

Matt Berry deposit (Yukon MINFILE, 1997 105H 021)

The Matt Berry deposit is an unusually copper-rich, small tonnage SEDEX deposit. Calculated reserves are 533,434 tonnes grading 6.1% Pb, 4.8% Zn, and 102.9 g/t Ag. Copper grades are not quoted in the reserves.

WORK HISTORY

Galena-sphalerite-rich float in the Thompson Creek area was first reported by Dawson (1887). The area was first staked in 1944. Between 1966 and 1969, Matt Berry Mines Limited carried out trenching, and EM surveys, and drilled 29 holes (2298 m). Between 1970 and 1971, the property was under option by Inco and Metallgesellschaft (now Inmet), ~~which who~~ drilled 4 holes (426.7 m). In 1974, Anvil Mining Corporation conducted soil sampling and geophysical surveys (ground magnetics and gravity). In 1978, Welcome North Mines Limited conducted a pulse-EM survey. In 1979, Sovereign Metals Corporation in a joint venture with Cominco conducted trenching, geological mapping, geochemical surveys, and drilled 5 holes (1229 m). Sovereign changed name to Barytex Resources, which currently owns the claims. Pulse Resources optioned the property in 1986 and carried out the following surveys between 1987 and 1991: conducted magnetic and geochemical surveys and staked the Beth claims (1987); cut baselines and staked the Binti claims (1988); conducted geological mapping, soil sampling and geophysical surveys (1989); and contracted Pamicon Consultants to drill four diamond drill holes (303 m, 1991). After Pulse Resources dropped the option, Barytex Resources Corporation cut 53 km of line (1993), and staked the Pat claims (1994), which have since lapsed.

GEOLOGY AND MINERALIZATION

The Matt Berry deposit is located in a densely vegetated area, where outcrops are rare, and restricted to river-banks, or the shore of Frances Lake. Stratigraphic and structural relations to shallower water facies to the south and northwest are poorly defined. Two Pb-Pb analyses of galena from the Matt Berry deposit were used to constrain the 'Shale Curve' of Godwin and Sinclair (1982) and yielded a Devonian age, suggesting that the black shales hosting the mineralization are coeval with Earn Group rocks.

The area is underlain by dark grey to black phyllite, which is the host to mineralization. A trench exposes a 45-cm-thick massive sulphide layer on the south shore of Thompson Creek (Fig. 3). The sulphide bed consists of mainly galena, sphalerite and quartz, with lesser chalcopyrite and bornite hosted in dark grey to black phyllite to carbonaceous phyllite. Mineralization thickens and is open to the east. Sulphide-bearing quartz veins up to 1 m thick crosscut carbonaceous phyllites to the south of the deposit, along the eastern shore of Frances Lake.

Drill core from Pulse Resources' 1991 exploration program shows that the dark phyllites in the footwall of the Matt Berry zone are underlain by a strongly deformed, quartz-sericite-augen schist (Fig. 4). Abundant angular quartz grains and quartz and muscovite replacing feldspar prisms in thin section, suggest a volcanic felsic protolith for the schist (Figs. 5 and 6). Small outcrops of the felsic schist were reported by Cominco geologists south of the Matt Berry camp, and above treeline on the Simpson Tower. Efforts to locate those outcrops during the 2000 field season were unsuccessful. Figure 7 displays discriminant diagrams of felsic volcanic rocks from drill core. Samples cluster in the fields of thachyte composition and within plate magmatism. ICP-MS Analytical data is displayed in Table 1. Less deformed felsic volcanic rocks in Earn Group are reported 30 km to the northwest, in Cominco's Quest and Fin SEDEX prospects (D. Rhodes, pers. comm., 2000).

STRUCTURAL GEOLOGY

Three foliations are observed in outcrop (Fig. 8), suggesting that three phases of deformation affected the deposit. Northeast-oriented cross-sections (Figure 9) show the interpreted geology of the deposit. The felsic volcanic unit consistently underlies the mineralization, but the distance between mineralization and volcanic unit varies from 23 metres to over 75 metres. Easterly to

east-northeasterly-directed thrusting and folding brings the mineralized sequence closer to surface towards the east. The variable thickness of low-grade to barren phyllite between the quartz-eye felsic volcanic unit and the mineralization is interpreted as the result of folding along an approximate east-axis. This interpretation implies repetition of the mineralization at greater depth, and is in line with structural observations recorded in the area. Alternatively, this variation in thickness may result from a combination of transposition of bedding and variable distance to the volcanic centres.

