Geological Survey Branch Assessment Report **30,357**

GEOLOGY: ALTERATION

at the

FIRE MOUNTAIN PROPERTY

(tenures 202146, 396234, 589048)

Atlin Mining Division
British Columbia, Canada

Latitude: 59° 27' 25" N Longitude: 132° 47' 01" West
NTS 104N (46,47)

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1.0 SUMMARY

The large Fire Mountain molybdenite target has been explored intermittantly over a period of 40 years depending on economic cycles. The first work, including drilling, was done in 1972 by Canadian Johns Manville. Renewed investigations, mainly rock geochemisty and alteration studeies were done by J.R. Woodcock between 1981 and 1986. The results of Woodcock's study lead to three deep drill holes completed in 2004. The present study is an attempt to use alteration and mineralizaion trends and incorporating data from the three previous studies to define a site for further drilling.

The Fire Mountain molybdenite property is located 52 kilometers east south-east of Atlin, in the Atlin Mining District. It is associated with a large conspicious scarlet limonite gossan in the alpine peaks east of the Gladys River valley. It is accessible by helicopter based at Atlin.

The 1972 program included three -45° holes in the argillites and biotite honfels along the valley west of Fire Mountain Peak. These encountered pyrrhotite, pyrite and chalcopyrite along fractures. Two holes investigated an area of alteration, pyrite and molybdenite mineralization on the south side of Fire Mountain Peak. The best molybdenite was in the lower part of westerly dipping hole No 5.

In 1980, Woodcock recommended a rock geochemical survery and geological work on the large altered and mineralized target and in 1981 J.R. Woodcock Consultants returned to the property to do the program. This revealed a number of superimposed circular anomalies including molybdenium, and flourine within a larg zone of biotite hornfels and lead to recommendations for deep drill holes.

In 2004, J.R. Bellamy, P. Geologist, conducted a program of three vertical drill holes totalling 3379 meters. Hornfels, altered hornfels, and porphyry dikes were encountered in all of the holes. The first hole, collared near the centre of the anomalies, yielded the best results with 265 meters (716 to 981) averaging 0.068% Mo. The upper un-split part of this hole has sections with molybdenite. The second hole had lower values and the third hole, the furthest from the centre, had negligible values.

The present report attempts to more accurately define the centre of the anoalous target with the plotting of the K-feldspar intensity and the superimposition of recent aeromagnetic data. On the basis of this study, Woodcock has recommended completeing the splitting and assaying of the core from hole SAN #5 and from the upper parts of hole FM 04-07. A tentative position for another vertical drill hole is about 350 to 400 meters northwest of hole FM 04-07.

2.0 INTRODUCTION

Although a number of classifications for porphyry or stockwork molybdenite deposits have been published, the writer, for practical exploration purposes, generally divides them into stock-related versus batholith-hosted types. The stock types occur at the contacts of intrusive stocks, either as inverted caps over the apex of multiphase porphyry stocks and/or as cylindrical shells down the upper sides of such stocks. They are characterized by circular concentric zones of alteration and mineralization.

Geophysics and rock geochemistry can help detect and outline an un-exposed stock type deposit. The geochemical technique plus results from prior drilling, were employed to define a large drill target at Fire Mountain. The initial study included geochemical samples and a few thin section examinations from outcrops and felsenmeer and some specimens of core from prior drilling. The results were included in a report by the writer dated Novermber, 1981.

Subsequently, more extensive studies were made of thin sections for 42 rock specimens (J.R. Woodcock, January, 1986). All of these studies led to recommendations for deep drill holes.

In 2004, deep drill hole were completed and, in September 2008, Woodcock returned to the property to examine the core from some of the deep drilling and to collect specimens for alteration studies. The study of this deep core and also specimens from the prior near surface drill holes, in addition to the re-appraisal of surface specimens are the subject for this report. The report is based on thin section and hand specimen studies and attempts to resolve some of the confusion pertaining to the various orgins of the siliceous rocks.

3.0 PROPERTY DESCRIPTION

3.1 Location and Access

The Fire Mountain property is located 52 kilometers east south-east of Atlin in the Atlin Mining District. The property is centered at latitude 59° 27' 25" north, longitude 132° 47' 0" west on N.T.S. 104N / 46,47. The mineral claims cover several alpine mountain peaks in the Taku-Teslin Forest Plateau. Access to the mineral claims is best achieved by charter helicopters which are available in Atlin some 22 minutes flying time from Fire Mountain. Fire Mountain is an unofficial name given to an 1830 meter reddish alpine peak located 4 km south-east of Mount Sanford and 7 km north of Llangorse Mountain. The large, broad, swampy Gladys River valley to the west restricts any surface access to the property from the placer mining roads which lead east from Atlin and from the Surprise Lake road.

The topographical map (Figures 3 and 4) is from the work of Canadian Johns Manville and the sample sitesof this report were plotted in 1981 with the aid of expanded aerial photographs and the topographical map. The UTM grid has been plotted uisng the peak of Fire Mountain as a reference point with coordinates taken from a recent (edition 2004) B.C. topographical map, scale 1:20,000. The coordinates for the 2004 drill holes are those taken by Bellamy using a GPS; for the remainder of the hole positions are plotted in the date of Canadian Johns Mansville. There could be some descrepancies between the various plots.

Note: all the measurements for the 1972 drilling are in feet whereas all measurements for the 2004 drilling are in meters.

The UTM coordinates of some important points are as follows:

Fire Mountain Peak	6593510 N	625120 E
No 1 Post RAD 2 claim	6593600	624960
Hole SAN 1	6593635	624085
Hole SAN 2	6593275	624080
Hole SAN 3	6593995	624370
Hole SAN 4	6593150	625540
Hole SAN 5	6593150	625540
Hole SAN 6	6593425	624810
FM 7 (also #1)	6593068	625581
FM 2	6593073	625300
FM 3	6592916	625435

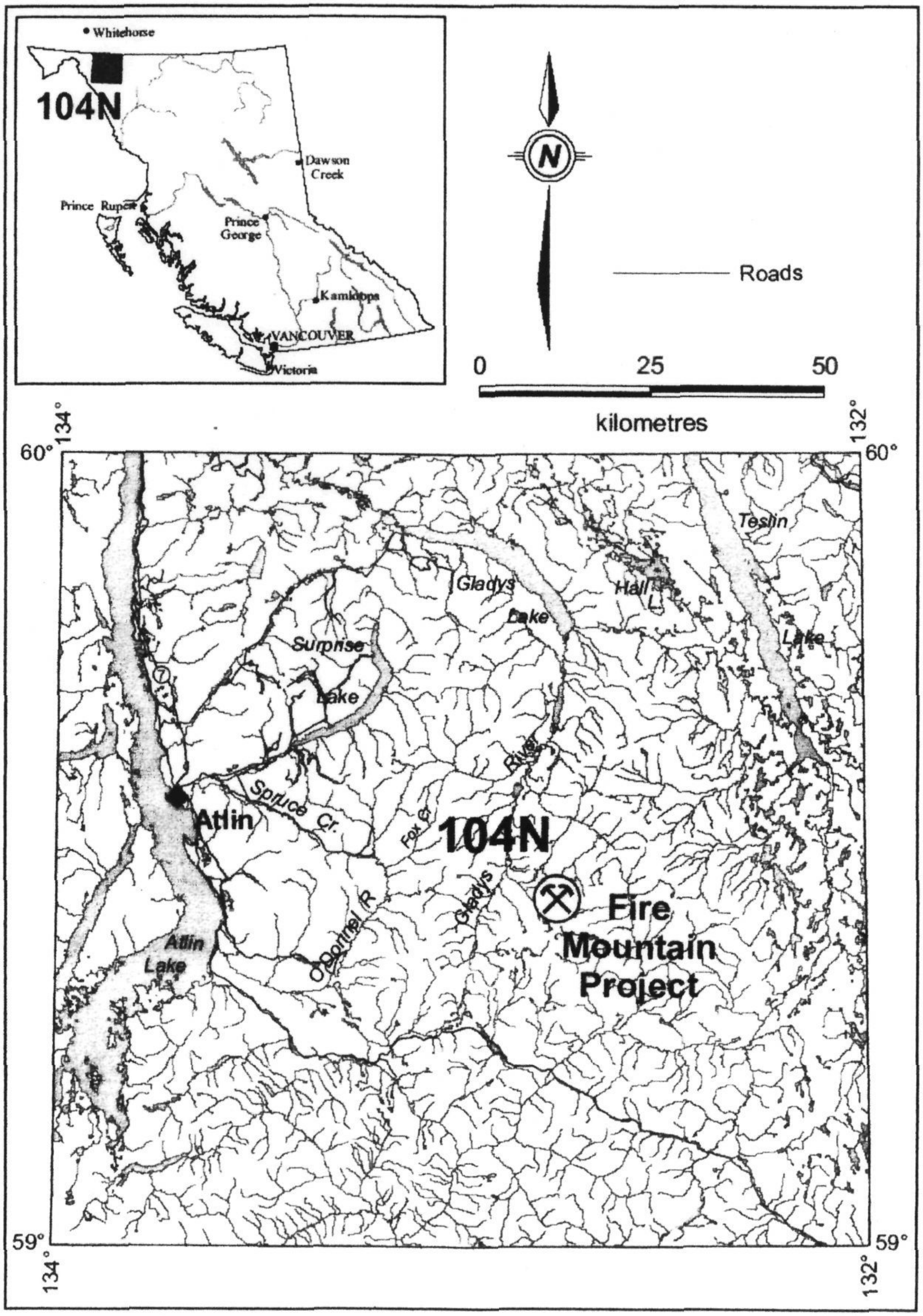

Figure 1: Location Map

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Internet Mapping Framework

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Figure 2

3.2 Claim Information

Figure 2 shows the present claim groups. These three tenures are owned 100% by John R. Woodcock. The perinent data is tabulated as follows:

Claim Name	Tenure Number	No. of Units	Tag Number	Record Date	Expiry Date
RAD 1	202146	2 grid	7148	1985-Apr-12	2015-Sept-06
RAD 2	396234	20 grid	65008	2002-Sept-06	2015-Sept-06
	589048	10 cells		2002-Sept-06	2009-Sept-06

On July 29, 2008 the RAD 3 grid claim of 20 units, tenure number 396233 was converted to a cell tenure, number 589048 and on August 29, 2008 the size of tenure 589048 was reduced to 10 cells. On September 4, 2008 work was recorded, subject to acceptance of this report, to bring expiry date of tenure 589048 to September 6, 2014. Work recorded in this report was done on parts of all three tenures.

