

MARS 1 - 200 (inclusive) Grant No.: YB96047-96246 inclusive

DDH 1 – 16 (inclusive) Grant No: YB57058-67073 inclusive

(MARS PROPERTY)

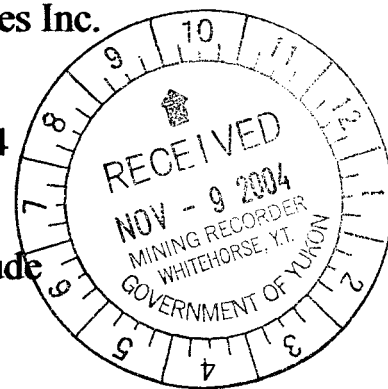
Owners: Brian R. Sauer and R. Allen Doherty as to 50% each – subject to an option agreement dated September 4, 2001 with Saturn Ventures Inc.

WORK PERFORMED: JUNE 26, 2004 to AUGUST 1, 2004

LOCATION: 61° 16' north latitude and 134° 45' west longitude

Northern Affairs Program Mineral Rights Map 105-E-07

Whitehorse Mining District, Yukon Territory



**The Mars Alkalic Cu-Au Property, Laberge Map Area**

**(105E/7), Yukon Territory, Canada:**

**Geology, Alteration, Mineralization –Diamond Drilling .**

**October 11, 2004**

*Prepared For: Saturn Minerals Inc  
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## **1.0 Summary**

Saturn Minerals Inc drilled a total of 827 metres of thin-wall NQ diamond drill core in 7 drill holes at 4 drill sites on the Mars property. Work was completed between June 26 and August 1, 2004, and was supervised by Dr. James R. Lang, P.Geo, with assistance from Mr. Murray McClaren, P.Geo, and Mr. Michael Elson. Camp gear and equipment were trucked from Whitehorse to a staging point near Lake Laberge, and men and materials were transported by helicopter to a campsite located on claim DDH-9 which is located near the centre of the property. The core was logged on site by Dr. Lang, and 192 samples were split for geochemical analysis. Drill core is stored at the campsite, where it was stacked and covered with tarps. Samples were prepared and ICP geochemical analyses were completed by Acme Analytical Laboratories, Vancouver, British Columbia. Geochemical results were disappointing: 1) for Cu all results were less than 667 ppm, except for two intervals from immediately below the surface that contained supergene copper oxide minerals and which reported 2902 and 813 ppm; 2) for gold, only 9 samples returned greater than 100 ppb Au, with a single 15' interval of 6,435 ppb; 3) for molybdenum 17 values exceeded 103 ppm, with a maximum of 1,080 ppm; and 4) no other elements showed economically significant enrichment.

Numerous exploration programs have been carried out on the Mars property since its discovery in 1971. The most significant work was carried out by Placer Dome Canada Ltd. between 1997 and 1998. Saturn Ventures Inc. (predecessor company to Saturn Minerals Inc.) optioned the property in 2001. Exploration by Saturn Ventures Inc. in 2001 resulted in the discovery of a new mineralized zone (TA zone) as well as additional areas that warrant future follow-up.

The property is underlain by the Jurassic Teslin Crossing pluton and sedimentary rocks of the Middle Jurassic Tanglefoot Formation. Poorly exposed and locally strongly altered hornfelsic volcanic rocks are found in the east-central portion of the property. The Teslin Crossing pluton is alkalic and silica oversaturated in nature. Many features observed on the Mars property are similar to those found at other silica-oversaturated, alkalic copper-gold deposits. Alteration mapping during the 2003 program outlined a broad, northwesterly trending zone of K-feldspar alteration that is up to 1 kilometer wide and at least 3 kilometers long. The early K-feldspar alteration zone envelops and is overprinted by zones of quartz veins and silicification; magnetite rich alteration zones and zones of albitic alteration. Extensive induced polarization resistivity highs spatially correlate with areas of quartz veins and silicification. Areas of silicification and resistivity highs also have a close association with copper (+/- gold) mineralization. These areas constitute the primary exploration targets on the Mars property. The Kelly zone and Moon Knob were the best mineralized areas examined during the 2003 field program. Siliceous, hornfelsic sedimentary rocks found at intrusive contacts locally contain significant copper (+/-gold) values and may constitute an additional exploration target.

The amount of drilling that was completed in 2004 is considered insufficient to fully test the exploration potential of the Mars property. Recommended work for the future includes further prospecting around the margins of the Teslin Crossing pluton, better documentation of post-hydrothermal fault history, and additional diamond drilling on the several untested prospects that have exposed copper-gold-molybdenum mineralization and which are widely distributed across the property.

## 2.0 Property Description and Location

The Mars property consists of 216 contiguous unsurveyed two-post mineral claims covering approximately 4,500 Hectares. The claims are owned 50% each Brian R. Sauer and R. Allan Doherty. They are subject to an option agreement dated September 4, 2001 with Saturn Ventures Inc. (now known as Saturn Mining Inc.). The claims are located within the Whitehorse Mining District, Yukon and are shown on Northern Affairs Program Mineral Rights Map 105-E-07. Claim data is as follows:

Claim Name	Grant No.	Recording Date	Expiry Date
Mars 1-200	YB96047-96246	July 16, 1996	July 16, 2005
DDH 1- 16	YB7058-6703	June 7, 1996	June 7, 2005

The DDH 1-16 and Mars 1-200 claims are collectively known as the Mars property and the claims are situated on the Teslin Crossing Stock..

The Mars property is located in south-Lake Laberge and the Teslin River, south of its confluence with the Yukon River.

## 3.0 Accessibility, Physiography and Infrastructure

Access to the property is by helicopter from Whitehorse. The "Livingston Trail", a winter-only trail suitable for track-type vehicles to placer gold mining camps in the Livingstone Creek area comes within 5 kilometers of the Property. There are no local resources or infrastructure on the Mars Property.

The Mars property is located within a physiographic region known as the Lewes Plateau, an area of moderate to rugged topography. The most prominent topographic feature is a northwest trending ridge informally called Windy Mountain. Relief on the Property is about 550 meters, with the highest point at 1,483 meters above sea level.

Vegetation consists of stunted but mature black spruce, willow, birch and alder below 1,300 meters, with alpine grasses and mosses at higher elevations.

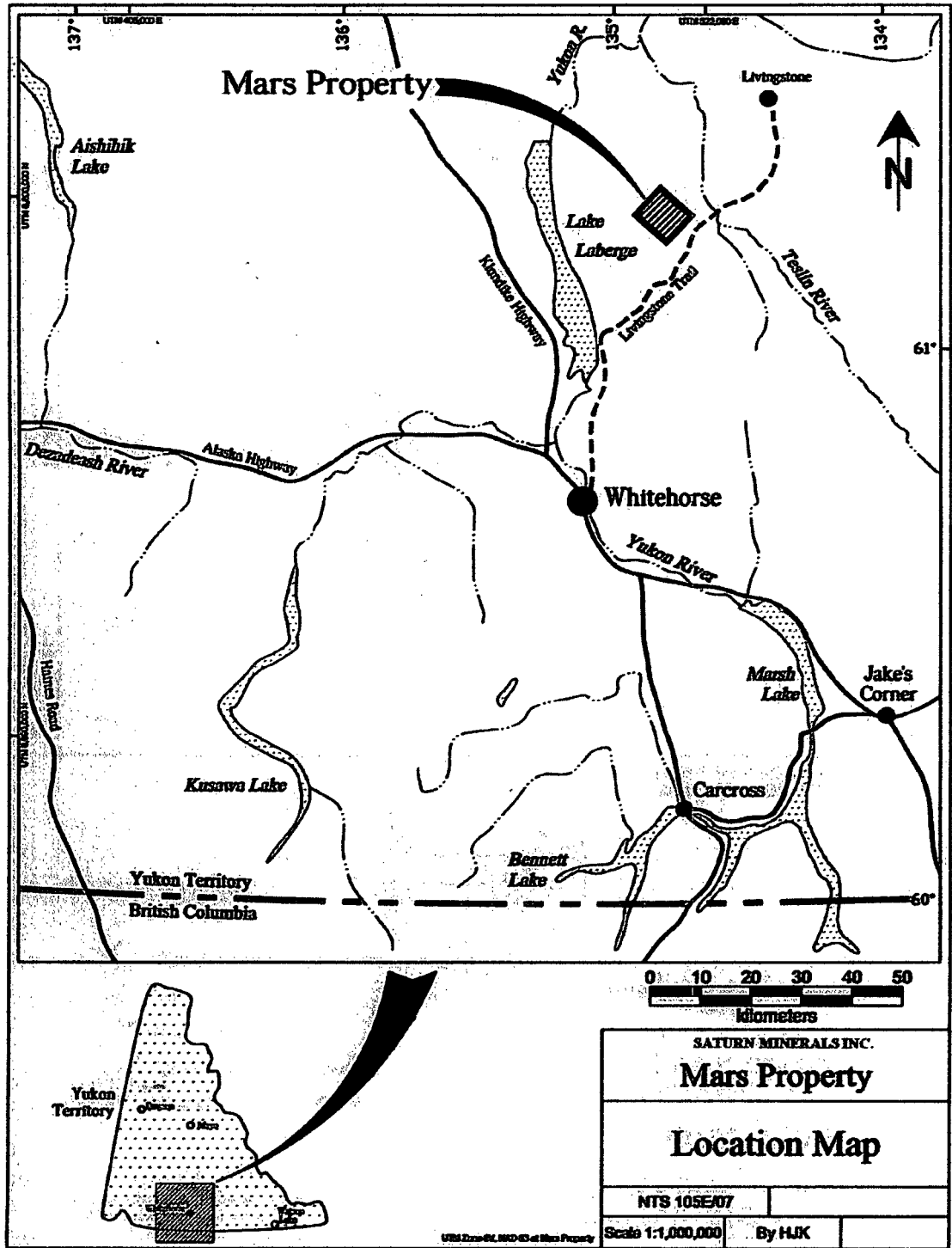


FIGURE 1.0

Modified from Keyser, H.J., 2002b

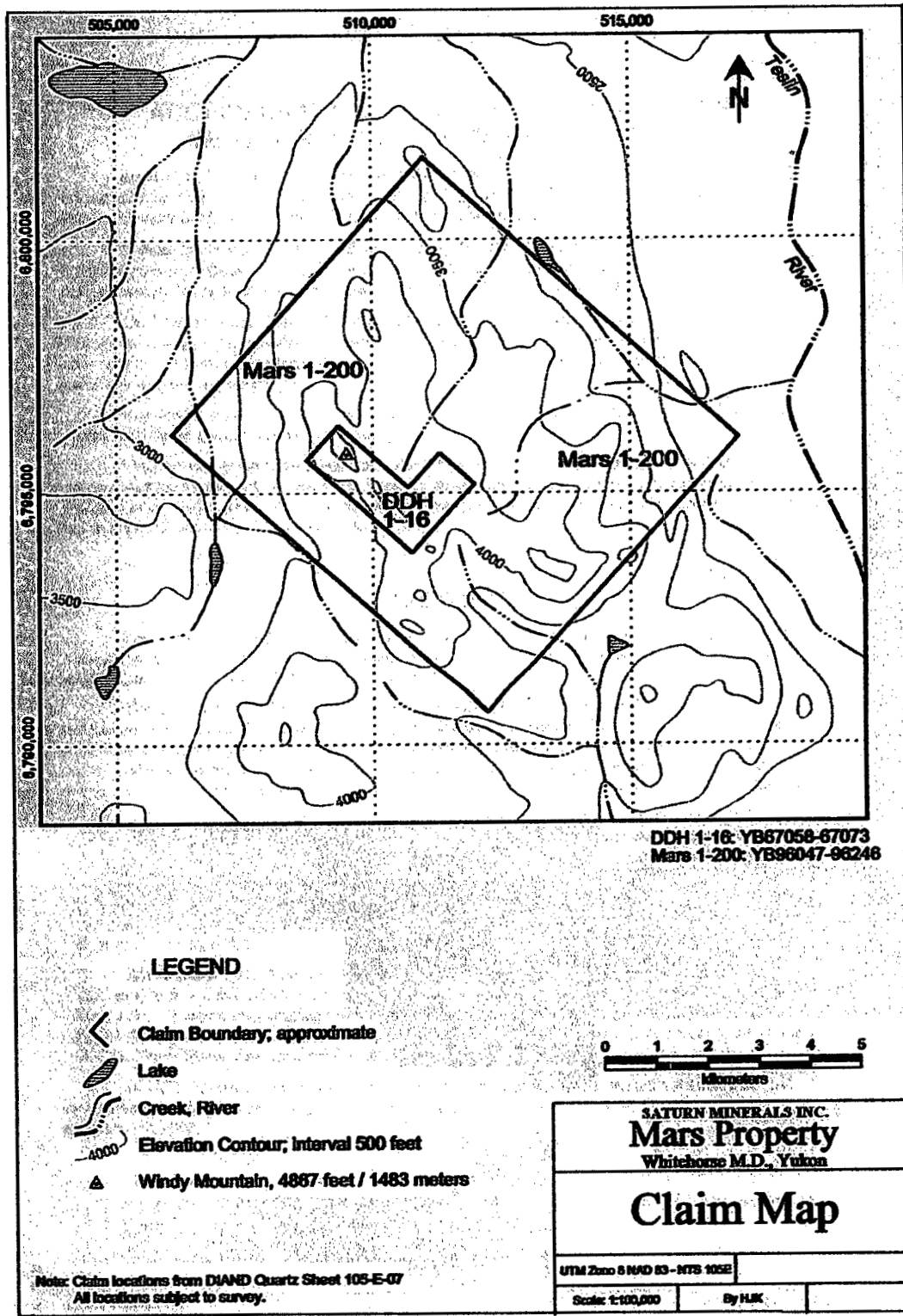


FIGURE 2.0

Modified from Keyser, H.J., 2002b

## 4.0 Introduction

Copper-gold deposits related to intrusions with an alkalic geochemical composition are widespread and include the Copper Mountain/Ingerbelle, Afton-Ajax, Mount Polley, Galore Creek and Mount Milligan deposits in British Columbia (Barr et al., 1976; Lang et al., 1995a, 1995b), Goonumbla/North Parkes (Muller et al., 1994) and Cadia-Ridgeway (Holliday et al., 2002) in New South Wales, Marian and Dinkidi in the Philippines (Wolfe et al., 1999), and Skouries in Greece (Kroll et al., 2002). Deposits of the alkalic Cu-Au association have historically been considered a compositional variant on the more traditional porphyry copper theme (e.g., Barr et al., 1976), although they exhibit a number of characteristics which distinguish them from this model (e.g., Lang et al., 1995b; Lang et al., in review). Lang et al. (in review) have subdivided the alkalic Cu-Au deposits into silica-undersaturated, silica-saturated and silica-oversaturated sub-types, based upon the level of silica saturation in associated alkalic intrusions and the presence or absence of quartz veins as a major alteration stage.

In the Canadian Cordillera, alkalic Cu-Au deposits were traditionally recognized only south of latitude 58°N in the Quesnel and Stikine tectonostratigraphic terranes. All of these deposits are silica-undersaturated or silica-saturated types. In the late 1990s, exploration on the Mars property, located about 65 km north-northeast of Whitehorse in Yukon Territory, recognized it as a further example of alkalic Cu-Au mineralization (Doherty, 1996; Hart, 1997; Wark, 1998; Wells, 1998). Geological and exploration work on this property has identified numerous areas of Cu-Au mineralization within and genetically associated with intermediate to felsic, alkalic intrusive rocks of the Teslin Crossing pluton (Hart, 1997), and has outlined some of the general geological features of the area. Characteristics of alteration and mineralization have, however, received only cursory attention.

This report provides additional information on the distribution and assemblages of alteration and mineralization on the Mars alkalic Cu-Au-Mo-Ag property. This work is based upon a review of previous exploration data and geological studies, field examination of alteration, mineralization and rock types, and results from diamond drilling and geochemical analyses completed between June 26 and August 1, 2004.

## 5.0 History and Previous Exploration

The exploration history of the Mars property began in 1971 and has continued sporadically to the present. Major highlights of past exploration include the following.

**1971-1973.** The Mars property was first investigated for intrusion-related Cu mineralization by United Keno Mines Ltd and by Archer-Cathro and Associates. United Keno, in a joint venture with Falconbridge and Canadian Superior, was drawn to the area by elevated Cu and Mo values in regional stream sediment samples, and acquired a claim position to assess porphyry Cu-Mo potential. Work included geological mapping and soil geochemistry surveys, but samples were not analyzed for Au (Pangman and VanTassell, 1972; Pangman, 1973). The property was allowed to lapse in 1973.

**1996.** A claim block was restaked in 1996 by Al Doherty and Brian Sauer, who recognized the similarities of the Mars property to alkalic Cu-Au deposits elsewhere in the Canadian Cordillera (Doherty, 1996). Positive results for Au assays led to an option of the ground to Camdan Exploration Inc later that year (Walton, 1996). Work included ground magnetic surveys and rock sampling.

