



Geology of the Area Between the Sustut Copper Deposit and the Day Porphyry Copper Prospect

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INTRODUCTION

The area of study lies within the headwaters of the Sustut River drainage about 350 kilometres north of Prince George, covering portions of NTS 94D/7 and D/10. The Omineca Mining Road lies just to the east of the area. To the northeast, across the Moosevale valley, lies the southern McConnell Range mapped by the writer in 1997 (Figure 1).

The Kemess mine is forty-five kilometres to the north. Elevations range from 1200 metres to 2300 metres with the tree line at about 1650 metres. In the summer of 2000 helicopters were stationed either at the Kemess mine or a trailer camp at kilometre 400 of the Omineca Mining Road.

The writer spent 20 days in the field assisted by Brent Carbno, a recent M.Sc. graduate from the University of Victoria. Traverses were based from three fly camps. The report here references information from a larger area than shown in figure 1.

OBJECTIVES

The principal objectives of the project were:

1. To determine the distribution of various copper-bearing sedimentary subunits of the Moosevale Formation.
2. To map the broad band of geology from the Sustut deposit southward to the Day prospect.
3. To relate the economic stratigraphy at Sustut to similar stratigraphy in the southern McConnell Range.

PREVIOUS WORK

The region was covered by 1:250 000 mapping by the Geological Survey of Canada during the mid 1940s (Lord, 1948). A number of showings were found. One of these, the Marmot, was the focus of the first modern exploration (1960s) in the general area. At the same time there was significant exploration activity for porphyry copper and molybdenum mineralization in the intrusive

belt running north and south through the McConnell Range. A large gossan was discovered in 1966 at the present site of the Kemess North prospect and led to similar exploration on nearby ground. Falconbridge Nickel Ltd., during a reconnaissance helicopter flight in 1971, discovered a malachite-stained bed in the Sustut drainage that was traceable for over 2500 feet. Their assessment suggested a replacement copper deposit hosted by volcanoclastic rocks in the upper part of the Takla Group. Numerous junior and major resource companies acquired ground in the area. In 1972 copper was found on the Willow cliffs on the opposite side of the Sustut River and a porphyry style target was identified at the Day. In 1973 the B.C. Geological Survey conducted a mineral deposit study of the Sustut copper area (Church, 1974a). The Geological Survey of Canada returned to pursue general and detailed studies within the McConnell sheet (Richards 1976, and Monger 1977). Monger and Church (1976) revised the stratigraphic nomenclature based on breaks and lithological changes in the volcanic succession supported by fossil data and field observations. In 1983, follow up of a gold-copper-molybdenum soil anomaly led to the discovery of the Kemess South porphyry deposit.

Site-specific work continued in the 1980s and 1990s on various properties. In 1996 a regional geochemical survey of the McConnell map sheet resulted in numerous multi-element precious and base metal anomalies within the general area of interest (Jackaman, 1997). Diakow mapped the northern part of the nearby McConnell Range in 1997 (Diakow, 1998) and this writer pursued studies at its south end (Legun, 1998).

In late 1999 Doublestar Resources Ltd. purchased all of Falconbridge Nickel's properties in British Columbia, including Sustut Copper. Doublestar's 2000 exploration program at Sustut consisted of fill-in drilling (20 holes for 5865 feet) in the higher grade Southeast Zone. Since their work program was helicopter-supported, the British Columbia Geological Survey field crew were able to use the same aircraft for their field work at much reduced cost.

REGIONAL GEOLOGIC SETTING

The area is underlain by volcanic rocks of the Asitka, Takla and Hazleton Groups (Figure 2).

