STRUCTURAL GEOLOGICAL REPORT
AU 1-12 CLAIMS
OMINECA MINING DIVISION

GERMANSEN RIVER - MANSON RIVER GOLD CAMP
BRITISH COLUMBIA

N.T.S. MAP-AREA 93-N-10 E
55°41'N 124°35' W

by

Michael Fox, P.Geol.
Calgary, Alberta

25,471

CERTIFICATE

I, Michael Fox, of 120 Hawkwood Hill N.W., Calgary, Alberta certify that:

1. I am a member of the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.

2. I am a graduate of the University of British Columbia and hold a Bachelor of Science Degree in Geology (1974).

3. I have practised my profession continuously since 1974 and I have worked in the field of mineral exploration since 1965.

4. I am the owner of the AU 1 - 12 claims described in this report.

5. I supervised and participated in work carried out at the property and described in this report.

Michael Fox, B.Sc., P.Geol.

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SUMMARY

The AU 1 - 12 claims cover an extensive zone of quartz-pyrite-gold stringer stockwork mineralization and a related zone of intense quartz-ankeritic carbonate-pyrite ± mariposite alteration, developed in fine-grained, calcareous volcanic sandstones and epiclastic rocks of the Triassic Takla Group in the Manson River - Germansen River gold camp of north-central British Columbia.

Exploration carried out previously over the mineralized zones (principally by Anaconda Canada Exploration Ltd. during 1982 and 1983, and also by Rio Tinto in 1972) includes geochemical soil and rock sampling, geological mapping, induced polarization, resistivity, and ground magnetic geophysical surveys, and percussion, diamond, and reverse circulation drilling. This work outlined two subparallel gold-in-soils anomalies, approximately 800 m apart, with dimensions of 100 m to 400 m in width by 2,000 m in length. An area within the more westerly of the two gold anomalies has been drilled, and this drilling has partially delineated an area 300 m long by up to 130 m wide containing gold-in-rock values of hundreds to thousands of ppb.

These gold values are associated with a stockwork of quartz-ankeritic carbonate-pyrite stringers overprinted on an earlier extensive zone of pervasive quartz-carbonate alteration. This alteration is more strongly developed in calcareous volcanic sandstones as opposed to conglomeratic and/or turbiditic depositional units with silty matrices, suggesting that permeability may have been an important control of alteration. The early alteration caused extensive recrystallization of the already massive sedimentary beds, producing a structurally competent zone, susceptible to brittle deformation. Although outcrop is very limited within the property area and within the mineralized zones, detailed mapping suggests orientations of mineralized structural features and other structures which are subparallel to deformational features associated with D1 and D2 regional deformation, and may also be related to more localized deformation regimes associated with the emplacement of the Germansen batholith, and movement along the Manson fault system.

Although considerable work has been done to date at this property, the geology of the property and the ore-forming environment are poorly understood, mainly because of poor bedrock exposure. A program of remapping the geology, analysis of existing data, and evaluating the controls of mineralization was begun in 1994 and continued in the 1997 field season. Work in 1997 focussed on structural controls of gold mineralization, with a view to relating mesoscopic structures to larger structural elements such as folds or major faults. This work has further advanced an understanding of the property geology and has shown that previous drilling programs were not optimally oriented to test all of the mineralized structures at the property.

Work described in this report consisted of collection of oriented hand specimens from outcrops within both of the main mineralized trends, and examination of the various mineralized structures under the microscope. Field work was carried out from August 16, 1997 to September 30, 1997.

INTRODUCTION

LOCATION AND ACCESS

The AU 1 - 12 claims are a contiguous group of claims located in the central part of the Germansen River - Manson Creek gold camp in northern central British Columbia approximately 400 km northwest of Prince George, B.C. (Figure 1) at 55°42' N Latitude and 124°35' W Longitude in N.T.S. map-area 93-N-10 E. The gold camp is accessible by gravel road from Ft. St. James (226 km) or by a series of logging roads from McKenzie (160 km to the southeast). A network of local roads and trails provides access to and on the claims.

PROPERTY AND OWNERSHIP

The claims are registered in the name of and owned 100% by Michael Fox of Calgary, Alberta.

The property consists of twelve contiguous "2-post" claims listed below:

CLAIM	UNITS	RECORD No.	DATE STAKED
AU 1	1	320756	93-08-22
AU 2	1	320757	93-08-22
AU 3	1	320758	93-08-22
AU 4	1	320759	93-08-22
AU 5	1	321647	93-09-30
AU 6	1	321648	93-09-30
AU 7	1	321649	93-09-30
AU 8	1	321650	93-09-30
AU 9	1	321651	93-09-30
AU 10	1	321652	93-09-30
AU 11	1	321653	93-09-30
AU 12	1	321654	93-09-30

HISTORY

The property history has been described in previous assessment reports by the writer; the most recent is dated October, 1995.

