D.D.H. GEOMANAGEMENT LTD.

REPORT

ON THE

1989 DIAMOND DRILLING PROGRAM ON THE

FORKS 1 - 4, AR 1 - 2, TEP 1 - 3 CON-1, K.P. 1-4 MINERAL CLAIMS

Cariboo Mining Division
MacKay River Area, British Columbia
52° 23' North / 120° 44' West
NTS 93A/7

FOR

ARROWFIELD RESOURCES LTD. and
ARMADA GOLD AND MINERALS LTD.

BY

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December 10, 1989

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SUMMARY

The Forks 1-4, AR 1-2, TEP 1-3, CON 1 and KP 1-4 mineral claims are held under option by Armada Gold and Minerals Ltd. with Arrowfield Resources Ltd. having a separate "earn in" option from Armada Gold and Minerals Ltd.

The claims are located approximately 110 kilometres east of Williams Lake in central British Columbia. The centre of the claim group is situated at the confluence of the North Fork of the Horsefly River and MacKay River. Coordinates are 52° 23' north, 120° 44' west, NTS 93A/7.

The 245 unit claim block is underlain by a complex suite of black phyllites, tuffs and sediments that have been assigned the Middle to Late Triassic Quesnel River Group. During the 1989 season a 616 metre diamond drill program consisting of 4 holes extended the gold mineralization discovered in 1987-88 on the TEP-1 claim an additional 135 metres.

The TEP 1 zone can now be traced by drill holes over a strike length of 238 metres (781 feet) with grades ranging from 0.013 to 0.274 ounces gold per ton over widths of 0.8 to 1.5 metres. Wider widths are present in Trench 8 (13 metres). Detailed check assaying shows that the deposit is subject to an extreme nugget effect that can be partially solved by using metallic assay methods.

The mineralized zone on the TEP-1 claim is characterized by a high percentage of boudinaged quartz veins with minor sulphides and iron carbonates hosted in a graphitic and locally sheared phyllite within a more massive type porphyroblastic phyllite. The character, type and possible stratigraphic position of the gold mineralization is identical to that found on the adjoining Eureka Resources, Inc. property.

Drilling results from the Forks 4 claim (2 holes) suggests that the favourable porphyroblastic Unit 4 is more complex than previously thought and that the drill holes were probably drilled too high in the section to intersect the favourable horizon if it exists. Other possibilities are also explored.

It is recommended that further diamond drilling be directed toward extending the TEP-1 zone to the northwest and down dip. It is also recommended that one or two holes be drilled on the Forks 4 claim to solve the stratigraphic problem and hopefully intersect the mineralized horizon on the opposite end of the property.

INTRODUCTION

The firm of DDH Geomanagement Ltd. was commissioned by the directors of Arrowfield Resources Ltd. and Armada Gold and Minerals Ltd. to supervise and report on a 616 metre (2,021 feet) diamond drill program on its Forks, AR, TEP, CON and K.P. claim group during the period 29 September to 26 October, 1989.

The 1989 drill program is a continuation of programs began in 1987, therefore much of the geologic, historical, and location date contained in this report is a repeat of material contained previously in submitted assessment reports (Howard, February 10, 1988 and January 10, 1989).

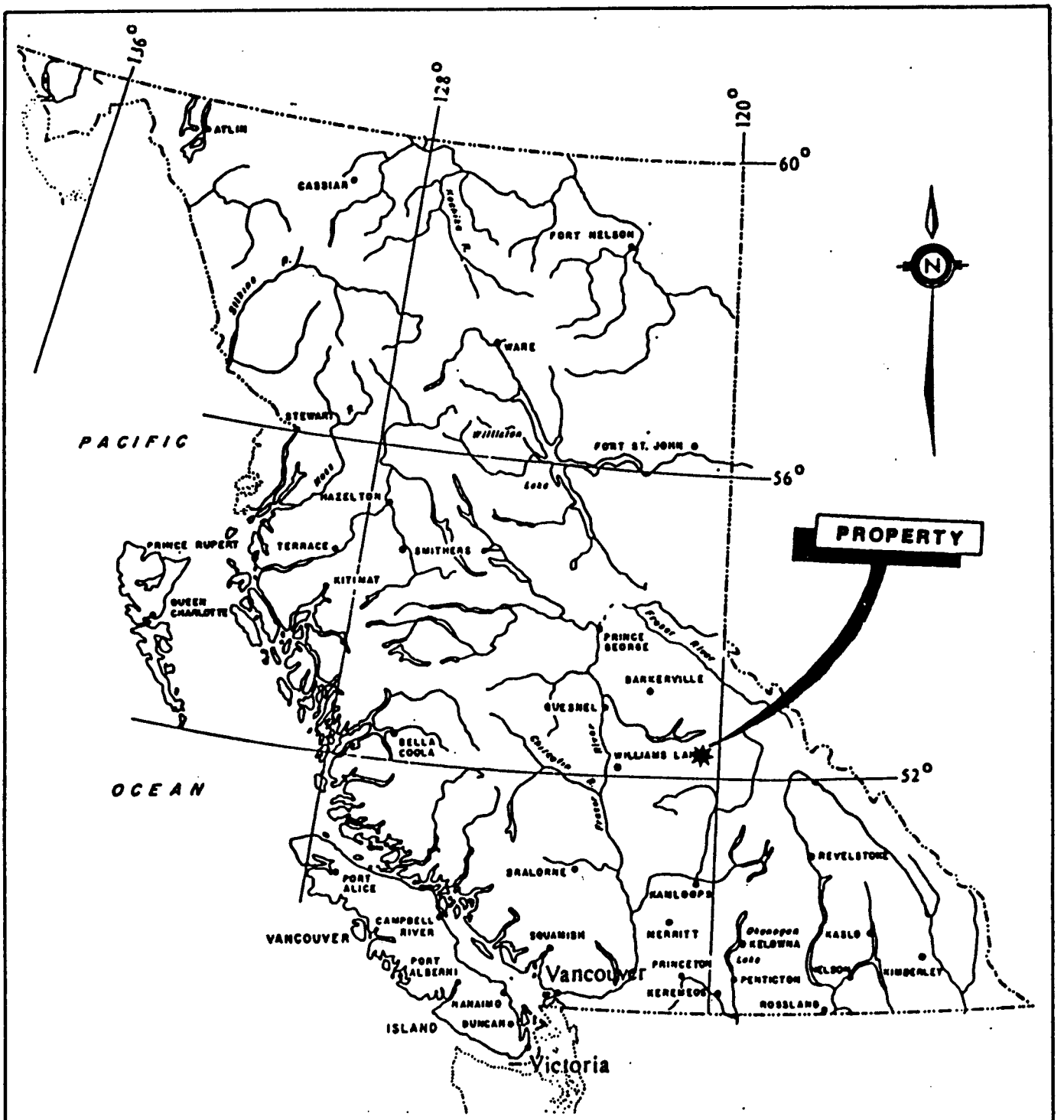
It should be noted that there are significant material changes in the descriptive details of the gold bearing unit TRa4 as a result of diamond drilling on the Forks-4 claim.

LOCATION AND ACCESS

The Forks 1-4, AR 1-2, TEP 1-3, Con-1 and KP 1-4 mineral claims are centred at the confluence of the MacKay River with the north fork of the Horsefly River approximately 110 kilometres east of Williams Lake in Central British Columbia. Coordinates of the confluence of the two rivers are 52° 23' North Latitude and 120° 44' West Longitude. N.T.S. 93A/7 (see Figures 1 and 2).

Access to the property is via a paved and graveled road, namely 104 kms from 100 Mile House, B.C. or about 90 kms due east of Williams Lake, B.C. Distance along Highway 97 from Vancouver, B.C. to Williams Lake, B.C. is 334 kms. There is scheduled air service between Vancouver and Williams Lake, B.C. Within the project area, logging roads allow two-wheel drive access to most parts of the claim group.

The claims lie along MacKay Creek (elevation 3,400 ft. at a.s.l. - 1,030 m) through Archie Pass (elevation 3,600 ft. a.s.l. - 1,091 m) to Horsefly Lake (elevation 2,580



ARMADA GOLD AND MINERALS LTD.
ARROWFIELD RESOURCES LTD.

FORKS 1-4, AR 1-2, TEP 1-3, CON - 1, & KP 1-4 MINERAL CLAIMS

REGIONAL LOCATION MAP

D.D.H. GEOMANAGEMENT LTD.

FIGURE 1

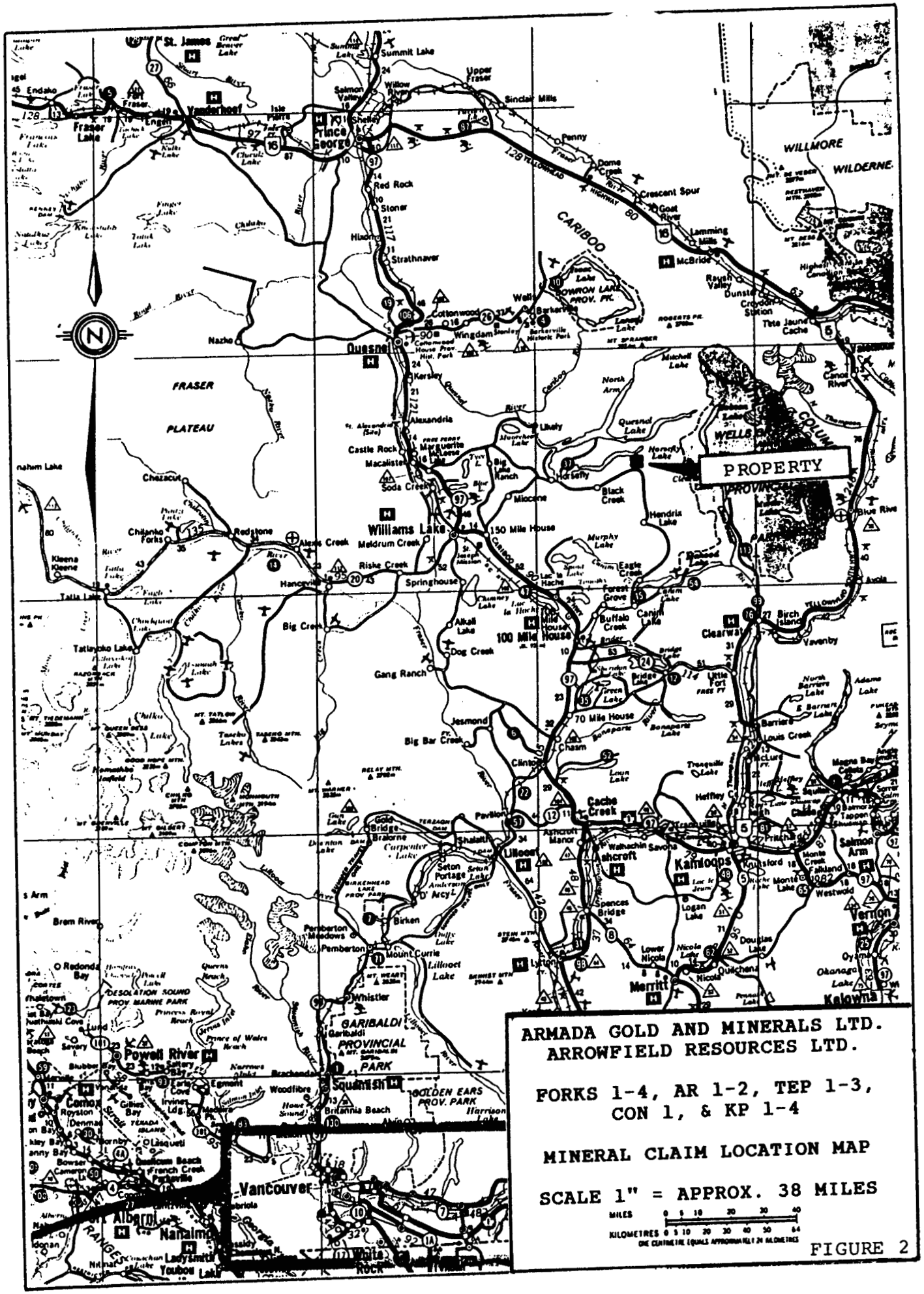

PROPERTY
ARMADA GOLD AND MINERALS LTD.
ARROWFIELD RESOURCES LTD.
FORKS 1-4, AR 1-2, TEP 1-3,
CON 1, & KP 1-4
MINERAL CLAIM LOCATION MAP
SCALE 1" = APPROX. 38 MILES
MILES 0 5 10 20 30 40
KILOMETRES 0 5 10 20 30 40 50 64
ONE CENTIMETRE EQUALS APPROXIMATELY 24 KILOMETRES

FIGURE 2

ft. a.s.l. - 784 m) then across Horsefly Lake to Quesnel Lake. Local relief is abrupt with Eureka Peak having an elevation of 8,012 feet (2,428 m).

Most of the property has been logged but those areas not yet logged are covered with fir, spruce, balsam, cedar, and thick underbrush.

PROPERTY AND TITLE

The Forks 1-4, AR 1-2, TEP 1-3, CON 1 and K.P. 1-4 mineral claims are held under an option agreement between Armada Gold and Minerals Ltd. and Messers. C.E. Gunn, D.A. Howard and A.D. Drummond. Subsequent to the above agreement Armada Gold and Minerals Ltd. have granted Arrowfield Resources Ltd. the right to earn up to 35 percent of the Armada portion of the property by spending certain monies on an exploration program.

The property is comprised of fourteen (14) mineral claims containing 245 claim units as follows (see Figure 3).

Claim	No. of Units	Record No.	Date Recorded	Registered* Owner
FORKS 1	20	8302	March 19, 1987	Armada Gold and Minerals Ltd.
FORKS 2	20	8303	March 19, 1987	Armada Gold and Minerals Ltd.
FORKS 3	20	8304	March 19, 1987	Armada Gold and Minerals Ltd.
FORKS 4	20	8305	March 19, 1987	Armada Gold and Minerals Ltd.
AR 1	18	8356	April 16, 1987	Armada Gold and Minerals Ltd.
AR 2	18	8357	April 16, 1987	Armada Gold and Minerals Ltd.
TEP 1	20	8355	April 16, 1987	Armada Gold and Minerals Ltd.
TEP 2	20	8354	April 16, 1987	Armada Gold and Minerals Ltd.
TEP 3	15	8353	April 16, 1987	Armada Gold and Minerals Ltd.
CON 1	6	9349	Sept. 30, 1988	Armada Gold and Minerals Ltd.
KP 1	18	9350	Sept. 30, 1988	Armada Gold and Minerals Ltd.
KP 2	20	9351	Sept. 30, 1988	Armada Gold and Minerals Ltd.
KP 3	18	9352	Sept. 30, 1988	Armada Gold and Minerals Ltd.
KP 4	20	9353	Sept. 30, 1988	Armada Gold and Minerals Ltd.

* A bill of sale for 50 percent of the property is held in trust in favour of Armada Gold and Minerals Ltd. subject to completion of the terms as set out in the option agreement.

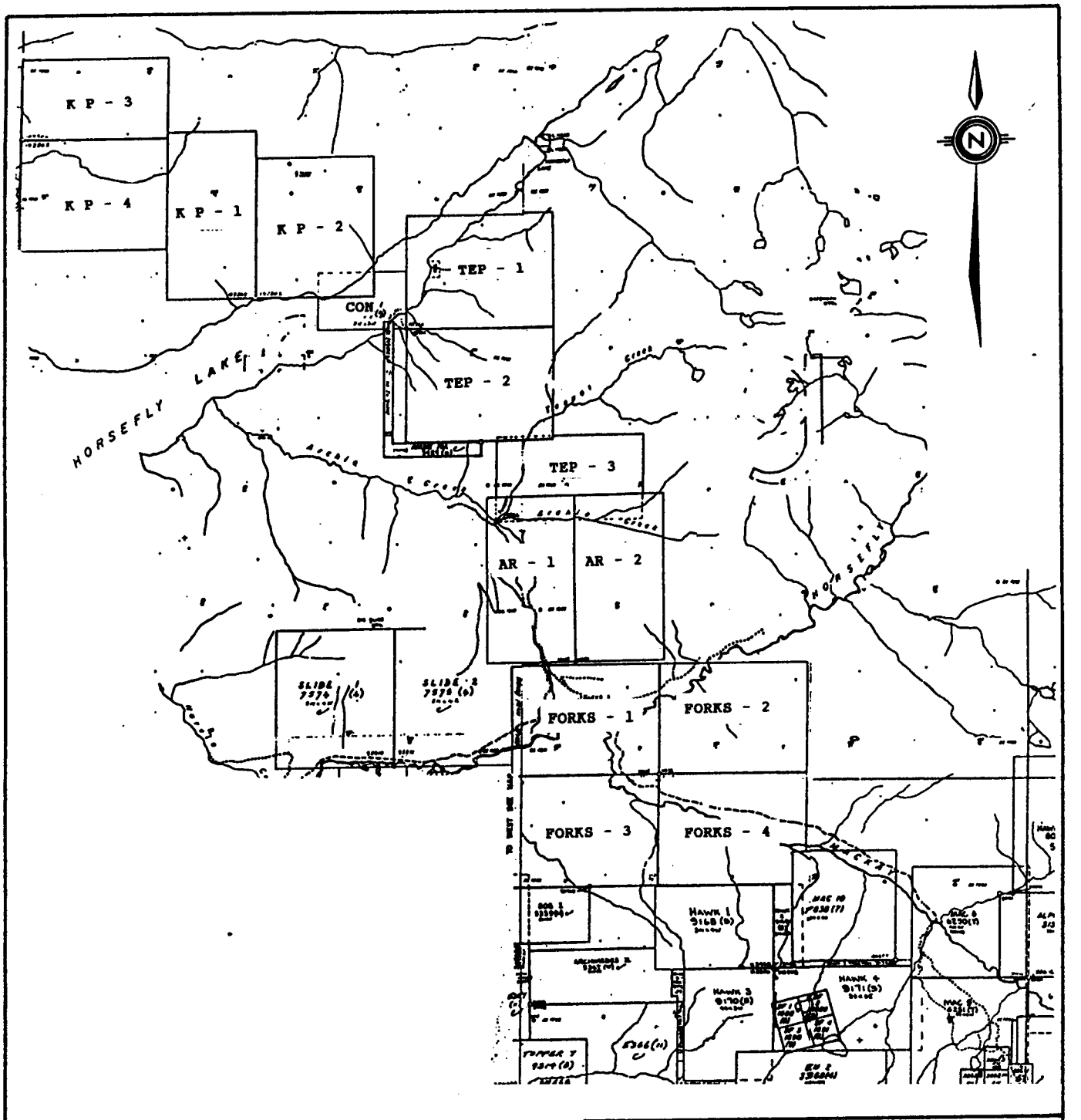


FIGURE 3

ARMADA GOLD AND MINERALS LTD
ARROWFIELD RESOURCES LTD.

CLAIM MAP

FORKS 1-4, AR 1-2, TEP 1-3
CON -1 AND KP 1-4

SCALE 1 inch = 1 mile

HISTORY

Early work in the MacKay River Valley area dates from 1901 when prospectors panned the creeks for gold. Small operations evaluating the pyrite bearing quartz veins and the gravels on Fraser and Eureka Creek were started in 1902 but discontinued in 1903. Later work in the early 1930's reported placer gold at and below the forks of the Horsefly River and the MacKay River.

Exploration for copper mineralization in this vicinity was conducted from the mid-1960's to mid - 1970's by such companies as Amax, Union Miniere, Rio Tinto and Helicon Explorations.

The Armada claims adjoin the Eureka Resources Inc. property on the northward on-strike extension of a favourable gold bearing strata. Prior to acquisition by Armada, exploration on this ground was in part conducted by Ripple Resources Ltd. (on Forks 3, 4). The work included soil sampling and one BQ drill hole on the north limb of the Eureka Syncline. The hole was drilled on a low order gold soil anomaly and encountered pyrite, pyrrhotite and chalcopyrite in andesitic tuff (Belik, 1983). In 1982, Dennison Mines Ltd. held the ground presently covered by the area of the Forks 1, 2, 3 and 4. They completed a geochemical soil survey for copper lead, zinc and silver but not for gold.

On the immediate southeast of Forks 4, the former LL No. 1 claim of Valhalla Minerals Inc. (now Mac 10 of Eureka Resources, Inc.) was the site of a geochemical soil survey which showed spot gold highs adjacent to the project area (Dawson, 1984).

During the 1987 field season Armada Gold and Minerals Ltd. conducted a program of soil/silt geochemistry and regional mapping of the Forks, AR and TEP claim groups. The 1987 field work defined several discontinuous soil anomalies plus locating indications of gold mineralization on the TEP-1 claim (Howard, 1988).

The 1987 program was followed in 1988 by a program of extensive trenching, further detailed geologic mapping and the diamond drilling of 5 holes totalling 918 metres. Trenching of the earlier gold indication on TEP-1 resulted in the discovery of a gold bearing zone averaging 0.109 ounces per ton gold over a width of 13 metres. Diamond drilling of the above zone yielded lower grades and narrower widths, but still confirmed the presence of a gold bearing zone.

The 1989 diamond drill program covered by this report a continuation of the above programs.

REGIONAL GEOLOGICAL SETTING

Wheeler et. al. (1972) and others have proposed district groupings of tectonic elements for the Canadian Cordillera. These are outlined in Figure 4. The project area lies along the eastern margin of the Quesnel Trough adjacent to the more easterly Omineca Crystalline Belt (Omineca Geanticline).

Geological compilation of the Quesnel Lake 93A Map Sheet was done by Campbell (1978) and summarized in Figure 5. Highly deformed amphibolite facies rocks of the Kaza Group (Unit 1 in Figure 5) lie to the east of the Pennsylvanian and/or Permian rocks of the Slide Mountain Group (Unit 3). These units form part of the Omineca Crystalline Belt in the project area. To the west lies the Quesnel Trough which at its base has an Upper Triassic phyllitic unit (Unit 6) overlain by Upper Triassic greenstone, augite porphyry breccia, tuff breccia with possible dykes and sills (Unit 8). These latter units are considered to be part of the Takla Group. Intrusive activity has been dated from Upper Triassic (Unit 7) to Cretaceous (Unit 10) to Tertiary (Unit 11).

