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PRELIMINARY GEOLOGY OF THE HANK PROPERTY, NORTHWESTERN BRITISH COLUMBIA (104G/1, 2)

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INTRODUCTION

The Hank property is situated in northwestern British Columbia approximately 20 kilometres northwest of Bob Quinn Lake (Figure 2-16-1). The property lies along a broad, northeast-trending ridge southeast of Ball Creek and varies in elevation from 900 metres in the northeast corner of the property to 2050 metres in the southwest. Access to the property is by helicopter from Bob Quinn Lake; the claims are served by a network of cat trails developed by Lac Minerals Ltd. between 1985 and 1989.

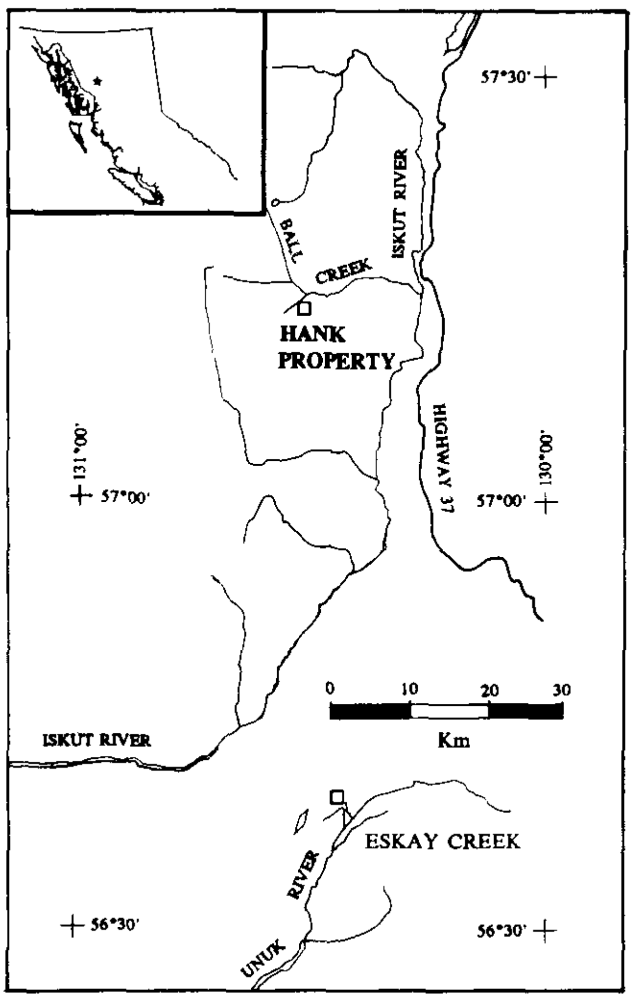


Figure 2-16-1. Property location map adapted from Anderson and Thorkelson, 1990.

The objective of this study is to define the stratigraphy, structure and alteration on the Hank property, leading to an understanding of the style and timing of precious metal mineralization.

Fieldwork conducted as a part of a Homestake Canada Ltd. exploration program between July and September, 1992, consisted of geologic mapping of the property and relogging of selected diamond-drill core. Mapping was conducted at two scales, 1:5000 property-scale mapping and 1:2000 detailed mapping of the informally named Fe site Hill, Bald Bluff and Rojo Grande areas. Subsequent research at the University of British Columbia will comprise part of an M.Sc. thesis supervised by Dr. A.J. Sinclair and Dr. J.F.H. Thompson

EXPLORATION HISTORY

The Hank property comprises two groups of claims totaling 91 units. The Hank claims, owned by Lac Minerals Ltd., cover a large hydrothermal system that extends to the south and east onto the Panky claims, owned by Cominco Ltd. Homestake Canada Ltd. optioned both groups of claims in 1992.

The Hank prospect was initially identified and staked by Lac Minerals Ltd. in 1983, based on regional stream-sediment geochemical anomalies and the presence of prominent gossans along the ridge. Preliminary geological mapping and sampling that year outlined several broad zones of anomalous gold and arsenic values.

Lac Minerals Ltd. completed more extensive geologic mapping, sampling, trenching and geophysical surveys resulting in the discovery of two subparallel, northeast-trending alteration zones, the upper and lower alteration zones (Figure 2-16-2). Trenching identified a zone of gold mineralization which averaged 3.3 grams per tonne gold over 13 metres, coincident with a broad gold anomaly (> 300 ppb) in soils within the upper zone. Four diamond-drill holes totalling 288.1 metres tested this zone and hole 84-2 cut an intercept assaying 1.98 grams per tonne gold over 18 metres (Turna, 1985).

Lac Minerals completed additional mapping, trenching, sampling and geophysical surveying during 1984 to 1985 and 1987 to 1989. Additional diamond drilling totaled 11604.1 metres in 88 holes, in both the upper and lower alteration zones and several other targets. Drilling outlined a geologic reserve of 245 000 tonnes with an average grade of 4.0 grams per tonne gold and 218 000 tonnes with an

LEGEND FOR FIGURES 2, 3 AND 4

EAST SIDE OF FAULT | **WEST SIDE OF FAULT**

STRATIFIED ROCKS

LOWER JURASSIC (?)