ORE PETROGRAPHY

A reflected light petrographic study of mineralization from the Matt Berry showing demonstrated the copper-rich nature of the deposit. Locally, chalcopyrite makes up to 2% of the rock volume. Typical paragenesis in the showing is: quartz → sphalerite → quartz, chalcopyrite, pyrite → galena → covelite, marcassite, quartz, sericite (Fig. 10). Chalcopyrite also occurs as exsolutions in sphalerite and is concentrated as fine-grained crystals along the contacts with unmineralized phyllite. Angular quartz eyes along the contacts of the mineralization suggesting a volcanoclastic component to the mineralization (Fig. 11). Principal gangue minerals are quartz, carbonate, and sericite.

DEPOSIT MODEL

The presence of alkaline felsic volcanic rocks underlying mineralization, unusually high copper grades, ~~and~~ small tonnage, and volcanic textures along the ore-wallrock contacts demonstrate a strong volcanogenic component in the Matt Berry deposit. Intensely deformed quartz-eye schist underlying the mineralization resembles felsic metavolcanic rocks of Yukon-Tanana Terrane, or in the Tombstone Strain Zone of Selwyn Basin.

The possibility that the Matt Berry deposit lies in Yukon-Tanana Terrane rocks was examined and rejected in the course of this research project. Rocks in the Simpson Tower to the west, are dark grey chert-pebble conglomerate, sandstone, and hornfelsed shale that do not show the same amount of strain as the quartz-eye schist underlying Matt Berry ore, and are interpreted as Earn Group. The possibility that the Matt Berry deposit lies on a klippe of Yukon-Tanana Terrane, which is the northerly extension of greenstones mapped by Roots and others (1965) and interpreted by Gordey and Makepeace (2000) as a klippe of Slide Mountain Terrane-affinity was also rejected. An examination of rocks from the greenstone unit showed that they are undeformed (recent and autochthonous) basaltic flows.

Conclusions

The previously unreported felsic volcanic unit that underlies the Matt Berry deposit may represent a significant metallogenic district in western Selwyn Basin.

A strong volcanogenic component was observed in the host rock geology and ore contacts of the Matt Berry deposit, suggesting that the mineralization represents a hybrid mineral deposit type, which has characteristics of SEDEX- and VMS-type mineralization. Proposed Pb-Pb analyses of galena in the ore and of pyrite in the volcanic unit will show conclusively whether or not there is a genetic relation between the extrusion of felsic volcanic rocks and mineralization.

The intense deformation undergone by rocks in the Matt Berry deposit is not shared by more typical Selwyn Basin strata in the Simpson Tower area, to the west. Intensely deformed rocks in the Matt Berry deposit may be the southerly extension of the Tombstone Strain Zone, or the result of strain localized by the intrusion of the Billings Batholith.

Acknowledgements

Many thanks to Steve Piercey, Danièle Héon, Gary Stronghill and Scott Heffernan, who volunteered to assist in the fieldwork. Cominco geologists Bruce Mawer, Dereck Rhodes, and Paul MacRobbie provided priceless expert advice on the geology and mineralization in the Frances Lake area. International Barytex Resources is thanked for providing and releasing information. Mike Burke assisted in obtaining information on the Maxi prospect. Shirley Abercrombie and Monique Schoniker provided administrative support for the fieldwork. Don Murphy edited and provided excellent suggestions to this paper.

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Felsic metavolcanic rocks at Matt Berry: a new deposit model

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Abstract

Exhalative Pb-Zn-Cu mineralization of the Matt Berry deposit is hosted in polydeformed black shale that is underlain by a strongly deformed felsic schist. The copper-rich nature of the ore, volcanic textures in the ore contacts, and the presence of felsic metavolcanic rocks beneath the deposit suggest that the mineralization fits a mineral deposit model intermediate ~~to~~ between SEDEX and VMS end members.

Introduction

During the 2000 field season, YTG Mineral Resources Branch carried out fieldwork in order to refine the mineral deposit models applicable to the western part of Selwyn Basin in Frances Lake (105H) map area (Figure 1). The area of the Matt Berry deposit and Maxi prospect, and the Simpson Tower area were the principal areas of study of SEDEX-type mineralization. Geological work involved mapping at 1:10,000 (Matt Berry), 1:20,000 (Simpson Tower), and 1:50,000 (Maxi) scales, as well as field checks at 1:250,000 scale (Nipple Mountain and Cenozoic basalts). Collection of samples for geochemical analyses, radiometric analyses (Pb-Pb and U-Pb), conodont dating, and petrographic studies were also conducted.