3.3 Physiography and Climate

The "Fire Mountain" molybdenum project is located just east of the Gladys River, and north of Llangorse Mountain in the Taku-Teslin Forest Plateau. The mountains in the area are underlain by Cache Creek meta sediments and are generally gently rolling hills and peaks that are covered with alpine vegetation. The intervening, glacial sculpted valleys are broad, dotted with lakes, and, at lower elevation, forest covered. The hanging valleys above the Gladys River (920m elev.) are above tree line (± 1,400 m) and are covered by patchy growths of low-lying willow, alder, and dwarf birch. The mountain peaks on the claim group are around 1830 meters in elevation and have steep topography where incised by alpine glaciation. The highest peak in the area is Llangorse Mountain at 1,962 meters.

The climate in this northern, mountainous platau region is quite variable during the summer months with intervals of hot weather and long periods of windy, wet conditions. The high barren mountains are often subject to strong winds and the plateaus to the east are known for the generation of late summer day thunderstorms. Winter conditions commence in November and continue until March or April with significant snow accumulations and long periods of severe cold. Atlin is considered to be semi arid and snow accumulations there are generally less than in the Fire Mountain area.

3.4 History

The Atlin area is best known for its placer mining activity which originated with the discovery in 1898 of "Tertiary" gold bearing gravels near Atlin by Fritz Miller and his partner Kenneth McLaren. Placer mining still continues with significat current operations on Spruce, Ruby, and McKee Creeks. Vein lode exploration has been important in the past but only limited productionhas occurred at most of the prospects. The source of the extensive placer gold deposits in the Atlin area has long been the focus of area exploration efforts. The numerous gold quartz veins that occur in the immediate vicinity of the gold placers are considered to be the source for many of the deposits.

In the Fire Mountain area, the small unnamed creeks to the northeast have been covered previously by placer mining claims and Rapid Roy Creek, the main drainage north east of Mount Sanford and Fire Mountain, has seen limited, past placer production.

Lode gold deposits associated with listwanite alteration assemblages in serpentinized ultramafics belonging to the Atlin terrane intrusives have received the most systematic exploration efforts in recent years. Pine Creek, just to the east of Atlin, is underlain by the faulted contact between an ultramafic body and greenstones of the Cache Creek group and hosts listwanite associated gold mineralization in the complex fault structures. The zone is covered by claims comprising the Yellowjacket Property which was drilled by Homestake Mineral Development in 1988 and subsequently (2004) by Muskox Mineral Corp.

The Adanac porphyry molybdenum deposit occurs 23 kilometers northeast of Atlin. It was discovered in 1905 and was explored extensively between 1967 and 1980. It is currently owned by Adanac Gold Corp. which has conducted a due diligence drilling program leading to a pre-feasibility study. The depoisit is now being prepared for production. The deposit is: "*within a complex, mulit-phase, quartz monzonite stock that is a satellite of the post-accretionary, Surprise Lake Batholith, Biotite K-Ar dates range from 70.3 ± 2.4 Ma to 71.6 ± 2.1 Ma, indicating a late Cretaceous age of emplacement.*

The deposit comprises an irregular-shaped ring or halo peripheral to a quartz monzonite porphyry dome, or "cupola", The shape of the ring, and of a small, fine grained quartz monzonite intrusion, and the presence of higher-grade mineralization on the eastern flank of the cupola, suggest partial control, by a premineral structure...

In 1981, Placer Development Limited reported an "undiluted mineable mineral reserve" of 151,971,000 tonnes grading 0.063% Mo at a cutoff grade of 0.04% Mo and a strip ratio of 1.5:1. Adanac (Ruby Creek) Molybdenum Deposit, Northwestern British Columbia: R.H. Pinsent and P.A. Christopher, 1995, In Porphyry Deposits of the Northwestern Cordillera of North America, Special Volume 46, p. 712-717.

The pronounced reddish-brown gossan in the walls of the Fire Mountain cirque and in the steep, north facing clifs has attracted attention from prospectors for many years. The original NI claims, staked by prospector G.C. Craft, are in MINFILE (MINFILE Record Number 104N 067) and were optioned in 1971 by Canadian Johns Manville. The original claims were enlarged by staking the Fire two-post claims, subsequently all were officially abandoned and restaked (Fire 200-203) in 1976 under the grid system.

Canadian Johns Manville was interested in the scattered molybdenite occurrences found in felsenmeer and in the cirque walls between the elevations of 1,525 and 1,825 meters. After preliminary geological, geochemical, and planimetric surveys were conducted in 1971, the company mobilized a diamond drill from Wrights Drilling – Kamloops into the property in early 1972. The drill was flown in by ski equipped fixed wing aircraft onto Camp Lake, and moved from hole to hole using a Highes 500 helicopter. The drill mast, base, rod racks, and water tanks can be found just east of the old base camp.

The first three BQ sized diamond drill holes were drilled in the winter around the northwest base of Fire Mountain under the prominent gossans and small skarns that are located in the cliffs above. Three –45° diamond drill holes were also drilled near the peak of Fire Mountain between the elevations of 1,670 and 1,770 meters. The six drill holes totalled 4,903 feet or 1,494.4 meters. In 1972 Canadian Johns Manville also completed further geological and geochemical work on the property and ran a small magnetometer survey over a central detailed grid system. The core from this drilling program is stored in newly constructed core racks outside of the eastern end of the Atlin Airport boundary fence.

In 1972, Canadian Johns Manville ran a ground magnetic survey over the core area of Fire Mountain and reported a positive magnetic anomaly covering the central part of Fire Mountain's hornfels hosted pyrite-sericite zone (Assessment Report 4436). In 2000 and 2001 the Geological Survey of Canada (Dumont *et al.*, 2001) conducted a regional aeromagnetic survey that covered the Fire Mountain area. Flightlines were flown 500 meters apart and at a mean terrain clearance of 200 meters, with control lines at three kilometer spacing. The aeromagnetic survey over Fire Mountain produced a similar positive magnetic anomaly surrounded by a broad ring of negative values. This circular anomaly over Fire Mountain is shown in Figure 7 in Panteleyev's 2002 report.

3.5 1972 Drill Results

The drilling conducted by Canadian Johns Manville in 1972 commenced wih three BQ sized drill holes sited at the north western base of Fire Mountain. The logs for these three holes are included in the preliminary geological report prepared by C. Aspinall (Assessment Report 3867). These holes were drilled peripheral to the zone of hornfelsing and encountered fracture controlled chalcopyrite, pyrrhotite and pyrite, some of which was in small quartz veins.

Diamond drill holes 4 and 5 were collared south of the summit of Fire Mountain at an elevation of 1,770 meters and at opposite minus 45° angles. The drilling was not submitted for assessment work but the original drill logs, the relogging by J.R. Woodcock, and the diamond drill core are preserved. Hole Sandford # 4 was drilled at minus 45°, azimuth 122°, and to a depth of 1,101 feet (335.6m). This hole was partially split and asayed with the majority of molybdenum values in the 200-500 ppm Mo range. This hole was continually split from 350 feet to the end of the hole at 1,101 feet (335.6m). The hole intersected a variety of weakly mineralized quartz feldspar porphyry dykes hosted in a silicified hornfelsed metapelite belonging to the Early Permian to Middle Triassic Kehahda Formation. Diamond drill hole 5 was not split or sampled.

3.6 2004 Exploration Program

The drill program of 2004 was done for Red Chris Development Corporation by Hy-Tech Drilling Ltd of Smithers, British Columbia. Hy-Tech was also responsible for down hole surveys. Mobilization was done by Discovery Helicopters of Atlin.

Three subvertical NQ2 sized drill holes totaled 3379 meters and are tabulated below.

Hole #	Easting	Northing	Elev.	Length	Azimuth	Dip
FM04-1	625,581	6,593,068	1,757	1,115.26	172.6°	-88.3°
FM04-2	625,300	6,593,073	1,752	1,143.0	215°	-87.6°
FM04-3	625,435	6,592,910	1,733	1,121.6	269°	-85.9°

Sections of the core were split and sampled and sent to International Plasma Lab in Vancouver for molybdenum analyses. The results, quality control, and core logs made by Bellamy are described in his report of September 2004 which has been accepeted for assessment work.

4.0 GEOLOGY

4.1 Regional Geology

(taken from Panteleyv, November 6, 2002)

The Fire Mountain property is located in the central part of the belt of predominately oceanic crustal rocks of the Cache Creek Terrane, roughly midway between two bounding regional faults – the Nahlin and Teslin faults (Figure 3). The area was first regionally mapped by Aitken (1959). More recent geological mapping and discussions of the tectonic history are summarized by Mihalynuk and Lowe (2002).

In the area of Fire Mountain, and to the north and east, the rocks are mainly chert, pelite, and sandstone, with some mafic volcanic units, all part of the Early Permian to Middle Triassic Kehahda Formation. To the northeast are small areas with platformal cabonates of the Teslin Formation. To the south of Fire Mountain the Cache Creek rocks consist of limestones and mafic volcanic units of the Mississippian to Permian Horsefeed Formation, and apparently older units of basalt, mafic pyroclastic and flow rocks, and lesser diabase. These older mafic rocks extend northward along the western margin of the Cache Creek belt and into the Atlin area. There, and elsewhere to the southeast, are large melanges of serpentinized dunite, harzburgite and gabbro. Much of the Cache Creek Terrane especially along its margins, is highly structurally disrupted by faulting. There is much structural inter-leafing of lithologic units and development of spectacular melanges.