**1997.** Placer Dome Canada Ltd optioned the property from Camdan in 1997 and completed the most extensive exploration on the property to date (Wark, 1998). The program included airborne and ground geophysical surveys (magnetics, radiometrics and IP), rock and soil geochemistry, hand trenching, geological mapping and limited thin section petrography (Wark, 1998; Wells, 1998). Results were

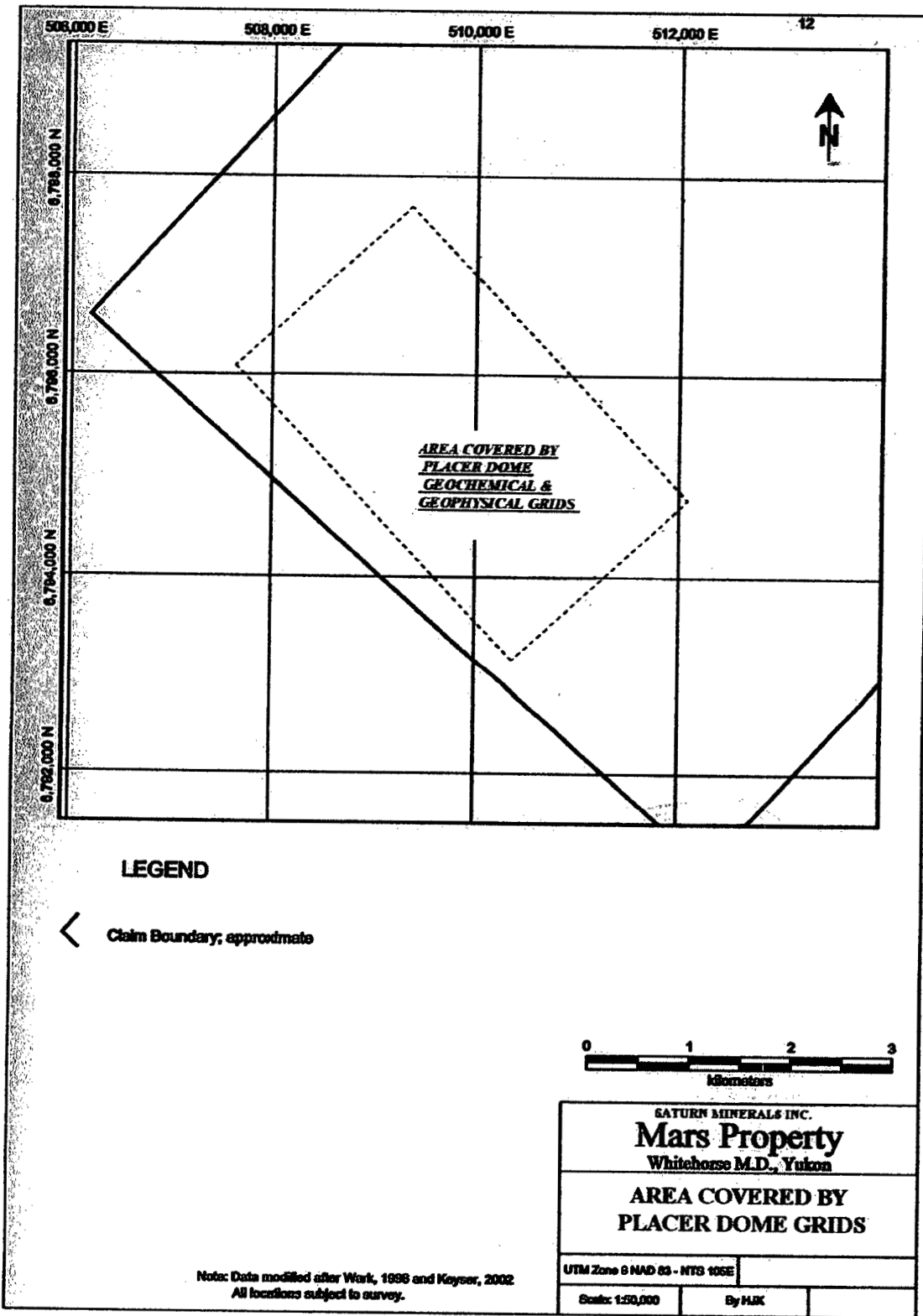


FIGURE 3.0

Modified from Keyser, H.J., 2002b

encouraging and drilling was recommended (Wark, 1998), but Placer Dome dropped their option in 1998 and the ground reverted back to Doherty and Sauer.

**2001.** Saturn Ventures Inc. (successor company to Saturn Minerals Inc) optioned the Mars property from Doherty and Sauer. Additional grid construction, soil and rock geochemistry, hand trenching and prospecting were completed. At least one new mineralized zone was encountered (TA zone).

**2003.** A small program of excavator trenching, and a review of surface geology, alteration and mineralization accompanied by rock geochemistry was completed by Saturn Minerals Inc. Results allowed the first map of alteration distribution and assemblages to be compiled for the property.

## **6.0 Regional and Local Geology**

The regional geological setting of the Teslin Crossing pluton has been summarized by Hart (1997), from which most of the following section is taken. The pluton is located within the Stikine tectonstratigraphic terrane, the largest of several such domains of uncertain derivation that accreted to the margin of ancestral North America during the Middle Jurassic. Stikinia consists of an Upper Paleozoic volcanic arc basement overlain by the Lewes River volcanic arc of Middle and Late Triassic age. The Whitehorse Trough developed as a marginal basin during this time, and was infilled by up to seven kilometers of strata that include Late Triassic volcanic-rich detritus and carbonate of the Lewes River Group and Jurassic clastic rocks of the Laberge Group. Amalgamation of the adjacent Cache Creek terrane and accretion to North America resulted in deformation of these rocks during the Jurassic.

The Teslin Crossing pluton is an isolated intrusive body emplaced near the axis of the Whitehorse Trough. The pluton is part of a 15 kilometre long zone of small stocks, sills and dykes that extend northwest of the pluton, and additional small intrusions occur at Tanglefoot and Porphyry mountains 20 kilometres south of Carmacks. The pluton is not, however, part of an extensive igneous suite.

Host rocks to the Teslin Crossing pluton are mostly fissile, black, well-bedded, carbonaceous, variably limey, poorly indurated shale and siltstone with minor, thin, chert-rich sandstone interbeds (Hart, 1997). Tempelman-Kluit (1984) assigned these rocks to the Middle Jurassic Tanglefoot Formation; fossils yield ages of Toarcian or Aalenian (Hart, 1997). They occur in a block that is fault-bounded against older rocks; the eastern margin of this block and the pluton are cut by north and north-northwest faults that include the southern end of the Chain fault. Volcanic rocks of Aalenian age are found 10 kilometres north-northwest of the pluton and may be temporally associated; a raft of possible hornfelsed volcanic rocks is also poorly exposed in the east-central part of the pluton, but the age of these rocks has not been established. Host rocks to the pluton dip steeply away from the pluton.

Poorly exposed volcanic rocks are found in the east-central part of the pluton. Wells (1998) describes these as locally porphyroblastic dacite to trachyandesite with locally strong carbonate alteration. The rocks appear to comprise a sequence of reworked tuff. They are strongly altered to hornfels, as well as later stages of hydrothermal alteration; as such they are older than igneous and magmatic-hydrothermal activity related to the pluton. Their genetic association with the pluton remain unknown.

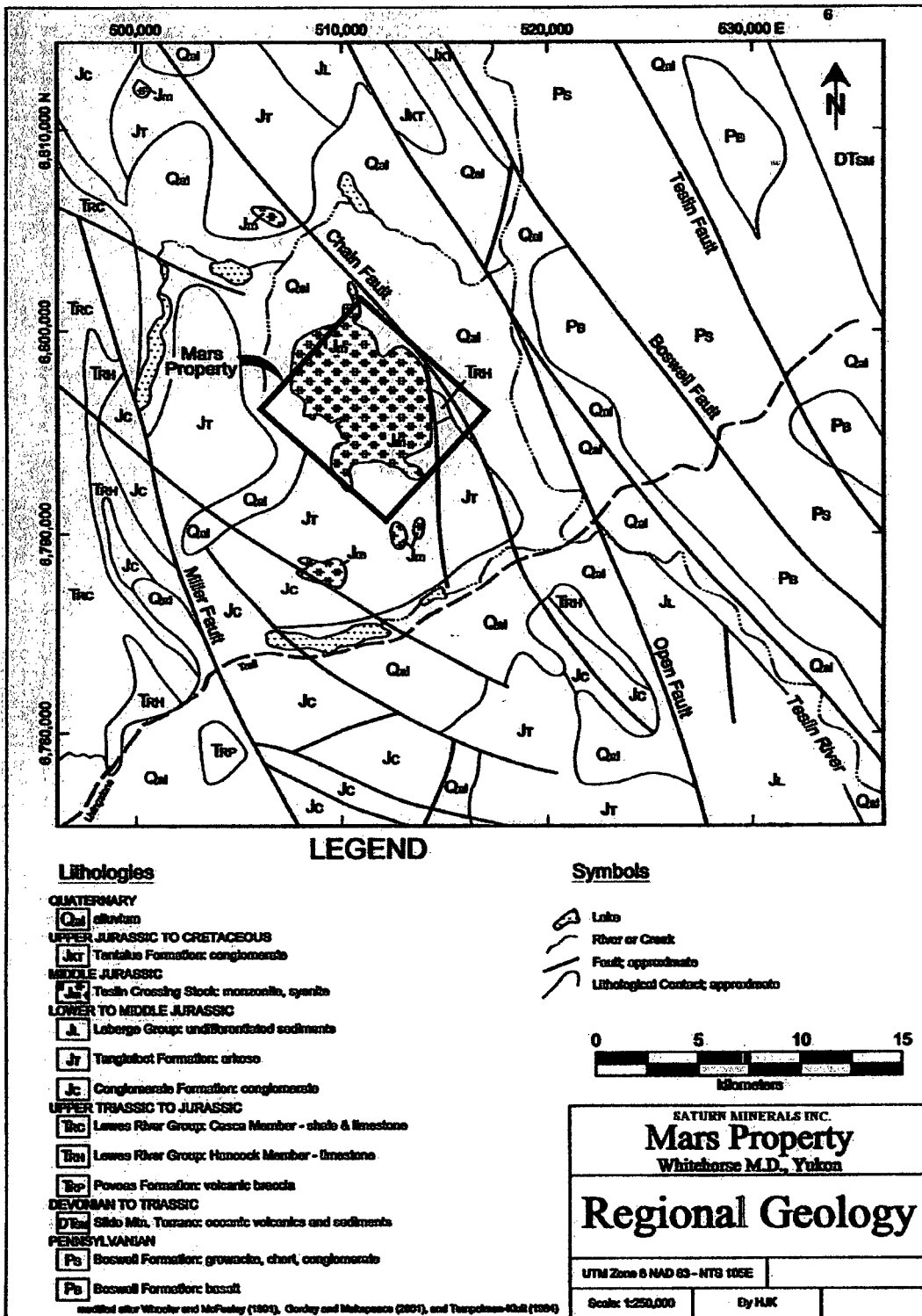


FIGURE 4.0

Modified from Keyser, H.J., 2002b

## 6.1 Teslin Crossing Pluton

**Description and Rock Types.** The Teslin Crossing pluton has not been mapped in detail, but many general features are known. The stock comprises a central phase bounded by a border phase, and the pluton and its host rocks are cut by dykes and sills of variable composition and orientation. The pluton is bounded on the east by strands of the Chain fault. On the north and west, contacts against host rocks appear to be sharp and steep (Pangman, 1972). To the south, the contact appears to be more shallowly dipping, and contours of airborne magnetic data indicate that the intrusion extends well outboard of the exposed contact. The surface expression of the pluton is about 8 by 5 kilometres, but the >57,200 gamma magnetic contour indicates a body up to twice that size. Sedimentary rocks above this part of the pluton are hornfelsed and may form a large roof pendant above one shoulder of the stock, although a large-scale sill geometry has also been suggested. Characteristics of the rock types in the pluton are summarized below.

- **Central Phase.** The core of the pluton comprises a texturally and compositionally variable suite of intrusive rock types. Most rocks are pink, medium to coarse-grained, equigranular syenite to monzonite compositions (Hart, 1997). Hart (1997) describes three main rock types. 1) The main phase is medium to light grey-pink monzonite with fine-grained hornblende and up to 40% euhedral, strongly zoned plagioclase in a slightly finer-grained matrix of orthoclase and hornblende. Accessory magnetite and rare, oxidized biotite are also present. Xenoliths are abundant and fractures with K-feldspar envelopes are common (see below). 2) A leucocratic, tan-pink syenite is characterized by an absence of ferromagnesian minerals. It is composed of 5 to 10% euhedral plagioclase in a matrix of slightly finer-grained orthoclase. Xenoliths are rare; it cuts the main central phase monzonite but is cut by dykes. 3) A minor rock type comprises small plugs and dykes of leucocratic, light pink, coarse-grained, equigranular alkali feldspar syenite. It contains >90% orthoclase, 6% euhedral hornblende, 1% magnetite and minor plagioclase. All phases contain accessory titanite, apatite, biotite, pyroxene and rutile. Pangman (1972) notes a change from An<sub>46</sub> to An<sub>20</sub> from early to late phases. He also notes abundant accessory pyroxene, but Hart (1997) asserts that all observed pyroxene is xenolithic or xenocrystic.
- **Border Phase.** This is a texturally variable, equigranular to fine-grained and crowded porphyritic phase that ranges from monzodiorite to monzonite. Phenocrysts are euhedral, between 1 and 4 mm in length, and comprise 50% plagioclase and 5% hornblende. Plagioclase phenocrysts have only weak compositional zoning (Wells, 1998). The matrix is grey and fine-grained. Accessory minerals include magnetite, apatite, titanite, pyroxene, and local pyrite and chalcopyrite (later hydrothermal?).
- **Dykes and Sills.** Swarms of dykes and sills have been described from south of the pluton by Hart (1997). They are similar to the border phase but are more fine-grained, locally more mafic and commonly trachytic. They range from 3 to 15 metres in thickness, and may be at least hundreds to several kilometers in length. Within the pluton, several trachytic feldspar porphyry syenite dykes have been observed that can contain orthoclase phenocrysts to several centimetres in length in a pink matrix with 5 to 10% hornblende and minor biotite and magnetite; these dykes appear to be unaltered (local clay and sericite; Wells, 1998) and unmineralized, and may post-date hydrothermal activity in the stock. The largest of these dykes is nine metres wide and is located on Moon Knob (Wark, 1998). Dykes within the pluton strike northeast to east-northeast with nearly vertical dips, whereas sill swarms south of the pluton strike north and are west-dipping (Hart, 1997). Mafic dykes with easterly trend have been described by Wells (1998) as metre scale, steeply dipping, grey to green, fine-grained hornblende porphyries with plagioclase, 3 to 5% orthoclase, and minor carbonate and magnetite; these dykes were described as lamprophyres by Pangman (1973) but subsequent authors (Hart, 1997; Wells, 1998) have disagreed with this nomenclature and call them monzonites to monzodiorite/gabbro. Narrow pegmatoidal dykes common, as are fine-grained felsic dykes.

- **Xenoliths.** These are common in most phases of the pluton. They include black pyroxenite, pyroxene gabbro and fine-grained diorite, and also hornfelsed sedimentary host rock (only found in the border phase). Xenoliths are rounded to angular, are mostly <20 cm in size, and locally occur in sufficiently high concentrations to form intrusion breccia.

**Age.** The age of the Teslin Crossing pluton is not tightly constrained. Four K-Ar dates range between 164 and 186 Ma (Stevens et al., 1982; Tempelman-Kluit, 1984), and a single U-Pb date from a sill south of the pluton yielded  $175.6 \pm 2.0$  Ma from two slightly discordant zircon fractions (Hart, 1997).

**Geochemistry.** Geochemical data (Hart, 1997; Wells, 1998) on the pluton and associated dykes and sills indicate a weakly alkalic, metaluminous to locally and weakly peraluminous composition. The concentrations of SiO<sub>2</sub>, Na<sub>2</sub>O and K<sub>2</sub>O range from 60 to 68%, 6.2 to 7.4% and 3.1 to 4.3%, respectively (Hart, 1997), with a slight trend toward more sodic compositions in younger phases (Wells, 1998). Normative compositions indicate silica-saturation to weak oversaturation for the main phases of the pluton, and a nepheline-normative composition for a pyroxenite xenolith (Hart, 1997).

Rocks described as granite are interpreted by Wells (1998) to be arkosic sandstone or possibly a reworked tuff.

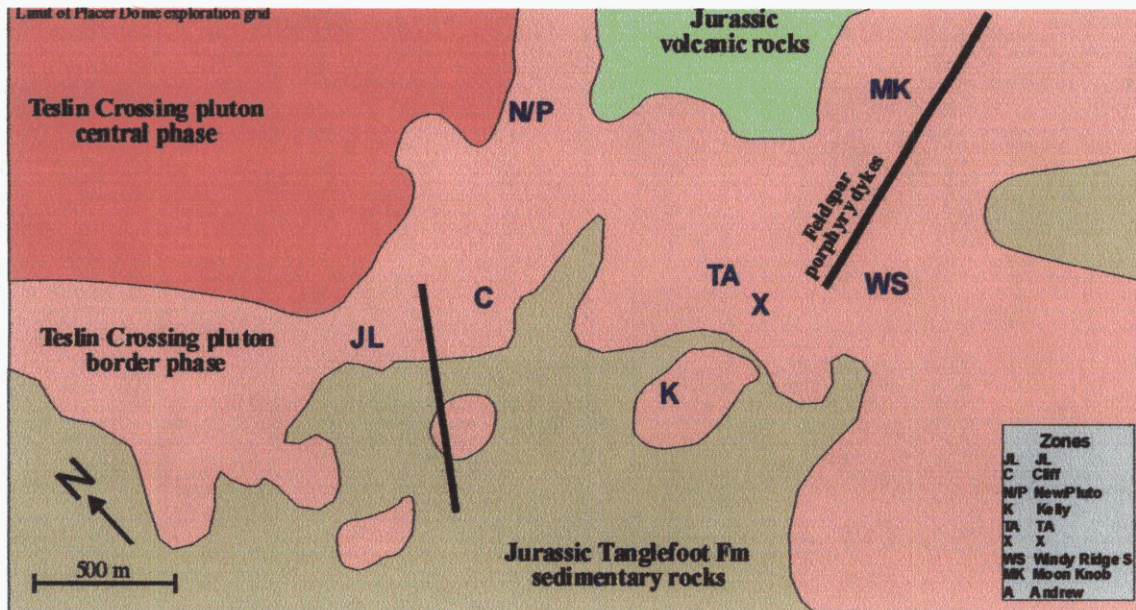


FIGURE 5.0

By J.R. Lang: Modified from Hart, C.J.R., 1997; Killin, K., 1997 & Pangman, P.G., 1973.

**Geology within the Placer Dome exploration grid, as mapped by Placer.** Note that exposures are very limited in many parts of the grid and that unit distribution is very generalized. Contact between the central and border phases of the pluton are gradational.

## 7.0 Topographic Setting of the Mars Property



PLATE 1.0

Photo by J.R. Lang

**Panorama from the Windy Ridge South zone looking northwest through the centre of the exploration grid.** Location of the Cliff, JL, New/Pluto and X zones is indicated. The small white dot is the exploration camp 1.5 km distant. The Kelly zone lies farther to the left of the X zone on the back side of the ridge. The TA zone is in the valley below Murray McClaren. Moon Knob and Andrew zones are well to the right of and behind the photographer. Relief is generally <200 metres. All mineralized zones are exposed on or near the bare ridge crests. Tree and alluvial cover with little or no outcrop makes identification of other mineralized zones that may lie at lower elevations difficult. Strong soil geochemistry does, however, extend well into the covered areas.