4 Undivided siltstones, well-bedded sandstones and heterolithic conglomerates.

LATE TRIASSIC STUHINI GROUP

2A Undivided magnetic pyroxene-feldspar-phyric flows and breccias.

3 Undivided aphyric flows, rusty pyritic flow-banded rhyolites and minor well-bedded siltstones and fine-grained sandstones.

2b Bioclastic and silty limestone.

1a,d Undivided hornblende ±feldspar-pyroxene flows, feldspar-hornblende ±pyroxene phyric ash tuffs, lapilli tuff and tuff breccias and volcanic-derived siltstones and fine-grained sandstones.

1b Siltstones interbedded with well-bedded sandstones.

1c Feldspar ±biotite-phyric ash tuffs and biotite-phyric massive flows and breccias.

INTRUSIVE ROCKS

A Orthoclase-megacrystic, hornblende-phyric monzonite.

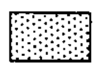
B Medium-grained hornblende diorite.

ALTERATION


Quartz+clay+pyrite


Quartz+clay±pyrite


Clay ±quartz


Quartz ± pyrite

SYMBOLS

Fault (defined, approximate, assumed)

Geologic contact (defined, approximate, assumed)

Alteration contact (defined)

average grade of 2.0 grams per tonne gold in the 200 and 440 pit areas (Figure 2-16-2).

Carmac Resources Ltd. (now Camnor Resources Ltd.) optioned the Hank claims in 1990 and drilled five holes totalling 1090.5 metres in the upper and lower zones, then terminated the option.

The Panky claims were staked by Cominco Ltd. in 1988, and geological mapping and sampling were completed in 1988 and 1990.

Homestake Canada Ltd. optioned the Hank and Panky claims in 1992, and completed a program of soil and rock sampling, an induced polarization survey and both property-scale and detailed geological mapping. Work concentrated on exploring the extensive alteration zones lying topographically and stratigraphically above the previously explored upper and lower alteration zones, with most of the detailed work in the Felsite Hill and Rojo Grande areas (Figure 2-16-2).

REGIONAL GEOLOGY

The Hank Property lies within the Stikine Terrane along the western margin of the Intermontane Belt and the eastern margin of the Skeena fold belt. Regional mapping in the area (Logan *et al.*, 1992.; Evenchick, 1991.; Souther, 1972) has defined the stratigraphy as predominately Upper Triassic augite andesite flows, pyroclastic rocks and volcanic-derived sediments overlain by Lower Jurassic grits, conglomerates and greywackes (Units 5, 7, 8 and 13, Souther, 1972). Sedimentary rocks of the Middle Jurassic Ashman Formation of the Bowser Lake Group are exposed along the Iskut River valley to the east (Evenchick, 1991). Augite-phyric flows, andesite tuffs and volcanic-derived wackes and sandstones of the Upper Triassic Stuhini Group are exposed along the western margin of the property (Units uTSv, uTSs, and uTSsn, Logan *et al.*, 1992)

To the west of the property a large-scale northwest-striking fault is mapped at the head of Hank Creek (Souther, 1972). A subparallel fault, informally named the West Hank fault, adjacent and to the east of the large-scale fault, is exposed on the ridge to the northwest of the claims and continues along the western boundary of the property (Figure 2-16-2). A syncline trending southeast along the top of Hank Ridge is exposed in the saddle northeast of Goat Peak (Souther, 1972).

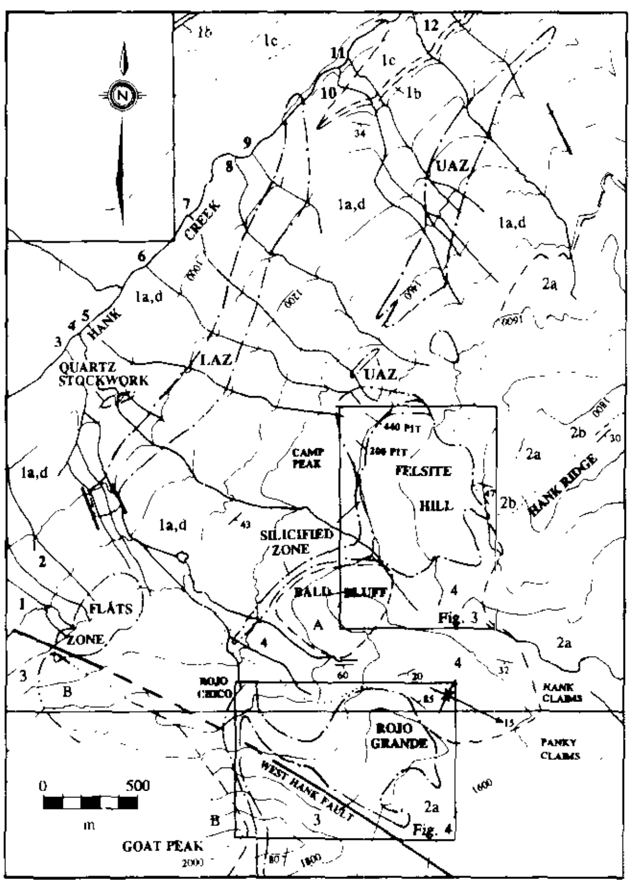


Figure 2-16-2. Generalized geology of the Hank property.