Two principal suites of intrusions are recognized in the region. The older is a Middle Jurassic (165-172 Ma) suite of quartz diorite and granodiorite intrusions, the Fourth of July suite. The other intrusive map unit is made up of Late Cretaceous quartz monzonite to alaskite intruions that are referred to as the Surprise Lake suite. A few, smaller Teriary granite to monzonite intrusions are also mapped. The ages of the intrusive rocks and their emplacement history in the Cache Creek Terrane are discussed by Mihalynuk *et al.*, (1992).

Plutonic rocks have markedly diffrent aeromagnetic responses. The Fourth of July intrusive suite corresponds with strong, reltively homogenous positive magnetic anomalies, whereas the Surprise Lake suite of plutons are weakly magnetic. The magnetic field over the Llangorse, and some of the other Middle Jurassic plutons, are heterogeneous with distinct zones of positive and negative magnetic anomalies observed within each body (Mihalynuk and Lowe, 2002). They have noted that several small (less than 5 kilometer) sub-rounded, positive and negative magnetic anomalies occur in the regions underlain by the Kehahada assemblage of dominatly chert, argillite, siltstone and limestone. One of these anomalies coincides with the Fire Mountain property, another with the Boot mineral occurrence nine kilometers to the north-northwest. The main body of the Surprise Lake batholith lies about 20 kilometers to the north of Fire Mountain. The surface outcrop of the Middle Jurassic Llangorse batholith is found about three kilometers to the south. The rocks there are medium-grained, equigranular to porphyritic biotite-hornblende quartz diorite to granodiorite.

Overlapping assemblages in the Cache Creek Terrane occure as small outliers of Jurassic sedimentary rocks of the Lewes River Assemblage and some Cretaceous to Tertiary volcanic units.

4.2 Property Geology

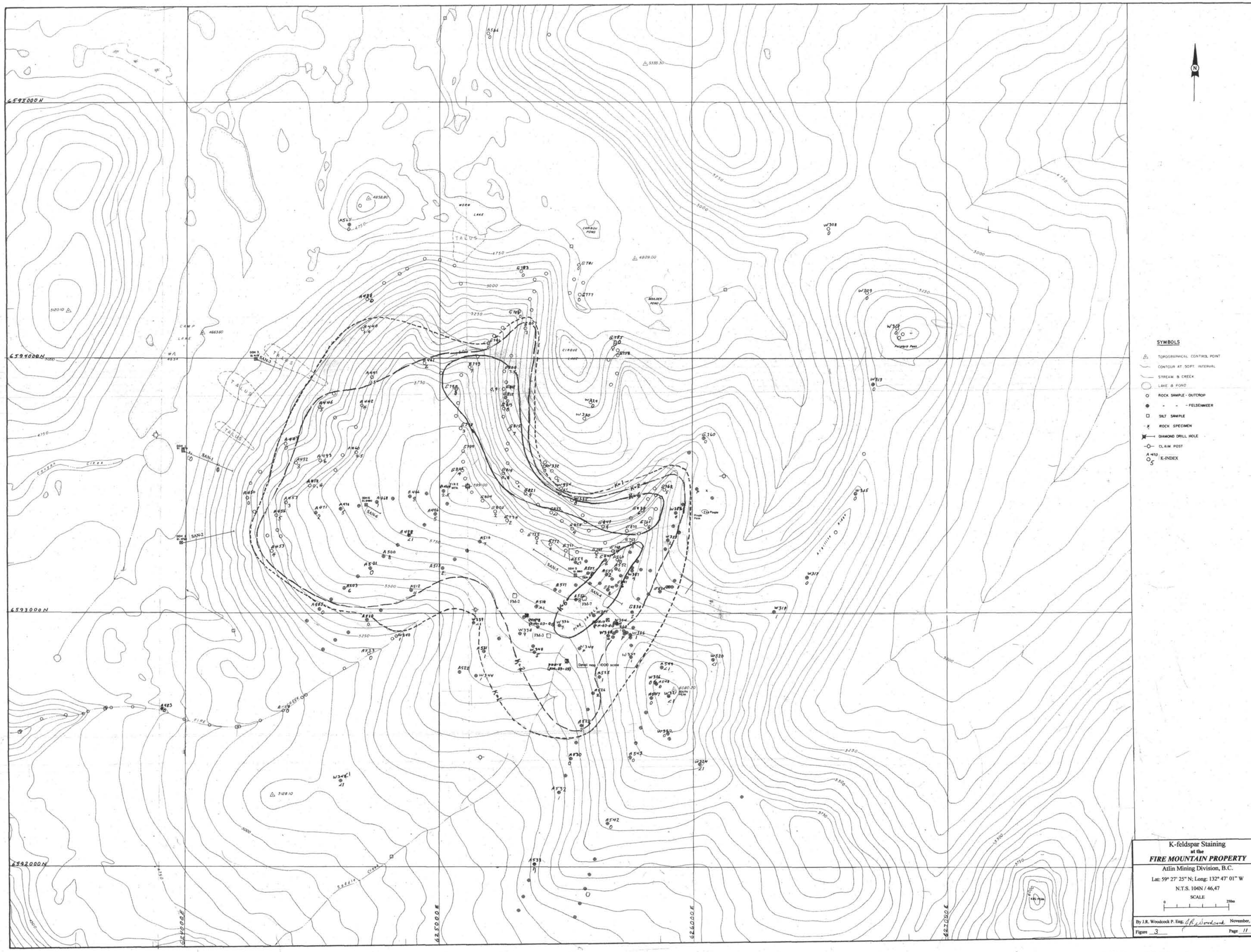
(taken from Bellamy, 2004)

The Fire Mountain property is underlain by rocks of the Early Permian to Middle Triassic Kehahda Formation and are part of the subduction-generated accreted Cache Creek terrane. In the area they are mainly chert, cherty argillite and argillite that form massive to phyllitic outcroppings. They are interpreted from regional mapping to trend northeast but bedding textures, if they existed, have been destroyed by hornfelsing and silicification. The most commmon hornfelsed core foliation angle is ~15° to the core axis (-88°) whch may indicate either the bedding is sub vertical or that the foliation was formed by regional or batholith sized compressional forces.

In the drilling area, several varities of porphyry dykes have been located in the talus and felsenmeer surrounding the cirque wall. Woodcock mapped and sampled several dyke varieties in the walls of the cirque and reported on them in reports in 1981 and 1986. The different types of porphyritic rocks were also intersected in the nearby 1972 diamond drill holes Sanford # 4 and # 5. In the "saddle" area, prospecting located two megacrystic K-feldspar porphyry dykes separated by 15-20 meters of hornfels. The northern dyke, which was approximately 5 meters wide, was traced for about 300 meters in a N 75° E direction and the adjacent host rocks were observed to have been bleached due to stronger silica and sericite alteration. The top core of hole FM04-3, which was drilled closest to this dyke, also contained stronger sericite alteration.

Dykes of similar composition and texture were intersected in all three 2004 diamond drill holes. All the porphyritic rocks are texturally and compositionally distinct from the magnetic, hornblende quartz diorite of the nearby Middle Jurassic Llangorse batholith. Glacial erratics from this batholith can be found scattered over Fire Mountain. In the drill core, one post mineral, dark groundmass, porphyry dyke was found to be weakly magnetic – the others were non-magnetic.

White fine grained dykes with sparse small quartz phenocrysts have been found on surface in a number of places and also in drill core, eg hole FM-04-03 at 1103 meters. These were labelled rhyolite in field work, but are called rhyodacite by Payne. Some of them have dissseminated molybdenite flakes or small rossettes.



K-feldspar Staining
at the
FIRE MOUNTAIN PROPERTY

Atlin Mining Division, B.C.