Regionally the Takla Group lies disconformably to unconformably above cherts and siliceous mudstone of

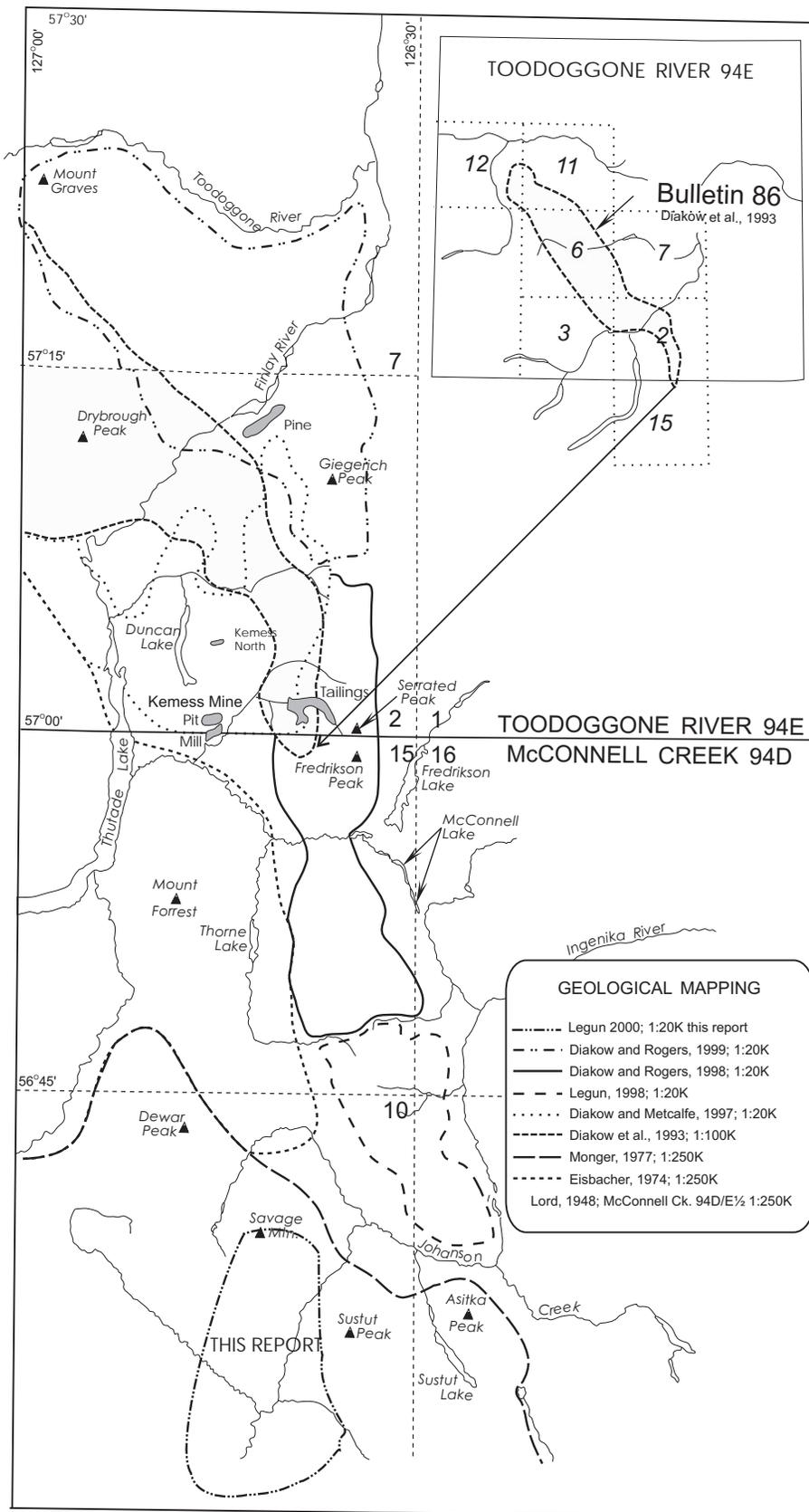


Figure 1. Location of recent and previous mapping in the northeastern McConnell Creek (94D) and southern Toodoggone River (94E) map areas. Modified after Diakow (1998).

