interiors with well develofed vesicles. Massive fjows ere orcasionally flow brecoizted with rounded, reaction rimmed frasments. These frasments reveal a variets of alteration styles (chiefly silicification) and textures. Flow tof breccib is characterized by hishly ansular clasts and relative uniformity of alteratiori lavas are norimastietic, locally weakly to moderately masnetic (flow marsins, selvases, etci), fillowed flow is moderptely to Etrorigly silicified, heconing faler coloured with tilicification.
Eilicificetion
Ifark sreen aphanitic - vers fine stairied pillowed flow. Selveses contain flow breccia, non-masretic, Fock is siliceous. Carburiate alteralion at base,
155.37 159.10 Fqult zone. Georse-type, Interisefervasive carhoriate alteration at has.e. Ground core common with $65 \%$ core recovery, Numerous clasisint seams at. 30 to 40 desrees to the core aris. from 155.62 to 156,00 meters is brecciated auarta .- carboriate veinima with chloritic metrix. Mifor purite. An often brecciated foliation is noted at. 60 dearees to the core a\%is below 158.55 meters - Falip steen in coluur.
159.10 167,52 Fale green very firie grairied-afharijic fillowes flow. fillows are ofter sjlicified. lluff silicified zories commori. Nori-nastietia. Ruarti.. carthonate veimiels

| 20056 | 155.37 | 156.37 | 1.00 | 0.5 | . 17 | .17 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20057 | 156.37 | 157,37 | 1.00 | 1-2 | .17 | .17 |
| 20058 | 157.37 | 158,37 | 1.00 | 0.5 | 4 r | tr |
| 20059 | 158.37 | 159.10 | .73 | 0.5 | tr | tr |
| 20060 | 167.90 | 168.90 | 1.00 | 0.5 | tr | tr |
| 20061 | 168.90 | 169.90 | 1.00 | TR | .17 | . 17 |
| 20062 | 169.90 | 171.03 | 1.13 | 1F | .07 | . 08 |
| 20063 | 171,03 | 172.10 | 1.07 | 0.3 | . 07 | . 07 |
| 20064 | 227.32. | 228.32 | 1.00 | TE | . 07 | . 07 |
| 20065 | 228.32 | 229.32 | 1.00 | O.E | . 51 | . 51 |
| 15901 | 237.26 | 238.26 | 1.00 | TF | . 07 | +07 |
| 15902 | 238.26 | 239.34 | 1.08 | 1-2 | 2.15 | 2.32 |
| 15903 | 253.90 | 254.90 | 1.00 | 1-2 | .17 | .17 |
| 15904 | 262.76 | 263.09 | . 33 | 2-3 | nil | nil |
| 15905 | 286.85 | 287.85 | 1.00 | 3-5 | . 07 | .07 |
| 15906 | 287,85 | 288,85 | 1.00 | 2-3 | rid 1 | riil |
| 15907 | 288.85 | 289.85 | 1.00 | 1-2 | nil | nil |
| 15908 | 289.85 | 290.85 | 1.00 | 0.5 | nil | nil |
| 15909 | 290.85 | 291.85 | 1.00 | 1-2 | nil | nil |
| 15910 | 291.85 | 292.93 | 1.08 | 0.5 | .07 | . 08 |

and carbonate - auartz veimietic comon. Pervasive carboriate alteration at base, Grades down section to folisted bassit.
167.52 168.90 Foliated besalt. Khaki sreer, stronsly Poliated at 38 defrees to the core axis. Poliated at 38 denrees to the core axis.
Interise fervasive carhoriate siterstion. Minor sericite noted. Contacts sradational to fillowed flow.
168.90 171.03 Kheki sreen pillowed plow, Carhorinte Biteration elons fractures. Non-masmetic. Trace pyrite.
171.03 172.10 Carbonate - auartz veining farallel to core axis. Trace to $1 \%$ purite.
172.10177 .81 core axis. trace to izeen very fine grained - apharitic fillowed flow. Ffidotized adjacerit to fractures. Minor auartz - carbonate strifisers. Pillows ofter silicified. Non-mastietic.
177,81 178.82 MONZONITE, Iark green porphuritic, White feldspars up to 2 mm. Dark greeri chloritized mafics to 2 mm . Riotite rioted, sharp chill contacts.
17B.82 185.60 Green very fine arained - apharitic pillowed flow. Selvases are foorly develofed and epidotized. Non-mannetic.
185.60 189.40 Increased episotization of felvases. Fillows are silicified.
189.40 197.68 Selvases Foorly Hevelofed arid widely spaced. Selvasps epidotized.
197,68 203. 15 fluw breccis. Arigular .. rourided fragments, Larser frasments hisve reaction rjms. Orades down section to massive flow. Zone at 200.40-200.87 meters fault souge, around core, Limonite on frictures. Affroximately 35 desirees to the core $s$ ils. 10 cm core recovered.
203.15 204.84 Green fine arained massive flow, Non-mastietic. Efidote fracture Pilling.
204.84206 .75 Glomeroporphuritic massive flow. Scatiered White feldspar crystals to 20 man. Non-manetic.
206.75 207.28 Hasel treccia. Tof containc feldspar shenocrysti. Rourided fresments.
2,07.28 207.70 Flow top hreccis, Kounded framents with chilipd marsins. Vesicular frasments rioted. 207.70214.90 Fine trained areen mssive flow. Kare feldspar phenocrysts to 4 mint Non-masnetic. Minor epidote fractur fillins. Oradationsl to uriderlyins urit.
214.90 226.80 Fale - dark green, very fine areined afhanitic fillowed flow. Selvases well develofed with efidote arid ausrtz. Non-mashetic. 218.42 To 218,90 meters: carbonste weathered from fractures. limonite ori fractures.

### 292.93296 .00 LAMFROPHYFE

Medium - fine grained dark green intrusive, Auundant chlorite and biotite, Chloritized mafics to 3 mim in felsic matrix - biotite wrafed buff areeri spheres to 6 min. Fervasive carboriate alteration. Nori-masnetic.

307.34315 .09 BASALT

Fine grairied grepr massive plow. locally weakly masnetic. Numerous auartz carbonate efidote veirilets with $11 F$ to 2\% furite, Carbonatefilled terision fractures becoming riumerous at base. 314.37315 .09 Syenite - white to firk feldspar pheriocrysts to 2 mim form bulk of rock.
Normasnetic.

| 15914 | 307.34 | 308.34 | 1.00 |
| :--- | :--- | :--- | :--- |
| 15915 | 308.34 | 309.34 | 1.00 |
| 15916 | 309.34 | 310.34 | 1.00 |
| 15917 | 310.34 | 311.34 | 1.00 |
| 15918 | 311.34 | 312.34 | 1.00 |
| 15919 | 312.34 | 313.34 | 1.00 |
| 15920 | 313.34 | 314.37 | 1.03 |
| 15921 | 314.37 | 315.09 | .72 |


| $1-2$ | .07 | +07 |
| ---: | ---: | ---: |
| $1-2$ | $n i 1$ | $n i 1$ |
| 0.5 | $n i 11$ | $n i 1$ |
| 0.5 | $n i 1$ | $n i 1$ |
| $1-2$ | .07 | .07 |
| 0.5 | .07 | .07 |
| 1 | $n i 1$ | $n i 1$ |
| 0.5 | nil | $n i l$ |


| 15922 | 315.09 | 316.09 | 1.00 | $2-4$ | .07 | .07 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 15923 | 316.09 | 317.05 | .96 | $1-3$ | .07 | .07 |

20\% sres - furfle-srey silicification in fine grairied areen foliated rock. Fervasive carbonate alteration, often wisfy reflacements alons foliation. Carbonate alteration breccia is often silicipied. Eifown dolomitiaztion noted locally, fare sellow sericile in highly foliated zones. Foliation is 75 to 80 dearees to the core anis. Stronsly masrietic. 1 to $4 \%$ fyrite, tecreasina down section.
317.05319 .45 MONZONITE

Dark sres-spean fine arained iritrisive rook. Chloritized mefics to 3 mm in felsic matris. Locally mastretic. 1 To 2\% purite, Coritains narrow syefitic intrusive barids. 318.68 319,45 Syenite, Feldsfar fheriocrysts to 3 mm form Boy of rock. Stronsly mashetic.

### 319.45353 .95 SASALT

Dark. sreen to Fale grest fine arairifd with both coarse and very fine grained to aphanitic phases. Finer arained fillowid flows and relatively coarser arained massive flows are fourid in the section. I avas are riorimasrietic, locall: wiatls to moderitely mosrietio (flowmardiris, selvases, etc.), GFart from weak to moderateffrvasive chloritization, the racts are psseritialls urialtered. 319.45 324.75 Very fine srained - afharitic green
fillowed flow, selvases bre foorly
$15913 \quad 306.34307 .34 \quad 1.00 \quad 0.5 \quad$ nil ris
316.09317 .05

| 15924 | 317.05 | 318.05 | 1.00 | $1-2$ | .07 | .07 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 15975 | 318.05 | 318.68 | .63 | $1-2$ | niil | nil |
| 15926 | 318.68 | 319.15 | .77 | $1 k$ | nil | nil |


| 15927 | 319.45 | 320.45 | 1.00 | 0.5 | . 07 | . 07 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15928 | 320.45 | 321.45 | 1.00 | 1-2 | ril 1 | rill |
| 15929 | 324.75 | 325.75 | 1.00 | 1-2 | +17 | . 17 |
| 15930 | 325.75 | 326.50 | . 75 | 0.5 | nil | riil |
| 15931 | 351.44 | 352.44 | 1.00 | 1-2 | nij 1 | riil |
| 15932 | 352.44 | 352.95 | . 51 | 1-2 | nil | riil |
| 15933 | 352,95 | 353.95 | 1.00 | 0.5 | nil 1 | nil |

### 353.45365 .19 IIORITE

Fine srained grey-green intrusive rock, chioritized mafics to 1.5 m in a felsic matrim, Nonmasietic, Nori-reactige to HCJ. Fiare carbonate - auartz fijled fractures,

### 365.19371 .50 BASALT

Aphanitic - very fine arajned dark areen pillowed flow,
Well develofed masinetic selvases. Rere carboriate auertz strinsers.

4

### 371.50393 .37 IIORITE

Dark srey-sreen fine srained massive rock Very homatieneous. Locally masnetic, increasins down sertion. Trere to $1 \%$ fyrite as disseminations, uf to $2 \%$ ir nuartz strinsers.

| 15934 | 389.20 | 390.20 | 1.00 | 0.5 | nil | nil |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 15935 | 390.20 | 391.20 | 1.00 | 0.5 | nil | nil |
| 15936 | 391.20 | 392.40 | 1.20 | $1-2$ | $n i 1$ | nil |

393.372 .45 HIGH MAG BASALT
Very dark green pillowed flow, fillowed flows exhibit
well develoferl diassy selvasts arod interiors with well
developed vesicles, Stronsly manetic. Gelvases contain sbundant pisite. Red-brown carbonate occurs in selvases and epidote ausrtz veinlets.
422.45 END OF HOLE.

# AMERICAN BARRICK RESOURCES CORPORATION LTD. <br> An Annual Report on Exploration Activity for the Year 1985 <br> on the <br> Manville Option 

## RECEIVED

APS 25 1986
MINING LANDS SECTION
A.W. Workman

Senior Geologist
November 15, 1985

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## INTRODUCTION

## Location of Property

THE MANVILLE OPTION is located approximately 50 kilometers east of Matheson, Ontario. It is found in Harker Township about 1.3 kilometers south of Highway 101. The property is composed of nine claims. Access to the property can be gained by a 1.8 kilometer bush trail from the highway. This trail crosses the adjoining Lenora property to the east. Alternately, access can be made across the Newmex and Demers properties, again by bush trail, from the Imperial Lake-Harker Lake haulage road.

The property is crossed by the Mattawasaga river, and is mostly clay covered.

## Summary of Work

During the 1985 exploration programme, three holes were drilled on the Manville Option. A total of 777.66 meters ( $2,551.38$ feet) of BQ diameter drilling was completed. The technical data on each drill hole is listed in Table 1. The purpose of this drilling was to explore for the extension of an altered and mineralized zone previously detected on the adjoining optioned properties.

In addition to this work, an airborne geophysical survey was carried out over the Manville, and other, Barrick Options. The purpose of this survey was to provide information with regards to the extension of the zone of interest and to explore the possibility of other mineralized horizons on the property. This information would be utilized in the planning of future diamond drilling. Approximately 7.4 kilometers were completed over the Manville property.



TABLE 1

## DIAMOND DRILL HOLE DATA

| D.D.H. | Location | Bearing | Dip |  | Length |  | Date <br> Started |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | | Date |
| :---: |
| Completed |

## REGIONAL GEOLOGICAL SETTING

The volcanic rocks of Harker and Holloway Townships are of Archean age and belong to the Superior Province of the Canadian Shield. This particular region is referred to as the Lightning River District. The stratigraphy of the Abitibi Belt has been subdivided as follows (Jensen, 1983):
$\begin{array}{ll}\text { UPPER } & \begin{array}{l}\text { (Timiskaming Group } \\ \text { SUPERGROUP } \\ \\ \\ \text { LBlake River Group } \\ \text { (Kinojevis Group } \\ \text { (Stoughton-Roquemaure Group }\end{array} \\ \text { SUPERGROUP } & \begin{array}{l}\text { (Porcupine Group } \\ \text { (Hunter Mine Group } \\ \text { (Wakewada Group }\end{array}\end{array}$

The two supergroups represent successive volcanic cycles from ultrabasic komatiitic volcanism to acid calcalkalic volcanism. Each cycle is topped by a dominantly sedimentary (tuffaceous), sequence which reflects relative quiescence is extrusive activity.

The tectonic regime in which the majority of these rocks are located is one of regional subsidence. The formation of a broad, east-west trending synclinal basin is attributable to this subsidence. The Destor-Porcupine Complex forms the north boundary of this basin, and the south side is marked by the Larder Lake Complex.

A few later intrusives have been emplaced into the volcanic succession. Compositionally, these rocks range from pyroxenite, diabase and lamprophyre, to diorite, granite and syenite. The mafic and ultramafic varieties tend to be found as narrow dykes whereas the intermediate and felsic varieties are more common as larger, more rounded bodies.

The Destor-Porcupine Complex strikes approximately 075 degrees across Harker and Holloway Townships in the same approximate position as highway 101. Rocks to the south of this complex, or zone of dislocation, have approximately the same strike and dip 75 to 85 degrees south. All units top south - there has been no reported evidence of overturning in this area.

## DIAMOND DRILLING

## Summary

As previously given, a total of 777.66 metres were drilled in three BQ holes on the Manville Option. The holes were intended to explore along strike from an altered zone intersected on other properties during the 1984 drilling programme.

This 'favourable' geology consisted of well developed alteration, as well as geochemically anomalous gold values along strike from the McDermott Deposit.

Drill hole Mc.85-253 encountered low, and yet still highly anomalous gold values over narrow widths. Alteration in this hole was thin but encouraging. The following hole, Mc.85-254, intersected less alteration but slightly more anomalous gold values. The next hole to be drilled was Mc.85-255. This hole cut similar widths of alteration to the first hole but intersected lower gold mineralization. All holes intersected geochemically anomalous and encouraging gold values.


## BARRICK RESOURCES CORPORATION

MANVILLE DRILL HOLE LOCATIONS


## Geology

Country rock bordering the mineralized zone is composed of iron-rich and magnesiumrich tholeiitic basalts. In the specific vicinity of the Manville Option, magnesian varieties are dominant. Very little alteration is noted in these rocks. The flows exhibit well developed and often pristine volcanic textures. It can be shown that "basaltic composition is coincidental to the location of the ore-bearing zones" (Workman, 1985).

The host rocks to mineralization are recognized to be of intrusive origin. They were emplaced into an active fault zone. Two intrusive lithologies are present. The earliest was composed of quartz-diorite and has been deformed in a highly ductile (or plastic), manner. This rock has been converted to chlorite-carbonate and chlorite-carbonate-muscovite schist. Little mineralization is found within this rock. Subsequent tectonism allowed a second intrusive, diorite, to be injected into this zone. This rock underwent brittle deformation. The resulting breccia, with its enhanced permeability was subjected to a long multi-phase history of fluid influx. These hydrothermal fluids altered and mineralized the brecciated, dioritic rock mass.

This brecciated and altered zone, as it crosses the Manville Property, strikes approximately 085 degrees and dips south at 80 to 85 degrees. The zone subcrops on line $21+00 \mathrm{~W}$ at about $1+90 \mathrm{~N}$ (McDermott Grid Co-Ordinates).

Following tectonism along the zone, a few narrow late stage intrusives were injected into the rocks of this area. In general, they have a random, cross-cutting relationship to mineralization. A typical example is the dioritic intrusive intersected in the footwall sequence in drill hole Mc.85-255.

Although not intersected on the Manville Option, all rocks are known to have undergone offset by very late, north to north-easterly trending fault systems. The maximum displacement presently recognized is less than 100 metres in the horizontal plane. It is important to note that these structures are in no way involved in the mineralization process, neither actively (in terms of genesis as a fluid conduit), or passively (as a broken host rock).

## Alteration

The extreme alteration which is characteristic of the mineralized zone has prompted Barrick personnel to investigate the mechanism and chemistry of the gold-bearing system.

Silicification and carbonatization are the most prevalent forms of alteration in the rocks comprising the mineralized zone. Albitization, hematization and pyrite formation are also pronounced. All forms of alteration overlap and boundaries are entirely gradational.

The alteration sequence of events is as follows:

1) chloritization and the release of iron as magnetite into intergranular spaces;
2) oxidation of magnetite to hematite;
3) silicification as an ongoing multi-stage process coupled with each brecciation event, sulphidation of hematite to pyrite (with probable introduction of gold), albitization; and,
4) carbonatization - ferroan dolomite near ore and calcite in more distal areas (with leaching and re-distribution of gold)

## Mechanism of Alteration

The development of alteration was dependant upon two factors: firstly, the permeability afforded by brecciation; and secondly, the ability of altering fluids to penetrate radially away from micro-conduits into non-brecciated rock. It is the former of these two that is critical. Without fine brecciation on a maximum scale of 1 cm ., complete alteration is retarded and penetrative fragment rim alteration is the result. Spatially, the higher levels of alteration in stages 3 and 4 are proximal to the actual plane (s), of brecciation and movement within this altered zone. Stages 1 and 2, as well as albitization are found beyond the limitations of extreme brecciation.

Enhanced permeability through multi-stage, brittle deformation, allowed altering hydrothermal fluids better access in diorite than they were afforded in the quartz diorites. At least 3 early stages of brecciation have been inferred through the examination of breccia fragments. Each stage has been accompanied by silicification, pyritization, and albitization, to form an aphanitic highly siliceous rock.

## Silicification and Pyritization

It is visually apparent when logging drill core, that silicification and pyritization are the critical elements of alteration with respect to gold content. Hence, for correlation purposes, the alteration zone was sub-divided on the basis of silicification into the Main Silicified Zone with quantitatively greater than $95 \%$ silicification, and flanking Transitionally Silicified Zones with lower amounts of silicified rock. These zones are collectively referred to as the Main Mineralized Zone. Irrespective of where the ore is located, a well developed Main Silicified Zone is a necessary feature for good mineralization. Individual zones of silicification have a pod-like morphology as do the ore-grade sections within these zones. The zones are all on the same datum, being adjacent to the McKenna Fault, and have a similar orientation. The silicified
pods or shoots range in maximum thickness from 8 to 25 meters. Length and width dimensions range from 250 meters by 150 meters to several times this size.

Pyritized rock is found throughout the Main Mineralized Zone. Pyrite contents can locally reach $30 \%$ although they are significantly lower on the Manville Property. Little in the way of silica flooding, commonly associated with the better mineralization is noted in the most highly silicified sections. Within the Main Silicified Zone, pyrite commonly averages 3-5\% when well developed mineralization is present. It is found as a very fine dissemination, as $1-2 \mathrm{~mm}$. cubes and as $1-3 \mathrm{~mm}$. blebs, often forming aggregates in the siliceous matrix to breccia. Coarse, $1-3 \mathrm{~cm}$. clots are noted which encompass breccia fragments. Pyrite is common as a filling in healed fractures of various ages. Pyrite was initially deposited throughout the rock as indicated by very finely disseminated grains within early breccia clasts. Later stages of pyrite, including some grains which were subsequently brecciated, were confined largely to the matrix between individual breccia fragments. To some degree, pyrite was probably in a constant state of re-distribution during the brecciation-silicification events.

## Albitization

Albitization is evident in thin section as euhedral, twinned plagioclase laths. These crystals could not have survived the stress imparted on this sequence of rocks. Albite has often been partially or completely replaced by carbonate. The presence of albite alteration is indicated geochemically as a strong sodium anomaly over the altered zone(s).

## Carbonatization

Carbonatization was the final alteration process. Proximal to ore, this event formed dolomite, while in more distal altered sections, calcite was deposited. The availibility of iron, which was probably mobile throughout progressive alteration, aided in the formation of ferroan dolomite or ankerite. This carbonate can be easily seen on the weathered bedrock surface as an alteration invading a late brecciation event. In drill core, dolomite is frequently seen as a buff alteration penetrating dark purple-grey silicified breccia in the main silicified zone. Spatially, the best dolomitization is of ten found adjacent to the McKenna fault or other shears of the same age as the fault. The last stage of brecciation was related to final reactivation of the McKenna Fault. This remobilization created a grit and clay filled seam up to 10 cm . in thickness. A tectonic regime composed of ripped up silicified clasts supported in a mylonitic groundmass is associated with the fault plane. Fragments of silicified rock carried in this zone bear $1-5 \mathrm{~mm}$. dolomitized rims, thus indicating that minor carbonatization post-dated the last tectonic event.

## Gold Mineralization

The following table lists the gold intersections from the 1985 drill programme.

| D.D.H. | From | To | Length |  | Estimated True Width mtr ( ft ) |  | Gold Content |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | rs- | mtr | (ft) |  |  | ppm. | (oz/ton) |
| 85-253 | 135.75 | 136.85 | 1.10 | (3.6) | 0.73 | (2.4) | 6.35 | (0.185) |
| 85-254 | 184.71 | 185.38 | 0.67 | (2.2) | 0.45 | (1.5) | 4.80 | (0.14) |
| also | 213.76 | 216.66 | 2.90 | (9.5) | 1.93 | (6.3) | 1.86 | (0.054) |
| 85-255 | 165.49 | 166.34 | 0.85 | (2.8) | 0.57 | (1.9) | 3.43 | (0.100) |
| also | 172.60 | 173.66 | 1.06 | (3.5) | 0.71 | (2.3) | 2.23 | (0.065) |

## AIRBORNE SURVEYS

## Geophysics

An airborne geophysical survey was carried out during the summer of 1985. The purposes of this survey were:

1) to attempt to better delineate the trend of the McDermott mineralized zone;
2) to determine the presence of any faults which might cross-cut and displace the zone; and,
3) to investigate the potential for any additional mineralized zones.

The contract was awarded to Geophysical Surveys Inc. of St. Foe, Quebec. The survey was flown in July, 1985, using a helicopter-born gradiometer. Two cesium vapour magnetometers of 0.005 gamma resolution and vertically separated by 2 meters, were towed under a helicopter at an average elevation of 45 meters above ground level. The average traverse spacing was 200 meters. The flight path recovery was recorded on video tape by a vertically mounted camera inside the helicopter.

The accessory equipment consisted of:

1) a VLF-EM from Herz Industries, the TOTEM-2A, measuring the total field and quadrature component of the electromagnetic field at two frequencies;
2) a Sonotek SDS-1200 digital data acquisition system; and,
3) a King KRA-10 radar altimeter.

## Aerial Photography

Aquarius Flight lnc. have completed a series of flight lines, over the property for Barrick Resources. Aerial photographs were produced on two scales - 1:10,000 and $1: 20,000$. These photos were used to facilitate ground control for the geological
mapping program and to prepare a photo mosaic for the helicopter-born geophysical survey.

## Total Field Magnetics

The total field response varies from approximately 58,500 gammas for low magnetic (magnesium-rich), tholeiitic basalts, to greater than 58,900 gammas for the more highly magnetic (probably iron-rich), tholeiitic basalts.

In general, this survey has confirmed the existence of more highly magnetic rocks striking approximately east-west across the north margin of the property. It is presently unknown whether these rocks represent a repeat in the iron-rich volcanic stratigraphy from further south, or, whether these rocks are ultrabasic flows belonging to the Stoughton-Roquemaure Group. This is not completely an academic matter since flow composition might influence future exploration plans apart from the main mineralized zone. The total field survey also delineates more highly magnetic flows to the south. The mineralized zone lies in the intervening sequence of less magnetic rocks.

An off-set on the magnetic contours indicates the possible presence of a fault along the west boundary of the Manville property. If such a structure is present, it would strike approximately 010 degrees. Displacement seems to be sinistral and about 200 meters in magnitude.

## Gradient Survey

The response of the gradiometer helps to highlight the position on surface of the contact between rock formation with different magnetic properties. The zero contour line is the definitive contour. Aside from generally supporting the notion of a fault
along the west margin of the property, it will remain for future diamond drilling to evaluate the usefullness of this survey technique in this geological environment. The accuracy with which contacts can be delineated is unknown at this time.

## VLF Survey

Although few conductive responses are noted on the Manville Option, this survey (generally), was able to detect northwest - southeast striking conductors. However, these conductors frequently undergo radical changes in response over short distances, thus making correlation difficult. Furthermore, no explanation has been adequate to explain the existence of these features and their affiliation is presently unknown. It is extremely doubtful whether mineralization could be associated with these conductors.

## GROUND SURVEYS

To accurately define the boundaries of the Manville property, and other Barrick options and claim blocks, Barrick has carried out a survey of the perimeter of this property. Also included in this surveying has been the locating of current diamond drilling into an idealized McDermott grid system. The present cut line grid with its picket stations is inadequate for relating one hole to another. Future drill holes will be spotted by Barrick's survey crew.

## CONCLUSIONS

On the basis of our experience on the McDermott Properties, and the results from the exploration work carried out in 1985, the following conclusions are presented.

1) The McDermott mineralized zone crosses (on surface), the Manville Option and dips steeply south.
2) The altered and mineralized zone locally carries ore-grade gold mineralization over narrow widths with somewhat broader zones
containing geochemically anomalous gold.
3) The general style of alteration closely matches that observed within the McDermott Deposit.
4) Sufficient variation in the quantity of gold associated with particular intensities of alteration, makes the initial visual estimation of gold content more of an art than a science.
5) The gold-bearing zones warrant follow-up diamond drilling.
6) There is no single recognizeable geophysical feature or signature to the known mineralized zone on the Manville property although it is generally associated with a magnetic low. Hence, it is unlikely that any additional zones will be found purely through geophysical means. The best means will be to apply knowledge gained elsewhere to this property in an integrated exploration approach.

## RECOMMENDATIONS

The results of the 1985 exploration programme speak for themselves and the recommendations are obvious.

1) Future diamond drilling is imperative on roughly 100 meter centres to determine the attitude of the alteration zone, and, to determine whether any trend is present in gold mineralization.
2) This diamond drilling should be implemented in such a way as to probe the zone across the entire property $(15+00 \mathrm{~W}$ to $23+50 \mathrm{~W})$. This would require approximately 2,500 metres of drilling in nine additional holes.
3) A minor amount of investigative work with regards to the trace element major oxide profile of the zone on the Manville Option is proposed to fully quantify the apparent similarity to other mineralized sections.

## REFERENCES

Jensen L.S. and Langford F.F., Geology and Petrogenesis of the Archean Abitibi Belt in the Kirkland Lake Area, Ontario; O.G.S. Open File Report 5455, 1983.

Workman A.W., The McDermott Gold Deposit, C.I.M. Distribution, 1985.

ISOMAGNETIC LINES
(absoluto lotal lield)
1000 gommos . . . . . . . .
500 gommas . . . . . . . .
100 gommos. . . . . . .
10 gammos . . . . . . . .
Mognetic depression . . . . .
Flight llnes. . . . . . . $\frac{4501}{725}$

MANVILLE OPTJON
(OIAL F JELD MAGNE IJCS
NAY 198;
$56 \pm 18: 12,000$





Pale green to mediam srey-sreen with pew dork sreen pheses and usually fine to vers fine grained. The rack in this section is comfosed of massive flum ondy. The rocks are not internally structured with the exception of localls vesicular flow tops. Flows are forfhuritic locally, Zone is occasionaliy non-masnetic but are normaliy moderately to strongly masnetic. The rock carijes an averase of 0 to $1 \%$ pyite as ajne siained ois5eminstion.
19.20 45.78 Fine to medium srained massive flow aradual coersening trend down-hale. Aturidarit nuartz - epidote - carbonate veinins from 27.45 to 29.21 meters, Weakly masrietic locally. Core is hishly fractured.
45.78 64.20 fomiriantily fine grainede no flow contact noted in this section. A porphyritic zone is notes at 60.90 to 61.95 meters. Well developed teldsfar phenocrusts up to 2 mim account for apfrosimately $15 \%$ of the rock.
64.20 81.00 zone becomes domineritly medium arairied, non-magrietic with weakly develofed mesnetics locally.
81.00 109.15 Medium arained messive flow - weakly mesrietic becomiris stronsly misrietic locally. Chloritized laths up to 2.5 mm noter. Fractures are ofteri mesnetite pilled. 109.15 110.95 Fine srained tasal flow - tilicifiedand brecciated at bisce.
110.95111 .76 Hyaloclastite bearing flow tor with well develofed foliation at 40 degress to the core axis. Zone is Pirie to very firie arained with a distifict furfle hue due to interstitial henatite.