Location and Access

The Matt Berry deposit is located on the northeastern shore of the East Arm of Frances Lake (Fig. 2). Access is by float plane from Finlayson or McEvoy Lakes, or by boat (approximately 60 km) from the Frances Lake Campground. Remains of an old exploration camp are located at the mouth of Thompson Creek, immediately northwest of the deposit.

Regional Geology and mineralization of Frances Lake area

Frances Lake map sheet (105H) was mapped at 1:250,000 scale by Roots and others (1966). Gordey and Makepeace (2000) compiled and interpreted the geology of Frances Lake area (Fig. 2).

The area of this study is located at the western edge of Selwyn Basin, where siliciclastic and carbonate deposition took place under different tectonic environments, from Late Proterozoic through Triassic time. Throughout its existence, four main extensional (rift) events have been documented. These extensional events produced down-dropped blocks, localized volcanism, SEDEX mineralization on and near the seafloor, and deeply penetrating normal faults that were reactivated throughout the geological history of Selwyn Basin.

Siluro-Devonian limestone, calcareous shale, and possibly quartz-arenite are interpreted (Gordey and Makepeace, 2000) as McEvoy Platform – a high-standing block to the west of Selwyn Basin. McEvoy Platform may represent an eastern-most, ~~autochthonous~~ autochthonous part of Cassiar Platform.

Mesozoic deformation started in Permo-Triassic time, and ended before the emplacement of mid-Cretaceous granitic batholiths and plutons. The timing of emplacement of eastern Yukon-Tanana (Finlayson Lake district) onto Selwyn Basin is pre-Triassic. Cenozoic strike-slip movement along Tintina Fault juxtaposed metamorphic rocks of Yukon-Tanana Terrane (Finlayson Lake district) to those of Cassiar Platform, and Selwyn Basin to Cassiar Platform and Yukon-Tanana rocks. Cenozoic magmatism produced basaltic rocks that crop out in the southern Frances Lake map area.

Samples collected during 2000 Field Season

Location	Sample #	Purpose
Matt Berry	MS	specimen, T.S.
Matt Berry	MBB	specimen, T.S.
Matt Berry	ddh91-4@47	T.S.
Matt Berry	ddh91-1@31.6	T.S.
Matt Berry	ddh91-1@52.1	T.S.
Matt Berry	ddh91-1@64.5	T.S.
Matt Berry	ddh91-3@23.5	T.S.
Matt Berry	ddh91-3@75.2	T.S.
Simpson Tower	AF-66A	specimen
Simpson Tower	AF-68A	specimen
Simpson Tower	AF-69A	T.S.
Simpson Tower	AF-73A	geochem
Simpson Tower	AF-74A	specimen
Simpson Tower	AF-74B	geochem
Simpson Tower	AF-76A	geochem
Simpson Tower	AF-79A	T.S.
Simpson Tower	AF-83A	specimen
Simpson Tower	AF-85A	specimen
Simpson Tower	AF-87A	geochem
Simpson Tower	AF-88A	geochem
Simpson Tower	Af-90A	specimen
Simpson Tower	Af-91A	T.S.
Simpson Tower	AF-170A	fossils-paleontology
Nipple Mt.	AF-92A	T.S.
Anderson	AF-150A	specimen
Anderson	AF-150B	skarn, specimen
Anderson	AF-150C	geochem, T.S.
Anderson	AF-151A	geochem
Anderson	AF-152A	geochem
Anderson	AF-153A	specimen, geochem
Anderson	AF-153B	T.S.
Anderson	AF-154A	geochem
Anderson	AF-155A	geochem, T.S.
Anderson	AF-158A	geochem, float
Anderson	AF-159A	skarn (specimen), rusty (geochem)
Anderson	AF-159B	geochem (py in dike)
Maxi	AF-161A	geochem
Maxi	AF-161B	geochem, specimen
Maxi	AF-162A	geochem
Maxi	AF-163A	geochem
Maxi	XC6@117.5	T.S.
Maxi	XC14@4.5	T.S.
Maxi	XC13@80.8	T.S.
Fluke	AF-166A	T.S., geochem
Fluke	AF-166B	geochem
Fluke	AF-167A	specimen, T.S.
Fluke	AF-168A	specimen
Fluke	AF-168B	geochem
Cenozoic Basalt	GK	T.S.