Lat: 59° 27' 25" N; Long: 132° 47' 01" W

N.T.S. 104N / 46,47

By J.R. Woodcock P. Eng. J.R. Woodcock November, 2008

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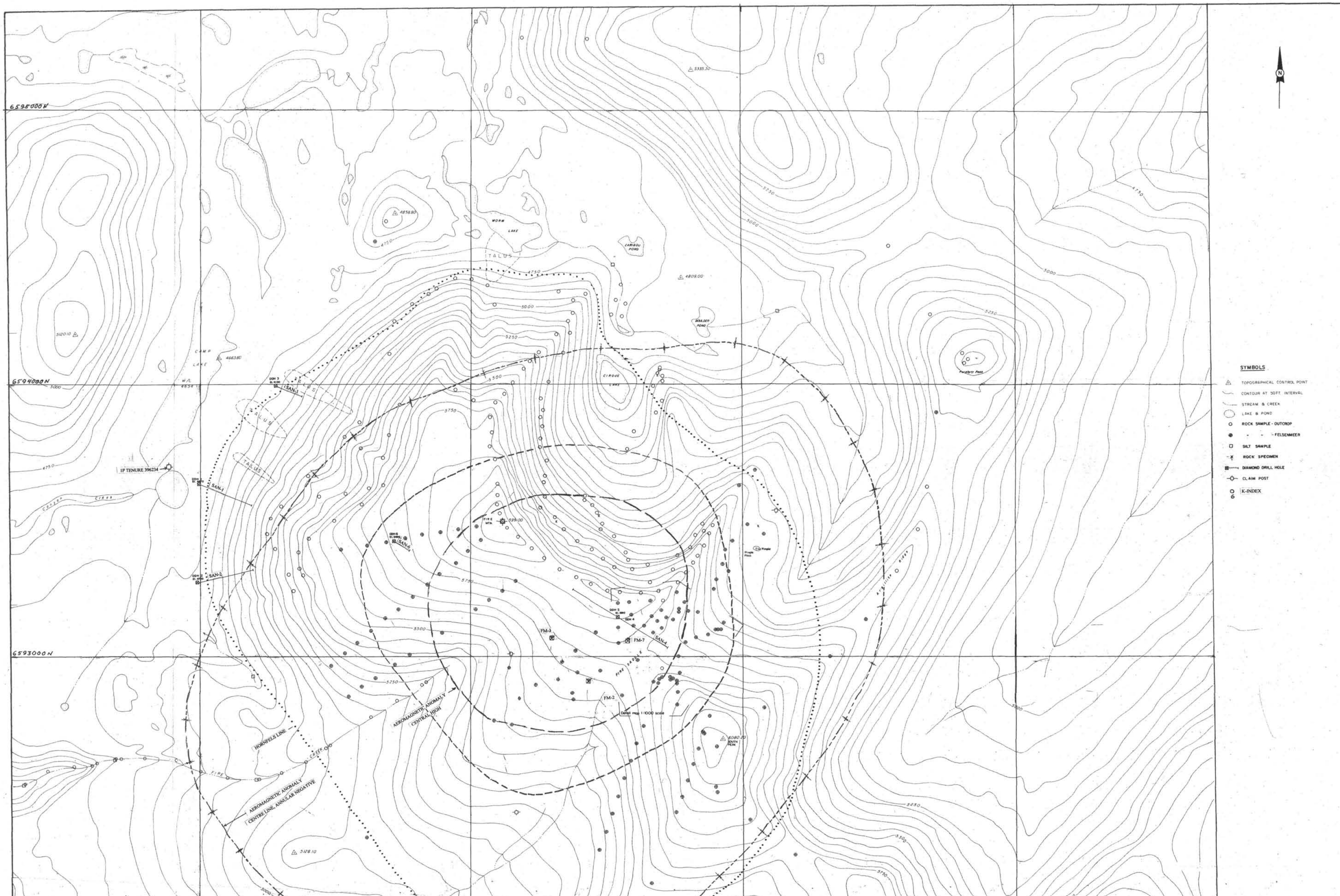

Hornfels & Aeromagnetic Data
at the
FIRE MOUNTAIN PROPERTY

Atlin Mining Division, B.C.

Lat: 59° 27' 25" N; Long: 132° 47' 01" W

N.T.S. 104N / 46,47

SCALE

0 — 250m

By J.R. Woodcock P. Eng: J.R. Woodcock November, 2008

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Some small porphyry intrusions lie outside of the target area. An example occurs 1300 meters east of Cirque Lake where it forms a small peak in the argillaecous rocks. It has no hornfels aureole.

Small exposures of narrow basalt dykes can be found in the northern walls of the cirque and a biotite lamprophyre dyke was noted near the cirque lake. Columnar basalt flows can be found along the northern rim of Fire Mountain just northwest of Sanford # 6 drill hole. The flows of scattered volcanic debris along the west shore of Cirque Lake and on Fire Mountain, belong to the Llangorse volcanic field of Neogene to Quaternary age. The lavas of vesicular to glassy basanite are thought to represent erosional remnants of valley-filling lava flows that may have been erupted under ice sheets (M. Harder, J.K. Russell, R.G. Anderson, and B.R. Edwards, 2003, *Llangorse volcanic field, B.C.*).

4.3 Alteration Model

Although significant differences occur between various examples of stock-related prophyry molybdenite dposits, Woodcock generally refers to a basic zonal pattern he devised for the Lime Creek deposit a Alice Arm, B.C.

The Line Creek deposit occurs in argillaceous sedimentaries of the Bowser Group. It is a single deposit in comparison to Climax, Colourado where three deposits, all partially overlapping, complicate the picture. First the intrusion of the stock created a wide aureole of biotite hornfels in the adjacent argillaceous rocks. This was followed by intense alteration of the stock apex to quartz plus K-feldspar. Subsequently, sericite alteration superimposed on the system replaced any plagiclase remnants in the central quartz – K-feldspar by relatively coarse grained sericite. However sericite is most abundant (but finer grained) outside of the central alteration because relatively more plagioclase was available for replacement. Clay alteration was mainly along cross-cutting faults.

Molybdenite mineralization was mainly in the transition from the quartz – K-feldspar zone to the sericite aureole. Negligable traces of copper are outside of the molybdenite zone. Lead and bismuth occur outside the deposit and calcite veins are also late. Flourine is a very important halo element as it extends outward from the deposit and can be used to detect un-exposed molybdenite deposits.

Specific differences between various deposits include the carbonate mineral which is rhodocrosite at Henderson in Colourado, calcite at Alice Arm, and dolomite at Fire Mountain. Other differences include the three dposits at Climax with the oldest the highest; the very intense silica under the deposits at climax versus quartz – K-feldspar at Alice Arm; and an unexpected aureole of topaz-magnetite at Henderson.

4.4 Alteration and Minerals at Fire Mountain

In 1981 surface samples and corresponding rock specimens were collected in an area about 3400 meters in diameter. In order to pinpoint drill holes for a porphyry molybdenum deposit, all the samples were analyzed for a variety of trace elements and the results were included in a report (Woodcock J.R., 1981).

One of the best guides in the exploration is the degree of contact metamorphism. In argillaccous terrane, this converts the host strata to dark chocolate-brown hornfels. The rock specimens were all examined macroscopically for brown colouration and the locii of the fading of the colouration (the biotite line) is plotted on the maps of 1981. The biotite line, with minor changes, and pertinent aeromagnetic features are plotted on Figure 4 of this report.

Rock units include argillaceous strata of the Kehada Formation of the Cache Creek terrane, which are metamorphosed to biotite hornfels adjacent to an intrsive centre. Bellamy, 2003 (p 22), identified seven different porphyry dikes in his logging of the 2004 drill core. Spectacular are the quartz-feldspar porphyries with quartz phenocysts up to 0.5 cm diameter. Most of the porphyries contain inherent abundant K-feldspar and so have been omitted from the staining map which is intended to reveal trends of hydrothermal alterations in the hornfelsed argillaceous rocks.

The surface specimens and selected core specimens are stored at J.R. Woodcock Consultants Ltd. Selected specimens from surface and from drill core were subsequently stained for the present report. The degree of yellow staining was graded according to a colour index grading from 0 to about 9. The results have been plotted to indicate feldspar patterns, and to help further delineate the target (Figure 3). The staining also helped in the thin section studies in differentiationg the K-feldspar. The yellow staining can be somewhat erratic in places, but overall it has reduced the target area. K-feldspar is generally closely associated with stock-type porphyry molybdenite deposits.

<u>Silica</u>

Alterations in the central drill area include quartz, biotite, K-feldspar, dolomite, and sericite. Watery white silicification is somewhat confusing in that it could be chert from the original argillaceous sedimentary sequence. However, such layers are uncommon in the outer parts of the hornfels and in the adjacent argillaceous rocks. In places it contains thin folia or layers of fine-grained biotite and in places it includes wisps or remmanents of hornfels. The silica appears to be replacing the biotite hornfels. It does seem to be largely confined to the drill target area and is thus partly hyrdrothermal. The siliceous specimens can be cut by many hairline quartz veinlets and by subsequent definite mineralized quartz veinlets.

<u>Carbonate</u>

Dolomite is ubiquitous. It is scattered in irregular clouded patches throughout the matrix and also as clear crystals in white veinlets where it can have pyrite, dolomite, or molybdenite.

K-feldspar

K-feldspar is a very important alteration mineral in most porphyry molybdenite deposits and is generally most concentrated below or inside of the molybdenite concentration. Consequently, a large number of specimens collected previously from surface rock outcrops and from felsnmer and from drill holes were submitted to Vancouver Petrographics for sawing and hydrofluoric staining.

This acid stains K-feldspar a deep yellow colour. Sericite can also become stained, but the yellow colour is very subdued. To facilitate the grading, 10 stained specimens with increasing amounts and/or intensities of staining were selected and assigned K-colours from 0 to 9. The remainder of the 140 specimens were referenced to these 10 control specimens.

The degree of staining is somewhat subjective and depends on intensity and abundance. For instance, a highly silicified rock may have very intense yellow staining only along fractures but it would be upgraded in spite of relatively lesser overall abundance.

That the technique is workable is suggested by relevant patterns obtained upon ploting the estimates, To merely plot potassium analyses would yield an indefinite picture.

The pattern strongly reflects the typography, especially the accurate thin zone in the southwest wall of the cirque. This suggests a flat-lying aspet to the target with centre under the peak area of Fire Mountain. It also supports the need for deep vertical holes nearer to the center of the target.

Spotted Hornfels

Spotted hornfels is an unusual alteration product which occurs throughout hole FM04-07 but is especially abundent between 400 and 600 meters. It is also common in hole FM04-03 especially between 500 and 900 meters and it has also been noted in hole SAN-05. This consists of small elliptical and, in places, almost euhedral shapes, of concentrations of secondary biotite flakes in a group mass of K-feldspar plus some quartz grains. Examples have been studied in thin sections. Spernium FM7-575-13 has the dark biotite rich spots throughout. In addition to K-feldspar within the spots, K-feldspar also forms the grey rock surrounding the spots. This is an un-usual rock and may be a form of biotite-feldspar hydrothermal alteration, although the biotite may be from the hornfels.

In some places (eg thin section FA7-495-59) all of the dark spots have been subsequently altered to white spots which are mostly sericite. In other places white zones, related to veins, cut across the dark spotted variety. Specimen FM7-498 has remnants of the dark spotted rock, parts where the dark spots become blurred because of alteration of the biotite to sericite, and a cross-cutting zone of white spots.

Fluorite

Another favourable mineral in molybdenum exploration in fluorite. The molybdenite deposits of the Colourado Mineral Belt have some unique characterisitcs including abundant fluorite and high molybdenum grades. Fluorite is also notable at Fire Mountain and has been logged in many places in FM-07 (700-800m), FM-02 (500-950m) and FM-03 (400-900m). In addition, microscopic fluorite crystals were noted in FM-07 at 267-75 and 498.