MAIN MINERALIZED ZONE : 111.76 - 142.92 meters.
the zone is based upon amount and destree of Ellicification and it is composed of three members. The zone is well developed por this section of the Mclermutt properts (s). However, the Mckeriria fault is found below the, Main Silicified Zone. The elteration is the mirror imase of the normal sequence located ori the Mcliermott and three Star proferties.
136.85 MCKENNA FAULT FLANE.
111.76130 .31 TRANSITIONALLY SILICIFIED GASALT
 puplemrey hematized and silicificd patches. The dearee Rock is hiahly variably masietic - weakly to struridly. In seneral silicification and furfle-srey hue are noted only in finely brecciated sections. Relic textures such ss vesicies are noted localiy. Brecciation is of a opposed to shearina. Initially zone is less than sox breccieted increasins to $75 \%$ below 112.80 meters. Level of hemetization is very hish frobstis reflecting high degree of masinetics as alturod mbanetite. Breccis seams re rarely foliated at 55 dearees to the core axis on a in voids end with 5 to 10 cm clots of pyrite areins. A few zones uf Main Silicified Zone style alteration are lleiplot sections up to bo cs in width. Most silicifyins fluids have not penetrated. The best silicification is roted adjacent to a aranulated, hishly brecciated section at 121.33 to 122.01 meters dioritic or syenitic intrusive zone. A sinils sithoush less silicified zone is noted at 119.70 to 120.24 meters. These zones are very weskly to moderately masnetic whereas the surrouriding rock is moderately to stronsly masnetic. Breccia frasments within these of areen clay is noted on slickensided fismes along the lower contact at 122,01 neters. This is fossibly a faul zone at afproximately 70 degrees to the core $a$ isis of the same ase as the Mckerma Fault. An immediate but below this foint. Late stase fracturins with auarta illing has softer chioritized halos 1 to 3 min width. level with fisher pyrite contents (2-3\%) as a very fine dissemiriation and 1 to 2 mm (renerala with aburidant silica dumfins locally and everasins 2 to $4 x$ pgrite and up to $10 x$ 121.33 to 122.01 and 119.70 to 120.24 meters.
127.26130 .31 More hishly silicified - nearly maits silicified zone type.

| 19777 | 111.76 | 112.72 | . 96 | 1-2 | .17 | .16 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19778 | 112.72 | 113.72 | 1.00 | 1-2 | $t \mathrm{r}$ | $t r$ |
| 19779 | 113.72 | 114,71 | . 99 | 1-2 | $t r$ | $t r$ |
| 19780 | 114.71 | 115.74 | 1.03 | 1-2 | tr | $t r$ |
| 19781 | 115.74 | 116.74 | 1.00 | 1-2 | tr | tr |
| 19782 | 116.74 | 117.74 | 1.00 | 1-2 | tr | tr |
| 19783 | 117.74 | 118.74 | 1.00 | 1-2 | tr | tr |
| 19784 | 118.74 | 119.70 | . 96 | 2 | tr | tr |
| 19785 | 119.70 | 120.24 | . 54 | 1-2 | $t r$ | 4 r |
| 19786 | 120.24 | 121.33 | 1.09 | 2-3 | tr | tr |
| 19787 | 121.33 | 122.01 | . 68 | 2-4 | . 34 | 23 |
| 19788 | 122.01 | 123.01 | 1.00 | 2-3 | tr | $t r$ |
| 19789 | 123.01 | 124.01 | 1.00 | 1-2 | tr | $t r$ |
| 19790 | 124.01 | 125.00 | . 99 | 2 | tr | tr |
| 19791 | 125.00 | 125,84 | . 84 | 2 | $t r$ | $t r$ |
| 19792 | 125.84 | 126.77 | .93 | 2-3 | tr | tr |
| 19793 | 126.77 | 127.26 | . 49 | 2-4 | $t r$ | tr |
| 19794 | 127.26 | 12B. 26 | 1.00 | 1-2 | tr | tr |
| 19795 | 128.26 | 129.26 | 1.00 | 1-2 | . 17 | . 17 |
| 19796 | 129.26 | 130,31 | 1.05 | 2-3 | $t r$ | tr |

Rock is dark purple-grey sphanitic to very fine arained end very hishly to intensely silicipied. The purple hue reflects strona dearee of hewatization throushout. In general the level of silicification increases down section. A relatively larse smount ( $5 \%$ ) of relic sreen chloritized rock is noted in this unit. These seams have - non-breccisted afpearence, Zone is locally reactive to HCl due to locelized pervasive carbonatization. Minor late stese dolomitization is noted locsily as buff coloured elteration in the most histuly brecciated sections. Tine zorie buerases $2-3 \%$ purite as fine disseminations erid as 1-3mm blebs, Furite elso noted as blebs concentrated alons hesied fractures in breccia. Minor silice dumpins is localis found in the most intensely silicipied rock.
134.71 142.92 TRANSITIONALLY SILICIFIEI ZONE

Dark green, very fine arained with selective
silicification in carbonstized laminations and clasts. Cerbonetization is indicated by crean colouration whereas silicification has areser hue, Hematization accompanies silicification as a purple tirit in more hishly altered rock. A minor amount of honey coloured elteration carruins eleveted purite is pound in silicified rock. This alteration is ususily associated with moderate despees of silica dumpins. White silice is noted ss void filling in silicified breccia. The zone is domineritly of tectonic oriain with aburidant chioritized shears afr rifped-up clasts of silicified rock supported in s sranular chloritic matrik. This lithology is best noted below the Mckenna Fault where it is much brozder than freviousjy observed, Locajized sections of intensely silicified breccie are noted - es, 135.75 to 138.00 meters. Oreari, chloritized, non-silicified rock is weakiy hematized es a firie Interstitial dissemination. Furite coritent averases $1 \%$ with up to 8\% locelly in silicified sections, the Mekenna Fault is represerited by a clas sean at 53 destres to the core suis st 136.85 meters. 1 cm of sidit and clay is noted in the plane, Several other minor clex-arit seans are noted helow this foint.
134.71 136.84 Fatchu silicified breccia in dominently chloritic rock.
136.84 136.85 Mckenna Fault - 1 cm clay-grit sean at 53 dearees to the cure axis.
136.85 141.92 Abundent creism, red-brown end purfle-srey coloured ansular to subangular silicified breccia clasts us to 3 ca in size. Matrix is chloritic grianular and often moloritic. The frasments are ofter foliated sub-rarallel to the Mckenna Fault.

Sample From To Lenath \% Sul

| 19797 | 130.31 | 131.32 | 1.01 | $2-3$ | $t r$ | $t r$ |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 19798 | 131.32 | 132.30 | .98 | $2-3$ | $t r$ | $t r$ |
| 19799 | 132.30 | 133.29 | .99 | $2-3$ | $t r$ | $t r$ |
| 16800 | 133.29 | 134.30 | 1.01 | $2-3$ | $t r$ | $t r$ |
| 16801 | 134.30 | 134.71 | .41 | $2-4$ | .34 | .14 |


| 16802 | 134.71 | 135.75 | 1.04 | $1-2$ | .34 | .35 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 16803 | 135.75 | 136.85 | 1.10 | $2-4$ | 6.35 | 6.99 |
| 16804 | 136.85 | 137.85 | 1.00 | $2-3$ | .34 | .34 |
| 16805 | 137.85 | 138.82 | .97 | $2-3$ | $t r$ | $t r$ |
| 16806 | 138.82 | 139.83 | 1.01 | $1-2$ | .69 | .70 |
| 16807 | 139.83 | 140.85 | 1.02 | $1-2$ | .17 | .17 |
| 16808 | 140.85 | 141.92 | 1.07 | $1-2$ | $t r$ | $t v$ |
| 16809 | 141.92 | 142.92 | 1.00 | 1 | .17 | .17 |

141.92 142.92 Well foliated dark dreen chloritized rock with selective silicification of cresm coloured bands and seams up to 2 min width. Seams are precciated and are moderately to stronsly resctive to HCl. The rock is ron-masnetic with slisht trace locally.
142.92 158.40 FOLIATED BASALT


#### Abstract

Hark greent fine to very fine mrained, chloritized end well foliated. Foliation is hishlighted hy selective carbonatization along 1 to 3 mingems. Carbonetization is revesied by a creas to pale grey colourationin an otherwise areen rock, Carbonetized laminations ake up en aversise of lis\% of the rock volume. Rare silicification is noted es purple-arey hue within cerbonilized sesms. Silicified sections have finely breccisted texture, opten pink hued - fossibly a different orisinal lithology. This is noted at 151.54 to 151.73 meters and 152.20 to 152.30 meters. The rack is weakly to moderately well parted throushout. Crenulation cleavase, (f2), is also well developed with - steep essterly dip. A nerrow fault zone is noted st 30 dearees to the core aris at 155.45 meters. The foliation decreases markediy in the lower 50 cm of zone.

Foliation - 55 desrees to the cove exis at 14B.5S meters and 45 desrees to the core axis at 154.40 ond 157.85 meters.


$158.40 \quad 247.19$ BASALIT

Fale sreen to medium srey-sreen with few dark sfeen phases and usually fine to very finesiained. finer arined pillowed flows ario relatively coarser grained messive flows are found in the section. Flows are well structured with vesiculari often andularly trecciated tops end less hroken interiors. Vesicular pillowed zones are occasionally found es the uppermost section in otherwise massive flows. Flow tof breccia is characterized by hishly arisular clasts and relative uniformity of alteration. Rocks are non-masnetic. A trace of purite is noted throushout. White carhonate strinsers cerry to 5 m blebs of chalcopyrite locally, A minor amount of flow treccia is noted locally in sssociation with fillowed flows.
158.40 165.80 Fine to very fine stained massive flow weakly treccisted throughout with carbonate fillins fractures. Nonmmarietic. 165.80 171.55 Firie srained massive flow ... sliadual coarsenins trend down-tiole.

| 16810 | 142.92 | 143.85 | . 93 | 1 | tr | $t r$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 16811 | 143.85 | 144,85 | 1.00 | 1 | tr | $t r$ |
| 16812 | 144,85 | 145,83 | . 98 | 0-1 | $t r$ | tr |
| 16813 | 145.83 | 146.85 | 1.02 | 0-1 | tr | tr |
| 16814 | 146,85 | 147.85 | 1.00 | 0-1 | $t r$ | tr |
| 16815 | 147.85 | 148,88 | 1.03 | 0-1 | tr | tr |
| 16816 | 148.88 | 149.85 | . 97 | 0-1 | tr | tr |
| 16817 | 149.85 | 150.85 | 1.00 | 0-1 | tr | tr |
| 16818 | 150.85 | 151,85 | 1.00 | 0-1 | $t r$ | tr |
| 16819 | 151,85 | 152.85 | 1.00 | 0-1 | tr | tr |
| 16820 | 152.85 | 153.80 | . 95 | 0-1 | +17 | .16 |
| 16821 | 153,80 | 154.81 | 1.01 | 0-1 | tr | $t r$ |
| 16822 | 154.81 | 155.86 | 1.05 | 0-1 | tr | $t r$ |
| 16823 | 155.86 | 156.87 | 1.01 | 0-1 | . 17 | . 17 |
| 16824 | 156.87 | 157.87 | 1.00 | 0-1 | tr | tr |

```
171.55 173.35 Fine to medium srained messive flow.
173.35 183.43 Fine to very fine sreined messive flow -
    gradusl finins trend doun-hole, becomins
        incressinglis brecciated (weskly): down
        section.
183.43 184.43 Tensional nreccistion with white carbonste
                fil1ing.
184.43 191.40 Faler greeng fine grained massive flow.
191.40 193.12 Fine to vers fine arained massive plow -
                            sraduel finins trend down-hole.
193.12 193.20 Chilled plow top.
193.20 193.65 frecciated and weakly vesiculse flow top
193.65 199.50 Irresulerly developed fluw breccia
                rourided, vesicular fragments uf to 5 cm.
        Section Erades into underlying fillowed
        zone.
199.50 212,27 Fillowed flow - selvases well develofed,
        Etronsly chloritized - often carry
        hysloclsstite.
212.27 213.48 Medium sreen to finkish-araen fine grairied
        intrusive with feldspar phenocrusts uf to
        3 ma which ere opten clumped
        (slomero-porphuritic). Frohebly dioritic
        in composition. Non-masmetic. Aburidarit
        geecular hematite at lower contact,
213.48 227.75 Pillowed flow - becomes relatively coseser
        Erained below 224,00 meters and pervasive
        certonatization increases slightly.
        Fillows hecome less well developed.
227.75 227.76 Flow contiact,
227.76 233.30 Irresularly brecciated flow tof zone
        locsilzed epidotization with a few fillows
        between 229 and 232 meters. Norimesinetic.
233.30 240.68 nark areen, fine sraimed massive flow.
240.68 240.95 Easel flow and flow contact zone with
        foliation develored at 55 desrees to the
        core ouis.
240.95 247.19 Irresularly textured fine srained masmive
        flow, nori-mesrietic, non-carbonstized,
```

247.19 END OF HOLE.
Note; Hangins wall bassits losied by N. Iowriey.

18.90134 .15 BASALT

File sreen to medium sres-steen with few dark green phoses and usually fine to very fine srained. Fituer grained fillowed plows and relatively coneser arained asseive flows are found in the section, flows are well structured with vesicular often arisulerly brecciated tofs end lefs broken interiors. Fillowed flowsexhibit tops sind less broken interiors' filiowed feveloped slessy selveses end interiors with well
well dever developed vesicles. Messive flows are occasionaily flow breccisted with rounded, reaction rimmed fresments. These frasments reveal a variety of alteration stules (chiefly silicification) and tentures, levas are moderately to stronaly masnetic throushout, A few wealy magnetic phases rioted localiy. locel shears due to late tectonic ectivity are noted and these zones are more stronsly chloritized.
18.9030 .60 [lark sreen to bisck, fine to very firie arairied fillowed flow, Selvases are hishly efidotized and carbonatized.
30.60 41.27 Intrusive? - firie to very firie grairied gradins down section to mediumidrained at 36.0 meters. Zone is weakly masnetic locally. Contacts are well defined,
41.2784 .80 Same es above $3 t 18.90$ to 30.60 meters .. a brecciated zone is noted at 79.15 to B1.38 meters .. resembles flow breccia.
84.80 105.77 tark green to black, fine to very fine srained massive flow .. moderately masietic locally.
105.77 107.11 Fine to medium arained massive flow - flow contact zone in lower 6 cm. Moderately masnetic locally.
107.11 113.30 Fine to very fine arsined massive flow becoming piler hued bown bection. Centre of section hecumes medium to coarse arairied
113.30114 .22 Fine to very fine $\leq r a i n e d$ nessive flow moderately mesnetic throushout.
114.22 120.82 Fine to medium grained messive flow moderatels to stronsly marnetic.
120.82124 .90 Breccisted flow contsct zone with sulirourided to sutarisular frasmente - fale green, srey and burf coloured, hishly masnetic. Shear atone is noted parallel to core axis. Section is weakly silicified locally with 3 to 5\% fisitite.
$\begin{aligned} & 124.90126 .70 \text { Fine to very fine sheiried mossive flow } \\ & \text { hishly mashetic, moderately to stronsly }\end{aligned}$

| 15832 | 119.82 | 120.82 | 1.00 | $1 K-1$ | .34 | .34 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 15833 | 120.82 | 121.82 | 1.00 | $3-5$ | .17 | .17 |
| 15834 | 121.82 | 122.82 | 1.00 | $3-5$ | .17 | .17 |
| 15835 | 122.82 | 123.82 | 1.00 | $3-5$ | .17 | .17 |
| 15836 | 123.82 | 124.90 | 1.08 | $3-5$ | .69 | .75 |
| 15837 | 124.90 | 125.90 | 1.00 | $1 R-1$ | $t r$ | $t r$ |
| 15838 | 132.13 | 133.12 | .99 | $1-2$ | .17 | .17 |
| 15839 | 133.12 | 134.15 | 1.03 | $1-2$ | $t r$ | $4 r$ |

epidotized locally
128.00 138.00 Dioritic intrusive .- stronisis mesnetic.
128.00134 .15 same as athove at 124.90 to 126,70 meters. zone sradually develops a purple-trex hue down section with an increasins rumber of weakly to moderately silicified breccia sections up to 20 cm in width. A carbonate pilled chloritic shear at 10 desress to the core axis is noted at 134.15 meters. Locelized clotis of purite up to 1 cm in size are noted with silicificetion. Zone carries fink clasts near base - possibly phenocrysts.

13 A.15 141.16 UARIABLY SILICIFIEN BASALT
Extension of the overlyins zone - rock is initiblly dark sreen and very pine arained messive flow with bundarit purple-srey silicified seant. Silicified rock is weak.ly brecciated with network of tisht fractures depinins 1 to 2 co breccia tresments. pesree of silicification is moderate to strons. Dccasionel scctions of strons brecciation carry increased silicification. Increased purite contents ere noled in silicified breccia with up to $5 x$ locally. furite content increases profortionally to dearee of silicification Zone exhibits strong pervesive carbonatization locally associeted with silicification. Furfle colouration is probably due to hemetite. Rock remsins moderetely to stronsiz masrietic throushout.

### 141.16165 .31 DIORITE

Dark streen fine to very firie sreiried, moderately to stronsis mesnetic with abundent speculer hematite disseminatud throushout, Zone is porfhyritic locally. Rock is moderately chloritized with weak pervasive carbonatization.
141.16 152.30 fine to very fine grained.
152. 30 152.80 Abundant 1 to 3 ma Peldsfar fheriocrysts.
152.80 162.96 Fine srained, sradual coarsenins trend doun-hole - zone has s dioritic finkish hue locally. Wesklt magrietic becomirig moderately masrietic down section. Abundant leucoxene.
162.96163 .38 Chilled zone - possithly hetween two fhases of intrusive activity. Aliso noted ere abundant gritty carhoriate filled shears at 30 desrees to the core axis.
163.38164 .80 Firie srained massive zorie as described sbove at 152.80 to 182.96 meters.
164.80 165.31 Sheared contact cone - wall chilled bese
165.31 182.93 BASAL.
Section is composed of pine to very ine arimined massive
flow and very fine grained zones with epidotized seams
which ere pbsisiby pillowed. Variolitic flow is noted
locally. Minor silicification is noted locislis.
Masnetics are varisbly developrod throushout.
165.31 166.80 Aphanitic to very fine arainedr masmive
flow with shundent hyslocisstite and 0.5
mm variolites. Numerous firongly
epidotized arid silicipied seams are noted.
166.80169 .40 Silicified flow top - tronsiy breciated
becomins more weskly developed oown
section. Vesicular presments are noted
throushout. Weakis masnetic fhroushout,
169.40177 .95 Vers fine sirsiried massive flow, mundant
epidotized sesin - possible pillow
selveaes. Moderately to stronaly masmetic
throushout.
177.95 182.93 Very fine trained massive flow, occasional
purple-grey silicified breccia seams up to
20 cm in width. Rock is very hard
sithoush does not seem to he silicified.
Weakly to moderately manetic throushout.
182.93 189.11 TRANSITIONALLY SILICIFIED BASALT

Greenish-sies, very fine areified chloritized rock with abundant fuppie-arey to reddish-pink coloured aphanitic sections of silicification uF to 60 cm in width. silicificetion is controlled by brecciation - ansular frasments uf to 1.5 cm zre tntensely silicified end are surrounded by siliceous material which is often mulonitic. Minor buff coloured sections noted - due to 3ate stase dolomitization. Larger purfle-siey fragments often exhibit hairlime rims of dolomitization. Breccia is both frasment and matrir supforted. A lerge amount of metrix in some sections indicates that frecciation hes been brittie due to tension, Increased pyrite contents are noted in interisely silicified sections as a fine dissemination 1 to 3 marains and as clots up to 1 ca in size, Zone is senerelly non-masnetic to weakly mastietic localis with increasing mesnetics near tise of section.
182.93184 .71 Incressins amounts of tishtly controlled silicified breccia
184.71 185.38 Well developed stronsly to intencely

| 15849 | 182.93 | 183.92 | .99 | 1 | .17 | .17 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 15850 | 183.92 | 184.71 | .79 | 1 | $t r$ | $t r$ |
| 15851 | 184.71 | 185.38 | .67 | $2-3$ | 4.80 | 3.22 |
| 15852 | 185.38 | 186.35 | .97 | 1 | .69 | .67 |
| 15853 | 186.35 | 187.38 | 1.03 | 1 | .17 | .18 |
| 15854 | 187.38 | 188.39 | 1.01 | 1 | $t r$ | $t r$ |
| 15855 | 188.39 | 189.41 | 1.02 | 1 | .17 | .17 |


189.41211 .75 BASALT

IIsik green to Ereeritsh-arey, very fine grained flow. Section is initialiy pillowed becomins massive flow below 194.20 meters. Selvases are weat.ly precciated and hiahly silicified locally but relic vesicles are rioted throush siteration. The massive section is locally breccisted and weakly silicified in zones ur to 15 cm . A fow sections of transitional quality silicification are noted $30 c a l l y$, es. 208.00 to 208.34 meters. All rock is moderately to stronsiy mesnetic but masnetics decreses sharply in lower 75 ch of zone. Unit is moderately to stronsly hematized throushout. A white carbonate filled shear is noted from 192.65 to 193.37 meters at 20 to 30 desrees to the core axis. Contact with underlyins gection is weakly slickensided.

MAIN MINERALIZED ZONE: 211.75 .- 229.83 meters,
The zone is based ufon emount and desree of silicificetion and it is compused of three memters. Each member of the zone is relstively thin and the desiee of Eleration $1:$ not particularly strons. Purite contents Gre lower than normaly most noticeably in the Main Siltcified Zone.
226.70 MCKENNA FAULT FLANE.

### 211.75 224.73 TRANSITIONALLY SILICIFIED ZONE

Dark sreen and fine grained with apharitic; furfle-srey Eilicified treceia zones up to 60cm wide. Upper 4.5 meters of the zone is domiriantly silicified breccia ( $90 \%$ ). Green rock is chloritized arid stronsly hematized.

Zone is moderately pervasively carbonatized throushout. Silicification is indicated by dark greyish colouration but is stronsest, where furple hued. The site of silicification is almost eritirely coritrolled by prior

| 15860 | 211.75 | 212.76 | 1.01 | $2-3$ | $\operatorname{tr}$ | $\operatorname{tr}$ |
| :--- | :--- | :--- | :--- | :--- | ---: | ---: |
| 15861 | 212.76 | 213.76 | 1.00 | $2-3$ | .34 | .34 |
| 15862 | 213.76 | 214.75 | .99 | $2-3$ | 2.74 | 2.71 |
| 15863 | 214.75 | 215.75 | 1.00 | $2-3$ | 2.06 | 2.06 |
| 15864 | 215.75 | 216.66 | .91 | $2-3$ | .69 | .63 |
| 15865 | 216.66 | 217.64 | .98 | $1-2$ | .17 | 17 |
| 15866 | 217.64 | 218.64 | 1.00 | $1-2$ | $t r$ | $t r$ |
| 15867 | 218.64 | 219.65 | 1.01 | $1-2$ | .34 | .34 |
| 15868 | 219.65 | 220.65 | 1.00 | $1-2$ | $t r$ | $t r$ |

breccistion; Silicified brecciz is occesionslly homed coloured. this colouring may refiect incressed dolomitizetion. Ereccia frasments often have pink or syenitic hue. A pele coloured sheared section at 212.64 to 212.76 meters ay he same ade as the Mckenna fault, Shesred rock is hesled with subsequent alteration, Shearins is at 40 desirees to the core axis. Fiyrite content is noted us to $5 \%$ locsily $\ddagger s$ biets in matrix to breccia frasments alons healed fractures in breccia. A trece of chalcopyrite is noted as a late stase vein filiins in 1 to 3 mmpebs. zone is non-masnetic throushout. Breccia esihitits folistion locelly at 45 to 50 destrees to the core axis. Fossible crenulation cleavase is noted diffing bferoximately 30 degrees westerly.
211.75 216.6690\% silicified treccia - desiref of
 interise, zone often resembles ari upper silicified zone.
216.66224 .7330 To $40 \%$ silicification - moderately to stronsly develofed but rarelu Main Ejlicified Zone type.

### 224.73225 .91 MAIN SILICIFIED ZONE

Fisfrle-jres to honey or cream coloured afhanitici intensely silicified breccia. A minor emount liess than 5\%) of sreen, relic chloritized seams are noted within this section, These seams heve a riun-brecciated apfearance. Grey silicified rock has a purple hue due to a variable desfee of hematization. This hematite is reduced to pyrite ir the buff to hories coloured alteration fatches and zones. Lower anounts of pyrite are moted throushost. A degree of hematization is fourid, and is more readily identified ty streak, in chloritized rock. The cone is moderatelu resctive to HCl due to carboriatization throushout. Euff colour is limited to deto stase brecciation locally seen to cut core in seams up to 2 cm in width, Zone is norima引netic throushout, Several narrow clay-grit seans are noted which refresent fault Fiaries of same ase as the Mckenna Fault, These Ere ricited $3 t$ 40 destees to the core exis at 225.46 and 225.81 neters. Lower contact of zone is marked ty 32 mm clay seam.
235.91 229, EX TKANSITIONALLY SILICIFIEII TONE

Iark grean and furfle-grey vers fine srairied to ashenitic rock, Green sections eie chloritized, well foliated, stronsly hematized znd weskly carbonatized. Grey coloured zories are weakly to strongly silicified
$15869220.65 \quad 221.65 \quad 1.00 \quad 1-2$
$15870 \quad 221.65 \quad 222.65 \quad 1.00$
$15871222.65223 .65 \quad 1.00$
$15872 \quad 223.65 \quad 224.73 \quad 1.08$
15872223.65224 .73 1.00 1-2

| 15875 | 225.91 | 226.70 | .79 | 2 | .34 | .27 |
| :--- | :--- | :--- | :--- | ---: | :--- | :--- |
| 15876 | 226.70 | 227.70 | 1.00 | $1-3$ | .69 | .69 |
| 15877 | 227.70 | 228.42 | .72 | $1-2$ | .34 | .24 |
| 15878 | 228.42 | 229.13 | .71 | $1-2$ | .17 | .12 |
| 15879 | 229.13 | 229.83 | .70 | $1-2$ | .17 | .12 |

and exhibit hisher desrees of carbonstization. The site of silicification is almost eritively controlled by frior brecciation. Seams/eatches of silicification ere oriented parallel to poliation but cross cut locally. A minor amount of honey coloured alteration carryina eleveted fyrite is founis ir silicified rock. silicified elevated fyrite is foulidin silicifiedrock. silicified
breceia frasments are often riffed from major sections breccia frasments are often riffed from major sections
of silicification and are rafted into the chloritic of silicification arid are rafted into the chloritic
matri\%. Ihe foliation is occasionalis deformed alons or acros; fractures which refresent nicro-faults. This deformation in the form of dras folding indicates that the south sife of these microfaults has tuen disflaced downiwards, The Mckenria Fault is represerited by a clay seam et. 58 desrees to the core axis at 226,70 meters. The zone ahove this fault has a brecciated tectonic appearance, mofe so than the section below. Zorie aver ases $2 \%$ pyrite throushout as a very fine grairied dissemination ir, dssociation with sillcified seams and ureccis. A weatly develofed crenulation cleavase is noter - seems to lie flat luing.
229.83234 .83 FOLIATED EASALT

Dart: areen, fing to vers fine arained and veriably foliated. The rock is weakly chloritized pervasivelyFerhafs due to resiorial metamorfhism. The foliation is hishlishted by selective carbonatization of individual laminations. Bodies of carbonate alteretion swell to cross-cut and feather out alons the folistiori, Carhonatization is revealed by a cream to palesrey colouration in an otherwise gieer rock. Fiare silicification is noted bs a purple-grey hue within carbonatized seams. The rock is weat.ly to moderately well farted throushout. Hematite is pourid as a very firie iriterstitial dissemination withir the chloritized sroundmass. Rocks are norimashetic, fyrite is noted as a Ine dissemiriation in amounts uF to $1 \%$. The foliation is roted it sis desrees to the core axis at 230.75 meters and 40 desrees to the core axis at 232,50 meters. Folietion is lost somewhat abruptly at base of zone.

### 234.83270 .3 B BASALT

Zone is comfosed of medium areen: fine arairied massive flow and relatively finer grained fillowed flow. A few mafic intrusives are noted locally.
234.83 246.60 Fine to very fine srairied massive flow with dioritic texture - eauisrariular, rori-masneticg weakly fractured. Gradual coarserifis trend dowrinhole, Weak fervasive rarbonatization.


| $0-1$ | +34 | .34 |
| ---: | ---: | ---: |
| $0-1$ | 17 | .17 |
| $0-1$ | $t r$ | $t r$ |
| $0-1$ | .17 | .18 |
| $0-1$ | $t r$ | $t r$ |

246.60 251.00 Same as atoove - sredual pirins trend
251.00 251.25 Chilled and breciciated basal flow.
251.25251 .50 Frecciated and hysloclestite - hesing flow top zone.
251.50252 .80 Vers firie srained to aphanitic, vesicular flow tor brecciated pillows weakly develufed.
352.80270 .38 Very fine srained to aphanitic, stronsis breccisted, moderstely to iriterisels silicified aridepidotized massive flow. A mefic iritrusive of dioritic composition is well developed chills zone is non-masrietic. Section below intrusive to non-masrietic. Section below intrusive to
a defth of 256,40 meters has undersone e defth of 256,40 meters has undersone
several stases of brecciation with irijection of silicuous meterisi to matrim. This zone is frobably pillow breccia or breceiated fillows -. few features locally resembles selvages. It becomes more evident down section that most pillows have ruftured with aburidant hyalociastite locally.
270.38 Neters FND OF HOLE.