PROPERTY GEOLOGY

The Hank property is underlain by a succession of flows, pyroclastic and minor sedimentary rocks divided into four units (Figure 2-16-2). On the northeast side of the West Hank fault the stratigraphy consists of Upper Triassic Stuhini Group pyroxene-phyric flows and breccias overlying hornblende±pyroxene flows, pyroclastic rocks, siltstones, sandstones and biotite-phyric flows and breccias. Lower Jurassic carbonaceous siltstones, sandstones, wackes and pebble conglomerates which locally contain fossilized wood fragments unconformably overlie the volcanic succession (Souther, 1972).

On the west side of the fault Upper Triassic Stuhini Group interlayered aphyric flows and flow-banded rhyolites are overlain by siltstone and fine-grained sandstone.

Two intrusive plugs are exposed on the property, an orthoclase-megacrystic, hornblende-phyric monzonite which outlines the prominent knoll, Bald Bluff, and a medium-grained hornblende diorite which crops out on Goat Peak.

STUHINI GROUP

UNIT 1a

On the northeastern side of the West Hank fault, the most volumetrically abundant unit on the property is green to maroon, lapilli and tuff breccia. Rocks in this unit are poorly sorted and display weak normal grading from lapilli to breccia-sized fragments. Individual layers are difficult to identify, imparting an overall massive appearance to the rock. The fragments are feldspar-hornblende±pyroxene phyric, typically angular and vary in size from 2 to 50 centimetres. Feldspar laths vary from 1 to 4 millimetres and make up 20 to 35 per cent (this and all subsequent mineral percentages are based on field estimates) of the fragments. Hornblende varies from 2 to 5 millimetres and pyroxene from 1 to 2 millimetres; together they comprise 15 per cent of the fragments. The matrix of lapilli and tuff breccia is composed of a fine-grained mass of broken feldspar crystals and aphanitic ash.

Within this sequence isolated lenses of well-bedded ash tuff, composed of broken feldspar laths and ash are exposed in Creeks 4 and 7 and on Camp Peak and vary from 0.5 to 1 metre wide. Poorly indurated, well-bedded, maroon and green calcareous siltstones and volcanic sandstones crop out at the top of Creek 13.

UNIT 1b

At the base of Creeks 8, 9 and 10 a lens of feldspar±biotite-phyric ash and lapilli tuff interfingers with Unit 1a. On the ridge to the north these tuffs are interbedded with black biotite and feldspar-phyric flows and breccias. Fragments are subrounded to rounded and vary in size from 2 to 20 centimetres. The groundmass is composed of fine-grained ash and isolated shards of volcanic glass. Flows, 20 to 30 metres thick, are massive to amygdaloidal and medium grained with euhedral 2 to 5-millimetre biotite phenocrysts.

UNIT 1c

Overlying Unit 1b are black, finely laminated siltstones interbedded with grey and brown fine to medium-grained sandstones. Individual sandstone beds vary in thickness from 2 to 20 centimetres and occasional load structures indicate that beds are upright. The thickness of this unit varies along strike from 20 to greater than 50 metres.

UNIT 1d

Interfingering with Unit 1a are maroon to grey, magnetic, hornblende-feldspar±pyroxene-phyric flows. On the west side of the property these flows are volumetrically minor forming thin lenses which are discontinuous over 100 metres strike length. On the east side of the property, a series of flows up to 70 metres thick dominates the stratigraphy. The flows are massive with amygdaloidal bases, best exposed in Creeks 6 and 7. Hornblende phenocrysts vary from 2 to 20 millimetres in size and comprise up to 15 percent of the rock. Feldspars are commonly pale green and form single crystals or radiating masses with magnetite inclusions. Pyroxene occurs as equant crystals 2 to 4 millimetres in size. The groundmass is maroon, aphanitic and contains disseminated magnetite.

UNIT 2a

Overlying Unit 1, interlayered pyroxene and feldspar-phyric, dark green to grey, magnetic flows and maroon to green breccias are best exposed along Hank Ridge (Figure 2-16-2). The flows are massive and amygdaloidal and range in thickness from 5 to greater than 100 metres. Isolated limestone clasts are observed in the flows near the top of the section on Hank Ridge. The breccias are poorly sorted and consist of angular to well-rounded fragments up to 1.5 metres in size derived from the flows. Recessively weathering pyroxene crystals are equant, vary in size from 2 to 10 millimetres and comprise 10 to 30 per cent of these rocks. Feldspars occur as crowded white laths up to 3 millimetres in size and forming 20 to 40 per cent of the rock. The groundmass is aphanitic and contains fine-grained disseminated magnetite.