Recent mapping by Struik (1982a,b, 1983a,b, 1985b,c, 1986, 1987) of the Cariboo Mountains and Quesnel Highlands has resulted in a refinement of the divisions previously defined by Monger et. al. (1982) of the area into four stratigraphic and tectonically distinct terranes. Struik (1985) infers that the various terranes were thrust together and metmorphosed during the Jurassic, re-metamorphosed during

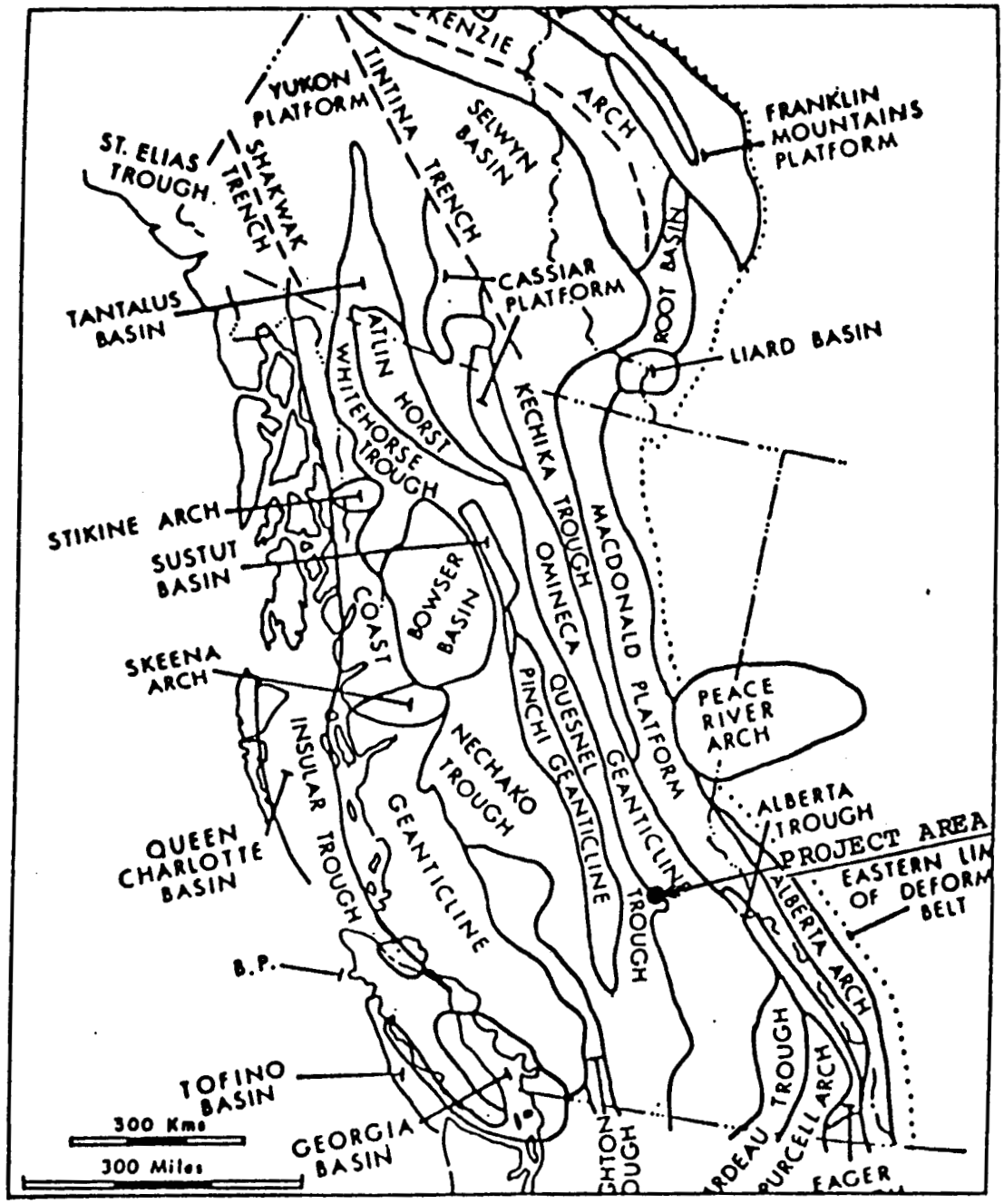


FIGURE 4

ARMADA GOLD AND MINERALS LTD.
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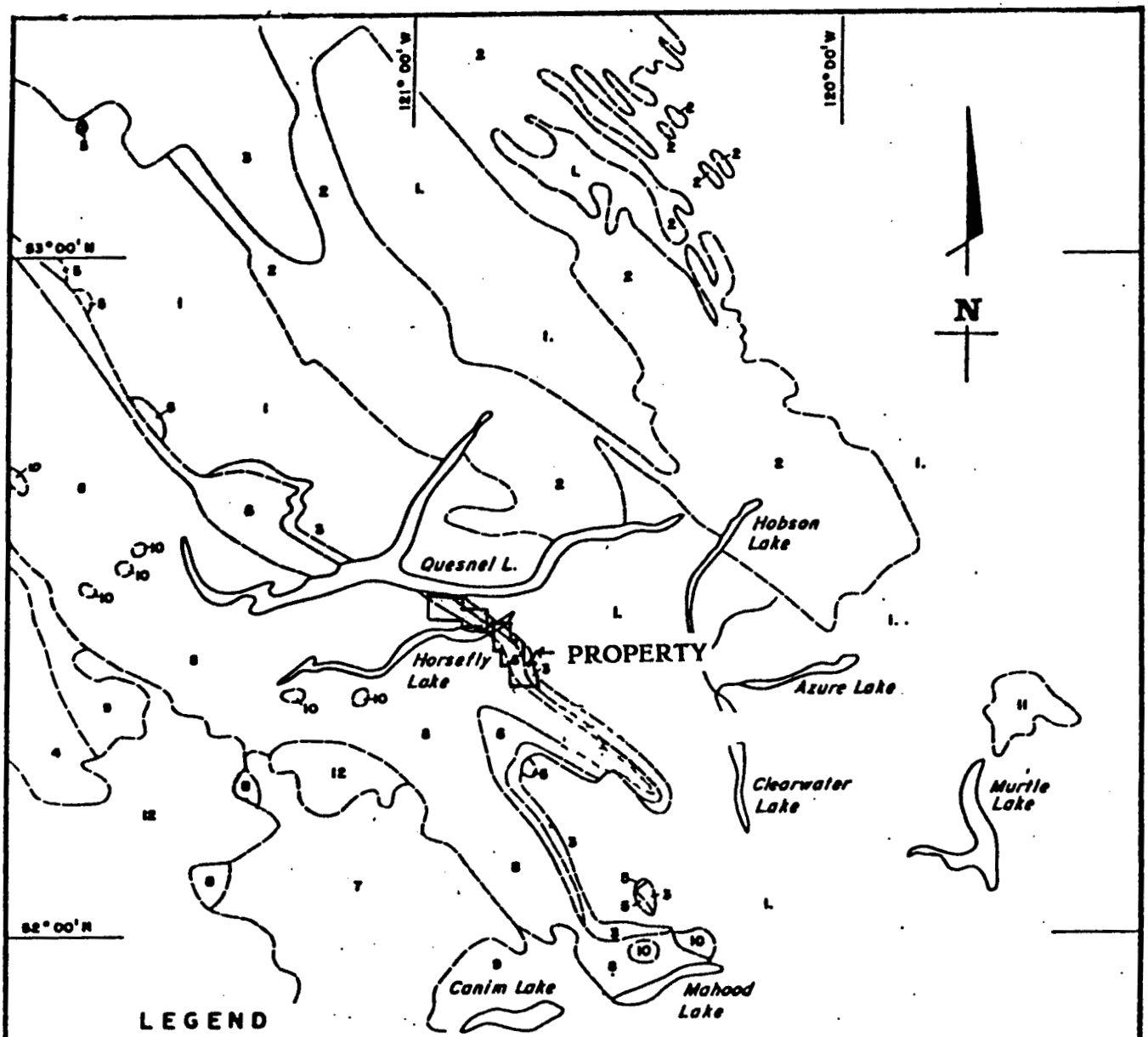
FORKS 1-4, AR 1-2, TEP 1-3, CON-1, KP 1-4

TECTONIC ELEMENTS OF THE CORDILLERA

(after Wheeler et. al., 1972)



LEGEND

RECENT TO TERTIARY

12 Recent volcanics - overburden

CRETACEOUS TO TERTIARY

11 Granodiorite - quartz diorite

CRETACEOUS

10 Syenite - quartz monzonite

JURASSIC

9 Sediments

UPPER TRIASSIC TO LOWER JURASSIC

8 TAKLA GP: Volcanics - sediments

UPPER TRIASSIC

7 TAKOMKANE BATHOLITH: Granodiorite - quartz monzonite.

UPPER TRIASSIC

6 BLACK PHYLLITES: Sediments - lesser volcanics

PERMIAN TO TRIASSIC

5 Ultramafics

UPPER PALEOZOIC

4 CACHE CREEK GP: Sediments - lesser volcanics

3 SLIDE MT. GP: Volcanics - sediments

HADRYNIAN TO ORDOVICIAN

2 Sediments

HADRYNIAN

1 KAZA GP: Metasediments

0 10 20 30 40 50 KM

FIGURE 5

ARMADA GOLD AND MINERALS LTD.
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FORKS 1-4, AR 1-2, TEP 1-3, CON-1, KP 1-4

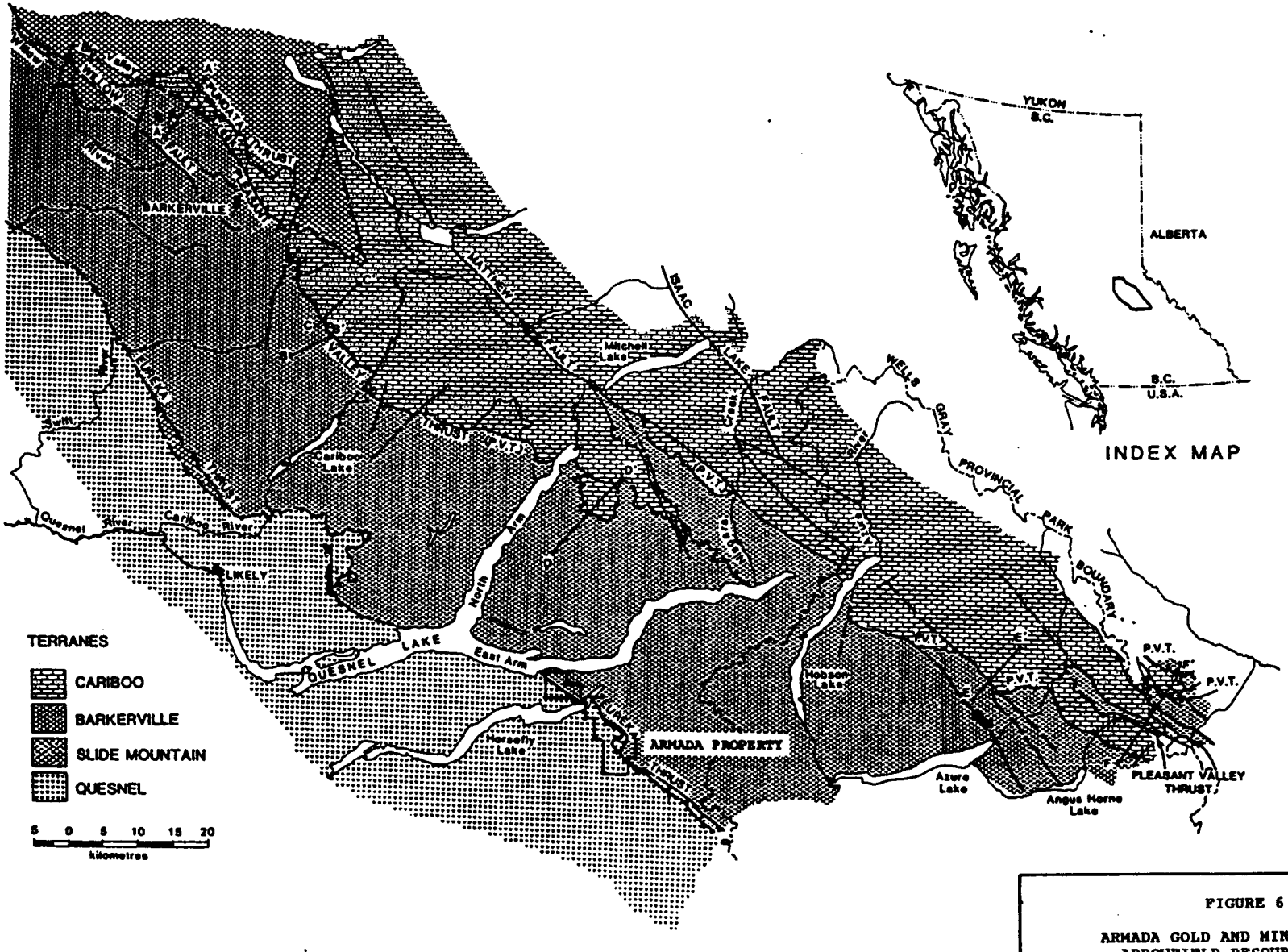
REGIONAL GEOLOGY (After Campell, 1978 O.F. 574)

mid-Cretaceous and subjected to dextrel strike-slip faulting from mid-Cretaceous to early Tertiary. The terranes going from east to west are the Cariboo (continental shelf clastics and carbonates), Barkerville (continental shelf clastics, carbonates and volcanics), Slide Mountain (oceanic rift volcanics, intrusives and clastics) and Quesnel (island arc volcanics and clastics) (Struik, 1986). Figure 6 shows the distribution of the various terranes and how they are structurally related to each other.

The various terranes are defined by either east dipping or west dipping thrust faults. The Armada/Arrowfield property lies along and partially includes a portion of the Eureka Thrust (west dipping) that thrusts Quesnel terrane onto Barkerville.

The gold-bearing occurrences hosted by rocks within the Quesnel Trough are shown on Figure 7 which also indicates the relative position of the stratabound gold project area. A brief description of the gold occurrences was reported by Saleken and Simpson 1984 and reproduced below:

> "In 1964, the Cariboo-Bell deposit was discovered 9 km southwest of Likely. Current drill indicated mineable reserves are 117-million tons grading 0.31% Cu and 0.012 oz/ton Au (including a higher grade zone totalling 30-million tons grading 0.38% Cu and 0.018 oz/ton Au). Mineralization is mainly confined to high level, intrusive breccia zones within an alkalic laccolith of early Jurassic age emplaced at the site of an Upper Triassic eruptive center.
>
> During the early 1970's most of the known Jurassic alkalic plutons in the Likely-Horsefly area were staked and explored for similar copper-gold mineralization. Though most were found to contain some auriferous chalcopyrite mineralization in stockwork or disseminated deposits, none proved to be significant in size or grade. It was during the investigation of one of these comagmatic stocks that the QR deposit was discovered in the late 1970's. Gold mineralization was found associated with a pyrite-epidote zone in basaltic breccia flanking a zoned alkalic stock. The mineralized horizon occurs immediately below a sedimentary contact and above a strongly carbonatized zone (Fox 1983). Drill indicated reserves have been reported as 950,000 tons grading 0.21 oz/ton Au (CMH 1982-83).
>
> During the renewed exploration activity in the 1980s other, seemingly stratabound, gold occurrences have been discovered in the eastern Quesnel Trough. Near Frasergold Creek, Eureka Resources has reported drill indicated reserves of 11-million tons grading between



Pre-Jurassic terranes in an area of British Columbia shown by the inset map.

FIGURE 6

ARMADA GOLD AND MINERALS LTD.
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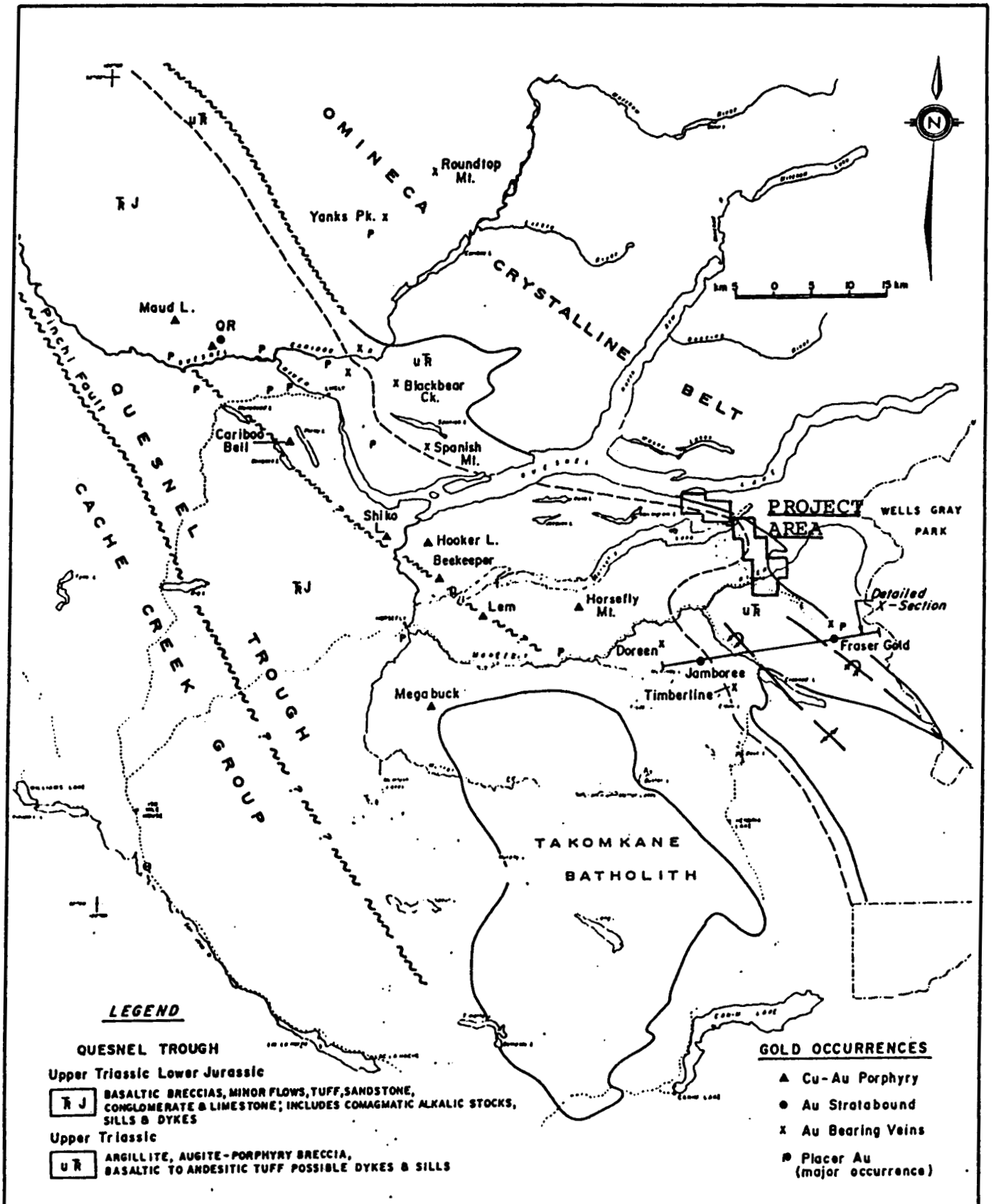
MAP SHOWINING LOCATION OF PROPERTY RELATIVE TO THE QUESNEL/SLIDE MOUNTAIN TERRANES

Modified from Struik (1986)



ARMADA GOLD AND MINERALS LTD/ARROWFIELD RESOURCES LTD. FIGURE 7

GEOLOGY OF THE QUESNEL TROUGH SHOWING THE RELATIVE LOCATION OF GOLD OCCURRENCES TO THE STRATABOUND GOLD PROJECT AREA.

(Modified after Saleken and Simpson, 1984)

0.04 and 0.05 oz/ton Au (NAGMIN January 15, 1984). Here, gold-pyrite mineralization occurs along an iron-carbonate rich horizon within the Upper Triassic argillite sequence which has been highly deformed and metamorphosed to phyllite (Belik, 1982). The Jamboree property, northwest of Crooked Lake, hosts a stratabound, anomalous gold horizon in tuffaceous phyllite immediately above a contact with the augite porphyry breccia unit."

PROPERTY GEOLOGY

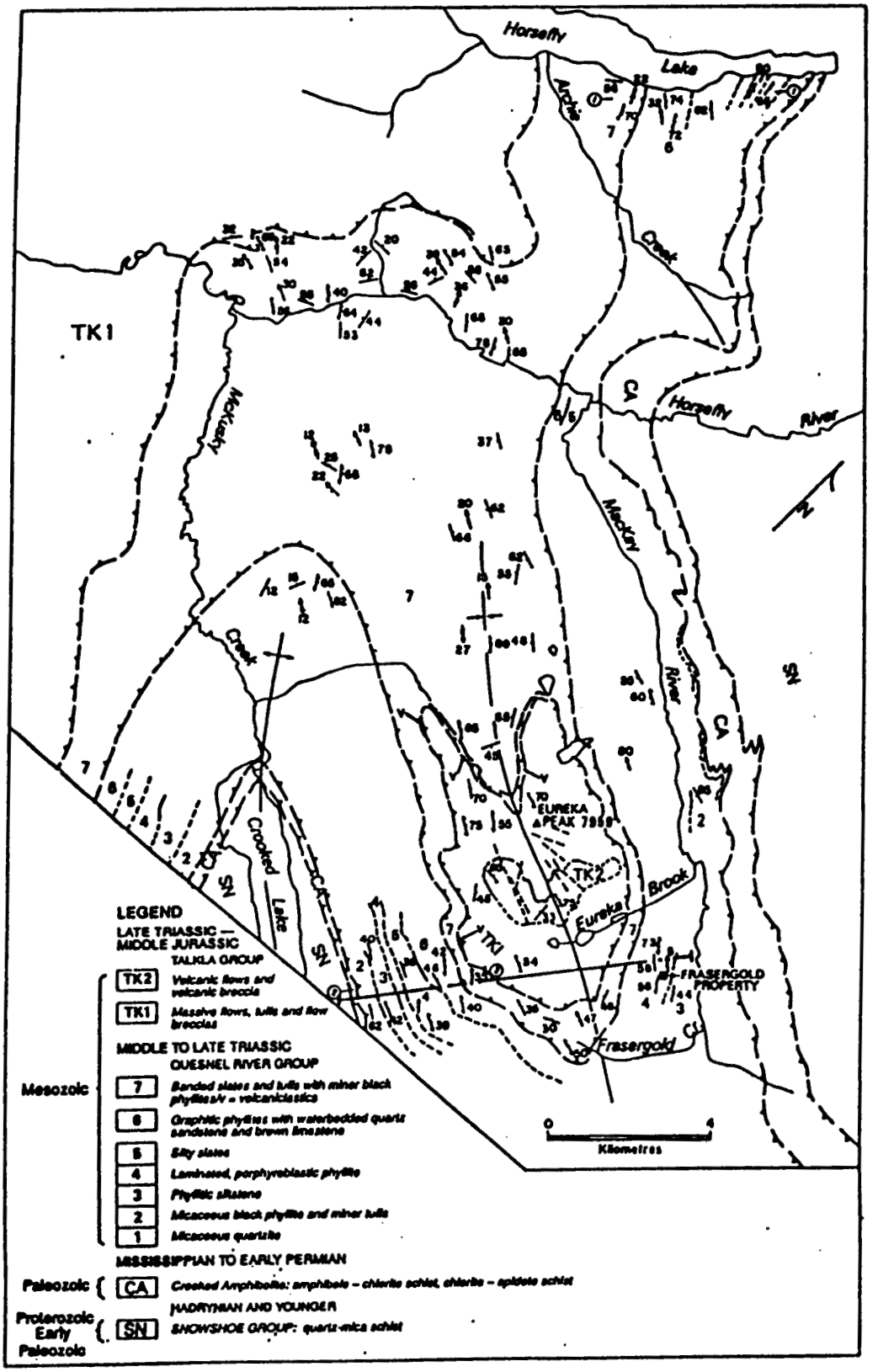
(1) General

Regional detailed geologic mapping of the Eureka Peak area by Ms. M.A. Bloodgood (Figure 8) in 1984 and 1985 as part of a Masters Thesis / Canada / British Columbia Mineral Development Agreement provided the mapping / conceptual base upon which the 1987 (Howard, 1988) study was based. Bloodgood (1987) inferred that near identical stratigraphy within the black phyllite unit existed along strike from the recent gold discovery of the Frasergold property to the south shore of Horsefly Lake, a distance of approximately 25 kilometres. Subsequent prospecting and geological reconnaissance by the writer and others has confirmed that the same stratigraphy underlies the newly acquired K.P. claims which lie between Horsefly and Quesnel Lakes.

Geologic mapping (Figure 9) by the writer (Howard, 1988) in 1987 and 1988 confirmed and expanded on the work of Bloodgood (1987). During the 1988 field season detailed mapping of the new trenches and logging roads on the claims and logging of drill holes further defined the distribution, structure and mineralization associated with the Black Phyllite unit. Figure 9 above is identical to the Figure 10 included in the author's report of 10 January, 1989.

(2) Geologic Setting

The Forks 1-4, AR 1-2, TEP 1-3, CON-1 and K.P. 1-4 mineral claims are mainly underlain by an unnamed black phyllite formation that has been assigned to the Middle to Late Triassic Quesnel River Group (Tipper, 1978; Campbell, 1978).



ARMADA GOLD AND MINERALS LTD./ARROWFIELD RESOURCES LTD.

FIGURE 8 GENERALIZED GEOLOGY OF EUREKA PEAK AREA SHOWING THE EAST LIMB CONTINUITY BETWEEN FRASERGOLD CREEK AND HORSEFLY LAKE.
(After Bloodgood, 1987, Figure 3-2-2, p. 136)

The oldest rocks exposed on the claim group are those of the Proterozoic to early Paleozoic Snowshoe Formation which crops out in a road cut (Bouldery Creek road) above the south shore of Horsefly Lake on TEP 1 (see Figure 9) and extend at least as far as Bouldery Creek. These rocks consist of fine to coarse grained, well foliated quartz-muscovite schist containing minor biotite and flattened garnets.

Overlying the Snowshoe Formation are rocks of the Mississippian to early Permian Crooked Amphibolite Formation. Unfortunately all contacts with this unit are covered in the map area. The Crooked Amphibolite defines the base of the Quesnel terrane (Bloodgood, 1988). According to Bloodgood (1988) the base of the Crooked Amphibolite defines the Eureka Thrust but that relationship cannot be confirmed in the map area. The only exposure of Crooked Amphibolite on the property is located approximately 100 metres east of the Carlson Bridge (see Figure 10). At this location the Crooked Amphibolite consists of pale green to grey, fine-grained, banded well foliated biotite-chlorite-quartz schist. Foliation is defined by both the alignment of phyllosilicate minerals and discontinuous quartz/carbonate bands 2-20 mm in width. The contact between the unnamed black phyllite and the Crooked Amphibolite is covered by glacial debris.