NOTE: Fortions of the hensins wall lossed by 5 . Conauer.

28.65165 .19 RASALT
flow marsins end medium siained flow centres. Finet
grained pillowed flows and relatively coarser grained
massive flows are fourid in the section. Flows are well
structured with vesicular, aften angularly brecciated
tofs and less broken interiors. Vesicular pillowedzones
are occasionally found as the uffermost section in
otherwise massive flows. Fillowed flows exhibit well
develofed glasss eelvases arir iriteriors with well
develofed vesicles. Massive flows are occasionally flow
brecciated with rounded, reaction rimmed frasments.
These frasments reveal a variety of alteration styles
(chiefly silicification) and teatures. Flow top breccia
is characterized by hishly angular clasts and relative
uriformits of alteration Flow tofs are variulitic
locally with round to oblons variolites up to smm in
size, Rockg are rion-masnetic with a trace locelly. A few
mafic intrusives are roted locally. In addition to weak
aereral chloritization fervasive weak carbonatization
if noted.
20.65 33.45 Fine srained slamero-porphuritic basalt with
Non-masinetic.
srained massive flow,
forfhsitic locally with feldspars up to
cm, Normal amourits of auartz, cartonate,
efidote veiniris. A section of sround and
broken core noted at 42.78 to 43.65 meters.
56.7565 .20 Ver:s fine srained to afhanitic fillowed flow
with well develofed selvases arid vesicular
मiarsins. Selvases become foorly develofed
doun section, A carkonate altered section
is rioted at 58,36 to 59,13 meters with $2 \%$
Furite and a tiace of chalcopyrite.
66.2073 .30 Medium graifed mafic iritrusive with areen
chloritized laths uf to 5 mim. Section da
sradationill into uriderlyins pillowed flow -
mas he a lava tuhe.
73.30 102.05 Contirisation of overlyins pillowed plow -
well develofed selvases often cairy clots
of fyrite, Vesicles are less common than
athove, Masrotics are weakly developed but
iricrease down section.
102.05 121.96 No eridotization in this zone - section
becomes pine srairied end massive. A rafid
increase ir fervasive carboriatization is

| 18695 | 103.26 | 104.26 | 1.00 | 1 | .34 | .34 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18696 | 104.26 | 105.26 | 1.00 | $1-2$ | .34 | .34 |
| 18697 | 105.26 | 106.26 | 1.00 | 0.5 | $t r$ | $t r$ |
| 18698 | 163.80 | 164.73 | .93 | 0.5 | $t r$ | $t r$ |
| 18699 | 164.73 | 165.49 | .76 | 0.5 | $t r$ | $t r$ |

noted, particulariy in breccia which mas have a furple-arey colour localiy. Zone is variably masnetic. Minor carbonate ausitz stririsers with speculif hematite are noted near base of unit.
$121.96 \quad 128.40$ flow breccia
flow to ar to rounded frasmente. Rounded subrounded prasments exhibit reaction rims ard a few vesicular frasments are noted locelly.
120.40 135.50 Grey-sreer, fine arained massive flowfervasive carbonatization increasins down section. Heakis masrietic locally.
135.30 139.29 Fault zone - narrow sean of fault souse parallel to core axis accompanied by carbonate - auartz stringers cerruirs henatite ano chalcopyrite. There may be several parallel sliffage plaries. Carbonetization is strong in surrounding rocks. Kune is very hisily chloritized.
139.29 144.04 Coritinuation of overlying zarie from 128.40 to 135.50 meters. Pervasively carbonatized medium srained massive flow. Gradual fining trend dowri-hole, section is weakly maynetic.
144.04 145.97 Flow top breccia - derk green to purflep with rourided to andular prasments. Upfer section of zone cerries hysloclastite foliated at 43 desrees to the cove esis. Variolites are locally developed. Fock is weakl's masrietic locally and the matrix to frasments is carboriztized. Zorie arades down section to massive flow.
145.97150 .84 Firie to very fine srained massive tlow sfecular hematite noted tr, fractures. Gradual finins trend down-hole.
150.84 151.42 Flow tof breccia - es described sbove at 144.04 to 143.97 meters.
151.42 154.78 Greeri to locally furple coloured, firie sirained massive flow. Fervasive carbonatization increases down section.
154.78 165,49 Gres-sreen massive flow - stronsly fervasively carbonstized becomina purfle hued locelly, Irresiulerly develofed weat. to moderate masmetics ere noted.
165.49 178.00 MAIN MINERALIZEII ZONE.

The zorie is tased ufor amount end desree of silicification arid it is composed of three members. Each memter of the zone is relatively thin arid the dearee of alteration is not particularly strons. Silicification is foorls develofed in the Mair Silicified Zone. Fyrite
contents are lower thar nurmal, mast noticeably in the Main Silicipied Zone. Fyrite content averases $2 \%$ ir the Main silicified zone with up to $4 \%$ locallw. The Mckenna Fault is refresented by a clay sean et 40 desrees to the core axis at 174.75 meters. This seam is $B$ cm in width. 174.75 MCKENNA FAULT FLANE.
165.49171 .56 VARIAFL.Y SILICIFIEI ZONE (UNIETERMINE[I)

The zone is composed of a mixture of purple-srey silicified treccia arid sreen chloritized fine grained rock which is senerally non-brecciated. Hematization accomparies silicification as a purple tint in more hishly altered rock. Chloritic section are strongix hemetized ss $a$ very fine srained interstitial dissemination. The desree of silicification is moderate to strons, Silicified breccia carries elevated fyrite contents with up to $5 \%$ locsily, arid an average of 1 to $3 \%$ as a firie dissemination arid clots up to $i$ cm of firier stains. silicified rock is reactive to HCl . Aturidant carboriate filled fractures ie also noted throushout, Breccia is often folisted et 35 to 40 desrees to the core axis. Freccietion has been multi-stase as indicated by late stase chloritized practures and chlorite filled voids within silicified breccia. Silicification is sumewhat evenly distributed throushout section unlike normal transitional zone rock with more localized silicipication of breccia, some silicified breccia clasts have been fulled apart and mixod with less silicified, chloritized matrix material. 7one is norimagrietic throughout.
171.56 174. 68 MAIN SILICIFIEM ZONE

The section is a dominantly grey to furple-srey moderately to stronsly silicified breccia with minor buff colour localls. A relativels larae amourit ( $10 \%$ ) of relic sreen chloritized rock is noted irithis urit. Chioritic miaterial was introduced alons late stese precturins and turecoiation and post-dates micst alteration. Some of this tectonism is of the same age as the Mokenna fault, noted at the base of the unit. Grey silicified rock has a purple hue due to a variable desree of hematization. A desref of hematization is found erid is more readily identified by streak, in chloritized roct. Euff colour is sssociated with late stase breccia seams uf to 15 cmiri width. Most op these brectia fresments ere finely brecciated internally due to Fruwious brecojation. Vie zome is moderately reactive Io HCI due to cartonatization throushout. The zorie averases 2\% Fyrite at firie jisseminations arid as 1-3nm

| 18700 | 165.49 | 166.34 | .85 | $1-3$ | 3.43 | 2.92 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 15887 | 166.34 | 167.30 | .96 | $1-3$ | .17 | .16 |
| 15880 | 167.30 | 168.31 | 1.01 | $1-3$ | .17 | .17 |
| 15889 | 168.31 | 169.29 | .98 | $1-3$ | .34 | .33 |
| 15890 | 169.29 | 170.31 | 1.02 | $2-3$ | $t r$ | $t r$ |
| 15891 | 170.31 | 170.94 | .63 | $2-3$ | $t r$ | $t r$ |
| 15892 | 170.94 | 171.56 | .62 | $1-2$ | .34 | .21 |


| 15893 | 171.56 | 172.60 | 1.04 | 2 | .34 | .35 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 15894 | 172.60 | 173.66 | 1.06 | 2 | 2.23 | 2.36 |
| 15895 | 173.66 | 174.68 | 1.02 | 2 | $t r$ | $t r$ |

blehs, Furite is also noted alons healed fractures ir breccia. A trace of chalcopurite is noted with late chioritized fractures. The rock is non-masnetic trace is noted locally, Very littie sulfhide is fund in breccia fresments - almost exclusively contained in matrix.
171.56 172.60 frominantis purpie-sres hued.
172.60173 .66 Afprosimately $50 \%$ of section is bupf coloured tirecciation which has been imposed ufon purfle-srey silicification. Minor late stage chioritic shearins is rioted locally farallel to Nckenina fault.
173.66174 .68 same as ahove at 171.56 to 172.60 meters with 费inor chloritic fractures and shears.
174.68178 .00 TRANSITIONALLY SILICIFIED ZONE

Nark. zreen, very fine sreined chloritized sranular (ized) rock with abundant purple-spey silicified frasments derrived throush lete stase re-brecciation of the silicified breccia in the overlyint main silicified zorie, All silicified rock is reactive to HCl. Hematization accomparies sijicification es purfle tint in more hishly altered rock. Silicified prasmerits ere set in a chioritized matrim of tectonic orisin. Green, chloritized, rion-silicified rock is weakiy hematized as a Pine interstitial dissemination. The Mckenns fault is refresented by en B cheng-arit seam at 45 despecs to the core axis at 174.69 to 174.77 meters. Other clay-srit seafis are noted locelly. 174.68 175.35 McKenna Fault zone - abundant clew-afit seans uF to 8 ch in width with widest seam localized at 174.75 meters. Section is composed of aburidant arisular cillicified frasments in chloritic metri\% with seversi sections of hiahly practured silicified rock. Fractures ere all chlorite filled with occasional white carhoriate, Shearins is roted at 45 degrees to the core axis.
175.35 178.00 Generally dark sreen, very fine grained foliated rock with purple-srey silicified hreccis clasts up to 1 con and rare purfle-stes seams of silicified breccia up to 3 cm . A clay-grit sean is roted at 177.33 to 177.36 meters of same ase as the Mckenna Fault.
$15896 \quad 174.68 \quad 175.35$
15897175.35176 .22 $15898 \quad 176.22 \quad 177.08$ $15899177.08 \quad 178.00$

.87
.86
.92

Polisted．Foliation is roted at 45 to 50 desrees to the core axis．Rock is moderately to stronsiy chloritized． The falistion is hishlishted bu selective carbonatization of iridividual laminations．Bodies of cartonate alterstion swell to crossmeut and feather out alons tine foliation．Carbonatization is revealed by a cream to pale srey colouration in an otherwise areen rock．Rare silicification is noted is s purple－grey hue within cartonatized seans．Hematite is found st very fine interstitial dissemination within the chloritized sroundmass，The zone is essentially non－mesnetic with e trace of masnetism locally．A trace of purite is roted throushout．A clay－srit sean refresenting fault zone of same ase as the Mckerina Fault is noted at 178．28 meters，farallel to foliation．Helow 178.90 meters．the folichion is weaker and not well exhibited exceft on localized tasis．
178．00 178．90 Moderately developed foliation becoming stroris locally．
178．90 190．90 section eahibits very weak foliation with rare silicification in localized brecciation．Ereccis is moderately to stronsly carbonstized end is reactive to HCl．Mirior epidotization is noted in localized section which resemble volcanic stule auto－trecciation．No other volcafic tentures are roted．
$190.90 \quad 193.91$ O1ORITE
Firkish－areen to fink，apharitic to very fine areiried zone with well developed breccistion throushout． Brecciated rock is variathy silicified becoming interise locally．Contacts are weakly mhearedi the upper at 25 desrees to the core axis，the lower exhititins more brecciation than shearing，Zone exhibits strons pervasive tarhonatization．Masrietios are veriably develofed throushout beconing moderate locally．Zone cerries uf to $2 \%$ pyrite but suersses $1 \%$ as blebs up to 2用角。

### 193.91260 .09 RASALT

Fole sreen to mediun sres－sreen with few dark areen phases and usually firie to vers fine grained．Finer arained fillowed flows arid relatively coarser grained massive flows are fouris ir，the section．Flows are well structured with vesicular，often ansularis brecciated tols arid less troken interiors．Pillowed flows exhibit well develofed slassy selvases and ifiteriors with well develofed vesjcles．Rocks are riori－mesrietic with etrace

| 16826 | 179.90 | 180.92 | 1.02 | 0.5 | $t r$ | $t r$ |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 16827 | 180.92 | 181.90 | .98 | 0.5 | $t r$ | $t r$ |
| 16828 | 184.20 | 185.17 | .97 | 0.5 | $t r$ | $t r$ |
| 16829 | 189.90 | 190.90 | 1.00 | 0.5 | nil | $n i 1$ |


| 16830 | 190.90 | 191.86 | .96 | 1 | $n i 1$ | $n i 1$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 16831 | 191.86 | 192.93 | 1.07 | 1 | $n i 1$ | $n i 1$ |
| 16832 | 192.93 | 193.91 | .98 | 1 | $n i 1$ | $n i 1$ |

locally. The rocks in the urper section sie often carhonetized but carhonetizetion is not observed in pillowed flows.
193.91 207.40 Fine srained ron-masnetic massive flow chlaritized end PRTvestvel carhonatized chioritized arid pervasively
cath decreasing carbonatized donatization dowis section, A weskly porfhuritic intrusive of dioritic compasition with 1 to 2 mm Firk feldsfar phenocrusts is noted betweer 198.70 and 199. 22 meters. This zone is moderstelu to stronsly carhonatized and is weakly nasmetir.
207.40 210.34 fine to very fine grained wassive flow gradu:si fining trend sown-hole.
210.34211 .07 Sheared and brecciated flow contact zone in basal flow - ainundent hematite filled fractures, A minor trace of magrietics sussests that the hematite carrius some mesnetite.
211.07211 .45 Afhariticg ansularly brecciated flow tof. 211.45260 .09 Very filie sraified to apharitic norimastietic pillowed flow, Well developed selvases are exhituted except fur a tortion hetween 232,00 and 233.70 meters where few fillow rims re noted.
260.09 ifeters ENI OF HOLE.

Note : Harising wall logged by N. Irowries.

## BARRICK RESOURCES CORPORATION LTD．

# An Annual Report on Exploration Activity for the Year 1985 

on the

# Barrick West Block Property 

RECEIVED<br>AP⿸丆口一己 2； 1986<br>R．Brian Alexander<br>A．W．Workman<br>December， 1985

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## INTRODUCTION

The West Block Property is located in the western portion of Harker Township, Ontario, Larder Lake Mining Division.

The property is approximately 5 km . west of the McDermott Project and 51.5 km . east of Matheson, Ontario via highway 101.

Access to the property is by secondary gravel road, 3.2 km . south, from highway 101.

The West Block includes 37 contiguous, unpatented claims. The claims numbered L641387 to 406 , and L641410 to 416 were staked by Camflo Mines Ltd. which merged with Barrick in 1984. Certificates of record were issued to Barrick Resources Corp. in March, 1985. Claims numbered L802656 to 659, L802668 to 669, and L802671 to 674 were staked in May, 1985.

## PREVIOUS WORK

In 1982, Camflo Mines Ltd. staked claims numbered L641382 to 641416, inclusive.

In 1983, Camflo Mines Ltd. established a surface grid for the purpose of ground control. The grid consisted of 30 km . of cut line, with 100 m . line spacing and 25 m . stations. Camflo conducted an EM-16 and a magnetometer survey over the above mentioned grid system. The equipment used was a Scintrex MP-2 proton magnetometer with a compatible base station for diurnal corrections, and the Geonics EM-16 using the transmitter at Cutler, Maine at 17.8 KHz . The survey was conducted over claims L641395 to L641416.

In 1984, Camflo Mines Ltd, drilled one diamond drill hole on claim L641406. The drill hole was designated Mc.84-70 and was drilled to a depth of 240.6 m . along the hole. The BQ drilling was orientated at 360 degrees, with a minus 50 degree dip. The drill collar was located approximately 80 to 100 m . east of claim post \#3 of L641406. No significant assays were obtained.

In 1984, claims L641407 to L641409 were cancelled by the recorders office due to overstaking.

Barrick and Camflo were amalgamated in July, 1984, as Barrick Resources Corporation.

Barrick Resources Corporation Ltd. became American Barrick Resources Corporation as a result of a corporate re-organization.

In 1985, Barrick Resources re-established a surface grid, for the purpose of ground control, since a forest fire destroyed a major portion of the 1983 surface grid. An airborne magnetometer survey, with 23,700 meters of flight line and 200 meter line spacing, was flown over the property. Simultaneously, 1:10,000 and 1:20,000 air photos were produced. A topographic survey was done in conjunction with the interpretation of the air photos, and a $1: 5,000$ scale map with 2 meter contour spacing was produced. Bedrock geology was mapped on a 1:5,000 scale on claims L641387 to 398, L802671 to 674, L802658 to 659 and the northern portion of L802657.

## REGIONAL GEOLOGICAL SETTING

The volcanic rocks of Harker and Holloway Townships are of Archean age and belong to the Superior Province of the Canadian Shield. This particular region is referred to as the Lightning River Area of the Abitibi Belt. The stratigraphy of the Abitibi Belt has been sub-divided as follows (Jensen, 1982):

|  | (Timiskaming Group <br> Upper <br> (Blake River Group |
| :--- | :--- |
| Supergroup | Kinojevis Group <br> (Stoughton-Roquemaure Group |
|  |  |
| Lower | ( Porcupine Group |
| Supergroup | Hunter Mine Group <br>  <br> (Wakewada Group |

The two supergroups represent successive volcanic cycles from ultrabasic komatiitic volcanism to acid calcalkalic volcanism. Each cycle is topped by a dominantly sedimentary (tuffaceous), sequence which reflects relative quiescence in extrusive activity.

The tectonic regime in which the majority of these rocks are located is one of regional subsidence. The formation of a broad, east-west trending synclinal basin is attributable to this subsidence. The Destor-Porcupine Complex forms the north boundary of this basin, and the south side is marked by the Larder Lake-Cadillac break.

A few later intrusives have been emplaced into the volcanic succession. Compositionally, these rocks range from pyroxenite, diabase and lamprophyre, to diorite, granite and syenite. The mafic and ultramafic varieties tend to be found as narrow dykes whereas the intermediate and felsic varieties are more common as larger, more rounded bodies.

The Destor-Porcupine Complex strikes approximately 075 degrees across Harker and Holloway Townships in the same approximate position as highway 101. Rocks to the south of this complex, or zone of dislocation, have approximately the same strike and dip 75 to 85 degrees south. All units top south - there has been no reported evidence of overturning in this area.

## LOCAL GEOLOGY

Bedrock geology was mapped on a scale of 1:5,000, utilizing the surface grid and air photos for control on claims L641387 to 398, L802671 to 674, L802658 to 659 and the northern portion of L802657.

The claim block was found to be underlain by tholeiitic basalts and interflow sediments of the Kinojevis Group (Satterly, 1951).

Generally the units are striking east-west (between 076 and 100 degrees) and dip to the south (between 60 and 74 degrees). The basalts are right side up, younging to the south, as indicated by vesicular and pillowed flow tops in massive flows.

Specific descriptions of the individual lithological units have been provided in the previous report on exploration activities; dated December, 1985.

The 1984 diamond drilling intersected a wide band of sediments in claim L641406, with a true thickness of at least 100 meters. The sediments are striking roughly 060 degrees and probably dip approximately 75 degrees south. Massive beds occasionally contain graded bedding which indicate the sediments are right side up, younging to the south. This band of greywacke and argillite sediments was not reported in outcrop,but
is apparently reflected in the form of an east-west trending magnetic low (less than 500 gamma contour interval).

The 1986 diamond drilling has tested east-west trending geophysical anomalies and the results will be discussed in the section of this report entitled "Diamond Drilling".

Seven major fracture directions were previously determined in the geological mapping program. Four of these seven interpretted fault directions are reflected in both the bedrock geology and the contoured geophysical data. The strike directions are listed as follows: 1) 004 degrees, 2) 024 degrees, 3) 068 degrees, and 4) 339 degrees.

It has been generally observed that north-south faulting post dates east-west faulting. Locally shearing and fracturing has been observed in outcrop, although no visible eastwest displacement was observed in the contoured magnetic data.

## GEOPHYSICS

A VLF ground geophysical survey was completed over 59.3 kilometers of surface grid, with 100 meter line spacing and 25 meter stations. The instrument used was a Geonics EM-16, and the transmitter station used was Cutler, Maine with a frequency of 17.8 KHz . All in phase and quadrature reading were taken facing north, and presented in profile form as well as the contoured Fraser filter data.

There were 20 VLF anomalies, which are numbered on the accompanying map. They are generally weak anomalies, predominantly reflecting condurtive overburden rather than bedrock conductors. The long axes of the anomalies are in an east-west orientation with three interpretted northeast-southwest trending breaks or faults.

Anomalies $10,11,17$ and 20 are probably associated with the intrusive contact (Satterly, 1951) in the northeast corner of the property. The intrusive has been tentatively assigned a syenitic composition.

Anomalies 12 and 16 are correlatible with a northeast trending break in the east-west VLF anomaly axes and coincident change in the contoured magnetic data.

An evaluation of the anomalies was done to prioritize which if any anomaly warranted testing with a diamond drill hole. Any diamond drilling in this area should be based on coincident VLF and magnetic anomalies, unless a more sophisticated geophysical survey gives more reliable anomalies. The following criteria was used to evaluate the EM-16 data: A) negative quadrature response indicating that the conductor is probably at depth and not associated with conductive overburden. B) strong in-phase response indicating the amplitude of response and the intensity of the contoured Fraser filter anomaly. C) good lateral extent of the contoured Fraser filter anomaly.

The following is a description of the individual anomalies:
ANOMALY 1 Location: Line $7+00$ West between $7+70$ and $8+40$ North

- associated with a weak, east-west trending magnetic low.
- negative quadrature response.
- depth interpretted as 50 to 70 meters.
- partially associated with a topographic low.
- strong in-phase response with a good lateral extent.

ANOMALY 2 Location: Line $9+00$ West between $2+20$ and $2+75$ North

- positive quadrature response.
- associated with a topographic low and swampy ground.
- correlated to the east with Anomaly 15.
- strong in-phase response and good lateral extent.

ANOMALY 3 Location: Line $9+00$ West between $0+35$ and $0+85$ North

- positive quadrature response.
- strong in-phrase response with good lateral extent.
- associated with swampy ground and topographic low.
- associated with a weak, east-west trending magnetic low.

ANOMALY 4 Location: Line $11+00$ West between $2+50$ and $3+25$ South

- positive quadrature response.
- associated with swampy ground.
- moderate in-phase response and poor lateral extent.

ANOMALY 5 Location: Line $11+00$ West between $4+50$ and $5+10$ South

- positive quadrature response.
- associated with swampy ground.
- moderate in-phase response and poor lateral extent.

ANOMALY 6 Location: Line $14+00$ West between $6+75$ and $7+55$ South

- positive quadrature response.
- strong in-phase response and moderate lateral extent.
- only partially defined due to the proximity to the western boundary.

ANOMALY 7 Location: Line $6+00$ West between $8+30$ and $9+35$ South

- negative quadrature response.
- depth interpretted as 50 meters.
- associated with a topographic low.
- moderate in-phase response and lateral extent.

ANOMALY 8 Location: Line $12+00$ West between $11+15$ and $12+20$ South

- negative quadrature response.
- depth interpretted as 55 meters.
- strong in-phase response and poor lateral extent.

ANOMALY 9 Location: Line $2+00$ East between $9+40$ and $9+70$ North

- positive quadrature response.
- poorly defined due to the proximity to the property boundary.

ANOMALY 10 Location: Line $1+00$ West between $7+60$ and $7+85$ North

- positive quadrature response.
- in proximity to intrusive contact.
- moderate in-phase response and poor lateral extent.

ANOMALY 11 Location: Line $1+00$ East between $8+15$ and $8+70$ North

- negative quadrature response.
- depth interpretted as 70 meters.
- in proximity to the intrusive contact.
- moderate in-phase response and lateral extent.

ANOMALY 12 Location: Line $4+00$ East between $7+60$ and $8+15$ North

- negative quadrature response.
- moderate in-phase response and good lateral extent.
- depth interpretted as 100 meters.
- correlated with Anomaly 16, trending northeast-southwest.
- appears to cross-cut intrusive.

ANOMALY 13 Location: Line $0+00$ between $5+40$ and $5+95$ North

- positive quadrature response.
- weak in-phase response and poor lateral extent.

ANOMALY 14 Location: Line $2+00$ West between $4+20$ and $5+10$ North

- negative quadrature response.
- depth interpretted between 15 and 20 meters.
- correlated with a syenitic intrusive from recent drill results.
- moderate in-phase response and good lateral extent.
- associated with the north side of a topographic low.

ANOMALY 15 Location: Line $2+00$ West between $1+20$ and $1+70$ North

- positive quadrature response.
- correlated to the west with Anomaly 2 and a topographic low.
- strong in-phase response and good lateral extent.

ANOMALY 16 Location: Line $1+00$ West between $0+60$ and $1+30$ South

- negative quadrature response.
- depth interpretted as 60 meters.
- moderate in-phase response with good lateral extent.
- correlated with Anomaly 12, trending northeast-southwest.

ANOMALY 17 Location: Line 6+00 East between $4+35$ and $5+40$ North

- negative quadrature response.
- depth interpretted as 70 meters.
- associated with intrusive contact.

ANOMALY 18 Location: Line $9+00$ East between $4+80$ and $5+15$ North

- positive in-phase response.
- poorly defined due to the proximity to the property boundary.

ANOMALY 19 Location: Line $4+00$ East between $1+70$ and $2+30$ North

- negative quadrature response.
- depth interpretted as 25 meters.
- strong in-phase response with good lateral extent.
- correlated to the west with Anomalies 2 and 15.

ANOMALY 20 Location: Line $12+00$ East between $2+00$ and $2+65$ North

- negative quadrature response.
- depth interpretted as 50 to 75 meters.
- associated with the intrusive contact.
- poorly defined due to the proximity to the property boundary.

A magnetometer ground geophysical survey was completed over 59.3 kilometers of surface grid, with 100 meter line spacing and 25 meter stations. The instrument used was a Scintrex, Model MP-2, portable proton precession magnetometer. The diurnal variation was corrected by the use of a compatible base station and the total magnetic field data was plotted and contoured on a 1:5,000 scale map.

Magnetic lows of less than 750 gammas, were shown in the northeast corner of the property and in a narrow band across the southwest corner of the property.

Government geological mapping (Satterly, 1951) has shown a felsic intrusive contact to be coincident with the magnetic low in the northeast corner of the property.

The low across the southwest corner has been shown by 1984 diamond drilling to represent a sedimentary horizon, consisting of greywacke and argillite.

Two smaller east-west trending lows are expressed in the northwest corner of the map sheet, coincident with VLF Fraser filter anomaly 1 and at the western limit of the baseline, coincident with VLF Fraser filter anomaly 3.

The highly magnetic contours are interpretted to be magnetic basalt flows, of the iron rich tholeiitic variety, common to the Lightning River Area.

Northeast-southwest trending breaks in the contoured magnetic pattern have been interpretted as faulting which probably post dates the felsic intrusive.

Four fracture trends at 024 degrees, 004 degrees, 068 degrees, and 339 degrees appear predominant, as exhibited by the interpretted linear breaks in the contoured magnetic data. These four interpretted fault directions are also reflected in the bedrock geology.

## DIAMOND DRILLING

The 1986 diamond drill program consisted of two holes for a total cumulative depth of 465.56 meters. The two holes were designated Mc.86-259 and 260. They were drilled at an azimuth of 360 degrees, with a dip of minus 50 degrees.
Mc.86-259 was collared on Line $2+00$ West at $4+00$ North, and was designed to test a coincident VLF (EM-16) and magnetic anomaly. The VLF (EM-16) Fraser filter Anomaly $\# 14$ proved to be an east-west trending felsic dike of a tentatively syenitic composition. The intrusive locally exhibited a pegmatitic texture and was generally hematized to an orangy-brown to reddish-pink colour. The coincident magnetic low appears to be the transition of strongly magnetic basaltic flows at the top of the hole to weakly magnetic basaltic flows at depth.
Mc.86-260 was collared on Line $2+00$ West at $0+75$ North, and was designed to test the VLF Fraser filter Anomaly $\# 15$ and to initiate a stratigraphic diamond drilling cross section along Line $2+00$ West. The stratigraphic section would be to test for McDermott style mineralization in areas of poor bedrock exposure, coincident with east-west trending geophysical anomalies. The VLF Fraser filter anomaly is associated with a fault zone and a felsic dike in the upper portions of the hole.

The drill hole locations are plotted on the geology map, included with this report.

## CONCLUSIONS AND RECOMMENDATIONS

VLF Fraser filter Anomalies 1 and 14 have been postulated to have a lateral continuity between them. Anomaly 14 has been tested by Mc.86-259. Examination of the drill core has indicated the VLF anomaly to be the expression of an intrusive at depth and the coincident magnetic low is explained by the presence of weakly magnetic basalts. The lack of anomalous assays suggests, that should a diamond drill hole be designed to test the more promising Anomaly 1, it would probably yield similar results.