Brain Stucture

"Brain structures" were noted in the quartz-feldspar porphyry dyke in hole FM-7(892.25 to 900.95m). It consists of parallel thin crenurlations of quartz separated by the feldspar rich rock. Blobs or quasis phenocrysts of quartz seem to hang from these quartz crenulations. Molybdenite flakes occur in the quartz crenulations. This is considered a favourable strucure in some porphyry molybdenite deposits.

Molybdenite

Molybdenite distribution has not been studied for this report. Bellamy (2004, p 14) states that "accompaning the fine quartz-healed micro fracturing are fine hairline, bluish, quartz-molybdenite veinlets and larger banded or ribbon quartz-molybdenite veins with fine, margin parallel disseminated molybdenite."

Bellamy (2004), p 28, summarizes the drill results as "The first drill hole, FM04-1 (also labelled FM04-07), intersected the longest continously mineralized section of molybdenite mineralization from 716.00 to 1,115.30; a 399.3 meter section running 0.058% Mo. Hole FM04-2 interected similar (0.054%) grades in the section 725.42 to 798.57 (73.15 meters). The third hole, FM04-3, did not return any significant Mo values and appears to be peripheral to the zone of heaviest quartz-molybdenite stockwork mineralization." Note that in the core boxes and field logs, FM04-1 is labelled FM04-7.

Woodcock examined the core of FM04-07 in 2008 and selected specimens for this study and foundthat molybdenite mineralization, similar to that found in the sampled lower part of the hole, occurred in many places in the unsampled upper 700 meters. This may be because at the start of drilling a person to split core was not available.

4.5 Geophysics

The aeromagnetic maps (Lowe, C., and Anderson, R.G., 2002) shows an anomaly over Fire Mountain with an unusual pattern. This includes a circular sharp positive centered over the area of alteration which includes the three deep drill holes and holes SAN 4 and SAN 5 of the 1972 drill program. Surrounding this is a pronounced annular negative anomaly. Outlines of both of there anomalies feature are included on Figure 3.

Bellamy logged the core from the deep drill holes and concluded: "The drilling did not encounter rock types or magnetic minerals that would explain the circular positive magnetic anomaly that is centered on Fire Mountain".

Holes SAN 1, SAN 2 and SAN 3, drilled by Canadian Johns Manville, are in the western part of the annular negative anomaly. Clive Aspinall (1972) logged the core and noted that pyrrhotite, pyrite, and chalcopyrite occur throughout the three holes in fractures, but also within some small quartz veins. Woodcock (1981) examined the core from hole SAN #1 which is mainly chocolate brown horfels.

Generally the intense hydrothermal alteration of porphyry deposits (sericite, pyrite, K-feldspar) destroys many of the iron-bearing minerals, especially magnetite, to create a negative magnetic anomaly; but the pyrrhotite in the hornfels of the annular zone creates a positive anomaly. This reverse pattern at Fire Mountain suggests a polarity reversal which would have occured before the emplacement of the small exposures of magnetic Llangorse volcanics which occur on the northern flanks of Fire Mountain and yield small sharp irregular positive anomalies on the ground magnetometer maps.

5.0 DISCUSSION OF RESULTS

The Fire Mountain molybdenum property has many of the characteristics of major molybdenite deposits including numerous quartz-feldspar porphyry dykes from many stages and a huge area of biotite hornfelsing in the argillaceous rocks, with as yet no intercepted underlying stock control. Alteration includes silicification and widespread K-feldspar alteration, some with possible secondary biotite. Abundant carbonate, probably dolomite, and also sericite are present. Widespread purple fluorite occurs within the central drill area and pyrrhotite with some chalcopyrite are reported in drill core in hornfels to the west. Also abundant pyrite has caused a large scarlet gossam. The detection of "brain texture" with molybdenite in some porphryr dykes and the occurences of small rhyodacite dykes with discriminated molybdenite are also considered favourable.

With such an immense target and especially with the fact that molybdenite grades away from the centre can cut off quite sharply, indicate that it is very important to identify trends in alteration and in mineralization to help direct the drilling and that it is unwise to drill only in one place near the edge of a huge anomaly.

The staining of rock specimens to indicate potassium, especially K-feldspar, has yielded an important map. This map shows an anomalous are ($K \geq 1=2$) 1600 meters long and up to 1000 meters wide trending NNW, and confined to the upper parts of Fire Mountain. Along its east to south sides, on the steep wall of the cirque, is an arrcuate zone of higher values ($K>1=6$).

On the upper parts of the mountain values within the large anomaly are mixed with many values >4, a few values of 1, and a few values up to 9. The lower values were obtained in highly silicified rock where K-feldspar alteration is unlikely. In fact, the peak of Fire Mountain and its adjacent slopes may owe existence partly to the relatively higher content of resistant silicified hornfels.

In the relatively restricted area of drilling in the south part of the K-feldspar anomaly, many of the surface samples and the upper parts of holes have erratic values, whereas the values of K increase up to 9 at deeper levels (eg. SAN 4, SAN 5, FM 7).

This suggests that there could be a vertical zoning with a zone of high K values overlain by a mixed zone of good K-values and silicified rock.

Any molybdenite mine would probably be an underground operation. The valley of Gladys River is about 2700 feet lower than the peak of Fire Mountain and about 4.5 kilometers to the west. Note that the world's larget molybdenite mine is the Henderson in Colourado where the ore is delievered to the mill by 10.5 miles of underground belt plus 5.0 miles of surface belt.

6.0 RECOMMENDATIONS

1. More deep drill holes are needed; the tentative site recommended for the first hole is in the saddle at near 6593300N 625300E. This would be about 350 meters northwest of hole FM-07. Suggestions for a second hole are 6593600N 624900E.

2. The unsplit upper core of FM-07 and the core of SAN 5 should be split. These cores should be analyzed for Mo.

3. Samples or alternative samples in future drilling should be analyzed for fluorine, probably by the specific ion electrode technique.

6.1 Cost Estimate for Further Drilling

Recently there has been a drastic decrease in the price of molybdenum. Several new dposits are ready to go into production, some of which have been postponed. This over supply problem plus the fact that the peak of the cycles in demand for molybdenum has been very long; the last one was over 20 years, from 1981 to 2003, indicate that estimating a budge for further drilling would be merely misleading, but the costs for the 2004 drilling could be used as a tentative guide.

J.R. Woodcock, P. Eng. November ,2008

7.0 STATEMENT OF 2008 EXPENDITURES

FIRE MOUNTAIN COSTS, 2008

Pre September 6, 2008 (July 28 to Sept 3)

Helicopter		1796.93
Trvel and Transportation		1329.00
Atlin Inn		318.50
Helpers		400.00
J.R. Woodcock 5 days @ $700		3500.00
	TOTAL	7344.43

Applied for Assessment Sept 3/08

Assessment		5921.23
PAC		1087.77
	TOTAL	7009.00

see p. 21 for more detail

Post September 6, 2008(Sept 10 to Nov 22)

Vancouver Petrogrpahics (Staining)		670.15
Typing (J. Pope)		370.00
Reproductions, Misc		125.00
Rock specimen and thin section studies, Report by J.R. Woodcock, 204 hrs @ $85		17,340.00
	TOTAL	18,505.15

Applied for Assessment work Nov 24/08

Assessment		6579.14
PAC		11926.01
	TOTAL	18505.15

The costs in my report of November 8, 2008 were broken down into pre September 6th and post September 6th to fit into the aniversary dates.

The pre September 6th work included the field work (4 days) and is divided as follows:

Pre August 10th, organise data and trip (one day)

<u>Field Work</u> in Atlin area:

Drive to Atlin, hire help, reserve helicopter	August 10th	1 day
Review 1972 core in Atlin, select specimens	August 11th	1 day
Poor flying weather, study drill report	August 12th-14th	
Fly to Fire Mtn, review hole FM 04-1, select specimens	August 15th	1 day
Leave Atlin	August 16th	1 day
		4 days

Start petrographic work and report	September 3rd	1 day

While staying in Atlin, I bought groceries, did not keep receipts. The restaurants were closed.

Used total of 5 days for assessment – including 4 days fieldwork.

Because it is not normal to charge in hours, if necessary the 5 days could be converted to 40 hours.

8.0 REFERENCES

Bellamy, J.R. (2004): 2004 Drilling Report on the Fire Mountain Property

Dumont, R., Coyle, M., and Petvin, J. (2001): Aeromagnetic Total Field Map, Bell Lake, 104 N/T; *Geological Survey of Canada,* Open File 4097

Edwards, B.R., Russell, J.K., Anderson, R.G., and Harder, M. (2003): Overview of Neogene to Recent volcanism in the Atlin volcanic district, Northern Cordilleran volcanic province, northwestern British Columbia, year three: *Geological Survey of Canada,* Current Research 2003-A8, 6p.

Harder, M., Russell, J.K., Anderson, R.G., and Edwards, B.R. (2003): Llangorse volcanic field, British Columbia; *Geological Survey of Canada,* Current Research 2003-A6, 10p.

Lowe, C., and Anderson, R.G. (2002): Preliminary Interpretation of New Aeromagnetic Data for the Atlin Map Area, British Columbia – Preliminary Interpretations: *in* Current Research, Part A, *Geological Survey of Canada,* Bulletin 1693, pages 73-74.

Panteleyev, A. (2002): Report on the Exploration Model for "Fire Mountain" Molybdenum Prospect, Near Atlin B.C. NTS 104N/07W. Technical Report prepared for American Reserve Energy Corporation.

Seedorff, E., Einaudi, M.T. (2004): Henderson Porphyry Molybdenum System, Colourado: I. Sequence and Abundance of Hydrothermal Mineral Assemblages, Flow Paths of Evolving Fluids, and Evolutionary Style: *Economic Geology,* Vol. 99, pp. 3-37.