UNIT 2b

A lens of partially recrystallized, bioclastic and silty limestone crops out near the top of the exposed section of Unit 2a on Hank Ridge (Figure 2-16-2.). The limestone contains bivalve and gastropod fossil fragments in strongly bioturbated layers interbedded with well-laminated, fine-grained silty limestone. This unit is overlies tuff breccia and underlies pyroxene-feldspar-phyric flows.

UNIT 3

Dark green to black amygdaloidal aphyric flows and flow breccias interlayered with rusty, pyritic, flow-banded rhyolites are exposed on the east flank of Goat Peak along the southwest side of the West Hank fault. These volcanic rocks underlie brown to black, well-bedded, calcareous siltstones and fine-grained sandstones with carbonaceous plant fragments along bedding planes. The sediments are exposed west of Creek 1 and at the base of Goat Peak on the southwest side of the West Hank fault.

LOWER JURASSIC

UNIT 4

Unconformably overlying Unit 2 are poorly indurated, maroon and green siltstones, brown and green well-bedded sandstones, and heterolithic pebble to cobble conglomerates. Fossilized wood fragments up to 2 metres are common and rare *Weyla* are reported (Turna, 1985). Siltstones are well laminated and individual beds vary from 0.5 to 5 metres thick. The sandstones are calcareous and display low-angle, cross trough bedding with pebble lags along foresets. Clasts in the conglomerates are well rounded and vary in size from 0.5 to 10 centimetres. Clasts are dominantly intraformational and derived from the underlying volcanic rocks.

INTRUSIVE ROCKS

UNIT A

An orthoclase-megacrystic, hornblende-porphyritic intrusive is exposed on Bald Bluff. The intrusive is well foliated and locally flow banded with the strike of the foliation subparallel to the margins of the plug and dipping near vertically. On the top of Bald Bluff the foliation flattens and well-banded orthoclase-megacrystic intrusive rock underlies silicified breccia derived from it. A contact breccia with angular fragments of the foliated intrusive cemented by calcite, iron-bearing carbonate and grey to red silica is exposed on the margins of the intrusive. The Bald Bluff porphyry has intrusive contacts with the surrounding sediments and breccia dikes related to it intrude sedimentary rocks adjacent to the contact. Minor hornfelsing of Unit 4 is observed in outcrop adjacent to the intrusion and represented by the occurrence of black, euhedral biotite and fine-grained, disseminated pyrite.

UNIT B

A plug of relatively homogeneous, medium-grained equigranular diorite which locally contains more pegmatitic phases, crops out on Goat Peak west of the West Hank fault.

STRUCTURE

The West Hank fault was identified during mapping along the southwestern boundary of the Hank property. This fault is recognized as an extension of a fault previously mapped on the ridge to the northwest (Logan *et al.*, 1992). In outcrop the fault is marked by abundant white calcite veining, brecciation and contorted bedding in sedimentary rocks adjacent to it.

Bedding in the volcanic succession on the northeast side of the West Hank fault strikes northeast and dips 20° to 40° to the southeast along Hank Ridge. On the ridge to the north, bedding strikes southwest and dips 20° to the northwest. Within Unit 2b, above Felsite Hill, bedding strikes southeast and dips 50° to the southwest. Local variations in bedding are also recorded within Unit 1b at the base of Creeks 10 and 12.

Within Unit 4 bedding is more variable due to doming, caused by the intrusion of the Bald Bluff porphyry and folding along the east side of Rojo Grande. Along the margins of the intrusion, east to northeast-striking bedding steepens from 30° to 60°. On the east side of Rojo Grande an asymmetric syncline trending southeast probably corresponds to one mapped by Souther (1972).

Bedding on the southwest side of the West Hank fault strikes south and dips steeply to the west. Bedding in the sedimentary rocks adjacent to the fault and along Hank Creek strikes east and dips steeply south.

Within the volcanic succession along the northwest side of Hank Ridge local faults have been identified in outcrop and drill core. These faults strike north-northwest and have offsets of less than 100 metres.

ALTERATION AND MINERALIZATION

Seven alteration zones were identified during mapping and examination of drill core. The use of sericite and clays are field terms only. Preliminary x-ray diffraction work has indicated that most of the sericite is illite and clays are kaolinite±dickite.

LOWER ALTERATION ZONE

The lower alteration zone is a broad northeast-striking zone of sericite+pyrite±carbonate alteration which dips steeply to the southeast and cuts stratigraphy (Figure 2-16-2). The intensity of alteration increases toward the lower boundary of the alteration zone from weak chlorite+pyrite+carbonate alteration to strong sericite+pyrite+carbonate alteration. The lower boundary of the alteration zone is based on a decrease in the estimated percentage of carbonate and the prominent change in the colour of the gossans in the creeks along the northeast side of Hank ridge. The upper contact of the lower alteration zone is gradational and marked by a gradual decrease in the intensity of alteration to weak chlorite+pyrite+carbonate±sericite with discontinuous pods of stronger alteration.