It is recommended that should future diamond drilling be designed to test Anomaly 1 on Line 1300 West or Anomaly 3 on Line 1500 West, that it should take place in the summer months. This is due to the lack of a sufficient water supply in the immediate area during the winter months.

Anomalies 2, 15, and 19 have been tentatively assumed to be laterally contiguous. Anomaly 15 has been tested by diamond drill hole Mc.86-260.

Examination of the drill core indicates the anomaly is related to a Fault Zone and a felsic intrusive located near the top of the drill hole. A silicified zone at the base of the hole is not responsible for the geophysical anomaly.

The lack of McDermott style mineralization suggests that similar results may be expected if future diamond drilling is designed to test Anomalies 2 and 19, although Anomaly 19 has the most attractive geophysical characteristics.

The position of future diamond drill holes should be determined by the simultaneous examination of available bedrock geology exposed in outcrop and the quality of the geophysical anomalies described within this report.

The proximity of diamond drill holes Mc.84-70, Mc.86-259 and 260 to Line $2+00$ West, is advantageous to establishing a north-south fence of diamond drill holes. This pattern for future drilling would be designed to establish the presence of east-west trending McDermott style mineralization on the West Block Property.

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B． 04 19．40 OVERELIRDEN．
19.40 33．18 HIGH MAG BASAL．T．

33． 18 35． 25 SYENITE．
$35.0571 . E 5$ HIGH MAG EASALT．
71． ES 72． 95 GYENITE．
7E． 95 75． 70 HIGH MAG BASALT．
75.70 78． 75 SYENITE．

78． 75 108． 05 HIGH MAG BASAL．T．
108.05 1之S．EG SYENITE．
125.66136 .92 HIGH MAG GASALT． 125.66 136．92 HIGH MAG
$136.9 E$ 137．85 SYENITE．
137.85181 .50 HIGH MAG EASALT．

181．50 183．60 GYENITE．
183． 60 E05． 50 HIGH MAG BASALT．
205．50 210．27 SYENITE．
E10．こ7 ĖE．BQ HIGH MAG EASALT． EこE．日Q EKí．QD SYENITE．
23E．DQ 256.30 HIGH MAG EASALT eSE． 30 END DF HOLE．


```
Reddish orowri to oale grey, pmarieritic, mericitized,
intermediate intrusive.
degrees to the core ax\lambdaw. Lower coritact is at 45
aeprees to the core axis. Carbonatizatiari is associatea
witn the uoper contact.
77.25 77.85 Xenolith Gf Dasalt.
```

78． $75108 . \square 5 \mathrm{HIGH}$ MAG BASALT

```
Greenish grey, very fine grairied to medium grairied,
weakly to moderately magrietic, massive basalt. .
78.75 81.EO Massive flow : preeri grey, medium grairiea,
    chloritized basalt witn gradational lower*
    coritact.
79. E0 79. E0 Quartz - carboriate veiriarig with S to 10x
    pyrite iri fracture fillirig form.
```

108．05 125．66 SYENITE

> Mottled oraripe brown to pase grey coloured, hematized, pegrnatitic iritrusive. Rock composition is Bux ouartz ard feldepar, arid en\% mafic mineral, possioiy norroleride. upper arid lower coritacts are weakly cnilled arid irrequiar
125.66 136． 9 HE HIGH MAG BASALT

Dark greari grey，very firie grairied to firie grairied， cnloritized，weakly to moderately magnetic．massive flow．Carboriate filled vesicles are rioted locally． magretism is decreasirig down sectior．
136.92137 .85 SYENITE

Same as above 1 riterval from 108.05 to 1 ES． 66 meters．

### 137.85181 .50 HIGH MAG $3 A S A L$

Same as above interval from $125.6 \in$ to $136.9{ }^{2}$ meters．
159．Eわ 1Ei． $6 \boxtimes$ Fyrite 1 to $4 x$ irifracture fillirg form associated with weak carboriatizatior．

| Sample From | To | Lerigth $\times$ Sul | Au | GW |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |
| 20311 | 75.70 | 76.70 | 1.00 | TR | .34 | .34 |
| 20312 | 76.70 | 77.25 | .55 | $T R$ | .34 | .19 |
| 20313 | 77.25 | 77.85 | .60 | TR | .34 | .20 |
| 20314 | 77.85 | 78.75 | .90 | TR | .34 | .31 |


| 20317 | 108.05 | 109.05 | 1.00 | TR | $t r$ | tr |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E0318 | 109.05 | 110.05 | 1.08 | TR | tr | tr |
| 20319 | 114.05 | 115.05 | 1.00 | TR | tr | tr |
| こ03ごも | 119.05 | 120.05 | 1． 20 | TR | tr | tr |
| こめろこ1 | 1ニ3．78 | 1E4．70 | 1.80 | TR | $t r$ | $t r$ |
| 20322 | 124．7＊ | 125．66 | .96 | TR | tr | tr |
| 20323 | 1\％5．66 | 1 86.60 | ． 94 | TR | tr | tr |
| 203E．4 | 135.94 | 136．92 | ． 98 | TR | tr | tr |

203ES 136．92 137.85 TR tr tr

| $203 E \epsilon$ | 137.85 | 138.80 | .95 | $T R$ | $t r$ | $t r$ |
| :--- | :--- | :--- | :--- | :---: | :--- | :--- |
| 20327 | 159.60 | 160.60 | 1.00 | $1-2$ | $t r$ | $t r$ |
| 20328 | 160.60 | 161.60 | 1.00 | $e-4$ | $t r$ | $t r$ |
| 20329 | 180.50 | 181.50 | 1.00 | $T R$ | $t r$ | $t r$ |

178.35178 .43 Fault poupe at 40 deprees to the core axis 15 strorigly cnloritized.
181.50 183. E\% SYENITE

Same as above iriterval from $1 \Delta B$. os tc $1 \ddot{E} 5.6 \in$ meters. Localiy a pharieritic, eouigrarimiar texture is ricted to equivalerit to upder syeritic iritrusive.
183. EQ EQS. 50 HIGH MAG BASALT
 metere iri wadth.

19E. 70 197. 35 Feqmatitac intrusive with $1 \%$ pyrite.
205.50 2in. 27 SYENITE

Same as above iriterval from 108.05 to 1 E5. $6 \in$ meters. Upper coritact $i s$ shard at $5 s$ deqrees to the care axis. Lower caritact is miarp at 40 degrees to the core axis.

2u®.e7 EEG. BO EASALT
Dark green prey, very firie prairied to medium grairied, cnioritized massive flow. Locally ari conitic texture is formed oy white feldspar $2 r_{\text {a }}$ chloritized matrix.

## EEE. BD EЗ天. DO SYENITE

Same as above iriterval frim $108 . \operatorname{bs}$ to les.eg meterg.
Pegmatitic texture is patcony. Lower coritact is sharp at
70 degrees to the core axis. Upoer coritact 1 is at 5
teprees to the core axis. Weakly chilled margins are
ricitea.


EDG. 30 END OF HOLE.

A. AN 19.5S OVERBURDEN.
19. SS GE. ié EASALT.
66. 12 69.45 SYENITE.
$69.451049 .3 E$ HIGH MAG EASALT.
109. 3 е 180.74 DIORITE.
100. 74 190. 65 VARIABLY SILICIFIED ERSALT.
190.65 e09.eє DIORITE.

ED9. ef END OF HOLE.
0.00 19.55 OVEREURDEN
19. ES EG. 12 EASALT

> Darte green grey, very firie grained ta fime praineo cnloritized massive arid Dillowed flows. Locally ouartz-carboriate filled fractures are rioted with asmociated enidotized arid minor pyrite.
> e7.45 27.55 Tectorically foliated at $G d$ deprees to the corm axis associated with mirior pyrite.
> 34. 35 Weakiy mheared at 40 degrees to the core axis with syenitic veirilet associated.
> 44.00 4 E. 35 fault zorie. Unper 3 cm foliated G degrees to the core axis with flow ton filiirin oyrate up to Ex locally. Strorigly foliated arid weakiy sheared at 45.1 meters at S s degrees to the core axis. Locally pale grey silica dumpirig is roted with increasing pyrite coriterit sssciciated. $4 B, 18$ shearirio at GO deprees to the core akis.
> 49.75 E3. 90 Pillowed flow. Dark greer grey, very fire grained to fire grained chloritized basalt with weakly to moderately develoded selvapes uo to 3 cin wide. Selvages are chioratized arid epidotized.
> 63. 92 E4. E 3 I . Drarige browr, pharieritic sericitized iritermeaiate intrusive. Oraripe colouririg is due to hematite alteratior.

EE.1こ E9.45 SYENITE

```
Fale to orarpe browr, lacally Fegmatitic, weakly Gericitized iritermediate iritrusive. Rock compositici is Bo to \(90 x\) quartz and felaspar with 10 to e0x mafic mirieral. Upper coritact is sheared at En degrees to the core axis. Lower coritact \(1 E\) sheared arid weakly enleritized.
```

E9.45 20.3 HIGH MAG BASALT
Very fine grained to firie grained dark green grey weakly cnloritized oillowed flow. Narrow selvages are weakly develided chioritized arid edidotized. Vesicie ricted locally. Strorigly magrietic aricreasirig dowri sectior. 93. $\mathbf{e 4} 54.04$ Dark greer zorie of with milicification and carboriate alteratior adjacerit fractures.

| 20344 | 43.00 | 44.00 | 1.00 | $T R-1$ | $t r$ | $t r$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 20345 | 44.00 | 45.00 | 1.00 | $3-5$ | $t r$ | $t r$ |
| 20346 | 45.00 | 46.00 | 1.00 | $1-E$ | $t r$ | $t r$ |
| 20347 | 46.00 | 47.00 | 1.00 | $E-3$ | $t r$ | $t r$ |
| 20348 | 47.00 | 48.00 | 1.00 | $1-2$ | $t r$ | $t r$ |
| 20349 | 48.00 | 49.00 | 1.00 | $T R$ | $t r$ | $t r$ |
| 20350 | 65.10 | $66.1 E$ | 1.02 | $T R$ | $t r$ | $t r$ |


| 2035 1 | EE. 1 E | 67. $1 \approx$ | 1.00 | TR | tr | tr |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -035* | E8. 50 | 69.45 | . 95 | TR | $t r$ | tr |


| EQ353 | 69.45 | 70.45 | 1.000 | TR | tr | $t r$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20354 | Se. 32 | 93. 24 | . 9E | TR | tr | tr* |
| 20355 | 93.24 | 94.4 | . 80 | $1-E$ | tr | tr |
| E0356 | 94.04 | 94.80 | .76 | TR | $t r^{*}$ | $\mathrm{tr}^{\sim}$ |

$\qquad$
105.05 105.45 Strarigly epidotized welvape with carbonate-quartz fillirig. 1 to EX pyrite.
108.73108 .77 Firik syerite iriterise. Reactive to HCl.
109.3E 180.74 DIORITE

180.74190 .65 VRRIAELY SILICIFIED EASAL.

70x silicified. Very firie grairied grey to daje green massive rock. ofter, 'cherty'. Nori-magrietic. Fissibly a basalt. Alteration alorig fractures pives a barided laok. Iricludes firie grairied feldspar porpnyritic zories.
$180.74183 .1490 \%$ silifified. Grey very firie grairied basalt. lacally un to ex pyrite.
183.14184.9460x silicified. Grey to buff grey-preen. $30 x$ feldspar onericicrysts.
184.94 lB6. $3590 \%$ silicified. Very firie prairied prey basalt. 1 to ex pyrite.
1日G. $35167.4550 x$ silacified. Grey firie graimed iriterise. Feldspar phenocrvets to $E$ mm. Trace ta $1 x$ pyrite.
$187.45190 .6590 \%$ silicifiea grey to grey-greeri basalt. 1 to Ex pyrite. Section at 188.74 to 188.83 meters is pirk porphyritic SYENITE. 1× pyrite.

| $E 0357$ | 115.35 | 116.09 | .74 | $T R-1$ | $t r$ | $t r$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 20358 | 116.09 | 116.71 | .62 | $T R-1$ | $t r$ | $t r$ |
| 20359 | 179.84 | 160.74 | .90 | $T R-1$ | $t r$ | $t r$ |


| 20360180.74 | 181.90 | 1.16 | $1-2$ | 1.03 | 1.19 |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 2036.1 | 181.90 | 183.14 | 1.24 | $1-2$ | .34 | .42 |
| 20362 | 183.14 | 184.05 | .91 | $T R-1$ | .34 | .31 |
| $E 036.3$ | 184.05 | 184.94 | .89 | $T R-1$ | .34 | .30 |
| 20364 | 184.94 | 185.70 | .76 | $1-2$ | $t r$ | $t r$ |
| 20365 | 185.70 | 186.35 | .65 | $1-2$ | $t r$ | $t r$ |
| 20366 | 186.35 | 187.45 | 1.18 | 1 | $t r$ | $t r$ |
| 20367 | 187.45 | 188.59 | 1.14 | 2 | $t r$ | $t r$ |
| 20368 | 188.59 | 189.67 | 1.08 | $1-e$ | $t r$ | $t r$ |
| 20369 | 189.67 | 190.65 | .98 | 1 | $t r$ | $t r$ |

190.65 209. 26 DIORITE

Dark grey oreen firie ta medium grairied mafic iritrusive. Fines at top coritact. Silicification irivades rock from Fines at too coritact. Silicification irivades rock from
overlying unit. Chlaritic laths to 4 mm in feleac matrix. Top rior-magnetic, becomes strongiy magrietic dowr sectiori. Minor quartz-carboriate stririgers. Cut dy pirik pegmatitic feleic intrusive banos at. 19e.39 To 19E.55,
 20E. 48 to e02. 65 meters.

20370 190.65 191.59 . 94 20371 201.52 20た.72 1.20 $\begin{array}{lll}\text { 20371 c01. Se coe.72 } & 1.20 \\ \text { en37e z0e.72 e03.55 } & .83\end{array}$

# AMERICAN BARRICK RESOURCES CORPORATION LTD. 

An Annual Report on Exploration Activity for the Year 1985
on the

## Worvest Option

(in parts of Harker and Holloway Townships, Ontario)

## RECEIVED.

APR 2; 1986
mining lands section
A.W. Workman

Senior Geologist
October 31, 1985

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## INTRODUCTION

## Location of Property

THE WORVEST OPTION is located approximately 50 kilometers east of Matheson, Ontario. It straddles the Harker-Holloway Township boundary about one kilometer south of Highway 101. Eleven claims make up the property - six in Harker and five in Holloway Township.

For a complete description of the property including claim numbers, road access, physiography and access to hydro, refer to the previous report:

Summary Report of a Diamond Drilling Programme on the Lost Treasure (Worvest) Option<br>Workman, Conquer, 1984.

## Summary of Work

During the 1985 exploration programme, five holes were drilled on the Worvest Option. A total of $1,625.3$ meters ( 5332.35 feet) of BQ diameter drilling was completed. The technical data on each drill hole is listed in Table 1. The purpose of this drilling was to follow-up on the favourable geology intersected during the period from June 15 to September 18, 1984. It was believed at the time that the area around lines $1+00 \mathrm{E}$ to $2+00 \mathrm{~W}$ required further work (see previous report - Workman/Conquer, 1984).

In addition to this work, an airborne geophysical survey was carried out over the Worvest, and other, Barrick Options. The purpose of this survey was to provide information with regards to the possibility of other mineralized horizons on the property. This information would be utilized in the planning of future diamond drilling. Approximately 6.9 kilometers were completed over the Worvest property.



TABLE 1
DIAMOND DRILL HOLE DATA

| D.D.H. | Location | Bearing | Dip | Length | Date Started | Date Completed |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Mc.85-192 | $1+00 \mathrm{E} 1+22 \mathrm{~S}$ | 342.4 | -65 | $\begin{aligned} & 251.65 \\ & .342: 4 \theta \end{aligned}$ | 21-05-85 | 24-05-85 |
| Mc.85-250 | $1+00 \mathrm{E} 2+10 \mathrm{~S}$ | 344.5 | -70 | 386.18 | 8-08-85 | 16-08-85 |
| Mc.85-251 | $1+50 \mathrm{E} 1+73 \mathrm{~S}$ | 349.2 | -70 | 355.70 | 13-09-85 | 20-09-85 |
| Mc.85-252 | 0+00 1+22S | 342.2 | -65 | 321.50 | 27-09-85 | 4-10-85 |
| Mc.85-258 | $1+50 \mathrm{E} 1+20 \mathrm{~S}$ | 350.6 | -70 | 310.27 | 20-09-85 | 26-09-85 |

## REGIONAL GEOLOGICAL SETTING

The volcanic rocks of Harker and Holloway Townships are of Archean age and belong to the Superior Province of the Canadian Shield. The stratigraphy has been subdivided as follows (Jensen, 1980):

| UPPER | (Timiskaming Group <br> SUPERGROUP <br>  <br>  <br> (Blake River Group <br> (Kinojevis Group <br> (Stoughton-Roquemaure Group |
| :--- | :--- |
| LOWER | (Porcupine Group |
| SUPERGROUP | (Hunter Mine Group <br> (Wakewada Group |

The two supergroups represent sucessive volcanic cycles from ultrabasic komatiitic volcanism to acid calcalkalic volcanism. Each cycle is topped by a dominantly sedimentary (tuffaceous), sequence which reflects relative quiescence is extrusive activity.

The tectonic regime in which the majority of these rocks are located is one of regional subsidence. The formation of a broad, east-west trending synclinal basin is attributable to this subsidence. The Destor-Porcupine Complex forms the north boundary of this basin, and the south side is marked by the Larder Lake Complex.

A few later intrusives have been emplaced into the volcanic succession. Compositionally, these rocks range from pyroxenite, diabase and lamprophyre, to diorite, granite and syenite. The mafic and ultramafic varieties tend to be found as narrow dykes whereas the intermediate and felsic varieties are more common as larger, more rounded bodies.

The Destor-Porcupine Complex strikes approximately 075 degrees across Harker and Holloway Townships in the same approximate position as highway 101. Rocks to the south of this complex, or zone of dislocation, have approximately this same strike and dip 75 to 85 degrees south. All units top south - there has been no reported evidence of overturning in this area.

The zone of interest which hosts gold mineralization is of tectonic origin. It crosscuts volcanic stratigraphy at a shallow angle. Present studies indicate that volcanic rocks cut by this zone are iron-rich and magnesium-rich basalts of the Kinojevis Group.

## DIAMOND DRILLING

## Summary

As previously given, a total of $1,625.3$ metres were drilled in five $B Q$ holes on the Worvest Option. The holes were intended to explore down dip and along strike from an encouraging zone intersected during the 1984 drilling programme. This 'favourable' geology consisted of well developed alteration, as well as geochemically anomalous gold values along strike from the McDermott Deposit.


Drill hole Mc.85-192 encountered low, and yet still highly anomalous gold values over narrow widths. Alteration in this hole was thin but encouraging. The following hole, Mc.85-250, intersected increasing alteration and higher gold values. The next two holes to be drilled were Mc.85-251 and 258. These holes cut good widths of alteration and ore-grade gold values across highly favourable widths. The final hole, Mc.85-252 was drilled into a separate zone of alteration approximately 150 metres west of the section with holes 251 and 258. This hole intersected well developed alteration, although it was narrower than the two overlying intersections (drilled in 1984-Mc.8573 and 74). Gold values were low to moderate in this hole although a narrow section did carry ore-grade mineralization.

## Geology

As stated in the 1984 report on diamond drilling of the Worvest Option, further revisions of the geology along the McDermott zone were considered likely. In fact, major revisions have been made. these changes are due to:

1) a substantial increase in the amount of diamond drill data from a total drilled footage on the project of 79,117 ' at year end, 1984, to 199,547 ' as of October 4, 1985;
2) more extensive drilling along strike encountering more variety in style of mineralization; and,
3) detailed petrographic and scanning electron microscope work on gold mineralization along the McDermott zone.

Country rock bordering the mineralized zone is composed of iron-rich and magnesiumrich tholeiitic basalts. In the specific vicinity of the Worvest Option, magnesian varieties are dominant. Very little alteration is noted in these rocks. The flows
exhibit well developed and often pristine volcanic textures. It can be shown that "basaltic composition is coincidental to the location of the ore-bearing zones" (Workman, 1985).

The host rocks to mineralization are recognized to be of intrusive origin. They were emplaced into an active fault zone. Two intrusive lithologies are present. The earliest was composed of quartz-diorite and has been deformed in a highly ductile (or plastic), manner. This rock has been converted to chlorite-carbonate and chlorite-carbonate-muscovite schist. Little mineralization is found within this rock. Subsequent tectonism allowed a second intrusive, diorite, to be injected into this zone. This rock underwent brittle deformation. The resulting breccia, with its enhanced permeability was subjected to a long multi-phase history of fluid influx. These hydrothermal fluids altered and mineralized the brecciated, dioritic rock mass.

This brecciated and altered zone, as it crosses the Worvest Property, strikes approximately 074 degrees and dips south at 65 degrees. It comes to surface along the baseline.

Following tectonism along the zone, a few narrow late stage intrusives were injected into the rocks of this area. In general, they have a random, cross-cutting relationship to mineralization.

All rocks are offset by very late, north to north-easterly trending fault systems. The maximum displacement presently recognized is less than 100 metres in the horizontal plane. Several of these fault-types with lesser amounts of dislocation are noted on the Worvest Option cutting the base-line near $1+75 \mathrm{E}$. and $1+50 \mathrm{~W}$. It is important to note that these structures are in no way involved in the mineralization process, neither
actively (in terms of genesis as a fluid conduit), nor passively (as a broken host rock).


#### Abstract

Alteration Silicification and carbonatization are the most prevalent forms of alteration in the rocks comprising the mineralized zone. Albitization, hematization and pyrite formation are also pronounced. All forms of alteration overlap and boundaries are entirely gradational.


The alteration sequence of events is as follows:

1) chloritization and the release of iron as magnetite into intergranular spaces;
2) oxidation of magnetite to hematite;
3) silicification as angoing multi-stage process coupled with each brecciation event, sulphidation of hematite to pyrite (with probable introduction of gold), albitization; and,
4) carbonatization - ferroan dolomite near ore and calcite in more distal areas (with leaching and re-distribution of gold)

## Mechanism of Alteration

The development of alteration was dependant upon two factors: firstly, the permeability afforded by brecciation; and secondly, the ability of altering fluids to penetrate radially away from micro-conduits into non-brecciated rock. It is the former of these two that is critical. Without fine brecciation on a maximum scale of 1 cm ., complete alteration is retarded and penetrative fragment rim alteration is the result. Spatially, the higher levels of alteration in stages 3 and 4 are proximal to the actual plane (s), of brecciation and movement within this altered zone. Stages 1 and 2, as well as albitization are found beyond the limitations of extreme brecciation.

Enhanced permeability through multi-stage, brittle deformation, allowed altering hydrothermal fluids better access than they were afforded in the quartz diorites. At least 3 early stages of brecciation have been inferred through the examination of breccia fragments. Each stage has been accompanied by silicification, pyritization, and albitization, to form an aphanitic highly siliceous rock.

## Silicification and Pyritization

It is visually apparent when logging drill core, that silicification and pyritization are the critical elements of alteration with respect to gold content. Hence, for correlation purposes, the alteration zone was sub-divided on the basis of silicification into the Main Silicified Zone with quantitatively greater than $95 \%$ silicification, and flanking Transitionally Silicified Zones with lower amounts of silicified rock. These zones are collectively referred to as the Main Mineralized Zone. Irrespective of where the ore is located, a well developed Main Silicified Zone is a necessary feature for good mineralization. Individual zones of silicification have a pod-like morphology as do the ore-grade sections within these zones. The zones are all on the same datum, being adjacent to the McKenna Fault, and have the same orientation. The silicified pods or shoots range in maximum thickness from 8 to 25 meters. Length and width dimensions range from 250 meters by 150 meters to several times this size.

Pyritized rock is found throughout the Main Mineralized Zone. Pyrite contents can locally reach $30 \%$. These highs are associated with silica flooding in the most highly silicified sections. Within the Main Silicified Zone, pyrite commonly averages 3-5\%. It is found as a very fine dissemination, as 1-2 mm. cubes and as $1-3 \mathrm{~mm}$.
blebs, of ten forming aggregates in the siliceous matrix to breccia. Coarse, $1-3 \mathrm{~cm}$. clots are noted which encompass breccia fragments. Pyrite is common as a filling in healed fractures of various ages. Pyrite was initially deposited throughout the rock as indicated by very finely disseminated grains within early breccia clasts. Later stages of pyrite, including some grains which were subsequently brecciated, were confined largely to the matrix between individual breccia fragments. To some degree, pyrite was probably in a constant state of re-distribution during the brecciation-silicification events.


#### Abstract

Albitization Albitization is evident in thin section as euhedral, twinned plagioclase laths. These crystals could not have survived the stress imparted on this sequence of rocks. Albite has often been partially or completely replaced by carbonate.


## Carbonatization

Carbonatization was the final alteration process. Proximal to ore, this event formed dolomite, while in more distal altered sections, calcite was deposited. The availability of iron, which was probably mobile throughout progressive alteration, aided in the formation of ferroan dolomite or ankerite. This carbonate can be easily seen on the weathered bedrock surface as alteration invading a late brecciation event. In drill core, dolomite is frequently seen as a buff alteration penetrating dark purple-grey silicified breccia in the main silicified zone. Spatially, the best dolomitization is of ten found adjacent to the McKenna fault or other shears of the same age as the fault. The last stage of brecciation was related to final reactivation of the McKenna Fault. This remobilization created a grit and clay filled seam up to 10 cm , in thickness. A tectonic regime composed of ripped up silicified clasts supported in a mylonitic
groundmass is associated with the fault plane. Fragments of silicified rock carried in this zone bear $1-5 \mathrm{~mm}$. dolomitized rims, thus indicating that minor carbonatization post-dated the last tectonic event.

## Gold Mineralization

The following table lists the gold intersections from the 1985 drill programme.

| D.D.H. | From | To | Length |  | Estimated True Width $\mathrm{mtr} \quad(\mathrm{ft})$ |  | Gold Content |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |
| 85-192 | 141.98 | 145.71 | 3.73 | (12.2) | 2.50 | (8.2) | 1.93 | (0.056) |
|  | 177.25 | 180.25 | 3.00 | (9.8) | 2.00 | (6.6) | 1.83 | (0.053) |
| 85-250 | 272.30 | 277.47 | 5.17 | (17.0) | 4.00 | (13.1) | 3.32 | (0.097) |
|  | includes |  | 2.49 | (8.2) | 1.93 | (6.3) | 4.60 | (0.134) |
| 85-251 | 218.44 | 230.22 | 11.78 | (38.6) | ) 9.65 | (31.7) | 8.02 | (0.234) |
|  | includes |  | 5.09 | (16.7) | ) 4.17 | (13.7) | 10.73 | (0.313) |
| 85-252 | 171.00 | 174.20 | 3.20 | (10.5) | ) 2.50 | (8.2) | 3.26 | (0.095) |
|  | includes |  | 1.16 | (3.8) | 0.91 | (3.0) | 4.69 | (0.137) |
| 85-258 | 152.28 | 161.03 | 8.75 | (28.7) | 7.50 | (24.6) | 7.52 | (0.219) |
|  | includes |  | 4.20 | (13.8) | ) 3.60 | (11.8) | 13.23 | (0.386) |

## AIRBORNE SURVEYS

## Geophysics

An airborne geophysical survey was carried out during the summer of 1985. The purposes of this survey were:

1) to attempt to better delineate the trend of the McDermott mineralized zone;
2) to determine the presence of any faults which might cross-cut and displace the zone; and,
3) to investigate the potential for any additional mineralized zones.

The contract was awarded to Geophysical Surveys Inc. of St. Foe, Quebec. The survey was flown in July, 1985, using a helicopter-born gradiometer. Two cesium vapour magnetometers of 0.005 gamma resolution and vertically separated by 2 meters, were towed under a helicopter at an average elevation of 45 meters above ground level. The average traverse spacing was 200 meters. The flight path recovery was recorded on video tape by a vertically mounted camera inside the helicopter,

The accessory equipment consisted of:

1) a VLF-EM from Herz Industries, the TOTEM-2A, measuring the total field and quadrature component of the electro-magnetic field at two frequencies;
2) a Sonotek SDS-1200 digital data acquisition system; and,
3) a King KRA-10 radar altimeter.

## Aerial Photography

Aquarius Flight Inc. have completed a series of flight lines, over the property for Barrick Resources. Aerial photographs were produced on two scales - 1:10,000 and $1: 20,000$. These photos were used to facilitate ground control for the geological mapping program and to prepare a photo mosaic for the helicopter-born geophysical survey.

## Total Field Magnetics

The total field response varies from approximately 58,500 gammas for low magnetic (magnesium-rich), tholeiitic basalts, to greater than 58,900 gammas for the more highly magnetic (probably iron-rich), tholeiitic basalts. A pyroxenitic intrusive, in the centre of the west block of claims, has a response of from 59,000 to greater than 60,000 gammas.

In general, this survey has confirmed the existence of more highly magnetic rocks striking approximately east-west across the north margin of the property. It is presently unknown whether these rocks represent a repeat in the iron-rich volcanic stratigraphy from further south, or, whether these rocks are ultrabasic flows belonging to the Stoughton-Roquemaure Group. This is not completely an academic matter since flow composition might influence future exploration plans apart from the main mineralized zone. The total field survey also delineates more highly magnetic flows to the south. The mineralized zone lies in the intervening sequence of less magnetic rocks.