Walcott, P.E. (2002): A Report on Geophysical Interpretation, Fire Mountain Property, Atlin Area, British Colimbia; *Peter E. Walcott & Associates Limited,* American Reserve Energy Corporation, Unpublished Company Report, 11 pages, with maps.

Woodcock, J.R. (1981): The Fire Mountain Property on Fire Claims: *J.R. Woodcock Consultants Ltd.,* Unpublished Private Report, 16 pages, with Appendices (drill logs) 40 pages.

Woodcock, J.R. (1986): Petrogrpahy of the Fire Mountain Property; Unpublished Private Report, *J.R. Woodcock Consultants Ltd.,* 51 pages.

Woodcock, J.R. (1995): Fire Mountain Molybdenum, Unpublished Private Summary Report, *J.R. Woodcock Consultants Ltd.,* 9 pages; Addendums (2008)

8.0 REFERENCES

Bellamy, J.R. (2004): 2004 Drilling Report on the Fire Mountain Property

Dumont, R., Coyle, M., and Petvin, J. (2001): Aeromagnetic Total Field Map, Bell Lake, 104 N/T; *Geological Survey of Canada,* Open File 4097

Edwards, B.R., Russell, J.K., Anderson, R.G., and Harder, M. (2003): Overview of Neogene to Recent volcanism in the Atlin volcanic district, Northern Cordilleran volcanic province, northwestern British Columbia, year three: *Geological Survey of Canada,* Current Research 2003-A8, 6p.

Harder, M., Russell, J.K., Anderson, R.G., and Edwards, B.R. (2003): Llangorse volcanic field, British Columbia; *Geological Survey of Canada,* Current Research 2003-A6, 10p.

Lowe, C., and Anderson, R.G. (2002): Preliminary Interpretation of New Aeromagnetic Data for the Atlin Map Area, British Columbia – Preliminary Interpretations: *in* Current Research, Part A, *Geological Survey of Canada,* Bulletin 1693, pages 73-74.

Panteleyev, A. (2002): Report on the Exploration Model for "Fire Mountain" Molybdenum Prospect, Near Atlin B.C. NTS 104N/07W. Technical Report prepared for American Reserve Energy Corporation.

Seedorff, E., Einaudi, M.T. (2004): Henderson Porphyry Molybdenum System, Colourado: I. Sequence and Abundance of Hydrothermal Mineral Assemblages, Flow Paths of Evolving Fluids, and Evolutionary Style: *Economic Geology,* Vol. 99, pp. 3-37.

Walcott, P.E. (2002): A Report on Geophysical Interpretation, Fire Mountain Property, Atlin Area, British Colimbia; *Peter E. Walcott & Associates Limited,* American Reserve Energy Corporation, Unpublished Company Report, 11 pages, with maps.

Woodcock, J.R. (1981): The Fire Mountain Property on Fire Claims: *J.R. Woodcock Consultants Ltd.,* Unpublished Private Report, 16 pages, with Appendices (drill logs) 40 pages.

Woodcock, J.R. (1986): Petrogrpahy of the Fire Mountain Property; Unpublished Private Report, *J.R. Woodcock Consultants Ltd.,* 51 pages.

Woodcock, J.R. (1995): Fire Mountain Molybdenum, Unpublished Private Summary Report, *J.R. Woodcock Consultants Ltd.,* 9 pages; Addendums (2008)

9.0 STATEMENT OF QUALIFICATIONS

I, J. Richard Woodcock, P. Eng do hereby certify that:

1. I reside at 3870 Lonsdale Avenue, North Vancouver, British Columbia, Canada, V7N 3K6

2. I have a BASc from the University of British Columbia (1951) and an MSc from California Institute of Technology (1953)

3. I am a member of the Association of Professional Engineers and Geoscientists of British Columbia

4. I have practised my profession since my graduation in 1951

5. I first became involved in molybdenite geology and exploration in 1960 and 1961 when I managed the drill program on Kennco's Alice Arm, B.C. property. In 1961 I transferred to a Geological Research Divisio of Kennecott Copper in Salt Lake City to study the geology of molybdenum deposits and to devise techniques for the exploration.

6. In 1980 and 1981, I worked on the Fire Mountain property doing rock geochemisty, logging available core and doing some petrographic studies. I also visisted the property during the drill program of 2003 and again in 2008.

7. I consent to the filing of this report with any stock exchange and other regulatory authority and any publication by them.

____

J.R. Woodcock, P. Eng.   Dated the   day of November, 2008

APPENDICES

Guidlines to Appendices

Appendices:

Appendix I gives the sample numbers, K-feldspar staining index (0 to 9), and the UTM coordinates of all specimens used in this study (Figure 3)

Appendix II includes brief descriptions of specimens used in the K-feldspar studies

Appendix III gives the descriptive data from Woodcock's recent thin section studies

Appendix IV includes a few thin section studies done in 1985 by John Payne, petrographer

Labelling:

Most of the specimens stained for the K-feldspar map (figure 3) were selected from specimens collected in 1981 when they were labelled according to the collector and year as follows: A 81-number, G 81-number, W 81-number.

Specimens slected from the drill core were labelled according to drill hole number and depth. The drill holes of 1972 were labelled SAN (1 to 6) and depth is in feet.

In 2004, the first drill hole was started as FM-04-07; however Bellamy recieved the request from office that the holes should be numbered starting at No. 1. Thus,although Bellamy's report used FM-04-01, FM-04-02, FM-04-03, the core boxes and the field logs label the first 2004 hole as FM-04-07. This report also uses FM 7-depth, where depth is in meters.

Abbreviations:

bio	Biotite
bire	Birefringence
carb	Carbonate
conc	Concentrated
dol	Dolomite
dissem	Disseminated
K-feld	K-feldspar
lim	Limonite
hfls	Hornfels
Mo	Molybdenum
MoS_2	Molybdenite
py	Pyrite
rk	Rock
qtz	Quartz
X-cutting	Cross Cutting
xls	Crystals

Appendix I

Staining Data For Map (Figure 3)

Specimen No.		UTM Coordinates	
A 81-	K stain Index	North	East
439	0	6594230 N	624710 E
440	1.4	6594110	624694
441	1.7	6593930	624730
442	4	6593815	624590
446	5	6593810	624535
447	0	6593665	624390
450	0	6593475	624240
453	4		
456	5	6593385	624355
457	3	6593387	624355
458	0 & 4	6593500	624490
460	2.5	6593760	624534
461	2	6593635	624670
464	2.5	6593480	625015
466	8	6593460	624885
468	1	6593440	624753
471	2	6593395	624515
470	5	6593415	624610
483	0	6592620	623910
489	0	6592615	624390
492	3		
493	6	6593600	624530
496	5	6593393	624985
498	<1	6593305	624880
500	8	6593100	624625
501	1	6593175	624730
503	6	6593075	624680
505	0	6593015	624525
510	0	6592975	624715
512	4	6593090	624890
513	2	6593175	625010
516	7	6593280	625155
517	0	6593093	625460
518	<1	6593025	625385
521B	1	6592850	625175
523	0	6592840	624725
525	1	6592750	625835
526	2	6592685	625610
528	2.5	659255	625565
530	0	6592426	625520
532	1	6592294	625475
533	1	6592007	625376
542	0	6592170	625665
543	0	6592430	625755

547	0	6592666	625840
548	0	6592710	625850
549	1	6592785	625880
552	6	6592175	625700
553	2	6592300	625660
556	8	6593055	625540
559	<1	6593200	625540
560	0	6593210	625700
565	0	6594525	625740
566	0	6595126	625190

Specimen No.		UTM Coordinates	
G 81-	K stain	North	East
755	0	6594060 N	625690 E
758	0	6594010	625700
760	0	6593690	625045
762	2.5	6593490	625890
765	8	6593350	625815
767	6	6593275	625755
768	4	6593245	625685
769	2	6593240	625620
771	<1	6593297	625500
772	4	6593270	625440
774	2	6593365	625270
775	2	6593295	625300
777	0	6594250	625555
781	0 & 9	6594365	625550
783	0	6594340	625325
788	0	6594130	625315
791	0	6594055	625190
793	7	6593935	625120
795	8	6593880	625065
798	3	6593884	625084
799		6593635	625795
801	0 & 9	6593560	625090
804	4	6593445	625170
805	2	6593405	625220
807	3	6594115	625340
809	7.5	6593950	625255
811	0 & 9	6593885	625250
812	0	6593850	625260
813	8	6593805	625255
815	7	6593725	625280
819	0 to 8	6593550	625250
821	9	6593470	625344
823	<1	6593397	625445
825	4	6593333	625525
830	6	6593405	625800
834	P	6593084	625870
838	2	6593005	625760
841	6	6593110	625700
842	8	6593095	625665
845	6	6593210	625666
849	9	6593340	625645

Specimen No.		UTM Coordinates	
W 81-	K stain	North	East
304	4	6592960 N	625700 E
307	4	6594760	625760
308	0	6594510	626540
309	0	6594255	626690
310	0	6594115	626810
313	0	6593900	626710
315	0	6593447	626645
317	0	6593140	626450
319	1.5	6592005	626320
320	<1	6592815	626080
321	<1	6592805	625905
322	0	6592905	625900
324	<1	6592405	625028
326	0	6592390	625850
327	1	6593850	625755
329	0	6593830	625595
330	0	6593770	625670
332	0	6593325	625425
334	<1	6593183	625470
335	8	6592445	625535
336	7	6592955	625475
338	9	6592900	625240
339	<1	6592965	625135
340	1	6592960	624835
342	<1	6592335	624615
344	1	6593750	625145
348	5	6592895	625375
356	4	6592154	625930
360	1.5	6592925	625730
366	1	6592915	625750
368	4	6592910	625615