## 8.0 Alteration and Mineralization

**Table 1.0** General alteration assemblages and styles observed in the Mars system.

Assemblage	Style	Minerals	Distribution	Geochem
Pervasive K-feldspar	Perv	Commonly found in areas where intensity of K-feldspar-calcite-actinolite veins is much higher and may be related, but timing not well-constrained. Comprises massive K-feldspar flooding of border phase, beginning in matrix and then affecting phenocrysts. Contains disseminated pyrite and chalcopyrite in Cliff zone, but elsewhere association with sulphide not constrained.	Variably developed throughout system; strongest in Cliff	
K-feldspar-actinolite-calcite	Frac	Mostly planar but locally discontinuous veins, mostly quite tight (<2-3 mm open space typical). Ubiquitous envelopes up to 2-3 cm wide with at least K-feldspar and calcite. Vein fill of K-feldspar, calcite, actinolite and rare quartz. Only rare pyrite observed as sulphide.	Entire system in variable intensity	
Albite	Perv	Pervasive white to buff or tan zones in border phase, no significant fracture control. Commonly contains disseminated pyrite and/or chalcopyrite. Can contain disseminated magnetite, which may be later, or be cut by magnetite. Intensely altered host rock typically contains no or very minor sulphide.	Moon Knob, Kelly, X, Windy Ridge South	
Magnetite	Frac	Planar to sinuous veins, small irregular replacements, possible pervasive disseminations. Magnetite is main phase, commonly with minor quartz, locally with minor biotite. May be barren and sulphide-bearing varieties (chalcopyrite and pyrite only, possibly bornite and native Au). In some cases may contain hypogene specular hematite.	Minor in Cliff  Abundant in Moon Knob, X, Windy Ridge South, Andrew, Kelly	
Quartz veins	Frac	Planar to sinuous and discontinuous veins dominated by quartz, late calcite mostly in vugs, minor to important magnetite, pyrite, chalcopyrite, molybdenite. No envelopes. Up to >30 cm wide but mostly <1 to several cm. Surrounding host rock may be more widely silicified.	Pluto/New, JL, Moon Knob, Windy Ridge South, minor in X and TA, Andrew	Strong sulphides common
Epidote-albite	Frac	Minor assemblage found mostly on NW end of system. Irregularly distributed, mostly tight veinlets filled by calcite, actinolite, epidote and albite, with albite envelopes up to 2-3 cm wide. Can contain minor pyrite, but mostly unmineralized.	Occurs on NW margin and also outside of Cliff	
Hematite-actinolite	Frac	Narrow, mostly planar veinlets; various combinations of hematite, quartz, calcite, pyrite, actinolite and probably chlorite. No alteration envelopes.	Mostly in New/Pluto area	
Sericite	Perv	Very minor, mostly as selectively pervasive alteration of plagioclase grains in border phase. Does not appear to form large, discrete zones. Locally common in post-hydrothermal feldspar porphyry dykes, but also a potential relationship to pervasive K-feldspar zones. Probably has no association with sulphide.	Small areas throughout system	

## 9.0 Distribution of Alteration Assemblages

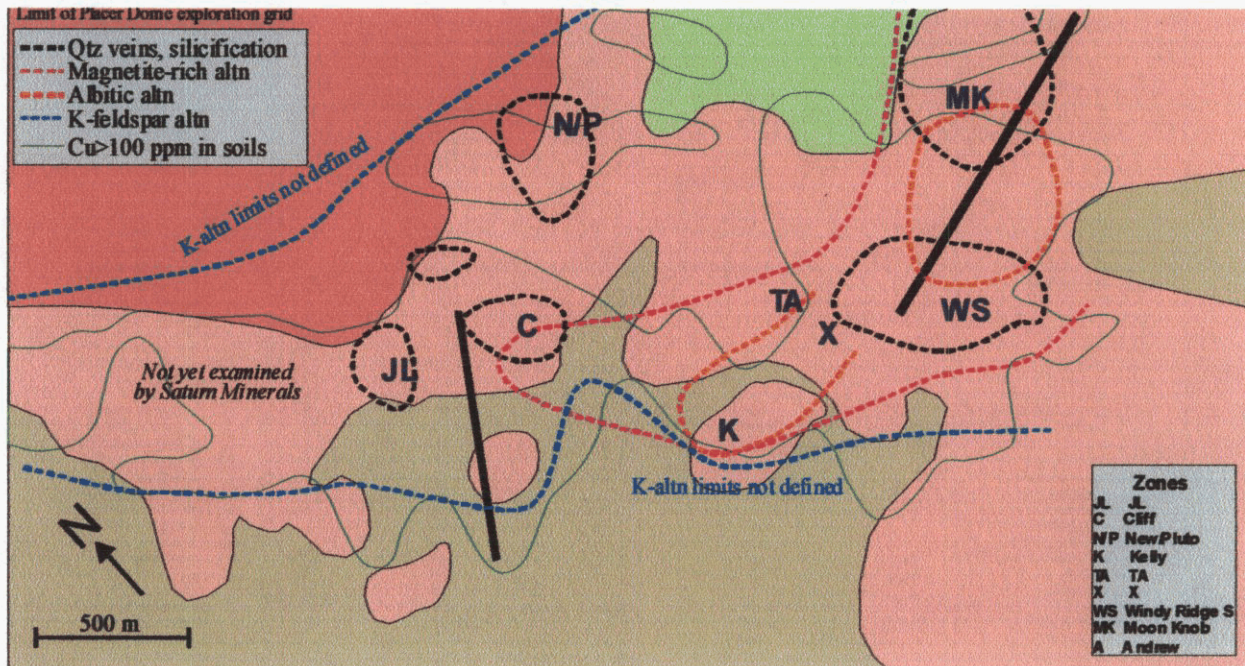


FIGURE 6.0

By J.R. Lang

**Alteration on the Placer Dome exploration grid.** The distribution shown above was identified during reconnaissance field examination of the property by Saturn Minerals (Lang and McClaren) during 2003. The distribution is largely schematic, as the distribution of individual assemblages was not fully defined during the 2003 program; most of the closed areas would actually be open in several directions. The area to the left of the JL zone was not examined. Past exploration reports and comments in Hart (1997) suggest that K-silicate alteration probably extends across the entire map area.

## 9.1 Comments from Wells (1998)

Widespread brecciation within the stock reported by United Keno Hill Mines Ltd and Pangman (1973), giving areas with quartz-carbonate veins with magnetite in the northeastern area, and minor mineralization (cpy, gl (?), moly). Only comments on Cliff, X, Windy Ridge South and Moon Knob zones. Most Au > 1 g/t from X zone associated with N-trending fracture-magnetite stockwork zone.

Potassic alteration. K-feldspar veins and semi-pervasive flooding, with or without associated pyrite or chalcopyrite mineralization. Pangman (1973) indicates related to intrusive 'brecciation' (possibly stockwork fractures and/or joints). Wells suggests several generations of K-feldspar alteration. Flooding is early and widespread, and locally grades into pervasive alteration. K-feldspar veinlets occur in brecciated zones with or without associated (fine) quartz veinlets, magnetite, pyrite and chalcopyrite. Late mineralized quartz veins on Moon Knob contain chalcopyrite, pyrite, molybdenite, with K-feldspar selvages with local magnetite.

**Cliff Zone.** K-feldspar and/or magnetite veining widespread, locally with minor quartz in fractures. Better mineralization with more intense pervasive K-feldspar. Patchy carbonate with K-feldspar. Fine-grained, disseminated chalcopyrite and minor bornite commonly occur in small aggregates with magnetite and local coarser pyrite.

**New Zone.** One sample with moderate K-feldspar fractures and pervasive alteration, with minor quartz veins that returned 2 g/t Au, 0.35% Cu, 125 ppm Mo (A29330); sample not mineralized and only has disseminated magnetite, carbonate veinlets, minor chloritic fractures.

**Windy Mountain South Zone.** K-feldspar and magnetite veinlets occur in more 'brecciated' areas, with mineralization as fine-grained disseminations of chalcopyrite and magnetite .

**X Zone.** N-trending zone 1.5 m wide by up to 90+ metres long, with 'brecciation' and magnetite veins. Au values of up to 1 to 4.8 g/t found , 0.1 to 0.3% Cu, and up to 195.7 g/t Ag. Stong vein and pervasive K-feldspar alteration east of the zone, and intensity of alteration vectors into the zone. Many samples proximal to mineralization, however, showed little K-feldspar alteration. Best mineralization may be in albitized monzonite that contains fine, disseminated chalcopyrite, and magnetite veinlets.

**Kelly Zone.** (previously included in the X zone), chalcopyrite is mostly fracture controlled, closely associated with magnetite, brecciated chlorite and magnetite ( possible actinolite?) form selvages to larger veins, early pyrite cubes within chalcopyrite, strong albite-carbonate alteration in host rock, significant recrystallization prior to brecciation and sulphide-chlorite-magnetite veining. Pervasive mineralization has finer anhedral K-feldspar (hydrothermal or igneous?), chloritized hornblende (or actinolite?), carbonate, fine disseminated chalcopyrite and magnetite.

**Moon Knob Zone.** Several E-trending mafic and felsic dykes. Cm scale quartz-carbonate veins common and at dyke contacts . Some quartz veins have strong K-feldspar envelopes with variable magnetite, and may contain fine-grained chalcopyrite and local molybdenite (near vein margins). Quartz distinctly grey.

#### **Styles of Mineralization.**

Disseminated mostly, in Cliff and Windy Mountain South zones. More constant Cu/Au values than at X and Moon Knob. Some high Au (low Cu/Au) from Cliff zone can be correlated with later stage veining, high Pb and/or Mo values. X zone disseminated, fracture and vein styles. Wider range of Cu/Au values. High Au correlates with fracture and vein styles combined with strong albitization. Moon Knob veinlet-related mineralization, high but variable Cu/Au values, variable Ag, local high Pb and Mo. One petrographic sample by Van Pet showed 0.02 to 0.07 mm Au grains as inclusions within the hem-altered margins of fracture pyrite located near chalcopyrite; suggests higher Au related to elevated Pb, Mo and/or Zn, suggesting that perhaps there may be different stages of Au introduction..

## **10.0 Geophysical Surveys and Results**

Several types of geophysical surveys have been completed on and around the Mars property. These include IP, airborne magnetics and airborne radiometrics. The results and implications of these surveys are described below.

### ***Induced Polarization Survey***

An IP survey was completed over a large portion of the Placer Dome grid in 1997. A total of 17.65 line kilometers on 14 lines spaced 200 metres apart was completed by Amerok Geosciences Ltd of Whitehorse.

The IP survey identified anomalies in both chargeability and resistivity. The chargeability highs are approximately coincident with the south-dipping contact of the pluton against sedimentary host rocks, and also correspond broadly to Cu-Au mineralization exposed at surface in the Kelly and X zones. Other zones of high chargeability are located at other points along the southwestern contact zone of the intrusion. The anomalies are elongated northwest, approximately parallel to the grid baseline and to the overall orientation of the main zone of alteration and mineralization.

Resistivity highs are widespread on the grid, but were virtually ignored during previous exploration. The strongest anomaly is located near the Moon Knob zone, with additional anomalies in the New/Pluto, JL, southeast part of the Cliff, X and Windy Ridge South zones. The anomaly on Moon Knob is at least 600 metres in length; it dips steeply to the northeast and appears to plunge to the southeast, and remains open to the southeast. This large anomaly trends parallel to the orientation of the main zone of alteration and mineralization. Each of the resistivity highs corresponds spatially to areas of mineralized quartz veins exposed at surface.

**10.1 Interpretation.** The chargeability highs correspond to sedimentary host rocks to the intrusion that have been altered to hornfels that contains >5 to 10% disseminated and fracture-controlled sulphide. The sulphide is primarily pyrite with lesser pyrrhotite and local concentrations of chalcopyrite. The anomalies may also, at least in part, outline zones of increased sulphide concentration along the margin of the pluton and may correlate with zones of stronger sulphide mineralization. The resistivity highs are found within the pluton. They exhibit an excellent correlation with zones of sulphide-bearing quartz veins and pervasive silicification, with and without disseminated sulphide mineralization, exposed at surface. In those cases where resistivity highs are evident on adjacent IP lines, they exhibit a northwest trend approximately parallel to the overall orientation of the principal zone of alteration and mineralization. The resistivity highs also have distinct apparent dips, mostly to the northeast, that may indicate control by larger scale structures. The correspondence of resistivity highs with zones of mineralized quartz veins, which are one of the principal hosts to ore-grade mineralization in other silica-oversaturated alkalic Cu-Au deposits (e.g., Cadia-Ridgeway in New South Wales; Holliday et al., 2002), indicates that these zones constitute some of the best drill targets on the property.

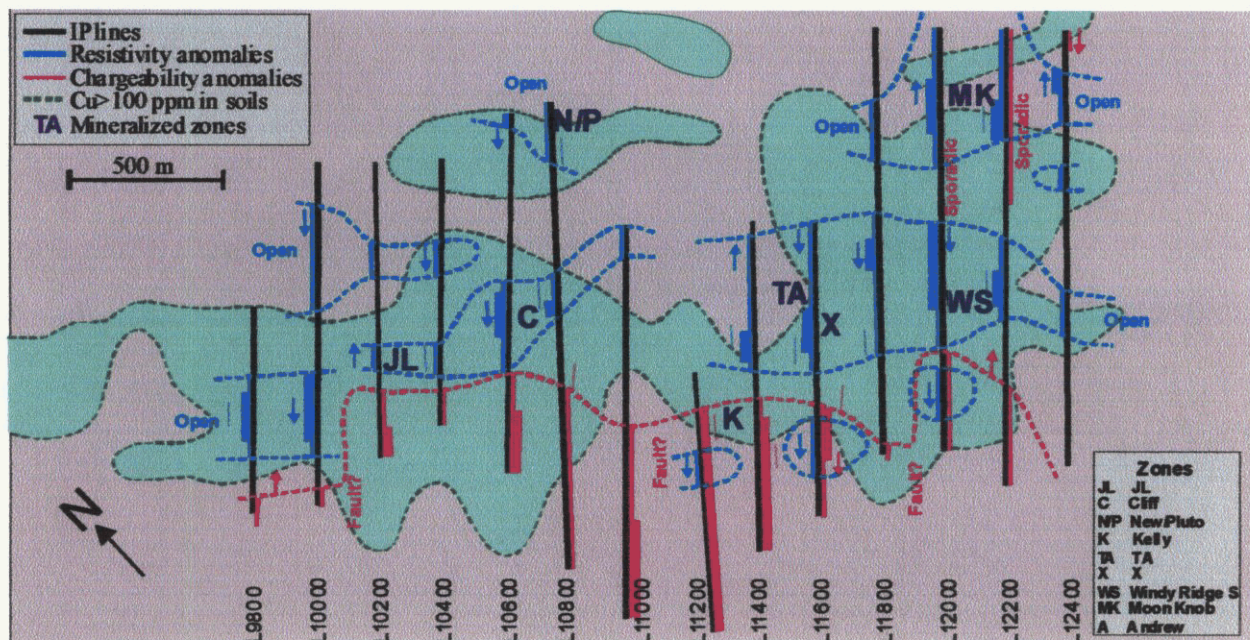


FIGURE 7.0

By J.R. Lang

**Compilation Map.** Map showing distribution of mineralized zones and copper geochemical results in relation to the distribution of induced polarization resistivity and chargeability anomalies.

**10.2 Summary of the reinterpretation of IP surveys by Saturn Minerals.** Placer Dome acquired the data in 1997, and focused primarily on the chargeability anomalies. Field examination of alteration and mineralization in 2003, however, showed that: 1) most of the better exposed mineralization is related to zones of strong quartz vein formation and silicification; 2) chargeability anomalies are related to sulphide, and in some places Cu-bearing, hornfels of sedimentary host rocks to the pluton; and 3) that resistivity highs may constitute the principal IP exploration target on the property. The IP anomalies are extensive, laterally continuous, and correlate well with exposed geology and alteration/mineralization. In addition, most of the resistivity anomalies have distinct dips, mostly to the southwest but also in the Moon Knob zone to the northwest, that suggest a strong structural control that may broadly parallel the northwest elongation of the mineralized belt. Reinterpretation is based upon visual inspection of inverted IP pseudo-sections.

**Airborne Magnetic Survey** An airborne survey of combined magnetics and radiometrics was flown in 1997 by Aeordat Inc of Mississauga, Ontario. The survey comprised 2092 line kilometers, and covered the entire Placer Dome claim block and a large area peripheral to it. The magnetics confirmed that the pluton extends to the southwest of its surface exposures (e.g., Figure X), and that it has a sharp contact on the east and northeast consistent with the existence of the Chain fault as a major bounding structure. The magnetics also support a zoned nature to the pluton, with a stronger magnetic signature in the Border phase and a more subdued response in the Central phase; the stronger magnetic response in the Border phase may also reflect the presence of abundant hydrothermal magnetite as veins and disseminations. The magnetic survey provides only limited information at the smaller scales of individual mineralized zones.

**Airborne Radiometric Survey** The radiometric results have not been reviewed in detail. Wark (1997) notes that the potassium channel reveals several unconnected regions of high potassium concentration within the pluton and suggests that this could reflect either: 1) hydrothermal alteration; or 2) variation in distribution of primary igneous K-feldspar among different phases of the pluton.

## 11.0 Drill Hole Locations

Exploration on the Mars property during 2004 focused primarily on diamond drilling. A total of 827 metres of thin-wall NQ core were drilled in 7 drill holes at 4 drill sites whose locations are shown in Appendix A. Location and orientation of each drill collar is listed in Table 2. Drilling was completed by Kluane International Drilling Ltd., of Whitehorse, Yukon Territory, using a KID modular, hydraulic lightweight diamond drill. A helicopter was used to move the drill and all related materials between drill sites. Drill holes M4-01, 02 and 03 were sited in the Kelly Zone, M4-04 and 05 were located in the Moon Knob Zone, M4-06 in the Andrew Zone 500 metres north of Moon Knob, and M4-07 was located about 250 metres west of the Moon Knob Zone (Fig. 5.0).