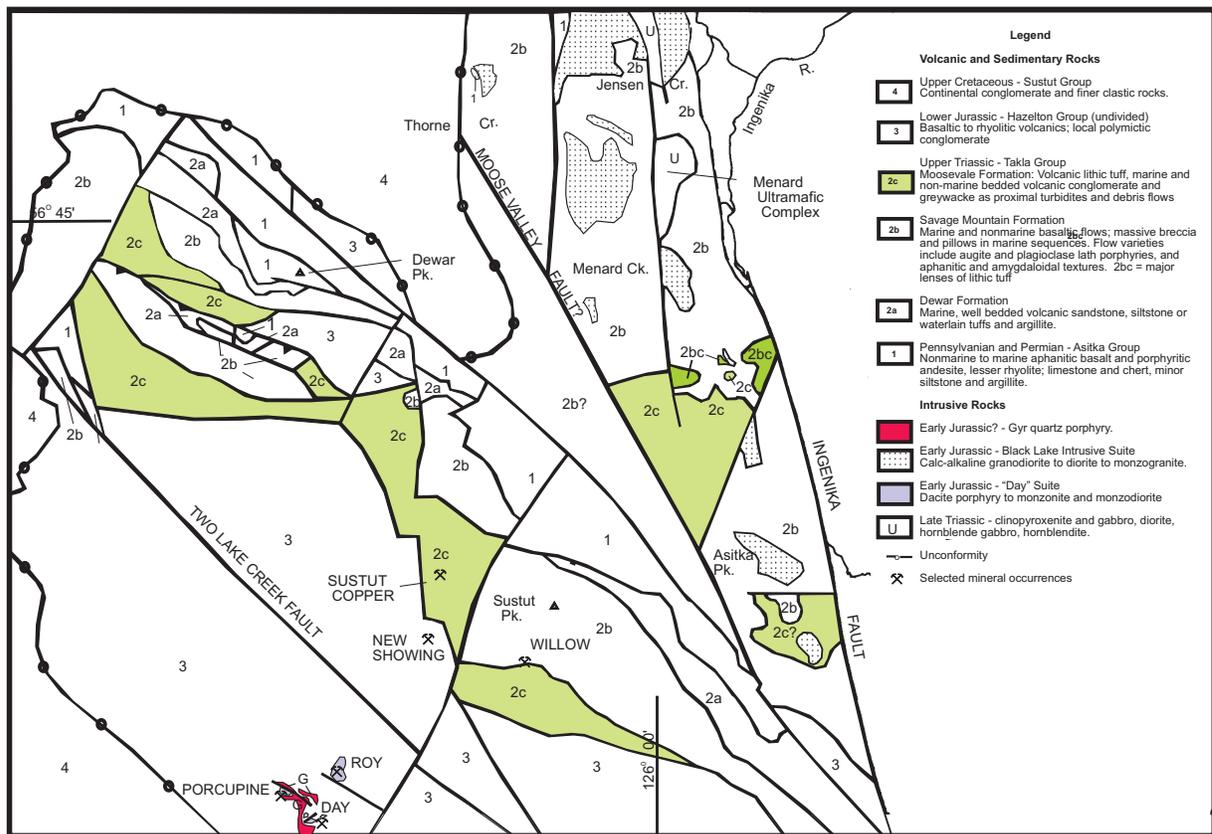


Figure 2. Schematic geology of the McConnell Range and Sustut-Day areas showing major lithostratigraphic divisions and plutonic rocks. Geology after Monger (1976), Legun (1998), Diakow (1998) and unpublished maps of Falconbridge Nickel Mines Ltd.

the early Permian Asitka Group, a volcano-sedimentary package that includes rhyolites and limestone as well as mafic volcanics, shale and chert. Diakow (1998) places the base of the Takla at the first occurrence of Halobia-bearing shale above cherts. The Asitka is confined to the slopes facing Moosevale valley and was not examined.

The Dewar Formation, forming the base of the Takla succession, is regionally the most extensive facies of the Takla, but is thin in the area of study, consisting of 300-400 metres of siltstone, crystal-rich sandstone, and interbedded argillite. It thickens to the southeast and is up to 1600 metres thick in the Sikanni Range. It thins to a feather edge in the northern McConnell Range where Diakow recognises only a few metres below Savage volcanics and above the Asitka (Diakow 1998, Figure 8.3).

The Savage Mountain and Moosevale Formations dominate the Takla in the area of study. Augite-bearing pillowed flows and minor breccias constitute the Savage (1600 metres) which passes laterally to Dewar facies toward the Sikanni Range. Overlying the Savage is a sequence, 1400 metres thick, dominated by breccias. The breccias are disorganised in the lower part of the sequence but stratified in its upper. This is the Moosevale Formation that hosts the Sustut deposit. In the Sikanni Range it rests directly on the Dewar Formation.