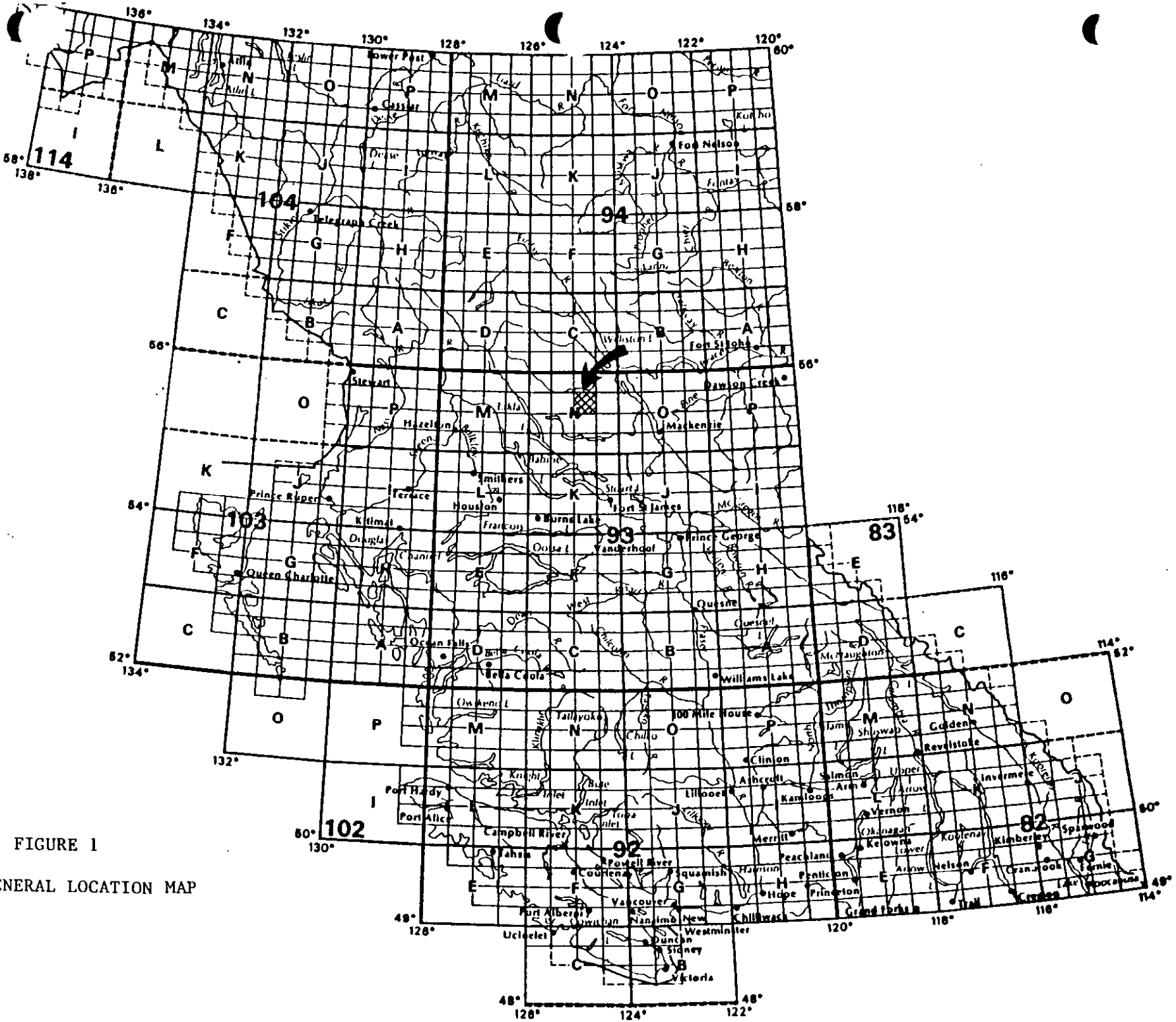

FIGURE 1

GENERAL LOCATION MAP

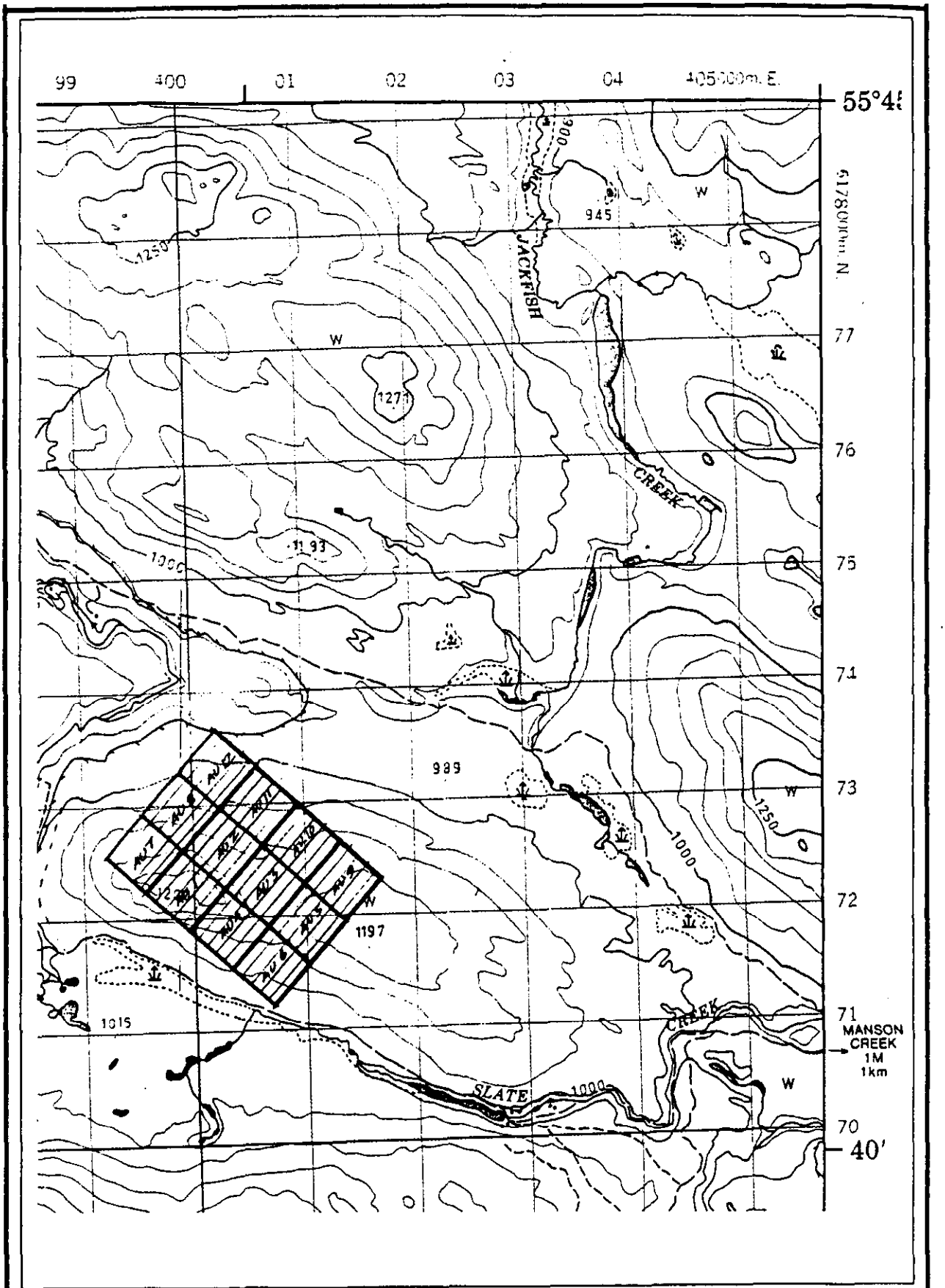

FIGURE 2. PROPERTY LOCATION MAP
AU CLAIMS
N.T.S. MAP SHEET 93 N 10E
SCALE 1: 50,000

REGIONAL GEOLOGY

The regional geology and distribution of lithologies of the Germansen River - Manson River gold camp and the locale of the Au claims has been described in a previous assessment report by the writer, dated October, 1995. The interpreted geological evolution of the region has been discussed in detail by Ferri and Melville (1994) and others, and their work is a significant advance in providing a framework for interpreting the timing of deformation and mineralization within the region and at the Au claims. The key points of their discussion are summarized below.

The Germansen River - Manson River gold camp is located along a major northwesterly trending crustal suture which marks the boundary between a displaced crustal segment (Cassiar terrane) of ancestral North America and obducted oceanic crust (Nina Creek Group) of the Slide Mountain Ocean to the northeast, and accreted volcanic and volcanisedimentary rocks of the Takla Group (Quesnel terrane) of the Intermontane superterrane to the southwest. The zone has a complex evolutionary and structural history extending at least from Late Proterozoic to the present. A thorough description of the stratigraphy of the region is included in B.C. Geological Survey Bulletin 91. Ferri and Melville (ibid) envision a geologic model wherein the rocks record Late Proterozoic cratonic rifting, continental breakup during the Early Cambrian to Middle Devonian, and basinal evolution from Proterozoic - Mississippian intracontinental basin to Mississippian - Permian oceanic basin (Nina Creek Group) along the rift/spreading centre. Sea floor spreading in the Slide Mountain Ocean (floored by Nina Creek Group rocks and equivalents along the continental margin) was accompanied to the west by subduction and arc type volcanism and sedimentation during the Late Devonian to Permian, resulting in the construction of the Lay Range arc on a basement fragment of continental crust separated from ancestral North America by Slide Mountain Ocean. During the Permian, extensional plate margin tectonics changed to a compressive tectonic regime, resulting in the closing of the Slide Mountain Ocean during the Late Permian to Triassic and obduction of oceanic crust (represented by the Nina Creek Group) onto Proterozoic to Paleozoic supracrustal rocks along the western edge of ancestral North America. Closure of Slide Mountain Ocean was accompanied by renewed subduction, and volcanism and plutonism to the west resulting in the construction of the Takla arc (Quesnel terrane) on the older Lay Range arc and continental basement. Volcaniclastic (Plughat Mountain succession) and clastic sedimentary rocks (Slate Creek succession) were shed eastwards from the Takla arc and deposited over the now imbricated Nina Creek Group. The docking or collision of Stikinia with the western edge of the Takla arc resulted in the closure of the ocean basin on the west side of the Takla arc and the obduction o f oceanic crust once again (Cache Creek Group). Compressive tectonics continued into the Cretaceous producing tectonic wedging and development of anticlinoria. Late Cretaceous to Early Tertiary time was marked by a tectonic regime of extensional uplift and

transcurrent faulting, producing the major structures now recognized in the district (including the Wolverine fault zone and the Manson fault zone.