The northern boundary of the lower alteration zone terminates between creeks 9 and 10 along Hank Creek (Figure 2-16-2). Reconnaissance mapping on the ridge to the north of the property indicates that it does not extend across Hank Creek. The southwest limit of the lower zone is a fault contact with unaltered hornblende and feldspar-phyric lapilli tuff.

Altered rocks are typically pale grey in colour and very uniform. Pyrite is euhedral, 1 to 10 millimetres in size, comprises 10 to 15 per cent of the rock and is commonly disseminated or concentrated within relict lapilli. Sericite is predominantly white and less commonly pale green to brown and comprises up to 80 per cent of the alteration assemblage. The predominant carbonate mineral is fine-grained calcite which comprises less than 10 per cent of the assemblage.

Within the lower alteration zone gold hosted in quartz-carbonate veins which also carry sphalerite+galena+pyrite±chalcopyrite and vary from 2 to 50 centimetres in width. In drill core these veins appear to be localized along dilational zones which pinch and swell, while on surface they appear to be discontinuous over tens of metres. Where zoned the veins consist of fine-grained, grey quartz on their margins and coarse-grained, white to pale pink calcite and sulphides in their cores. Wallrock alteration typically increases to soft pyritic clay adjacent to the margins of the veins.

Pyrite stringers, less than 1 centimetre wide cut calcite stringers and in turn are cut by late pink to white carbonate veins up to 30 centimetres wide. Gypsum and anhydrite fill the latest set of fractures with crystal growth typically perpendicular to the fracture walls.

QUARTZ STOCKWORK

Below the lower alteration zone in Creek 4, a 10 by 150 metre zone of quartz stockwork is exposed within chlorite+iron-carbonate+pyrite altered lapilli tuff of Unit 1a. The zone appears to terminate to the east of Creek 4 and is covered by talus to the west. Both milky white quartz veins up to 2 centimetres wide and silica flooding of the rock are observed in outcrop. Sheeted quartz veins in the core of the stockwork strike 170° and dip vertically.

UPPER ALTERATION ZONE

The upper alteration zone is less continuous than the lower zone and forms a series of northeasterly trending zones from the head of Creek 4 to the west side of Creek 12 (Figure 2-16-2). Alteration varies from strong sericite+pyrite±carbonate to strong sericite+chlorite+pyrite+carbonate. In Creeks 10, 11 and 12 the footwall of the zone is very sharp; in drill core within the 200 and 440 pit areas this lower boundary coincides with the top of maroon hornblende±pyroxene-phyric flows. In Creek 12 the upper contact of the alteration zone coincides with the base of a thick pile of hornblende-phyric flows. This suggests that the upper alteration zone may be stratigraphically controlled.

The alteration assemblage in the upper zone comprises pale green, sericite+chlorite+pyrite+carbonate with localized pods of intense pale grey, sericite+pyrite±carbonate similar to the lower zone. Gold in the upper zone appears to be related to pyrite concentration. Disseminated pyrite varies from 10 to 15 per cent, is very fine-