Fossil data shows the Dewar and Savage are upper Carnian to lower Norian (Late Triassic), while the Moosevale may be restricted to the lower Norian.

A few kilometres south of Sustut the upper contact of the Takla Group is marked by a transition to polymictic conglomerate. The contact here appears gradational over 5 metres or so but regionally it is an unconformity. The conglomerate comprises the base of the Hazelton Group, a volcano-sedimentary package of more calc-alkaline affinity than the Takla. Monger suggested the polymictic conglomerate was probably of Lower Jurassic Sinemurian age based on correlation with similar rocks in the area of Mt. Iktlaki, 16 kilometres to the south (Monger and Church, 1976).

Strata of the Takla Group are regionally metamorphosed to zeolite (prehnite-pumpellyite) facies grade. This contrasts with generally higher greenschist to amphibolite grades found east of the Ingenika fault.

STRATIGRAPHY

Takla Group

SAVAGE MOUNTAIN FORMATION

The Savage Mountain Formation is characterized by pyroxene basalt porphyry, pyroxene-feldspar porphyry and massive basalt. Work by the author in the Southern McConnell Range showed a clear upward change in composition. Pyroxene porphyries dominated the lower sequence while coarse feldspar lath porphyries approaching andesite composition cap the sequence.

These compositional changes are not apparent in the Savage Mountain Formation at Sustut. At Sustut the Savage Mountain Formation is dominated by pillow lavas that are pyroxene porphyries. The top of the sequence shows some development of spherulites, is locally carbonated and massive. Interbeds between pillow sequences at Sustut show gradations to pillow breccia, and beds of nodular debris with greenish cherty bands. The pillow breccia perhaps originates as spalling material from submarine flows on appreciable slopes.

Across the Sustut River at the Willow showing Church (1974b) and Burns (1974) show the upper sequence is dominated by thin aphanitic and amygdaloidal flows. However, the writer noted at one location a clear pillow sequence at the very top of the Savage Formation.

In southern McConnell Range the upper Savage consist of a series of flows with reddish oxidised tops. As well there are large mappable intercalations or wedges of tuff breccia. This is not apparent at Sustut.

In the Dewar-Sustut-Willow area the Savage Formation thus appears to have formed broad submarine edifices while in the McConnell Range shield volcanoes emerged above sea level. The rapid thickening northward of lath porphyry flows and wedges of tuff breccia is evidence for those subaerial edifices.

MOOSEVALE FORMATION

The Moosevale Formation is a volcanoclastic unit that lies abruptly on the Savage Mountain Formation. In this study area the subdivisions of Harper (1977) were found to be useful, but the writer has given descriptive names to the subdivisions 3a,3b,3c,3d. These are a basal marine shale, a lower division breccia facies called the "chaotic breccia" in this article, a middle sandy unit, and an upper semi-stratified breccia and matrix-supported conglomerates with graded beds. The lower and upper breccias correspond to the lower and upper members of the Moosevale described by Monger and Church (1976) and the sandy unit is not formally known outside the area.

Most clasts in the Moosevale can be ascribed to the Savage Formation but not from immediate sources. For example, coarse feldspar lath porphyry is unknown in the Savage Formation at the Sustut copper property. Similarly clasts in the Moosevale at Sustut carry no vestiges of pillows rinds.

Feldspar porphyries and pyroxene-hornblende feldspar porphyries are common as clast types in the Moosevale Formation. Pyroxene (without feldspar) porphyry clasts are less common in contrast to their abundance in the Savage. Monger (1977) suggested in an AFM diagram that Moosevale clasts lay in a field between Hazleton and Savage compositions.

Basal Shale and Siltstone Band

This marine shale unit is described by Monger and Church (1976) as transgressive as it occasionally overlaps volcanic flows interpreted to be subaerial.

The shale band is best developed at Willow Ridge where up to 60 metres of Halobia-bearing black shales and argillites are present (Burns, 1974). The shale thins rapidly along strike and within a few hundred metres to the east is only about 10 metres thick. At that location it lies abruptly on reddish limestone that caps pillowed lava of the Savage Mountain Formation. The shale probably drapes a preserved submarine topography. The shale is missing on the ridge to the east (cut out by a volcanoclastic wedge?), but reappears further east where Burns notes 30 metres of fossiliferous brown to black shale near a showing called the Sit.