The unnamed Black Phyllite Formation structurally overlies (thrust fault contact?) rocks of the Crooked Amphibolite Formation. This unnamed Black Phyllite Formation as defined by Bloodgood (1987a,b) consists of six or seven units depending upon the reference cited. The units from base to top are TR_{a1} (Unit 1) micaceous quartzite, TR_{a2} (Unit 2) micaceous black phyllite and tuffs, TR_{a3} (Unit 3) phyllitic siltstone, TR_{a4} (Unit 4) laminated phyllite and porphyroblastic phyllite, TR_{a5} (Unit 5) silty slates and TR_{a6} (Unit 6) graphitic black phyllites with interbedded quartz sandstone and limestone (Bloodgood, 1987b).

The following description of the various units in the unnamed black phyllite package is based on the writer's observations unless otherwise shown.

Unit 1 (TR_{a1})

The basal unit of the Black Phyllite Formation is exposed in two separate new road cuts on the AR-2 Mineral Claim (Figure 9). At the above locations the basal unit varies from a pale green to pale grey, very fine grained, well foliated sericite/muscovite phyllite to a slightly coarser grained muscovite schist or meta-quartzite. Locally the phyllite type is highly contorted and banded with quartz rich bands. Bedding is difficult to define but is probably more or less parallel to the foliation. The unit commonly exhibits buff to rust coloured weathering and is usually very soft and punky.

Unit 2 (TR_{a2})

Unit 2 rocks are well exposed along the MacKay River where it passes through Forks 4 (Figure 9). At this location Unit 2 consists of dark grey to silver grey, very fine grained, very siliceous, tightly foliated, locally pyritic and/or graphitic, moderate to high sheen phyllite. Locally the phyllite is poorly laminated, but in general it is impossible to define bedding because of the well developed cleavage/foliation. Unit 2 rocks are also well exposed in the new road cuts on the AR-2 mineral claim (Figure 9). At the location the rock type is identical to that exposed on Forks 4. The lower contact is well exposed and is defined by a narrow (20 cm) very carbonaceous zone that is parallel to the foliation.

Unit 3 (TR_{a3})

Unit 3 is well exposed along the Bouldery Creek road (Figures 9 and 10) above Horsefly Lake (TEP 1), partially exposed in the lower part of No. 1 creek on Forks 4 (Figures 9 and 11) and along the new logging roads on AR-2 (Figure 9). The lower contact of Unit 3 is not exposed at either the Horsefly Lake or No. 1 creek locations, but is poorly exposed on the AR-2 road system. Unfortunately at this location the stratigraphic relationships between the various sub-units of Unit 3 are obscured by intense folding and numerous faults (see Figures 10 and 11). The lower portion of Unit 3 exposed on the Bouldery Creek road (TEP-1) consists mainly of medium dull grey, very fine grained, locally well laminated, moderately foliated,

carbonaceous, very calcareous phyllite. The upper portion of Unit 3 as presently shown on Figure 10 is a very siliceous, high sheen, dark to silver gray phyllite that in part resembles Unit 2 above. Subsequent logging of drill hole 89-6 which intersected the upper contact (as mapped) suggests that the siliceous upper member of Unit 3 could be the lowermost member of Unit 4 which is described below. This possible change of designation is because in the core from 89-6 the unit was found to contain porphyroblasts which is the main criteria for defining Unit 4. Without elaborating, there are a number of problems in using the presence of porphyroblasts to define a stratigraphic unit, therefore for the present the siliceous unit above the calcareous member of Unit 3 in the TEP-1 area is going to become part of Unit 4. The siliceous section compared to the calcareous section is relatively thin at this location, but is relatively thick in the AR claim block. This lack of uniformity between the various areas suggest to the writer that Unit 3 varies rapidly along strike, i.e. rapid facies change between carbonate and silica deposition. In contrast to the Unit 3 in the AR road section and Horsefly Lake section, Unit 3 at the No. 1 creek location (Figure 11) as mapped is very siliceous (no carbonate) much more pyritic including bedded pyrite (1 mm beds of very fine grained pyrite) and contains several 1-3 metre beds of white quartzite (almost vein-like except they are conformable to bedding) containing thin bands of very fine grained sericite phyllite. The quartzite-sericite phyllite bands (beds) commonly contain 1-3 percent finely disseminated pyrite and traces of chalcopyrite.

In detail there is little comparison between the contacts at the No. 1 Creek and Trench 8 locations. The Unit 3 phyllite at the No. 1 Creek location contains a much higher muscovite content and is much less graphitic than at the Horsefly Lake section. This lack of comparison between the two areas is underscored after the diamond drilling on the Fork 4 claim (DDH 89-8 and 89-9). The sericite phyllite member of Unit 3 described above is in fact either a very local member of limited extent, part of Unit 4 described below, or a totally separate unit not exposed to any great extent elsewhere on the property.

Unit 4 (TR_{a4})

Unit 4, prior to the 1989 diamond drill program, had been defined by Bloodgood (1987) and the writer (Howard, 1988, 1989) by the presence of porphyroblasts. During the logging of diamond drill hole 89-8 and 89-9 on the Forks 4 claim, it became apparent that the presence of porphyroblasts cannot be used to define a stratigraphic unit. The writer has eluded to the problem in the past (Howard, 1989) of using a metamorphic phenomenon to define a stratigraphic member.

Extensive trenching in 1988 completely exposed the zone containing porphyroblasts in Trench 8 on the Bouldery Creek Road. At this location Unit 4 as then defined consisted of a basal grey, silty limestone overlain by grey to silver grey, very fine grained, well laminated, locally well bedded, well laminated, tightly folded, siliceous porphyroblastic phyllite. The top of the unit was defined by the last occurrence of porphyroblasts. Subsequent diamond drilling has shown that the limestone is not in fact the base of the porphyroblastic unit because the core from below the limestone member is porphyroblastic. The base of Unit 4 of the Trench 8 location is now shown to be the transition to calcareous phyllite (Figure 10). Previously (Howard, Jan. 1989), the contact was shown at the base of the limestone. At present the porphyroblastic unit as measured at the Trench 8 location is approximately 200 - 220 metres thick. The importance of this latter change is to point out that within a given package of porphyroblastic rock that porphyroblasts are not always present i.e. the surface exposure of the basal part of Unit 4 is not porphyroblastic but drill core of the same section is porphyroblastic.

The relative uniformity of Unit 4 in the Trench 8 area (TEP 1) does not appear to report itself on the Forks 4 claim some 11 kilometres along strike. Prior to the 1989 drill program, the best exposure of Unit 4 on the Forks 4 claim was along No. 1 creek and in Trench 9. The combined exposure at the two above locations appeared to delimit the Unit 4 member in its entirety with only a few covered sections. On the No. 1 creek section, two distinct zones of porphyroblastic phyllite were mapped. The lowermost zone was attributed to repetition of section due to isoclinal folding along strike. It now appears from the diamond drilling that the repeat in section is not due to folding, but is in fact a separate porphyroblastic

band of phyllite. An examination of the drill logs (see Appendix B) from Holes 89-8 and 89-9 shows that there are several distinct bands of porphyroblastic phyllite within the drilled section. On the Forks 4 claim the top of the porphyroblastic phyllite unit is well established by trenching. Both drill holes (89-8, 89-9) were collared above or just below this contact. From the 89-8 and 89-9 drill logs, Unit 4 from the top of the section alternates from a sparsely to coarsely porphyroblastic black phyllite to a black, dense, locally banded phyllite (white and black banded) interbedded with light grey to a greenish to light silver grey, very pyritic sericite phyllite with narrow sections of black, coarsely porphyroblastic phyllite and then to a thick section (to bottom of hole) of sparsely porphyroblastic black phyllite. Although in detail the two drill holes differ, the gross lithologic character of the two holes (89-8 and 89-9) are almost the same.

A comparison of geologic sections between the TEP-1 and Forks 4 areas shows that there is very little comparison except for a close similarity of the porphyroblastic section of the Forks 4 area with the entire porphyroblastic section of the TEP-1 area. The Forks 4 area does not contain any limestone and it has thick sections of sericite phyllite which are missing on the TEP-1 section. On the Forks 4 claim, limestone float similar to that found in Trench 8 (TEP-1 claim) was noted on Line 16+00E north of the MacKay River, but has never been found in place. From the concentration of float fragments it is reasonable to assume that the source must be close to the float location. If this limestone is from the same unit as exposed in Trench 8 it is safe to assume that the portion of Unit 4 exposed in Trench 9, No. 1 creek and drill hole 89-8 and 89-9 represents only the top most part of the section. The lack of correlation of rock types between the two areas would also suggest this providing of coarse that the porphyroblastic nature of the rock was confined to one stratigraphic unit. The fact remains that there are several possibilities why there seems to be a lack of correlation between the Forks 4 and TEP-1 areas. The possibilities are as follows:

1) The porphyroblastic nature of the unit is stratabound and the variation in the two sections is related to one being the base of the section (TEP-1) and the other being the top of the section (Forks 4) with the respective missing parts being covered.

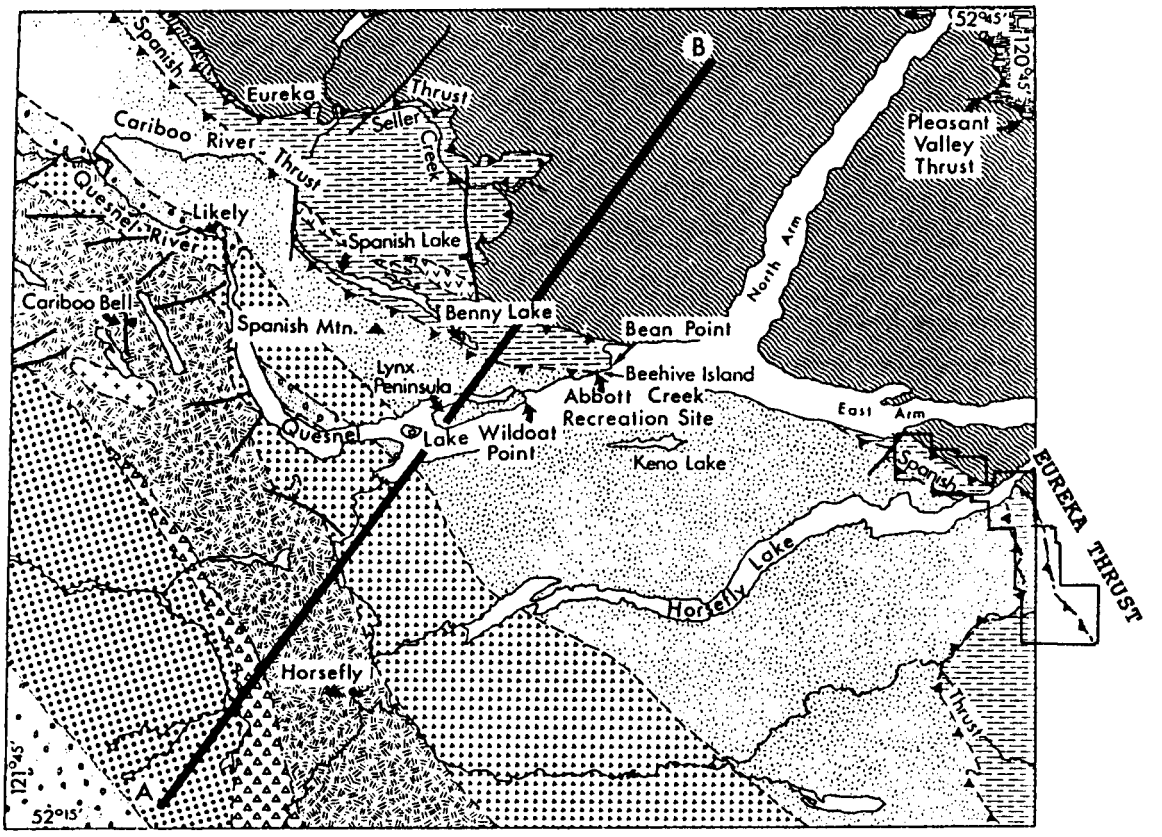
2) The porphyroblastic nature of the Unit is related to a regional thrust fault(s) which may or may not be parallel to the enclosing strata and in which case could produce similar looking rocks (porphyroblasts) at various stratigraphic levels.

3) The porphyroblastic nature of the unit is related to a number of stacked or imbricate thrust sheets that may or may not be parallel to the enclosing strata.

The third possibility in the writer's opinion is the most likely explanation for the variation in stratigraphy between the two areas. Work by Struik (1988) shows that the black phyllite (his pelitic unit) is bracketed by the Spanish Thrust on the top and the Eureka Thrust on its base (see Figure 12). The mainly volcanic rocks (Takla-Nicola) which make up the core of the Eureka Syncline are age equivalent of the Black Phyllite unit. If one were to consider the incompent nature of phyllites it is easy to see how multiple thrust sheets would develop. It is also very possible that heat generated during the thrusting would allow for the development of porphyroblasts. An x-ray diffraction scan of the porphyroblasts showed that they are composed of sillimanite, graphite and andalusite. It is possible that the graphite is included within the andalusite (chiastolite). Outside the porphyroblastic rocks the metamorphic grade is unknown.

Unit 5 (TR_{a5})

Unit 5 appears to be a very thick unit consisting of medium to dark grey to blue black, very fine grained, siliceous, well foliated locally very graphitic and/or pyritic, locally very well laminated (alternating light coloured, narrow (1-2mm) silty beds and dark phyllite), moderately high sheen phyllite. The unit contains a number of sections containing interbedded grey micaceous siltstone. Smeared pyrite is locally common on foliation surfaces. Unit 5 commonly breaks out at the outcrop in elongate rod shaped fragments (pencil rock). This is caused by the intense, very tight folding of the foliation in a single direction.



QUESNEL TERRANE

Volcanic unit

- NEPHELINE SYENITE, SYENITE
- CONGLOMERATE, GREYWACKE, SHALE
- BASALT AND FELSITE BRECCIA, MINOR FLOWS AND TUFF, SANDSTONE AND LIMESTONE, SYENITE, MONZONITE, AND DIORITE
- CONGLOMERATE AND SANDSTONE
- AUGITE PORPHYRY BASALT BRECCIA, FLOWS, AND TUFF
- BASALT TUFF AND BRECCIA, ARGILLITE, AND CHERT
- BASALT AND ANDESITE FLOWS AND BRECCIA, MINOR ARGILLITE, AND LIMESTONE

Pelitic unit

- PHYLLITE, ARGILLITE, QUARTZITE, SCHIST, MINOR GREENSTONE
- GREENSTONE, AUGITE PORPHYRY BASALT BRECCIA, TUFF BRECCIA, AND TUFF

SLIDE MOUNTAIN TERRANE

- CROOKED AMPHIBOLITE: SERPENTINITE, SHEARED ULTRAMAFIC ROCKS AND AMPHIBOLITE

SELKIRK TERRANE

- SNOWSHOE GROUP: MICACEOUS QUARTZITE, PHYLLITE, SCHIST, MARBLE, AMPHIBOLITE
  QUESNEL LAKE GNEISS: GRANITIC AND GRANODIORITE ORTHOGNEISS

CARIBOO TERRANE

- CARIBOO GROUP: PHYLLITE, MARBLE SCHIST, AND QUARTZITE

. Geology in the vicinity of Quesnel Lake, central British Columbia after R. B. Campbell (1978) and Struik (1983*a*, 1983*b*). The Crooked Amphibolite lies along most of the trace of the Eureka Thrust but is too thin to depict at this scale except in the northwest.

FIGURE 12

ARMADA GOLD AND MINERALS LTD./ARROWFIELD RESOURCES LTD.

MAP SHOWING RELATIONSHIP OF BLACK PHYLLITE UNIT

WITH SPANISH AND EUREKA THRUSTS

modified from Struik (1988)

Unit 6 (TR_{a6})

Unit 6 is very poorly exposed on the Horsefly Lake section therefore the following definition is questionable. Where exposed, Unit 6 consists of medium grey to black, very fine grained, siliceous, blocky, poorly foliated rusty weathering phyllite. The Horsefly Lake section contains mainly grey to pale grey, very fine grained siliceous tuffs which may be part of the overlying unit. No attempt was made to map the Unit 6 exposed on the Forks claims because it did not appear to host any mineralization. The contacts and attitudes of Unit 6 shown on the Forks claims section of Figure 10 are from mapping by Mary Ann Bloodgood, (1987).

Unit 7 (Bloodgood, 1987a) or Unit TRb (Bloodgood, 1987b) was only mapped on the Horsefly Lake section. At the location (south of TEP 2) the unit consists of mainly grey to pale green, very fine grained siliceous tuffs interbedded with minor dull, dark grey, very fine grained siliceous, blocky meta-siltstones and/or slates. At this same location there is a number of variable width dykes or small stock-like intrusions of dark grey to greenish grey, fine grained, inequigranular, hornblende/augite locally porphyritic diorite. The diorite commonly contains medium grained disseminated, slightly magnetic pyrrhotite.

The possibility of more intrusive activity in the area is suggested from a strong magnetic deflection of the compass in the vicinity of the Legal Corner Post at TEP 1 and 2, although no igneous rock was observed in the immediate area.

Structurally, the Forks, AR and TEP claims cover a segment of the northeast limb of the Eureka Peak syncline. Bedding attitudes are quite variable along strike and dips range from 30 degrees to vertical. Most of the strike directions clustered around 130 degrees ($\pm$ 10 degrees). Most of the Horsefly Lake section with the exception of the area in the vicinity of the mineralized zone, dips steeply (70-85 degrees) northeast which suggests some degree of overturning on this segment of the Eureka Peak syncline. All of the black phyllite package appears to exhibit intense isoclinal folding which creates a difficult mapping situation for tracing individual units along strike. Fortunately, for this study the critical unit (Unit 4 - knotted phyllite) is also a very good marker horizon.

(3) Mineralization and Diamond Drill Results

The 1989 diamond drill program consisted of four NQ holes totalling 616 metres (2,021 feet). The program was designed to further test the strike extension of gold mineralization discovered in 1987-88 on the TEP-1 claim and to further delineate and test the favourable porphyroblastic (Unit 4) horizon that is partially exposed on the Forks 4 claim.

Trenching followed by diamond drilling in 1988 on the TEP-1 claim resulted in the discovery of a new gold bearing mineralized zone in Trench 8 (Figure 10 and 13) situated along the Bouldery Creek logging road. The Trench 8 mineralized zone is characterized by a high percentage of boudinaged quartz veins with minor sulphide and iron carbonates hosted in a graphitic and locally sheared phyllite within a more massive type porphyroblastic phyllite (Unit 4). The character, type and probable stratigraphic position is identical to the mineralized zone found on the adjoining Eureka Resources Inc. property to the south. Chip/channel sampling of the Trench 8 mineralized zone yielded a weighted assay of 0.109 ounces of gold per ton over 13 metres (43 feet) on the original assays. Subsequent check assaying of the reject material (same assayer - different sample numbers) lowered the average grade to 0.044 ounces gold per ton. This lack of grade correlation is attributed to a very serious "nugget effect".

Nugget effect is a characteristic typified in placer gold deposits, but applicable to other type deposits, where the influence of all variables (particles of gold) have ranges much smaller than the available distances of observation (Journal and Huijbregets, 1978). The definition of nugget effect is closely related to the scale of observation which in the present case appears to be less than the size of a single sample. A comparison between two separate splits (see Table 3) of a set of samples from the surface mineralized zone (Figure 19) show the extreme variability (nugget effect) present in the deposit. The same extreme variability also occurs in the adjoining Fraser Gold Deposit.

CORE STORED AT CAMPSITE ON FORKS 4.

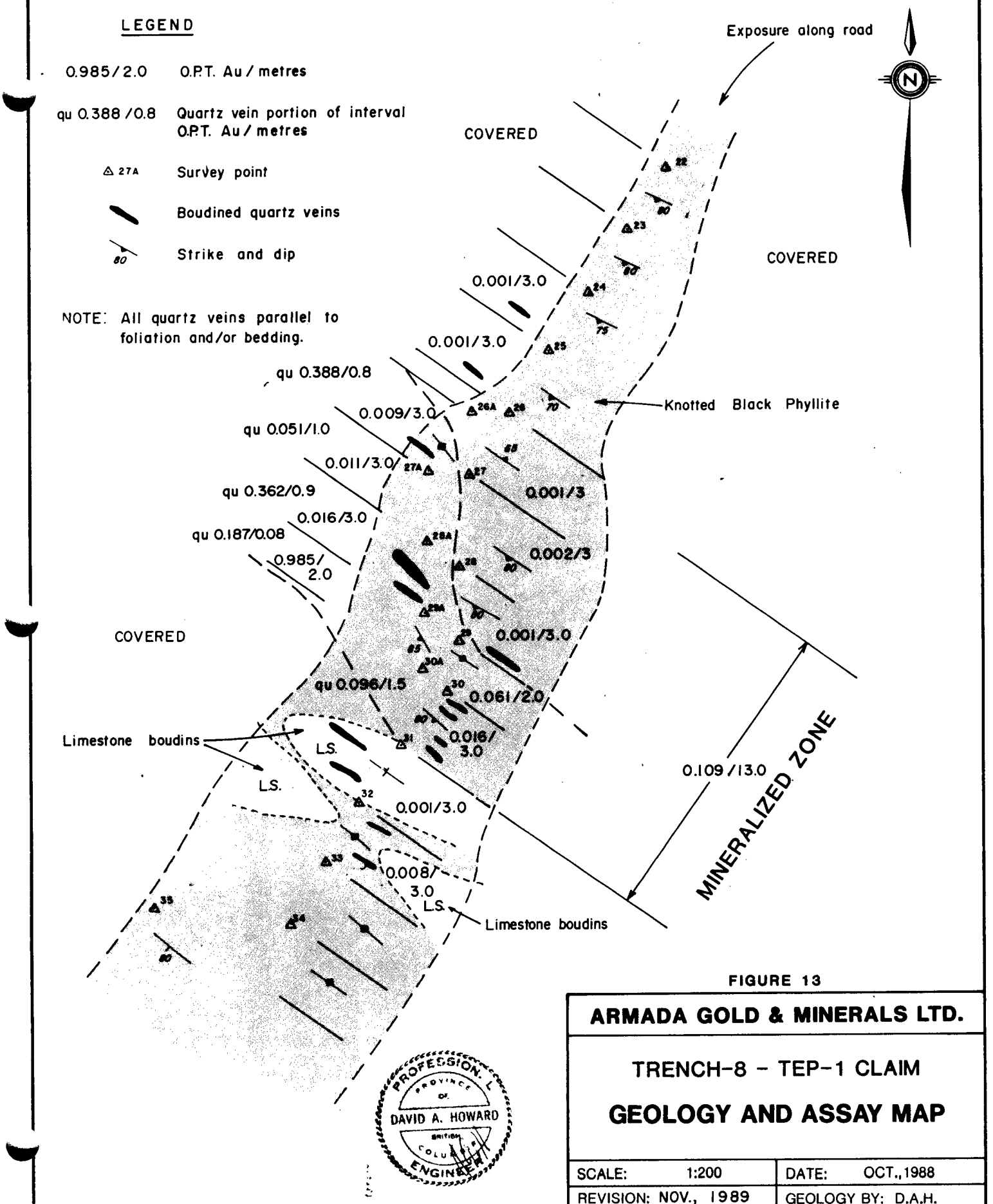


FIGURE 13

ARMADA GOLD & MINERALS LTD.

TRENCH-8 - TEP-1 CLAIM

GEOLOGY AND ASSAY MAP

SCALE: 1:200	DATE: OCT., 1988
REVISION: NOV., 1989	GEOLOGY BY: D.A.H.

D.D.H. GEOMANAGEMENT LTD.

In an attempt to address the nugget effect experienced in the present study a total of 49 samples (rejects) were re-assayed using different labs and any sample containing anomalous gold values from either lab was assayed again using a metallic gold assay method. Acme Analytical Laboratories Ltd., 852 East Hastings Street, Vancouver, B.C. assayed all of the original core. Min-En Laboratories, 705 West 15th Street, North Vancouver, B.C. check assayed 49 of the reject samples and also conducted the Metallic Assay on 12 samples. All assay certificates are found in Appendix A.

Table 1 below gives a good cross-section of the variability in assaying when particulate gold is present. Although the metallic assay method is probably the most reliable, it is the writer's opinion that the true gold content of the mineralized zone exposed on the TEP-1 claim can only be determined by bulk testing and/or very large drill samples. Diamond drilling can be used to generally outline the zone but not determine its overall grade.