**Table 2.0** Drill hole collar specifications, Mars exploration program, 2004.

DDH	Easting <sup>1</sup>	Northing <sup>1</sup>	Elev (m) <sup>1</sup>	Azimuth	Angle	Total Depth (ft)	Sample Series <sup>2</sup>
M4-01	509676	6794991	1375	060	-60°	405	M401 01-29
M4-02	509673	6794988	1375	240	-45°	250	M402 01-18
M4-03	509673	6794988	1375	240	-75°	158.5	M403 01-11
M4-04	511030	6795128	1425	180	-60°	585	M404 01-43
M4-05	511030	6795131	1425	000	-60°	463.8	M405 01-31
M4-06	511186	6795519	1372	000	-60°	410	M406 01-30
M4-07	510816	6795433	1316	235	-60°	440	M407 01-29

<sup>1</sup>All drill collar locations were determined with a Garmin hand-held, non-differential GPS unit using the datum NAD83, Zone 8.

<sup>2</sup>Complete analytical results are tabulated in Appendix C.

## 11.1 Geological Observations

Summary logs, drill hole sections, and comments on core observations are detailed in Appendix B for each drill hole. The major observations include the following.

- 1) Several types of intrusive rocks were encountered, and range from larger bodies to narrow dykes. The complexity of rock types is much greater in drill core than was inferred from surface observations. Syn- to late-hydrothermal intrusions include syenite and trachytic syenite porphyry dykes, and pyroxene and hornblende monzodiorite porphyry intrusions. Post-hydrothermal dykes comprise andesite, hornblende diorite porphyry, and rare biotite lamprophyre.
- 2) One or more major fault zones were encountered in most drill holes. These structures commonly juxtapose different rock types and/or rocks affected by different types of alteration. In general, the system appears to have experienced significant post-hydrothermal structural disruption.
- 3) All drill holes encountered strong sulphide mineralization. The main sulphide mineral is pyrite, which ranges from <1 to >10% by volume, and is most commonly between 3 and 5%. Pyrrhotite was encountered in drill holes M4-01, 02 and 03, within both intrusive rocks and in hornfels sedimentary host rocks to the intrusions.
- 4) Visible chalcopyrite was consistently absent to very weakly developed. It was most common as a minor phase in quartz-rich veins. Locally it was observed as minor disseminations through intrusive rock strongly altered by a pervasive K-silicate assemblage.
- 5) The major alteration comprises sericite-chlorite-quartz-pyrite and K-silicate assemblages. In most cases the sericitic alteration appears to be an early pervasive event which was subsequently overprinted by K-silicate alteration. The K-silicate alteration ranged from pervasive to fracture-controlled and is commonly related to quartz-sulphide veins. The K-silicate assemblage is dominated by K-feldspar, quartz, actinolite, calcite and pyrite, with erratic but mostly low concentrations of magnetite.
- 6) Albite-rich alteration was encountered primarily in the Kelly Zone in drill holes M4-02 and 03. This alteration is a Na-Ca assemblage dominated by albite, actinolite, pyrite and calcite, and overprints both sericitic and K-silicate alteration.
- 7) K-silicate alteration is only locally developed in the Kelly Zone, but is strongly developed in the Moon Knob area in drill holes M4-04, 05 and 07. The early sericitic alteration in the Moon Knob area also contains abundant actinolite instead of chlorite.
- 8) Magnetite veins are well-developed only in the Andrew Zone in drill hole M4-06. The veins range up to >20 cm in width, and are related to K-silicate alteration. They commonly contain abundant pyrite and actinolite, and locally minor to trace chalcopyrite. Magnetite-rich veins were less commonly encountered in the Moon Knob area, and were not observed in the Kelly Zone.
- 9) Quartz veins contain most of the chalcopyrite mineralization. They are mostly quartz accompanied by typically minor but highly variable calcite, magnetite, actinolite/chlorite, pyrite, chalcopyrite, and trace molybdenite and bornite. They mostly have a low sulphide concentration. They have K-feldspar alteration envelopes.
- 10) Many early-stage veins, particularly those with abundant magnetite, commonly manifest deformation textures consistent with formation under brittle-ductile, mesothermal conditions.

- 11) Late, barren calcite-dominated veins are common and widespread.
- 12) All features observed in the Mars system during this drill program remain consistent with a silica-oversaturated alkalic Cu-Au-Mo-Ag deposit model.

## **11.2 Sampling and Analytical Methods, and Geochemical Results from Drill**

### **Core**

Sample intervals for each drill hole are tabulated in Appendix B, and complete analytical results may be found in Appendix C. Drill core was logged at the drill sites, and sample intervals of 15 feet were selected for analysis, except for intervals modified by lithological and/or structural contacts. A total of 192 samples were collected for geochemical analysis. The sample intervals were split with a hand splitter. One half of the sample was placed in plastic sample bags, labelled and tagged, and sealed with cable ties. The other half of the sample was put back into the core boxes for archiving. All samples were retained at the campsite until the end of the program, at which point they were taken by helicopter to Lake Labarge, and thence immediately to a secure storage site at the Kluane Drilling workshops. Samples were shipped directly to Acme Analytical Laboratories via the Whitehorse office of the commercial carrier Canadian Freightways. All samples were crushed and pulps were prepared by Acme Analytical Laboratories. The analytical package used ICP-MS (induced coupled plasma and mass spectrophotometry) techniques for the determination of a suite of 30 elements. A second, more accurate analysis for gold using a 30.0 gram sample and determination of gold content by fire assay and induced coupled plasma finish.

Geochemical results indicated the presence of only weak mineralization among the elements of potential economic interest (copper, gold, molybdenum and silver).

- 1) Copper. All but 2 results were below 667 ppm. Sample M4-04-01 and M4-04-02 returned 2902 and 813 ppm, respectively, which reflect the presence of near surface supergene copper minerals such as malachite.
- 2) Gold. All results from drill holes M4-01, 02, 03, 04, 05 and 07 were very low, with a maximum of 72 ppb. Values were significantly higher in drill hole M4-06, with 9 values greater than 103 ppb. Sample M4-06-05 returned 6,435 ppb gold (replicate analyses yielded 5,970 and 5,463 ppb). The elevated gold concentrations in M4-06 correspond to the presence of abundant magnetite-pyrite veins.
- 3) Molybdenum. A total of 17 intervals returned greater than 100 ppm molybdenum. The highest values of 1080, 1043 and 681 ppm were found in samples M4-04-24, 25 and 26, respectively. All values above 100 ppm were obtained from drill holes M4-04, 05 and 07, within and to the west of the Moon Knob Zone. The higher values correspond spatially and visually to quartz-sulphide veins. Values in all other drill holes were very low.
- 4) Silver. Only 6 values exceeded 1.0 ppm silver, with a maximum of 4.5 ppm.

### **11.3 Drill Core Storage**

All drill core is stored at the campsite (Appendix A –location map). It is stored in covered wooden core boxes which were stacked on the floors of two of the camp tent frames, and covered with tarps to limit climatic degradation. The 2004 exploration program was conducted within the terms and conditions of Saturn Minerals Inc.'s Class III operating permit (Appendix E).

## **12.0 Conclusions and Recommendations.**

Results of diamond drilling on the Mars property in 2004 were decidedly negative. The Mars property clearly hosts a very large hydrothermal system that is, at least in all areas thus far drilled, very strong and sulphide-rich. Geochemical results, however, were very poor and significant enrichment in copper, molybdenum, silver and gold is typically very weak with very few higher values that are erratically distributed. The brittle-ductile textures noted above suggest that the Mars system may reflect erosion to a depth below that considered optimal for formation of economic mineralization in porphyry-style deposits of alkalic affinity, although this possibility remains to be demonstrated to any level of confidence.

The total meterage of drilling completed in 2004 was very small, and is not considered sufficient to condemn the property. In particular, the abundance of post-hydrothermal faults suggests that the system might contain structurally-bounded domains that represent considerably different paleodepths in the hydrothermal system. It is recommended that structures within the pluton be mapped in greater detail to potentially constrain post-hydrothermal deformation history, although this will be seriously limited by the distribution of outcrop. The association of elevated gold values with strong magnetite veining suggests that detailed ground magnetic surveys might identify target that are relatively more prospective. It is also recommended that further prospecting be undertaken around the margins of the Teslin Crossing pluton to identify additional areas of alteration and mineralization that may have economic potential. A large number of additional zones of exposed alteration and mineralization remain to be tested by drilling.

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## 14.0 Author's Certificate and Signature Page

### 14.1

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1. I, Dr. James R. Lang P.Ge, am a Professional Geoscientist employed by Lang Geoscience Incorporated, with offices at 10556 Suncrest Drive, Delta, B.C., Canada, V4C 2N5.
2. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia, registration #25376.
3. I am a graduate of Michigan State University (1983 B.Sc in geology, with honors) and the University of Arizona (1986 MSc and 1991 PhD in economic geology).
4. I have been engaged in mineral exploration and ore deposit research continuously since graduation in 1983, and have been involved in mineral exploration in Canada, the United States, Bolivia, Mexico, Chile, Argentina, Peru, Spain and Portugal.
5. I am president of Lang Geoscience Incorporated, a geological consulting firm incorporated in the Province of British Columbia
6. As a result of my professional registration, education and experience, I am a qualified person as defined in N.I. 43-101.
7. I am not an independent qualified person as defined by N.I. 43-101, as I sit on the Board of Directors of Saturn Minerals Inc and hold stock and stock option positions in the company and the Mars property.
8. The foregoing report on the Mars property is based on a study of available data and company reports, and my personal knowledge of the geology of the property gained during field work between July 17, 2003 and August 1, 2004.

Dated at Delta, British Columbia, this 11<sup>th</sup> of October, 2004.

“ James R. Lang ”  
Dr. James R. Lang, P.Ge.

14.2

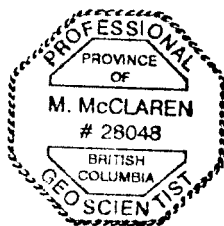
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1. I, Murray McClaren P. Geo, am a Professional Geoscientist employed by Crockite Resources Ltd., with offices at 283 Woodale Road, North Vancouver, B.C., Canada, V7N1S6.
2. I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia, registration #24048.
3. I am a graduate of University of British Columbia (1973 B.Sc in geology)
4. I have been engaged in mineral exploration and development continuously since graduation in 1973, and have been involved in mineral exploration in Canada, the United States, Mexico, and Portugal.
5. I am president of Crockite Resources Ltd., a geological consulting firm incorporated in the Province of British Columbia
6. As a result of my professional registration, education and experience, I am a qualified person as defined in N.I. 43-101.
7. I am not an independent qualified person as defined by N.I. 43-101, as I sit on the Board of Directors of Saturn Minerals Inc and hold stock and stock option positions in the company and the Mars property.
8. The foregoing report on the Mars property is based on a study of available data and company reports, and my personal knowledge of the geology of the property gained during field work and data compilation between July 17, 2003 and October 11<sup>th</sup>, 2004.

Dated at Vancouver, British Columbia, this 11<sup>th</sup> of October, 2004.

  
Murray McClaren, P. Geo.



**APPENDIX A:**  
**Map of Claims, Drill Holes and Core Storage Site**  
**Mars Exploration Program, June to August, 2004**



FIGURE . MARS PROPERTY, 2004 DIAMOND DRILL LOCATIONS

**APPENDIX B:**  
**Drill Hole Summary Logs, Major Observations, Sections and Sample Intervals**  
**Mars Exploration Program, June to August, 2004**

## **Drill Hole Summary: Mars Project, Yukon**

### **Drill Hole: M4-01 (Kelly Zone)**

**Date Started: July 14, 2004**

#### **Data**

- East: 509676 (NAD 83, Zone 8)
- North: 6794991
- Elevation: 1375 m
- Azimuth: 060
- Angle: -60
- Total Depth: 405'
- Sample Series: M401-01 to M401-29

#### **Objective of Drill Hole**

This hole was sited on the Kelly Knob, just above the Kelly outcrop. It was intended to test: 1) for the presence at depth of mineralization like that in the outcrop; and 2) test Cu-Au potential in hornfels near the margin of the intrusion.

#### **Key Observations and Features**

The drill core shows:

- at least three types of hornblende monzonite to syenomonzonite intrusions and dykes
- intense hornfels with a high (>5-10%) sulphide concentration dominated by pyrrhotite
- Kelly style mineralization does not extend continuously to depth
- intrusions have much stronger alteration than anticipated; this is mostly quartz-sericite-pyrite but locally includes K-silicate alteration (bt-KF-mt-Sx)
- intrusions have much higher sulphide concentration than expected, commonly >5% but mostly all pyrite with locally minor to important pyrrhotite
- a nearly complete absence of visible Cu mineralization
- very few dilatant veins, most of which are late to post-sulphide
- a major fault between Kelly Knob and Windy Ridge
- features are compatible with a setting peripheral (lateral and/or vertical) to a zone of porphyry style Cu-Au mineralization

## Summary Log

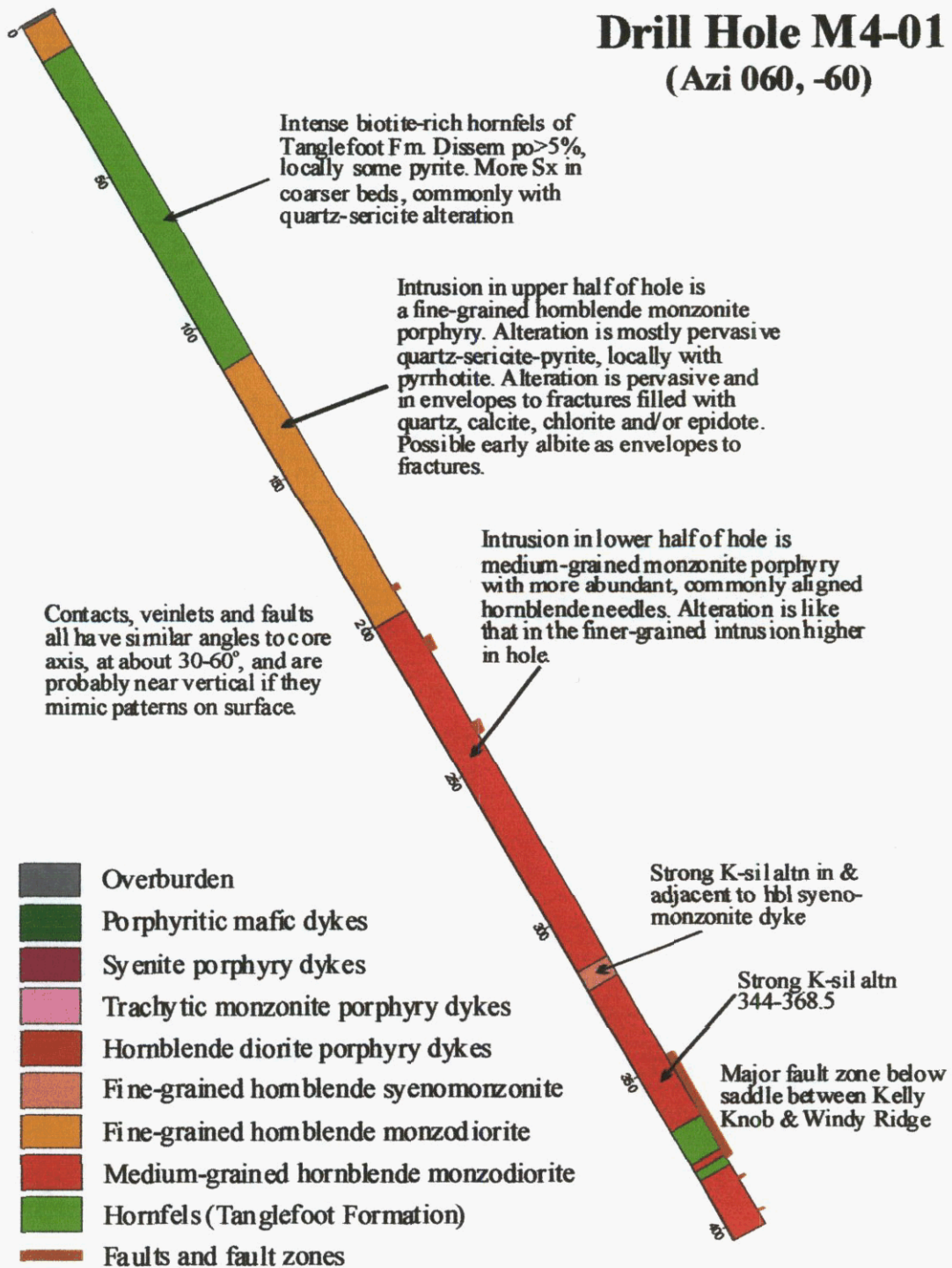
from	to	rock	comments
0	1	OB	
1	12	Fgr hbl monz	Porphyritic texture defined by plagioclase and hornblende. Contains pyrrhotite>pyrite, mostly disseminated. Alteration pervasive sericite-quartz, minor clots of secondary biotite. Partially oxidized.
12	113.5	Hornfels	Intense hornfels. Mostly biotite-rich with disseminate pyrrhotite. Lesser quartz-sericite-pyrrhotite (possibly with pyrite). Controlled by bedding. Minor albite alteration controlled by narrow fractures. Micro-fractures with sericitic envelopes. Late, vuggy calcite veinlets. Oxidation mostly along fractures.
113.5	200.5	Fgr hbl monz	Similar to interval 1-12 above. Pervasive quartz-sericite-pyrite alteration, and veinlets of any combination of quartz, chlorite, epidote, pyrite and/or calcite with sericitic envelopes. May be an early stage of albite that occurs as envelopes to fractures. Pyrite and local pyrrhotite mostly 3-5% disseminated and lesser fracture-controlled.
200.5	317.5	Mgr hbl monz	More coarse-grained than intrusion above, but mineralogically almost identical. Slightly more abundant hornblende that occurs as needles which are commonly aligned. May contain <5% equant K-feldspar phenocrysts, and is moderately magnetic in least-altered parts. Alteration is similar to fine-grained monzonite, and is dominated by quartz-sericite-pyrite. A narrow zone near base of interval has strong K-feldspar alteration with calcite and pyrite. A late stage of buff-coloured alteration contains abundant calcite and overprints sericitic alteration.
317.5	322	Syenomonz dyke	Strong K-silicate alteration with calcite, relatively lower pyrite concentration.
322	368.5	Mgr hbl monz	See above.
368.5	380	Hornfels	Same as hornfels near top of hole. Here within a major fault zone
380	381.5	Mgr hbl monz	See above.
381.5	385	Hornfels	Same as hornfels near top of hole.
385	405	Mgr hbl monz	See above.