Rocks underlying the Au claims have been tentatively assigned to the lower part of the Takla Group (Slate Creek succession) and include volcanisediments shed eastwards from the main arc onto the Nina Creek Group. Alternatively, the rocks might be assigned to the Mississippian – Permian Lay Range assemblage which is in part the temporal equivalent of the Nina Creek Group.

REGIONAL STRUCTURE

Ferri and Melville (ibid) documented four phases of penetrative deformation within rocks included in the area described in B.C. Geological Survey Bulletin 91. They divided the study area into two main structural domains bounded by the Manson fault zone which separates exposures of supracrustal continental rocks and obducted Nina Creek Group rocks on the northeast (Omineca Belt) from Takla Group and Lay Range assemblage rocks on the southwest (Intermontane Belt). Ferri and Melville (1994) considered the timing of the different deformation phases to be as follows:

D1 Early to Middle Jurassic and later
D2 Middle to Late Jurassic
D3 Early to Middle Cretaceous
D4 Late Cretaceous to Early Tertiary

With the exception of D4, all of the deformation phases exhibit well-developed, related structures in rocks northeast of the Manson fault zone. In addition, layer parallel thrust faults are present within the Nina Creek Group, and are considered to be eastwards verging and of post-Permian age, but predate D2 deformation. Ferri and Melville (ibid) also recognized thrust faulting in the younger Takla Group rocks on the southwest side of the Manson fault zone, which might be related to D1 or D2 deformation. (If the Au claims are underlain by Lay Range assemblage rocks and not Takla Group rocks, they might also have been involved in the deformational event causing the closure of Slide Mountain Ocean and might contain similar thrust faults as those indicated by structural observations northeast of the Manson faultzone.)

Southwest of the Manson fault zone, the D1 phase of deformation is represented by a weak layer-parallel fabric (S1) sometimes developed in the lowermost shales of the Slate Creek succession. This compressive phase of deformation produced imbricated panels within rocks of the Cassiar, Slide Mountain and Quesnel terranes. D2 structures consist of northwest trending (F2) folds with wavelengths of 1 to 5 km and sometimes associated northwest trending zones of axial planar vertical to southwest dipping spaced and slaty cleavage. F2 folds pre-date the Germansen batholith which implies that they can

be no younger than Middle Cretaceous (the Germansen batholith has been dated at 106 Ma). Ferri and Melville (ibid) also recognized a structural domain (referred to as Domain 5 in Bulletin 91) characterized by steeply dipping foliation planes and near vertical mineral lineations within the foliation planes in the batholith, which follow the contact of the batholith in a concentric manner. Related structures in enclosing Takla Group rocks include easterly to northeasterly trending structural elements which follow, in a roughly parallel sense, the northern contact of the batholith. These structural elements include a weakly to moderately developed, easterly to northeasterly trending, steeply dipping foliation in the vicinity of the batholith. (The rocks underlying the Au claims are situated close enough to the contact with the batholith to have been affected by this localized deformation.) Easterly trending fold structures in this area may also be due to shortening produced by compressive stresses related to regional strain patterns associated with right lateral displacement along the Manson fault zone.

Ferri and Melville (ibid) considered that the Manson fault zone forms a separate linear structural domain (referred to in Bulletin 91 as Domain 3), comprised of the northwesterly striking Manson fault zone and a number of subparallel, related, anastamosing splays. Right lateral displacement has taken place (most recent) along the Manson fault zone as evidenced by subhorizontal slickensides, subhorizontal elongate clasts contained within the deformation zone, and subhorizontal mineral lineations. (Within the Manson Creek – Germansen River gold camp, quart – carbonate ± mariposite ± pyrite alteration is also a defining characteristic of the fault zone and related splays, indicating that they have been important conduits for hydrothermal fluids.) Movement along the Manson fault zone postdates Early to Middle Jurassic (D1) deformation, and truncates imbricated structures within rocks of the Cassiar, Slide Mountain and Quesnel terranes. Ferri and Melville (ibid) provide a K-Ar age determination of 134 Ma for a sample of mariposite collected from an altered ultramafic body incorporated into the deformation zone, and further state that the Germansen batholith (107 Ma) truncates a splay of the Manson fault zone near Boulder Creek. These constraints imply an Early to mid-Cretaceous timing for movement and deformation along the Manson fault zone.

In summary, regional structural features in the vicinity of the Au claims suggest that rocks underlying the claims may have been affected by four distinguishable phases of deformation. Two of these phases of deformation are regional in extent and are referred to by Ferri and Melville (ibid) as phases D1 and D2. The earliest phase, D1, where it is developed, is characterized by layer parallel foliation and associated thrusting and imbrication of rocks of Cassiar, Slide Mountain, and Quesnel terranes in Early to Middle Jurassic time. The second phase of deformation, D2, extends from Middle to Late Jurassic time and is characterized by the development of broad, upright folds with wavelengths of 1 to 5 km developed in rocks on both sides of the Manson fault zone. A northwesterly trending, vertical to southwest dipping, axial planar, spaced to penetrative slaty cleavage may be associated with these folds. A third, Early to mid-Cretaceous, more localized deformational event is associated with movement along the Manson fault system.

It is expressed in structural features such as vertically dipping foliation within the fault zone, and easterly trending fold structures adjacent to the fault zone, which might be due to shortening produced by compressive stresses related to regional strain patterns associated with right lateral displacement along the Manson fault zone. A fourth zone of deformation, also localized, is associated with the mid-Cretaceous emplacement of the Germansen batholith (106 Ma), which post dates movement along the Manson fault system, and is characterized by weakly to moderately developed, easterly to northeasterly trending, steeply dipping foliation in the enclosing Takla Group rocks in the vicinity of the batholith. A number of northeasterly striking, northwest side down, normal faults have been mapped in the region to the northeast of the Manson fault zone, and mostly produce successive right lateral offsets to the northeast in stratigraphy and structure. Ferri and Melville (ibid) theorize that these faults might be cut by or might be contemporaneous with the Manson Creek fault zone. Detailed property mapping carried out by the writer in late 1980 along the lower Germansen River indicated that a system of northeasterly trending, closely spaced faults cut the Manson fault zone and produced offset segments of lithologies and alteration zones associated with the Manson fault zone.

PROPERTY GEOLOGY

The geology of the area enclosed by the Au claims and the immediate surrounding area has been described in detail in an earlier report by the writer dated October, 1995.

PROPERTY STRUCTURAL GEOLOGY

THRUST FAULTS (D1 ?)