An off-set on the magnetic contours indicates the possible presence of a fault along the vicinity of the Harker-Holloway Township line. Strike is approximately northsouth. Displacement seems to be sinistral and about 100 meters in magnitude,

## Gradient Survey

The response of the gradiometer helps to highlight the position on surface of the contact between rock formation with different magnetic properties. The zero contour line is the definitive contour. Aside from generally supporting the notion of a fault along the township line, it will remain for future diamond drilling to evaluate the usefulness of this survey technique in this geological environment.

## VLF Survey

Although few conductive responses are noted on the Worvest Option, this survey (generally), was able to detect northwest - southeast striking conductors. However, these conductors frequently undergo radical changes in response over short distances, thus making correlation difficult. Furthermore, no explanation has been adequate to explain the existence of these features and their affiliation is presently unknown. It is extremely doubtful whether mineralization could be associated with these conductors.

## GROUND SURVEYS

To accurately define the boundaries of the Worvest property, and the boundaries of other Barrick claims and options, Barrick personnel carried out a survey to locate internal and perimeter borders. Included in this job, has been the surveying of individual drill holes into an idealized McDermott Grid System so that any drill hole can be accurately located with respect to any other drill hole. The existing cut grid lines and their picket stations were inaccurate for this purpose.

## CONCLUSIONS

On the basis of our experience on the McDermott Properties, and the results from the exploration work carried out in 1985, the following conclusions are presented.

1) The McDermott mineralized zone crosses (on surface), the Worvest Option and dips steeply south.
2) The altered and mineralized zone locally carries ore-grade gold mineralization over moderate to broad widths.
3) The general style of alteration closely matches that observed within the McDermott Deposit.
4) Sufficient variation in the quantity of gold associated with particular intensities of alteration, makes the initial visual estimation of gold content more of an art than a science.
5) Because of (4) above, there is no present size (tonnage) estimation of how large these altered, and/or ore-bearing zones might be.
6) The alteration zones seem to have a westerly plunge, generally similar to other mineralized zones, and ore-grade mineralization likely has a similar attitude.
7) The gold-bearing zones warrant considerable follow-up diamond drilling.
8) There is no single recognizable geophysical feature or signature to the known mineralized zone on the Worvest property although it is generally associated with a magnetic low. Hence, it is unlikely that any additional zones will be found purely through geophysical means. The best means will be to apply knowledge gained elsewhere to this property in an integrated exploration approach.

## RECOMMENDATIONS

The results of the 1985 exploration programme speak for themselves and the recommendations are obvious.

1) Future diamond drilling is imperative to increase the drill hole density around the existing zones and to trace their down-dip extensions. The planning of this drilling should take into account the apparent westerly plunge but should also remain open to variations in attitude.
2) This diamond drilling should concentrate in the area south of the base-line between lines $1+50$ west and $1+50$ east.
3) A minor amount of investigative work with regards to the trace element major oxide profile of the zone on the Worvest Option is proposed to fully quantify the apparent similarity to other mineralized sections, on the McDermott Property.

## REFERENCES

Conquer S. and Workman A., Summary Report on the Lenora Exploration Ltd. Harker Township Property, 1985.

Jensen L.S. and Langford F.F., Geology and Petrogenesis of the Archean Abitibi Belt in the Kirkland Lake Area, Ontario; O.G.S. Open File Report 5455, 1983.

Workman A.W., The McDermott Gold Deposit, C.I.M. Distribution, 1985.