Appendix II

Description of Specimens For Figure 3

A-81	K-Feld	Description
439	0	dark green to brownish, hard, probably hfls
440		
441	2^-	black spots and streaks in a stained matrix
442	4	one part is spotted hfls with aded spots. This is cut by qtz veinlets
446		
447	0	A dark grey, partially hornfelsed rk
450	0	hard siliceous, grey, with netwok of fractures filled with dark minerals – may be qtz plus pyrite, the surface has abundant iron oxide
453	4	white spottehfls cut by numerous thing qtz veinlets and some black hairline veinlets which may have py. Yellow stain throughout matrix around white spots. This may be related to the qtz.
456	5	massive hfls cut by many thin veinlets. Yellow stain throughout especially in the veinlets. Dissem py
457		
458	0 & 4	hard siliceous light grey rk with no K-feld, in contact with a soft coarser grained brownish rock which appears to be progressing out along fractures in the siliceous rk. It may be hfls which has white spots and many yellow stained spots
460	2^+	grey mod. hard rk with staining in veinlets & networks
461		
464		
466	8^+	hfls with ghosts of spots, cut by irregular qtz lenses and veinlets
468	1	mottled rk cut by few qtz-py veinlets, yellow stain in rock
470		
471	2	mainly silicified rk with dark brown altered hfls between the silicified masses. Yellow stain most intense within silica masses.
483	0	black argillite with casts and Xls of py
489	0	light grey cherty rk cut by py veinlets
492	3	Dark brown hfls, parts silicified. Structurally controlled stain
493		
496	5	Tan hfls with lens like mass of silicified rk cut by thin veinlets, some of which are black (py). Stain occurs as network in outer parts of silica zones and also in many veinlets
498	<1	hard, siliceous, mottled, grey; few bright yellow pockets
500	8	hard siliceous rk with tan colour from limonite cut by many qtz veinlets, some are dark maybe from fine py. The yellow stain is more intense by dark veinlets
501	1	mixture of light grey tan (from limonite) rock and brownish hfls; both are soft (sericite?) the brown aquires irregular yellow stain
503		
505	0	brown hfls, some with white spots
510	0	watery white hfls, moderately hard, cut by py and lim veinlets
512	4	Light grey, with some iron oxide staining ct by many qtz veinlets. Rk is silicified and has ghosts of hfls. Stain within silica zones and

		Also intense in some veinlets
513	2	siliceous grey rk cut by few limonite fractures. Yellow stain faintly dispersed, most along structures
516		
517		
518		
521B	1	siliceous, grey rk with many parallel qtz veinlets few qtz-K-feld veinlets
523	0	same as 510, few thin qtz veinlets
525	1	parallel structures: light grey part is soft probably sericite with no K-feld; the other is siliceous and has dispersed K-feld with concentrations in X-cutting, veinlets
526		
528	2^+	silicious white cherty rk, cut by py & lim veinlets, some veinlets of yellow stain
530	0	grey sericitic rk
532	1	same as 523, some networks of K-feld
533	1	brown hfls, some dispersed k-feld, and also few small veinlets
542	0	Dark grey to black silicified hfls cut by lensy qtz
543	0	White qtz rk with Fe oxide along fractures near surface of spec. In center are black irregular lensy streaks, probably fine py.
547	0	watery hard rk with tan to brown streaks from limonite, py cast, foliated
548	0	watery grey, with limonite in fractures
549		
552	6	Nearly white silicified rk with a py-rich veinlets cut by numerous qtz veinlets, the largest has books of molybdenite and also pyrite. Stain is intense in a network and also along some veinlets.
553	2	Light grey rk with massive silica-rich alteration. Cut by many qtz veinlets, the lrgest with MoS_2 flake. Also many limonite fractures or veinlets. K occurs with rk.
556	8	dark grey rk, abundant limonite in place, abundant k-feld in parts, especially some banded rk and along fractures and pockets
557	5	grey rk, many py casts, cut by some qtz-py veinlets K-feld dispersed throughout patches; same as A555
559	<1	grey mottled rock; py mainly along veinlets k-feld dispersed through some of rock, best by larger qtz-py veinlet
560	0	siliceous watery grey rk, many limonite fractures give it brown colour
565	0	grey rk cut by py veinlets
566	0	dark grey dense rk, possibly hfls (brownish)

G-81	K-Feld	Description
755	0	dark grey argillite with numerous black spots of fine py
758	0	light grey siliceous rk cut by many qtz veinlets, mostly very thin. Many dissem casts from py
760		
762	3^{-}	white aphanitic rk, grey with scattered euhedral qtz xls; little grains of py are surrounded by small white patches. In places the rock is mottled with small vague white grains which assume faint yellow stain; K-feld stain is intense along some of the qtz veinlets
765	8	A light grey rock altered to qtz and K-feld, cut by a stockwork of limonite. Cut by some thin qtz veinlets. Most of the rock, excepting some siliceous remnants, if intensely stained
767	6	A light grey rk alteredto qtz and k-feld cut by thin qtz veinlets. K stain throughout most wiht concentrations along some veinlets and shear zones
768	4	Tan to dark greyish hfls. Cut by many hairline qtz veinlets. Some of larger ones have qtz centre with k-feld outer parts. Stain also dispersed in parts of the rock.
769	2^{-}	light grey to white massive siliceous rk cut by thin watery qtz veinlets. Stained in laces with limonite. K mainly along some short structures
771	<1	light grey siliceous rock cut by many hairline veinlets to some larger py veinlets. Faint patches of yellow stain
772	4	watery grey siliceous rock cut by many qtz veinlets up to 1mm thick; K-feld associated with the veinlets, limonite from veins of py
774		
775	2	grey siliceous rk cut by many qts veinlets with associated k-feld
777	0	grey hard rk, py pockets along some structures also dissem py casts
781	0	dark grey-black arg
783	0	dark grey argillite-brown hornfelsing
788	0	grey siliceous rk, irregular dark brown-black veinlets
791	0	grey siliceous spotted rk, some light patches with light yellow stain, also as thin selvage along a thin qtz veinlet
793		
795	8	siliceous, watery, light grey in contact with banded brown hfls; py xls and qtz (?) fragments in grey portion
798		
799		
801		
805	2	Massive white rk cut by thin qtz and qtz-py veinlets. Some dispersed K stain, and short stretches of intense stain along some veinlets.
807	3	Tan to dark hfls cut diagonally across spec by tan shear zone. Stain is mainly within this shear zone, py throughout.
809		

811	0 & 9	greyish to watery rk cut by weathered py veinlets. Areas between these veinlets has slight yellow stain. A foliated vein at one corner has intense staining (K=9)
812	0	siliceous rock with some brown (iron oxide?) patches, cut by qtz, qtz-py, and py veinlets – grey-tan colour
813	8	Altered hfl, tan colour, cut by many pyritic veinlets. Intense K stain in most of rk.
815		
819	8 to 0	banded rock, sharp changes from yellow stain to brown hfls (?)
821		
823	<1	Light grey hfls, some with light tan tint. Dappled colour: cut by whitish veinlets. K stain only on one pyritic veinlet.
825	4	white silicified rock cut by many watery qtz veinlets, some with py K stain along veinlets and some dispersed. Some fine Mo in one veinlet
830		
838		
841	6	white igneous rk with small qtz pheno. K-feld concentrated along veinlets & outward
842	8	same rk as 841, more K-feld throughout rk. Probably rhyolite or rhyodacite
845	6	Whitish silicified rk cut by a qtz vein that has spanse pockets of Mo and of K-feld. The altered rk has network and pockets of intense K stain.
849	9	light grey, relatively soft; part has high K-feld stain. Part is dark grey with no stain. Abundant py & limonite especially in dark area

W-81	K-Feld	Description
304	4	Siliceous grey rk with limonite along fractures, K-feld throughout and along fractures
307	4	Grey hard rk with many fractures with K-feld
308	0	Highly fragmented arg.
309	0	Dark grey soft argillite
310	0	Grey siliceous hfls; tan near limonitic fractures
313	0	Dark grey arg.
315	0	Dark grey massive arg.
317	0	Dark grey, white fracture zones, few qtz veinlets
319	1.5	Watery grey dense rock; tan fracures from lime stain along some fractures
320	<1	Greenish grey, relatively soft, pockets & hairline fractures have yellowish colour
321	<1	Siliceous light grey with tan from limonite. Many hairline fractures few may have yellow stain
322	0	Grey to brownish siliceous hfls with many hairline fractures, some have qtz
324	<1	Dark grey, relatively soft, cut by hairline fractures & veinlets of black rk. Resembles arg. rk but has yellow stain along some veinlets
326	0	Sheared light grey to amber; colour due to abundant py, (dissem. veinlet); soft (sericite?)
327	1	Siliceous grey rk, many qtz veinlets(hairline to 1mm); K-feld associated with many of the structures; brownish patches may be remmants of biotite hfls.
329		
330	0	Tan-coloured sedimentary. stockwork of thin veinlets of tarnished py
332	0	Tan to light grey; some thin py-qtz veinlets. Same as 330 – quite hard
334	<1	
335	8	Abundant K-feld mixed with hairline qtz veinlets; the bigger qtz veinlet control K-feld
336	7	Tan to grey hfls with crowded white pots, cut by veinlets of qtz-py K stain forms dense network in spotted rk and also controlled by some veinlets
338		
339	<1	Tan rk, moderately hard; abundant py dissem. and along fractures
340	1	Soft greyish rk replaced in places by cericite which extends outward along fractures. The rest of the rk has light yellow stain
342	<1	The colour may be from many thin py streaks & veinlets; faint yellow in places may be from sericite?
344	1	Soft greyish rk, cut by tan silicification along some structures
348	5	Tan hfls with white spots and ghost spots, cut by veinlets with

		various combinations of quartz, py, and K-feld. K stain mainly dispersed in parts of rk.
356	4	Hard grey siliceous rk cut by fractures and qtz veinlets along which K-feld migrated
360	1.5	Light grey siliceous rk with some limonite. Yellow stain along small structures
366	1	Grey to tan siliceous rk; yellow stain along structures
368	4	Sheared grey rk cut by qtz which extends out along shears. K-feld controlled by veinlets & shears

Appendix III

Thin Section Studies (J.R. Woodcock)

FM7 – 50.25m

This is a watery white siliceous rock. Such rock is common within the area of biotite hornfels. It has a stockwork of white hairline veinlets. This is cut by quartz-pyrite (or limonite) veinlets. Pyrite grains are scattered throughout. Staining shows that shear planes and also some networks of fractures control the K-feldspar. K=4

Thin Section

The Matrix is mainly a mosaic of quartz crystals generally 0.01 to 0.07mm with quartz of the veinlets 0.1 to 1.0mm. Numerous fluorite crystals are scattered, mainly within or adjacent to quartz veinlets. Those in the veinlets are clear and have high negative relief and in some a faint purple tint can be discerned.