Appendix VI - ICP analyses of rush samples from Maxi prospect

TITLE 01-11-00 14:00:58 V00-02040.0 M. BURKE 30/10/00
CLIENT GOV. OF CANADA -INDIAN & NORTHERN AFFAIRS -GEOLOGY
PROJECT NONE GIVEN #SAMPLES: 4

SPECIAL VALUES

IS Insufficient Sample
-9 No Value Recorded

Values above the upper limit are shown as +uplimt
Values below the lower limit are shown as -lolmt (ie not detected)

DETERMINATIONS

ELNAME METHO ECO UNI #SAM LOLMT UPLIMIT COMMENTS

01 Ag ICP EA5 PPM 4 6.5 500.0 Results Reported
02 Cu ICP EA5 PCT 4 0.01 15.00 Results Reported
03 Pb ICP EA5 PCT 4 0.01 15.00 Results Reported
04 Zn ICP EA5 PCT 4 0.01 15.00 Results Reported

SAMPLE PREPS

40 SAMPLE TYPE=R ROCK
41 PA2= 4 CRUSH/SPLIT & PULV.

FORMAT (1X,A8,3X,A1,3X,A1,3X,A20,1X,4(1X,A7,2X,A1,1X))

BEGIN	Type	Frac	Sample ID	Ag	Cu	Pb	Zn
20400001	R	2	XC6 30.5-31.5	-6.5	-0.01	0.01	0.11
20400002	R	2	XC6 53-54	-6.5	-0.01	-0.01	0.08
20400003	R	2	XC6 137-138	-6.5	-0.01	-0.01	0.03
20400004	R	2	XC6 145.5-147.3	-6.5	-0.01	-0.01	0.11

END

The area was

It was first staked in 1944. Between 1966 and 1969, Matt Berry Mines Limited carried out an aggressive exploration program, including trenching, EM surveys, and 29 ~~drill~~ holes (2298 m). Between 1970 and 1971, the property was under option of Inco and Metallgesellschaft (now Inmet), which drilled 4 holes (426.7 m). In 1974, Anvil Mining Corporation conducted soil sampling and geophysical surveys (mag and gravity). In 1978 Welcome North Mines Limited conducted a pulse-EM survey. In 1979, Sovereign Metals Corporation conducted trenching, geological mapping, geochemical surveys, and drilled 5 holes (1229 m) in a joint venture with Cominco. Sovereign changed name to Barytex Resources, which currently owns the claims. Pulse Resources optioned the property in 1986; and conducted magnetic and geochemical surveys and staked the Beth claims (1987); cut baselines and staked the Binti claims (1988); conducted geological mapping, soil sampling, and geophysical surveys (1989); and drilled 4 holes (303 m, 1991). After Pulse Resources dropped the option, Barytex Resources Corporation cut 53 km of line (1993), and staked the Pat claims (1994), which ~~expired~~ since.

lapsed

GEOLOGY AND MINERALIZATION

A trench exposes a 45 cm thick massive sulphide bed on the south shore of Thompson Creek. The sulphide bed consists of mainly galena, sphalerite and quartz, with local chalcopyrite and bornite. Mineralization thickens, and is open to the east, and is hosted in dark grey to black phyllite to carbonaceous phyllite of Earn Group. Sulphide-bearing quartz veins up to 1 m thick cross-cut carbonaceous phyllites to the south of the deposit, along the eastern shore of Frances Lake. One vein runs

Plate 1: NB showing

An examination of drill core from Pamicon's 1991 exploration program revealed the existence of a previously unreported felsic volcanic unit. SW-NE-oriented cross-sections show the felsic volcanic unit consistently underlying the mineralization.

STRUCTURAL GEOLOGY

Easterly to east-northeasterly-directed thrusting brings the mineralized sequence closer to surface towards the east. The variable thickness of low-grade to barren phyllite between the quartz-eye felsic volcanic unit and the mineralization is interpreted as the result of folding along an approximately EW-axis. This interpretation implies repetition of the mineralization at greater depth.

Figures 3 + 4

Three foliations are observed in outcrop, suggesting that three phases of deformation affected the deposit. The earliest phase of deformation produced a moderately developed penetrative foliation (S_1) that is folded along NS-trending axes, crenulated, and kink-folded. The second phase of deformation produced ~~NS~~ trending folds that affect the first phase foliation and bedding, and a very well developed penetrative foliation (S_2) that is crenulated. The third phase of deformation produced folding of S_0 , S_1 , and S_2 along NW-trending axes, ENE-directed thrusting, and a poorly developed spaced cleavage.