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Lark areen to pale srey; fine srained with both coarse arid vers fine arained to afhanitic phases. Finer srained pillowed flows end relatively coarser grained masive flows bre found in the section. Flows are well structured with vesicular, often arisularly brecciated tops and less broken interiors. flow top brecciais cheracterized hy hishly angular clasts and relative uriformity of alteration. Lavas are rionmasrietic, locally weakly to moderately masietic (flow marsifiso selvases, etc.). Localized epidotization arid silicification of treccia in flow tops is observed. Pillow selvases heve devitrified ta chlorite-efidote; whereas interiors are stronsly silicified.
28.0448 .01 Firie to very firie srairied fillowed flow.
4B.04 4B.74 Flow contact.
48.7456 .39 Fine to very fine grained massive flow.
\(56.3959,13\) fine to very fine arained fillowed flow,
59.1371 .94 Medium to coarise grained flow centre. 66.94 to 67,18 meters intermediate composition intrusive. 60.36 to 61.48 meters: 105 t arid sround core.
71.9473 .08 Fine to very firie srairied massive flow,
73.0879 .30 Frecciated flow tof \(\quad\) arigular frasments.
79.3087 .12 Fine to very fifiegrained massive flow.
87.12 89.83 Iritermediate comfositior intrusive, cspbonatized and weakly masnetic. BB.46 To B9.30 meters fault zone - Fale sreeri, very soft unit with ansular basaltic frasiments in a chloritic and locally cartoriatized matrix. 89.22 To B9.29 meters mylonitic section with small. up to 4 min diameter frasmerits. 89.29 meters : 1 cm thick clay sean.
89.83 92.01 Flow tof breccia.
92.0195 .08 Fine to very fine drained messive flow. 95.0899 .90 Fine to medium srairied massive plow. \(99,90127.07\) Medium to coarse srained flow centre. 127.07133 .19 Fine to very fine grained mbssive flow. 133.19134 .84 Easel flow.
```


### 134.84 141.40 CHLOKITE-CAFBONATE SCHIST

$$
\begin{aligned}
& \text { Iark greend fine to very firia grained arid variably } \\
& \text { foliated. A mirior bmount of the seauence has a distinct } \\
& \text { tuffaceous affeararice with clasts ise to } 4 \text { mo The roct. is }
\end{aligned}
$$

| Samfle From | Fo | Lensth $\%$ Sul | Au | BW |  |  |
| ---: | :---: | :---: | :---: | :---: | :---: | ---: |
| 15234 | 139.00 | 140.00 | 1.00 | 0.5 | tr | tr |
| 15235 | 140.00 | 141.00 | 1.00 | 0.5 | tr | tr |
| 15236 | 141.00 | 141.40 | .40 | 0.5 | .17 | .07 |

$141.40 \quad 141.98$ TRANSITIONALLY EILICIFIEII ZONE

Well foliated, dark areen chloritic unit. $25 \%$ silicified as purple to honey hrown coloured alteration. fervasive and selective carbonstizetion elons folistion planes is noted throushout. Trace to $1 \%$ pyrite, localiy up to $3 \%$.

### 141.98 145.71 MAIN SILICIFIED ZONE

Intensely (95-100X) silicified with local seams of shear
or Mckenna fault related chloritic material. The
Hokenna feult is not eresent in this hole, but is
probably represented by the chloritic zone from 141.98
to 142.17 meteris. Alons with silicification, this
section has been hematized and shows 40 - $45 \%$
dolomitizetion and minur fervasive carbonstization. The
alteration is controlled by fracturins and the
moderately to well developed brecciation. Pyrite content
verases 5 - $7 \%$, with up to $30 \%$ inthe dolomitized
sections.
141.98 142.17 Lzte shear develofed chloritic zonep
refresents Mckerine Fiult.
142.17142 .68 llolomitized section, 5-7\% pyrite, with $B$
cm of Mckerina Fault chloritic material at
142.50 meters.

| 15238 | 141.98 | 142.67 | .69 | $5-7$ | 3.09 | 2.13 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 15239 | 142.67 | 143.07 | .40 | $1-2$ | 2.06 | .82 |
| 15240 | 143.07 | 143.84 | .77 | 30 | .69 | .53 |
| 15241 | 143.84 | 144.79 | .95 | $5-7$ | 2.57 | 2.44 |
| 15242 | 144.79 | 145.71 | .92 | $5-7$ | 1.37 | 1.26 |

145.71180 .73 TRANSITIONALLY SILICIFIEN ZONE
Dark areen and fine arained with afhanitice furfle-arey
silicified breccia zones up to 20 cm wide. silicification
is indicated by a dark sreyish colouration but is
stronsest where purple hued. The gite of silicification
is zlmost eritirels coritrolled by prior brecciation.
silicified breccia is occasionally honey coloured.
Cream to horiey coloured, pyrite rich alteration is rioted
as halos borderins fractures. Silicifiedrock carries
2-3\% purite with uF lo $30 \%$ in paler verieties.
Chioritized rock carries TK-1\% pyrite. The amount arid
seneral desree of illicification in breccie decreases
dowrihole, Zones of localized trecciation have provided
sites for intensified silicification and puritizatior.,
This unit generaliy lacks definitive sedimentary or flow
features. The only exceftion beins the vesiculzr and
selvase like structures noted at 157.45 meters.
145.71 147.45 25-30\% silicification, with silicified
hematized arid dolomitized frasments noted
within shear related chloritic material.
147.45 $166.4435-40 \%$ silicifications decreasing down
section. Locally hematized brid
dolomitized. The alteration ls fracture
and breccis contralled. Vesicular and
selvase like features noted at 157.45
meters. Trace to $1 \%$ disseminated furite
within chioritic sections, up to 3 to $5 X$
in altered rock.
160.44 167.44. As described shove from 147.45 to 160.44
meters 20 to $25 \%$ silicified with
brecciation and alteration decreasins down
section, 2 to $3 \%$ pyrite.
167.44176 .25 As descritied shove from 147.45 to 160.44
meters - 10 to $15 \%$ silicified, 1 to $2 x$
disseminated pyrite.
176.25180 .73 As descrited ghove from 147.15 to 160.44
meters - 40 to 4 i\% sijicified. 2 to 3\% pyrite, locally up to $7 \%$.

| 15243 | 145.71 | 146.71 | 1.00 | 0.5 | . 69 | . 69 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15244 | 146.71 | 147.45 | .74 | 0.5 | . 34 | . 25 |
| 15245 | 147.45 | 148.45 | 1.00 | 3-5 | . 51 | . 51 |
| 15246 | 148,45 | 149.15 | 1.00 | 3-5 | . 69 | . 69 |
| 15247 | 149,45 | 150.45 | 1.00 | 3-5 | .69 | . 69 |
| 15248 | 150.45 | 151.45 | 1.00 | 3-5 | . 69 | . 69 |
| 15249 | 151.45 | 152.45 | 1.00 | 3-5 | tr | tr |
| 15250 | 152.45 | 153.45 | 1.00 | 3-5 | tr | tr |
| 15251 | 153.45 | 154.45 | 1.00 | 3-5 | . 34 | .34 |
| 15252 | 154,45 | 155.45 | 1.00 | 3-5 | . 69 | . 69 |
| 15253 | 155.45 | 156.45 | 1.00 | 3-5 | . 69 | . 69 |
| 15254 | 156.45 | 157.45 | 1.00 | 3-5 | .17 | . 17 |
| 15255 | 157,45 | 158.45 | 1.00 | 3-5 | . 69 | . 69 |
| 15256 | 158.45 | 159.95 | 1.00 | 3-5 | 1.03 | 1.03 |
| 15257 | 159.45 | 160.44 | . 99 | 3-5 | .17 | . 17 |
| 15258 | 160,44 | 151.44 | 1.00 | 2-3 | . 17 | . 17 |
| 15259 | 161.44 | 162.44 | 1.00 | 2-3 | $t r$ | $t r$ |
| 15260 | 162,44 | 163.44 | 1.00 | 2-3 | . 86 | , 86 |
| 15261 | 163.44 | 164.44 | 1.00 | 2-3 | . 69 | . 69 |
| 15262 | 164.44 | 165.14 | 1.00 | 2-3 | +69 | .69 |
| 15263 | 165.44 | 166.44 | 1.00 | 2-3 | tr | 4 |
| 15264 | 166.44 | 167.44 | 1.00 | 2-3 | tr | tr |
| 15265 | 167.44 | 168.44 | 1.00 | 1-2 | +34 | .34 |
| 15266 | 168.44 | 169.44 | 1.00 | 1-2 | tr | tr |
| 15267 | 169.44 | 170.44 | 1.00 | 1-2 | . 17 | .17 |
| 15268 | 170.44 | 171+14 | 1,00 | 1-2 | , 17 | . 17 |
| 15269 | 171.44 | 172.41 | 1.00 | 1-2 | . 17 | . 17 |
| 15270 | 172.44 | 173.44 | 1.00 | 1-2 | tr | tr |
| 15271 | 173.44 | 174.44 | 1.00 | 1-2 | . 34 | . 34 |
| 15272 | 174.44 | 175.44 | 1.00 | 1-2 | . 69 | . 69 |
| 15273 | 175.44 | 176.25 | . 81 | 1-2 | . 26 | . 21 |
| 15274 | 176.25 | 177.25 | 1.00 | 2-3 | . 69 | . 69 |
| 15275 | 177.25 | 178.25 | 1.00 | 2-3 | 3.09 | 3.09 |
| 15276 | 178.25 | 179.25 | 1.00 | 2-3 | 1.37 | 1.37 |
| 15277 | 179.25 | 180.25 | 1.00 | 2-3 | 1.03 | 1.03 |
| 15278 | 180.25 | 180.73 | . 48 | 2-3 | . 69 | .33 |

Main Silicified Zorie style alterationg 95 to $100 \%$
interisely silicified oreccia. $\quad$ This section shows a
domiriant furflo colour from hematization and

From To
Sabele From
To
181.61 186.42 TRANSITIONALLY SILICIFIEII ZONE

## As defcrited shove from 145.71 to 180.73 meterse

 silicificetion 40 to $45 \%$, purite averases 2 to $3 \%$, locelly up to 7\%. 182.87 To 183.68 meters syenite dike - dark red and highly siliceous with relic feldspar phenocrusts.
### 186.42 1B7.13 LONER SILICIFIEII ZONE

As defcribed shove prom 180.73 to 181.61 meters except
pyrite averases 3 to $5 \%, 10 c s 11 \%$ up to $20 \%$ in dolowitized sections.

187,13199.26 TFANSITIONALLY SILICIFIEII ZONE
As described ahove from 145.71 to 180.73 meters.
$18 \% .13187 .7540$ To $45 \%$ silicification, purite averases 2 to 3\%, locally uf to $7 \%$
187.75 196.76 15 To $20 \%$ silieipied with purfle-gres coloured, weakly silicified halos alons fracturing. Locally intensely silicified, hematized and dolomitized sections are noted. Furite averases 1 to $2 \chi$ in chloritic rock and 1 to $3 \%$ in eltered material. 190.60 meters foliation at 55 desrees to the core sxis, hishlishted tu wispy vellow-sreft micaceous material and ielective carbonatization.

> 196.76199 .26 As described above from 187.75 to 196.76 meters: 50 silicification and 1 to $2 \%$ disseminated pyrite.

### 199.26215 .72 CHLORITE-CAREONATE SCHIST

Mark greeng fine to very firie grained arid veriably foliated. The rock is weakly chloritized fervasively perhaps due to resional metamorfhism. The foliation is hishlishted by selective carbonatization of individusi laminations, Hodies of carboriate alteration swell to cross-cut and Peather out aloris the foliatiori. Fiare silicificution is rioted as a furfle-srey hise within carbonatized seams. The foliation is occasionally hishlishted by thin (mm scale), farallel carboriatized
$15280 \quad 181.61182 .21$ 182.21 182.87 15282182.87183 .68 15283183.68184 .68 $15284 \quad 184.68 \quad 185.68$ $15285 \quad 185.68 \quad 186.42$

### 1.00 <br> 1.00 1.00

.74

.17
.17
17
.17
tr
$15287187.13 \quad 187.75 \quad .6$ $15288 \quad 187.75188 .75 \quad 1.00$ $15289188.75 \quad 189.75 \quad 1.00$ $13290189.75 \quad 190.75$ 15291190.75191 .75 15292191.75192 .75 15293192.75193 .75 15294193.75194 .75 15295 194.75 195.75 $\begin{array}{llll}15296 & 195.75 & 196.76 & 1.01\end{array}$ 15297196.76197 .76 $15298 \quad 197.76 \quad 198.76 \quad 1.00$ $15299 \quad 198.76 \quad 199.26$

| 0.5 | .17 | .11 |
| :--- | ---: | ---: |
| 0.5 | $t r$ | $t r$ |
| 0.5 | .17 | .17 |
| 0.5 | $t r$ | $t r$ |
| 0.5 | $t r$ | $t r$ |
| 0.5 | $t r$ | $t r$ |
| $1-2$ | $t r$ | $t r$ |
| $1-2$ | .17 | .17 |
| 0.5 | .17 | .17 |
| 0.5 | .34 | .34 |
| $1-2$ | .26 | .26 |
| $1-2$ | .69 | .69 |
| $1-2$ | .17 | .08 |


| 15300 | 199.26 | 200.26 | 1.00 | 0.5 | .17 | .17 |
| :--- | :--- | :--- | :--- | :--- | :--- | ---: |
| 15301 | 200.26 | 201.26 | 1.00 | 0.5 | $t r$ | $t r$ |
| 15302 | 201.26 | 202.26 | 1.00 | 0.5 | $t r$ | $t r$ |
| 15303 | 202.26 | 203.26 | 1.00 | 0.5 | $t r$ | $t r$ |
| 15304 | 203.26 | 204.26 | 1.00 | 0.5 | $t r$ | $t r$ |
| 15305 | 204.26 | 205.26 | 1.00 | 0.5 | .17 | 17 |
| 15306 | 205.26 | 206.26 | 1.00 | 0.5 | 17 | 17 |
| 15307 | 207.26 | 207.26 | 0.00 | 0.5 | $t r$ | $t r$ |
| 15308 | 207.26 | 208.26 | 1.00 | 0.5 | $t r$ | $t r$ |
| 15309 | 208.26 .209 .26 | 1.00 | 0.5 | $t r$ | $t r$ |  |

seans. The zorie is essentially non-masnetic with itece of masnetism localls
199.26207 .51 Similar to the transitional silicified unit above however non-silicified. Thin sections of arhanitic dark areen chloritic materisl are roted within areen, flow to very fine srained, messive to weakly poliated rock. Purite contents are up to $1 \%$ as very fine arained dissemination and as blebs uF to 1 mm .
207.51215 .72 The rock becomes well follated with trace to 1\%, locelly up to 2\% dissemineted pyrite. 210.43 Meters : foliation at 60 dedress to the core suis. 210.50 Meters minor brecciation, weakly silicified, hematized. 214.60 Meters : minor hrecciation, weakly silicified, hematized,
215.72251 .65 BASALT

Fible sreen to medium srey-green with few dart. sreen phases and usually fine to very fine aratned. Vesicular pillowed zones are occasionally found as the uffermost section in otherwise massive flows. Flow tofs are variolitic locslly with rourid to otlons viriolites up to 5min size.
215.72 225.07 Poorly structured flow that shows foliation or shesr fleries, at 60 desrees to the core aris at. 217.30 meters. Foliation - shear planes are hishlishted Foliation shest planes arehighlishted
by carbonatization and vellow-areen micaceous material,
Variolitic sections are noted at 220.05 vellow-green micaceous material,
Variolitic sections are noted at 220.05 and 220.70 meters, sssociated with ephanitic, derk sreer, chloritic horizons - Plow contect zones, 221.51 to 221.71 meters hyaloclastite - variolitic section
225.07215 .10 Fine to very fine grained fillowed flow.
5ilicified and epidotized selvases ere Silicified and epidotized selvases ere locelly veriolitic arid exhituit mirior husloclastite. 242.63 To 243.25 neters
ansular frasments bleached to a
 vellow-green colour if chlorite carbonete matrixi possibly hydrothermal breccia zone.
245.10 251.65 Fine to very fine arained massive flow, vesicular down to 248.05 meters.

| 15310 | 209.26 | 210.26 | 1.00 | 0.5 |
| :--- | :--- | :--- | :--- | :--- |
| 15311 | 210.26 | 211.26 | 1.00 | 0.5 |
| 15312 | 211.26 | 212.26 | 1.00 | 0.5 |
| 15313 | 212.26 | 213.26 | 1.00 | 0.5 |
| 15314 | 213.26 | 214.26 | 1.00 | 0.5 |
| 15315 | 211.26 | 215.26 | 1.00 | 0.5 |
| 15316 | 215.26 | 215.72 | .46 | 0.5 | $15311210.26 \quad 211.26 \quad 1.00 \quad 0.5$ $15312 \quad 211.26 \quad 212.26 \quad 1.00 \quad 0.5$ 15313212.26213 .261 .00 $15315211.26 \quad 215.26 \quad 1.00 \quad 0.5$ $15316215.26215 .72 .46 \quad 0.5$

251.65 ENI OF HOLE.


0.0041 .15 OUEFDURINEA.
41.15 235.90 HASAL.T.
235.90254 .43 UAKIAHLY SILICIFIFII HASALI,

254,43 3ZG. 60 MAIN MINEFALIZEII ZONE
254.43269 .37 TFANSYTIOHALIY SILICIFIEI ZONE,
269.37280 .83 MATN $911.10 I F 1 E 1$ YOME.
$280.83 \quad 336+60$ TRANSITIONALIY STLICIFIE 2 ONE
i4
$336.60 \quad 347.95$ CHL OFITE CAFBOMAII SCHT9T.
347.95384 .18 BA5ALT.
306.18 ENV OF HOLE.

### 41.15 235.90 kasnl.

Febe sreen to medima ates sreen with few dert srean phoses end ucuelly fime to vers fife greamers. timer grajned rillowed flows and relativelu coercer sfathod massive flows atr fump wh the section vesiculas rillowed zormes are occesionslly founct at the bepertiout section jn othertief mestiot plows. levat are formondmetio, locelle veraty to moberately mesnetis:
 moderete pervarto vinatitiontion the roct ere
 to chloriterepitote, wheres Jotariors are stranses


 surface down to 51, tio meters.
41.15 47.16 Fine to vore rint areinulmassive flou. $4 \% .16$ si. O F fine io medium siained messive flow,
 lower rontact - focsible lave luise marciff.
 moakly masmetic.
 mashetio.
90.25 13..27 Medium ta coarse zrabed flow centro. weskls ta ctromat: mestretit localle down ta 110 meters affroximately, 102.44 lo 103.00 meters: marjc atutusw,
161.27169 .75 Fime to medum atssmodmessive fjow.
 with faoyde develured areal cectador.
 weat. mithor hoajoclastate,
191.12 221.91 Fine to vert fino aramod villoued flow. 221.91234 .73 Weakly to morierelely medneticy rore
 233.25 meters isfrormatplas
 nori-masiretic end lucalls worve.s.vel\% cerbofetiatud

| 15680 | 233.20 | 234.25 | 1.00 | 1 $1:-1$ | 11 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15681 | 234.25 | 234.83 | . 68 | TE.1. | 11\% | . 12 |
| 1563: | 34.93 | 235.90 | 97 | 1.? | $1 \%$ | 14 |



15685335.90 236.07 $\quad .04$
15.534 185.03 23?.43 1.00
$1 \cdots$
$\because \quad 1$
.35

| Samyle | From | To | Lensth |
| :---: | :---: | :---: | :---: |
| 15685 | 237.93 | 238.93 | 1.00 |
| 15888 | 2318.73 | 239.93 | 1.00 |
| 15687 | 239.93 | 240.93 | 1.00 |
| 15888 | 240.93 | 241.93 | 1.00 |
| 15689 | 241.93 | 242.93 | 1.00 |
| 15690 | 242.93 | 243.93 | 1.00 |
| 15691 | 243.93 | 244.93 | 1.00 |
| $1569 \%$ | 244.93 | 245.93 | 1.00 |
| 156.93 | 245.93 | 246.37 | .44 |
| 15694 | 246.37 | 247.30 | . 93 |
| 15655 | 247.30 | 248.30 | 1.00 |
| 15676 | 348.30 | 249.30 | 1.00 |
| 156.97 | 249.30 | 249,96 | . 66 |
| 156.98 | 247.76 | 250.98 | 1.00 |
| 15699 | 250.96 | 252.08 | 1,12 |
| 15700 | 252.08 | 253.08 | 1.00 |
| 15701 | 253.08 | 254.08 | 1.00 |
| 15\%0? | 25.4 .08 | 25,4,43 | . 35 |


| \% Sul | An: | (iw |
| :---: | :---: | :---: |
| 1-2 | . 69 | . 69 |
| 1-2 | .17 | 117 |
| 5-7 | . 34 | .34 |
| 1-2 | , 34 | . 34 |
| 1-? | tr | tr |
| $1 \cdots$ | $t r$ | 1. 5 |
| $1 \cdots 3$ | t.r | tr |
| TR - 1 | tr | t. |
| TF-- | . 69 | .30 |
| 1. 3 | 1.03 | . 96 |
| TF゙-1 | 1.37 | 1.37 |
| TK゙・1 | $t r$ | $t \cdot$ |
| TFi-1 | tr | t. r |
| 1.3 | . 34 | .34 |
| 16-1 | .17 | . 19 |
| 1F-* | tr | t. r |
| 1K-1 | . 34 | .34 |
| 7F--1 | . 17 | . 06 |

MAIN MINERALIZEII ZONE: $254.43 \cdots 336.60$ MEters.
The zone is based ufan amount afid despee of sjuicification and jt is composed of three members. hoth the urfer arid lower transitional zaries are hroberer than rormal, with the alteration heins well develofed throushout, Furite comtent is rowmel, firielt disepminated throushout and es eoarcer elots in silicified rock, Furite content overises $x .5 \%$ in the
 269.53 MCKENNA FAUIT FOI ANE.
254.43269 .37 TRANSITIONALLY SILICIFIEA $2 O N E$

This zome is variabsy altered assoripted with fracturins arid hrecciztion. Alteretion $t \mathrm{in}$ itielly frecture coritrolled as furfagesres colowred, matacele silicified, hematized athd carhometized frecture haloc. These localls coallesce ifito broader sertions of ateration where silicifacetion beeome mote aftaront. Fracturims abo nreceiation inerease in jritensits down section with
an associated increase in amourt of silicificaidomy hematization aris miror burf coloured dolomitiondiom. The fervasive ceroonetizataon rioted in more weatis eltered rores ie rot evisemt in mose inteneele sjurified materind. Cerionate rilled fractures def
 fine to vere fine srejned, vele to dert drembarad formabsmetice raceiblt besallic meterial silirjfication avereses 5 s\% while worite content
 aldered sertions. Frarturing brid related deformationel features show a domidaritoribntation or so uso fuspeos to the core asis. A secomid set of leta offsettims

$269.37280 . E 3$ HAJM SILICIFIEH ZONE

 pursie hue due to e rijiable dedree of hematianiam. this nematite is reduced to furite in the huff formers coloured alteration fetchers and zories, Weak reacifon to HCl is localls noted lhroushout this zone. The zome avereses $3-5 \%$ Furite as vers firme disseminations arad as cuots filling vojds in breerje. Jn hones roloured roct, purjte content rias locell: reech $10.15 \%$ moctly 36 roarser ciots. the rock $j s$ weal.le to moderatels
 seam at 55 despere to the core amis at 269.48-269, 08 meters.
269.37271 .71 furfle to purflewares with buff coloured Sulomitizet Fatches. 5 to $7 \%$ Fsite il frematizets sectioris up to 10 to $15 \%$ in White to kuff roloured anese Meteve $;$ weapls foljated at 45 destress to the rore
 Furfle to tarl red, direeaus intrusivo

 a)foèritice.
271.71 272.30 lrtermediete intrusive : fale rift. to pele spech, modetetely mechutie intumetut wilis a sherf brfer fontert end a sumaztirmal











| 15711 | 262.43 | 263.43 | 1.00 | 2-3 | . 34 | 34 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15712 | 263.43 | 264.43 | 1.00 | 2-3 | . 34 | . 34 |
| 15713 | 264.43 | 265.43 | 1.00 | 2-3 | 1.03 | $1+03$ |
| $15 \% 14$ | 265,43 | 266.43 | 1.00 | 2-3 | , 34 | -34 |
| 15715 | 266.43 | 267 , 43 | 1.00 | 2-3 | . 17 | .17 |
| 15718 | $267+43$ | 269.43 | 1.00 | ?-3 | . 17 | .1) |
| 15717 | 268.43 | 269.37 | . 94 | 2-3 | 2.74 | 2.58 |


| 15718 | 269.37 | 370.37 |
| :---: | :---: | :---: |
| $1 \% 919$ | $2 \cdots 0,3$ | 271.06 |
| 15720 | 271.06 | 371.71 |
| 15721 | $2 \cdots 1.71$ | 272.30 |
| 15722 | 275.30 | 272.79 |
| 15723 | 279.79 | 273.79 |
| 15724 | 273.79 | 274.79 |
| 15725 | 274,79 | 275.47 |
| 15726 | 236.4\% | 276.47 |
| 55727 | 276.47 | 277.47 |
| 15728 | 277.47 | 278.47 |
| 15759 | ?78.47 | 379,47 |
| 15730 | 279.47 | 280.23 |
| 15731 | ? 00.23 | 390.83 |


| 1.00 | 5-9 | 1.71 | 1.71 |
| :---: | :---: | :---: | :---: |
| . 6.7 | $5 \cdot 7$ | 3.40 | 1.66 |
| . 65 | $5 \%$ | 2.06 | 1.34 |
| . 59 | 15: | . 89 | . 4.5 |
| . 49 | 10-15 | 3,77 | 1.85, |
| 1.0: | 5 | 7.54 | 7.54 |
| 1.00 | 5 | $\therefore .06$ | 2.06 |
| . 1.8 | $!$ | 1.3\% | . 93 |
| 1.00 | 3-5 | 1.03 | 1.0.3 |
| 1.00 | 3-6 | 3.77 | 3, 77 |
| 1.00 | 3-5 | 1.37 | 1.37 |
| 1.00 | 3-5 | 1.03 | 1.05 |
| . 76 | 3-5 | 2.57 | 1.95 |
| . 60 | $3 \cdot 5$ | 2.06 | $1+: 4$ |

275.47280 .73 4s described shove from 269.37 10 271.71 meters : domimantis furgle..sres coloured with miror areem, charitireretches. 3 to $5 \%$ rurite tiouschout.
380.83 336.60 TKANSITIONALLY SILICTFIEXI ZOMI
 purfle to murble-gres eng buff colocred alteretion of hreceieted zories the roct js socrints baseltio. loralls the core is wedls foliated, the altevation -

 increase uithim these anore, bete rrantures ere

 down section.
280.83 283.40 75 To 80\% vilicifié, rurple ere\% lo white, fobcture contralled ajteration.
 at AS besteas to the rore a; 1 s .
282.40 302.08 25 To 30\% sijjciriede domincutly Furfleweres coloured with buff roloured irasments uf bocese aroses us to 20 \{ 1, य width. krewria seams parallat the folietion et 5 E to bo destees to the cure

 approximetely pareljel fo core exis with mersire hishlishted pre eellow wewr micreacus materiel.
 silleified breceio and purflemates silicified freoture helose locelle west foliated of so fesmere to the core axde. Trace io $1 \%$ yorite lowill\% $\quad 1:$ to a\% Aturbant late stese rernonale filled frecturing and cercumetiaen folidetion
 et 316.30 motere.
$316.92325 .92351040 \%$ ateren as Jetrrined ahove from
 locelly ur form. Cisrornetizw rolaetion remer ents rarmorieterillem rractures are localls Eilicified. Foljeted \#t 60 desrees to the rare ande.
$325.92336 .605 \%$ sjujejfication onds mersirialis trersitionel metural. Alteration is restficted $\quad$ a thifi hremod, ornes ald frecture halos. rojietod al do desroes tu line pore asi=.

| 15932 | 200.03 | 281,82 | 1.00 | $2-x$ | $\therefore .06$ | 2.06 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15733 | 291.83 | 2¢2.40 | . 57 | 21 | . 8.9 | + 39 |
| 15734 | 202,40 | 283.40 | 1.00 | 2-3 | . 17 | +17 |
| $15 \% 35$ | 233.46 | 284.40 | 1.00 | 2-3 | t. 1 | t: |
| 15736 | 284.40 | 285.40 | 1.00 | 2-3 | t.r | tr |
| 15737 | 295.40 | 236.40 | 1.00 | $\because \quad$ ? | . 17 | $+17$ |
| 15738 | 286.40 | 207.40 | 1.00 | 23 | -69 | . 69 |
| 15779 | 247.40 | 28B, 40 | 1.00 | 2-3 | t.r | 1. |
| 15740 | 209,46 | 289.40 | 1.00 | 23 | . 1.9 | 17 |
| 1574: | 290.70 | 200.40 | 1.00 | 2.3 | . 69 | +69 |
| 15742 | 200,40 | 251.40 | 1.00 | 23 | . 67 | . 69 |
| 15743 | 201.40 | 992. 10 | 1.00 | 23 | . 34 | . 34 |
| 15744 | 202.10 | 293.40 | 1.00 | 1 ? | . 17 | . 17 |
| 15795: | 293.40 | 294.40 | 1.00 | $1 \cdots$ | . 69 | +69 |
| 15746 | 294.40 | 255. 40 | 1.00 | j-2 | +34 | 1.34. |
| 1574\% | 3954.40 | 296.40 | 1.00 | 1.: | , 1\% | . 17 |
| 15748 | 296.40 | 29\%,40 | 1.00 | 1-2 | +34 | . 34 |
| $15 \% 90$ | 397.40 | 298.40 | 1.50 | $1 \cdots$ | . 69 | +69 |
| 9515 | 298.10 | 299.40 | 1.00 | 1.2 | . 69 | $+69$ |
| $15 \%$ | 299.40 | 300.10 | 1.000 | 1. | 1.03 | $1.0 \%$ |
| 15961 | 300.40 | 301.40 | 1.00 | $3 \cdots 2$ | .34 | .34 |
| $15 \% 5 \%$ | 301.40 | 302.00 | . 68 | 1-3 | . 49 | . 4 ! |
| 15763 | 302.08 | 303.08 | 1.00 | 16-1 | . 17 | .17 |
| 15754 | 10\%.08 | 307.08 | 1.00 | TR-1 | . 69 | . 6.9 |
| 15755 | 304.08 | 305.08 | J.00 | PR-1 | 1.03 | 1.03\% |
| 15756 | 303.00 | 306.09 | 1.00 | TF-1 | tr | tr |
| 15757 | 306.088 | 307.08 | 1.00 | TK-1 | . 3.4 | . 3.4 |
| 1575 | 307.08 | 308.00 | 1.00 | TE. 1 | . 69 | .69 |
| 15759 | 308.08 | 309.08 | 1.00 | T $\mathrm{C} \times 1$ | . 17 | . 17 |
| 15\% | $36,0.09$ | 310.00 | 1.00 | TE:-1 | . 17 | . 17 |
| 15.761 | 310.08 | 311.08 | 1.00 | TE-1 | 1 r | tr |
| 1593 | 311.08 | 312.03 | 1.00 | TK-1 | 15 | tr |
| 15763 | 315.08 | 313.08 | 1. 1.00 | TE-1 | . 69 | . 69 |
| 15764 | 313,08 | 314.08 | 1.00 | 18-1 | . 34 | . 34 |
| 15765 | 314.08 | 315.08 | 1.00 | Mi-1 | . $1 \%$ | .17 |
| 15766 | 315.08 | 316.09 | 1.00 | 15-1 | 1 r | ! 1 |
| 15767 | 316.08 | 316.92 | . 84 | 1F-1 | . 17 | .14 |
| 15768 | 316.92 | 31\%.92 | 1.00 | - 3 | 15 | t: |
| 15769 | 317.92 | 318.92 | 1.00 | 2-3 | 1.03 | 1.03 |
| 15770 | 318.92 | 319.92 | 1.00 | 2-3 | 1.37 | 1.3 |
| 15771 | 319.92 | 320.92 | 1.00 | 2-3 | 1.03 | 1.03 |
| 1577 ? | 320.9\% | 321.02 | 1.00 | . 3 | 1.63 | 1.03 |
| 15773 | 321.9\% | 322.92 | 1.00 | $2 \cdot 3$ | \% | 11 |
| 15774 | 3.22.9: | 323.92 | 1.00 | $3 \cdot 3$ | L. | tr |
| 15775 | 223.92 | 324.92 | 1.00 | $\cdots 3$ | . 34 | $\therefore \therefore 1$ |
| 15976 | 324.02 | 325.9\% | 1.00 | 9.3 | . 17 | .1. |
| 15777 | 325.92 | 726.92 | 1.00 | 10.-1 | .1\% | 17 |


|  |
| :---: |
| $15 \%$ |
| $19 \%$ |
| $1: 9$ |
| 157 |
| 157 |
| $15 \%$ |
| 157 |
| $15 \%$ |
| 157 |
| 157 |


| 15768 | 234．60 | 33．60 | 1.00 | 1 F | ． 17 | ．19 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 15780 | 337.60 | 334．30 | .90 | TK | ＋69 | ． 46 |
| 15790 | 338.30 | 738．7？ | ． 4.3 | 1 E | ． 17 | ． $0 \%$ |
| 15901 | 330．7\％ | 339， 7 | 1.00 | リド | ：1\％ | ． 1 ／ |
| 1690？ | 339．7\％ | 340.72 | 1.00 | If | .34 | ． 34 |
| 15993 | 340.72 | 341．72 | 1.00 | TV | t． | $t \mathrm{r}$ |
| 15794 | 341．72 | 342．72 | 1.00 | T | ． 17 | .17 |
| 15795 | 340.70 | 313．72 | 1.00 | T\％ | .17 | .17 |

### 347.95386 .18 RASA！ 1

 fhaser aro uctalle fine to very fine grajsed．Fiber arained fillowed flows atid reletiveluroarser srabmed


section ir fherur \％flame foct aro nom－jnastretje．

 Ve：icalar with ehlorite anderjifuta rimb


386.18 EHI OF HOIE．


### 33.41213 .77 HASAL.

 and vers fifo ereimed to aftaritic phetes. Fimer stejned fijlowed flowe atio reletivels coerser spaifiod meseive flows are foumd in the setion luese rabts onhitul weet shriracesemser frecturins locally the ureate ara white Gerbonete filled. Flaw tare ert verjolitio jocelly with

 intrusjve is moderetely to witorationashetic, treé to $1 \%$ furite thrusshout.
33.41 54.70 Mazsive flow ta dolerite : dert srem, verieble fism us to lwelly coarse giaimob, messive flou la basallic compogition irtrusivo Sutiofijije fexture or latally dietirict, acirular mafie mirierabs with aburident whiter interstitial reljeler, Felativele mieltered with minor raraomate filleg riectures alid vedriets elld minar Hetchs ofidolizelion. Jatiebly meshetic,
 heroming weatly to : 1 frigly mashetio down
 throushout. The lower 0.5 meters of the unit. is fine arisibed and wectl mestedit. drafoechins tha curtert ahe below.
 sreiried weat mon scela perioljtes alors the


 : 15 .
54.7668 .25 Messive rlow : dert areeri medium lo roerse
 to the arerleins matatial however lectum
 Froferties, Eejalijele uridered ard normmestietic uith trece to $1 \%$ ryrite su, as
 Ereen to piot hued, rery firm ereiredy rervesively cerboriatiaed felsie intrusives, Focsibls aona onitit:
69.25 68.59 Flow bottom : Bres colourode pidotiaed afd




| 10753 | 68,25 | 68.80 | . 55 | 3-5 | . 34 | . 19 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 10754 | 68.800 | 69.38 | + ${ }^{5} 8$ | 0-1 | t. | t. r |
| 18755 | 69.30 | 70.25 | . 87 | 1-? | t. | 1.1 |
| 18756. | 70.25 | 70.98 | . 73 | 2-3 | tr | t. r |
| 10757 | 70.98 | 71.77 | . 79 | 1-? | t. ${ }^{\text {r }}$ | 1. |
| 18758 | 71.77 | 72.26 | . 49 | $0 \cdot 1$ | tir | $1 \%$ |
| 18759 | 72.36 | 73.59 | 1.26 | $0 \cdot 1$ | . 17 | .21 |
| 18760 | 73.5? | 74.53 | 1.00 | 0-1 | tr | t. r |
| $18 \% 61$ | 111.00 | 113.00 | 1.00 | 0-1 | nil | 1131 |
| 18962 | 112.00 | 112.00 | . 80 | 1-? | tr | i. |
| $16 ? 63$ | 113.00 | 113.80 | 1.06 | 6-1 | (1) | mit |
| 18964 | 112.77 | 213.77 | 1.00 | TE-1 | t. ${ }^{\text {a }}$ | $1 . \mathrm{r}$ |

 vejnitet, 6R, 5f meturs i contart et 70 aesrees fo the rore $\%$ iz
63.5968 .80 Interflow eediment ; fitfle coloured, verv Cine srajried, foonle modded, hjehles mazrietio: shd strontsly cercomatized interflow sediment, Herding at so to 60 desrees lo the cort able effronimetelu. $\quad$ to \% ticenajraten fariter tiraumbout
 purble to ares colaured, anherally vers firm grejried metejvo flut rut ha several vero rime stableth pibl moed moneonstic
 mosmetic, locella ferboriatijed aris vere woble siluified biti trad to d\%


 to $3 \%$ discomirater rarites wejl revelorad chilled merdifs are hoted. Masomitir intrutives : so, 30 lo 69.03, 70.25 I, $70,9 \mathrm{O}$

 relatjualy madteren and etrongle washetio.
 beceisted flow coritect zome.
 statred rillowed flou with 1 to "enthick chloritic erici efidotic selvaset and fractured, weatly carbometizes efod cilicirjed fillow coies, Norymmandic witit


 is hoted helow 23.70 motio rhor fillowe becomes botter develower down sertiof,

 sres atd biluecous fami eotich.
112,00 112,80 Tectonic bremete wore: intily orotor, end arourd ebres aut bu abuidem auerta veintrat cerbonate filled fiartare\% emb sever bl sreen elay.grit nomat. Dat areen, hashly bilicified, weatly

 the core oriantation of tho teonlt fiame it imfassible to rietermifte.


 vers fine trajriog frectamed pari
moderetejs to hishly sjicified flow top, Graduel coarserins trund down hole below 114.e日 meters affroxjmatels. Trefe to $1 \%$ purite as finelu cruetelline clote dsio. os meters : sherf camtart with the urderlsina roliates materiel it 3 si dearees to the core asic.
152.05153 .0 folieted flow contat rore, roesjbly interflow cediment with en imtrusive comporment : dert sreen erid fine stejried
 hishly tovoriatized, orowh meterial, Fossibly jutrusjue in riature, Moderatels to weatl: cartumatised throushout with minor wispy carhonate alemse lhe folialuori.