Dolomite crystals and patches with some of the coarse quartz are generally obscured by limonite.

In places, a few biotite flakes are associated with the veinlets. Minor sericite occurs in some pockets of coarse quartz.

Small crystals of opaque mineral are very abundant. Could be grinding medium. Apatite crystals are also common.

FM7 – 267.75m

This is a section of core, 13.5 cm long. A 2-cm wide complex vein crosses the centre of the specimen. The rock is a grey altered hornfels. The vein is composed of fragments of white rock within a black rock. A watery 1mm wide veinlet bounds this black material on one side. This complex vein is displyed in thin section A. It has no K-feldspar stain. At both ends of the specimen, the grey rock is cut by numerous dark fractures, many with pyrite. Many of these fractures, especially the thicker ones, have selveges of K-feldspar, which is also dispersed in the adjacent rock.

Thin Section 267.75 B

The matrix of the rock is mainly quartz grains with minor K-feldspar and with biotite flakes and carbonate patches scattered throughout. Accessory minerials include sphene and small equi-dimensional euhedral crystals of very high negative relief.

A large quartz veinlet has relatively large irregular patches of K-feldspar along its contacts and also, in places, large patches of carbonate and relatively coarse grained sericite. Molybdenite crystals occurs in a sericite patches and project into the quartz veinlet. It also occurs in the K-feldspar selvages. In some places the vein widens and is composed mainly of very large carbonate crystals. The enlarged vein is bounded by sericite and in one place by large quartz crystals that contain numerous minute fluorite crystals.

Some of the large carbonate crystals contain numerous small flakes of sericite.

Some of the thin discontinous quartz veinlets do not have ditinctive contacts with the quartz mosaic of the matrix. They could be recrystallization due to shearing.

Thin Section 267.75 A

The white to cream-coloured fractured rock in the middle of this vein is a mass of bladed crystals arranged in radiating groups. It is soft and has extremly high biregringence. It resembles carbonite, but has unusual structures. Included are clear crystals of muscovrite which, in places, has a faint brown tint. The irregular fractures that cut the white rock are filled with mica that has faint greenish to brownish tint.

The matrix outide of the vein is mainly a mosaic of quartz crystals and contain irregular patches of carbonate and minor mica. Also some crystals of pyrite occur and these are surrounded by concentrations of mica plus carbonate.

Also cutting the matrix are irregular quartz veinlets with irregular contacts.

The dark rock forming one side of the vein is a felted mass of biotite crystals containing some carbonate.

FM7 – 275.1m

A stained specimen of core, 11cm long, shows a highly silicified grey rock with pockets of molybdenite. This is cut by mainly veinlets including a prominent one that has alteration zoning outward from it. This vein is filled with a white or cream coloured mineral and in places, vugs, or casts left from pyrite. Along the sides, and also forming the veinlet in parts, is a watery alteration product. Outside of this is a tan (0.5cm) biotite zone followed by a dark brown zone (0.7cm) of spotted hornfels. These spotted zones occur only on one side of the veinlet.

Yellow staining is most intense outside of the hornfels zone and also in and along minor veinlets. Cross-cutting are some irregular watery siliceous veinlets, some of which have molybdenite along their boundaries.

Thin Section

One end of section is dominatly quartz and lesser K-feldspar with scattered patches of carbonate and a few flakes of sericite and no biotite. This is the silicified rock. The other end of the section has biotite flakes and more K-feldspar and larger patches of carbonate. The spotted hornfels and parallel veinlet were not intersected by the thin section. The veinlets that do cross the section are of quartz crystals. Cross fractures have carbonate.

FM-07-294.2m

This cut-off is a quartz-feldspar porphyry, cut by three prominent quartz veinlets up to 4mm wide, each containing very small flakes of molybdenite.

The rock is intensely stained with the matrix mainly K-feld and quartz crystals.

Phenocysts form up to 25% of the rock and include quartz, few small K-feld and white plagioclases which appear to be partly altered to K-feld.

Thin Section

The matrix is dominatly alkali feldspars containing about 40% dirty rounded grains of quartz. Some of the small crystals of oligoclase (An13) are clear, but most are dirty with inclusions. The bigger, the more inclusions or replacements. Some of the large plagioclase crystals are highly altered to sericite. Small patches of carbnate and sericite flakes are scattered throughout. The larger K-feld phenocrysts are perthitic. Some of the large quartz pheocrysts are composite with up to six different optical orientations but with overall hexagonal outline.

The quartz veinlets are devoid of the minerals that occur within or along borders of the many quartz veinlets that cut the hornfels, including carbonate, K-feldspar, and coarse sericite.

FM7 – 495.57m

This is white-spotted hornfels, an alteration of the dark biotite-rich spotted hornfels. Some of the white spots have a core of grey rock which resembles the matrix. The section is cut by watery veinlets, some of which contain pyrite.

Thin Section

The matrix is a mixture of K-feldspar plus lesser quartz. Scattered sericite flakes and some irregular carbonate patches occur throughout. The biotite spots are highly altered, mostly to sericite plus carbonate; although some biotite still retains a light brown tint. Numerous needles of rutile (?) occur in the spots with the most advanced alteration.

Pockets of coarsened quartz are common and the small quartz veinlets extend or radiate outward from the coarse quartz patches. Pyrite crystals are abundant.

Streching across centre of section is a conspicious vein of coarse clear carbonate and this is cut by a longitudial vein of quartz. Within the carbonate vein (near the intersection) are some clear low birefrigit crystals, some with octahedral cross-sections, probable apatite.

One carbonate veinlet changes along its length to quartz, or to coarse sericite, or to K-feldspar.

FM7 – 498m

The rock is composed of two main types including a dark brown hornfels and a tan coloured rock with abundant dark brown spots, similar to FM7 – 575.13. This is cut by a 1-cm wide zone of white spotted rock which is the same as FM 7 – 495.57. This bleached zone is related to a central watery veinlet that contains some MoS_2. Many other veinlets cut the rock and alter or reduce the sharpness of the adjacent brown spots. The core from this site has a stockwork of white veinlets up to 3mm wide, some of which contain MoS_2.

Thin Section

The matrix is mainly K-feld which forms about ⅔ of the section, in optically continous mosaics that contain rounded grains of quartz. Within the mica concentrations, and surrounding them, the K-feld forms >80% of the rock.

The matrix contains numerous tiny euhedral crystals, some probably apatite.

Pyrite crystals and small irregular patches of dolomite are scattered throughout matrix and the biotite concentrations.

The white veinlet is also dolomite. It contains MoS_2 and also some nearly opaque, brown, high biregringent, euhedral crystals. In one place, some black opaque blades radiate from such Xl. Some large dirty, perthitic K-feld crystals occur in this veinlet which are also associated with quartz veinlets. Any mica adjacent to this veinlet has been converted to sericite.

Purple square outlines of fluorite crystals occur adjacent to the dolomite veinlet, but one such fluorite crystal appears to be trancated by the dolomite veinlet. A few fluorite crystals also occur in the matrix. In places, the mica concentrations appears to have a euhedral or partly euhedral outline in shapes one would expect from hornblende crystals.

Note that the alteration of biotite changes to dolomite plus bleached biotite and then to sericite adjacent to the dolomite veinlet.

FM7 – 575.13m

Spotted hornfels in which dark biotite-rich spots occur in a grey matrix. The spots form 30% to 50% of the rock. The stained section reveals a shear foliation.

Thin Section

The biotite flakes form varying amounts of the dark spots and are also scattered throughout the intervening matrix. In places the biotite is trending to a greenish colour. The matrix is mainly K-feldspar with 10% to 25% quartz grains. Also present are some discountinous linear zones of biotite flakes. Similar linear structures of carbonate also occur. Small irregular patches of carbonate occur throughout, especially in the intervening matrix.

A few lenses of coarses crystals are composed of K-feldspar plus quartz. At the label end of the section are veinlets of relatively coarse K-feldspar crystals containing small flakes of sericite.

SAN 5-151

This is a spotted hornfels cut by several types of veinlets. The spots are biotite, in many places with lighter centres. One grey veinlet, probably quartz, crosses one the end of the stained cut off section. Another prominent 1-mm wide quartz and K-feld veinlet crosses the section longitudially. It has a centre of quartz bounded by K-feld. Some small layers of quartz K-feld also occur within the centre of the quartz vein. Other thin quartz veinlets have no associated K-feld and some hairline veinlets are mainly K-feld.

Thin Section

Matrix is a mosaic of K-feld and quartz with numerous flakes of biotite and some sericite plus clouded little patches of dolomite. One part of section contains elongated patches of biotite flakes. An extremly fine-grained mineral, possibly a clay, occurs in the biotite. Opaque grains occur throughout but are most common in the biotite rim and the biotite rich parts of the section. Much of this is pyrite and its oxides.

At the extreme ends of the section the biotite has been converted to sericite.

Note that the K-feldspar of the veins is quite dirty with clay.

The grey zone across the end of the section consists of irregular lenser or veinlets of quartz with all the biotite of the adjacent matrix converted to sericite and with extra large sericite flakes adjacent to the introduced quartz. This is quartz-sericite alteration.