West of Willow Ridge the shale band is offset at the Sustut River fault and reappears as a band of greenish cherty siltstones at the base of cliffs north of the Sustut deposit. The band is visible in a gully where large peels of siltstone are found in sandy turbidite interbeds and it is offset and truncated in a succession of faults.

To the northeast in the southern McConnell Range (Legun, 1998) a possible equivalent is present in a sandy lens at the base of the chaotic breccia unit of the Moosevale. The lens is about 50 metres thick and a few hundred metres wide. It comprises thick beds of calcareous and lithic tuffaceous sandstones (with crossbeds and mud chips), stratified grit and conglomerate, minor red and green siltstone, calcareous argillite and laminated chert.

The stratified sediments are overlain by at least 800 metres of lithic tuffs, massive tuffs, slump facies with red siltstones, graded conglomerates, and tuffaceous breccias cut by occasional sills of megacrystic augite porphyry. The breccias are similar to that of the lower Moosevale seen elsewhere. The minor presence of quartz in the lens is however atypical.

To the northwest the basal shale unit has not been formally recognized in the area of Dewar Peak; however, the entire Moosevale Formation is described as marine (Monger, 1977). Therefore, it is probably masked by coarse influx from a proximal sediment source.

The marine shale or its equivalent may be present to the southeast in a fault block panel between the Asitka and Sustut rivers. Monger (1977) notes fossiliferous grey argillite and siltstone interbedded with conglomerate near the base of the formation.

Chaotic Breccia

A thick sequence of breccias, which belong to the lower division breccia facies, overlie the basal sediments. Bedding attitudes are difficult to discern in these chaotic breccias. There are two main lithotypes.

One, lithic tuff breccias with similar volcanic material in the matrix and clasts. Clasts are subrounded to subangular, the matrix has fragmented and sparse crystals of feldspar. The clasts are dominated by pyroxene-feldspar porphyries.

Two, complex breccias which contain large blocks up to 2 metres or more in a matrix of variable composition. The matrix may be irregular masses of bedded sediment, often siltstone, and lensoid masses of stratified conglomerate. Some armoured clasts seem to be present.

Sandy Unit

The sandy unit at Sustut is present at the northern base of the cliffs of the "mesa". The same unit was mapped half a kilometre southwest of Savage peak. The unit includes minor mudstones. Some beds have detached isoclinal folds suggesting slumps, others are full of large blocky chips of red siltstone, one distinct bed comprises a sharp based graded tuffaceous sandstone with crescent and oval-shaped inclusions of mudstone. Monger (1977) retrieved *Halobia* fossils from this unit (sample H and I on map), probably from the mudstones. The sandy unit represents a shallower marine environment than that represented by the basal marine band. It may have been occasionally emergent as evidenced by mudcracks.

UPPER SEMI-STRATIFIED BRECCIA AND CONGLOMERATE

At Sustut the sandy unit is overlain by thick beds of semi-stratified breccia. Semi-stratified breccia bodies include matrix-supported conglomerates and significant lenses and interbeds of stratified and graded beds with mudstone rip-ups. In contrast to the chaotic breccia, strike and dip bedding surfaces are discernible in intercalated sediments. The semi-stratified breccia still includes a considerable portion of slump and "tuff breccia" similar to the lower unit.

The tuff breccia includes monomictic breccias with embayed and very irregular shaped volcanic clasts in a slightly darker matrix. They may be peperites, formed by interaction of magma with wet sediments. Other tuff breccia variants include clasts with alteration rims and clasts "etched" against altered matrix. These may be subaqueous eruption breccias.

The upper part of semi-stratified breccia is dominated by sandy, matrix-supported conglomerates. Harper noted that the upper 365 metres (1200 feet) of the upper division was rather reddish with a more lime-rich matrix than the red and green beds immediately below.

EXTENT AND THICKNESS OF MOOSEVALE

It is apparent that the structural basin of deposition underwent changes in the Lower Jurassic. For example on the ridge network east-southeast of Willow Ridge the Hazleton cuts down into the Savage Mountain Formation in stepwise fashion. A tilting fault block is probable. Monger also reports dramatic local thickness changes in the Moosevale Formation at Mt. Dewar related to downcutting channels at the base of the Hazleton.