Ferri and Melville (ibid) assigned rocks underlying the southwestern section of the Au claim block to the Middle to Upper Triassic Slate Creek succession at the base of the Takla Group, or, alternatively, to The Mississippian to Permian Lay Range assemblage. The latter designation would imply that a thrust fault separates these rocks from younger, but structurally lower rocks assigned to the Slate Creek succession, which underlie the northeastern portion of the Au claim block. Interestingly, the inferred continuation of this contact to the southeast (see map accompanying B.C. Geological Survey Bulletin 91) is aligned with and/or trends into a thrust fault mapped between Slate Creek and Manson River. Also, map units 7 and 8 (see geological map accompanying October, 1995 assessment report), which have a strike trend of 100° - 115°,and compositional layering with attitude of 110/40 SW (see outcrop in central part of Au 2 claim) are apparently truncated against a north-northwesterly (330°) trending structure in an area of poor exposure along the boundaries of the Au 8 and 12, and Au 2 and 11 claims. Several exposures of sericite-ankerite schist and black phyllite containing ankerite porphyro-

blasts on well-developed penetrative cleavage occur along a small stream gully close to the southwest boundary of the Au 12 claim. Foliation planes in the sericite-ankerite schist are oriented 330/56 SW. which could coincide with the trace of such a thrust fault. These exposures were assigned to Map Unit 6 (see geological map accompanying October, 1995 assessment report). A description of the exposures is excerpted from that report:

> *Unit 6: Deformed Black Graphitic Phyllite (graphitic phyllite, ankeritic graphitic phyllite, sericite-ankerite schist)*
>
> *Structurally/stratigraphically above the quartz-ankeritic carbonate-mariposite±pyrite alteration zone (Map Unit 5) is another (thin?) zone of deformed, strongly foliated black graphitic phyllites similar to those described above. Only one exposure of these rocks was seen, along the boundary of the AU 12 and AU 8 claims, in a small stream gully. The foliation trends 150/56 SW and the black phyllites vary from strongly foliated black phyllites with lustrous graphitic partings, to similar rocks which contain distinctive rusty orange weathering coarse grained ankeritic carbonate porphyroblasts, flattened subparallel to the foliation. A short distance to the north, float and subcrop of a distinctive light grey sericite-ankerite schist, almost identical in appearance to that described above (see Unit 4), is present along a road cut which follows the stream gully.*

The exposures of sericite-ankerite schist and penetratively deformed black phyllite with porphyroblastic ankerite phenocrysts likely mark the trace of a southwesterly dipping thrust fault rather than a splay of the the Manson fault system, which is associated with vertically dipping structural features. Even though foliation planes within these exposures dip relatively steeply southwestwards, this might be explained by a steepening of these structural features by a Phase 2 deformational event. This would be consistent with stuctures documented elsewhere in the Cordillera along the boundary between the Omineca Belt and the Intermontane Belt, such as in the Quesnel Lake area, where thrust faults related to a Phase 1 deformational event have been deformed by a Phase 2 deformation (Struik, 1988), Bloodgood, 1987, 1988).

Struik (1988) described field relationships in the Spanish Lake area, between Likely and Quesnel Lake that indicated that a late Middle to early Late Triassic volcanic unit consisting of fragmental basalt with minor pillow lavas, greywacke, siltite, and pelite is in fault contact with an underlying Triassic black phyllite unit, is in part older than the underlying phyllite, and has been thrust eastwards over the phyllite, along the Spanish Thrust which has been traced for a distance of at least 300 km into the Prince George area. In places the thrust is marked by zones of weakly to strongly foliated, highly altered siliceous sericite schist with alteration consisting of pyrite and ankerite porphyroblasts in a matrix of chlorite, quartz, plagioclase, and sericite.

FOLDING

Large scale folds have not been defined at the property.

STRUCTURES IN ALTERED ROCKS IN THE VICINITY OF THE AU 1 & 2 CLAIMS

Within the mineralized area referred to in previous reports as the "Central Zone" (area on either side of the boundary between the Au 1 and 2 claims), the attitude of the carbonatized and silicified epiclastic rocks which host gold mineralization (see description of Unit 9 in the October, 1995 assessment report) is usually obscure due to the massive bedding and generally small exposures, but orientation of larger elongated clasts of dark chert and shale, and sometimes graded bedding, have been used to determine an east-southeasterly to southeasterly (95° Az to 125°) strike with dips to the southwest of approximately 30° to 60°. Foliation planes strike 115° to 140°, subparallel to the strike of the sedimentary strata, but dip relatively steeply (60° - 70°) south-southwesterly to southwesterly and could represent penetrative deformation associated with F2 folding, or deformation associated with the emplacement of the Germansen batholith, or even deformation along a splay of the Manson fault system.

Exposures within this zone were reexamined in 1997 with a view to collecting more detailed structural data. Most of the outcrops consist of thickly bedded volcanic arenite, extensively recrystallized and flooded with ankeritic carbonate. Foliation is not well developed in the massively bedded, recrystallized rocks, but nearly all of the exposures contain small quartz stringers with a variety of orientations. Based on strike measurements, these fractures can be divided into four groups, listed as follows:

Northerly striking group:	Attitudes:	160 / 070 E
		004 / 008 E
		012 / 065 E (late set qv)
North-northeasterly to northeasterly striking group:		
	Attitudes:	027 / 045 SE (early hairline)
		042 / 068 SE (late set qv)
East-northeasterly striking group:	Attitudes:	067 / 080 N (late set qv)
		072 / 064 SE (late set qv)
		077 / 070 SE
East-southeasterly striking group:	Attitudes:	105 / 080 S
Southeasterly striking group:	Attitudes:	122 / 075 NE
		127 / 090(vert.hairline w/pyr)

In addition, joint sets with attitudes of 350 / 080 E and 012 / 080 E are present in exposures along the drill road between percussion drill holes 83-22 and 83-23. Outcrops of sandy, volcanisedimentary rocks along the crest of the ridge to the west of the "Central" zone exhibit a fairly well developed foliation with attitude 170–180 / 075–090 E and joints trending 090 / 080-090 S.

Thin section studies (in progress) indicate that quartz-carbonate altered rocks are comprised of a framework of fine- to coarse-grained, equigranular crystals of 70% light grey ankeritic carbonate, 20% clear to translucent quartz, and 10% or less broken, ragged twinned albite crystals in a microcrystalline groundmass composed of euhedral to broken ankeritic carbonate crystals and crystal aggregates and microgranular quartz. Opaque mineral content is variable, ranging up to 10% or more limonite and/or goethite in more strongly weathered samples, and up to 3 to 4 % extremely fine-grained to coarse-grained disseminated euhedral pyrite. Quartz veinlets and stringers consist of coarse-grained, interlocking quartz crystals elongated more or less at right angles to the walls of the fractures, and becoming finer-grained towards the contacts of the veinlets. Thicker (0.4 to 1 cm) quartz veinlets belonging to the 072/65 SE set commonly display thin (1 to 3 mm), but pronounced brown-weathering ankeritic carbonate selvages.

The main quartz-carbonate alteration event clearly predates all of the stringers and veinlets, which produce only weak alteration effects along their contacts. The quartz-carbonate alteration is most strongly developed in sandy epiclastic rocks which appear to have had a greater permeability than interbedded silty units. The quartz-carbonate alteration assemblage is structurally competent and has been susceptible to brittle deformation. The alteration zone has preferentially recorded brittle deformation structural
features related to the various phases of deformation that have affected the rocks underlying the property.