### *Fault and Fault Zone Intervals*

192.5-194.5  
 210-214.5  
 238.5-242  
 348.5-383 (major zone)  
 389-389.3  
 401-402

## Cross Section

### Drill Hole M4-01 (Azi 060, -60)



**Geochemical Samples, Drill Hole M4-01 (complete analytical results in Appendix C).**

<b>DDH</b>	<b>From<sup>1</sup></b>	<b>To</b>	<b>Interval</b>	<b>Host</b>	<b>Comments</b>
M401-01	1	12	11	fgr hbl monzonite	
M401-02	12	30	18	hornfels	
M401-03	30	45	15	hornfels	
M401-04	45	60	15	hornfels	
M401-05	60	75	15	hornfels	
M401-06	75	90	15	hornfels	
M401-07	90	105	15	hornfels	
M401-08	105	113.5	8.5	hornfels	
M401-09	113.5	130	16.5	mgr hbl monzonite	
M401-10	130	145	15	mgr hbl monzonite	
M401-11	145	160	15	mgr hbl monzonite	
M401-12	160	175	15	mgr hbl monzonite	
M401-13	175	190	15	mgr hbl monzonite	
M401-14	190	200.5	10.5	mgr hbl monzonite	fault 192.5-194.5
M401-15	200.5	215	14.5	mgr hbl monzonite	fault 210-214.5
M401-16	215	230	15	mgr hbl monzonite	fault 238.5-242
M401-17	230	245	15	mgr hbl monzonite	
M401-18	245	260	15	mgr hbl monzonite	
M401-19	260	275	15	mgr hbl monzonite	
M401-20	275	290	15	mgr hbl monzonite	
M401-21	290	305	15	mgr hbl monzonite	
M401-22	305	317.5	12.5	mgr hbl monzonite	
M401-23	317.5	322	4.5	pink hbl syenomonzonite dyke	strong K-silicate altn, poss trace cpy
M401-24	322	337.5	15.5	mgr hbl monzonite	
M401-25	337.5	343.5	6	mgr hbl monzonite	
M401-26	343.5	368.5	25	mgr hbl monzonite	fault zone 348.5-383
M401-27	368.5	379.5	11	hornfels	fault zone 348.5-383
M401-28	379.5	390	10.5	mgr hbl monzonite (3.5' hornfels)	fault zone 348.5-383; fault 389-389.3
M401-29	390	405	15	mgr hbl monzonite	fault 401-402

<sup>1</sup>All depths in feet.

## **Drill Hole Summary: Mars Project, Yukon**

### **Drill Hole: M4-02 (Kelly Zone)**

**Date Initiated: July 16, 2004**

#### **Data**

- East: 509673 (NAD 83, Zone 8)
- North: 6794988
- Elevation: 1375 m
- Azimuth: 240
- Angle: -45
- Total Depth: 250'
- Sample Series: M402-01 to M401-18

#### **Objective of Drill Hole**

Drilled in orientation opposite to DDH M4-01 to test below albitized, variably mineralized intrusive rock on Kelly Knob.

#### **Key Observations and Features**

The drill core shows relationships similar to those in DDH M4-01:

- Host rock is hornfels in upper part of hole, and medium-grained hornblende monzonite below.
- Hornfels is identical to that in DDH M4-01, and is mostly biotite-rich with disseminated pyrite-pyrrhotite.
- The host intrusion is medium grey and affected by weak pervasive quartz-sericite alteration with several percent disseminated pyrite.
- Later alteration comprises strong albite that occurs in pervasive zones and as envelopes to fractures that contain actinolite, quartz and albite, locally with minor epidote. Pyrite is variable in these zones, but they commonly contain Fe oxide related to oxidation enhanced by coarse-grained, more porous nature of albitic alteration.
- A few late, vuggy calcite veins are present.
- No indications of K-silicate alteration.
- No Cu sulphide minerals were observed.

## Summary Log

from	to	rock	comments
0	3.5	OB	
3.5	12.5	Fgr hbl monz	Similar to rock at collar in M4-01; fine-grained, porphyritic, <10% hbl phenocrysts, 40-50% blocky plagioclase phenocrysts
12.5	75	Hornfels	Mostly biotite-rich with lesser quartz-sericite rich zones/beds. Sulphide is >5% disseminated pyrite and pyrrhotite
75	97.5	Mgr hbl monz	Medium-grained, porphyritic plagioclase-hornblende monzonite to monzodiorite; similar to main rock type in M4-01; alternating alteration of weak pervasive quartz-sericite-pyrite and later albite related to veinlets of albite, actinolite, epidote, quartz and pyrite.
97.5	100	Hornfels	Probably a xenolith in hbl monzonite
100	247	Mgr hbl monz	Same as 75-97.5 interval
247	250	Intrusion	Possibly a different intrusive phase, or just variation in alteration

### *Fault and Fault Zone Intervals*

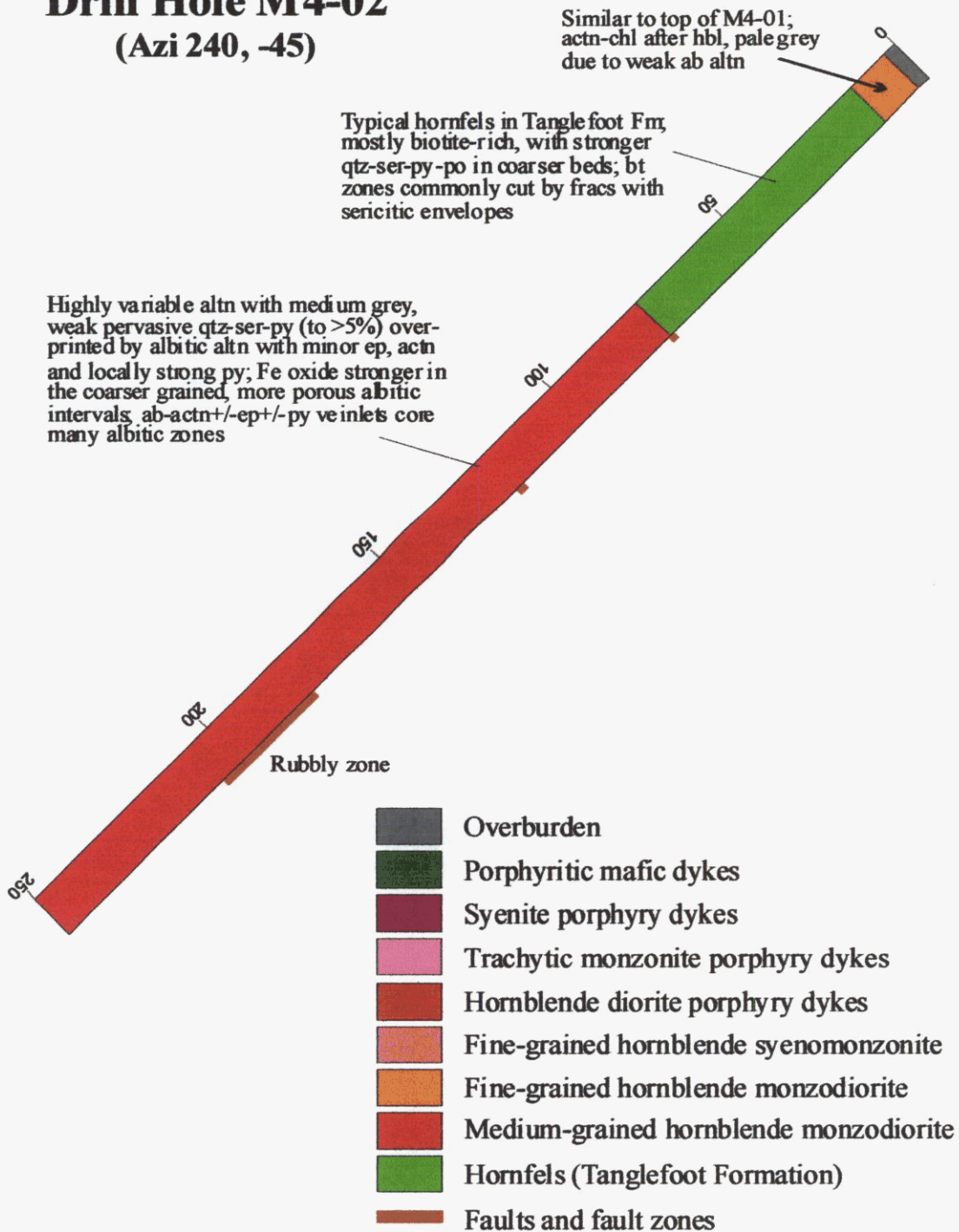
74-75' is a minor fault

116-117.5 rubbly zone

178-204 variably rubbly zone

**Cross Section**

**Drill Hole M4-02**  
(Azi 240, -45)



**Geochemical Samples, Drill Hole M4-02 (complete analytical results in Appendix C).**

<b>DDH</b>	<b>From<sup>1</sup></b>	<b>To</b>	<b>Interval</b>	<b>Host</b>	<b>Comments</b>
M402-01	3.5	12.5	9	fgr hbl monzonite	
M402-02	12.5	30	17.5	hornfels	
M402-03	30	45	15	hornfels	
M402-04	45	60	15	hornfels	
M402-05	60	75	15	hornfels	
M402-06	75	90	15	mgr hbl monzonite	
M402-07	90	105	15	mgr hbl monzonite	hornfels xeno 97.5-100
M402-08	105	117.5	12.5	mgr hbl monzonite	
M402-09	117.5	130	12.5	mgr hbl monzonite	
M402-10	130	145	15	mgr hbl monzonite	
M402-11	145	158	13	mgr hbl monzonite	
M402-12	158	167	9	mgr hbl monzonite	
M402-13	167	182	15	mgr hbl monzonite	
M402-14	182	197	15	mgr hbl monzonite	
M402-15	197	208.5	11.5	mgr hbl monzonite	
M402-16	208.5	220	11.5	mgr hbl monzonite	
M402-17	220	235	15	mgr hbl monzonite	
M402-18	235	250	15	fgr hbl monzonite	

<sup>1</sup>All depths in feet.

## Drill Hole Summary: Mars Project, Yukon

### Drill Hole: M4-03 (Kelly Zone)

Date Initiated: July 17, 2004

#### Data

- East: 509673 (NAD 83, Zone 8)
- North: 6794988
- Elevation: 1375
- Azimuth: 240
- Angle: -75
- Total Depth: 158.5'
- Sample Series: M403-01 to M403-11

#### Objective of Drill Hole

Test ground between drill holes M4-01 and M4-02 near surface; in part to keep drill running until move.

#### Key Observations and Features

Results from this hole do not differ materially from M4-01 and M4-02.

- Intrusion at the top of the hole may be rubble or boulders atop hornfels.
- Most of the hole is biotite-rich hornfels, with lesser coarser-grained types with stronger quartz-sericite-sulphide. Bedding is about 40° TCA.
- Minor quartz-pyrite fractures cut hornfels and have sericitic envelopes. Nothing more of note.
- Intrusion at base of hole has weak to moderate quartz-sericite-pyrite-(pyrrhotite) alteration.
- Overprint by younger albitic alteration, commonly related to fractures with quartz, albite and/or actinolite, with albite as envelopes or coalescing envelopes.
- No significant Cu mineralization recognized.

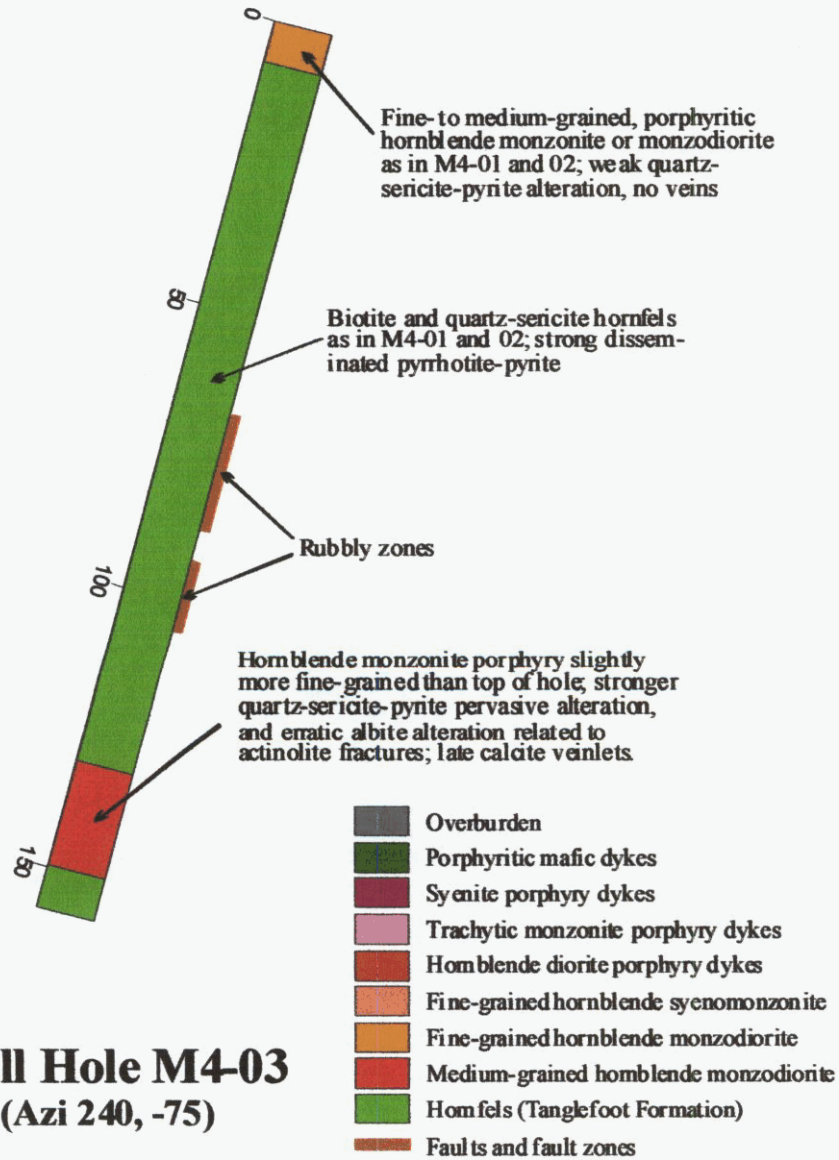
#### Summary Log

from	to	rock	comments
0	7	Mgr hbl mzdior pph	Medium-grained hornblende monzodiorite porphyry; possibly boulders on top of knob as quite rubbly
7	131	Hornfels	Typical, mostly biotite-rich type
131	151	Fgr hbl mzdior pph	Finer-grained variety of monzodiorite
151	158.5	Hornfels	

#### *Fault and Fault Zone Intervals*

67-87' and 93-105': rubbly faults with calcite fractures and veins.

## Cross Section



**Geochemical Samples, Drill Hole M4-03 (complete analytical results in Appendix C).**

<b>DDH</b>	<b>From<sup>1</sup></b>	<b>To</b>	<b>Interval</b>	<b>Host</b>	<b>Comments</b>
M403-01	0	7	7	mgr hbl monzonite intrusion	
M403-02	7	20	13	hornfels	
M403-03	20	35	15	hornfels	
M403-04	35	50	15	hornfels	
M403-05	50	65	15	hornfels	
M403-06	65	80	15	hornfels	fault 67-87
M403-07	80	95	15	hornfels	fault 67-87 & 93-105
M403-08	95	110	15	hornfels	fault 93-105
M403-09	110	131	21	hornfels	
M403-10	131	151	20	fgr hbl monzonite intrusion	
M403-11	151	158.5	7.5	hornfels	

<sup>1</sup>All depths in feet.

## **Drill Hole Summary: Mars Project, Yukon**

### **Drill Hole: M4-04 (Moon Knob Zone)**

**Date Initiated: July 18, 2004**

#### **Data**

- East: 511030 (NAD 83, Zone 8)
- North: 6795128
- Elevation: 1425
- Azimuth: 180
- Angle: -60
- Total Depth: 585'
- Sample Series: M404-01 to M404-43

#### **Objective of Drill Hole**

Sited on top of Moon Knob and drilled to south to test depth extension of quartz-sulphide and magnetite-sulphide veins and siliceous breccia on surface. Drilled deeper than other holes to test changes in alteration with depth.

#### **Key Observations and Features**

This hole is the most interesting and strongly mineralized thus far in the program.

- The hole is dominated by medium-grained hornblende monzodiorite porphyry with hornblende and hiatal plagioclase phenocrysts. This unit is clearly cut by all other intrusive rock types.
- The second most important rock type is a fine-grained hornblende monzodiorite porphyry that has lower hornblende concentration and lacks the larger type of plagioclase phenocryst found in the medium-grained phase.
- A single trachytic monzonite dyke has very strong K-feldspar alteration, and contains traces of disseminated chalcopyrite and minor pyrite, although veins are rare and restricted to calcite-dominated types.
- Hornblende-rich diorite porphyry dykes are narrow and contain mostly propylitic alteration; they are probably post-hydrothermal.
- A mafic porphyry dyke has weak propylitic alteration but no mineralization.
- The hole cut only one major fault zone, although a smaller fault may occur near surface.
- Alteration follows the pattern typical of this area.
  - Early pervasive alteration comprises sericite, chlorite, quartz and pyrite, minor but erratic epidote, and locally very trace chalcopyrite; this has a weak fracture control related to veinlets filled with some combination of calcite, quartz, chlorite, pyrite and locally epidote. This assemblage appears to form a background alteration that occurs in both the fine-grained and medium-grained phases of hornblende monzodiorite porphyry. Veins of this assemblage cut intrusive contacts.
  - Early K-silicate veinlets are sinuous and form a weak stockwork, possibly related to joint patterns. They comprise combinations of quartz, K-feldspar, actinolite (commonly

chloritized), calcite, magnetite, minor pyrite and trace to trace chalcopyrite. These veins are <1-2 mm wide and have K-feldspar alteration envelopes to a few mm width.