TABLE 1

Comparative Assays

Sample No.	Hole No.	Interval	Acme	Min-En (reg.)	Min-En (metal.)
27804	89-9	439 - 444	0.001	0.006	0.002
27814	Tr - 8		0.099	0.061	0.051
27815	Tr - 8		0.002	0.008	0.006
38728	89 - 6	185 - 193.5	0.010	0.007	0.007
38729	89 - 6	193.5 - 200	0.003	0.005	0.002
38732	89 - 6	212 - 217	0.002	0.005	0.001
38733	89 - 6	217 - 222	0.020	0.020	0.100
38763	89 - 6	380 - 385	0.001	0.004	0.002
38764	89 - 6	385 - 390	0.171	0.006	0.002
38765	89 - 6	390 - 395	0.001	0.006	0.001
38830	89 - 7	334 - 338	0.003	0.007	0.006
38831	89 - 7	338 - 340.5	0.202	0.081	0.274

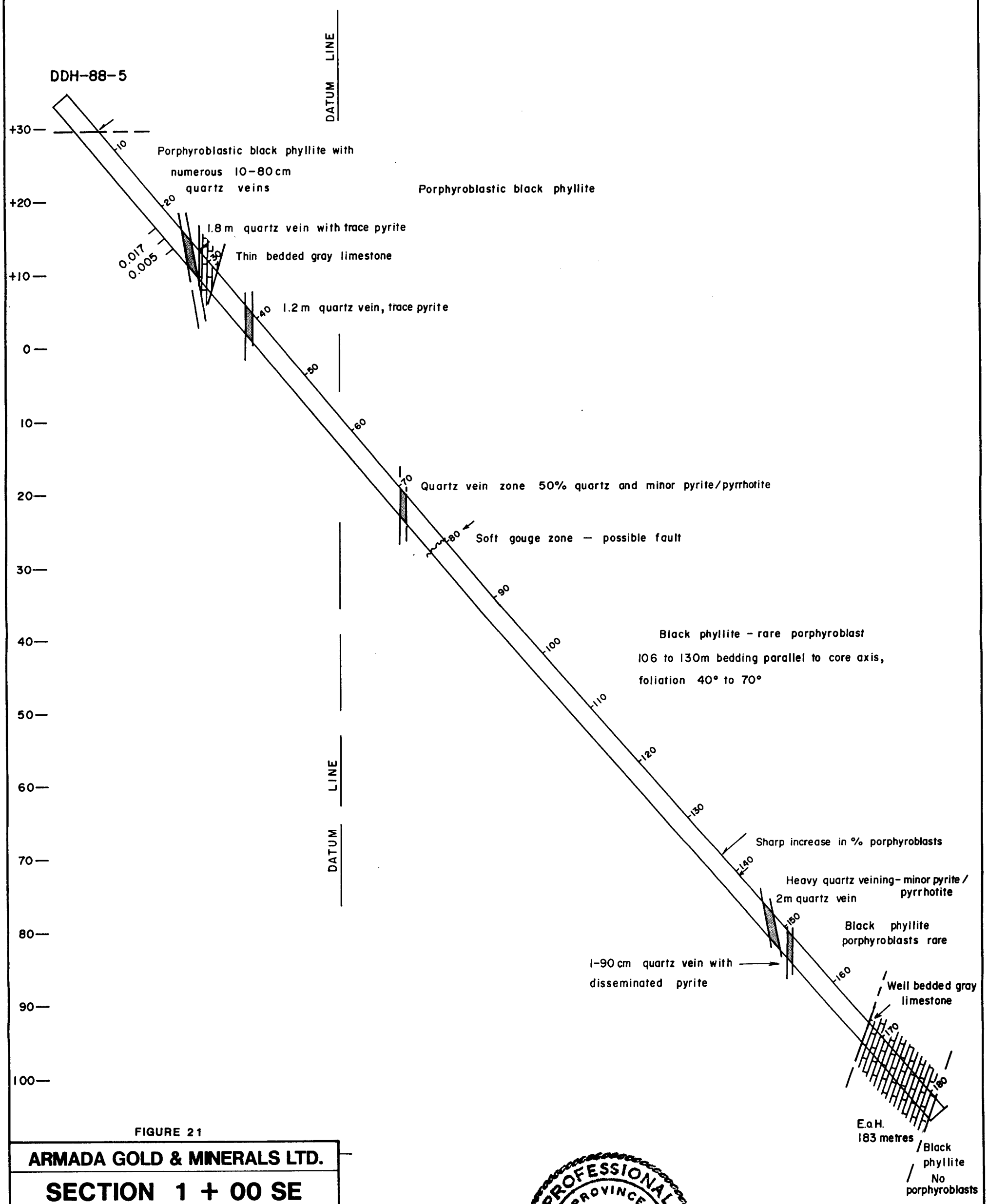


FIGURE 21

ARMADA GOLD & MINERALS LTD.

SECTION 1 + 00 SE

LOOKING NORTHWEST

Cariboo Mining Division, MacKay River Area,
British Columbia, NTS 93/7W

METRES
0 10 20

SCALE: 1:500	DATE: January, 1989
REVISION:	GEOLOGY BY: D.A.H.

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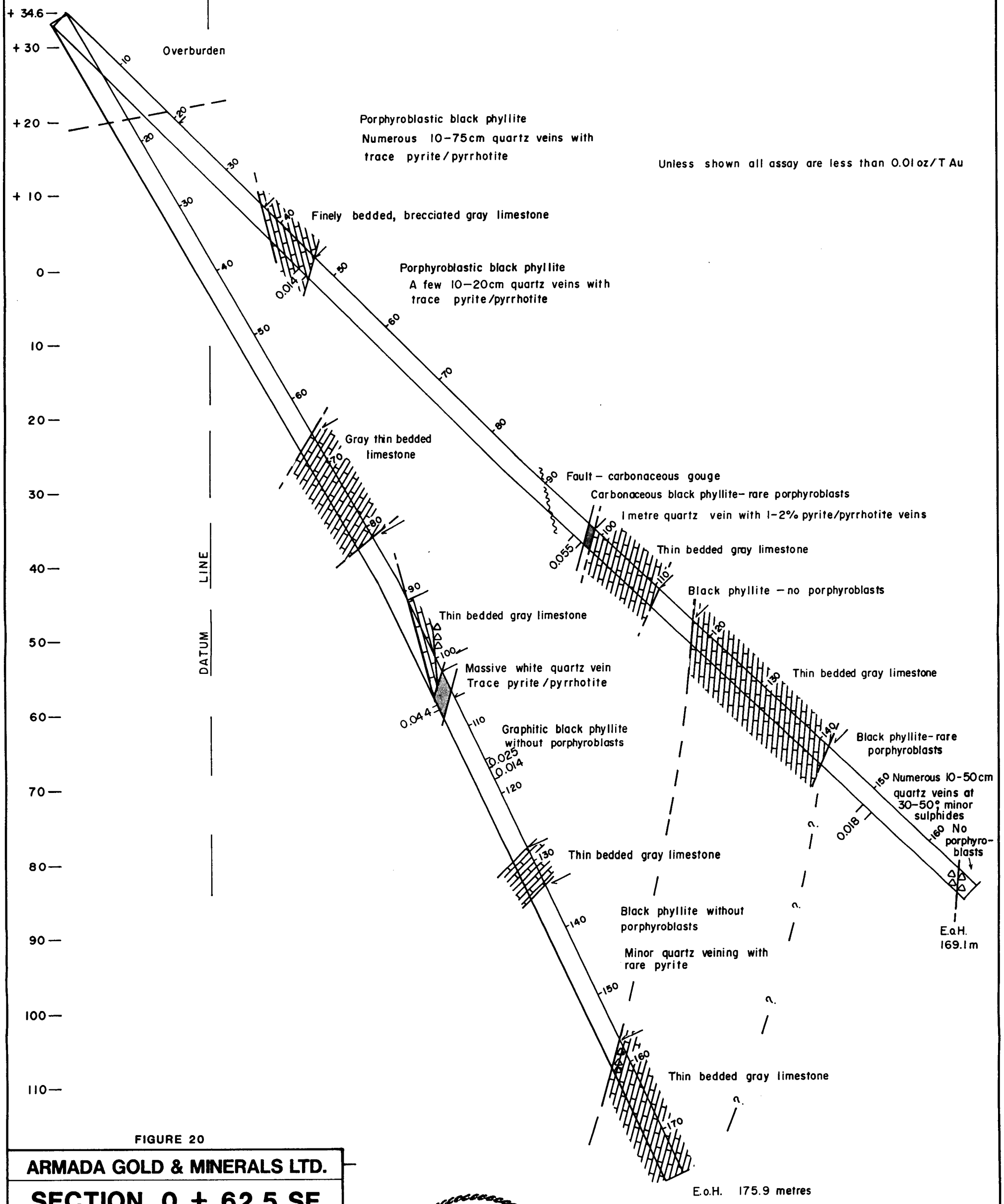
PROVINCE OF BRITISH COLUMBIA
DAVID A. HOWARD

DDH-88-3 (-45°)
DDH-88-4 (-60°)



Unless shown all assay are less than 0.01 oz/T Au

FIGURE 20

ARMADA GOLD & MINERALS LTD.

SECTION 0 + 62.5 SE

LOOKING NORTHWEST

Cariboo Mining Division, MacKay River Area,
British Columbia, NTS 93/7W

METRES
0 10 20

SCALE: 1:500	DATE: January, 1989
REVISION:	GEOLOGY BY: D.A.H.

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DDH-88-2

DATUM LINE

Overburden

Numerous 20-30cm quartz veins with or without pyrite

No gold assays greater than 0.001

Porphyroblastic black phyllite

1.5m quartz veins with trace pyrite

50cm quartz vein

Possible fault zone – very carbonaceous

Black phyllite without porphyroblasts
very little quartz veining

Thin bedded gray limestone

Porphyroblastic black phyllite

E.o.H. 208 metres

FIGURE 19

ARMADA GOLD & MINERALS LTD.

SECTION 0 + 27.5 NW

LOOKING NORTHWEST

Cariboo Mining Division, MacKay River Area,
British Columbia, NTS 93/7W

METRES 0 10 20

SCALE: 1:500	DATE: January, 1989
REVISION:	GEOLOGY BY: D.A.H.

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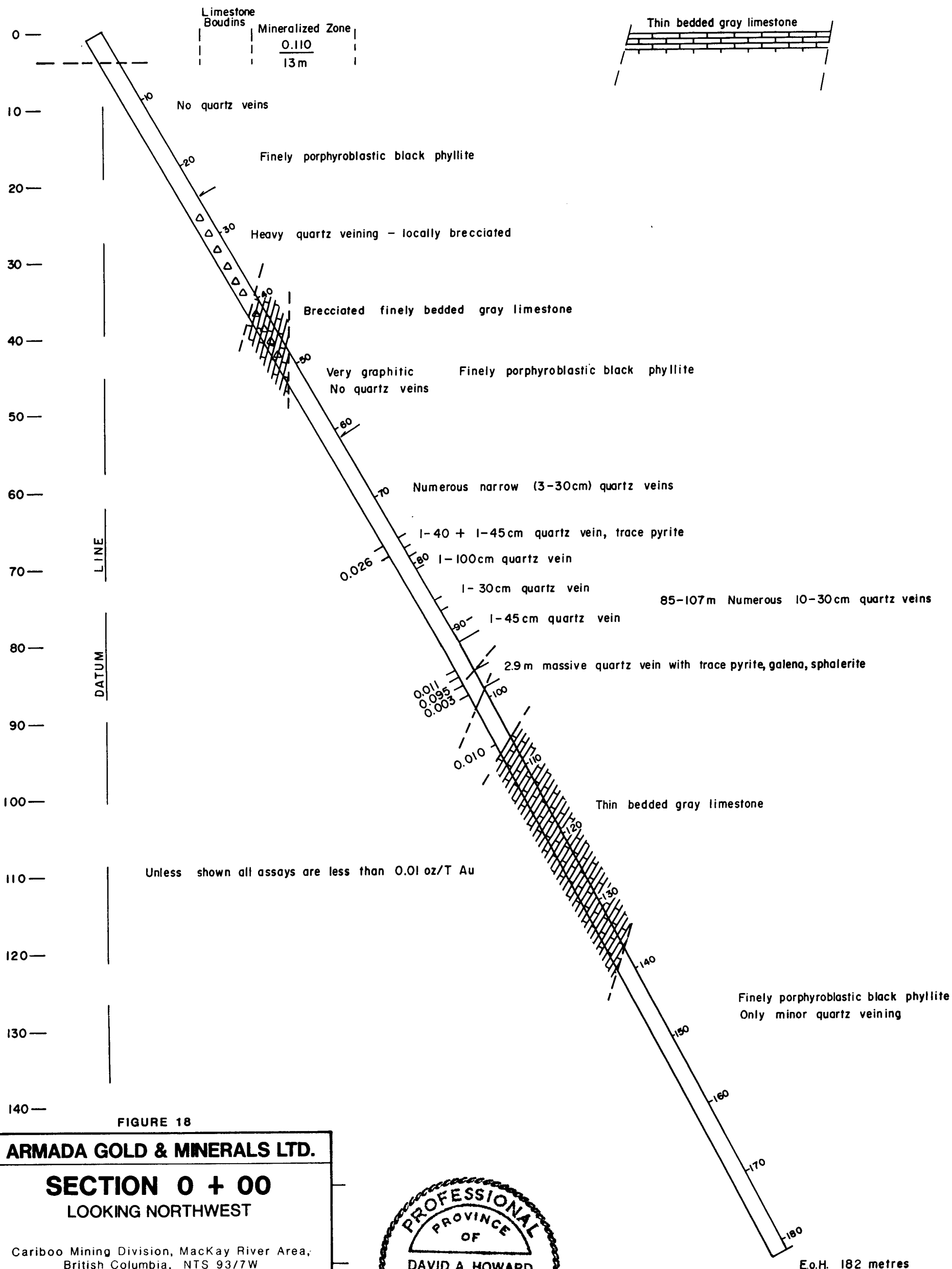
DDH-88-1



Unless shown all assays are less than 0.01 oz/T Au

FIGURE 18

ARMADA GOLD & MINERALS LTD.

SECTION 0 + 00

LOOKING NORTHWEST

Cariboo Mining Division, MacKay River Area,
British Columbia, NTS 93/7W

METRES
0 10 20

SCALE: 1:500	DATE: January, 1989
REVISION:	GEOLOGY BY: D.A.H.

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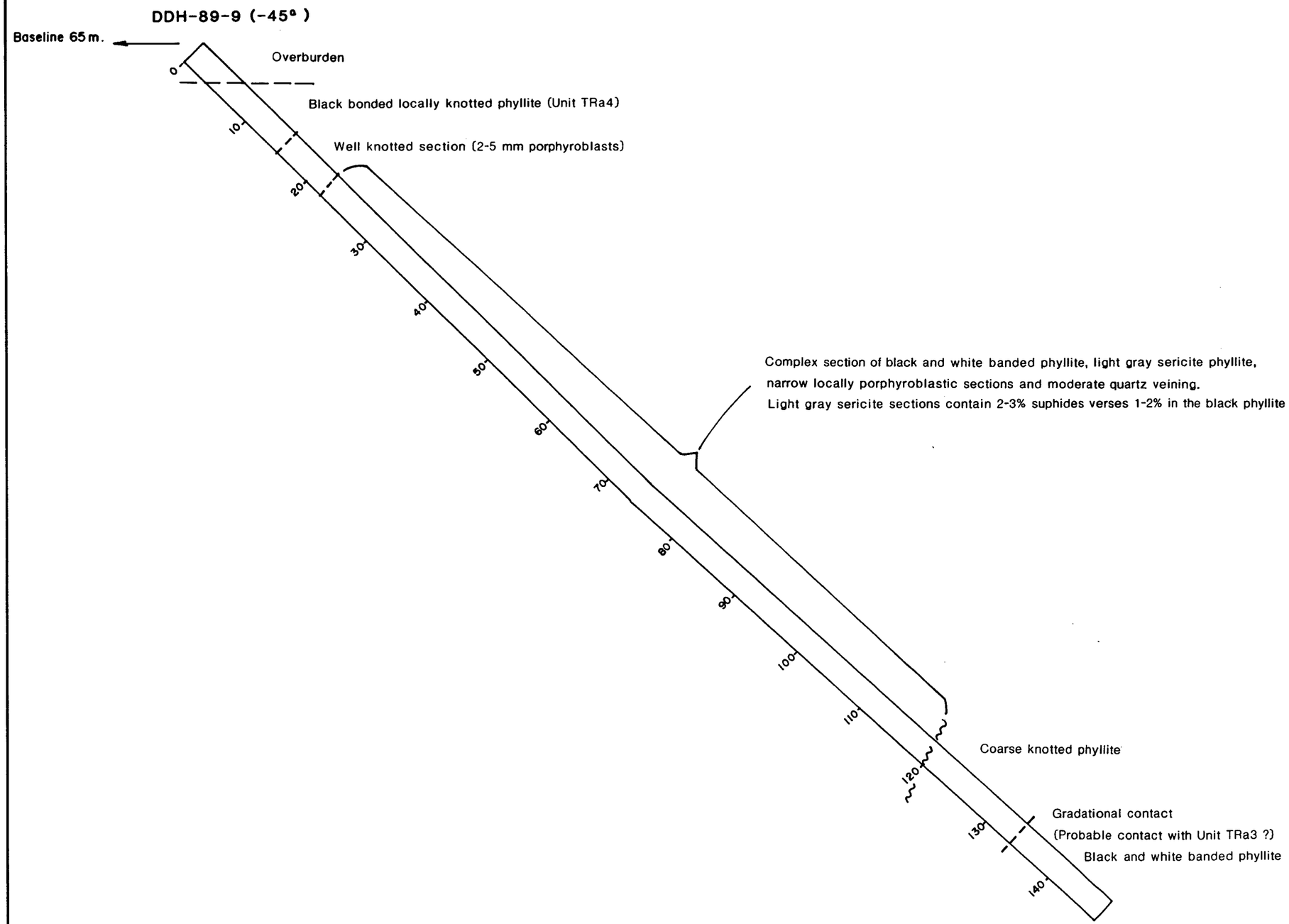

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FIGURE 17

ARROWFIELD RESOURCES LTD.
ARMADA GOLD & MINERALS LTD.

SECTION 5 + 90 SE

LOOKING NORTHWEST

GRID 1 FORK 4 CLAIM

Cariboo Mining Division, MacKay River Area,
British Columbia. NTS 93/7W

METRES
0 10 20

SCALE: 1:500	DATE: December, 1989
REVISION:	GEOLOGY BY: D.A.H.

D.D.H. GEOMANAGEMENT LTD.

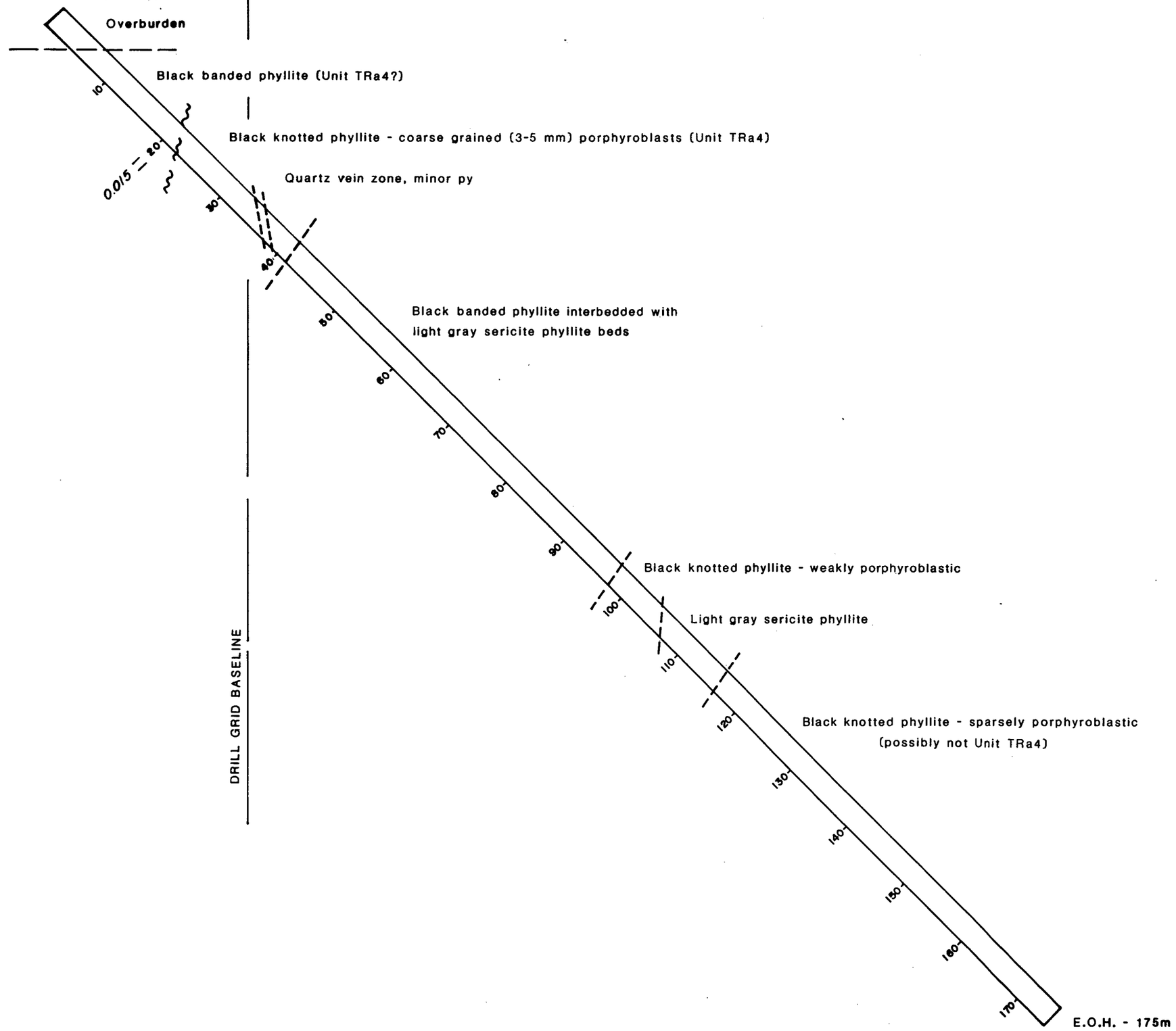


FIGURE 16

ARROWFIELD RESOURCES LTD.
ARMADA GOLD & MINERALS LTD.

SECTION 1 + 37 SE

LOOKING NORTHWEST

GRID 1 FORK 4 CLAIM

Cariboo Mining Division, MacKay River Area,
British Columbia. NTS 93/7W

METRES
0 10 20

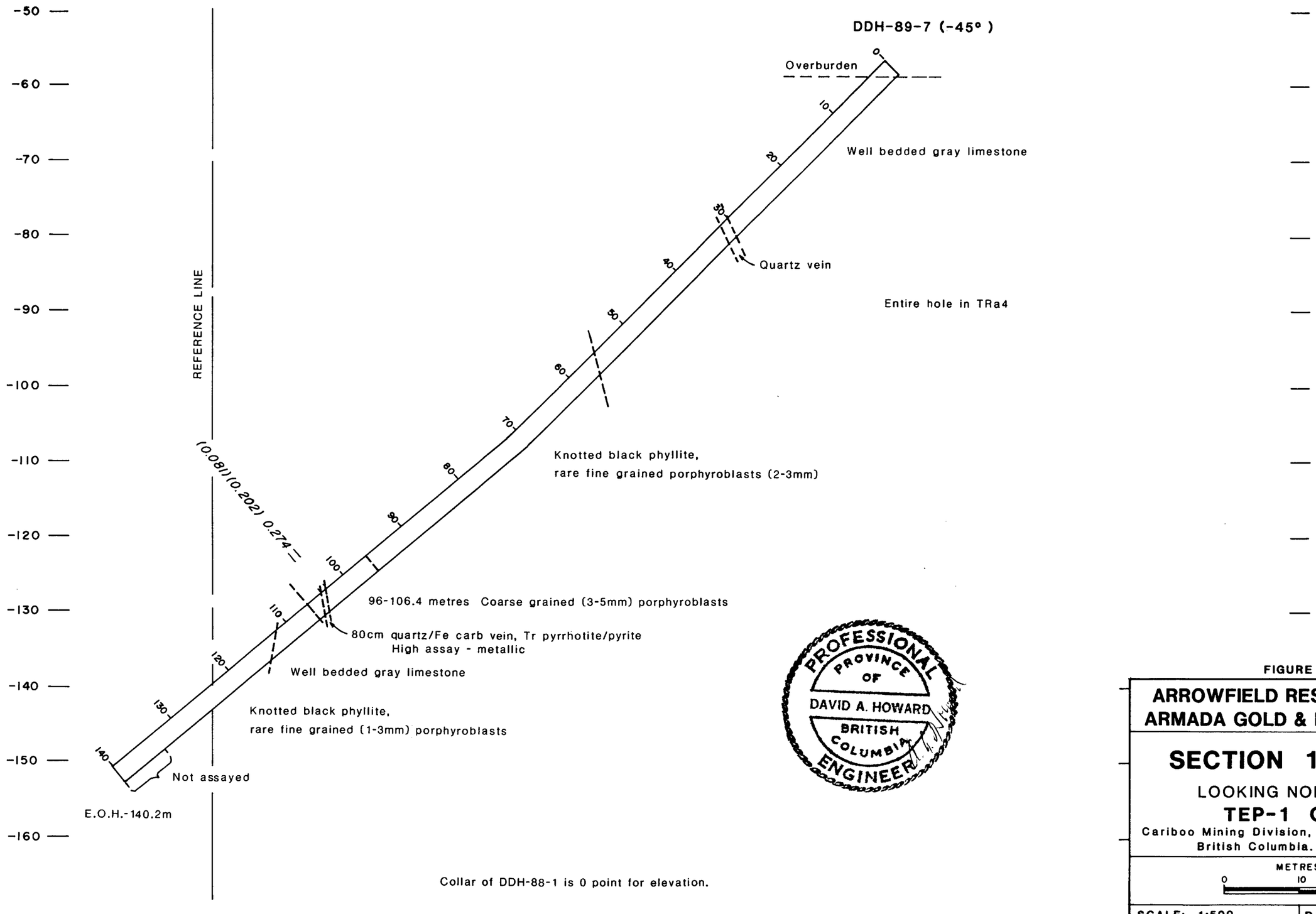
SCALE: 1:500	DATE: December, 1989
REVISION:	GEOLOGY BY: D.A.H.