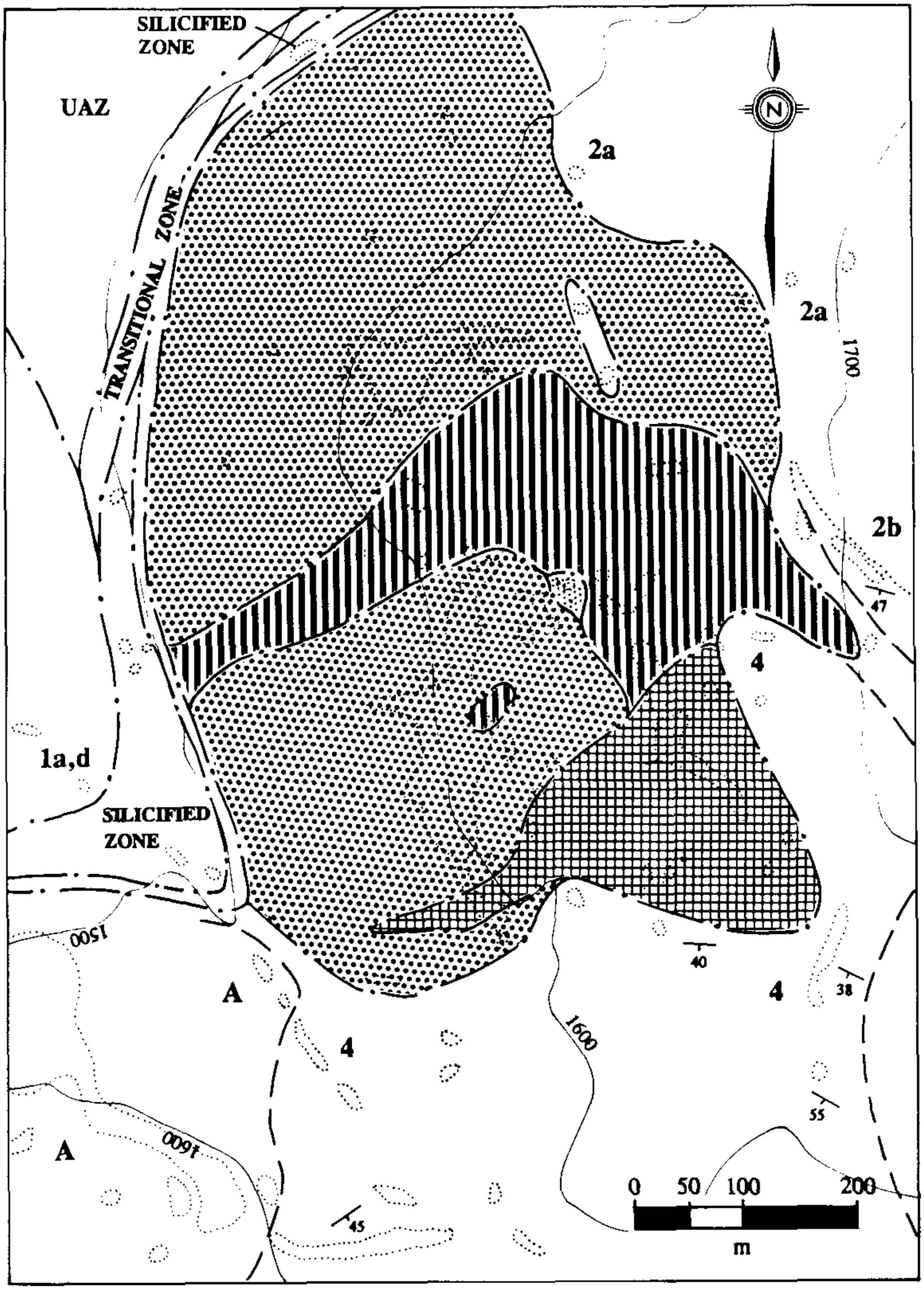


Figure 2-16-3. Distribution of alteration assemblages on Felsite Hill.

grained (<1mm) and appears to be concentrate in relict lapilli. Pyrite stringers up to 1 centimetre wide cut calcite stringer veins. Disseminated carbonate varies from 5 to 15 per cent of the alteration assemblage with an increase in calcite occurring along the margins of quartz-carbonate veins.

Quartz-carbonate veins carrying sphalerite±galena±pyrite±chalcopyrite, similar to those in the lower alteration zone are present but less abundant. Late, coarse-grained, milky white to pale pink, crustiform calcite±pyrite veins up to 50 centimetres in width cut these veins. Gypsum and anhydrite fill the latest set of fractures. Discontinuous zones of grey silicification are seen in core and correspond to an increase in the percentage and grain size of pyrite. These zones are usually related to an increase in the amount of veining and are up to 10 metres in width.

Between the upper alteration zone and quartz-clay-pyrite alteration on Felsite Hill there is a poorly exposed zone, up to 100 metres wide, of transitional alteration best seen in drill core within and above the 200 pit area (Figure 2-16-3). In drill core there is a general decrease in the degree of silicification downward from quartz+clay+pyrite alteration to friable clay+pyrite±quartz. Crumbly clay+pyrite±quartz grades downward into sericite+clay+pyrite±carbonate and into typical upper zone alteration. An interval of diffuse silica flooding within this transitional zone may correspond with the position of the silicified zone described below.

Silicified Zone

The "silicified zone" consists of intense silicification, sometimes accompanied by disseminated pyrite, exposed at the base of Bald Bluff and extending along the western margin of Felsite Hill (Figure 2-16-2). Below Bald Bluff the silicified zone appears stratigraphically controlled within sedimentary rocks of Unit 4; it strikes 100° and dips 30° to the south. It may pinch and swell along strike, as indicated by the absence of this type of alteration in drill core below Felsite Hill (Figure 2-16-3). The zone is bounded by a poorly exposed zone of strong sericite+clay+pyrite±quartz alteration of unknown width. Below Bald Bluff this zone contains cavities lined with drusy quartz and quartz veins similar to those observed in the "flats zone" described below.

Alteration in the silicified zone is composed of pale grey to dark blue-grey, very fine grained quartz. Pyrite is present as very fine grained disseminations within grey quartz and coarse-grained pyrite within blue-grey quartz. At least three phases of brecciation are recognized in the zone. The earliest phase is characterized by white to grey angular fragments in a grey silica matrix. The second phase is characterized by rebrecciation and partial cementation by silica. Drusy cavities occurring at the interstices between angular fragments and chalcedonic veinlets up to 2 millimetres wide are associated with this phase. The lastest phase is characterized by the brittle fracturing of silicified outcrops and the presence of barite in open cavities.

Felsite Hill

Alteration on Felsite Hill forms a broad oval zone with a north-trending long axis cutting across stratigraphic contacts (Figure 2-16-3). Along the margins of the zone are altered sedimentary rocks of Unit 4 and pyroxene and feldspar-phyric flows of Unit 2a. The dominant alteration is intense quartz+clay+pyrite followed by quartz+clay ±pyrite and clay±quartz. A small zone of quartz+pyrite alteration, similar in appearance to the silicified zone, is exposed on the top of Felsite Hill.