Pyrite is variably developed, and sometimes seems to increase towards the contacts of veinlets or stringers and sometimes not. Pyrite commonly is concentrated (up to 5% disseminated pyrite) within a few centimeters of the contacts of the most prominent 072/65SE stringer set, and is sometimes sparsely distributed in euhedral crystals along the stringers, but this is not a consistent relationship. Concentrations of disseminated pyrite may also occur within 5 cm of the contacts of the 105/080 S quartz stringer set. Pyrite also occurs in association with the subhorizontal, northerly striking 004/008 E set of hairline fractures, and sometimes a vague subhorizontal sulphide banding, produced by concentrations of disseminated pyrite was observed. Thin discontinuous stringers and lenses of pyrite 1 to 3 mm thick are also sometimes associated with the 120-130 / 75 N to subvertical set of hairline fractures.

Hairline fracture sets trending 027/045 ESE and 077/070 SSE are filled with fine grained brown weathering ankeritic carbonate crystals and give the rock a reticulated appearance on smooth, partially weathered lighter coloured surfaces.

When the property was drilled by Anaconda in 1983, most drill holes were oriented northwards and drilled at an angle of –65°, in order to intersect bedding and the main fracture systems recognized at that time. The results of work described in this report indicate that there is an important group of northerly striking subvertically dipping mineralized structures which would not have been intersected by these drill holes. Samples of northerly striking, subvertically dipping quartz veins collected from surface exposures have assayed as high as 4300 ppb Au (see sample 11356 in Appendix 1).

STRUCTURES IN ALTERED ROCKS IN THE VICINITY OF THE AU 12 CLAIM

Scattered exposures and subcrop of quartz-carbonate altered rocks define a 200 m wide alteration zone which trends northwestwards across the Au 12 claim and is thought to extend southeastwards along the northeast side of the Au claim block. This zone is referred to as the "Flag" zone in earlier assessment reports authored by Anaconda workers because it was thought to extend along strike to a wide quartz-carbonate alteration zone in the vicinity of the Flag mineral occurrence, located to the northwest in the Germansen River canyon. Structural data acquired subsequently to Anaconda's drilling program (Ferri and Melville, 1991) and structural analysis of the property using that data (this report) indicate that there could be considerable structural complexity in the area around the Flag occurrence, since it is situated close to the trend of a probable thrust fault, and might be offset an unknown distance, along a northerly striking normal fault, from altered rocks underlying the Au 12 claim.

Samples of quartz-carbonate altered rock collected in the vicinity of the Au 12 claim are more strongly deformed than samples collected in the area of the Au 1 and 2 claims. Thin section studies (in progress) indicate that the rocks are composed of (approximately 60%, by volume) fine- to coarse-grained, interlocking ankeritic carbonate and quartz crystals, and crystal aggregates with ragged outlines, and ragged, partially carbonatized and sericitized, twinned plagioclase feldspar crystal fragments and crystal aggregates, entrained in and oriented subparallel to a very fine-grained groundmass (40% by volume) of microcrystalline quartz and ankeritic carbonate, which displays a strong foliation and mineral banding around the larger mineral fragments of quartz and feldspar. In a number of exposures, the altered rocks are transected by quartz veinlets, stringers, and numerous quartz-filled hairline fractures with many different orientations, producing an almost brecciated texture. The hairline fractures are accompanied on both contacts by thin reddish-brown weathering ankeritic carbonate crystals, somewhat coarser-grained than the carbonate in the groundmass. The hairline fractures produce a network of thin reddish brown lines on smooth, light coloured exposures which are not too deeply weathered. The high percentage of altered plagioclase in the rock suggests that the protolith may have been tuffaceous.

The dominant trend of foliation is 092°-110° / 068° S. The more prominent quartz stringers are northerly striking and easterly dipping with attitudes averaging 184°/064° E. In places the stringers have been refractured subparallel to their strike and are cut by later fractures trending 360°/subvertical to 080° W. Concentrations of up to 10% subhedral to euhedral, very fine-grained to coarse-grained pyrite occur disseminated in the wall rocks for several centimetres on either side of the larger stringers. The pyrite has crystallized on grain contacts and within coarser-grained aggregates of quartz and ankeritic carbonate, as well as in the very fine-grained groundmass, and is thus related to brittle deformation and post dates movement recorded by mineral lineations within the zone.

Thin section studies (in progress) indicate that a sample of sericite-ankerite schist collected from an exposure along the side of a small gully approximately 100 m northwest of the Au 12 final post, and thought to represent the trace of a thrust fault trending 330/056 SW (see section above entitled "Thrust Faults" under Property Structural Geology) displays a mylonitic texture. The rock consists of 10%, by volume, elongated and abraded aggregates of fine-grained quartz which are entrained in a banded matrix of very fine-grained sericite and microcrystalline quartz. In hand specimen the rock consists of light grey aphanitic groundmass, composed of sericite and quartz, with 5% to 15% fine to coarse-grained subhedral to euhedral reddish-brown weathering ankeritic carbonate phenocrysts. The ankerite does not display a porphyroblastic texture since mineral banding and lineations terminate abruptly against crystal faces. Also, the phenocrysts show a spatial relationship to quartz-filled hairline fractures that form an anastamosing network of stringers subparallel to foliation, and contain quartz crystals that are considerably coarser-grained than the quartz in the enclosing groundmass. The ankerite has apparently been introduced with the quartz veinlets, and is related to late brittle deformation and post dates movement that produced the mylonitic texture.

DISCUSSION AND RECOMMENDATIONS

Detailed mapping of mesoscopic structures and thin section study (in progress) of samples collected during 1997 have provided new insights into the timing of deformation and mineralization at the Au claims. Structural and geological data and interpretations contained in B.C. Geological Survey Bulletin 91 (Ferri and Melville, 1994) have been especially useful in interpreting structures at the property in a regional context.

The lack of outcrop and the deep weathering of most of the exposures available for examination has only allowed an incomplete analysis of cross cutting relationships of the different fracture sets and other structural features at the property. Steeply north or south dipping to subvertical stringers and planar features striking approximately 125° could be related to D2 folding or strain patterns related to later movements along the Manson fault system. Late, ENE striking southwesterly dipping quartz stringers and hairline fractures are most likely related to emplacement of the Germansen batholith. The only ENE trending faulting known in the area is in the vicinity of Olsen Creek (south side of Germansen Lake), and is considered to

be related to the emplacement of the batholith. Although the surface contacts of the batholith are several miles south of the Au claims, the hypabyssal contacts probably lie further north and could have produced east-northeasterly trending structures in the vicinity of the Au claims. Alternatively, the ENE set of fractures and the NNE to NE striking set of quartz stringers and fractures might be a fracture set related to D2 compressive forces that produced northwest trending, easterly verging folds. Finally, the northerly to NNE striking, subvertically dipping fracture set seems to be clearly related to late stage northerly and NNE striking normal faults that are known to offset the Manson fault system. These relationships are quite clear in one of the outcrops examined in the vicinity of the Au 12 claim, where late, northerly striking quartz stringers crosscut WNW foliation (probably related to movement along the Manson fault system) in the quartz-carbonate alteration zone.

The detailed structural study of the Au claims reported on here has raised a number of questions which were not being considered at the time the field work was conducted. Although, the timing and genesis of the extensive zones of quartz-carbonate alteration is still not understood, there is little doubt that recrystallization resulting from silicification and carbonatization produced structurally competent zones which have been susceptible to brittle deformation. Further work is required to elucidate structural relationships and the nature and controls of gold mineralization.