It is clear that the Moosevale, once of wider extent, is preserved in a remnant structural basin by earliest Jurassic time. The remnant basin appears to preserve the thicker deposits of the original basin.

Hazleton Group

POLYMICTIC CONGLOMERATE

On the ridge immediately south of the Sustut highland the transition to a polymictic conglomerate is marked by the appearance of chert clasts within matrix supported conglomerates of the Moosevale and their increase up section. The transition interval varies from a few metres to perhaps ten metres of section. The polymictic conglomerate is clast to matrix-supported, with clast support more evident in the upper beds. Generally it has less matrix than Moosevale breccias and the clasts are more closely packed. The matrix is more of a wacke with mudstone matrix rather than the tuffaceous, broken crystal-rich matrix common to the Moosevale. Clasts include pale volcanic feldspar porphyries, red siltstones, chert and limestone (up to 50 centimetres diameter). Some limestones are fossiliferous and carry ammonites. The clasts reflect erosion of Asitka lithologies but with some component of Takla volcanics.

Regionally the contact with the Takla Group varies from faulted to erosional channel fills or conformable transitions. It appears alluvial fans from an eroding source prograded into the area but local conditions varied from subaerial to subaqueous. Richards reports (in Monger 1976) bedding current directions indicating sources from north and east.

Lower Hazleton Group

On the ridge network a kilometre south of the Sustut mesa the lithologies immediately above the polymictic conglomerate comprise matrix-supported conglomerates with finer grained, sandy, reddish tops. Clasts are pale andesitic to dacitic feldspar porphyries. The lack of Takla Group clasts suggests the landscape was buried under renewed volcanism in the early Jurassic. Richards (1976) mapped this area on the north side of Two Lake Creek fault as part of a northwest trending half graben fill of volcanoclastics (unit 6a). Conglomerate and breccia passes upward to reddish lithic tuffs, tuffaceous sandstone, lapilli tuff and reddish andesitic flows of clear subaerial character.

On the south side of Two Lake Creek fault massive greenish grey andesitic volcanics dominate. These do not have pillow features and belong to an extensive volcanic unit (unit 6 of Richards 1976) probably overlying the volcanoclastics. The volcanics are faulted and mantled by tuffs and subaerial flows in well bedded sequences.

A well exposed sequence overlies massive andesites in the drainage of Harper Creek. It includes welded tuffs, columnar jointed tuffs, lapilli tuff, rubbly subaerial breccias and very vesicular flows (with chalcedonic "thunder eggs"). The columnar jointed tuff, possibly the ignimbrite described by Church (1983), fills a paleochannel, probably cut in a volcanic slope. Some flows abut earlier andesites marking an unconformity or fault. The volcanic topography must have evolved in a rather complex manner. In the Day area dacitic ignimbrites represent evolving felsic magmatism. Their source may be the Gyr porphyry (Church, personal communication).

DACITE PORPHYRY AND MONZODIORITE PLUGS

South of Two Lake Creek a suite of intrusive plugs of common character extend southeast to northwest across the Sustut River. Only those on the west side near the Day, Roy and Birch minfile showings were examined. These are plugs of dacite porphyry/monzodiorite with varying development of pyritic and silicic alteration and bearing local concentrations of copper mineralization. Locally they carry abundant magnetite as an accessory mineral. The Day "granodiorite" is the best known example. Others include an intrusive at the Roy showing (minfile 94D 078), a dacite porphyry near the Birch (minfile 94D 077). Two other plugs of modest size are noted on old Falconbridge maps west of the Day (one of which was drilled). The bodies have been listed under a rather confusing variety of names in individual reports, perhaps due to textural variations from porphyritic to equigranular. However, an unpublished compilation map of Falconbridge Ltd., refers to them all as unit 11 "diorites". To the east, across Sustut River other intrusives may be part of the suite (eg. one is informally known as the Pat intrusive). In two areas there have been anomalous zinc values at sample sites near these intrusives (eg Gyr and Brown, 1973) but no clear association shown. The Day and Pat have been dated to a metallogenetically significant period (185 m. yrs for Lorraine, Mt. Milligan deposits.). By association these other plugs are also of some interest and constitute a theme for some reassessment of the area. The minfile showings are described in more detail in the Economic Geology section.