Quartz+clay+pyrite alteration is texturally destructive with relict feldspar and fragment outlines present only on weathered surfaces. Near the margins of quartz+clay+pyrite alteration zones, the intensity of silicification decreases and clay-altered feldspars and fragments are visible. Texturally this alteration type is composed of fine grained blue to grey silica, grey to white clay and up to 15 per cent very fine grained disseminated pyrite. A small pod of clay±quartz-altered, fine-grained sediments with carbonaceous partings is exposed within quartz+clay+pyrite alteration on the west side of Felsite Hill. This alteration varies from clay ±quartz to brown clay which appears more granular than the typical soft amorphous clay described below.

Quartz+clay±pyrite alteration varies from texturally destructive vuggy, quartz+clay alteration to less intense alteration with relict primary textures and isolated pods of fine-grained pyrite. In the former, intensely altered rock, fine-grained white to buff quartz comprises to 70 per cent of the rock which has small cavities throughout. These cavities contained clay which has since been leached out. Where textures are more visible there is an increase in clay±pyrite alteration. Pyrite occurs as fine-grained euhedral grains in localized disseminations of up to 15 per cent pyrite. Small pods of chalcedonic grey silica and white amorphous clay veinlets have been identified in outcrop.

Clay±quartz alteration varies dramatically in intensity along the southern margin of the alteration zone on Felsite Hill (Figure 2-16-3). In this area clay±quartz alteration preserves primary sedimentary textures in the maroon siltstones and conglomerates. Clay varies from green to maroon in colour and occurs initially as soft amorphous clay alteration of the matrix. With an increase in alteration intensity, clasts in the conglomerates are altered to fine-grained clay similar to the matrix.

Patchy zones of moderate quartz+clay+pyrite±sericite±chlorite alteration with textural similarities to alteration on Felsite Hill and in the upper alteration zone are exposed on the top of Bald Bluff.

Rojo Grande

Alteration on Rojo Grande forms a more irregular zone than on Felsite Hill, extending from Rojo Chico eastward to Rojo Grande and southward onto Goat Peak (Figure 2-16-4). The style of alteration is similar to alteration on Felsite Hill with quartz+clay+pyrite the dominant assemblage, followed by quartz+clay±pyrite and minor clay±quartz. On Rojo Grande zones of intense quartz±pyrite alteration are more abundant and occur as north-striking linear zones.

Rojo Chico is situated to the west of Rojo Grande and is altered to quartz+clay+pyrite (Figure 2-16-4). Altered rocks are typically massive and granular in appearance with fine-grained, blue-grey quartz, disseminated pyrite and white clay.

Along the east-northeast side of Goat Peak a prominent zone of quartz+clay+pyrite alteration appears to strike towards Rojo Chico. This linear zone cuts across the West Hank fault along the base of Goat Peak with no observable offset. Along the ridge line, a quartz-clay-pyrite assemblage