- Magnetite veins are rare. They contain highly variable concentrations of quartz, actinolite, pyrite and chalcopyrite. They mostly have K-feldspar envelopes, and may be transitional in time with the quartz-sulphide veins. Magnetite-dominated veins commonly occur as anastomosing stringers that form bands up to at least 15-20 cm in width.
  - Quartz veins contain most of the chalcopyrite mineralization. They are mostly quartz accompanied by typically minor but highly variable calcite, magnetite, actinolite/chlorite, pyrite, chalcopyrite, and trace molybdenite and bornite. The sulphide concentration ranges widely, and those with higher relative sulphide concentrations commonly have more strongly developed K-feldspar envelopes. The veins range from hairline fracture infill to coarse veins up to at least 20 cm in width. They commonly occur in swarms that have a sheeted nature. They have consistent angles to core axis and are probably approximately vertical.
  - Late veinlets are relatively enriched in calcite and chlorite, and have lower concentrations of pyrite and appear to lack chalcopyrite. They were dilatant and are up to 2 cm in width, although most are tight fractures.
  - Albitic alteration is not present.
  - Propylitic alteration is restricted to late- to post-hydrothermal (or at least post Cu-Au) dykes. It comprises calcite, chlorite, sericite, epidote and pyrite, and does not appear to have any associated chalcopyrite. It is found in late-stage dykes.
  - K-silicate alteration is widespread. It occurs as discrete alteration envelopes to individual veins and fractures, and as apparently pervasive zones that actually reflect coalescence of alteration envelopes in zones with a high density of early K-silicate, magnetite-dominated and/or quartz-sulphide veins. The mineralogy is dominated by salmon-pink K-feldspar accompanied by important calcite and actinolite (commonly chloritized), and lesser but typically minor to trace magnetite, biotite, epidote, pyrite and chalcopyrite. The concentration of sulphide varies widely, and the highest values commonly occur in areas with clotty to fracture-controlled calcite-quartz that is interstitial to K-feldspar. K-silicate alteration is found mostly in the medium-grained and fine-grained phases of hornblende monzodiorite porphyry, and also in the trachytic monzonite porphyry dyke.
- There is no obvious change in alteration or mineralization assemblages, or intensity, with depth. The pervasive and fracture-controlled sericitic alteration occurs throughout the core with similar intensity. K-silicate alteration of widely variable intensity is erratically distributed through the entire drill hole, and mimics the distribution of Cu-bearing veins. Magnetite veins are found throughout the drill hole, although they are the least common vein type. The drill hole therefore does not show indications of increasing proximity to a more strongly mineralized centre, although the orientation of the hole (drilled directly south) might be parallel to the source region which may lie to the west or northwest of Moon Knob.
  - The hole is weakly but consistently mineralized, with at least trace chalcopyrite and favourable assemblages of alteration from top to bottom for a distance of 178 metres (585 feet).

## Summary Log

from	to	rock	comments
0	4	OB	
4	35	Mgr hbl mzdior pph	Strongest minl due to abundant qtz-Sx veins; also 1.5' siliceous bx with >15% pyrite and possibly minor cpy
35	92	Fgr hbl mzdior pph	
92	95.4	Hbl diorite pph dyke	Late hydrothermal, probably post Cu-Au; propylitic altn only
95.4	107	Mgr hbl mzdior pph	
107	120.5	Mafic pph dyke	Post Cu-Au, and probably post-hydrothermal; propylitic altn only
120.5	135.5	Hornfels	Different from Kelly zone, possibly a volcanoclastic unit; affected by same altn as intrusions, although effects less intense
135.5	198.5	Mgr hbl mzdior pph	
198.5	205.5	Hbl diorite pph dyke	As above
205.5	302	Mgr hbl mzdior pph	
302	306.5	Fault	Gougy, fragments of mgr hbl mzdior pph intrusion
306.5	314	Mgr hbl mzdior pph	
314	326.5	Hornfels	
326.5	432	Mgr hbl mzdior pph	
432	435	Hbl diorite pph dyke	As above
435	442	Mgr hbl mzdior pph	
442	471.5	Trachytic monzonite dyke	Strong K-feldspar altn, but few veins; trace disseminated cpy
471.5	533	Mgr hbl mzdior pph	
533	559	Fgr hbl mzdior pph	Intrudes mgr phase and has chilled contact; stronger K-silicate altn than in adjacent mgr phase
559	585	Hornfels	Contains small dykes of both mgr and fgr mzdior pph phases, but is mostly hornfels as above

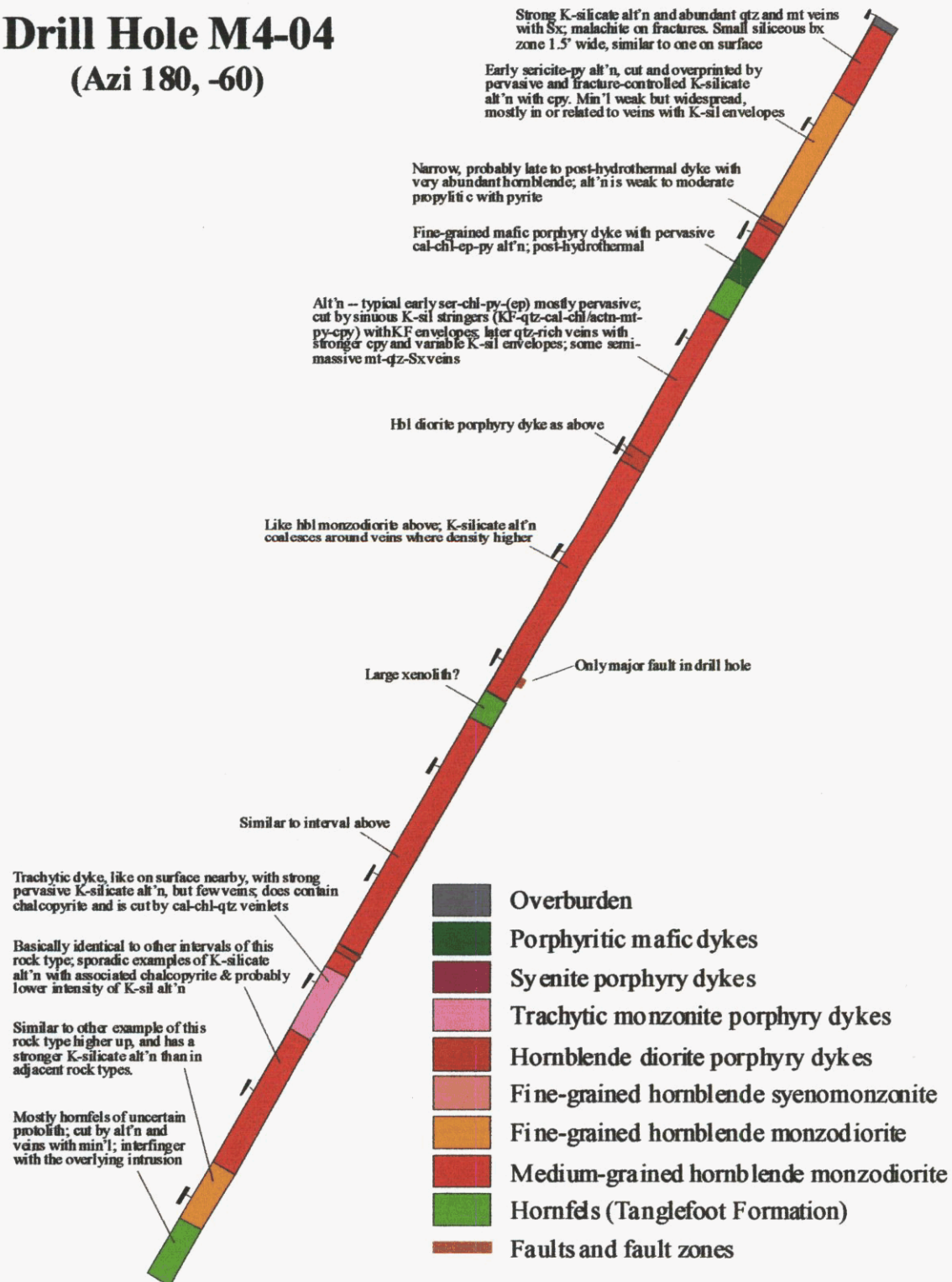
### *Fault and Fault Zone Intervals*

Gougy fault at 302-306.5'

Possible minor fault at 27-27.8'

# Cross Section

## Drill Hole M4-04 (Azi 180, -60)



**Geochemical Samples, Drill Hole M4-04 (complete analytical results in Appendix C).**

DDH	From <sup>1</sup>	To	Interval	Host	Comments
M404-01	4	20	16	mgr hbl monzodiorite	str Qtz-Sx veins and K-sil altn
M404-02	20	35	15	mgr hbl monzodiorite	str Qtz-Sx veins and K-sil altn
M404-03	35	50	15	fgr hbl monzodiorite	variable K-sil overprint on Qtz-ser-py, with late Qtz-Sx veins
M404-04	50	65	15	fgr hbl monzodiorite	variable K-sil overprint on Qtz-ser-py, with late Qtz-Sx veins
M404-05	65	80	15	fgr hbl monzodiorite	variable K-sil overprint on Qtz-ser-py, with late Qtz-Sx veins
M404-06	80	92	12	fgr hbl monzodiorite	variable K-sil overprint on Qtz-ser-py, with late Qtz-Sx veins
M404-07	92	95.4	3.4	hbl diorite porphyry dyke	probably late hydrothermal; propylitic
M404-08	95.4	107	11.6	mgr hbl monzodiorite	
M404-09	107	120.5	13.5	mafic porphyry dyke	post-hydrothermal
M404-10	120.5	135.5	15	hornfels	
M404-11	135.5	150	14.5	mgr hbl monzodiorite	
M404-12	150	165	15	mgr hbl monzodiorite	
M404-13	165	180	15	mgr hbl monzodiorite	
M404-14	180	198.5	18.5	mgr hbl monzodiorite	
M404-15	198.5	205.5	7	hbl diorite porphyry dyke	
M404-16	205.5	220	14.5	mgr hbl monzodiorite	
M404-17	220	235	15	mgr hbl monzodiorite	
M404-18	235	250	15	mgr hbl monzodiorite	
M404-19	250	265	15	mgr hbl monzodiorite	
M404-20	265	280	15	mgr hbl monzodiorite	
M404-21	280	302	22	mgr hbl monzodiorite	
M404-22	302	306.5	4.5	fault	gougy, probably in mgr hbl mzdior pph
M404-23	306.5	314	7.5	mgr hbl monzodiorite	
M404-24	314	326.5	12.5	hornfels	
M404-25	326.5	340	13.5	mgr hbl monzodiorite	
M404-26	340	355	15	mgr hbl monzodiorite	
M404-27	355	370	15	mgr hbl monzodiorite	
M404-28	370	385	15	mgr hbl monzodiorite	
M404-29	385	400	15	mgr hbl monzodiorite	
M404-30	400	415	15	mgr hbl monzodiorite	
M404-31	415	432	17	mgr hbl monzodiorite	
M404-32	432	435	3	hbl diorite porphyry dyke	
M404-33	435	442	7	mgr hbl monzodiorite	
M404-34	442	455	13	trachytic monzonite dyke	
M404-35	455	471.5	16.5	trachytic monzonite dyke	
M404-36	471.5	485	13.5	mgr hbl monzodiorite	strong K-sil altn next to trachytic dyke
M404-37	485	500	15	mgr hbl monzodiorite	mostly sericitic altn
M404-38	500	515	15	mgr hbl monzodiorite	mostly sericitic altn
M404-39	515	533	18	mgr hbl monzodiorite	mostly sericitic altn
M404-40	533	545	12	fgr hbl monzodiorite	stronger K-sil altn than mgr unit adjacent
M404-41	545	559	14	fgr hbl monzodiorite	stronger K-sil altn than mgr unit adjacent

M404-42	559	570	11	hornfels	small dykes of mgr and fgr hbl mzdior pph
M404-43	570	585	15	hornfels	small dykes of mgr and fgr hbl mzdior pph

<sup>1</sup>All depths in feet.

## **Drill Hole Summary: Mars Project, Yukon**

### **Drill Hole: M4-05 (Moon Knob Zone)**

**Date Initiated: July 22, 2004**

#### **Data**

- East: 511030 (NAD 83, Zone 8)
- North: 6795131
- Elevation: 1425 m
- Azimuth: 000
- Angle: -60
- Total Depth: 463.8'
- Sample Series: M405-01 to M405-31

#### **Objective of Drill Hole**

The top 35' of drill hole M4-04 intersected strong quartz-magnetite-sulphide veins with the strongest Cu mineralization thus far encountered, but lower grade mineralization was found in other rock types as the hole continued south. Contacts in this area are steep, and it was reasoned that the stronger mineralization might therefore continue north of the M4-04 collar.

#### **Key Observations and Features**

The core in this hole has many similarities to M4-04.

- Medium-grained hornblende monzodiorite porphyry intrudes and is chilled against the fine-grained phase. The medium-grained phase may be a younger phase which might account for the manifestation of generally weak hydrothermal effects.
- The fine-grained hornblende monzodiorite porphyry has generally stronger alteration and mineralization than other intrusive rock types.
- Textures in at least three intervals near the bottom of the hole grade from those typical of the fine-grained phase to the medium-grained phase, and these are commonly separated by internal chill contacts. This pattern is compatible with a dyke swarm.
- Excellent, probably sheeted, veins with very strong chalcopyrite occur in hornfels in the lower half of the drill hole.
- Possible juxtaposition of poorly- and more-strongly mineralized rock by a fault zone between 159 and 190' depth.
- Otherwise, completely typical patterns of alteration assemblages, including an early stage of pervasive sericite-pyrite, early-stage K-silicate micro-veinlets, later quartz-sulphide veins and a last stage of poorly-mineralized, calcite-rich veins.

## Summary Log

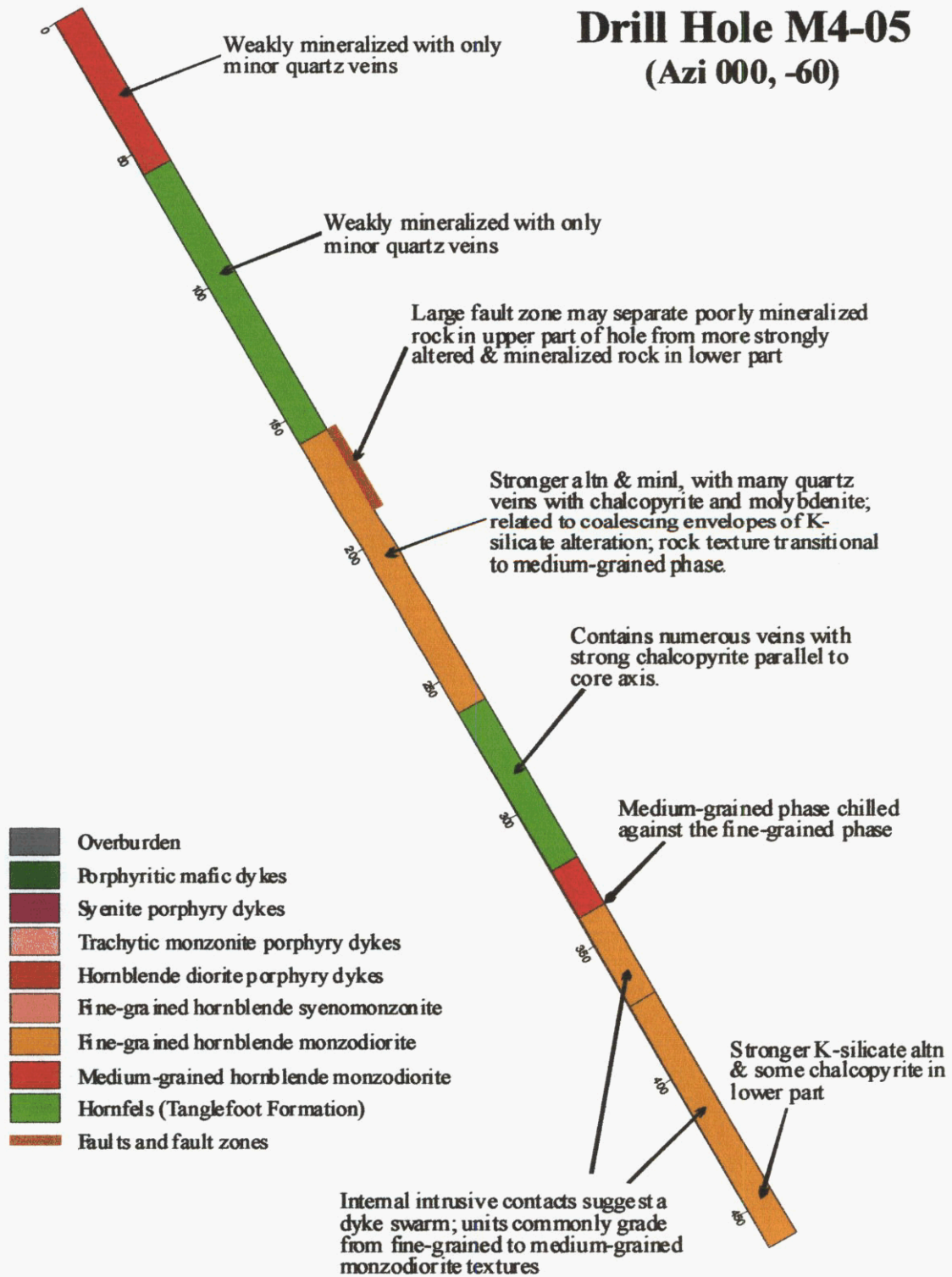
from	to	rock	comments
0	57.5	Mgr hbl mzdior pph	Typical alteration, but fairly weakly altered and mineralized
57.5	159	Hornfels	Typical features, weak alteration, no significant mineralization
159	262	Fgr hbl mzdior pph	Typical alteration patterns, but much stronger and with at least local chalcopyrite mineralization compared to medium-grained phase
262	322	Hornfels	Contains numerous, probably sheeted, strongly mineralized veins with abundant chalcopyrite, nearly parallel to core
322	339.5	Mgr hbl mzdior pph	Chilled against fine-grained phase below; may account for weaker alteration and mineralization if later-stage intrusion
339.5	373	Fgr hbl mzdior pph	Typical alteration but stronger than in medium-grained phase
373	463.8	Fgr hbl mzdior pph	Internal contacts and grading from fine- to medium-grained hornblende monzodiorite porphyry; dyke swarm? Sericitic altn in upper half, K-silicate in lower half.