The meterial ahove and iowlow js jdentioel medium to rowre traind bes.sivi flaw, sussestiras this urit mise be a aneared intrusive. bowder nontact uith tibe
 80 destees to the rore asjs.
153.08160 .57 Contimution of the massive flow ahove
 coatwe grajned with a oradual fining trend downinole. 160.57 nietere: No flow kot tom is roted and the context wilh the underlydres rlaw tof hrectie ic stamma.
160.57163.16Flow tof breccia : suhansular to
 framents with well develofed reaction rims jris chloritic, erintitic matrits, Fresmerts increese irt eize efod necomes rombed sown coditom towelits the urderlying massive flow.
 mon-masuetic, locally vesiculat meswty flow. Graduel conersenine trorid down-imbe. The uffer severel meters of the flou $4=$ fractured asd locellध veejol.les with milur rlow rirecoteted cemb or fatiobes. Treet?

 veiriete and minci cirvoriatizeit, choritizeg shears. Mote: 15 rim of cote is
 lose canmol be ratjonalized. nelow jel. meters ssromjmatels, chanitu rillod
 Forfhurablest ant reted.
190.58190 .63 rolieted. wrigotic flow rontert rome. faljeted al os 1070 dester. tu fore cove bixs, shatr lower rontret al 65 to 70 destees to the corr dsise o dietimot


 messive flow with aradued coercenibs trend bown holu. Mormasmetic and reletivel: uraltered with tiece to $1 \%$ diesembated Futito. Ahurionert carbonate bto minor flitotr filled froctusinty retehe erianli;alion ie cammone Sarmanate
 Carbonatizetion imutaser down exrtion BFFroaching tho uriderlesiof fulseted zone. The flow is weatly foliated with shumant leucoserfe oredspouth helow ?1o.9 moters aftrosimetely. Tin basel 2.0 meters is
 athd weekle folieted. fhe rombert with time

 develornefit uf o cumbuted foljalbim ind the lack of lewoonerie oversrowth.
213.77217 .70 CHLOFITE-CAFMONATE SCHIGT

Greer to alive sfeen, firf to vers fine arainot, well foliated efog cerboriatized, chlotitic material. lhe foliztion is highlimhted hy 1 ersejtir and wisqu comborate sfowth whirh is commonde contorted with the roliztion, ApFrosimately $30 \%$ of the corg ie unite to fint corbonete

 localls purple rolnared, strarals carbonatized wetchas
 Weatls mashetie with trece to $1 \%$ diseemineted furite
 the core abis 215.90 metere et be dearees to tio vore


 made uf of 5 smite Gemerelly the rome is tinget and alteredion is verumejl darejured. Thr mojn siljuifiod

 alteration $j s$ ratad. purite velues are denerajue hisher



| 18765 | 213.7 | $\bigcirc 14.7$ | 1.60 | TK-1 | $\because$ | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1876\% | 214.79 | 915.77 | 1.00 | 18:1 | : 17 | . 17 |
| 18767 | 215, \%7 | 216.74 | . 99 | TE-1 | , 17 | .17 |
|  |  |  |  |  |  |  |

Foliated and tectonjcalls brecciated, chloritic and highly cerboriatized rock. Generally 5 to $10 \%$ atartz cores are rioted within lensitic carbonete srowths. These berises frohebly refresent bousimased auartzecartomate veimbets. ? to 10 cm thict anes of Main Gilicified Zone inteneity atered treceia zere roted
 filled veimets arod the foljetion aro irmeresimul dieturbed down section approachins the hofermafault.
 disceminated forite $!f F$ ta ry 10 jo\% withif Main Gilicjfied zone intericitu elteration. 218.37 10210.44 moters : Mrtomat Feult represented bs a o.s cnthiot
 frasments in $\Rightarrow$ armad rhluitio metuix, strarisis carbonetized throushout. The rlesestit semp je at 60 dessees to the rore axiz

### 318.44231 .84 HATN STLICTFIEI $70 N E$



| 19770 | 218.44 | 210.89 | . 45 | $5-4$ | 14.06 | 607311 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18771 | 218.89 | 219.78 | -90 | \%-98 | 7.20 | 6.41 |
| 10772 | 219.76 | 220.21 | . 43 | 7.9 | 24.17 | 10.39 |
| 18773 | 230.21 | 221.27 | 1.03 | $2 \cdot 3$ | 4.46 | 4.55 |
| 10794 | 221.23 | 221.76 | . 53 | 6-10 | 20.57 | 10.70 |
| 18775 | 291.76 | 222.61 | . 8 5 | 4. | 5.14 | 4.37 |
| 18776 | 222.61 | 223.53 | . 92 | $5 \cdots$ | 12.69 | 11.6 ? |
| 1897 | 223.53 | 22.4.04 | . 51 | 6-8 | 6.51 | 3.3\% |
| 19778 | 224.04 | 234.64 | . 60 | 15-20 | 5.14 | 3.09 |
| 18779 | 231.64 | 2? | 1.00 | $15 \cdots 0$ | 3.07 | $3.0 \%$ |
| 18780 | 225.c4 | 226.24 | . 60 | $15 \cdots 2$ | 4.11 | 2,4\% |
| 10781 | 96.24 | 23\%.09 | . 95 | $10 \cdot 15$ | 7,60 | 8.16 |
| 18789 | 227.09 | 227.93 | +84 | 8-10 | 6.17 | 6.18 |
| $18 \% 83$ | 297,9\% | 22日.75 | +62 | 8-10 | 4.90 | 3.94 |
| 18784 | 220.75 | 299.50 | . 75 | 8-10 | 4. 11 | 3.09 |
| 19785 | 229.50 | 230.22 | . $7 \%$ | 10 | 10.29 | 7.41 |
| 19786 | 230.22 | 230.80 | . 56 | 2-3 | 1.71 | , 90 |
| 18\%8\% | 270.80 | 231.84 | 1.01 | ? | 2.40 | $3+5$ |

breceiated material，frohable an intrusive seenitic．Where strarods brecoiteter the rock is ajtered a duff homes colour and conteris 5 to $10 \%$ finele jisstmineted purite biak purfle red，reletjvels urieltered moteried je waelsly riecturod with trace to $1 \%$ rorite．the urper 1.3 meters of the ache $i$ hasinle hecejeted， 60 to $70 \%$ butf mones coloured surj resjitic， moderetele to stromaly mrimetir，Felou 219.95 meters the core $1=$ nommasmetio． The uffer and lower ronticets of this intrusjef ate ohliterated be huff hones coloured elteretan with mumerons res abs daft Furt－le rolumed intrmeive trestmerte． 221．26 Metere： 3 \＆$\%$ that ：anir uf white frasments uithin a soft grepr ihlarita metria resrecents e tectomic brarite zome at affroximetele 35 destees to the core われら．
221．76 224．04 fervasively dat warfle coloured and intencel：Eiljoified cat bs rumerous yeta teste white oundta filled fravtures． astrosifastelu s\％white to sres．ansular， insthly filiceous frasments aris $10 \%$ revilic，iutt io nin raloused averfi．fitims elteration is moted，Moderatele（b


 clots famiontroted in burf coloures
 tectonic breccte e．biser sone ot 20 destese fo tho care axis．
204．04 226．24 Intensely silucified，hure coloured breceia with mandorit mita to areas silice dumfing arod minory spor to Furfle colontes， lese mjefed metwial． 10 （1）to to

 noryreactive to hrel throushout life zome


226．24 227．09 AFFroximately 50\％mufi imbey rolbureas． hishlu ryritir breceja end so\％dart．furflt coloured material．Cut for abusidalt wilite Jate stase aubrta filled fractures， Nom－mastietic arid mori teactive ti HCI with 10 to $15 \%$ djesenimeted．perite throushout．
 Fatchs buff brown overfrintiris arid oburadat white guerty rilled frectures．





$$
\begin{aligned}
& \text { foliated zone } \\
& \text { to the core asis. }
\end{aligned}
$$

As described above nowever localis weatly with moderetely fervestyely rernometizog moted throushust. Miror dart: areemy less than $\because \%$ nf the rore, $\because$ to $\mathrm{F} \%$ dissemineted metrite.
231.34238 .90 TRANSITIONALIY GJI.OIFIEH ZGNE

Fire dreined, dab, sreen, ohloritit meterit cut bu rutfle coloured brecoia weams and white, firit. sres, cream and red coloured absutz shad worery corbobste filles frectures. These frectures are rantated, deformed ans commonly affeet alome micromfatlifo and
 red coloured, mis scejo silitificetion halos srici tho, maiorits of silicificalion is rrecture coritrolled. Where most intemsela hreccietert ard fioctured, furble lo huft Hrown, Majr cilicified lorie antersity altefetion js
 siljcified material and 30 to $30 \%$ dart green, chloritic, relatively mriedered ract. Mirior certmanti filled fractures ang focallu weatly cerboriatized, nom mestietic,
 Furite.

### 238.90251 .89 LOWER SII.ICTFIEI ZON:

 brectie cut bs severel efisodes of white wartaz filled
 brown coloured end eminit sombiant warerte fijfed fracturife erod silice dumrine Siliojficelion arici alleration $\operatorname{se}$ brecoiz and fractur controlled umita the Fredomirabh brecoie contrul rat alteretion of tho Mein



 dart sreen chloritic materias are mated.
238.90247 .80 Gres 40 furrle and lanelly mut firmo.
jntensele silicified brecria cat be a networt of white allertarilluf frertesoed Mirior, less than a\% seren, relfitvely unajtered meterjel is noted Gfiesialle

 dicsemimeted reritat
18789231.64232 .82 $18789232.82233 .02 \quad 1.00$ $16790 \quad 233.62 \quad 234.84 \quad 1.02$ $13791234.34 \quad 335+8 \%$ 18792 235.82 236.93 $18793: 36.83: 37+00$ 18794239.80239 .90
.98
.08
1.01
1.01
.97
1.70
 $-4$

1. 3.4

134
5'
, 91
34
.33
.35
.76
'* $\cdot 1$

| 18795 | 238.90 | 239.65 | . 95 | $1 ?$ | 1.03 | . 90 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1396\% | 39.85 | 240.81 | 96 | 1-3 | +69 | 6 |
| 18797 | 240.81 | 241.83 | 1.02 | 4.6 | . 69 | . 70 |
| $10 \% 90$ | 341.63 | 242.90 | 1.0\% | +.. | - 34 | . 36 |
| 10790 | 342.90 | 24.7.79 | -89 | 4-5 | 1, 37 | 1,29 |
| 18806 | 243.79 | 244.36 | +57 | $\cdots 3$ | +69 | - 3.9 |
| 18801 | 244.36 | 245.30 | . 94 | 7-10 | 5.14 | 4.03 |
| 18802 | 245.30 | 246.08 | . 76 | $2 \cdot 3$ | 1.71 | 1.30 |
| 18803 | 246.06 | 246.97 | . 91 | 2-3 | $2 \cdot 10$ | 2.19 |
| 18804 | 946.97 | 247.80 | . 83 | 2-3 | , 51 | - 4 ? |
| 19805 | 247.80 | 248.69 | 1.09 | 1-2 | , 17 | . 19 |
| 18808 | 248.89 | 349.30 | . 91 | $3 \cdot 5$ | 1.20 | 1.0\% |
| 18807 | 249.80 | 250.58 | , 78 | 3.5 | . 69 | - 4 |
| 18803 | 250.58 | 251.?7 | . 69 | $3 \cdot 1$ | . 34 | $\therefore 3$ |
| 18800 | 251.27 | 251.89 | 18\% | $\therefore \cdots 4$ | 69 | . 43 |

247.90248 .69 AS described above however 15 to 20\% relic sreen chloritic retches noted, 1 to $2 \%$ disseminated mysite.
248.89 251.89 tiark surfle coloured intensele silicified breceia with minor white guartz filled frectures ond :idiratumins. Moderatelu rervasively carbmetized with
 crsotels aros finely evatalline elots.
$251,89266.26$ TRANSITIONALLY STLICIFIEI ZON:

Grees, fine sreireg masejve rock rut is a randomber oriented metwort of white, pint, buff ara oremp coloured auartz filled fractures alo pretres of furfle stesto
 foliated, hishlishted bs wisps white lo ribll. Guartz-corbonate olons folation wanes and aurdt: veiritng sub-rarallel lo the roljatjong generelly hrecciation frecturing and alleretion intenita Socrease down semtion amo raliation tecomes belter
 cofitrolled down Eection wion white to cream zolourad Guartz filjer frectures quhinitins momecale furfic to buff roloured silicifien miles. Numerous jete stede carbonate filled frectures alid lacel rervasivit carhonatization is roted in the urfer fortion of the zone. Carbonatizetion os ujefe srouths ajoris the roliation localls with rimt aurfaz cores becomes more Frevalent down cection ornerelis rommestelig with trace to $2 \%$ fyrite locelje ur to 3 lo y\% an hein Siljeified Zore intensits breceice secms.

 ariented networt ar amertz filled fracturas ami veiridet: ?0 1 a $30 \%$ Gote

 carbonetized. How mathetic with ? ar to t\%
 ratcher, :3c.78 metar: 1 for fint brecojeted swebl falill rume at so dedreve to the rore aris.
 meters however arproximetele
 matorian. Jrateseed rarbormetisetion


 dearees to the rate axse.
 abmanemt anyrta, amertr-aerbonate end

| 18 E 10 | 25,1,89 | 252.78 | .99 | 1-2 | .34 | . 36 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18811 | 252.78 | 253.69 | ,93 | 1.92 | . 34 | , 31 |
| 1881: | 253.69 | 254.80 | 1.11 | 1-2 | . 34 | +30 |
| 18813 | 254.80 | 255.71 | . 51 | 2-3 | . 17 | . 15 |
| 18814 | 25.5 .71 | 258.84 | 1.13 | 1-2 | 1.03 | 1.16 |
| 18 ELS | 256.84 | 257.93 | 1.09 | 2-1 | . 69 |  |
| 18016 | ?57.9? | 258.99 | . 96 | 1 | 4.r | tr |
| 18817 | 258.89 | 259.88 | . 99 | 1-2 | tr | tr |
| 13918 | 259.89 | 260.81 | 153 | 1? | .1" | . 16 |
| 10019 | 260.91 | 261.40 | . 59 | 2-3 | . 34 | 190\%.. |
| 10020 | 361.46 | 262.46 | 1.06 | 1 | 11. | tr |
| 18821 | 262.46 | 263.49 | 1.03 | 1 | +69 | . 71 |
| $109 ?$ | 293.49 | 264.44 | .95 | 1-2 | . 69 | . 6.6 |
| 16853 | 264.44 | $265 \cdot 44$ | 1.00 | 1 | . 34 | -34 |
| 19824 | 265.44 | 268.26 | , 83 | 1 | . 34 | +29 |


6. 26269,49 CHIDETTE CAFDONATH SCHISI



 The rolietion is commonle (faturted. lacelly mestive, relatuqels ameltered sectjons af anted, Carbonatization


 corese these are fronense fombindefo matererdrbunde
 foliation rectease doms eectar, Mon masmetio witis trace
 bo desrees to the rore asis.
$\because 69.49271 .15$ SYENITE
 intrusive with whote boojstart rolit fobsump



371.15313 .03 CHLORITE. CARBONATE SCHISI








$18529268.34369 .90 \quad 1,25 \quad 140$
11.1
i. $r$
$1 r^{2}$
isil


| 18830 | 271.15 | 272.09 | . 9.4 | Tral | tr | E, |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18831 | -72.09 | 293.09 | . 99 | TF-1 | to | 4 |
| 1883? | 273.68 | 274.07 | . 09 | 1 $\mathrm{N}-1$ | 1.1 | 1. |
| 1963 | - А, \%" | $\cdots)^{\prime \prime} 1^{\circ}$ | 1.1: |  | 10 | tr |
| 18034 | 275.19 | 276.10 | . 91 | 18-1 | 1.1 | $t \mathrm{t}$ |
| 13035, | -76, 10 | 2? 11 | 1. $\quad 11$ | 17 l | 11 | 4 fir |
| 19836 | 27\%.11 | 278.1" | 1, 1 | 1R-1 | i. 1 | to |
| 18937 | 378.19 | 278.94 | ? | 1 F | t, | 4 |

### 313.03 326.03 FOLIATEA basal

Green to derl etema fine ta very finc sreined folized and cerbomatized unit as geseribes above however fistinct Fillow eelveses ere hotmit A morlo dreelowod rolietion is noted localje however much of the whte

Honmashatio with trece to $1 \%$ djesenirmeted risite.
 flow botton with mitor rlow intion
 be foljated mastjo flum. Foliated at 70 despees to the wor anis.


 thi wise Minol wree ta witur auartz carbonata wojnulas aras frasturbris ja

320.90 321.74 Monzonitio intrusive: stey, rine arasieds Fervasivels eerbmetiapr intitsiow wilh



 Fs despest lo tion lare w: is.





| 18838 | 278.15 | 279.94 | . 99 | TF-1 | . 17 | . 17 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18339 | 279.94 | $230.9 \%$ | 1.03 | TF. 1 | . 17 | .18 |
| 18840 | 280.97 | 202.04 | 1.07 | TFi-1 | . 17 | . 18 |
| 18841 | 282.04 | 203.05 | 1.01 | TE. 1 | t. r | 1. |
| 18EA: | $\because 63.05$ | 284.12 | $1.0 \%$ | $15 \cdots 1$ | .1\% | .18 |
| 18043 | 234.12 | 235.24 | 1.1: | T1:-1 | . 17 | . 19 |
| 181844 | 285, 21 | 296.35 | 1.01 | $1 \mathrm{R} \cdot 1$ | . 17 | . 17 |
| 1084\%: |  | 207, 37 | . 93 | 1 | . 69 | . 03 |
| 118846 | 2F7. ${ }^{-18}$ | 3¢日, \% | 1.0.4 | 1E-1 | 36 | 3.39 |
| 19347 | 209. 2 ? | 240.9n | 1.01 | $r 10 \cdot 1$ | . 1 \% | .1\% |
| 18048 | $280+98$ | 300.15 | .19\% | 18-1 | I. r | $1:$ |
| 18040 | 290.15 | 291.13 | . 18 | TE. 1 | 1. | 1. |
| 111850 | 291.13 | -0.08 | . 95 | T1: 1 | tir | 11 |
| 1835] | 90\%.9 | 393.97 | 1:01 | TV: 1 | 1:1 | Hil |
| 18 es | 304.05 | 20", ¢A | - 9 | 1F-1 | i . ${ }^{\text {a }}$ | 1 |
| 108\% | 296,96 | 297.94 | 00 | Ti 1 | t. | $1:$ |
| 18854 | 390.61 | 909.05 | .94 | 11-1 | [.il | 1.13 |
| 1885 | 300.0.6 | 30? . 79 | 1.0.6 | 16.01 | 1. | 1. |
| 18056 | 90\%, 0 ¢ | 304.02 | . 94 | $3 \mathrm{~m} \cdot 1$ | H1i | nij |
| 1885: | 305.03 | 304.01 | -99 | 10-1 | , 9 | .17 |
| 10858 | 706.94 | 507.72 | 1.0: | 1f. 1 | . 17 | .17 |
| 18859 | 309.6\% | 310.63 | 1.01 | 11...1 | , 1' | . 1 , |
| 11186 | 311.06 | 31? (1) | - V | 18-1 | 1.1 | 19 |


| 19061 | 3.13 .03 | 314.03 | 1.00 | 18-1 | tr | 1.1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $1086:$ | 315.03 | 315.99 | +94 | 1B-1 | 1 l | 1.1 |
| 18843 | $31 \% .01$ | 318.00 | . 99 | TE-1 | .17 | . 17 |
| 18864 | 319.05 | 320.02 | , 9 | TF--1 | +17 | . 16 |
| 18065 | 320.02 | 320.90 | . 88 | TR-1 | tr | tr |
| 18866 | 320.90 | 321.74 | . 814 | TK. 1 | tr | t r |
| $1986 \%$ | 921.74 | 322.76 | 1.02 | 1K-1 | tir | tr |
| 18969 | 323.76 | 324.199 | +98 | 15-1 | 1 : | t. $\%$ |
| 18866 | 325,86 | 326.63 | 97 | YR - 1 | 17 | . 16 |

Fine to vers fire stabed meseive bridrillowed flows,

 firie arejried bernming firie sreined below
 10 \& meters or the riati $j=$ versefife

 eyidotiaedjum. simmame embomela vtringers ani locel wél ilicifiretion.
 are aleo mated. Tho llow becomes lest frectured dobli sertich bowfory mbar wisfor Carbonetiabtion shd crobnete strimaers
 disceminibled forite lhroushout, The flow
 the first =elvase $i=$ noted at 339.02 meters
 to vets fine staired fillowed flow, locelje hishle frertured fo biewedeted with ofjdoter filled fracturins athil :atctis orjdotization thrasshoul. H:Herous raraorate fillui reatures and cerhorate veintets $\quad$ loralls fervesjvels

 untreasimsl: raentered arad dieturimed down

355.70 FNII OF HOL L:

0.0024 .95 OUEESURDT N.
34.95159 .13 घASALT.

159.65209 .44 MAIN MIMEFALIZE1 2ONE
159.65160 .34 TRANSTTIONALI.Y SHIDETEIEII $2 O H E$
160.34 171.00 MAIN GILICIFIED ZOHF.
171.00209 .44 TEANSITJONALEY SILTCIITEA :ONE

4
209.44 269.04 CHO OFITE-CAEHONATE SCHIST.
269.04 321.50 FAFS4LT.
321.50 EHI OF HOLE.

### 24.99159 .13 FASALT

Fale ofeer to meditm sres-streef with few dark areert pheses and ucualiy rime to vert fine srajed. Finor dreined pillowed flows and relatively coarser eframed messive flows ibe fobra in the section. Fijulowed flow has been butombercteted to form eroct resenhtins flow brectia - rejic selvaser ere hoted jocallst flowe ert well structures wifh preirular, uften arisulerge






 mashetir (flow marairis, selveses, etc.). These ronfs
 breaks are white corbormeterillad. In addition to weal.
 is moted. Thjs $i=$ most mambrout ahove the urnerluins
 breceis in flow tope is arsromed, Tntrasivos af diuritio
 meters in widta. lnese rows are cherauteristicalbu

relteration.
34.99 35, fio rime to vere fine greibed meselve flow

Eactins of ractume rlemes , Pruinehle tore to

becoming wertly $\quad$ moderetely mathelig
(ocal) $:$.



 silioified. Mestitice are wed lucalla,
 shears.
$53.27105,73$ silicitied ard ufjdatizaci arecoie Eedm at


 kefies have a latinlof le:ture A feb


is normmestietic and carries a trace of Chalcofurite localls. Fractares ere often currourded bu 1 ran efidotjazed tialos.
105, 73 105, 95 Hsaluclastite ... Frobabluth fow tor gohe rut off at apforaimalelu ses deareat to the core asje hu overjuifis intmutive.
105.95 134. 30 Miror flow lof breceia with aburodat more rounded flow breceia fresmerite ut o 4 cm in size. Frasments are oftern vesjembar with underarmed pound vesjeles ur to 3 mm in size, Hetrin to frasments is oftern
 resembliris hyelnclestitet aro noted ill metrj: logalls, A fourrimíy arcuale etruetures are noted laralls - roseible brecciated rillow rime.
134.30 142. 60 Continuatinn of ovorlyins section with weatly develofed vatieler throuthout trisca of flow breccie localls. Zore $1=$ ofter s.iljzifjed woolsty to mbibriffly. section becomes micre masaive down section,
$142.80 \quad 143.80$ Weakju follated nastive flow.
143.80 144,00 5ection is hishle foliated ot 40 .. 45 destees to the rore asis
$144,00145.60$ Weatly faliated massive flow ard hasal flow 44. 60 148.00 Hishls folseted mria cartoratized section uith minor recumbant foldiris of foliation Fossibly interflow efdiment.
146.00146 .38 Quevte vein - rewries aburdand dart areen
 jn urfer vection of vejr,
 breceinted alesseflow tor section hecones less alteres down sectimb trereis: freamerte aft of B hidily andalder rlow to veriety.
147.70 148.25 「Jow hreccia ... vesicular localls.
148.25153 .00 Moderetel: brecciated vors rime areinod massive flow with ahurrant sauseuritized
 oetween 148, rer and 1 AB. Bo metere,
 moderately fervesivels carbonetized.
 (fossjole autamoreceja: are stronste Fervasively rarhonatized, Mimor fuljulion nevelofed locelly et 50 respees to the


Ferhafs due to resiomal metamoffrism．The foliation is hishlishted he selective carhormatization of individual lanimations． $\log$ ． crosc－cut arid feather out alones the foliatjori． carbonatizetion is revealed bs e crean fopaje aies colouration in an otherwise sreen rock．Carbonatiaed lanimations make uF ari averase of $15 \%$ of the rock
 hue within carboratized seans．The ：urfele hue $j=$ due 10 bematite．Hematitf is fumal ar ：velus fiof interetifiaj dis玉emination within tho chloritizes aroumbesc．The
 trece of furite is moted throushout．

MAIN MJTFRALJZEN ZORF 159.65 OOQ． 44 mevere，
The aone is bused uron amomit and dedree of Ejuicificetion end it je composed of three membere．The members are of mormel thiortace：line alferetion je woll Jevelofed and tuficel foq reat merter，furiturnatato aro histher than normal，rattimalaris in the Mojn Gijucjfied Zone，F\％rte antert averases B－10\％in the Main Eiliviried Zarie with up to $15 \%$ locelly． 160.34 MCKENNA FAUIT FIANE．
159.65160 .34 TWANSITIONALLY SILJCIFIE日 ZONF

Dart stemp wers fine speimen with selective cjlicification if $\quad$ arbonetiaed laminations and slésts． Carnonatization is indicested b：e refem ralobration whereas silicirication hes a aremer hue．Hametieation


 silicified roct，Green，viloritized，mombilicified rock is wezl：henctized es $\Rightarrow$ firu jriselstitiel djssemimetion，forita content averages $1 \%$ with tr to $5 \%$ locally ir sjijojfied sections．Tise ane is moduralely reactive to HCJ due to cabonaliadtom thoushout，The
 rock is moderatels to locslls कtronals rocelured wilis
 Fatult is represented he e olas seen ot do desmees to the core axjs at 160.34 metrors，

fursje－gres to homey or eream columped reforitite intenseje silicified ineccie．Jins roet js often meli foljeter at 50 desrees to the roro zaje．This foliation

| 16036 | 160．34 | 161．08\％ | ． 74 | 9． 8 | 1．9＊ | 84 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $1683 \%$ | 161．08 | 161．31 | ．73 | $\because$ | $\therefore 1$ | ． 6 |
| 16838 | 161，81 | 162.884 | 1.67 | 1－3 | ． 65 | ． 71 |
| 16.339 | 16：．91 | 163．9\％ | $1.0 \%$ | ！ | ． 17 | ． 19 |

js of tectonterisif. Ores silicified roct has a furfate hue due to $a$ verjable despete of betmatizatiorn this hematite is reduced to furite ju the huff to homes coloured alteration fatches ard atifec. Weat reativerices to HCl, due to carbanatization, is noled meet the mergifie of thie zohe purite ie fouma es volufilio dissemimations; 1 mm cubes erid bletse end es clots uF to acm in size. Furite is mostle comentreted im tine matrix (vojos) between arisular breceja frasmerts. Averame
 content mas localls reach $15 \%$ mostlo és roarser clots. Associated with coaree olote or rurila in the rejer rork, is ar itscreased amourit or siljea mampint. This
 than $3 \%$. Fobls are monmemsmetie.
 sijjedfifi breccie with few buff coloured Fatches A fink hue is moted jocelly. Brecojistion is oflen me am scale with frasmerts exhinit, verious elferetion

 wertly reaction to HCl.
 awhanitic jntensels silicified zono Frobahly morboritis iritusive, kock it noderatoly to : transy breceiated locelly, Where brecriated, reck ietries : fy to 5\% forite in metri: mad rierlures. Tinja is


 mas heve been feldspar vherocrusts. Zome is rorn recetive to Hri.

 57 desrees to tie rore Beis. Matror Fisife i: roted thlibut tabr of remalistimu

 destees to si falagtion a few rintish

 contente.
 gilicified inrocide frasmerte ur to ab

 sibejfied fresments after monait ourr




$16840 \quad 163.67164 .61$ 36841164.61185 .36 $16842165,36166,11$ 16843168.11167 .02 $\begin{array}{lll}16841 & 167,02 & 167,98\end{array}$ 16345187.88160 .74 $16846 \quad 168.74169 .65$ $1634 \% 169.69170 .35$ 16848170.35171 .00
.74
$\cdot 75$
.86
+85
+95
.95
.86
.65
.76
.62
.52
.94
.39
.69
.32
.20
 A small fatit plane at 168,26 motere outs the care rass af 3E berfefo．This it roushl mateldel to folletion． Hisplecoment is normal witi ※untir sido hown smd sidelentidet wlunte y to eo decerees wex．

 sheare at arfrosimetole ts sogrees to the core as：is．Femeinder or the rition i． intentels siligiriod breocia．
 cabour．
$169,10169.69$ Contimetion af orerlsins tectonio restma
 moderate fn $\because$ tions folietion at to to s＂ deerees to bitio bore asise nomustat

 or movement is south stide down．

 of fromode tectumit artefr．Sertur．as

 fillins wr teme：mb foctury at fisht




 uf the zoosio．

## 

| 16845 | 171.60 | 171．57 | ． 53 | 3.1 | 4.20 | $\because \%$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 12006 | 1\％1． | 1\％，0： | ，5\％ | $\because \quad \%$ | $\cdots, \cdots$ | 1．1\％ |
| 16851 | 175,04 | 173.04 | ． 96 | $\cdots$ | 13 | 1．$\quad 1$ |
| 1885？ | 1300， | 1：3．91 | $\therefore$ | $\cdots$ | 2.94 | $\therefore$ a 0 |
| 16053 | 173．64 | 174.20 | ． 6 | 9 | $\because 5$ | $\cdots$ |
| 1695． | 137．04 | 13， 1 \％ | 1\％ | $\cdots$ | $!$ | $\ddagger$ |
| 1685 | 176．13 | 176．06 | 01 | $1 \cdots$ | － 37 | ： |
| 1605． | 1／0．0\％ | 176．9\％ | $\cdots$ | 1 ？ | i． | 1 |
| 1， 685 | 136.96 | 17706 | ． 9 |  | it | 1.1 |
| 16859 | ？${ }^{\text {a }}$ ， | $17 \%$ | － 0 | 1 | $1:$ | $!$ |

cream hued, Croam lo homes coloured, porite rich alteration je lioted es helot farderina frexture.

 Geomstretches of siliojfication are oriented rerelled to
 breccietion have provided sitas for iriterisified
 ur to $10 \%$ werite louelly, Thser seane were fratable medor fluid condujte ribrimasteretjom.
$1 \% 1.001 \% 1,51$ fomimertals
シiveifien with 2 en

 coloured senthme us to of an widtin carsims us to 5\% Fitily lomellut
171.51171 .91 $90 \%$ iritericel.
sijucorifor inerojo afecribed abrove.
171.91 17\%.06 $15 \quad 20 \%$ sj1icified breceia.



 Fuffle-3res Jr colour with sections or butf coloused. dolomitized roct ts to ? cm in widtin relaters to late $\boldsymbol{m}$ tege chlorjtic shearime. liuff two je muetle compried to the witer half af the stitlon.
 interaremulat hemetile is molus in

175.15 179.69 25\% rumbewes \%ilforion invorta with munor buff colaured elteredion and
 erommd frertar.
$16859170.70 \quad 179.50$ 18860170.00120 .29 $16061100.54181,54$ $1406=101+54102+1$ $18863182,13183,10$ 16864103.10184 .10 $16865184.10 \quad 185.10$ 16868145.10186 .10 16867 18\&.10 107.12 $1686813 \% .1 \% 139.10$ 16869188.10 100.88 $15870 \quad 180.80 \quad 189.70$ $16871 \quad 199.70 \quad 100.40$ 16079190.40151 .30 $14978151.30 \quad 152.19$ 16074109.19103 .4 16875193.14194 .12 $160 \% 6144.12195 .0$ ? $168 \% 7185.07196 .00$ 15839196.00196 .71 16875196.71197 .44 16880197.46199 .31 $16 \mathrm{EQ1} 198.21198 .96$ 16382 196.75 199.76 14083199.76000 .74 16884200.74201 .72 14085301.73202 .70 6996 209. 90 90. 69 108:\% 20. 68 204. 6
 16889205.66 20d.65 10000 906 65207 $16891-27.60208 .52$ $1690 ? 309.52209 .44$






















 confoced of uall faliated chloritized roct. This section foes not exhibit much nemetizetion. The foliation is at. Sh desrees to the core asis throushmut,
 23 cm ift widh. Thése seams mat aerret lo 3\% perite locallu. Most of tior purito is fournd as a jate fase fixiture rillimot Interverime chlariliaed ane enibibits moderate hematiactionf. Content of
 $15 \%$ at bere ur zorre.
 al 188.10 to 189.70 meters.
196.71198 .96 Less ther s\% Eilicifscetiof. 20ries of localized brecelaticm have frovided aiter for intencified rilicification end ruritizetion.
$198.96159 .7630 \quad 35 \%$ silicirirelion as harrow breceia: cemms elons folietion with $\quad$ fo to $3 \%$ rutita ise sreils ur to 1 mm , A strons zssociztion betwern fyrite rid silicification ie rioter, foliation $j:$ hel aשvelowed at do desteme to the uro asi:
 3 chi Strons fisliation at fo bexreet to he core aris.
203.68 206. 65 AFFrowinately $45 \%$ sijicified hrecrie in section uF to 25 cm in inidth. Silicificetion it enhibited to a fole wast sreen and furflewsres colour carrsimatur to $2 \%$ furite locally.
$206.65209 .445 \%$ sj1icification in rerrow hroccoa seams uF to 3 cti ja width. A weatle developod crenuletion eleavest is noted localis at 70 desrees to folintion Tiiterobeven difs shellowls rarth. Tho rolistion (Si) it well dovelafed et. Er lo bo desrepe ta the core s\%is. lhe folintim is hishlighted he Eelnotive rixthanti,ation of individual laminations.
209.14269 .04 CHIDEITE-CARBONATE SCHJET




 foliation je highlighted bs afentive ormoratization of

| 16893 | 204.44 | 210.44 | 1.00 | 0.6 | 4 | $t r$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 168994 | 210.44 | $\because 11+42$ | . 90 | 0.6 | . 1 | 1\% |
| 16895 | 211.42 | 212.42 | 1.00 | 0.6 | tr | $1 \cdot$ |
| 15898 | 212.42 | 213.40 | . 93 | 0.5 | 1.1 | 1 r |
| 16897 | 213.40 | 214.40 | 1.00 | 1 | , 17 | .13 |
| 16996 | 214.40 | 215.40 | 1.00 | 0.3 | 1 r | 1.8 |
| 16099 | 216.40 | 217.40 | 1.00 | $0 \cdot 5$ | . 17 | . 17 |


| 15-30 | $f \mathrm{rom}$ | 70 |
| :---: | :---: | :---: |
| 0 | 21 |  |
| 13589 | 230.40 | 221.318 |
| 19570 | 22.40 | 223.40 |
| 10571 | 224.40 | 225.40 |
| 18572 | 226.40 | 227.40 |
| 18573 | 220.40 | 229.40 |
| 18574 | 229.40 | 230.43 |
| 18575 | 230.43 | 231.40 |
| 18576 | 231.40 | 232.40 |
| 1057 | $\because 32.40$ | 233.40 |
| 18570 | 233.40 | 234.40 |
| $185 \% 9$ | 234.40 | 234.95 |
| 18580 | 234.95 | 235.72 |
| $18: 58$ | 235,72 | 236,46 |
| 1058 ? | 236.46 | 237.00 |
| 18583 | 237.00 | 237.44 |
| 18581 | 237.44 | 238.40 |
| 18585 | 238.40 | 239.40 |
| 18596 | 239.40 | 240.40 |
| 1858\% | 240.40 | 241.40 |
| 18588 | $\because 41.40$ | 242.39 |
| 18589 | 242.39 | 243.03 |
| 16590 | 243.03 | 243.56 |
| 18591 | ? 43.56 | 244.40 |
| 10592 | 244.40 | 345.50 |
| $18: 193$ | 245,50 | 246.5\% |
| 16594 | 246.52 | 247.62 |
| 18595 | 248,50 | 249.50 |
| 18596 | 250.48 | 251.51 |
| $18 \%$ | 253.00 | 254.00 |
| 18598 | 256.00 | 257.00 |
| 18959 | 259.00 | 359.00 |
| 18600 | 260,00 | 261.00 |
| 15901 | 262.00 | 335.00 |
| 16902 | 264.00 | 265.00 |
| 16903 | 266,00 | 28.700 |
| 16904 | 268,00 | 269.04 |


236.46237 .00 same as sescribed zonve at 209.44 to 229.23 meter:
individual laminations. Fodies of carboriate alteration swell to cross-cut end feether out slofs the foliations Cartonatization is revealed bu a ream tofeje ares colouration in an orherwise sfeen roct, corbonatized laminations make u\% ar averede of $30 \%$ of the rock volume, Fare silicificetion je hoted as mpricestes hue withir carboriatized aeams, Chloritic rock is weatals carboriatized throushout. The rocl is weatly 10 moderately well serted throushout. A minor amount of moderatels to stronsjes ejlicified hreceia is rotad lorally as a rale oljuf areentopirit to furfje-arey hue. These sections, ur to 10 cm in width, ero moderately reactive to HCl (es. 213.07-2.33.99 m.) and carry uf to $2 \%$ very firiels risemmineted puritet A frut pintish siljefous breccia seams are roted orssjble brecojates Querta vein. The seams are sherfjetrumeated bu foliation develures durims jete stase movement or shearims alons roliation.