D.D.H. GEOMANAGEMENT LTD.

a relatively massive quartz vein containing minor pyrrhotite clots and veins with rare pyrite. Brecciated iron carbonates are common to all the quartz veins within the mineralized zone. A comparison of the location of the gold intercept (Figure 10) in both holes shows that they are in close proximity to the upper limestone bed. This relationship is also observed in Trench 8. Due to the boudinage nature of the mineralized zone it is impossible to define a strike or dip of the mineralization other than the general strike (125-130°) of the porphyroblastic unit. Over short distances the mineralized intercepts appear to be cross-cutting but it may only be a function of the boudinage nature of the zone. Grade-wise, there is an apparent increase in grade to the northwest if one disregards the Trench 8 results (Figure 13).

The 1989 diamond drill program on the Forks 4 claim (Figures 11, 16, 17) totalled 322.5 metres (1,058 feet) in two holes (89-8 and 89-9). The drilling on the Forks 1 claim was primarily for geological purposes of defining the location and trend of the favourable porphyroblastic unit that has been shown to host gold mineralization in the area. Only low grade intercepts (0.01 - 0.015 opt gold) were encountered, but it was found that the porphyroblastic unit is much more complex than elsewhere on the property and at this writing it is not clear that the drilling tested the most favourable part of the section.

Hole 86-8 was definitely collared in Unit 5 which up to now has never shown any evidence of gold mineralization. Despite the history of the unit two anomalous intersection of gold was found from 10.4 to 11.9 metres (0.010 opt) and from 19.5 to 20.7 metre (0.015 opt). It is not clear at the present time what this means, but future exploration in the area will have to address the possibility of Unit 5 being mineralized. The remainder of hole 89-7 contained porphyroblastic sections interbedded with sulphide rich sericite phyllite bands. Overall, the drilled portion of Unit 4 at this location does not correlate with the Unit 4 section exposed on the TEP-1 claim. There is a strong possibility that the portion of Unit 4 exposed on surface and in the present drill program is stratigraphically above any of the Unit 4 exposed on the TEP-1 claim. On the TEP claim the upper contact of Unit 4 was defined by the last occurrence of porphyroblasts. The area up section from the contact is covered for several hundred metres and now knowing that the



Collar of DDH-88-1 is 0 point for elevation.

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DAVID A. HOWARD

FIGURE 15

ARROWFIELD RESOURCES LTD.
ARMADA GOLD & MINERALS LTD.

SECTION 1+36 NW

LOOKING NORTHWEST

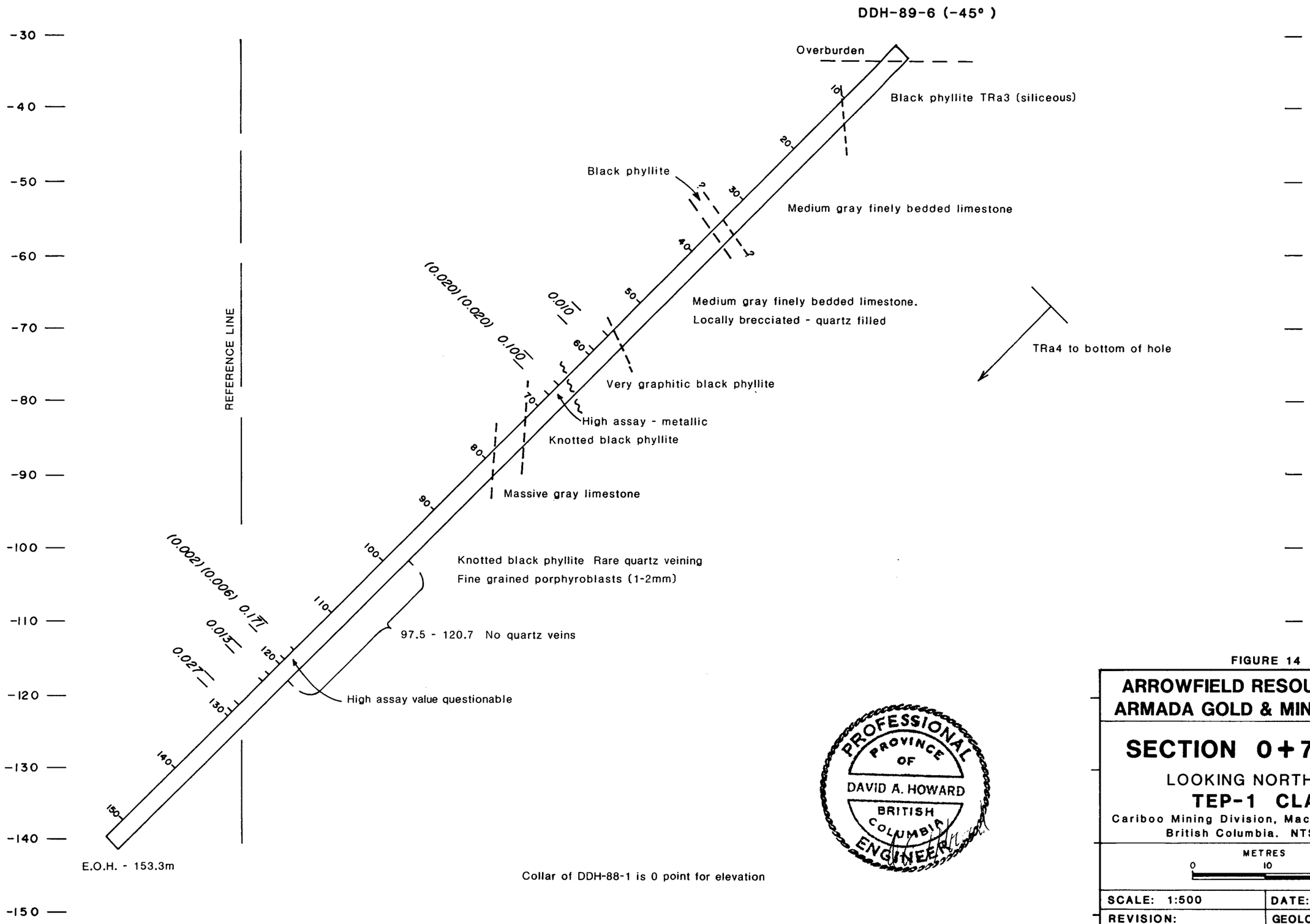
TEP-1 CLAIM

Cariboo Mining Division, MacKay River Area,
British Columbia. NTS 93/7W

METRES
0 10 20

SCALE: 1:500	DATE: December, 1989
REVISION:	GEOLOGY BY: D.A.H.

D.D.H. GEOMANAGEMENT LTD.



Collar of DDH-88-1 is 0 point for elevation

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. HOWARD

FIGURE 14

ARROWFIELD RESOURCES LTD.
ARMADA GOLD & MINERALS LTD.

SECTION 0+79.5 NW

LOOKING NORTHWEST

TEP-1 CLAIM

Cariboo Mining Division, MacKay River Area,
British Columbia. NTS 93/7W

METRES
0 10 20

SCALE: 1:500	DATE: December, 1989
REVISION:	GEOLOGY BY: D.A.H.

D.D.H. GEOMANAGEMENT LTD.

The 1989 diamond drill program on the TEP-1 claim (Figure 10, 14 and 15) totalled 293.5 metres (963 feet) in two holes (89-6 and 89-7). The two holes on the TEP-1 claim were successful in extending the previously indicated a gold bearing zone 135 metres (443 feet) to the northwest. The mineralized zone intersected in the drilling is nearly identical to the zone exposed in Trench 8 (Figure 10, 13). The mineralized zone at surface consists of highly contorted, folded and boudinaged quartz veins that range in width from a few centimetres to over 1 metre. The boudinaged veins commonly are enclosed in highly sheared, slickensided, graphitic phyllite without obvious porphyroblasts. The quartz veins are commonly brecciated and contain variable amounts of iron carbonates (siderite and/or ankerite) and sometimes disseminated and/or vein pyrite and/or pyrrhotite. There is no correlation between the presence or absence of gold and the amount of or type sulphide present. The mineralization is bounded top and bottom by brecciated, moderately siliceous grey limestone beds. The basal limestone is generally more uniform and less brecciated and is normally thicker than the top bed.

Diamond drill hole 89-6 (Figures 10, 14) contained one 1.5 metre (5 foot) gold-bearing intersection within the mineralized zone as defined above which graded 0.100 ounces gold per ton based on a metallic assay. Two regular one assay ton assays of the same sample returned 0.020 ounces gold per ton. Allowing for the serious nugget problem experienced on the property, it is the writer's opinion that the metallic assay methods yields the best results. In addition to the gold intersection within the defined mineralized zone, there was several other assays above 0.010 below (up section) the above defined mineralized zone. These include: 0.171 opt from 385-390 feet, 0.013 opt from 399-404 feet and 0.027 opt from 419-424 feet. All of these latter assays are from porphyroblastic material that contained only minor quartz veining (see drill logs). The highest value (0.171 opt) did not repeat itself when the metallic assay method was used, therefore it could be an erroneous assay.

Diamond drill hole 89-7 (Figures 10, 15) contained one 0.8 metre (2.5 feet) intersection grading 0.274 ounces gold per ton based on the metallic assay method. Standard 1 assay ton assays yielded 0.081 and 0.202 opt. As above the metallic assay is the preferred value. The gold mineralization in this hole is associated with

porphyroblastic character is not always present it is possible that a section corresponding to the Forks 4 section is present under the covered section. The reverse is also true for the Forks 4 section, the bottom of the section is covered. There is also a good possibility that the porphyroblasts are related to a thrust plate, in which case it probably cuts across the stratigraphy and differing original rock types could account for the variation in the apparent stratigraphy.

Hole 89-9 is essentially the same as a 89-7 except it was collared in Unit 4 (near top of section) and there were no anomalous gold intersections.

In order to make this report as complete as possible the drill cross-sections from the 1988 program are included as Figures 18, 19, 20 and 21.

CONCLUSIONS AND RECOMMENDATIONS

The 1989 diamond drill program was successful in extending the gold bearing zone on TEP-1 claim 135 metres (443 feet) to the northwest. The TEP-1 zone can now be traced over a total strike distance of 238 metres (781 feet). Drill indicated grades within the zone range from 0.013 to 0.274 ounces gold per ton. Detailed check assaying has indicated that the deposit is subject to an extreme nugget effect that can be partially solved by using metallic assay methods for analysis.

Diamond drilling on the Forks 4 claim confirmed the extent of the favourable porphyroblastic unit (Unit 4) across the property, but was not successful in defining identical stratigraphy to that found on the TEP-1 claim or on the Eureka Resources Inc. project, adjoining to the south. At present there appears to be two possibilities to explain the differing stratigraphy. The first is that the portion of the Unit 4 section exposed on surface and in the drill holes on the Forks 4 claim is much higher in the section than that exposed on the TEP-1 claim or on the Eureka property. In which case the favourable gold bearing zone is still possible down section on the Forks 4 claim. This latter possibility assumes that the gold mineralization is stratabound. The second possibility is that the porphyroblastic character and gold mineralization is associated with a thrust plate within the Black

Phyllite package and does not necessarily have to follow bedding. In other words, it is probably a cross-cutting fracture and that the differing stratigraphy found on the Forks 4 claim is due to differing original rock types within the overall Black Phyllite package. Gold mineralization in this case may only be present where the same parent host rock as found on the TEP-1 or Eureka Resources, Inc. are present. It should be pointed out that there is a strong resemblance between the favourable section on the TEP-1 claim and that found in the gold bearing zone on the Eureka Resource, Inc. property.

Based on the success of the 1989 diamond drill program, it is recommended that Arrowfield Resources Ltd. and Armada Gold and Minerals Ltd. continue diamond drilling the gold zone on the TEP-1 claim with emphasis on extending the zone to the northwest and down-dip. It is also recommended that one or two holes be drilled on the Forks 4 claim to test the stratigraphy below the present section for the possibility of a favourable horizon as suggested in the above.

PERSONNEL TIME DISTRIBUTION
(Forks 1-4, AR 1-2, TEP 1-3, Can-1, K.P. 1-4 Mineral Claims)

D.A. Howard, M.Sc., P.Eng. (Geological Engineer)

Field	September 29 - October 13, 1989 inclusive	15 days
	October 16 - October 26, 1989 inclusive	11 days
Office	Report preparation Period October 27, 1989 - December 15, 1989 Time: 90 hours	90 hours

G.E. Gunn, Professional Prospector / Core Splitter

Field	September 29 - October 25, 1989 inclusive	27 days

Diamond Drill Crew (4 men)
Time included in footage rate for diamond drilling.

Ernie Gruhs, Bulldozer Operator
Time included in hourly rate for bulldozer.

COST STATEMENT

Personnel

D.A. Howard, M.Sc., P.Eng.	
Field 26 days at $400.00 per day	$10,400.00
Office 90 hours at $50.00 per hour	4,500.00
C.E. Gunn, Professional Prospector	
Field 27 days at $275.00 per day	7,425.00
Sub-total	22,325.00

Expenses and Disbursements

Diamond Drilling, Black Hawk Diamond Drilling Inc.	56,715.75
Room and Board, Jacobson Bros. Forest Products Ltd.	4,781.00
Assaying Acme Analytical Laboratories Ltd. Min-En Laboratories	5,794.20
Site Preparation - Gruhs Bulldozing Ltd.	2,125.00
4 x 4 Truck Rental (2 units)	2,425.41
Diamond Saw Blades	542.78
Generator Rent	550.00
Fuel, Camp Supplies, Misc. Meals, etc.	1,411.39
Telephone	10.90
Report Preparation (typing and copying)	239.96
Drafting Geodrafting Services Image Reproduction Services	749.60
Sub-total	75,345.99
TOTAL	$97,670.99

Respectfully submitted,

D.A. Howard, M.Sc., P.Eng.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA DAVID A. HOWARD

CERTIFICATION

I, David A. Howard, of the City of Vancouver, Province of British Columbia, hereby certify as follows:

1. I am a geologist residing at 9040 Glenallan Gate, Richmond, B.C., with an office at 422 - 470 Granville Street, Vancouver, B.C.

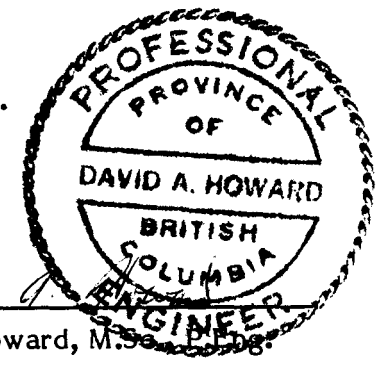
2. I am a registered Professional Engineer of the Province of British Columbia. I graduated from Montana State University in 1964 and from the University of Washington in 1967.

3. I have practised my profession continuously since June, 1966, with the firm Placer Development Ltd. and since 1981 with D.D.H. Geomanagement Ltd., the latter of which I am a principal.

4. I am the author of this report which is based on property work during the period 29 September to October 26, 1989.

5. I have a direct interest in the subject property.

Dated at Vancouver, B.C., this 21st day of December, 1989.



David A. Howard, M.Sc., P.Eng.

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APPENDIX A

ASSAY RESULTS

MIN-EN LABORATORIES

SPECIALISTS IN MINERAL ENVIRONMENTS

VANCOUVER OFFICE:
705 WEST 15TH STREET
NORTH VANCOUVER, B.C. CANADA V7M 1T2
TELEPHONE (604) 980-5814 OR (604) 988-4524
TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Metallic Assay Certificate

9V-1521-RM1

Company: DDH GEOMANAGEMENT LTD.
Project:
Attn: D.A.HOWARD

Date: DEC-01-89
Copy 1. DDH GEOMANAGEMENT, VANCOUVER, B.C.

We hereby certify the following Metallic Assay of 12 METALLIC samples submitted NOV-15-89 by D.A.HOWARD.

Sample Number	Total Wt (G)	+120 M Wt (G)	Assay Value AU +120(GM/T)	Assay Value AU -120(GM/T)	Total Weight AU +120(MG)	Total Weight AU -120(MG)	Metallic AU (OZ/T)	Metallic AU (GM/T)	Net AU (OZ/T)	Net AU (GM/T)
27804	2019.33	9.33	.16	.08	0.001	0.161	0.000	0.00	0.002	0.08
27814	520.07	7.07	32.81	1.32	0.232	0.677	0.013	0.45	0.051	1.75
27815	1065.67	13.67	.25	.21	0.003	0.221	0.000	0.00	0.006	0.21
38728	2573.90	13.90	13.74	.17	0.191	0.435	0.002	0.07	0.007	0.24
38729	3173.82	23.82	.46	.08	0.011	0.252	0.000	0.00	0.002	0.08
38732	2560.52	20.52	.14	.04	0.003	0.102	0.000	0.00	0.001	0.04
38733	1572.32	22.32	117.18	1.80	2.615	2.790	0.049	1.66	0.100	3.44
38763	2401.26	11.26	.49	.08	0.006	0.191	0.000	0.00	0.002	0.08
38764	2477.11	35.11	.32	.06	0.011	0.147	0.000	0.00	0.002	0.06
38765	2631.99	26.99	.25	.04	0.007	0.104	0.000	0.00	0.001	0.04
38830	1739.20	24.20	.28	.21	0.007	0.360	0.000	0.00	0.006	0.21
38831	1166.49	5.49	1204.22	3.74	6.611	4.342	0.165	5.67	0.274	9.39

Certified by

MIN-EN LABORATORIES

MIN
• EN
LABORATORIES

SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • CONSULTANTS

VANCOUVER OFFICE:
705 WEST 15TH STREET
NORTH VANCOUVER, B.C. CANADA V7M 1T2
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TELEX: VIA U.S.A. 7601067 • FAX (604) 980-9621

TIMMINS OFFICE:
33 EAST IROQUOIS ROAD
P.O. BOX 867
TIMMINS, ONTARIO CANADA P4N 7G7
TELEPHONE: (705) 264-9996

Assay Certificate

9V-1521-RA1

Company: DDH GEOMANAGEMENT
Project:
Attn: D.A.HOWARD

Date: NOV-17-89
Copy 1. DDH GEOMANAGEMENT, VANCOUVER, B.C.

He hereby certify the following Assay of 30 REJECTS samples submitted NOV-15-89 by D.A.HOWARD.

Sample Number	*AU G/TONNE	*AU OZ/TON	AG G/TONNE	AG OZ/TON
27801	.17	.005	0.3	.01
27802	.06	.002	0.5	.01
27803	.12	.004	0.2	.01
27804	.19	.006	0.3	.01
27805	.11	.003	0.2	.01
27806	.08	.002	0.8	.02
27807	.14	.004	0.6	.02
27808	.14	.004	1.7	.05
27809	.17	.005	1.6	.05
27810	.01	.001	0.9	.03
27811	.01	.001	0.7	.02
27812	.07	.002	0.8	.02
27814	**2.09	.061	2.1	.06
27815	.26	.008	0.4	.01
38694	.04	.001	0.3	.01
38695	.12	.004	0.3	.01
38696	.07	.002	0.2	.01
38697	.05	.001	1.6	.05
38698	.05	.001	0.3	.01
38699	.04	.001	0.5	.01
38700	.07	.002	0.4	.01
38727	.19	.006	0.3	.01
38728	**.23	.007	2.2	.06
38729	.18	.005	1.7	.05
38730	.22	.006	1.6	.05
38731	.04	.001	0.8	.02
38732	.17	.005	1.3	.04
38733	**.67	.020	1.9	.06
38744	.17	.005	0.3	.01
38763	.12	.004	0.2	.01

*AU - 1 ASSAY TON. **SAMPLE MAY CONTAIN METALLIC GOLD.
RECOMMEND SOME OF THESE SAMPLES SHOULD HAVE METALLIC GOLD ASSAY.

Certified by _____

MIN-EN LABORATORIES

MIN-EN LABORATORIES

SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • CONSULTING MINERALOGISTS

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TELEPHONE: (705) 264-9996

Assay Certificate

9V-1521-RA2

Company: DDH GEOMANAGEMENT
Project:
Attn: D.A.HOWARD

Date: NOV-17-89
Copy 1. DDH GEOMANAGEMENT, VANCOUVER, B.C.

He hereby certify the following Assay of 19 REJECTS samples submitted NOV-15-89 by D.A.HOWARD.

Sample Number	*AU G/TONNE	*AU OZ/TON	AG G/TONNE	AG OZ/TON
38764	.19	.006	0.3	.01
38765	.21	.006	0.2	.01
38766	.18	.005	0.3	.01
38767	.15	.004	0.2	.01
38771	.13	.004	0.4	.01
38830	.24	.007	1.8	.05
38831	**2.76	.081	4.0	.12
38832	.38	.011	1.9	.06
38859	.15	.004	0.4	.01
38860	.09	.003	1.8	.05
38861	.15	.004	1.5	.04
38862	.15	.004	1.9	.06
38870	.19	.006	1.0	.03
38871	.12	.004	1.7	.05
38917	.14	.004	0.8	.02
38918	.15	.004	1.8	.05
38919	.17	.005	0.2	.01
38943	.15	.004	0.6	.02
38959	.16	.005	0.4	.01

*AU - 1 ASSAY TON. **SAMPLE MAY CONTAIN METALLIC GOLD.
RECOMMEND SOME OF THESE SAMPLES SHOULD HAVE METALLIC GOLD ASSAY.

Certified by _____

MIN-EN LABORATORIES

ACME ANALYTICAL LABORATORIES LTD.
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 13 1989
DATE REPORT MAILED: Oct. 19/89.

ASSAY CERTIFICATE

- SAMPLE TYPE: Core
AU** AND AG** BY FIRE ASSAY FROM 1 A.T.