### *Fault and Fault Zone Intervals*

159-190' Numerous gougy and rubbly fault strands

## Cross Section

# Drill Hole M4-05 (Azi 000, -60)



**Geochemical Samples, Drill Hole M4-05 (complete analytical results in Appendix C).**

DDH	From <sup>1</sup>	To	Interval	Host	Comments
M405-01	0	15	15	mgr hbl mzdior pph	weakly altered, poor minl
M405-02	15	30	15	mgr hbl mzdior pph	weakly altered, poor minl
M405-03	30	45	15	mgr hbl mzdior pph	weakly altered, poor minl
M405-04	45	57.5	12.5	mgr hbl mzdior pph	weakly altered, poor minl
M405-05	57.5	70	12.5	hornfels	weak altn/minl
M405-06	70	85	15	hornfels	weak altn/minl
M405-07	85	100	15	hornfels	weak altn/minl
M405-08	100	115	15	hornfels	weak altn/minl
M405-09	115	130	15	hornfels	weak altn/minl
M405-10	130	145	15	hornfels	weak altn/minl
M405-11	145	159	14	hornfels	weak altn/minl
M405-12	159	170	11	fgr hbl mzdior pph	stronger altn/minl; fault strands 159-190'; abund moly in veins
M405-13	170	185	15	fgr hbl mzdior pph	as above
M405-14	185	200	15	fgr hbl mzdior pph	as above
M405-15	200	215	15	fgr hbl mzdior pph	stronger altn/minl; abund moly some qtz veins, with cpy
M405-16	215	230	15	fgr hbl mzdior pph	stronger altn/minl; abund moly some qtz veins, with cpy
M405-17	230	245	15	fgr hbl mzdior pph	stronger altn/minl; abund moly some qtz veins, with cpy
M405-18	245	262	17	fgr hbl mzdior pph	stronger altn/minl; abund moly some qtz veins, with cpy
M405-19	262	280	18	hornfels	several excellent veins with strong cpy; parallel to core
M405-20	280	295	15	hornfels	several excellent veins with strong cpy; parallel to core
M405-21	295	310	15	hornfels	several excellent veins with strong cpy; parallel to core
M405-22	310	322	12	hornfels	several excellent veins with strong cpy; parallel to core
M405-23	322	339.5	17.5	mgr hbl mzdior pph	strongly altered, abundant mt; chilled against fgr phase
M405-24	339.5	355	15.5	fgr hbl mzdior pph	above 418' typical altn patterns; moly-bearing qtz veins common w/cpy
M405-25	355	373	18	fgr hbl mzdior pph	above 418' typical altn patterns; moly-bearing qtz veins common w/cpy
M405-26	373	390	17	fgr hbl mzdior pph	above 418' typical altn patterns; moly-bearing qtz veins common w/cpy
M405-27	390	405	15	fgr hbl mzdior pph	above 418' typical altn patterns; moly-bearing qtz veins common w/cpy
M405-28	405	420	15	fgr hbl mzdior pph	above 418' typical altn patterns; moly-bearing qtz veins common w/cpy
M405-29	420	435	15	fgr hbl mzdior pph	below 418' stronger perv K-sil altn & minl
M405-30	435	450	15	fgr hbl mzdior pph	below 418' stronger perv K-sil altn & minl
M405-31	450	463.8	13.8	fgr hbl mzdior pph	below 418' stronger perv K-sil altn & minl

<sup>1</sup>All depths in feet.

## **Drill Hole Summary: Mars Project, Yukon**

### **Drill Hole: M4-06 (Andrew Zone)**

**Date Initiated: July 23, 2004**

#### **Data**

- East: 511186 (NAD 83, Zone 8)
- North: 6795519
- Elevation: 1372 m
- Azimuth: 000
- Angle: -60
- Total Depth: 410'
- Sample Series: M406-01 to M406-30

#### **Objective of Drill Hole**

Sited to drill beneath intrusion-hosted outcrops of sulphide-bearing, magnetite-rich and quartz-rich vein swarms in the Andrew zone, and to test adjacent hornfels.

#### **Key Observations and Features**

The core in this hole exhibits some hydrothermal features not observed, or much less strongly developed, in previous holes.

- The most important feature is the abundance of chalcopyrite-bearing magnetite veins. These veins occur mostly within an interval of medium-grained hornblende monzodiorite porphyry and adjacent hornfels between 144 and about 250' depth. They range up to 25 cm wide, and contain magnetite-actinolite-pyrite-chalcopyrite-(quartz); they can have K-silicate alteration envelopes.
- The more strongly mineralized rock is separated from 'barren' hornfels in the upper part of the hole by a major, gougy to rubbly fault zone between 100 and 135'.
- The intrusion related to the magnetite veins has a texture intermediate between typical medium-grained and typical fine-grained hornblende monzodiorite porphyry. Except for the abundance of magnetite-rich veins, and possibly a lower concentration of calcite and early-stage K-silicate veinlets, alteration patterns in this unit are typical of those observed in previous drill holes.
- Hornblende diorite porphyry dykes cut the monzodiorite. This unit is much less strongly affected by veins and alteration than the monzodiorite.
- The monzodiorite and hornblende diorite porphyry are cut by hornblende-bearing syenite porphyry dykes. The syenite porphyry is affected mostly by pervasive and fracture-controlled albite-(actinolite) alteration, with only very minor (<1%) disseminated pyrite.
- The intensity of hydrothermal effects, but most notably sulphide mineralization, decreases from early to later intrusive phases.

## Summary Log

from	to	rock	comments
0	3	Overburden	
3	152	Hornfels	Normal except for 144-152' which has abundant massive magnetite-actinolite-pyrite-chalcopyrite-(quartz) veins with associated K-silicate alteration
152	242	Mgr hbl mzdior pph	Abundant magnetite-actinolite-sulphide veins as above, strongest near upper and lower contacts
242	253	Hornfels	Similar to base of upper hornfels interval with strong magnetite veining
253	302	Mgr hbl mzdior pph	Similar to less strongly altered and mineralized portions of the previous interval of this rock type; hydrothermal effects lessening down hole
302	330.5	Hornfels	Typical hornfels without significant mineralization
330.5	355	Syenite pph dyke	Crowded porphyry texture, minor hornblende; pervasive and fracture-controlled albitic alteration and nearly barren quartz veins, but almost no significant mineralization; probably very late-hydrothermal
355	360	Hornfels	Typical hornfels without significant mineralization
360	376.5	Mixed intrusives	Mixture of early medium-grained hornblende monzodiorite porphyry with normal alteration, intermediate stage hornblende diorite porphyry dyke with much less alteration, and late syenite porphyry dyke with alteration and lack of mineralization as above.
376.5	385	Mgr hbl mzdior pph	Typical alteration pattern but weak
385	391.5	Syenite pph dyke	Similar to above, but mostly pink with lesser fracture-controlled albite alteration; still lacks significant mineralization
391.5	405	Mgr hbl mzdior pph	Same as last interval of this unit
405	410	Syenite pph dyke	Same as previous interval of this unit

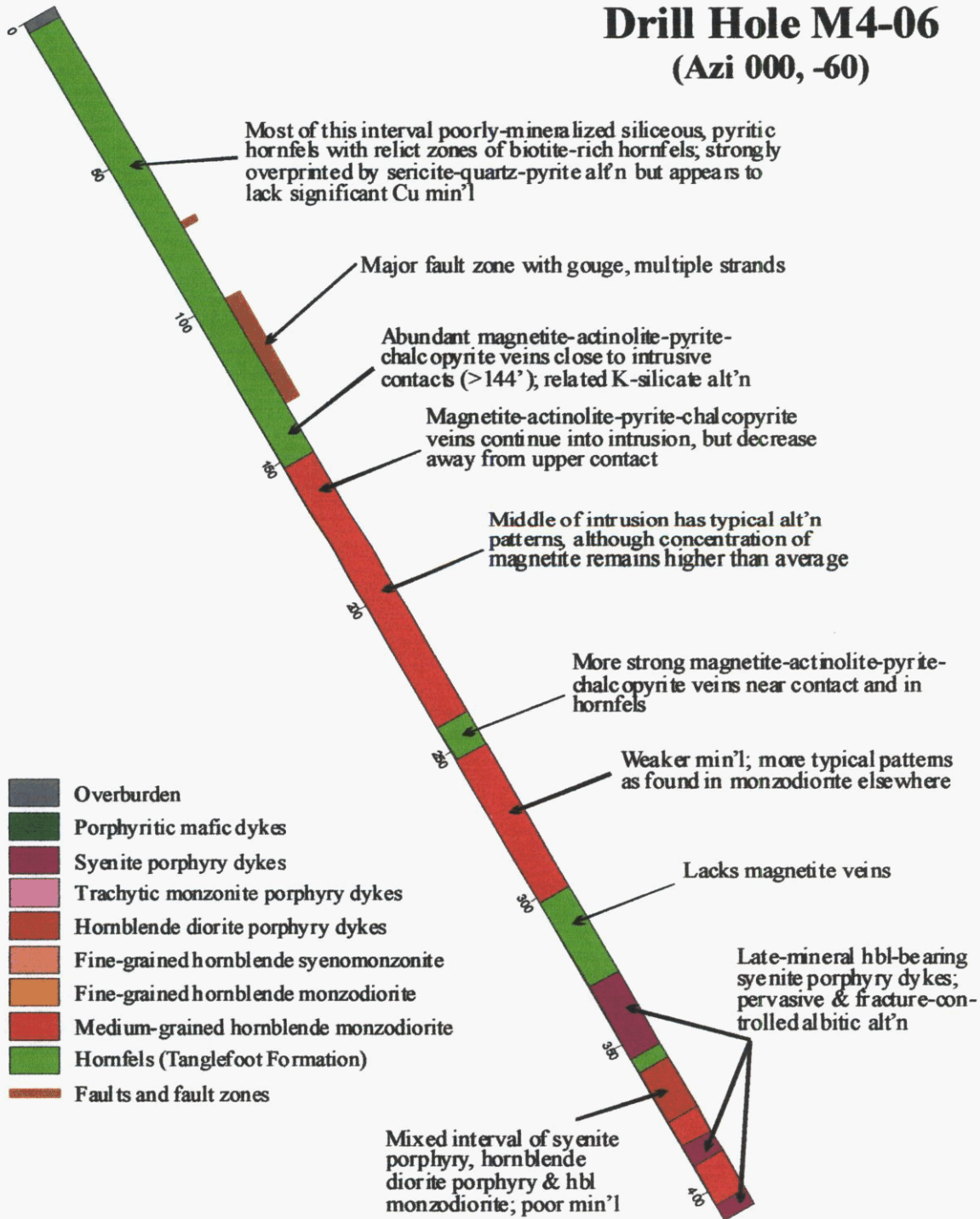
### *Fault and Fault Zone Intervals*

74-76' Small fault

159-190' Major fault zone of rubble and numerous gouge strands

**Cross Section**

**Drill Hole M4-06  
(Azi 000, -60)**



**Geochemical Samples, Drill Hole M4-06 (complete analytical results in Appendix C).**

<b>DDH</b>	<b>From<sup>1</sup></b>	<b>To</b>	<b>Interval</b>	<b>Host</b>	<b>Comments</b>
M406-01	3	15	12	hornfels	no significant altn/minl
M406-02	15	30	15	hornfels	no significant altn/minl
M406-03	30	45	15	hornfels	no significant altn/minl
M406-04	45	60	15	hornfels	no significant altn/minl
M406-05	60	75	15	hornfels	no significant altn/minl
M406-06	75	90	15	hornfels	no significant altn/minl
M406-07	90	105	15	hornfels	fault zone 100-135'
M406-08	105	120	15	hornfels	fault zone 100-135'
M406-09	120	135	15	hornfels	fault zone 100-135'
M406-10	135	152	17	hornfels	abundant mt-actn-Sx veins
M406-11	152	165	13	mgr hbl mzdior pph	abundant mt-actn-Sx veins
M406-12	165	180	15	mgr hbl mzdior pph	abundant mt-actn-Sx veins
M406-13	180	195	15	mgr hbl mzdior pph	weaker altn
M406-14	195	210	15	mgr hbl mzdior pph	weaker altn
M406-15	210	225	15	mgr hbl mzdior pph	weaker altn
M406-16	225	242	17	mgr hbl mzdior pph	mt veins again increasing
M406-17	242	253	11	hornfels	abundant mt-actn-Sx veins
M406-18	253	270	17	mgr hbl mzdior pph	weaker altn & minl than interval above
M406-19	270	285	15	mgr hbl mzdior pph	weaker altn & minl than interval above
M406-20	285	302	17	mgr hbl mzdior pph	weaker altn & minl than interval above
M406-21	302	315	13	hornfels	weak altn/minl
M406-22	315	330.5	15.5	hornfels	weak altn/minl
M406-23	330.5	345	14.5	syenite porphyry dyke	strong albite, post Cu-Au?
M406-24	345	355	10	syenite porphyry dyke	strong albite, post Cu-Au?
M406-25	355	360	5	hornfels	weak altn/minl
M406-26	360	376.5	16.5	mixed intrusive zone	some K-silicate altn and veins
M406-27	376.5	385	8.5	mgr hbl mzdior pph	some K-silicate altn and veins
M406-28	385	391.5	6.5	syenite porphyry dyke	late-mineral, weak altn/minl
M406-29	391.5	405	13.5	mgr hbl mzdior pph	some K-silicate altn and veins
M406-30	405	410	5	syenite porphyry dyke	late-mineral, weak altn/minl

<sup>1</sup>All depths in feet.

**Drill Hole Summary: Mars Project, Yukon**  
**Drill Hole: M4-07 (West of Moon Knob Zone)**

**Date Initiated: July 26, 2004**

**Data**

- East: 510816
- North: 6795433
- Elevation: 1316
- Azimuth: 235
- Angle: -60
- Total Depth: 440'
- Sample Series: M407-01 to M407-29

**Objective of Drill Hole**

Intended to more deeply test ground on the northwestern slope of Moon Knob, just above the swamp. A key objective was to look for indications of more proximal styles of alteration and/or mineralization that might be compatible with a thermal centre under the swamp.

**Key Observations and Features**

This drill hole exhibits similarities and differences when compared to all previous drill holes.

- Cut by a narrow biotite lamprophyre dyke, not observed in other holes but probably similar to those described by Pangman (1973).
- Cut by a single late- to post-hydrothermal mafic porphyry dyke similar to the one observed in M4-04.
- Contains one narrow hornblende-bearing syenite porphyry dyke like that in M4-06.
- Most of the host rock is transitional-type hornblende monzodiorite porphyry.
- Contains relatively more abundant K-silicate alteration than in other holes, and on average is commonly more intense; most related to coalescing vein alteration envelopes, but zones of pervasive alteration also common.
- Strongest K-silicate alteration zones contain abundant magnetite-actinolite with disseminated pyrite and in some intervals 1-2% disseminated chalcopyrite; these intervals are narrow.
- Several sections contain abundant, massive, barren or nearly so quartz veins; these have sharp contacts and variable K-feldspar envelopes, but are irregular and locally form matrices to small breccias; textures are consistent with formation at elevated P-T conditions.
- Remaining alteration is generally similar to other drill holes. Early pervasive sericite alteration is locally preserved to dominant and can contain more than 5% disseminated pyrite; this alteration is commonly more actinolite-enriched than normal. Early-stage K-silicate veinlets are found throughout the hole. Magnetite-actinolite-sulphide veinlets are very common in several intervals. Late calcite-enriched veinlets are also common.

- Barren quartz veins are (nearly) monomineralic, whereas those with pyrite-(chalcopyrite) commonly have a more complex mineralogy that includes actinolite, minor magnetite, and calcite which, along with sulphides, commonly occur along vein axes.

## Summary Log

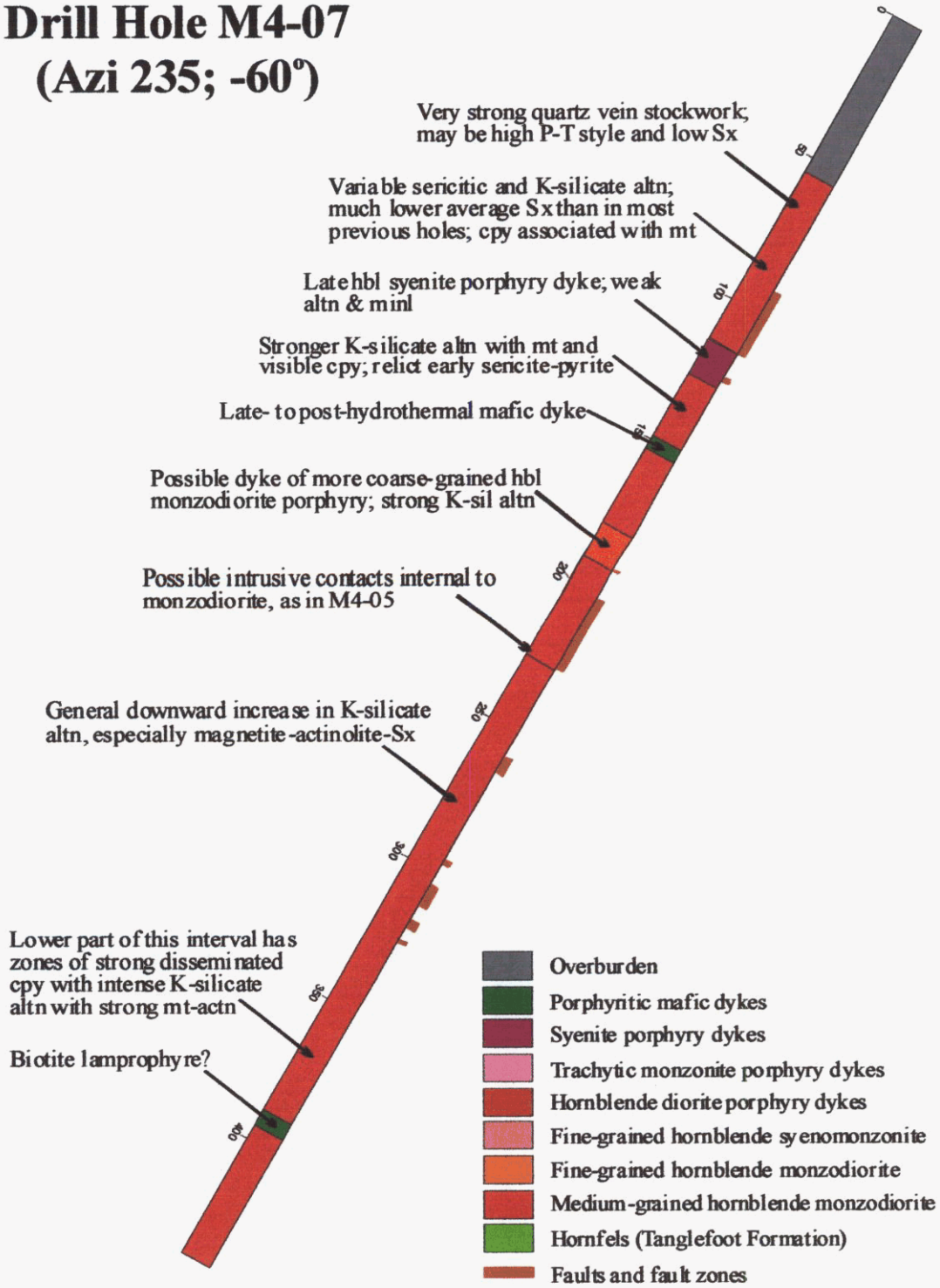
from	to	rock	comments
0	55	Overburden	
55	114.5	Mgr or trans hbl mzdior pph	Intervals with very abundant quartz veins that are nearly barren and which are irregular; may reflect vein formation at high P-T.
114.5	126.5	Syenite pph dyke	Similar to units found in lower part of M4-06; here also cut by (nearly) barren quartz veins.
126.5	149	Trans hbl mzdior pph	Typical of this unit elsewhere, but possibly stronger K-silicate alteration than observed in most previous holes; very low sulphide concentration overall.
149	153	Mafic pph dyke	Similar to one encountered in M4-04; late- or post-hydrothermal
153	179.5	Trans hbl mzdior pph	Identical to last interval of this unit
179.5	192	Cgr hbl mzdior pph	Similar to normal monzodiorite but slightly more coarse-grained; may be a dyke but potential contacts obscured by K-silicate alteration
192	227	Trans hbl mzdior pph	Similar to previous interval of this unit, but a notable increase in magnetite-actinolite veins and alteration, and very few quartz veins.
227	389.5	Trans hbl mzdior pph	May be separated from previous, largely similar unit by a diffuse intrusive contact (similar to observations in M4-05). Notable for the strong increase in K-silicate alteration, pyrite concentration, and for intervals that contain comparatively high (1-2%) concentrations of disseminated chalcopyrite. Overall alteration is highly variable.
389.5	395	Lamprophyre	Massive, heavy, black, biotite-rich dyke with abundant inclusions of host rock; probably compatible with lamprophyres of Pangman (1973)
395	440	Trans hbl mzdior pph	Similar to intervals above, but lower concentration of sulphide minerals.