209.44 229.23 Typical foliated roct with 15 to $20 \%$ tarbometized secms us for mitn in width amd few messive to woatly foliated eections, Foliation ranees betwefn 45 ard 50 dearees ta the core exis.
 silicification along marrow hrecciaters Seans ur to 2 rhin uirjthfarallel fo well develofed folialiof at 45 despatas lo
 10 em in width are rare, Hishly alleruas sections rarre uF to a\% wors finely dissemineted rusite.
234.01 234.95 Seme ar describsd bhowe at 20\%,44 tu 209.23 meters.


 Silicified roct carfies uF to s\% putite
237.00 237.44 Mafis intrusive - nem areen ulth slosint rint bue lieet bryer contect. Section at fine orained witin ohlorjtized mafic lathr. uf to 1 mm in wiae, rossiblu alterod botites which hove brea foljuled Ferallel to contacts, Folietion ja moiterntols well develofed at 5 desfees to the core axis. llait is wearle to morieritela masmetio throushout. Ceriumatiaetion is strmes and gervestuelo devalorgo.
237.44243 .07 seme es aescribed above ar 209.14 tu 229.23 meters with lire 1.6 wow grepl colotred sibleified brealie.
? 43.03243 .56 Moderately to stromeje silicified Burs lirecciated section arourd a mulomite zorie

### 269.04321 .50 BASAL.

prom 243.40 to 243.53 meters. Folietions in mulonitic material is well develofed at. Es to 60 desrees to the core axis. Mulorite carries 1 to 5 mm silicified rrasments. Surraunding silicified hrectia is coricentiated on usfer mardin of mulonite, fossible due to displacemont of lower side. Jiestef of silisificetubn $1=$ moderate to jntense.
243.56 250.00 Well folieted arid cerboriatized fection similar to zone from 209.44 Lo 229.23 meters but with 1 to $2 \%$ pirkieh silicified seams alons breccia charifiels. foliatjor is stronsjy cremulated locelles with resultims increese if carboriatizotion, Felow 324. 50 metere, zome carries rale $\quad$ to 2 cm fatches which resembles bisalorlastite. Carbriate strinsers often $\quad$ arry to $2 \%$ very finely disseminated chelcorsrite.
-250.00 263.75 liark sreen, weat.ly to moderately rolited section which has $\Rightarrow$ distinct texture Freviously ideritified fetrosrafilically as a cotaclestir diorite. luwel of carbonatizetion is moderate to stroma. Stronsfes celmmetization is noted aloms late stese tivcturel features normal to foliation and subuatellol to core d:at.
263.75269 .04 Alternetins sections of well foliated dart. green rinoritized malrivial ama very hishly foliated sections with solective certonetizetion ur to 1 con $3 r$ width. Foliation js develofed el 5 sia 60 despees
 moderate rlrencth is rioted alonss the foliation betwen 367. 10 and 347.40 meters.

Fale steeri to nedium eres-areen with few dart spern phases and usualls fine to veru firie stained. flow rochs
 brecciated tops. A few pillowed phoses are noted locally. The flows are not farticulerjs well etructured with the exception of vesirular flow lofs flow rocks are nor-mestietic throushout altioush rare wotelt developed mesretics can be detected on a hishly
 hut exhinits weak fervasive chloritization in tine upper sections.
269.04 277.00 Very firie srained messive flow with weat.lu revelored 1 ma vesicles throustiout and moderate vesicie develofmelt lacelju.

| 16905269.04270 .00 | .96 | 0.5 | $t r$ | 1. |  |  |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18906294.75300 .75 | 1.00 | $0.5 i$ | 17 | .17 |  |  |
| 16907 | 303.75 | 304.75 | 1.00 | 1 | 17 | .17 |
| 16908 | 314.59 | 315.34 | .75 | $1-2$ | 17 | .13 |
| 16909 | 315.34 | 316.22 | .80 | 1.3 | .17 | .15 |

Gection conteins anstular flow tof breceja in to 10 \& mories throsenout. Thus JHil. ofredes into the maderlsing section.
277.00 279.70 「illowed Eectjon as fart of a thicter flow 279.70267 .97 firier to vers firie arained messive flow.

297.97 288. 37 Vers ririe srajred foliated rorie with celective ratiombtazation alons falif:tion ard uF ta :\% Fortar locally.
 abondent eficiatsaed zerfil and patches.
 flow - weakle eridotiaed thrughnotit.
 cimiler to overlying outcom .. swhe is Fervaejvoly earhomeli aco lhomahout wilh

 earhonetizen Hocede. Mattjing hishlishle
 rore exis.
310.50311 .17 Contirustion af overlying section sredual finsing troted bammonole
311.17311 .26 Vere fine groined rame.
311.24312 .99 fine to veru rime stablied, maseivo intrusive with 1 to 10 mmfint feldsper fhemorrste Horsmasmetje. lumproritert is: njshle folideted at 30 degreed to fife

 within the besealt.

3]4.04 315.34 马ame as described amuve et 311.26 (11 s. 2.99 metere tritusive is mashls foljated froble at 50 dernoes to fhe rore aris. lit: foljation js oevolofed rerellel to the lower montect.
315.34317 .30 Hishly folveted besolt .. strons paritizetion reat lha mfer romitart.
317.30310 .77 sane ac foscrined thove at 319.04 to 31\%.34 metors.
318.77319 .28 Vers rine zremal to arnamitue, locelle folleted hacal tiow.
$319.26319,30$ F10w contarl zome.
314.32 321.50 noundant tersimes ineroistion with ansuler vesicular fresmerits an flow tof
 below end of bule.
321.50 Mrterg ENA OF HCLE.

| Comorts: | 9079.1 | 5149.1 |  |  | TIAMONI | IURILA Fif | COFI |  |  | HOLE ND.: |  | C. $8.85 \cdots 258$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Azinuth: | 3 ¢50.6 | tes. |  |  | Section: 1 |  | 50 E |  |  | Froperts: | Worvest |  |
| IIf: | -770.0 | Des, |  |  | Core Size: EO |  |  |  |  | Location: |  | +5OE $1+2 \mathrm{Com}$ |
| Elevation: | 4996.9 |  |  |  |  |  |  |  |  |  |  |  |
|  | 310.2 |  |  |  |  |  |  |  |  | jate gitarted: |  | O Seft, 1985 |
| leristh: |  |  |  |  |  |  |  |  |  | luete Completed; |  | 6 Sept + 1985 |
|  |  |  |  |  |  |  |  |  |  | lossed bs: |  | W.5. Kidsell |
| Measuremerit: | Medric |  |  |  |  |  |  |  |  |  |  |  |
| Commehts: | Mapti |  | Azimulin | 111\% | Hepth | azimuth | Iif | pefth | Azimuth | IIIF |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | 60.96 |  |  | $\cdots{ }^{4}+5$ | 183.08 |  | $-63.5$ | 304.80 |  | -52.0 |  |  |
|  |  | 101.19 | 344.0 | -6, 0 | 243.84 |  | -57.5 |  |  |  |  |  |
|  |  | 121.72 |  | $-6: 50$ | 369.74 | 337.5 | -58,0 |  |  |  |  |  |

0.0031 .09 OUFEDURMEN
31.08147 .16 BASAIT.
147.16 151.40 CHIOETIE CAKBONATE SCHIST.

151,40 193, 35 MAJN MINEFAL JZEJ $7 O N E$.



218.91.224.94 CHIDFITECAFEOHOTE ECHSS,
224.94 233.91 FOL ATFI MMSAT,

1242.02378 .58 FOLIATEH HASALY

267.87 306.00 CHIORTTE-GAEFOHATE SCHIST.
306.00310 .21 HASAAT

S10.21 ENH OF HOIL.
$\qquad$

## $0.00 \quad 31.08$ OVEREURIEFN

31.08147 .16 HASALI

Medium to dart: sreme and time grained wilh ambaitio flow margins afri medimia trajed flow centres. iffer araised rillowed flowe and reletivelu coerser sreinfod

 rimmed fraqments. Thest ructs winimjt wed


 breceje jn flow lofe ie ahequvel.
 very firik :ir.inud, well sevelofed, iylumal flow. $\quad$ Hom-mestetive with trece la 10 dissemimatert cofith fhobuthout. finets histhe froetured frofe and locelle wrumd
 affroximately. lerefla watherod an;


 tifroustome.

 rumerous efidotised rrabturas amb aims
















 develored resctian rins in a finloritía end



$18873130.33131 .341 .03 \quad 1-3.34 \quad .34$

finoushout, The lower contect of this unjt is indistinet aftd evedetional. 6j.40 10 61.57 meters : Fervasivels carbanetized, intermediate composjtion intrusive FoEsidals monzonitir. 78.977090 .50 meter $\quad 70$ affrosimetely tio loct io histily flow breceibifod and esibhits thict sections of
 B6.59 neters $\quad$ miario to intermedide




 mescive flom, $\quad$ buralls freclured wili


 decreasiris in intaneity halou 93,5 matere

 with 1 to 2\% finel' disseminated fatila
106.00 110.80 Flow breccis to breroiated flum tor ; mediun spewns fjat stajoed fumbiod tu subrounders besaltiv fiastments in birior


 Futiter withif the chloritic motri:
 urialtered, ron-masbetic massive rlowt a very fibe stabred flow tor sreste siond saction to film arimated, heromins medium stajned helow log.0 huters istog:imetely.

 weatly ofidotiond peldifal whtronmied bs
 corbonete rillfid frealume etul mimarime


 foliated and worbonatiand hesel flow ..


130.33132 .20 Hreceiated, veimed and intruded contadet









131.75 to 132.07 meters. The boteom 10 cm of this zore is prohehsuraritic flow tor Mreccie.
132,20 133.61 Flow tof breccia to flow braceia $\ddagger$ greero ronroded tor cubrourded; rim scele taseltic frasmerits in gervasively chloritic matri\% with gocal eridotizetion. Non-madretice cot bs mumetume carbomate

133.61 147.16 Massive flow, localle slomeroforineritice

 metere of the flow is alamerofargmaritite exhioilins clustere of mo seste culiedtel feldefer fhemorracto. lrase la $1 \%$ discemibetad rurite, manerous rermarieta
 soction. the nottatio of om of this untit i:




147.16 151.40 CHI OFJTE CARHOWAT: SCH151
 wisfe carbonate hishlishtims the foliselone the rock
 pervasjuale cerboratizari; betier foliated aris more
 with trece me to $2 \%$ wory finels disseminated wewite.
 laminatod ara obmanmat henatazation is moted, for ialla



 151.30 MCEFNRA VAHMT FIANE.

 rele rint wiswe and lemitio cobtomete


 with trace to $1 \%$ discominated F'síto.
 the core abie irnd $1,48+10$ mel, destees la 1 hic core ost
198.58150 .75 a distinct vinarse in line virit as rioltus the rock bocombe धur" will faliatequ ind fhinas Janinated. altermetame bn subly



| 18094 | 19.9.1: | 148.3? | $1.4 \%$ | 0.5 | t.r | 19 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $1.78{ }^{\circ} \mathrm{F}$ | 19n, 74 | 149.58 | 1.10 | 1 | .69 | .76 |
| 188\%6 | 145.68 | 150.76 | 1.07 | 1 | t. | 1.1 |
| 18877 | 1*9, |  |  |  |  |  |

ard hishle hematitic bands. Gemerally 1 to 2\% woat to motherate sjifeiricetion of the hematized moteriel is roted.
 aissmineted restide tine faliation
 149.10 mete, at so dedrue to the rowe
 the core a:
 fresmerts withir, z tuonal! pervestifly





 यroluded fristment: The core i: Almita frectured atil bishly ofoumd luctibs





The zone is Mesed uson dester of silicification amb is














### 151.40 161.03 MAIN SILICIFIET ZONE











| 100979 | 191. 10 | 153, 9 | -189 | $1 \cdots$ | . 3.4 | 30 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 18 cos | 159.9n | 130.3? | , $\because 1$ | 2. ${ }^{1}$ | 4.4 | $\cdots \cdot 4$ |
| 18860 | $15 \%$ \% | 193,76 | 194 | $0 \cdot$ | $\because \cdot 4$ | 2.89 |
| 18901 | 153.76 | 18.4.5\% | $\cdots 7$ | 10.? | ? 1.93 | 16.30 |
| 18892 | 154.53 | 155, 35 | , $0^{3}$ | $10 \cdots 3$ | 1\% 1 号 | $\cdots$ |
| 1099: | 10.5, 30 | 1516.10 | 1.93 | $19 \ldots$ | 1." | 1...3 |
| 108634 | 156.95 | 15.05 | , 60 | 15-3\% | ③. $3^{\text {a }}$ | , |
| 1898' | 15\% 05 | 1\%\% "\% | $\because 1$ | $\because$ ? |  | , |
| 1093s | 159.04 | 159,0 | 1.ns | 1 |  | 1.4" |
| 1 san: | 1:8.0.0 | $160.0 \%$ | 1 No, | ' ': |  | 1.3 |

Fale grey to buff coloured, iftensely silicified and
 virtualls shattered and only the jarsest fregmente eshibit jodietircte dart rurfer coloured eores. This rone displays the hishert rurite velues - uf to ? o to $\pi 5 \%$ loraljs ar firfo dieseminetions and firel! crustalline clots. Genermllo hrectiation derefeses in
 beoomes increasirase rracture rontrollea, quarte filled

 semptally dart rumble voloured alm hemeditir.






 however Fervasive catbonetioficm.


 Fortion of the wore
152.28152 .82 Contact zome bethech tyfe 1 . Ard luse $\because$ Malerial. The moper inalf of this corne is Buff coloured. hishle lionciaited elial intersely silicified with sto to\% vere
 jntersely altevad tufe 1. Material, Tho Iower helf of tho zane as bethe ur ur mator
 red oremese colnsed intencoly ejlicifimd breocie. I abswet frasments exhidat dert.
 is probaids oltered lure $\because$ Material did

 locall! atround feitfractured with an aramato forml colouredowerfrjotilig blows rrecture liowsirseWhere most interitis: prectured lodisseminated yerite Sharf lower romlert at 35 ciparees $1: 311$, Cort dais.



moterf jn largect fogsments．Narb mesmili．
 digsenimeted revile throushout．A．wisliu Blockse histhy frectured core．
157．05 161.03 lert rutple roloured，hishly aiticified

 frectures ara velolets（iefremelle
 minor late ctecte crininetir fillus

 buff roloured，wetchs altemetion $i=$ moteri


 as to $15 \%$ dinemis ted purite throumbont
 fracture marajns， $15,0,0$ To 150.03 metars
 material wilh invianed ritaed ur silicified frements 40 1．0 50 destuene la；

 degrees ta lhe are asis．

## 

 frecturud aredry fine arabed，chloritio meterial．
 rommande overfflites bes rateme buff to wink to ares








 decferser down seetion Hombatheta emi jorallo




 10 lo $15 \%$ ratetivoly meltwost areat






| 18089 | AS．03 | 161．93 | ． 95 | 3 | 1.63 | 9 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19890 | 161.79 | 1．4， 3 \％ | 1． $0 \cdots$ | 1．3 | － | 38 |
| 18891 | 18， 0 d | 164，34 | 1． 29 | $2 \cdot 3$ | － 31 | ． 41 |
| 1309\％ | 184，34 | 165．90 | $\cdots$ | 23 | $\square 1$. | t． 1 |
| 18898. | 165．09 | 166，14 | 1．05 | 9.3 | － 31 | ． 34 |
| 18994 | 1苗．14 | 16\％，0\％ | ． 9 ！ | $1 \cdots$ | 1． | 1．r |
| 18995 | 167．09 | 168．04 | ．55 | 13 | ． 69 | ， 46 |
| 14a？6 | 163.04 | 169．06 | 1．0\％ | ？ 3 | ． 34 | ，${ }^{17}$ |
| 1809 | 145．06 | 170，10 | 1.04 | $\cdots 3$ | 1.0 ； | 1．a？ |
| 18890 | 170．10 | 1\％1．1？ | 1.02 | 3 \％ | $\therefore .96$ | $\therefore 10$ |
| trese | 171．12 | 171.17 | ． 35 | $10 \cdots 15$ | 3.77 | 1．8： |
| 18som | 171，47 | 130． 3 | ． 97 | 1.9 | 2.06 | 1．72 |
| 18901 | 139.34 | 172．41 | $1+07$ | 1－9 | ． 37 | ． 34 |
| 1990\％ | 123．41 | 174．1\％ | 1．0．6 | 1－3 | $1+0.3$ | 1.09 |
| 18503 | 174．47 | 1？ 5.24 | ， 77 | $3-4$ | 1.03 | － 7 |
| 18904 | 1＂？＋2A | 1？ | ． 89 | －3 | ， 3.4 | \％？ |
| 13905 | 175，98 | 17\％．00 | 1.07 | $1 \cdots$ | 2.10 | $\because$ ， 3 |
| 1890s | 177．00 | 1？3．7\％ | ． 96 | － 3 | 1， 3 ＂ | 3．3： |
| 18907 | 179.98 | 176．98 | 1．02 | 0.6 | ． 34 | －35 |
| 11908 | 138.98 | 180．00 | 1．0\％ |  | 17 | 1＇ |
| 18909 | 180．00 | 100．90 | ． $5 \%$ | $\because$ | $\therefore 8$ | 1 |
| 13910 | 180． 20 | 18：．\％ | ． 01 | ； | ． 3 | 9 |
| 18911 | 131.33 | 18\％．79 | 1．06 | 10 | ＋ 1 | －$\square^{1}$ |
| ¢091： | 103，＂0 | 1月女，${ }^{\prime \prime}$ | ？${ }^{\prime}$ | ！ | $\therefore=$ | $\therefore 1$ |
| 10913 | 183．67 | 184.59 | 0 ： | $1 \cdot 3$ | $\cdots$ | 9 |
| 1091． | 119， 9.9 | 105． 11 | ？＂ | ＂ | 1.1 | ？ 9 |

 Nori- mastretic Areers atid serieralis Non arboriatizan however the lower several metert eahibits white retchet of stromst
 disseminated farite.
171.12 171.47 Interflow sediment : gres to dart gres, firie orajued, iritelsejs fervisivily carthonatized erid vers stronsts masimetio with distinet masuetije hatudt. locally: well bedded at 30 to 35 destemes to the
 bes begri dieturbed bu late otese frocturime orio veirlots. 10 To $15 \%$ fine Fspite in disurete beds and lonsag.
171.47 175.93
senteral]
früturs couttolled silicification amd $40 \%$ relelivels
 to white rolomes, shbrourided, intemsele
 Nor-mesmetic with aburidant moserate revvesive rethometizetjor, and rumetous late ciase ajbamate fijued fraclure
 pesrite.
 10 10\% rilic, areer, rock, Hon-mastetic: with a distirict hematitie streat and 1 to
 woperel Fele witht to sreen, dioritio


 mefic grest in $:$ felispar metri: witi
 376.94 to 176.39 meterc. 176.43 la 176.73 metefe ot 40 destef tother erte oxje and
 the core axis.
 hemetjebo hreces: 4lli, an tu $30 \%$ relativels sumeltered sravi bort.
 Fint., combomi: ronlicited veintet: abd
 disseninated pesrite linuushout, Bemerslly
 locally moderate l: meshotic.
 hreceie abu elons amondabt white to firit. and reream culombid babiont: foriented



$18915 \quad 185.41 \quad 186.43$ 180
$18916186.43187,431.00$ $18917187.43188 .34 \quad .91$ 13910130.34189 .33 -98 18919189.33170 .29 $10920190.27171,29$ 18921 191.22 192.43 1.21 18925192.43103 .35

| 2 |
| :---: |
| 1 |
| $1 \cdots 3$ |
| ? ${ }^{3}$ |
| $1:$ |
| 1 |
| 1-3 |
| 1-3 |


| .17 | .17 |
| ---: | ---: |
| 9.93 | 6.0 .3 |
| .34 | .31 |
| .17 | .17 |
| .17 | .16 |
| .17 | .16 |
| .34 | .41 |
| .17 | .1 .5 |

 stage carboriate filled fiactures．
186.43193 .35 AFFro\％imately 15 to $20 \%$ moderately
 hued hematized patrobesp piot auartz abs Guertacrerthmater rijled，coritorted veinlets and minur venolomls ariented whert\％fillenfrecturne Bo Tn HE：sreers redativele ，hrolternd roct，lacall＇t Foorle
 Weatis mastietire Trace to $1 \%$ dissemirieted Fstite，Abumbert lats cteste Cathomatt filled frattires are moted fisimushast．
 carbonetized with fhw fali－tion

 Meters ：rolinted al 40 desmee tr lif． core asac．tha distibct lower comtart i． moted however bflaw 103,3 meters

 off belows to $10 \%$ or lho core．

## 193．35 218．91 UARIARIY SILICJFIFT ZONE（HNHITVMINET）

 silicifiration，however zemorally lest then tix af the
 lorally well folizted maselve fort ．Frobably haseltic． Fractured throushout with shandatit winite to pibl carbonete fijlled fiectures afid baboniste veinlets．
 along the folietion aros minor mribomete rilled

 panibjt weak to moderete jlinifirolion virl wert
 to red contorted atarta vojulets war coshumelu－atary：

 serieralle finele eroes frectured，the re freeturec epp filleg with white rarhmote，Fare abobe of modevete breceiatjon us to Ro am lincl are semerally ververivelu
 included sres to brown colourde strafle silietriod
 weakl：masnetirg rhloritit meterjal jo moted fize for $1 \%$ dieseminated ferite thmumbout．
193．35 198.29 AE deseribol above denorallu 105 than $5 \%$

$$
\begin{aligned}
& \text { silfojfication } \\
& \text { auartzererboriote fillen fiactures arid }
\end{aligned}
$$

|  | 19 | 30 |  |
| :---: | :---: | :---: | :---: |
| 18が， | $1 \% 1.36$ | 10\％．33 | 3 |
| 18925 | 105．33 | 196．20 | 79 |
| 1300 | 196．9？ | 19\％．30 |  |
| 18927 | 197.20 | 198．：3 | 1.09 |
| 189？ 8 | 198．20 | 199．02 | ． 7 ＂ |
| 18999 | 199．02 | 199．05 | 3 |
| 18930 | 199．85 | 800.81 | ． 96 |
| 18931 | 200.81 | 20.1 .91 | 1.10 |
| 1893． | $201+91$ | 20.01 | 1.10 |
| 18933 | 203.01 | 203．98 | $9 \%$ |
| 18934 | 203．08 | 20s．00 | 1．0\％ |
| 18035 | 205.00 | 206.02 | 1．02 |
| 19936 | 306.02 | 207.00 | ． 98 |
| 18937 | 207.00 | 208，02 | 1.02 |
| 19930 | 208．03 | 309，01 | ． 97 |
| 16939 | 209.01 | 210.01 | 1．00 |
| 18940 | 210.01 | 210.90 | ． 89 |
| 18941 | 210.50 | 211.78 | ． 89 |
| $1989 ?$ | 211.78 | $213+5$ | ． 79 |
| 18943 | 212．57 | 213，3E | 01 |
| 19944 | $\because 13.30$ | 214.31 |  |
| 18945 | 314.31 | 215．21。 |  |
| 1004E | 31501 | 216.67 | 9 |
| 10947 | ？ 16.07 | 217.06 | 9 |
| 18948 | ：17．08 | 217．67 |  |
| 18949 | 217.67 | 218．41 |  |


| $\therefore$ \％ | ． 17 | ． 1.4 |
| :---: | :---: | :---: |
| 日： | .17 | ． 10 |
| 0.5 | 4.1 | tr |
| 0.6 | ； | ，17 |
| 0.3 | 17 | .19 |
| HJI | ．17 | ． 1.2 |
| NII． | 1 r | 18 |
|  | $+34$ | － 3 |
| 0.5 | ． 34 | ＋37 |
| $\therefore$ \％ | $4 . r$ | t． |
| 0.3 | ． 17 | ． 16 |
| $0 \cdot 6$ | .17 | ． 17 |
| 0.5 | ． 1 \％ | ． 17 |
| O，＂ | 1.1 | 1 r |
| 0.5 | 34 | ． 35 |
| 0.5 | ． 69 | ． 62 |
| 0.5 | .17 | ． 17 |
| $0 \cdot 5$ | .17 | ， 1. |
| 10： | ． 51 | ． 45 |
| 0.6 | 1.1 | $t 1$ |
| 1 | ＋69 | ，56 |
| $0, \square$ | 1.1 | 41 |
| 0． 5 | ． 17 | ，15 |
| 0.3 | $1:$ | 4. |
| 0.6 | ，1\％ | ． 17 |
| 1．2 | ． 69 | ． 43 |
| $0 \cdot 5$ | ，1\％ | ． 17 |

auartz frasment cores to carbonate lenses or boudiris, Trace to $1 \%$ dissemirieted Fstite, nonwmagrietic, 197.00 meters foljeted et 5o dearees to the core anis.
198.29 199.05 syenitic intrusive : dark red, apharitio, ciliceous auhedral, intrustre with $20 \%$ white: eunedral, feldefar Fhenocrysts uF to 5 mm if size. Normmasfetic with trace to iljl furite, Cunterts are sharf at 60 desuees to the core asis, marsins are rot chilled,
199.85 210.90 As described ahove from 193.35 to 196.29 meters. Foliatior ; 202. 1 : moters at b' despes to the core absti 20. 00 meters at
 meters at jo destefe to the wore aris.
 rilled fractures, amertz carbonate growlia
 weatls to moderately silicified amo hemetized brecria moams. Mboferetal: la stronsis ralieted with abomident cartoratizatan, focalatervasivel:
 trace to $2 \%$ disceminated furite. $\because 11+60$ meters : foliated at 50 desrees to the cortemis.
213.35217 .06 as decctibed ahove from 193.35 to 199.99 meters. les. then $2 \%$ silicifiretion is fint. atorta fresmente within lhicker cerbonele filibete Find ancuthe. Nornmestretic, frare to $1 \%$ djssenimated
 carboratueed. 214,10 metere: roliated at So desrees to the core axis.
$217.06: 17.0780 \quad 10$ F0\% Furfle wien wellut to
 Fervesivele eerbonatized breceis. Aburadert sellow brown :aralar la
 jri djemeter Harrmastelir wilit 1 ta $2 \%$ disseminethd suite
4217.67218 .91 5 10 10\% wet tombobele givicifjeatind as auartz cores to eartomite veiflete ermi
 resvosjvele brinometesed inroumhonl.






1095: 20.20 220.60
18954221.76322 .78 10955202,78 22.78 1095 2es.78 223.85 1.0 18956223.65224 .941 .09

Greer, fine areined, chloritio and well foljeted material simjar to the variahly sijicified zorie described above, nowever silicification is rate end weak. Folietion is hishlishted hs wisfs cerborete arowth and sub--feralled aerbomate vejnins alors the foliation. Gererelly 20 to $30 \%$ witite topelerint earboriate, locally pervasjvely carbonatized. Rare thing
 seams ard minor anert. frasmento within rearonate veirilete roted. Normmernetic with trece to $\quad \%$ disseminated xurita 220.22 to 20.65 meters : ares. stronsly fervesively qatuonetised, messjum mederjala possibly an intrusive however contacts ere jndistinct.
 and 224.50 meters at 60 dedrees to the core aris. Contact with l.tes moturlothes fulinled haselt ifodistinct and sfadetjomel, foljation js jess distarict


### 224.94233 .91 FOLIATEH EASALT

 moderately well folieted besalt. The foliation is highlishted bu wisps rathonetiaetjorir however fhe umit je cut bs mumerums ratiomivoripnted carboriete filled fractures arod je bocally ferwacively Garbonetized, Mart areer, chloritic atid localue efidotic, 1 to 3 thict
 299.22 nelevs. troells foopls incecciated, weatly
 to 20 comide es. 229.5 lo 229.72 melers. Nutrmashetic
 in breceiatest carmonitioni and weaklu siljciried zonez.


### 33.91242 .02 VARIGELY SILICITIEI FASALT

 pillowers flow cut hus ahurident revinnete and

 wisfy carbohatizatjoh and thin boceria steme histlisht a moderete folietion. Fillow selsedes ara iriditimot
 carborete brid aubrtz wjin 1 to $5 \%$ dimemonatod refje.




 the moderloift foljatef heselt is aradotional.

### 1805723.94255 .93

 1095: ? ? 5.5727 .7 $18959228.99 \quad 225.98$ $18460231.02232,01$ 16461233.03233 .91
.99
$+90$
$+.89$
*ーT"
11
.17
$+\mathrm{r}$

| 1896 | 233.91 | 234.96 | 1.05 | 9.5 | tr | 1.1. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1896? | 234.75 | 236.03 | 1.07 | 1 | $t r$ | t.r |
| 18964 | 236.03 | 237.03 | 1.00 | 0.5 | . 17 | , 17 |
| 1858 | 937.07 | 230.04 | 1.0 .1 | 0.5 | 17 | .17 |
| 18966 | 236.04 | 239,02 | -98 | 1.2 | 1 | 1. |
| 1896 | 239.0\% | 240.00 | 1.01 | $\therefore$. | $1 r$ | 11. |
| 18968 | 240.03 | 241.09 | 1.05 | , | tr | 1., |
| 18969 | ?41.00 | $39+0 \%$ | .94 | ri. | 1, | i ; |

Contiruation of the overlsins urit however pillows are
hetter freserved and dearea of sjlicification decreases.
Fardomly oriented aarbonete arid varhonaterauartz filled
fractures ard auartz veilidets fersist end localla srou
coloured, weakls silicified end stronsly cerboriatized
breceie zores ere hoted. Gerierslly lest thari 27 of the
fore je siljcified. Fillows rommonly exhibit vesicies
and selvases locelly contein hemboclastita. forejlu the
flow is weatily to moderately folteted, gelieribly
hishlushted rus cerboriotiastion elong the foliution.
Nom-masretic with trace la $1 \%$ disesminaled rasite.
Folietion ; 249.50 noters $\%$ go desrees to the cure
atis. 25b. 60 meters at 4 s desteps ta the core asis arid

$$
\begin{aligned}
& \text { 242.05 205.50 locelly foljeted pillowed flaw ; rabonete }
\end{aligned}
$$

filluwed rlow es leserined atove. filloww
terame lese distimet jown section suadina
to a massive flow below 3 bsis meters
affrocimatels.
265.50 278.58 Locally foljated massive flow :
sradetionicl from thr fillowfol fiows etrove.
Green to sfey srepm, rine stained, locally
ronvis folipted messive flow. like the
pillowed flows dhove, ihe flow js rut by
eburidant rarboriete ariot mitror
aumetzcrerbratf fillea frectures and
veinlets facelly formb foliated,
hishljeften tw wispte leshonatization.
Rave Foorle sijicified hrevoide teans ate
noted. the stere nue je awnerally rue fo
Nom-mashotif with lrara to 1\% liscemifreted
mibor stes to vellau irbwo boloured,
pervasivels serimatitöo. rm whell:
silicified brecoie eesms from 1 4F lo so
cm thict art loted.
270.59 289.87 IKANSITIONALIY SIIICIFIEL IASALT

Contimetion of the overlying massive flow momever miefted increase $\quad$ fr breceiation, with associated rorbomatjzetion ars meat to moderate silioifiretion at Holed, AFfrowimatele 20 for $40 \%$ of the roct: is sfesto Fele wellow, futrle asta wite coloured mroveje ise
 filled fractures and corbonstempatio woinlote are horted

| 18970 | 242.02 | 243.00 |  |
| :---: | :---: | :---: | :---: |
| 18971 | 244.00 | 244.98 | 981080 |
| 18975 | 246.02 | 247.02 | 1. |
| 18973 | 248.03 | 249.00 |  |
| 18974 | 250.02 | 251.00 |  |
| 18575 | 252.02 | 253.04 |  |
| 13976 | 254.02 | 255,03 |  |
| 18977 | 25d.02 | 257.01 |  |
| 18978 | 250.00 | 25.91 .99 |  |
| 10979 | 260.07 | 201.10 |  |
| 19980 | 252.02 | 263.03 |  |
| 19981 | 263.98 | 265,08 |  |
| $1998{ }^{\circ}$ | 266.05 | 266.99 |  |
| 18983 | 267.97 | 269.02 |  |
| 18984 | 270.01 | 271.03 |  |
| 18965 | 972.07 | 273.05 |  |
| 18906 | 274.34 | 775,44 |  |
| 189897 | 274,45 | 277.54 |  |
| 118989 | ?7? 5: | 276. 58 |  |

0.5
0.5
0.5
0.5
0.5
0.5
0.5
0.5
0.5
0.5
0.3
0.5
0.5
0.5
0.5
0.5
0.5
0.5

| 10599 | 276.58 | 279.08 | . 50 | 1 | . 17 | . 08 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 13990 | 279.00 | 279.96 | . 39 | 0.9 | 15 | 11 |
| 18991 | 279.96 | $280.73^{\circ}$ | . 82 | 0.5 | -17 | . 14 |
| 18997 | 280.78 | $2 \mathrm{~B}, 4 \%$ | . 6.9 | $1 \cdot 9$ | + 34 | , \% |
| 18953 | 281.42 | 282.58 | 1.16 | 0.5 | . 69 | -90 |
| 18994 | 292.84 | 283.63 | 1,0\% | 1 | , e9 | $\cdots$ |
| 19995 | 283.63 | 204.57 | . 94 | 1 | t. | t. |
| 19996 | 284,5\% | -45.34 | + 7 ? | 1.? | -31 | . 06 |

Sanfle From to leerstin \% ins du ous
throushout however the mavority of carbonatization is pervasive, Freceja is weatly tomoserately silisified with highly silicified, fale yellow brown frasments. Locally a roorly develored roljatiori is observed. Generajly normmasrietic with trace uF to 2 to $3 \%$ furite within brecciated material. Helow $2 \Omega 7.87$ meters the brecciation silicification arid carbonatization drofs off becomiris a poovls foliated to misejve roct down sertion.

### 237.87 306.00 CHLOFITE CAKRONATE SCHISI

Contimation of the atove umit however breceiation arad
associated alteretion are verv refe. green to sart
sreer, fine to medium fime areiried messive to locells
poorle foljeted loct, rossibly iacaltio.
Carborietization fersists as jrrasusar reabonate filled
fractures and whirlele, wisty carborizte zrowthe
histhisthting the foliation and locel moderate fervasive
cerbonatizetior. Fare ratches of trey fefvesivela
carbotiatized atid weatls silicified breceja are hoted as
speckjing of the core 15 noted locally due to
leuconerijtic oversfouths. Gemevell! ron*masnetio witit
trace to $1 \%$ disceminated purite. Felow 294.3 meters
abundant imfistinct chouitio clote poorle eliafed elane
westy silicified breceietion is noter from 3oe. 6 to to
305.11 meters apfroximetely the foliation becumes vere
lishter sreen massive flow. Folictiori 293.0 oueters
ist 45 destees to the worm ais $29 ? 25$ meters al th
despees to the nore exis and 303.70 netere at 4 desteos
to the rore asis.
$305.00 \quad 310.21$ EASAL. 1
 mafics currumpided be a fale sreen eribotur matrix.
 carbonetarmertz vein]ets, Gradetional rrom the ouerleites materiel. Hormbastretie with frece lo $1 \%$ eutedrel fyrita,

| 18997 | 285.34 | 286.03 | .69 | $1-2$ | .34 | .23 |
| ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| 18998 | 286.03 | 287.03 | 1.00 | 0.5 | 4. | 10 |
| 18999 | 287.03 | 287.67 | .84 | 0.5 | 17 | .11 |


| 19000 | 387.67 | 288.94 | 1.07 | 0.5 | 1 l | t! |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20064 | 290.17 | 291.10 | . 93 | 0.5 | tr | t.r |
| 20085 | 292.0? | 297.07 | 1.00 | 1 | tr | tr |
| 20086 | 294.05 | 295.05 | 1.00 | 0.5 | tr | tr |
| 20087 | 296.05 | 297.02 | 97 | 0.6 | 1r | tr |
| 20088 | 208.01 | 299.04 | 1.03 | 0.5 | tr | tr |
| ?0089 | 100.06 | $301+11$ | 1.05 | 0.9 | 1. | tr |
| 20080 | 302.05 | 302.69 | . 64 | 0.5 | Lr | tr |
| 20091 | 30\%.69 | 303.51 | . 09 | $0 \cdot \%$ | . 17 | +14 |
| 2009 | 303.51 | 304.39 | . 98 | 1.2 | . 34 | + 3,9 |
| $\cdots 0003$ | 10.4 .39 | 305.11 | . 72 | 0.5 | +69 | . 50 |
| 20094 | 305. 11 | 306.00 | . 89 | 1 | . 69 | .61 |


| 20095 | 308,00 | 307.01 | 1.01 | 0.5 | tr | $t r$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 20096 | 307.01 | 308,11 | 1.10 | 0.5 | 1.1 | 10 |
| 20097 | 308.11 | 309.20 | 1.09 | 0.5 | $t$ | 1. |
| 20090 | 309.20 | 310.21 | 1.01 | 0.9 | 1 r | tr |









| 1 |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |






[^0]:    * $\sin =$ silicification $\quad$ chld $=$ chloritization $\mathrm{cbn}=$ carbonatization

    $$
    \text { albn }=\text { albitization }
    $$