SIGNED BY..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

D.D.H. Geomanagement Ltd. PROJECT ARROWFIELD FILE # 89-4268 Page 1

SAMPLE#	Ag** OZ/T	Au** OZ/T	89-6
B 38701	.04	.002	10 - 15
B 38702	.05	.001	15 - 20
B 38703	.06	.002	20 - 25
B 38704	.07	.005	25 - 30
B 38705	.05	.003	30 - 34.5
B 38706	.04	.001	34.5 - 39
B 38707	.03	.001	39 - 44
B 38708	.04	.003	44 - 49
B 38709	.02	.001	102 - 107
B 38710	.02	.001	107 - 111
B 38711	.07	.001	111 - 114
B 38712	.05	.002	114 - 118
B 38713	.04	.001	118 - 123
B 38714	.02	.001	123 - 128
B 38715	.05	.002	128 - 132
B 38716	.02	.001	132 - 135
B 38717	.05	.003	135 - 140
B 38718	.05	.003	140 - 144
B 38719	.04	.001	144 - 149
B 38720	.03	.001	149 - 154
B 38721	.02	.001	154 - 158
B 38722	.02	.002	158 - 163
B 38723	.01	.001	163 - 168
B 38724	.03	.001	168 - 174
B 38725	.01	.001	174 - 177
B 38726	.03	.001	177 - 180
B 38727	.01	.001	180 - 185
B 38728	.04	.010	185 - 193.5
B 38729	.05	.003	193.5 - 200
B 38730	.05	.006	200 - 204
B 38731	.02	.004	204 - 212
B 38732	.02	.002	212 - 217
B 38733	.03	.020	217 - 222
B 38734	.01	.001	222 - 227
B 38735	.02	.001	227 - 232
B 38736	.01	.009	232 - 236

SAMPLE#	Ag** OZ/T	Au** OZ/T	
B 38737	.01	.001	236 - 241
B 38738	.03	.001	256 - 261
B 38739	.04	.001	261 - 266
B 38740	.03	.002	266 - 271
B 38741	.02	.008	271 - 276
B 38742	.01	.003	276 - 281
B 38743	.01	.001	281 - 286
B 38744	.01	.001	286 - 291
B 38745	.01	.002	291 - 296
B 38746	.02	.001	296 - 301
B 38747	.03	.001	301 - 306
B 38748	.01	.001	306 - 312
B 38749	.01	.001	312 - 317
B 38750	.02	.001	317 - 320
B 38751	.01	.001	320 - 325
B 38752	.01	.002	325 - 330
B 38753	.01	.009	330 - 335
B 38754	.01	.003	335 - 340
B 38755	.03	.001	340 - 345
B 38756	.01	.002	345 - 350
B 38757	.01	.001	350 355
B 38758	.01	.001	355 - 360
B 38759	.02	.003	360 - 365
B 38760	.01	.001	365 370
B 38761	.02	.001	370 - 375
B 38762	.02	.001	375 - 380
B 38763	.01	.001	380 385
B 38764	.03	.171	385 - 390
B 38765	.01	.001	390 - 395
B 38766	.01	.001	395 - 399
B 38767	.03	.013	399 - 404
B 38768	.01	.005	414 - 409
B 38769	.02	.005	409 - 414
B 38770	.02	.001	414 - 419
B 38771	.03	.027	419 - 424
B 38772	.02	.002	424 - 429

SAMPLE#	Ag** OZ/T	Au** OZ/T	
B 38773	.04	.001	429-434
B 38774	.04	.001	434-439
B 38775	.02	.001	439-444
B 38776	.01	.001	444-449
B 38777	.02	.001	449-454
B 38778	.02	.001	454-459
B 38779	.03	.003	459-464
B 38780	.01	.001	464-469
B 38781	.04	.001	469-474
B 38782	.02	.001	474-479
B 38783	.03	.002	479-484
B 38784	.02	.002	484-489
B 38785	.02	.001	489-492
B 38786	.10	.001	492-494
B 38787	.02	.001	494-499
B 38788	.03	.001	494-503
B 38789	.01	.001	44-98
B 38790	.01	.001	98-102
B 38791	.01	.001	54-59
B 38792	.02	.001	72-74
B 38793	.01	.001	74-79
B 38794	.01	.001	102-107
B 38795	.01	.001	107-112
B 38796	.01	.001	112-117
B 38797	.01	.001	180-182
B 38798	.05	.002	182-185
B 38799	.06	.001	185-190
B 38800	.03	.001	190-195
B 38801	.02	.002	195-200
B 38802	.05	.001	200-205
B 38803	.06	.003	205-210
B 38804	.08	.002	210-215
B 38805	.05	.001	215-220
B 38806	.04	.001	220-225
B 38807	.05	.003	225-230
B 38808	.04	.001	238-235

89-7

SAMPLE#	Ag** OZ/T	Au** OZ/T	
B 38809	.04	.004	235-238
B 38810	.03	.001	238-243
B 38811	.08	.001	243-247
B 38812	.05	.001	247-250.5
B 38813	.05	.001	250.5-255
B 38814	.05	.001	255-262
B 38815	.04	.001	262-267
B 38816	.05	.001	267-272
B 38817	.04	.001	272-274
B 38818	.04	.001	274-284
B 38819	.07	.001	284-288
B 38820	.04	.002	288-292
B 38821	.04	.001	292-297
B 38822	.05	.001	297-302
B 38823	.05	.001	302-307
B 38824	.04	.001	307-312
B 38825	.01	.001	312-317
B 38826	.01	.001	317-322
B 38827	.04	.001	322-327
B 38828	.05	.001	327-331
B 38829	.04	.002	331-334
B 38830	.04	.003	334-338
B 38831	.19	.202	338-340.5
B 38832	.06	.009	340.5-344
B 38833	.05	.001	344-349
B 38834	.01	.001	349-354
B 38835	.01	.001	354-359
B 38836	.01	.001	359-365.5
B 38837	.03	.001	365.5-369
B 38838	.04	.001	369-374
B 38839	.02	.001	374-379
B 38840	.02	.001	379-384
B 38841	.01	.001	384-389
B 38842	.02	.001	389-394
B 38843	.02	.001	394-399
B 38844	.01	.001	399-403

SAMPLE#	Ag** OZ/T	Au** OZ/T	
B 38845	.04	.002	403 - 408
B 38846	.02	.008	408 - 413
B 38847	.03	.003	413 - 418
B 38848	.01	.004	418 - 423
B 38849	.04	.002	423 - 429
B 38850	.03	.001	429 - 434
B 38851	.03	.004	434 - 439
B 38852	.09	.002	24 - 29
B 38853	.04	.008	29 - 34
B 38854	.08	.010	34 - 39
B 38855	.05	.002	39 - 44
B 38856	.04	.001	44 - 49
B 38857	.06	.005	49 - 54
B 38858	.06	.001	54 - 59
B 38859	.06	.001	59 - 64
B 38860	.05	.015	64 - 68
B 38861	.02	.001	68 - 73
B 38862	.07	.001	73 - 78

89-E

ACME ANALYTICAL LABORATORIES LTD.
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 26 1989
DATE REPORT MAILED: Nov. 6/89

ASSAY CERTIFICATE

- SAMPLE TYPE: Core AU** AND AG** BY FIRE ASSAY FROM 1 A.T.

SIGNED BY ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

D.D.H. Geomanagement Ltd. PROJECT ARROWFIELD FILE # 89-4502 Page 1

SAMPLE#	Ag** OZ/T	Au** OZ/T	
			89-9
E 27801	.02	.001	426-431
E 27802	.12	.001	431-434
E 27803	.01	.001	434-439
E 27804	.04	.001	439-444
E 27805	.03	.001	444-449
E 27806	.04	.001	449-454
E 27807	.03	.001	454-459
E 27808	.06	.001	459-464
E 27809	.05	.001	464-469
E 27810	.03	.001	469-474
E 27811	.04	.001	474-479
E 27812	.03	.001	479-484
E 27813	.01	.001	} surface samples
E 27814	.06	.099	
E 27815	.03	.002	
			89-9
B 38651	.03	.001	184-189
B 38652	.03	.001	[illegible]
B 38653	.01	.001	[illegible]
B 38654	.03	.001	[illegible]
B 38655	.04	.001	[illegible]
B 38656	.04	.001	209-214
B 38657	.08	.001	214-219
B 38658	.04	.001	219-224
B 38659	.03	.001	224-229
B 38660	.03	.001	229-234
B 38661	.02	.001	234-239
B 38662	.04	.001	239-244
B 38663	.04	.001	244-249
B 38664	.04	.001	249-254
B 38665	.03	.001	254-259
B 38666	.02	.001	259-264
B 38667	.03	.001	264-269
B 38668	.05	.001	269-274
B 38669	.04	.001	274-279
B 38670	.05	.001	279-283
B 38671	.03	.001	283-287

SAMPLE#	Ag** OZ/T	Au** OZ/T		
			89-9	
B 38672	.02	.001	287-292	
B 38673	.03	.001	292-297	
B 38674	.03	.001	297-302	
B 38675	.06	.001	302-307	
B 38676	.06	.001	307-312	
B 38677	.07	.001	312-316	
B 38678	.05	.001	316-319	
B 38679	.02	.001	319-324	
B 38680	.03	.001	324-329	
B 38681	.01	.001	329-334	
B 38682	.02	.001	334-339	
B 38683	.02	.001	339-344	
B 38684	.02	.001	344-349	
B 38685	.01	.001	349-354	
B 38686	.01	.001	354-359	
B 38687	.02	.001	359-364	
B 38688	.02	.001	364-369	
B 38689	.03	.001	369-374	
B 38690	.01	.001	374-379	
B 38691	.02	.001	379-384	
B 38692	.01	.001	384-389	
B 38693	.01	.001	389-394	
B 38694	.01	.001	394-396	
B 38695	.02	.001	396-401	
B 38696	.01	.001	401-406	
B 38697	.01	.001	406-411	
B 38698	.02	.001	411-416	
B 38699	.01	.001	416-421	
B 38700	.01	.001	421-426	
B 38863	.01	.001	78-83	89-8
B 38864	.03	.001	83-88	
B 38865	.01	.001	88-93	
B 38866	.02	.001	93-98	
B 38867	.02	.001	98-103	
B 38868	.02	.003	103-106	
B 38869	.02	.001	106-109	

SAMPLE#	Ag** OZ/T	Au** OZ/T	89-8
B 38870	.02	.001	109-112
B 38871	.04	.001	112-116
B 38872	.03	.001	116-121
B 38873	.04	.001	121-126
B 38874	.05	.001	126-131
B 38875	.02	.001	131-134
B 38876	.02	.001	134-139
B 38877	.04	.001	139-144
B 38878	.03	.001	144-149
B 38879	.02	.001	149-154
B 38880	.02	.001	154-159
B 38881	.03	.001	159-164
B 38882	.03	.001	164-169
B 38883	.03	.001	169-174
B 38884	.04	.001	174-179
B 38885	.04	.001	179-184
B 38886	.02	.001	184-189
B 38887	.03	.001	189-194
B 38888	.04	.001	194-198
B 38889	.03	.001	198-201
B 38890	.03	.001	201-204
B 38891	.04	.001	204-209
B 38892	.03	.001	209-214
B 38893	.02	.001	214-219
B 38894	.03	.001	219-224
B 38895	.04	.001	224-229
B 38896	.02	.001	229-234
B 38897	.01	.001	234-239
B 38898	.02	.001	239-244
B 38899	.02	.001	244-249
B 38900	.02	.001	249-254
B 38901	.01	.001	254-259
B 38902	.02	.001	259-264
B 38903	.05	.001	264-269
B 38904	.01	.001	269-274
B 38905	.02	.001	274-279

SAMPLE#	Ag** OZ/T	Au** OZ/T	89-B
B 38906	.03	.001	279-284
B 38907	.08	.001	284-289
B 38908	.03	.001	289-294
B 38909	.04	.001	294-299
B 38910	.03	.001	299-304
B 38911	.03	.002	304-309
B 38912	.04	.004	309-314
B 38913	.01	.001	314-319
B 38914	.01	.001	319-324
B 38915	.01	.001	324-329
B 38916	.03	.001	329-334
B 38917	.03	.001	334-339
B 38918	.03	.001	339-342
B 38919	.02	.001	342-347.5
B 38920	.02	.001	347.5-352
B 38921	.03	.001	352-357
B 38922	.02	.001	357-362
B 38923	.03	.001	362-367
B 38924	.03	.001	367-372
B 38925	.02	.001	372-377
B 38926	.02	.001	377-380
B 38927	.03	.001	380-385
B 38928	.03	.010	385-390
B 38929	.05	.001	390-395
B 38930	.03	.001	395-400
B 38931	.03	.001	400-405
B 38932	.02	.001	405-410
B 38933	.05	.001	410-415
B 38934	.07	.001	415-420
B 38935	.04	.001	420-425
B 38936	.02	.002	425-430
B 38937	.02	.001	430-435
B 38938	.01	.001	435-440
B 38939	.02	.001	440-444
B 38940	.02	.001	444-449
B 38941	.01	.001	449-454

SAMPLE#	Ag** OZ/T	Au** OZ/T	
			89-8
B 38942	.01	.001	454- 459
B 38943	.02	.005	459- 464
B 38944	.03	.001	464- 469
B 38945	.02	.001	469- 474
B 38946	.02	.001	474- 479
B 38947	.02	.001	479-484
B 38948	.03	.001	484- 489
B 38949	.04	.001	489-494
B 38950	.02	.001	494-499
B 38951	.03	.001	499- 502
B 38952	.02	.001	502- 507
B 38953	.03	.001	507- 510
B 38954	.04	.001	510-515
B 38955	.01	.001	515-520
B 38956	.02	.001	520-525
B 38957	.02	.001	525- 530
B 38958	.03	.001	530-532
B 38959	.02	.001	532-537
B 38960	.03	.001	537-544
B 38961	.02	.001	544-549
B 38962	.02	.001	549- 554
B 38963	.03	.001	554-559
B 38964	.02	.001	559-564
B 38965	.01	.001	564- 569
B 38966	.01	.001	569-574 E.O.H.
			89-9
B 38967	.04	.001	24-29
B 38968	.03	.001	29-34
B 38969	.03	.001	34-39
B 38970	.04	.001	39-44
B 38971	.02	.001	44-47
B 38972	.03	.001	47-50
B 38973	.02	.001	50-55
B 38974	.02	.001	55-60
B 38975	.03	.001	60-65
B 38976	.01	.001	65-70
B 38977	.01	.001	70-73

SAMPLE#	Ag** OZ/T	Au** OZ/T	89-9
B 38978	.01	.001	73-75
B 38979	.02	.001	75-80
B 38980	.02	.001	80-85
B 38981	.01	.001	85-90
B 38982	.02	.001	90-95
B 38983	.04	.001	95-100
B 38984	.03	.001	100-105
B 38985	.02	.001	105-110
B 38986	.02	.001	110-115
B 38987	.03	.001	115-120
B 38988	.04	.001	120-125
B 38989	.07	.001	125-130
B 38990	.03	.001	130-135
B 38991	.06	.001	135-140
B 38992	.05	.001	140-145
B 38993	.04	.001	145-150
B 38994	.05	.001	150-156
B 38995	.02	.001	156-160
B 38996	.04	.001	160-164
B 38997	.03	.001	164-169
B 38998	.02	.001	169-174
B 38999	.01	.001	174-179
B 39000	.02	.001	179-184

APPENDIX B

DIAMOND DRILL LOGS

DIAMOND DRILL LOG

PROPERTY Howard Gold TOWNSHIP _____

DATE Oct. 4, 1989 PAGE: 1 OF 6

HOLE HOH-89-6 DIP -45 AZMIUTH 215 LOGGED BY J.A. Howard

CORE SIZE NQ TOTAL FOOTAGE 503' (153.3m) DIP TEST (YES)/NO

DIP FOOTAGE AND DEGREE 415' @ 50.3 LOCATION TEP-1

CASING LEFT IN HOLE: YES/(NO) CASING FOOTAGE 12'

DRILL TIME: START Oct 3, 89 FINISH Oct 4 1989 MECHANICAL TIME _____

MISCELLANEOUS PROBLEMS Casing and sqeezing to 302'

FOOTAGE	DESCRIPTION	ASSAY NO.	Au	Ag
0-10'	Overburden			
10-34.5	Med. to dark gray, v.f.g., thinly laminated (bedded - contains 1mm white silty beds), locally tightly folded, sometimes parallel to foliation other times cross cutting foliation ~~////~~ - foliation // - bedding. Isoclinal folding common Trace pyrite along some bedding planes / foliation Rock type - siliceous, slightly graphitic phyllite (sil. unit 3). - low schist phyllite. Foliation = 10-60°, Bedding ≈ 60° overall Occasional bandraged 1-2mm porphyroblasts parallel to bedding / foliation within 1 ft. of lower contact	10-15 38701 15-20 702 20-25 703 25-30 704 30-34.5 705 34.5-39 706 39-44 707 44-49 708	0.002 0.001 0.002 0.005 0.003 0.001 0.001 0.003	0.04 0.05 0.06 0.07 0.05 0.04 0.03 0.04
	Quartz veins 13' - 1-4cm @ 45°, minor Fe-carb, vuggy contains frags of phyllite sheared // to vein wall. Tr. py on contacts. 24.5' 1-16cm @ 35° Tr Fe carb., massive Tr py on contacts 34.5 Contact 50° 1" qtz + heavy py + min. minor shearing			

PROPERTY Armada Gold HOLE NO. D.D.H-89-6 PAGE: 2 OF 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
34.5 - 111	Limestone - Med gray, v.f.g. well bedded, slightly silty, laminated by thin white more siliceous bands (1-2 mm), locally moderately contorted. L.S. interbedded with a few very siliceous hard mod. calcareous dark gray more phyllitic beds having a tightly crenulated appearance. (calcareous siliceous phyllite - Probably same as exposed in crk.) Highly contorted narrow qtz veining common in more phyllitic sections, minor pyrrhotite smears also common in these sections Bedding = 60°± Foliation = 30-60° Quartz veins 39' 10cm @ 60° mixed with heavy graphite bands, no sulphides, no Fe-carb. 42.5 40cm @ 40° Tr pyrrh and/or sphal gash veins (3-4) near lower contact. 44-49 crenulated phyllitic section w/ Tr pyrrh. 102' 30cm @ 50° contorted qtz/phyllite/graphite zone Tr pyrrhotite smears/veinlets and 111 Contact - Gradational over 2-3' Marked by decrease in carbonate, increase in pyrrhotite, and less definition of bedding.	102-107 107-111	38709 710	0.001 0.001	0.02 0.02
111 - 118	Phyllite - Black, highly, contorted, locally brecciated, wispy qtz stringers and small boudins, very "pyritic" - 1-5mm clots of pyrrhotite, some pyrite clots, mod. graphitic. dull - no phyllitic sheen. A few cross cutting qtz veins 3-5mm Foliation - 30-70 highly contorted. No bedding 118 Contact (sharp) 80°	111-114 114-118	38711 712	0.001 0.002	0.07 0.05
118 - 180	Limestone - Same as above except more graphitic sections and more highly contorted. Locally intensely brecciated - quartz filled.				

PROPERTY Amulet Gold HOLE NO. D.D.H.-89-6 PAGE: 3 OF 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
	Quartz veins / Rx variations				
	123' 20cm @ 20° Massive, few graphite inclusions No Fe-carb.	118-123	38713	0.001	0.04
		123-128	714	0.001	0.02
	129-135 20% irregular/fractured qtz. veins No Fe-carb., No obvious sulphide, some graphite inclusions also on contacts	128-132	715	0.002	0.05
		132-135	716	0.001	0.02
		135-140	717	0.003	0.05
		140-144	718	0.003	0.05
	144-154 Very heavy quartz veining, all brecciated heavy graphite on contacts, numerous inclusions (breccia frags of L.S.) Minor pyrrhotite - mainly 2-5 mm clots. Pyrite also present	144-149	719	0.001	0.04
		149-154	38720	0.001	0.03
	154-158 Phyllitic section, Tr. dis. py. highly contorted foliation / beddings	154-158	721	0.001	0.02
		158-163	722	0.002	0.02
		163-168	723	0.001	0.01
		168-174	724	0.001	0.03
		174-177	725	0.001	0.01
		177-180	726	0.001	0.03
	158-174 Well bedded unit from L.S. w/ minor brecciation near 158' Beddings 70-75 minor py in more graphitic sections.				
	174-180 Brecciated L.S. - qtz filling, some skarn development; qtz full of carbonate.				
	180 Contact - Sharp - 70°				
180-212	Phyllite - Black, very graphitic, soft, intensely foliated/ sheared, siliceous, sooty, very blocky and/or gougy. Some fragments of quartz (broken vein Tr elongated pyrite blebs Very soft and punky 200-212	180-185	38727	0.001	0.01
		185-193.5	728	0.010	0.04
		193.5-200	729	0.003	0.05
		200-204	38730	0.006	0.05
		204-212	731	0.004	0.02
	185-193.5 15% core loss				
	193.5-200 10% core loss				
	200-204 10-15% core loss				
	204-212 50% core loss				
	212 Contact 65° sharp / sheared				

PROPERTY Armada Gold HOLE NO. O.D.H-89-6 PAGE: 4 OF 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
212 - 236	Knotted Phyllite - Dark blk, fine grained, mod. porphyroblastic (2-3mm porphyroblasts pale gray to white), mod. hard 5.5, very siliceous, mod. phyllite schcen, locally thinly laminated (1mm wht. silty beds - highly contorted) near lower contact Tr dis f.g. blebs (some rotation into foliation) of pyrrhotite w/ slight increase toward lower contact.	212-217	3B732	0.002	0.02
		217-222	733	0.020 (F.D. 100)	0.03
		222-227	734	0.001	0.01
		227-232	735	0.001	0.02
		232-236	736	0.009	0.01
	Bedding - overall 50°, Foliation - 70°± which cross cuts beddings				
	Quartz veins				
	225' 1- 3cm @ 60°, cuts fol./bed, good Fe-carb, no obvious sulphide				
	232± 1- 16 cm @ 40°, in foliation, cuts beddings Heavy Fe-Carb, no obvious sulphide				
	236' 1- 2cm @ 40° On and parallel to contact Heavy Fe carb.				
	236' Contact @ 40° sharp.				
236 - 256	Limestone - Gray, v.f.g., massive, locally poorly bedded (30°), rare narrow (2-3mm) qtz vein cutting bedding, No obvious sulphides.	236-241	3B737	0.001	0.01
238	1- 25cm qtz. vein at 50° Ball quartz, no sulphides.				
	256 Contact sharp, 30° Foliation parallel to contact in same plane but at 90° to sense of contact, mod. graphitic.				

PROPERTY Armada Gold **HOLE NO.** D.D.H.-89-6 **PAGE:** 5 **OF** 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
256-503	Knotted Phyllite Dull blk, v.f.g. siliceous, thinly laminated, crenulated (fine scale) beddings, well foliated in same plane as bedding but at ∠ angles, poorly developed fine grained (1-2mm.) flattened white porphyroblasts; Rare hairline veinlet of pyrite parallel to bedding/foliation. Mod to highly graphitic. Bedding 20-80 highly variable and locally contorted. Foliation 20-80 but again at ∠ 4 Rare quartz veinlets Tr + 1-2mm clots of pyrrhotite common. locally	256-261	38738	0.001	0.03
		261-266	739	0.001	0.04
		266-271	38740	0.002	0.03
		271-276	741	0.008	0.02
		276-281	742	0.003	0.01
		281-286	743	0.001	0.01
		286-291	744	0.001	0.01
		291-296	745	0.002	0.01
		296-301	746	0.001	0.02
		301-306	747	0.001	0.03
		306-312	748	0.001	0.01
		312-317	749	0.001	0.01
		317-320	38750	0.001	0.02
		320-325	751	0.001	0.01
		325-330	752	0.002	0.01
		330-335	753	0.009	0.01
		335-340	754	0.003	0.01
		340-345	755	0.001	0.03
		345-350	756	0.002	0.01
		350-355	757	0.001	0.01
		355-360	758	0.001	0.01
		360-365	759	0.003	0.02
		365-370	38760	0.001	0.01
		370-375	761	0.001	0.02
		375-380	762	0.001	0.02
		380-385	763	0.001	0.02
		385-390	38764	0.171	0.03
		390-395	65	0.001	0.01
		395-399	66	0.001	0.01
		399-404	38767	0.013	0.03
		404-409	768	0.005	0.01
		409-414	769	0.005	0.02
		414-419	38770	0.001	0.02
		419-424	771	0.027	0.03
		424-429	772	0.002	0.02
	Quartz Veins / Comments:				
	269- 1-2cm @ 50° mod. Fe carb, Tr py.				
	271 2-5cm @ 50°, Brecciated, phyllite frags, mod Fe carb, Tr py + pyrrh. hairline veinlets.				
	284-312 Tr + pyrrh. assoc with fine scale crenulated folds (beds) - usually < 1mm. No qtz veins				
	312-317 Mod. heavy irregular qtz vein zone, in part brecciated. Tr dusty pyrite along some fractures. Fe-carb present Foliation (50-60) very graphitic. Phyllite mod. well knotted (2-3mm porphyroblasts)				
	304-312 - 15% core loss				
	319 1-38cm qtz vein @ 50°. 40% Fe carb Tr. + dis py, partially brecciated, graphite inclusions				
	320-396 No quartz veins, fine grained porphyroblasts, bedding (contorted) defined by white thin (<1mm) silty beds. Pyrrhotite veinlets (hairline) common also rotated blebs. (Tr+). Overall bedding ± 50°. Foliation more/less parallel				
	360-364 90% core loss				
	396-398 1-60cm qtz/Fe-carb vein @ 70° Tr dis py along hairline fractures Sample includes 1 foot phyllite on hanging and footwall contacts				
	417-424 Broken/gouge zone Fault?				