GYR PORPHYRY

The Gyr porphyry has an aphanitic, occasionally flow banded matrix and is reddish to orange on the fresh surface with sparse feldspar phenocrysts. It contains a few per cent quartz eyes which clearly distinguish it from the dacite porphyry/monzodiorites. Its age relationship to the latter is unclear. Church (1983) showed the rock was

rhyolitic in composition and described it as "a sinuous assemblage of small felsic stocks, dikes, and sill-like bodies". More detailed mapping in the area of interest suggests the main body is a large sill. Many contacts are shallow, concordant with regional bedding.

ECONOMIC GEOLOGY

Sustut Copper Deposit

The best defined mineral resource in the area of study is the Sustut Copper deposit, located south of Savage Mountain. It has an inferred resource of 20.1 million tonnes at an indicated grade of 1.17% copper, including the Southeast zone which contains 7.6 million tonnes grading 1.64% copper (George Cross News Letter, September 20, 2000). The deposit consists of fine grains of hematite, pyrite, chalcocite, bornite, chalcopyrite and native copper (in decreasing abundance) dispersed in matrix and clasts of volcanoclastic rocks in the Moosevale Formation. Alteration minerals include epidote, quartz, prehnite and carbonates. The main mineralized zone is partially concordant with bedding, and lies within the semi-stratified breccia, 250 metres above the sandy unit (Harper, 1977). This places it 400 metres below the polymictic conglomerate. Harper (ibid) noted that the upper 365 metres (1200 feet) of the semi-stratified breccia was rather reddish with a more lime rich matrix than the red and green beds immediately below. Interestingly the lime rich band would then lie just above the main Sustut band of mineralization.

Willow Showing

A thin grey-black lapilli tuff unit at the top of the basal shale of the Moosevale contains limestone as well as volcanic clasts. This unit contains irregularly distributed chalcopyrite and chalcocite mineralization. Church (1974b) described the mineralization as fine grained disseminations (less than a mm) constituting up to 30% by weight of some samples. The best showing is a lens 25 by 10 feet. A grab sample assayed 8.06 % copper (Burns, 1974). Most other assays over 5 foot intervals in this unit returned much lower values (0.25% Cu or less). Mineralized shears in the unit assayed up to 2.18% Cu over 5 feet. Drilling did not intersect the main surface showing at depth. However minor base metal values were intersected in the shale (maximum 10 foot assay of 0.11% oz/T Ag, 0.05% Zn, 0.08% Pb, 0.02% Cu). Burns traced this unit some 3000 metres to the east.

New Showing

A new showing was found during the field season on the ridge immediately south of Sustut highland. The showing comprises a set of malachite/bornite/chalcocite veins and shears extending over a width of about 10 metres and extending perhaps 10-15 metres vertically within the basal polymictic conglomerate close to its contact with Hazleton volcanoclastics. Epidote and calcite line the wallrock of the main vein which is 10-15 centi-

metres wide. The mineralization is near an inferred fault. Though clearly cross-cutting and non-stratiform, the mineralogy of the vein is similar to the sulphides and alteration phases found at Sustut.

DAY PORPHYRY COPPER PROSPECT

At the main showing altered dacite porphyry intrusive is well mineralized with bornite and chalcopyrite associated with a rusty quartz-ribboned outcrop knob. Quartz ribbons are apparently late fissure fills of silica with a central, dark seam of unknown material. Chalcopyrite is the main ore mineral, pyrite is also abundant in massive knots. There is a bit of chalcocite and abundant malachite stain on the rusty outcrop. Molybdenite has been identified in drill core. At the main showing the intrusive is highly altered and carbonated, but accessory magnetite is intact. Church (1983) showed through chemical analysis that the altered rock was enriched in potassium and carbon dioxide. The fresh intrusive is quartz poor, carries abundant feldspar plates, and up to 10% amphibole. Fracturing is well developed with chalcopyrite abundant on surfaces. Chalcopyrite is also disseminated and forms stringers and clots. The mineralization is clearly associated with the quartz flooding. Late thin calcite veins cut the quartz veins. Epidote is lacking. In more extensive exposures to the east the intrusive is relatively unaltered and mineralization is restricted to a few fracture coatings with malachite and chalcopyrite.