STATEMENT OF EXPENDITURES

M. Fox, professional services (travel, field days, petrographic analysis, etc.)	13 days @ 485/day	6305.00
Field assistant (casual labour)	1 man@ 175/day x 8 days	1400.00
Vehicle rental and mileage		1924.00
Field accommodation and meals	2 men x 8 days @ 75/man/day	1200.00
Travel expenses and miscellaneous		385.20
Disposable supplies, misc. charges		402.10
Drafting services	4 hours @ 40/hour	160.00
Secretarial services		132.00
Reproductions		19.24
	SUBTOTAL	6336.05
	GST on 6320.00	834.93
	TOTAL	$12,762.47

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APPENDIX 1

SAMPLE DESCRIPTIONS

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11351

LOCATION:	UTM:	6172425N	399970E
	GRID:	L 12+03N	1+15W
	Notes:	quartz stringer zone next to PDH 83-23	

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, original textures destroyed, quartz may be original, but recrystallized; rock is cut by 1 cm thick quartz stringer with attitude 072/64 SE and a system of hairline quartz-filled fractures 0.2 to 1mm thick, with orientation 027/45 ESE and 077/70SSE, with thin (0.1 to 1 mm) brown weathering ankeritic carbonate selvages

Quartz stringer:

Coarsely crystalline quartz with crystal orientation predominantly perpendicular to strike, brown weathering thin (1-3mm) ankeritic carbonate selvage on both contacts, interior of vein is fractured subparallel to strike and contains rare fine-grained euhedral pyrite cubes

Structure

Bedding:	attitude not determined
Foliation:	not determined
Early structures	027 / 045 ESE (hairline fractures)
	077 / 070 SSE (hairline fractures)
Late structures:	072 / 064 SE (quartz-pyrite stringer)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz stringers and hairline fractures which display only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of quartz stringers and hairline fractures: some of the disseminated pyrite in the wallrocks has been introduced with the quartz stringers, but concentrations of disseminated pyrite do not show any consistent spatial relationship to quartz stringers

Mineralization

2% to 5% disseminated, very fine-grained to coarse-grained subhedral and euhedral pyrite cubes, generally more plentiful within a few centimeters of quartz stringers, but this is not a consistent spatial relationship, and some of the pyrite probably was introduced at the same time as early carbonatization and silicification

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11352

LOCATION:

UTM:	6172425N	399970E
GRID:	L 12+03N	1+15W
Notes:	quartz stringer zone next to PDH 83-23	

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology:

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, original textures destroyed, quartz may be original, but recrystallized; rock is cut by 0.75 cm thick quartz stringers with attitude 072/65 SE and 012/65 E, and a system of hairline quartz-filled fractures 0.2 to 1mm thick, with orientation 068/80 SE, 004/08 E, and 122/75 NE, with thin (0.1 to 1 mm) brown weathering ankeritic carbonate selvages

Quartz stringers:

Coarsely crystalline quartz with crystal orientation predominantly perpendicular to strike, brown weathering thin (1-3mm) ankeritic carbonate selvage on both contacts, interior of vein is fractured subparallel to strike and contains rare fine-grained euhedral pyrite cubes

Structure

Bedding:	attitude not determined	
Foliation:	122 / 75 N	(possible, obscured by deep weathering)
Early structures	122 / 75 N	(hairline fractures, foliation?)
	004 / 08 E	(hairline fractures)
Late structures:	072 / 65 SE	(quartz-pyrite stringer)
	012 / 65 E	(quartz-pyrite stringer)
Notes:	Fracture density is fairly high at 1per 2cm for the 004/08E and 122/75N sets, but is difficult to see due to deep weathering	

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz stringers and hairline fractures which display only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of quartz stringers and hairline fractures: some of the disseminated pyrite in the wallrocks has been introduced with the quartz stringers, but concentrations of disseminated pyrite do not show any consistent spatial relationship to quartz stringers

Mineralization

2% to 5% disseminated, very fine-grained to coarse-grained subhedral and euhedral striated pyrite cubes, generally more plentiful within a few centimeters of quartz stringers, but this is not a consistent spatial relationship, and some of the pyrite probably was introduced at the same time as early carbonatization and silicification; pyrite is distributed sporadically in and along the 004/08 E and 122/75N fracture sets

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11353

LOCATION:

UTM:	6172425N	399970E
GRID:	L 12+00N	1+15W
Notes:	quartz stringer zone next to PDH 83-23	

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology:

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, outcrop is an exposure of a massively bedded sequence of sediments deposited in a turbidic environment; sediments occasionally exhibit indistinct graded bedding with angular to subangular dark grey chert pebbles or lithic fragments sometimes showing a vague alignment and layering in a matrix of silt and sand; quartz may be original, but recrystallized; rock is cut by thin (<1 cm thick) quartz stringers with attitudes 042/68 SE and 067/80 N, which intersect with the 042 set at an angle of approximately 45° in a plane perpendicular to the strike of the 042/68 SE set; and an 020/65 set of quartz stringers, which also intersect the 042 set at an angle of approximately 45° in a plane perpendicular to the strike of the 042/68 SE set; and subhorizontal quartz-filled hairline fractures, 0.2 to 1mm thick, with attitude 002/10 E, with thin (0.1 to 1 mm) brown weathering ankeritic carbonate selvages

Quartz stringers:

Coarsely crystalline quartz with crystal orientation predominantly perpendicular to strike, brown weathering thin (1-3mm) ankeritic carbonate selvage on both contacts

Structure

Bedding:	attitude not determined	
Foliation:	not determined	
Early structures	cross-cutting relationships not determined	
Late structures:	002 / 10 E	(subhorizontal hairline fractures)
	020 / 65 NW	(0.1-0.4 cm quartz stringer)
	042 / 68 SE	(0.5 cm quartz stringer)
	067 / 80 N	(0.2-0.3 cm quartz stringer)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz stringers and hairline fractures which display only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of quartz stringers and hairline fractures: some of the disseminated pyrite in the wallrocks has been introduced with the quartz stringers, but concentrations of disseminated pyrite do not show any consistent spatial relationship to quartz stringers

Mineralization

0.5% to 5% disseminated, very fine-grained to fine-grained euhedral striated pyrite cubes, generally more plentiful within a few centimeters of quartz stringers, but this is not a consistent spatial relationship, and some of the pyrite probably was introduced at the same time as early carbonatization and silicification, and a concentration of pyrite occurs in a subhorizontal band trending 360/10 E

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11354

LOCATION: UTM: 6172425N 399960E
GRID: L 12+10N 1+20W

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology:

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, outcrop is an exposure of a massively bedded sequence of sediments deposited in a turbidic environment; sediments occasionally exhibit indistinct graded bedding with angular to subangular dark grey chert pebbles or lithic fragments sometimes showing a vague alignment and layering in a matrix of silt and sand; quartz may be original, but recrystallized; rock is cut by thin (<1 cm thick) quartz stringers with attitudes 072/65 SE (no pyritic envelope) and 105/80 S, (5% disseminated pyrite in 5cm zone on either side of stringer, plus rare fine-grained disseminated euhedral pyrite crystals in the stringer), and quartz-filled hairline fractures, 0.2 to 1mm thick, with attitudes 360/10 E, and 127/subvertical (pyritized, with short, discontinuous 1 mm thick pyrite stringers) with thin (0.1 to 1 mm) brown weathering ankeritic carbonate selvages

Quartz stringers:

Coarsely crystalline quartz with crystal orientation predominantly perpendicular to strike, brown weathering thin (1-3mm) ankeritic carbonate selvage on both contacts

Structure

Bedding:	attitude not determined	
Foliation:	127 / subvertical	(probable)
Early structures	127 / subvertical	(approximates foliation in Manson fault system)
	360 /10 E	(subhorizontal hairline fractures)
Late structures:	072 / 65 SE	(0.5-0.6 cm quartz stringer)
	105 / 80 S	(0.3-0.4 cm quartz stringer)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz stringers and hairline fractures which display only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of quartz stringers and hairline fractures: some of the disseminated pyrite in the wallrocks has been introduced with the quartz stringers, but concentrations of disseminated pyrite do not show any consistent spatial relationship to quartz stringers

Mineralization

0.5 to 5% disseminated, very fine-grained to coarse-grained subhedral and euhedral pyrite cubes, rocks generally contain 0.5% disseminated pyrite which becomes more plentiful and reaches concentrations of 5% within a few centimeters of some quartz stringers, but this is not a consistent spatial relationship, and some of the pyrite probably was introduced at the same time as early carbonatization and silicification

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11355

LOCATION:

UTM:	6172295N	400195E
GRID:	L 9+45N	0+85W
Notes:	quartz stringer zone next to PDH 83-20	

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, original textures destroyed, quartz may be original, but recrystallized; rock is cut by 0.4 cm thick quartz stringer with attitude 078/80 SW, which pinches down to a and a system of hairline quartz-filled fractures 0.2 to 1mm thick, with orientation 027/45 ESE and 077/70SSE, with thin (0.1 to 1 mm) brown weathering ankeritic carbonate selvages

Quartz stringer:

0.4 cm thick, coarsely crystalline quartz with crystal orientation predominantly perpendicular to strike, brown weathering thin (1-3mm) ankeritic carbonate selvage on both contacts, stringer pinches down to a hairline fracture, outcrop is flat and not well exposed in a bulldozed area around the drill hole

Structure

Bedding:	attitude not determined	
Foliation:	not determined	
Early structures	not determined	
Late structures:	078 / 80 SW	(quartz-pyrite stringer)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates the quartz stringers which displays only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of the quartz stringer: some of the disseminated pyrite in the wallrocks may have been introduced with the quartz stringer, but pyrite do not show any consistent spatial relationship to the quartz stringer, and is early

Mineralization

5% to 7% disseminated, very fine-grained to fine-grained subhedral and euhedral striated pyrite cubes, disseminated evenly through the rock; pyrite distribution here does not appear to be related to the quartz stringer, but is early

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11356

LOCATION:	UTM:	6172600N	400070E
	GRID:	L 12+35N	0+75E

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology:

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, original textures destroyed, quartz may be original, but recrystallized; rock is cut by 1-3 cm thick quartz stringer with attitude 160/70 E, outcrop is deeply weathered with ankeritic carbonate altered to and replaced by rusty brown goethite and limonite, no disseminated pyrite observed;

Quartz stringer:

1-3 cm thick, anastamosing, coarsely crystalline light grey to translucent grey quartz, brown-weathering thin (1-3mm) ankeritic carbonate selvage on both contacts, interior of vein is fractured subparallel to strike and fractures are filled with later quartz and brown weathering ankeritic carbonate;

Structure

Bedding:	attitude not determined	
Foliation:	not determined	
Early structures	160/70 E	(1-3 cm thick quartz vein)
Late structures:	160/70 E	(late hairline fractures in quartz stringer)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz stringers and hairline fractures which display only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of the quartz stringer and hairline fractures;

Mineralization

No sulphides were observed in this sample; a sample collected previously from this exposure assayed 4300 ppb Au

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11357

LOCATION: UTM: 6172355N 400025E
GRID: L 11+60N 1+35W

LITHOLOGY: Silicified and carbonatized volcanic(?) arenite

DESCRIPTION

Lithology

Light grey, fine-grained, equigranular ankerite-quartz-pyrite assemblage, recrystallized, original textures mostly destroyed, sparse, indistinct, dark grey lithic fragments to 0.5cm long are still preserved, quartz may be original, but recrystallized; the protolith was probably a volcanic arenite deposited in a turbidic environment; rock is cut by 1 cm thick quartz stringer with attitude 180/80 E with thin (0.1 to 1 mm) brown weathering ankeritic carbonate selvages

Quartz stringer:

1.0 to 1.2 cm thick, coarsely crystalline white quartz with thin ((1 mm), brown weathering ankeritic carbonate selvage on both contacts, no sulphides in quartz vein;

Structure

Bedding:	strike approximately 110°; dip not determined	
Foliation:	not determined	
Early structures	not determined	
Late structures:	180 / 80 E	(quartz stringer)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz which displays only a thin selvage of recrystallized ankeritic carbonate, somewhat coarser-grained than the hostrock, vaguely defined band of 1 – 2% disseminated pyrite oriented 360/15 E

Late: thin selvages of recrystallized ankeritic carbonate and quartz, slightly coarser grained than the hostrock, along the contacts of quartz stringer, no sulphides in stringer, concentrations of disseminated pyrite do not show any consistent spatial relationship to quartz stringer

Mineralization

1% to 2% disseminated, very fine-grained to medium-grained subhedral and euhedral striated pyrite cubes, are concentrated in a vaguely defined band that trends 360/15

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11358

LOCATION:

UTM:	6172210N	400020E
GRID:	L 10+40N	2+60W
Notes:	series of outcrops along ridge crest, central part of Au 1 claim	

LITHOLOGY: Metamorphosed volcanic arenite

DESCRIPTION

Lithology

Medium greenish-grey, very fine-grained to fine-grained volcanic arenite metamorphosed and recrystallized to a quartz-albite-chlorite assemblage; exposures along the ridge crest occasionally display slightly coarser textured sandy to gritty sections where they are weathered in relief

Structure

Bedding:	attitude not determined
Foliation:	170-180 / 90-75 E
Jointing:	090 / 80-90 S

Alteration

None

Mineralization

Trace fine-grained cubic pyrite (<< 1%)

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11359

LOCATION: UTM: 6172415N 400090E
GRID: L 11+00N 0+50W

LITHOLOGY: interbedded conglomerate / lithic arenite and sandstone

DESCRIPTION subcrop in floor of roadcut

Lithologies

Conglomerate: 1-2 cm long by 0.4 cm wide, oval, subrounded medium grey shale or mudstone lithic fragments and light grey to white felsic lithic clasts in a coarse-grained sandy matrix; felsic clasts are weathered, and altered to clay with rusty, orange-brown sparsely disseminated specks of ankeritic carbonate; internal structure is chaotic with only a vague alignment of elongated clasts to suggest layering; the rock is vuggy and porous with numerous smaller lithic fragments and grains in the matrix displaying ankeritic carbonate alteration;

Sandstone: light grey, coarse-grained lithic sandstone with common medium grey shale or mudstone fragments; the rock is compositionally similar to the conglomerate matrix, but lacks lithic pebbles, and has a finer grained silty matrix;25% very fine-grained, disseminated, rusty brown weathering ankeritic carbonate

Quartz stringers:

Rock is cut by two intersecting quartz stringers composed of coarsely crystalline quartz with thin brown weathering ankeritic carbonate; no sulphides;

Structure (subcrop)