PROPERTY Aimeda Gold **HOLE NO.** ODH-89-6 **PAGE:** 6 **OF** 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
430	1- 6 cm qtz-Fe carb vein @ 50° Several 5mm clots of pyrite ragged contacts	429-434	38773	0.001	0.04
		434-439	774	0.001	0.04
		439-444	775	0.001	0.02
		444-449	776	0.001	0.01
492	1- 50 cm qtz/Fe-carb vein @ 80° Minor brecciation, Blob of pyrite common on margins of phyllite fragments within qtz vein.	449-454	777	0.001	0.02
		454-459	778	0.001	0.02
		459-464	779	0.003	0.03
		464-469	38780	0.001	0.01
		469-474	781	0.001	0.04
		474-479	782	0.001	0.02
320-503	Overall very massive and hard. Essentially identical to section on road from ±35 to end of road sample. (	479-484	783	0.002	0.03
		484-489	784	0.002	0.02
		489-492	785	0.001	0.02
		492-494	786	0.001	0.010
		494-499	787	0.001	0.02
503	End of hole (Nie shift) Oct. 5/6, 1989	499-503	788	0.001	0.03

DIAMOND DRILL LOG

PROPERTY Armada Gold **TOWNSHIP**

DATE Oct. 7, 1989 **PAGE:** 1 **OF** 4

HOLE D.D.H. 89-7 **DIP** -45 **AZMIUTH** 215 **LOGGED BY** D.A. Howard

CORE SIZE NQ **TOTAL FOOTAGE** 460 **DIP TEST YES/NO**

DIP FOOTAGE AND DEGREE 40° @ 460' **LOCATION** TEP-1

CASING LEFT IN HOLE: YES/NO **CASING FOOTAGE** 32'

DRILL TIME: START Oct. 6, 89 **FINISH** Oct. 9, 1989 2:30 PM **MECHANICAL TIME**

MISCELLANEOUS PROBLEMS

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
0-32	Overburden - heavy boulders				
32					
32-182	Limestone Med to dark gray, v.f.g., crystalline, mod. silty - mod. siliceous, locally either massive or well bedded. Locally beddings highly contorted including rotation 90° to foliation. Irregular quartz vein filled breccia common. All of the quartz has a high carbonate content. Darker section due to higher graphite content. 2-5mm clots of pyrite common in more graphitic sections. Bedding - 60° except where deformed by foliation. Foliation - 20 to 60° difficult to determine				
	Quartz Veins / Comments				
49-60	Heavy quartz concentration locally brecciated Very low sulphide content. crosscuts beddins/fol.	54-59	38791	0.001	0.01
72-79	1-2% pyrite blebs, angular, cuts beddins	72-74	38792	0.001	0.02
		74-79	38793	0.601	0.01
98-102	1- Slightly brecciated qtz vein w/ graphite stylolitic bands, Tr angular clots pyrrhotite, abundant carb. Contacts 70° - graphitic / sharp	94-98	38789	0.001	0.01
		98-102	38790	0.061	0.01

PROPERTY Granada Gold **HOLE NO.** DDH-89-7 **PAGE:** 2 **OF** 4

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
	102-124 Minor narrow qtz veins @ 40-50° Very irreg. contacts, a few narrow phyllitic band containing Tr dis pyrrh.	102-107	38794	0.001	0.01
		107-112	795	0.001	0.01
		112-117	796	0.001	0.01
	114 Return lost				
	124-160 Very blocky, very minor narrow qtz veining mod. shatter texture.				
	182 Contact - Very graphitic, broken, no angle.	180-182	38797	0.001	0.01
		182-185	798	0.002	0.05
182-349	Knotted Phyllite - Dark black, dull, very graphitic, sooty, rare 2-3mm porphyroblasts aligned with foliation, well foliated, rarely bedded (thin white silty contacted bands) Tr + hairline pyrrhotite veinlets // to foliation, rare clots of pyrrhotite, some pyrite veinlets, rare qtz veining commonly contains pyrrh and/or py	185-190	799	0.001	0.06
		190-195	38800	0.001	0.03
		195-200	801	0.002	0.02
		200-205	802	0.001	0.05
		205-210	803	0.003	0.06
		210-215	804	0.002	0.08
		215-220	805	0.001	0.05
		220-225	806	0.001	0.04
		225-230	807	0.003	0.05
		230 235	808	0.001	0.04
	Foliation = 50° ± 10° Beddins where present ± 60° highly contorted.	235-238	809	0.004	0.04
		238-243	38810	0.001	0.03
	182-184 50% core recovery	243-247	811	0.001	0.08
		247-250.5	812	0.001	0.05
	Quartz Veins / Comments	250.5-255	813	0.001	0.05
		255-262	814	0.001	0.05
	240' 1- 15 cm quartz vein - broken. 0.5% dusty pyrite along fractures. 3-4% Fe-carb.	262-267	815	0.001	0.04
		267-272	816	0.001	0.05
		272-274	817	0.001	0.04
		274-284	818	0.001	0.04
	242-243 Fault zone - gouge	284-288	819	0.001	0.07
	250.5 - 1 8cm qtz/Fe-carb @ 50° 1% vein type pyrrhotite.				
	253-254 1- 50cm qtz/Fe carb vein @ 70° Several hairline pyrrhotite veins				
	255-288 No qtz veins, very graphitic, mod soft and punky.				
	255-262 10-15% core loss				
	274-284 30% core loss				
	284-288 50% core loss				

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
	284-288 Possible fault - V. soft + broken.	288-292	38820	0.002	0.04
	288 - 1-12cm qtz/Fe carb vein @ 50° Tr clot. of pyrrhotite. Very graphitic contacts.	292-297	821	0.001	0.04
		297-302	822	0.001	0.05
		302-307	823	0.001	0.05
		307-312	824	0.001	0.04
	312 - 1-12cm qtz/Fe carb vein @ 60° Very hard + dense, no sulphides. Low carb. content.	312-317	825	0.001	0.01
		317-322	826	0.001	0.01
		322-327	827	0.001	0.04
		327-331	828	0.001	0.05
		331-334	829	0.002	0.04
	315 - 349 Knotted phyllite - massive type, less graphite.	334-338	38830	0.003	0.04
		338-340.5	831	0.202	0.19
		340.5-344	832	0.009	0.06
	331 1-11cm qtz/Fe carb vein @ 40° No sulphides, 50% Fe carb, slightly brecciated, phyllite frags. Dis pyrrh in adjoining fracture veins	344-349	833	0.001	0.05
		349-354	834	0.001	0.01
		354-359	835	0.001	0.01
		359-365.5	836	0.001	0.01
		365.5-369	837	0.001	0.03
	338 - 340.5 1-80cm qtz/Fe carb vein @ 60° Tr + clot/veinlets pyrrhotite, rare cube of pyrite	369-374	838	0.001	0.04
		374-379	839	0.001	0.02
		379-384	38840	0.001	0.02
		384-389	841	0.001	0.01
		389-394	842	0.001	0.02
		394-399	843	0.001	0.02
		399-403	844	0.001	0.01
	349 Contact sharp @ 90°				
349 - 365.5	Limestone Med. to dark gray, well bedded, crystalline, minor quartz veined, only very locally brecciated near lower contact, slightly carbonaceous, mod. siliceous/silty. H=5				
	365.5 Contact, sharp @ 40° carbon gouge at contact.				
365.5 -	Knotted Phyllite - Dark dull black, v.f.g. well foliated, very graphitic, locally very soft and punky, weakly porphyroblastic porphyroblasts 1-3mm, not always present. Bedding poorly defined, where present is highly contorted. Foliation = 10-60° highly variable.				
	365.5-402 Very soft and sooty, high carbon content, abundant slickensides/graphite shears. Essed. no quartz veins except for rare clot. May in part be a fault zone.				

PROPERTY Armada Gold HOLE NO. D.D.H.-89-7 PAGE: 4 OF 4

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
		403-408	38845	0.002	0.04
403-	Sharp reduction in carbon, core more massive, porphyroblasts better defined, bedding still rare - Foliation = 50-60°, some rotation of porphyroblasts, quartz veining rare	408-413	846	0.008	0.02
		413-418	847	0.003	0.03
		418-423	848	0.004	0.01
		423-429	849	0.002	0.04
		429-434	38850	0.001	0.03
		434-437	851	0.004	0.03
418-423	Minor brecciated qtz vein + frags.				
436-437 -	True mud seam "fault" @ 45°				
437-460	Sharp increase in carbon, core intensely shattered difficult drilling. Still Knotted phyllite Not sampled. No quartz				
460	End of Hole Oct. 9, 1989 2:30PM				

DIAMOND DRILL LOG

PROPERTY Armada Gold TOWNSHIP

DATE Oct 11, 1989 PAGE: 1 OF 7

HOLE DDH 89-8 DIP -45 AZMIUTH 04 LOGGED BY D.A. Howard

CORE SIZE NQ TOTAL FOOTAGE 574 (175m) DIP TEST (YES)/NO

DIP FOOTAGE AND DEGREE 45°@ 574' LOCATION Fork 4

CASING LEFT IN HOLE: YES/(NO) CASING FOOTAGE 24'

DRILL TIME: START Oct 10 89 FINISH Oct. 13, 89 MECHANICAL TIME

MISCELLANEOUS PROBLEMS

FOOTAGE	DESCRIPTION	ASSAY NO.		Au	Ag
0-24'	Casing - Overburden probably at 21'				
24-68	Phyllite - Dark blk, very fine grained, very hard 5.5-6 locally well bedded - highly contorted gray siliceous bands - hairline to 2 mm, very wispy, well foliated, mod. graphitic, beddings/foliation commonly parallel but not always in area of contorted bedding locally quite pyritic - veins parallel to foliation up to 3mm plus numerous wispy clots, rare pyrrhotite Rare narrow quartz veins and/or clumps Foliation 60-85 - foliation surfaces commonly graphitic Occasional porphyroblast (Knott) near contact Pyrite < 1%, Core very massive. (TR$_S$)	24-29	38852	0.002	0.09
		29-34	853	0.008	0.04
		34-39	854	0.010	0.08
		39-44	855	0.002	0.05
		44-49	856	0.001	0.04
		49-54	857	0.005	0.06
		54-59	858	0.001	0.06
		59-64	859	0.001	0.06
		64-68	38860	0.015	0.05
	Contact - sharp @ 60° very graphitic, narrow // qtz vein core intensely fractured and broken above contact. Possible fault zone 2' wide.				

PROPERTY Almada Gold HOLE NO. D.D.H. 89-8 PAGE: 2 OF 7

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
68 - 134	Knotted Phyllite - Dark black, v.f.g., very well foliated, poorly bedded (rare highly contorted light gray discontinous beds - hairline to 2mm) porphyroblastic. Porphyroblasts have been incorporated into the foliation and are elongated, sometimes rotated. A combination of porphyroblasts, contorted beddings and foliation sometimes gives the rock a mottled appearance	68-73	38861	0.001	0.02
		73-78	862	0.001	0.07
		78-83	863	0.001	0.01
		83-88	864	0.001	0.03
		88-93	865	0.001	0.01
		93-98	866	0.001	0.02
		98-103	867	0.001	0.02
		103-106	868	0.003	0.02
		106-109	869	0.001	0.02
		109-112	38870	0.001	0.02
		112-116	871	0.001	0.04
		116-121	872	0.001	0.03
		121-126	873	0.001	0.04
		126-131	874	0.001	0.05
		131-134	875	0.001	0.02
	0.5 - 1% pyrite - Occurs as wispy veinlets along foliation planes and/or beddings. Stands out in diamond sawed core.				
	Quartz veining not to common at least in top part of section.				
	Foliation - ± 70° commonly fol. planes very graphitic - high schoen type.				
	Quartz Veins / Comments				
	73' - 1 - 8cm qtz / Fe-carb vein @ 70° contains a couple of 5mm ± clots of pyrrhotite.				
	73-109 No quartz veins of note, A very massive section.				
	109-116 Quartz vein zone contains 16 veins @ 35° ± some contorted and/or folded, locally either cross cutting or // to foliation. Fe-carb common at contacts. Minor pyrite clots in a few of the veins				
	112-113 - 5 - 3cm veins surrounded by pale green to gray alteration halo - bleached zone. Sulphides where present occur at margins of qtz vein and in adjoining wall rock.				
	116-134 No quartz veins of note.				
	134 Contact - @ 80° Very sharp				

PROPERTY Armada Gold HOLE NO. D.D.H.-89-E PAGE: 3 OF 7

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
134-319	Phyllite - Dark blk, very fine grained, very siliceous and hard (H=6), dense, locally well bedded, quite pyritic. Phyllite interbedded with light gray/green v.f.g. silty beds of sericite phyllite (locally have a silvery sheen)	134-139	38876	0.001	0.02
		139-144	877	0.001	0.04
		144-149	878	0.001	0.03
		149-154	879	0.001	0.02
		154-159	38880	0.001	0.02
		159-164	881	0.001	0.03
		164-169	882	0.001	0.03
		169-174	883	0.001	0.03
	Bedding in blk phyllite locally very contorted but in light phyllite bedding is essentially parallel to foliation.				
	Pyrite occurs as both clots and hairline veins parallel to foliation in blk phyllite and in addition in the light phyllite it is disseminated. Pyrite content 3.5-1%. Local. 2-3%.				
	Bedding determined by contacts and bandings in light phyllite - 70-80°				
	Foliation - 60-80				
	Light phyllite contains a higher percentage of quartz veins. Quartz veins do not appear to contain Fe-carb but do contain minor patches of fuchsite - usually with pyrite and sericite.				
	Light phyllite identical that exposed at base of water falls on No. 1 cut. ie. Unit 3				
	Quartz Veins / Comments				
	155' - 1- 3cm qtz vein @ 80° in light phyllite				
	157' 1-12cm qtz vein @ 70° - In light phyllite bed 154-160 contains minor fuchsite				
	153 First occurrence of light phyllite				
	165-166 Qtz vein/frag zone in light phyllite				
	171-172 Contorted qtz vein/breccia zone in light phyllite				
	173-176 Light phyllite with 15% irregular qtz veining ± // to fol./bedding - 70° 1-2% dis pyrite				
	178-182 Light phyllite - same as 173-176 separated by blk phy band containing 1%+ hairline to 1mm pyrite veins // to foliation				

PROPERTY Armada Gold HOLE NO. D.D.H.-89-8 PAGE: 4 OF 7

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
183-195	Light phyllite with numerous narrow (.5-2cm) qtz veins ± // to bedding 70° + 2-3% dis + hairline pyrite veins // to beddins in phyllite	174-179	38884	0.001	0.04
		179-184	885	0.001	0.04
202-203+	1- 40cm brecciated (phyllite frags) qtz vein @ 70° enclosed in blk phyllite. 1-2% Fe carb frags with pyrite matrix	184-189	886	0.001	0.02
		189-194	887	0.001	0.03
		194-198	888	0.001	0.04
		198-201	889	0.001	0.03
195-207	Blk phyllite 5% narrow qtz vein except for the one at 202-203+	201-204	38990	0.001	0.03
		204-209	891	0.001	0.04
		209-214	892	0.001	0.03
207-209	Light phyllite - qtz flooded, some brecciation 1% pyrite and/or pyrrhotite as fracture filled veins	214-219	893	0.001	0.02
		219-224	894	0.001	0.03
		224-229	895	0.001	0.04
		229-234	896	0.001	0.02
209-294	Blk phyllite with a few narrow 2-20mm med gray silty beds. Essentially the same blk phyllite as above except it contains a much higher percentage of narrow qtz veins 5mm - 15cm. Total vein content ± 15% Contact variable - conformable to irreg./crosscut Most contain minor Fe carb (?) frags. Sulphide present but low percent. Pyrite veinlets in phyllite ± 1-2% mostly // to foliation - 70-80° also // to bedding where present. Most beddins to contorted to define.	234-239	897	0.001	0.01
		239-244	898	0.001	0.02
		244-249	899	0.001	0.02
		249-254	38900	0.001	0.02
		254-259	901	0.001	0.01
		259-264	902	0.001	0.02
		264-269	903	0.001	0.05
		269-274	904	0.001	0.01
		274-279	905	0.001	0.02
		279-284	906	0.001	0.03
		284-289	907	0.001	0.08
		289-294	908	0.001	0.03
		294-299	909	0.001	0.04
294-314	Mainly light phyllite with a few beds of blk phyllite. 15%± qtz veins and/or qtz flooding. Cooking foln. parallel at ±70° Tr Fe carb in qtz sections Pyrite content for section 1-2% dis sulfs vein + numerous irreg. clots. Light phyllite Not graphitic	299-304	38910	0.001	0.03
		304-309	911	0.002	0.03
		309-314	912	0.004	0.04
314-319	Blk phyllite with a few med. gray silty beds. 2-3% pyrite - hairline veins // to foliation (70°), a few 5-10mm qtz veins but fewer than blk phyllite in section 209 to 294 Rare porphyroblasts	314-319	913	0.001	0.01
319	Contact - Sharp but questionable at 80°				

Cont.

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
	319 (Cont.) Contact marked by first appearance of large 5mm elongated porphyroblasts. There is a 20 cm. zone of large knots right at the contact but then the size and percentage rapidly drops off. Below 319 the knots are 1-2mm and not always present				
		319-324	38914	0.001	0.01
		324-329	915	0.001	0.01
		329-334	916	0.001	0.03
		334-339	917	0.001	0.03
		339-342	918	0.001	0.03
319-342	Knotted Phyllite - Dark black with 15-20% med gray silty bands, very siliceous and hard H= 5.5-6, weakly porphyroblastic except next to upper contact (see above). Much less knotted compared to section in top of hole. Top portion of section contains only a few qtz veins. Quartz veins irregular and discontinous as a rule. 1% + hairline pyrite + pyrrhotite veins in phyllite small clots of pyrrhotite common in quartz veins. All of the qtz veins contain minor Fe carb frags. Phyllite looks almost like above unknotted variety. (Probably all part of Unit 4) Quite graphitic - particularly on foliation planes - 70° - Bedding ± // except where contorted. Quartz Veins / Comments				
	339 (-) 1 - 12cm qtz/Fe carb vein @ 60+70° Tr clots of pyrite and/or pyrrhotite				
	342 Contact sharp @ 50° Marked by a 1 metre qtz vein containing wispy frags of light phyllite - See below				

PROPERTY Armada Gold HOLE NO. D.D.H.-89-8 PAGE: 6 OF 7

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
342-380	Phyllite - Light greenish gray, sometimes silvery, v.f.g., locally well bedded, very siliceous and hard (H=5.5-6), quite pyritic, locally well foliated, normally // to bedding. Appears to be same rock type as Light phyllite further up the hole. Unit is quite quartz rich - approx 40% quartz vein and/or quartz flooded zones. Quartz veins are usually Fe-carb poor, contain sparse pyrite or pyrrhotite, both of which are usually associated with wispy inclusions of light phyllite. Unit was probably originally a dirty siltst. high in quartz. Pyrite content in phyllite 1-3% dis. plus occasional hairline veinlet. Bedding = 70°± Foliation 50-85°	342-347.5	38919	0.001	0.02
		347.5-352	38920	0.001	0.02
		352-357	921	0.001	0.03
		357-362	922	0.001	0.02
		362-367	923	0.001	0.03
		367-372	924	0.001	0.03
		372-377	925	0.001	0.02
		377-380	926	0.001	0.02
	Quartz Veins (Large) / Comments				
	342-347.5 Quartz vein with numerous inclusions of light phyllite upper contact ± 50, lower contact 85° // to foliation - Rare sulphides.				
	348 - 1-10cm qtz vein @ 85°				
	349 - 1-20 cm qtz/Fe carb/phyl. frag vein @ ± 80 brecciated				
	359 - 1-50cm qtz/Fe carb/phyl. frag vein @ 70° sharp.				
	380 Contact grad. over a few cm @ 80° parallel to foliation/bedding. Defined by gradual darkening				

PROPERTY Armide Gold **HOLE NO.** D.D.H.-89-8 **PAGE:** 7 **OF** 7

FOOTAGE	DESCRIPTION	ASSAY NO.	ASSAY	
380 – 574	Knotted (Sparely) Phyllite (?) – Dark blk with wispy med gray bed, very fine grained, locally well bedded, well foliated, commonly parallel to bedding, sparsely porphyroblastic. Porphyroblasts are very fine grained (<1mm) not always present, some may be larger qtz grains and not porphyroblasts, not alway elongated, very siliceous and hard H=5.5 Quite graphitic on foliation planes. 1 – 2% finely dis/elongated pyrrhotite grains along foliation planes. Very few qtz veins except for the one 2-5mm vein. Rock breaks in poker chips, has a white speckled appearance, also blk & white banded. Foliation – 20-80° locally quite deformed & steep to core axis Bedding 20-40 where defined by white blk bandings.	380-385	38927	0.001	0.03
		385-390	928	0.010	0.03
		390-395	929	0.001	0.05
		395-400	38930	0.001	0.03
		400-405	931	0.001	0.03
		405-410	932	0.001	0.02
		410-415	933	0.001	0.05
		415-420	934	0.001	0.07
		420-425	935	0.001	0.04
		425-430	936	0.002	0.02
		430-435	937	0.001	0.02
		435-440	938	0.001	0.01
		440-444	939	0.001	0.02
		444-449	38940	0.001	0.02
		449-454	941	0.001	0.01
		454-459	942	0.001	0.01
		459-464	943	0.005	0.02
		464-469	944	0.001	0.03
		469-474	945	0.001	0.02
		474-479	946	0.001	0.02
		479-484	947	0.001	0.02
		484-489	948	0.001	0.03
		489-494	949	0.001	0.04
		494-499	38950	0.001	0.02
		499-502	951	0.001	0.03
		502-507	952	0.001	0.02
		507-510	953	0.001	0.03
		510-515	954	0.001	0.04
		515-520	955	0.001	0.01
		520-525	956	0.001	0.02
		525-530	957	0.001	0.02
		530-532	958	0.001	0.03
		532-537	959	0.001	0.02
		537-544	38960	0.001	0.03
		544-549	961	0.001	0.02
		549-554	962	0.001	0.02
		554-559	963	0.001	0.03
		559-564	964	0.001	0.02
		564-569	965	0.001	0.01
		569-574	966	0.001	0.01
	Quartz Veins / Comments				
	508-509 – 1-17cm qtz/Fe carb vein @ ±70° irreg. contact. Footwall half of vein contains 5-6% pyrite/pyrrhotite in a fracture vein. Footwall wall rock contains 3-4% smeared pyrite along foliation for approx 30 cm.				
	528-548 Foliation changes to 0° – ie tight deformation assoc. with quartz vein 532-537 Fol/bedding above and below 40-70°				
	532-537 Mixed qtz/phyllite vein @ 20° T. cont., 40° L. cont., Numerous inclusions (wispy) of phyllite. 1-2% wispy pyrrh/py veinlets as fracture fillings. 80% qtz., Very graphitic at contacts and included frag/inclusions				
E.O.H. 574	537-544 – 40% core loss – graphitic zone on lower cont. Minor qtz veins at 552, 561 + 573 w/ pyrrh + Fe carb				

DIAMOND DRILL LOG

PROPERTY Armada Gold TOWNSHIP _____

DATE Oct 17, 1989 PAGE: 1 OF 6

HOLE D.D.H. 89-9 DIP -45 AZMIUTH 050 LOGGED BY D.A. Howard

CORE SIZE NQ TOTAL FOOTAGE 484 DIP TEST (YES)/NO

DIP FOOTAGE AND DEGREE 42°@ 484 LOCATION Forks 4

CASING LEFT IN HOLE: YES/(NO) CASING FOOTAGE 24

DRILL TIME: START Oct. 13, 89 FINISH Oct. 15, 89 MECHANICAL TIME _____

MISCELLANEOUS PROBLEMS _____

FOOTAGE	DESCRIPTION	ASSAY NO.	ASSAY	
0-21	Overburden 21			
21-391	Phyllite (locally Knotted Phyllite) - Blk to blk and gray banded; very siliceous (H= 5.5-6.5); harder varieties are thinly banded, blk, v.f.g; both laminated and contorted bandings present. Mod. graphitic - high schorn type localized on foliation planes. Contains narrow (10-60 cm) bands of silver gray sericite phyllite with higher pyrrh. content (2-3%). Also sericite phyllite softer than banded phyllite or laminated type. Quartz veining low to moderate, plus mod. number of irregular clots or narrow irreg. veinlets. Fe-carb common, quartz is grayish type vs. white bull qtz. Most contain 1-2% pyrrhotite filled fracture veins or clots. Minor py also present. Locally narrow sections are porphyroblastic - see notes below, Porphyroblasts are 2-5mm but sparse, mostly elongated, locally rotated. Most common in more deformed sections of core. Deformation in several directions evidenced by kinking of foliation in several directions on plane of foliation Bedding = ± 70° - contacts of sericite phyllite Foliation = 50-80°			