### *Fault and Fault Zone Intervals*

91.5-114.5'	Major fault zone mixture of rubble and gouge
122-123.5'	Gouge seam
91.5-92'	Gouge seam
201-226.5'	Major fault zone with gouge seams in rubble
258-264'	Rubble with some gouge
295-296.5'	as above
303.5-311'	Rubble zone and strong fractures
316-319'	Rubbly with gouge seams
323-323.5'	Gouge

**Cross Section**

**Drill Hole M4-07  
(Azi 235; -60°)**



**Geochemical Samples, Drill Hole M4-07 (complete analytical results in Appendix C).**

<b>DDH</b>	<b>From<sup>1</sup></b>	<b>To</b>	<b>Interval</b>	<b>Host</b>	<b>Comments</b>
M407-01	55	70	15	Trans hbl mzdior pph	No obvious cpy; abundant qtz-rich veins
M407-02	70	85	15	Trans hbl mzdior pph	No obvious cpy; abundant qtz-rich veins
M407-03	85	100	15	Trans hbl mzdior pph	No obvious cpy; abundant qtz-rich veins
M407-04	100	114.5	14.5	Trans hbl mzdior pph	No obvious cpy; abundant qtz-rich veins
M407-05	114.5	126.5	12	Syenite porphyry dyke	Pervasive K-silicate altn, but weak to no significant minl
M407-06	126.5	138	11.5	Trans hbl mzdior pph	Similar to above
M407-07	138	149	11	Trans hbl mzdior pph	Similar to above
M407-08	149	153	4	Mafic porphyry dyke	post-hydrothermal?
M407-09	153	170	17	Trans hbl mzdior pph	Similar to above
M407-10	170	179.5	9.5	Trans hbl mzdior pph	Similar to above
M407-11	179.5	192	12.5	Cgr hbl mzdior pph	May be a dyke with strong K-silicate altn
M407-12	192	205	13	Trans hbl mzdior pph	Increase in mt-actn veins and Sx from here down
M407-13	205	216	11	Trans hbl mzdior pph	Increase in mt-actn veins and Sx from here down
M407-14	216	227	11	Trans hbl mzdior pph	Increase in mt-actn veins and Sx from here down
M407-15	227	240	13	Trans hbl mzdior pph	Highly variable altn this unit interval and downward
M407-16	240	255	15	Trans hbl mzdior pph	
M407-17	255	270	15	Trans hbl mzdior pph	
M407-18	270	285	15	Trans hbl mzdior pph	
M407-19	285	300	15	Trans hbl mzdior pph	
M407-20	300	315	15	Trans hbl mzdior pph	
M407-21	315	330	15	Trans hbl mzdior pph	Sharp increase in qtz veins
M407-22	330	345	15	Trans hbl mzdior pph	
M407-23	345	360	15	Trans hbl mzdior pph	
M407-24	360	375	15	Trans hbl mzdior pph	K-sil altn with cpy
M407-25	375	389.5	14.5	Trans hbl mzdior pph	K-sil altn with cpy
M407-26	389.5	395	5.5	Biotite lamprophyre	probably post-hydrothermal
M407-27	395	410	15	Trans hbl mzdior pph	sericite altn
M407-28	410	425	15	Trans hbl mzdior pph	sericite altn and K-silicate altn low Sx
M407-29	425	440	15	Trans hbl mzdior pph	K-silicate altn low Sx

<sup>1</sup>All depths in feet.

**APPENDIX C:**  
**Analytical Results and Assayers Certificates**  
**Mars Exploration Program, June to August, 2004**











SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Au*	Sample	
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	ppm	ppm	ppm	%	%	%	ppm	ppm	ppm	kg		
NA0522	153	114	<3	19	<3	19	9	183	1.98	3	<8	<2	2	73	<5	3	<3	73	1.50	.082	12	35	.61	336	.20	<3	.76	.11	.42	4	5	10.33	
NA0523	190	199	<3	15	<3	6	10	182	2.53	2	<8	<2	9	119	<5	<3	<3	77	1.50	.119	34	15	.59	281	.14	<3	.82	.14	.22	<2	2	13.41	
NA0524	64	70	<3	13	<3	11	6	141	1.14	<2	<8	<2	6	66	<5	<3	<3	33	1.28	.073	27	23	.34	456	.11	<3	.42	.10	.14	3	3	11.66	
NA0525	94	98	3	12	<3	9	7	147	1.50	<2	8	<2	8	109	<5	<3	<3	40	1.13	.085	32	17	.40	383	.13	4	.66	.13	.17	<2	5	14.13	
NA0526	101	219	<3	18	<3	8	6	245	1.36	<2	<8	<2	5	71	<5	<3	<3	57	1.34	.063	23	20	.43	602	.07	<3	.45	.08	.15	2	10	14.80	
NA0527	149	472	8	12	.3	4	7	212	1.45	3	<8	<2	6	100	<5	<3	<3	40	1.57	.101	29	7	.39	245	.08	3	.47	.11	.14	<2	4	12.19	
NA0528	60	243	3	16	.3	5	8	284	1.70	3	<8	<2	6	118	<5	<3	<3	48	1.83	.116	30	10	.53	387	.08	3	.51	.09	.16	<2	3	12.91	
NA0529	133	224	6	15	.3	9	9	252	1.45	<2	<8	<2	7	107	<5	<3	<3	60	1.87	.095	25	20	.53	515	.09	3	.54	.09	.20	<2	2	13.45	
NA0530	53	227	7	20	<3	10	9	253	1.68	<2	8	<2	7	79	<5	<3	<3	84	1.63	.079	26	27	.60	783	.07	<3	.55	.08	.21	2	4	10.86	
RE NA0530	54	230	8	20	<3	10	9	257	1.71	2	<8	<2	6	79	<5	<3	<3	85	1.66	.080	27	25	.61	728	.07	<3	.55	.08	.21	2	5	-	
RRE NA0530	56	248	<3	21	<3	11	9	269	1.82	<2	<8	<2	6	87	<5	<3	<3	90	1.70	.082	27	30	.66	779	.07	<3	.59	.09	.22	<2	4	-	
NA0531	49	91	12	17	<3	22	8	209	1.53	<2	<8	<2	6	82	<5	<3	<3	54	1.48	.067	28	38	.54	631	.10	<3	.51	.09	.20	<2	4	8.45	
NA0601	23	159	<3	9	.3	48	13	68	1.98	<2	<8	<2	3	19	<5	<3	<3	77	.57	.090	11	33	.16	81	.18	<3	.30	.08	.08	8	84	7.73	
NA0602	28	192	<3	12	<3	46	14	88	3.98	4	<8	<2	4	26	<5	<3	<3	169	.47	.086	12	65	.58	105	.24	<3	.84	.08	.24	<2	125	9.18	
NA0603	45	281	6	15	.6	43	14	165	3.43	2	<8	<2	5	21	<5	4	<3	108	.58	.093	19	41	.53	132	.18	<3	.63	.09	.24	5	141	9.46	
NA0604	56	244	<3	14	.7	37	12	125	3.66	4	9	<2	5	30	<5	3	6	120	.55	.098	14	43	.50	243	.19	<3	.58	.10	.23	70	286	12.16	
NA0605	43	141	<3	16	<3	37	10	369	2.72	10	8	6	4	63	<5	<3	<3	44	1.59	1.96	.095	12	54	.58	186	.12	<3	.62	.08	.13	6	6435	9.85
RE NA0605	41	138	<3	15	.3	37	10	361	2.70	10	9	5	4	61	<5	<3	<3	41	1.56	1.90	.092	12	51	.56	182	.12	<3	.61	.08	.12	8	5970	-
RRE NA0605	33	116	4	14	<3	39	8	287	2.22	8	<8	4	4	55	<5	<3	<3	23	1.43	1.77	.095	12	52	.49	159	.13	<3	.57	.10	.13	5	5463	-
NA0606	26	123	3	31	.3	34	11	572	2.71	3	9	<2	4	116	<5	<3	<3	176	2.93	.071	13	39	.77	335	.01	<3	.47	.05	.09	40	258	10.90	
NA0607	54	70	5	31	.3	27	8	620	2.76	4	<8	<2	4	182	<5	3	<3	178	3.21	.087	8	44	.89	675	.01	6	.39	.06	.09	<2	70	10.64	
NA0608	23	139	4	33	1.3	17	11	660	2.93	3	8	<2	3	161	<5	<3	<3	88	2.84	.073	9	20	.75	353	.01	4	.40	.04	.10	5	20	10.92	
NA0609	35	416	<3	62	.7	30	16	980	4.35	3	<8	<2	2	175	<5	4	<3	170	4.76	.078	8	39	1.39	124	.01	<3	.37	.04	.11	<2	32	11.29	
NA0610	74	375	5	50	.6	32	19	713	3.73	4	<8	<2	3	185	<5	3	<3	209	2.69	.097	11	65	.80	443	.03	3	.18	.06	.09	4	306	13.06	
NA0611	5	116	5	24	<3	6	11	338	1.36	2	<8	<2	<2	173	<5	<3	<3	56	1.22	.021	8	18	.28	1527	<.01	<3	.18	.08	.10	<2	10	10.90	
NA0612	18	150	7	26	<3	6	11	336	1.70	<2	11	<2	3	195	<5	<3	<3	71	1.43	.044	22	14	.33	1382	.02	3	.28	.09	.11	<2	12	13.98	
NA0613	23	147	7	19	<3	4	12	182	1.44	2	<8	<2	7	132	<5	<3	<3	47	1.09	.061	71	7	.22	851	.06	<3	.38	.10	.11	<2	4	13.06	
NA0614	4	42	6	13	<3	2	5	113	.89	2	<8	<2	8	152	<5	<3	<3	35	1.15	.075	36	7	.15	1197	.08	56	.57	.12	.10	<2	208	13.34	
NA0615	11	42	8	15	<3	3	6	211	1.14	5	<8	<2	7	173	<5	<3	<3	36	1.49	.082	31	9	.27	927	.09	147	.56	.11	.11	2	16	12.37	
NA0616	5	35	7	19	<3	4	6	299	1.44	2	<8	<2	7	251	<5	<3	<3	58	2.75	.094	35	11	.34	1100	.08	23	.49	.10	.12	3	5	12.78	
NA0617	58	633	<3	78	.9	62	74	504	9.84	20	24	<2	4	65	<5	4	<3	396	1.38	.083	37	32	.69	103	.15	<3	.48	.09	.14	<2	104	10.58	
NA0618	10	83	6	15	<3	3	7	210	1.37	4	<8	<2	5	102	<5	<3	<3	39	1.14	.054	31	8	.21	630	.08	20	.37	.11	.10	<2	2	14.87	
NA0619	4	66	4	14	<3	3	7	192	1.09	<2	8	<2	5	96	<5	<3	<3	38	1.08	.052	31	11	.19	1043	.07	27	.29	.10	.09	<2	4	11.73	
NA0620	4	96	3	20	<3	5	8	258	1.43	2	8	<2	3	111	<5	<3	<3	69	1.18	.036	26	13	.25	1313	.04	8	.31	.10	.12	3	<2	12.67	
STANDARD DS5/AU-R1	13	145	24	136	.3	25	12	764	3.03	18	9	<2	3	47	5.8	3	5	61	.77	.098	13	194	.70	139	.11	16	2.06	.04	.15	6	551	-	

Sample types: CORE R150 60C. Samples beginning 'RE' are Reruns and 'RRE' are Relect Reruns.

All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of the analysis only.

Data LFA





SAMPLE#	No	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Au**	Sample
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	%	%	%	%	%	ppm	ppb
MA0721	11	100	6	11	<.3	2	5	250	1.13	3	<.8	<.2	3	81	<.5	<.3	<.3	40	1.27	.039	18	3	.18	914	.01	<.3	.34	.08	.10	2	2	11.12
MA0722	30	173	4	11	<.3	2	5	241	1.21	2	<.8	<.2	4	106	<.5	<.3	<.3	34	1.47	.055	24	4	.21	1190	.04	<.3	.35	.10	.10	2	4	12.62
MA0723	17	246	13	14	<.3	3	6	204	2.07	7	11	<.2	7	131	<.5	<.3	<.3	57	1.26	.065	32	6	.37	291	.07	4	.63	.19	.12	2	7	8.74
MA0724	27	346	10	15	<.3	3	6	257	2.11	4	10	<.2	8	112	<.5	<.3	3	84	1.40	.065	34	8	.38	323	.02	<.3	.41	.09	.13	2	26	16.94
MA0725	188	385	19	8	<.3	3	5	230	1.48	<.2	<.8	<.2	7	111	<.5	<.3	<.3	86	1.30	.067	27	5	.36	649	<.01	<.3	.32	.06	.14	2	41	12.60
MA0726	170	112	3	72	<.3	61	28	1481	5.87	16	<.8	<.2	2	1176	.9	<.3	<.3	151	5.09	.138	21	293	1.90	1284	.27	<.3	2.93	.12	.30	4	10	3.41
MA0727	50	351	24	6	<.3	4	6	277	1.68	3	<.8	<.2	6	216	<.5	<.3	<.3	59	1.30	.067	25	9	.30	149	<.01	<.3	.70	.06	.19	2	45	9.48
MA0728	16	164	20	11	<.3	3	4	199	1.42	2	<.8	<.2	5	155	<.5	<.3	<.3	97	1.00	.058	26	7	.37	384	.01	<.3	.31	.06	.13	<.2	20	7.74
MA0729	4	23	28	9	<.3	4	4	207	1.24	<.2	<.8	<.2	4	207	<.5	<.3	<.3	107	1.10	.071	20	4	.42	791	.01	<.3	.30	.06	.15	2	20	11.63
STANDARD BSS/AU-R1	13	146	23	130	.3	25	12	748	3.01	17	<.8	<.2	3	47	5.6	5	6	60	.73	.090	13	191	.68	140	.11	16	2.01	.04	.14	6	551	-

Sample type: CORE #150 60C

All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of the analysis only.

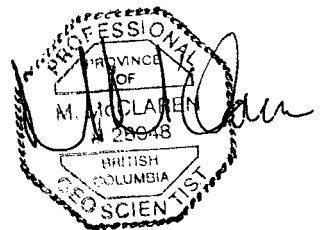
Data LFA

**Appendix D:**  
**Statement of Expenditures**

**SATURN MINERALS INC.**  
**420 - 625 Howe Street**  
**Vancouver, B.C. V6C 2T6**  
**Tel: 604 602 0004**  
**Fax: 604 608 0344**

**MARS PROJECT - SUMMARY OF EXPENDITURES WITHIN YUKON**

Camp supplies	\$	11,067
Equipment rental		9,024
Helicopter transport		91,208
Labour		48,510
Meals, accommodations		13,704
Mob/Demob		4,000
Trenching, drilling		120,313
Total Expenditures	\$	297,826



**APPENDIX E:**  
**Yukon Class III Approval**

Energy, Mines and Resources  
Box 2703, Whitehorse, Yukon Y1A 2C6

**MINING LANDS  
MINERAL MANAGEMENT BRANCH  
GOVERNMENT OF YUKON**

Pursuant to the Quartz Mining Act and Quartz Mining Land Use Regulation, the Chief, Mining Land Use hereby grants a Class III approval to:

Saturn Ventures Inc.  
901 - 1030 Burnaby Street  
Vancouver, B.C.  
V6E 1N8

**APPROVAL NUMBER:** LQ00103  
**UNDERTAKING:** Quartz  
**CLASS:** III  
**EFFECTIVE DATE:** 27 May 2003  
**EXPIRY DATE:** 26 May 2008

This permit shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the Quartz Mining Act and the Quartz Mining Land Use Regulation made thereunder as proposed in Mining Land Use Application LQ00103.

Dated this 27<sup>th</sup> day of

May 2003



David Wiebe  
Chief, Mining Land Use