Bedding:	attitude not determined
Foliation:	not determined
Fractures:	3-4% disseminated pyrite cubes on planes perpendicular to bedding (067/80 N set?)
Quartz stringers:	*one is subparallel to contact between beds (105/80 S set?); the other is subparallel to* and intersects the first at an angle of approximately 20°

Alteration

Early: pervasive ankeritic carbonate-quartz alteration and recrystallization of protolith, probably controlled by permeability; the main episode of carbonatiziation and silicification predates quartz stringers which display only a thin selvage of recrystallized ankeritic carbonate;

Late: thin selvages of recrystallized ankeritic carbonate and quartz along the contacts of quartz

Mineralization

3% to 4% disseminated, very fine-grained to coarse-grained subhedral and euhedral pyrite cubes, on fracture planes approximately perpendicular to bedding plane contact between sandstone and conglomerate;

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11360

LOCATION: UTM: 6173499N 399450E
GRID: off grid
Notes: alteration zone trending through Au 12 claim

LITHOLOGY: Carbonatized and silicified partly mylonitized tuff

DESCRIPTION

Lithology

Light grey, fine-grained to coarse grained, buff to orange-brown weathering, equigranular ankerite-quartz-pyrite ± mariposite assemblage, recrystallized, in part mylonitized, with well-developed foliation, 92-120/68 S, original textures destroyed, quartz may be original, but recrystallized; --mode: 50% light grey and translucent grey quartz, 45% white to light brown ankeritic carbonate, 5% very fine to predominantly fine-grained to rare coarse-grained disseminated, subhedral to euhedral, striated pyrite cubes, plus trace chrome green mariposite disseminated sporadically along foliation planes; -- rock is cut by 1 cm thick quartz stringer and lenses with attitude 004/64 E, quartz vein is refractured subparallel to strike and cut by hairline quartz stringers with orientation 360/80-90 W (intersecting dip of first quartz stringer set at approximately 45

Quartz stringers:

Light grey and translucent grey coarsely crystalline quartz with trace disseminated pyrite,but predominantly barren, quartz stringers are oriented 004/64 E and have been refractured subparallel to strike and cut by hairline quartz-filled fractures oriented 360/80-90 W;

Structure

Bedding:	attitude not determined	
Foliation:	92 – 120 / 68 SSW	
Early structures	004 / 64 E	(quartz stringers)
Late structures:	360 / 80-90 W	(hairline stringers in refractured quartz stringers)

Alteration

Early: pervasive ankeritic carbonate-quartz ± pyrite ± mariposite alteration and recrystallization of protolith within deformation zone, alteration probably controlled by deformation induced permeability along microfractures and mineral grain contacts; the main episode of carbonatiziation and silicification predates quartz stringers and hairline fractures which display only weak contact effects expressed as a thin selvage of recrystallized ankeritic carbonate;

Late: thin selvages of recrystallized ankeritic carbonate and quartz, coarser grained than the matrix of the hostrock, along the contacts of quartz stringers and hairline fractures: disseminated pyrite in the wallrocks is earlier than the quartz stringers

Mineralization

5% disseminated, very fine-grained to predominantly fine-grained to rare coarse-grained subhedral and euhedral striated pyrite cubes, more or less evenly distributed through the rock; no consistent spatial relationship between concentrations of disseminated pyrite and quartz stringers.

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11361

LOCATION:
UTM: 6173300N 399750E
GRID: off grid
Notes: outcrop in gully approximately 100 m north of Au 12 final post

LITHOLOGY: mylonite (in deformation zone along thrust fault?)

DESCRIPTION

Lithology

Light grey, aphanitic mylonite,, strongly foliated and speckled with 10-15% coarse-grained, rhombic, subhedral to euhedral ankeritic carbonate porphyroblastsfine, groundmass is soft and probably composed of sericite, quartz, and carbonate;

Structure

Bedding: none
Foliation: pronounced, 150 / 56 SW

Alteration

Mylonitic assemblage composed of very fine-grained to microcrystalline sericite, quartz, and carbonate, with coarse-grained ankeritic carbonate porphyroblasts

Mineralization

No sulphides

SAMPLE DESCRIPTIONS

SAMPLE NUMBER: 11362

LOCATION:
UTM: 6173415N 399940E
GRID: off grid
Notes: outcrop in a small ravine in NW sector of Au 12 claim

LITHOLOGY: Carbonatized and silicified partly mylonitized tuff

DESCRIPTION

Lithology

Light grey, very fine-grained to aphanitic, light grey to buff to orange-brown weathering, ankeritic carbonate-quartz assemblage with traces of mariposite; foliated (128/59 SW), heavily fractured with numerous intersecting quartz-filled hairline fractures, 0.1 to 2 mm thick, with rusty brown weathering, thin ankeritic carbonate selvages; which stand out against buff and grey weathered surfaces giving the rock a reticulated, almost brecciated texture; probably a mylonitized and recrystallized tuff

Structure

Bedding: none
Foliation: 128 / 59 SW
Fractures: numerous, many different orientations, "sub-breccia"

Mineralization

No sulphides; outcrop is deeply weathered;

LEGEND

(VII)

1	ULTRAMAFIC ROCKS, IN PART SERPENTINIZED, STEATITIZED, IN PART ALTERED TO QUARTZ-ANKERITE-MARIPOSITE ± PYRITE
2	PHYLLITE, BLACK, GRAPHITIC, STRONGLY FOLIATED ALONG MANSON FAULT
3	MAFIC VOLCANIC ROCKS, GREEN TO GREENISH-GREY, MASSIVE, LOCALLY PILLOWED, ALTERED TO TREMOLITE, CHLORITE, SERICITE, QUARTZ AND CARBONATE, IN PART ANKERITIZED
4	PHYLLITE, BLACK, GRAPHITIC, IN PART ANKERITIC, SERICITE-ANKERITE SCHIST
5	QUARTZ-ANKERITE ± MARIPOSITE ± PYRITE, LIGHT GREY, MASSIVE, ORANGE WEATHERING
6	PHYLLITE, BLACK, GRAPHITIC, IN PART ANKERITIC, SERICITE-ANKERITE SCHIST
7	MAFIC VOLCANIC ROCKS, FELDSPAR PORPHYRITIC, IN PART INTERCALATED WITH UNIT 6.
8	MAFIC TUFF, BASALTIC, MEDIUM TO DARK GREEN, FINE-GRAINED TO APHANITIC
9	EPICLASTIC ROCKS: a) VOLCANIC SILTSTONE, b) VOLCANIC ARENITE, c) CONGLOMERATE
A	QUARTZ-ANKERITIC CARBONATE ± PYRITE ALTERATION SUPERIMPOSED ON OR SYNDEPOSITIONAL WITH UNIT 9

SYMBOLS & ABBREVIATIONS

- OUTCROP, SUBCROP
- FOLIATION, DIP
- STRIKE, DIP
- CONTACT (INFERRED)
- ●14 PERCUSSION DRILL HOLE
- ⊙83-3 DIAMOND DRILL HOLE
- ○RD-1 REVERSE CIRCULATION DRILL HOLE
- ◉2 DIAMOND DRILL HOLE (1973)
- py PYRITE
- ank ANKERITE
- ser SERICITE
- sch SCHIST
- *3500 ROCK SAMPLE (GOLD IN ppb)
- QTZ VEIN, DIP
- THRUST FAULT, INFERRED
- JOINTING
- X11355 1987 SAMPLE (11351-11362)

GEOLOGY
AU CLAIMS

25 0 50 100 200 m

93 N 10 E

1:2500

MAP 1