PROPERTY Armada Gold **HOLE NO.** D.D.H-89-9 **PAGE:** 2 **OF** 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
	Quartz Veins / Comments	24-29	38967	0.001	0.04
		29-34	968	0.001	0.03
21-24	Quartz vein(s) rubble - mod. oxidation, vuggy Fe carb present	34-39	969	0.001	0.03
		39-44	38970	0.001	0.04
		44-47	971	0.001	0.02
30.5	1- 8cm bull qtz vein with 1-2% pyrite fracture veinlets. No pyrrhotite	47-50	972	0.001	0.03
		50-55	973	0.001	0.02
43.5-45.5	Sericite phyllite band, 1-2% py smeared on foliation planes (70°). Blk phy. - highly deformed either side.	55-60	974	0.001	0.02
		60-65	975	0.001	0.03
		65-70	976	0.001	0.01
50-73	Knotted phyllite section porphyroblasts 2-5mm, elongated locally rotated, blk and gray bandings in phyllite common. Mod. deformation. Section contains bands of sericite phyllite (56-58 + 62-63)	70-73	977	0.001	0.01
		73-75	978	0.001	0.01
		75-80	979	0.001	0.02
		80-85	38980	0.001	0.02
		85-90	981	0.001	0.01
		90-95	982	0.001	0.02
63'	1- 12cm qtz/Fe carb/phy vein @ 60° 1-2% hairline py/pyrrh. veinlets. Seperated from above sericite band by narrow band of blk phyllite. Qtz milky to gray colour.	95-100	983	0.001	0.04
		100-105	984	0.001	0.03
		105-110	985	0.001	0.02
		110-115	986	0.001	0.02
		115-120	987	0.001	0.03
		120-125	988	0.001	0.04
		125-130	989	0.001	0.07
82'	1- 15cm qtz/Fecarb/phy vein @ 60° Tr pyrrh.				
83-91	10% ± irreg. narrow qtz/Fe carb veins or clots in part breccia frags, high graphite content in wall rock, Tr pyrrh.				
93-94 + 95-96	Deformed sericite phyllite bands @ 65° 2-3% smeared py on fol. plane				
113	1- 10cm qtz/Fe carb/phy vein @ 40° 1-2% pyrrh + Tr py concentrated at lower contact (over 1cm) Resembles bull quartz.				
127	1- 15cm qtz/carb vein @ 70° Tr pyrrh. Foot + hanging wall contain 3-4% vein type py or pyrrh. ± 30cm from contact.				
120-123	Sericite phyllite band @ 50°, phyllite highly deformed, fol. // to core axis, 2-3% smeared pyrite on fol. planes.				
114-116	Knotted phyllite				

PROPERTY Armada Gold HOLE NO. D.D.H.-89-9 PAGE: 3 OF 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
130-135	A few well formed porphyro blasts in a blk well laminated var. phyllite w couple of 1cm deformed qtz veins. ±2% py along fol.	130-135	38990	0.001	0.03
		135-140	991	0.001	0.06
		140-145	992	0.001	0.05
		145-150	993	0.001	0.04
130-	Pyrite dominant sulphide except in some quartz veins.	150-156	994	0.001	0.05
		156-160	995	0.001	0.02
		160-164	996	0.001	0.04
156-160	qtz/breccia phyllite/graphite zone 2-3% clotty py veinlets. Pyrrhotite veinlets prominent in qtz vein sections. 20-25% quartz	164-169	997	0.001	0.03
		169-174	998	0.001	0.02
		174-179	999	0.001	0.01
		179-184	39900	0.001	0.02
164-169	5% qtz veins 0.5-2cm w/ pyrrh. partially cross cutting.	184-189	38651	0.001	0.03
		189-194	652	0.001	0.03
		194-199	653	0.001	0.01
173-174	1-30cm qtz/Fe carb/phy vein @ 50° // to fol/bed. Tr clot pyrrh. Possible tr chl.	199-204	654	0.001	0.03
		204-209	655	0.001	0.04
		209-214	656	0.001	0.04
192-195	Sericite phyllite band @ 70° 3-4% dusty pyrrh. on fol. planes	214-219	657	0.001	0.08
		219-224	658	0.001	0.04
		224-229	659	0.001	0.03
201-204	Sericite phyllite band @ 60° 1-2% pyrrh on fol. plane + Tr py	229-234	38660	0.001	0.03
		234-239	661	0.001	0.02
		239-244	662	0.001	0.04
205-206	Sericite phyllite band @ 70° 1-2% pyrrh.	244-249	663	0.001	0.04
		249-254	664	0.001	0.04
220-222	Sericite phyllite band @ 50° highly deformed Tr + dusty pyrrh on fol.	254-259	665	0.001	0.03
228-248	Questionable semi angular f.g. (±1mm) porphyro blasts. - Same type as bottom of 89-8. Maybe a knotted phyllite.				
259-319	Mainly gray to greenish gray sericite phyllite with narrow sections of blk & white banded phyllite, locally quite contorted. Numerous qtz/carb veins/breccia zones particularly in sericite phyllite. Qtz floodings also common. Sericite phyllite well foliated/bedded (±70°) Quite pyritic 2-4% py Cross-cutting pyrite vein present up to 4mm wide. Section 5-10% quartz veins				

Cont.

PROPERTY Smoke Gold HOLE NO. D.D.H.-89-9 PAGE: 4 OF 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
		259- 264	38666	0.001	0.02
282	1- 20 cm qtz/carb/chl(?) vein @ 70° 1-2% py +/or pyrrh hairline veinlets along fractures plus a few clots of pyrrh	264-269	667	0.001	0.03
		269-274	668	0.001	0.05
		274-279	669	0.001	0.04
		279-283	38670	0.001	0.05
287- 292	Qtz/carb vein with wispy inclusions of sericite phyllite, Vein looks shattered 3-4% pyrite and pyrrh veinlets and fracture fillings. Chlorite prob. present. Much of the shattered quartz is light gray. Top contact 30° in contact with graphitic blk phyllite. Lower contact 60° in contact with sericite phyllite contact very graphitic.	283-287	671	0.001	0.03
		287-292	672	0.001	0.02
		292-297	673	0.001	0.03
		297-302	674	0.001	0.03
		302-307	675	0.001	0.06
		307-312	676	0.001	0.06
		312-316	677	0.001	0.07
		316-319	678	0.001	0.05
		319-324	679	0.001	0.02
		324-329	38680	0.001	0.03
299	1- 18 cm qtz/carb vein @ 50° 1-2% pyrrh fracture filled veinlets, loose frags of carb.	329-334	681	0.001	0.01
		334-339	682	0.001	0.02
		339-344	683	0.001	0.02
		344-349	684	0.001	0.02
319- 391	Blk + white banded phyllite (1-20 mm bands) with rare 3-4mm porphyroblast. Quartz veining more abundant than in previous blk phyllite. Main sulphide pyrrhotite but py also present. v.f.g knotts (?) also abundant (some angular type)	349-354	685	0.001	0.01
		354-359	686	0.001	0.01
		359-364	687	0.001	0.02
		364-369	688	0.001	0.02
		369-374	689	0.001	0.03
		374-379	38690	0.001	0.01
		379-384	38691	0.001	0.02
324	1- 8cm qtz/Fe carb vein @ 50° 1-2% pyrrh.	384-389	692	0.001	0.01
		389-391	693	0.001	0.01
329-331	Well knotted section				
346-347+	1- 33 cm white qtz/Tr carb vein @ ± 80° Tr cloth of pyrrh. no py.				
358-	1- 20cm qtz vein @ 75° no obvious carb, Tr pyrrh near contacts				
360	1-16cm qtz/Fe carb/phy vein @ 45° 1% py/pyrrh fracture fillings				
365	1-15cm qtz/Fe carb vein @ 70° Tr py/pyrrh.				
368-369	Qtz/Fe carb vein zone @ irreg/breccia contacts ± 50% quartz Dusty pyrite on some fractures				
383	1- 12cm qtz/carb/chl or sericite vein @ 65° Fractures filled with hairline chl/sericite ± pyrrh. Same colour as sericite phyllite.				

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
	391 Contact - Quartz filled breccia zone, angular (390-391) banded phyllite fragments. Contacts @ 70-80°, very irregular. Finely dis py/pyrrh in frags only Fault Zone				
391-439	Knotted Phyllite (Typical - coarse porphyro blasts) Dark blk, very siliceous, well foliated, mod graphitic, high schcen on foliation planes, coarsely porphyroblastic, 3-5mm elongated locally rotated porphyroblasts, 10-15% blasts. No quartz veining except near bottom of section (411-439) Sulphide content low in top massive part of section. Both py + pyrrh present as wispy veinlets // to foliation. Lower section contains 0.5-1% py + minor pyrrh. Quartz veins where present contain Tr + py or pyrrh clots or fracture fillings. Lower part of section more broken, more graphitic and softer. Foliation = ±60°	391-396	38694	0.001	0.01
		396-401	695	0.001	0.02
		401-406	696	0.001	0.01
		406-411	697	0.001	0.01
		411-416	698	0.001	0.02
		416-421	699	0.001	0.01
		421-426	38700	0.001	0.01
		426-431	27801	0.001	0.02
		431-434	802	0.001	0.12
		434-439	803	0.01	0.01
	Quartz Veins / Comments				
	428-429+ 1- 38cm white qtz vein @ 50° Minor Fe carb near contacts, wispy inclusions of graphite/phyllite on some fractures Tr dis pyrrh. Contacts very graphitic				
	432 1- 7cm white qtz vein @ 70° Minor Fe-carb near contacts. Tr pyrrh along some fractures				
	433-439 Several narrow (1-2cm) qtz veins // to foliation				
	439 Contact Gradational several feet either side of 439. Marked by sharp decrease in size and number of porphyroblasts, increase in graphite, decrease in hardness and competancy of core. Below 439 core is extremely blocky.				

PROPERTY Armada Gold HOLE NO. D.D.H.-89-9 PAGE: 6 OF 6

FOOTAGE	DESCRIPTION	ASSAY NO.		ASSAY Au	ASSAY Ag
439 - 484	Banded Phyllite Blk and white banded, v.f.g., mod siliceous and hard (5-5.5) thin to mod. laminated, locally very contorted laminations very graphitic, well foliated (60-75°) soft high schoen graphite on all fol. planes, Beddng where present (white silty bands) parallel to foliation. Locally v. finely porphyroblastic (< 1mm porphyroblasts - some angular) Pyrite / pyrrhotite content 0.5 - 1% both hairline veinlets and disseminated. Minor quartz veining - most contorted discontinous type, a couple of 10cm+ types. Very blocky 439 - 459 - Some core loss ± 10-15% This section similar to section above Typical K.F.	439-444	27804	0.001	0.04
		444-449	805	0.001	0.03
		449-454	806	0.001	0.04
		454-459	807	0.001	0.03
		459-464	808	0.001	0.06
		464-469	809	0.001	0.05
		469-474	810	0.001	0.03
		474-479	811	0.001	0.04
		479-484	812	0.001	0.03
	Quartz Veins / Comments				
	444 1 - 8 cm white qtz vein @ 70° Tr py veining No carb				
	447 1 - 20cm ± white qtz vein - broken No sulphides				
	455 1 - 15cm ± white qtz vein - broken 4-5% dusty very pale yellow pyrite on fractures - Palest py observed to date.				
	484 End of Hole				

LEGEND

MIDDLE - LATE TRIASSIC

QUESNEL RIVER GROUP

TRa (Black Phyllites)

TRa_5 Medium to dark gray to blue black, siliceous, very fine grained, locally very graphitic and/or pyritic, locally very well laminated (alternating light narrow (1-2 mm) silty beds and dark phyllite), locally very tightly foliated phyllite with locally interbedded gray micaceous siltstone.

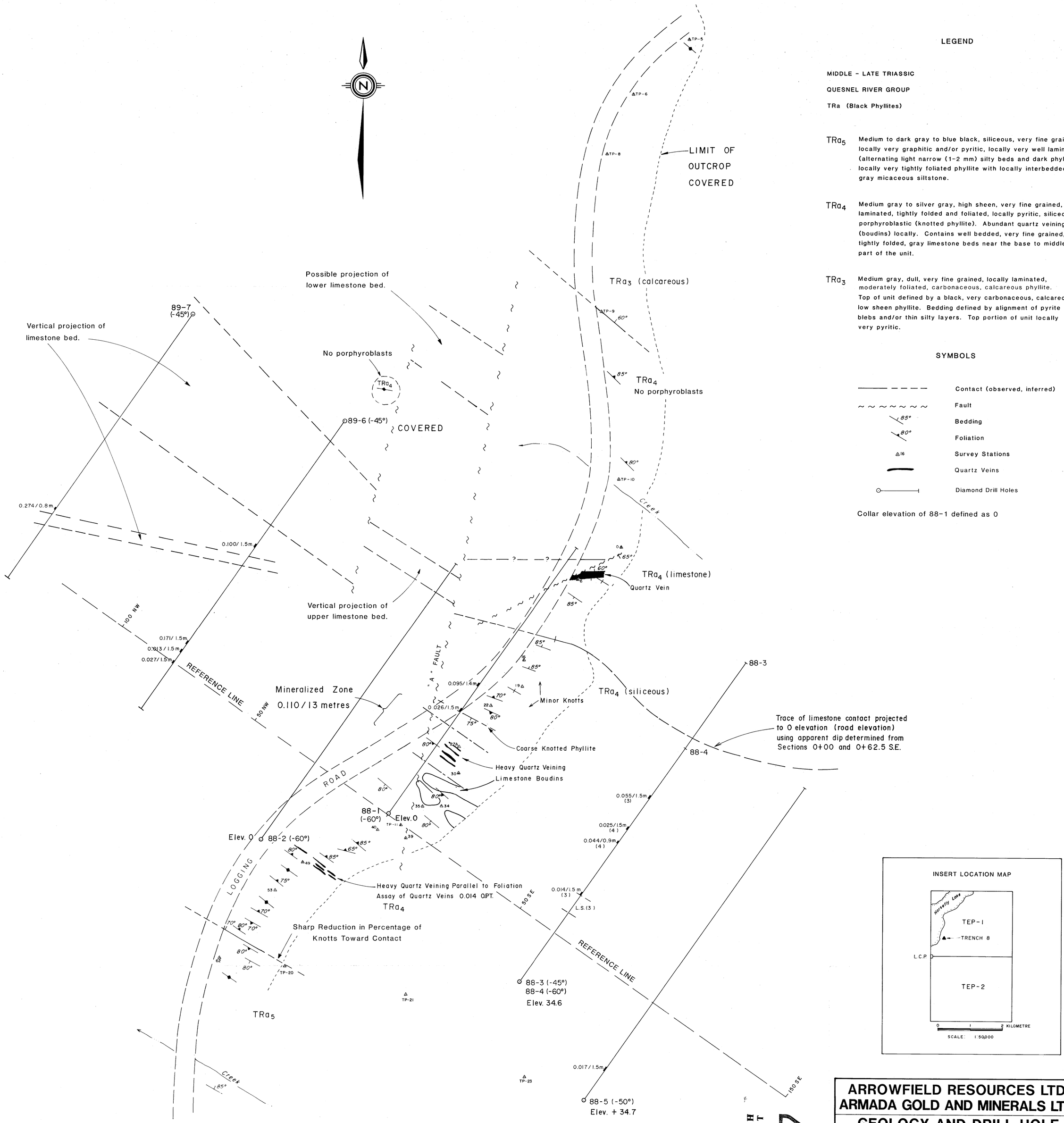
TRa_4 Medium gray to silver gray, high sheen, very fine grained, well laminated, tightly folded and foliated, locally pyritic, siliceous, porphyroblastic (knotted phyllite). Abundant quartz veining (boudins) locally. Contains well bedded, very fine grained, tightly folded, gray limestone beds near the base to middle part of the unit.

TRa_3 Medium gray, dull, very fine grained, locally laminated, moderately foliated, carbonaceous, calcareous phyllite. Top of unit defined by a black, very carbonaceous, calcareous low sheen phyllite. Bedding defined by alignment of pyrite blebs and/or thin silty layers. Top portion of unit locally very pyritic.

SYMBOLS

- Contact (observed, inferred)
- Fault
- 85° Bedding
- 80° Foliation
- Δ16 Survey Stations
- Quartz Veins
- Diamond Drill Holes

Collar elevation of 88-1 defined as 0



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
DAVID A. HOWARD

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,197

ARROWFIELD RESOURCES LTD.
ARMADA GOLD AND MINERALS LTD.

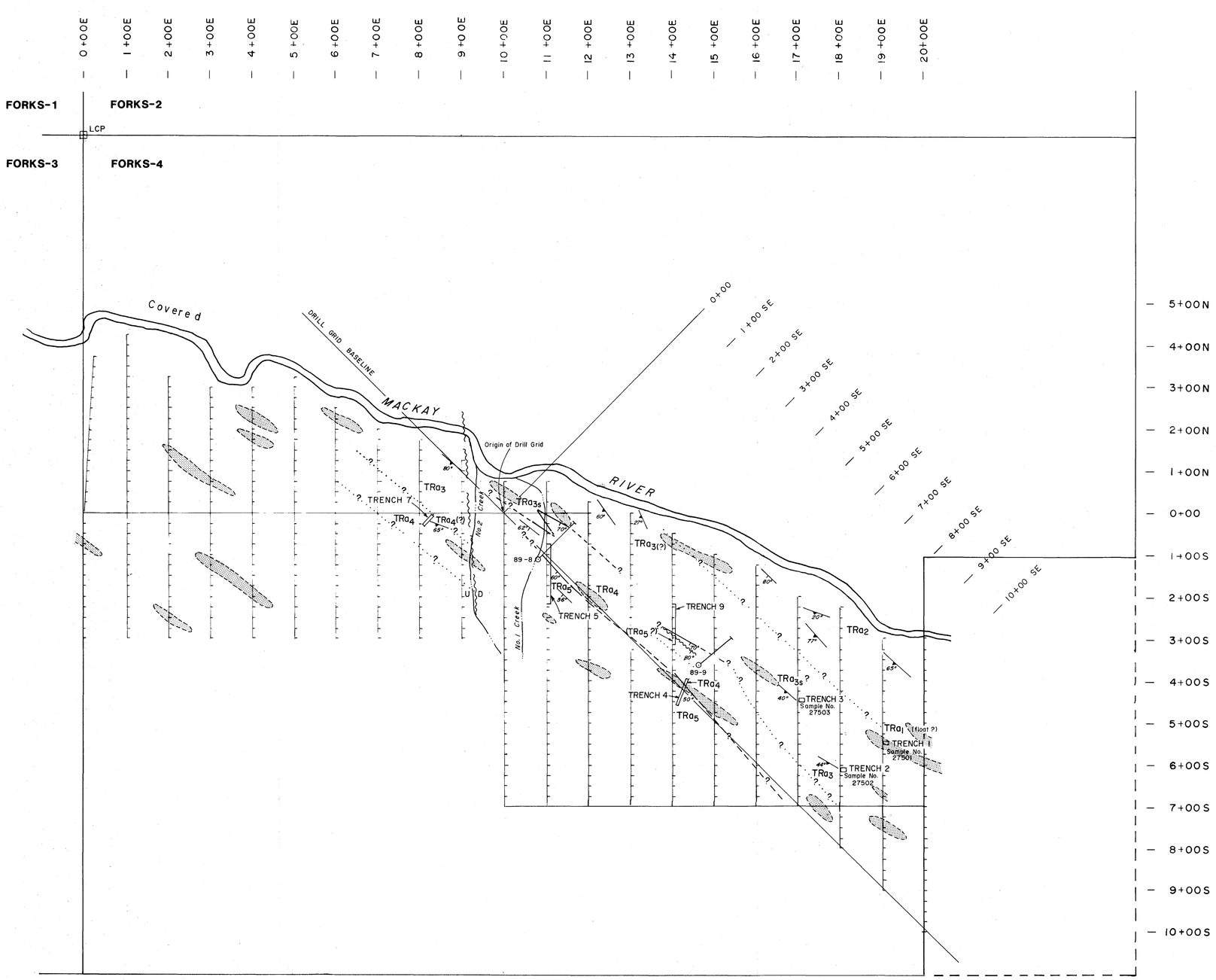
GEOLOGY AND DRILL HOLE LOCATION MAP TRENCH 8 AREA TEP-1 MINERAL CLAIM

Cariboo Mining Division, MacKay River Area, British Columbia, NTS 93A/7W

METRES
0 25 50

GEOLOGY BY: D.A. Howard, M.Sc., P.Eng.	DATE: December, 1989
SCALE: 1:500	FIGURE No.: 10

D.D.H. GEOMANAGEMENT LTD.



LEGEND

Soil geochemical Gold values in ppb

Contour greater than 50 ppb Gold (1987 analysis)

Sample no. 27501 - See Appendix A for analysis

For Geology Legend See Figure 9

SYMBOLS

Contact (observed, covered, inferred)

Fault

Bedding

Foliation

Trench

Diamond Drill Holes

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GEOLOGY AND TRENCH LOCATION MAP OF GRID 1

FORKS 4 MINERAL CLAIM

Cariboo Mining Division, MacKay River Area,
British Columbia, NTS 93A/7W

METRES
0 100 200 300 400 500 Metres

GEOLOGY BY: D.A.Howard, M.Sc.,P.Eng.	DATE: December, 1989
SCALE: 1 : 5000	FIGURE NO. 11

DDH GEOMANAGEMENT LTD.

LEGEND

In. (Intrusive rocks, age unknown)

Dark gray to greenish gray, fine grained, inequigranular hornblende/augite, locally porphyritic diorite. Commonly contains disseminated medium grained pyrrhotite.

MIDDLE - LATE TRIASSIC

Quesnel River Group

TRb (Tuff, Meta-siltstone, Slates)
Gray to pale green very fine grained siliceous tuffs interbedded with dull dark gray very fine grained siliceous blocky meta-siltstone and/or slates.

TRa (Black Phyllites)

TRa_6 Medium gray to black, very fine grained, siliceous, blocky, poorly foliated, rusty weathering phyllite. Horsefly Lake section mainly gray to pale green very fine grained silt-clay tuffs.

TRa_5 Medium to dark gray to blue black, siliceous, very fine grained, locally very graphitic and/or pyritic, locally very well laminated (alternating light narrow (1-2 mm) silty beds and dark phyllite), locally very tightly foliated phyllite with locally interbedded gray micaceous siltstone.

TRa_4 Medium gray to silver gray, high sheen, very fine grained, well laminated, tightly folded and foliated, locally pyritic, siliceous, porphyroblastic (knotted phyllite. Abundant quartz veining (boudinal locally). Contains a few narrow (1 metre) well bedded, very fine grained, tightly folded, gray limestone beds near the base to middle part of the unit.

TRa_3 Medium gray, dull, very fine grained, locally laminated, moderately foliated, carbonaceous, calcareous phyllite. Top of unit defined by a black, very carbonaceous, calcareous low sheen phyllite. Bedding defined by alignment of pyrite blebs and/or thin silty layers. Top portion of unit locally very pyritic.

TRa_2 Dark gray to silver gray, moderate to high sheen, very fine grained, siliceous, locally pyritic, locally poorly laminated, well developed cleavage (foliation), locally graphitic phyllite. Bedding difficult to define.

TRa_1 Light tan to rust colour weathering, fine to medium grained, banded, locally folded muscovite - quartz schist or micaceous quartzite. Banding defined by varying muscovite content in the various bands.

MISSISSIPPIAN - EARLY PERMIAN (?)

Pca (Crooked Amphibolite)
Pale green to gray green, very fine to fine grained, banded, tightly folded biotite-chlorite-quartz schist. Banding consists of 2 mm to 10 mm quartzite or quartz/carbonate bands alternating with variable width schist layers.

HADRYNIAN AND YOUNGER

SN (?) (Snowshoe Group)
Light gray to tan, fine to coarse grained, well foliated, quartz-muscovite (biotite) schist containing flattened garnets.

SYMBOLS

- Contact (Observed, inferred)
- Fault
- Thrust Fault
- Bedding
- Foliation
- Silt Sample Location

SAMPLE NO.	Au ppb -20 Mesh	Au ppb -80 Mesh
1	1	
2	1	
3	1	
4	1	
5	23	
6	1	2970
7	102	98
8	2	2820
9	1	
10	1	
11	1	
12	17	
13	1	
14	1	
15	1	
16	1	
17	1	
18	2	
19	2	
20	1	
21	1	
22	1	
23	1	
24	1	
25	1	
26	2	
27	1	
28	1	
29	1	
30	1	

NOTE: Soil sample value for Grid 2 shown when above 3 ppb Gold.

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Geology, Stream Geochemical Map of the Forks 1 - 4, AR 1 - 2, Tep 1 - 3 Mineral Claims

Cariboo Mining Division, MacKay River Area, British Columbia, NTS 93A 7E & W

SCALE: 1:10,000

0 500 1000 Metres

Geology by: D.A. Howard, M. Sc., P. Eng.	Date: Feb., 1988
Revision: January, 1989	Figure: 9

D.D.H. GEOMANAGEMENT LTD.

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19,497