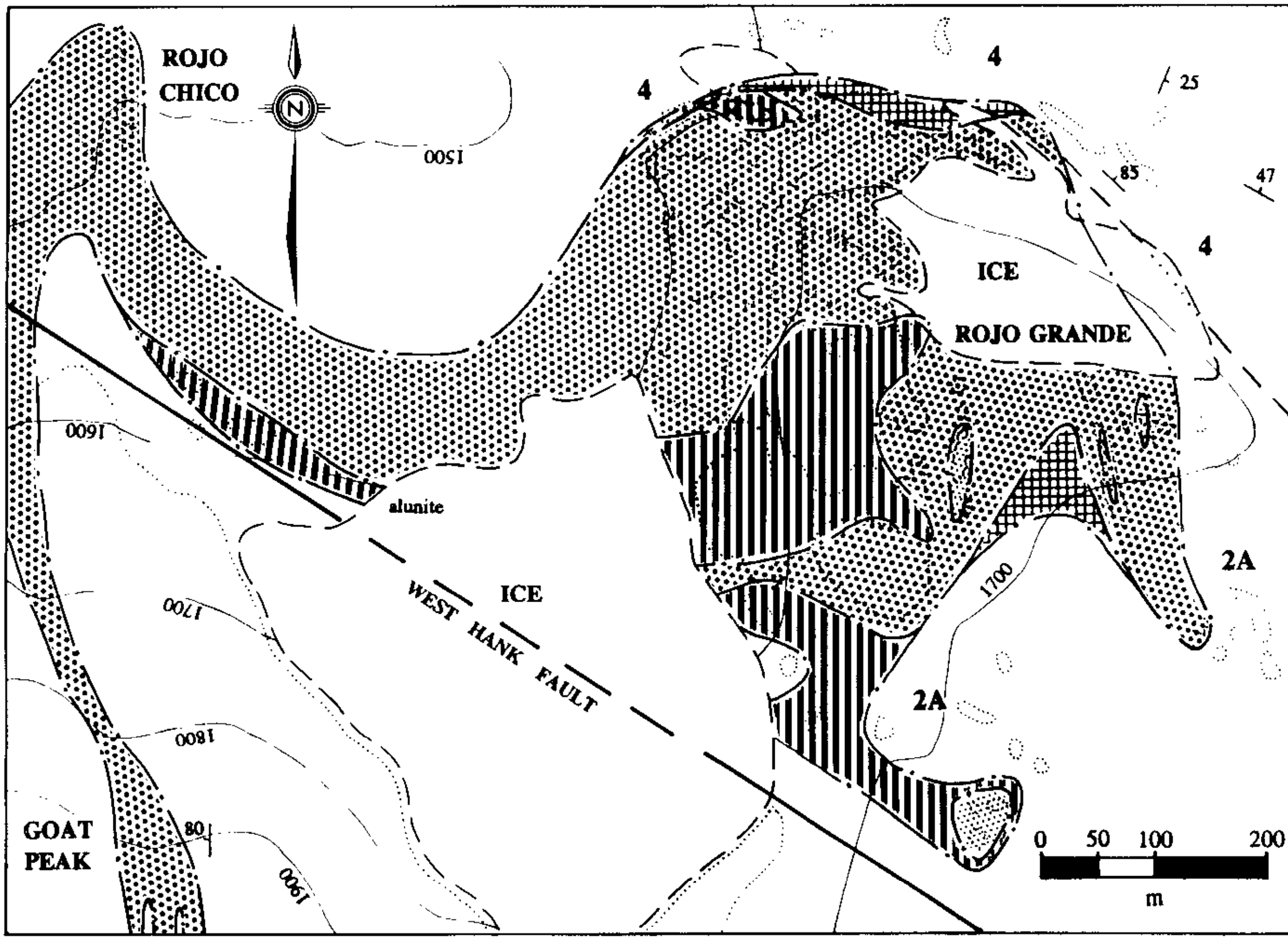


Figure 2-16-4. Distribution of alteration assemblages on Rojo Grande, Rojo Chico and Goat Peak.

alters aphyric amygdaloidal flows of Unit 3. This zone includes linear bands of unaltered flows striking 170° and dipping vertically (Figure 2-16-4).

Quartz+clay±pyrite altered rocks occur along the base of Goat Peak adjacent to the fault. Within this zone, white amorphous clay pods and veins up to 2 centimetres wide are observed adjacent to a zone of brecciation measuring 1.0 by 4.0 metres. The clasts in this breccia are altered to quartz and clay and cemented by fine-grained grey quartz. A vein of light brown sugary crystals 1.0 centimetre wide also occurs adjacent to the breccia. X-ray diffraction of this material has identified it as a combination of natroalunite and dickite.

Flats Zone

A poorly exposed zone of quartz+sericite+pyrite alteration hosting pods of clay+pyrite±quartz alteration is exposed at the head of Creeks 1 to 3 (Figure 2-16-2). Alteration in the flats zone is composed of pale grey, fine-grained sericite, quartz and pyrite with milky white, druzy quartz cavities and crustiform veining up to 3 centimetres wide. Fine-grained disseminated pyrite comprises 5 to 20 per cent of the rock. Clay+pyrite±quartz alteration is seen in small outcrops of friable white to grey rock with very fine grained disseminated pyrite. Within this zone are discontinuous pods of grey silica which are recognized by an increase in the competence of the rock. These pods are surrounded by a broad zone of yellow and white, clayey soil.

In drill hole 87-7, collared in this zone, quartz+potassium-feldspar+pyrite alteration has been confirmed at a depth of 46.5 metres by x-ray diffraction. This alteration assemblage occurs as more competent intervals within friable quartz-sericite-pyrite alteration.

DISCUSSION

The Hank property is underlain by Upper Triassic Stuhini Group andesitic to basaltic flows, pyroclastic rocks, volcanic-derived sediments and minor limestone, overlain unconformably by poorly indurated, well-bedded Jurassic sediments. These rocks have been intruded by the Bald Bluff orthoclase-megacrystic porphyry and diorite. Three main alteration assemblages have been identified, possibly representative of a low-sulphidation epithermal system. They include: the sericite+pyrite+carbonate assemblage of the upper and lower alteration zones, where gold is concentrated in narrow quartz-carbonate veins in the lower parts of the system, and is related to disseminated pyrite in the upper parts of the system; pervasive multiphase silicification within a transitional zone of decreasing carbonate+sericite and increasing quartz+clay alteration and; variable quartz±clay±pyrite alteration of the broad Felsite, Rojo Chico and Rojo Grande zone, where gold mineralization is restricted to quartz-clay zones. This alteration may represent the upper levels of an epithermal system. Weak quartz+clay+pyrite±sericite alteration within the Bald Bluff porphyry suggests that it intruded during the final phases of the mineralizing event. Future geochronometry, petrology, x-ray diffraction and whole-rock geochemistry work will help to constrain these temporal relations.

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