The Day intrusive is cut off on the north side by a fault and a separate small intrusive body lies to the north. Another body of uncertain size lies to the east. Limited drilling of the main mass suggests it may be a sill or laccolith. Existing data could also be interpreted as a series of elongate dike-like bodies, conceivably related to a larger underlying body.

Roy Showing

The Roy showing is hosted in a weakly zoned intrusive body varying from dacite porphyry near margins to monzodiorite and monzonite in the core. In hand specimen the intrusive is similar to the Day "granodiorite", consisting of abundant sodic plagioclase, some potassium feldspar and hornblende, remnant chloritised pyroxenes and up to 10% quartz, most of which is believed to be secondary. Petrographic work suggests weak to moderate pyrolytic and sericitic alteration.

The contact with andesite porphyry wallrock is rather subtle, the intrusive rock characterized by a paler matrix and more abundant feldspar phenocrysts. To date the boundaries of the intrusive have not been completely defined though a magnetic high provides the basic shape. The writer defined its southern border. The intrusive exhibits fairly widespread pyritic alteration and local silicic alteration, possibly related to shears. A pyritic halo extends into the wallrock on its southeast side. The northwest margin shows some peculiar breccias of greenish blocks within a pinkish matrix that may be an alteration effect rather than primary.

At the showing a series of trenches have been cut into the monzonitic phase of the intrusive. The trenches expose a sporadically mineralised belt of quartz shears and stockworks with chalcopyrite, malachite and magnetite trending west northwest (Fox, 1991). Best results are a weighted average of 0.121 % copper and 0.016 oz/ton gold over 62 metres (Fox, *ibid*). There was apparently some undocumented drilling in 1997 on the property.

Though the Roy appears to fall short of the mark in porphyry grade, it appears to be a larger body with a broader alteration zone than the Day.

Cisco-Porcupine Showing

A series of trenches were examined along a creek in this claim group. Successive trenches show similar massive silica-pyrite banded masses. The host rock to the extensive alteration zone is unclear, but Aussant (1991) reported altered dacite. A map by Falconbrige indicates an intrusive "diorite". The sulphide is essentially stringers and pods of massive pyrite within quartz, some magnetite and local chalcopyrite. Though banding is somewhat variable in orientation there does seem to be a northwest trend. This is roughly parallel to a fault margin of an elongate body of Gyr porphyry immediately to the east. The quartz zone may thus plug the fault at the contact of Gyr porphyry and dacite. Sampling returned some anomalous gold values and to 2.4% copper over 0.9 metres in one trench. Aussant (*ibid*) suggested a volcanogenic massive sulphide target but the writer believes these quartz-pyrite-magnetite zones are related to dacite porphyries as at the Roy showing.

COMMENTS PERTINENT TO REGIONAL EXPLORATION

Potential exists for Sustut targets in areas underlain by the Moosevale Formation at lower elevations. For example, work in the 1970s in the Willow area appeared to end with some showings found at or just below tree line. Low elevation areas at Willow Creek, southern McConnell Range, and Asitka peak are prospective though exposures may be limited. The area at Willow Creek is unfortunately within a designated park.

The polymictic conglomerate at the base of the Hazleton Group is prospective for a Sustut target. The new showing found this summer raises the potential of this unit. Burns reports the Horseshoe copper showing which is also hosted in this conglomerate (Burns, 1974 page 26). As well there is at least one report of mineralized transported clasts in this unit (Monger, 1976).

The potential to discover small intrusive porphyry bodies west of the Day area is high, particularly at lower elevations. Some assessment of them as a suite may be useful. Magnetic highs are indicative of their presence, though in highly altered zones this signature is missing.

The origin of large silica-pyrite zones with anomalous values including copper, west of Day is unclear. It does not appear to be a volcanogenic massive sulphide

target as suggested in some reports. It may be related to Gyr porphyry bodies or silica altered dacite porphyries with modest copper-gold potential.

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