Plate 2: folded foliation

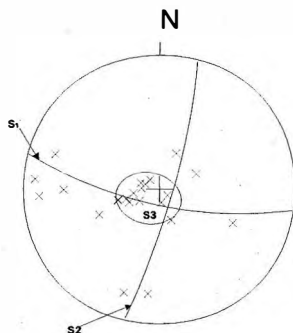
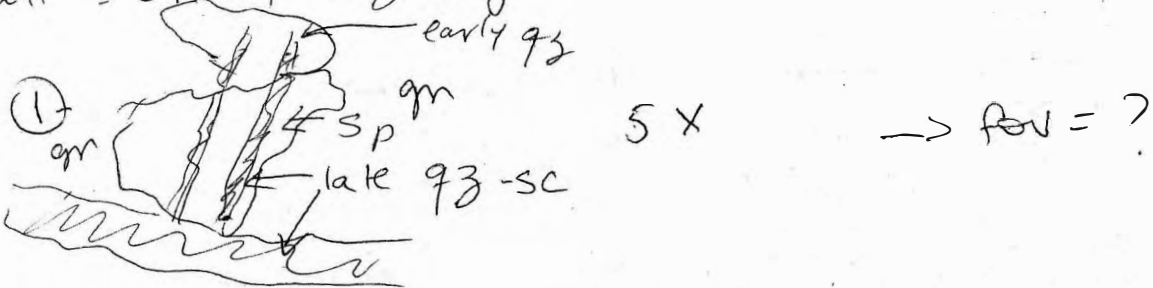


Figure 5. Stereoplot of poles to foliation planes, showing three populations.

Ore Petrography

Plates

Matt - Ore petrography

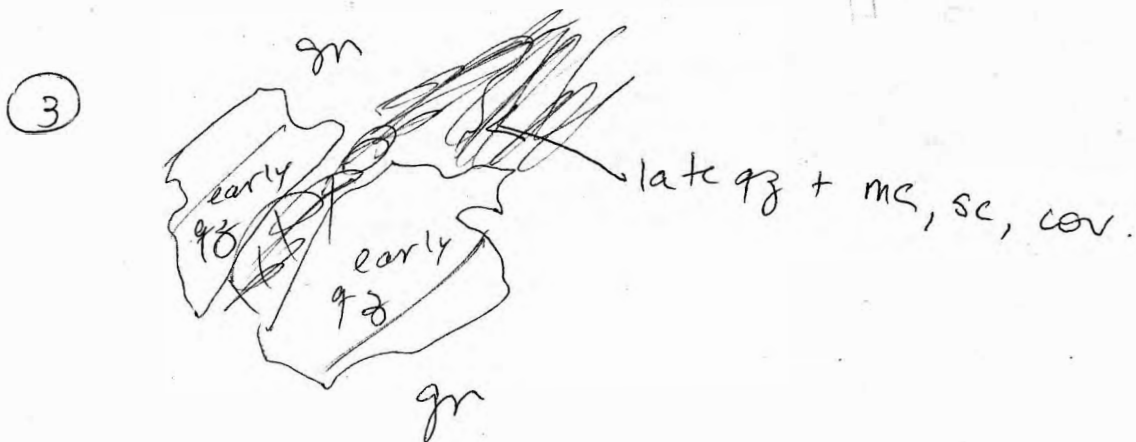


② sp → qz-cp → blue, ~~stannite~~ ~~azurite~~ ? (Cu₉S₅)
 covellite ;

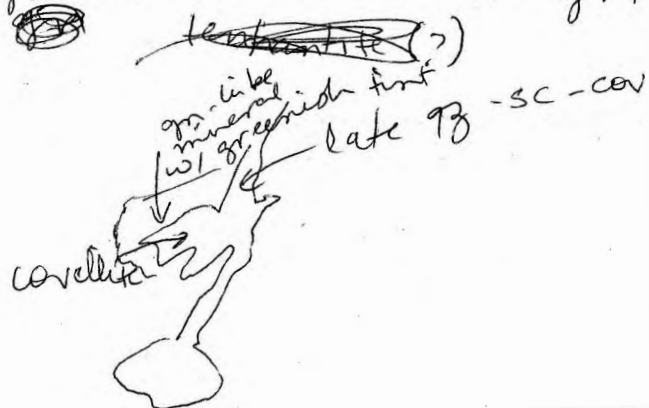
①
 ②
 blue mineral ~~st~~ photochromic → 1+ blue
 intensely

→ ③ qz-sc

∴ qz → sp → qz-cp, py ~~stannite~~ → ~~azurite~~, gn → qz-sc-
 mc-cov.



④ greenish-tint mineral in gn, euhedral to subhedral



FINDINGS AND DEPOSIT MODEL

The previously unreported felsic volcanic unit that underlie the Matt Berry deposit may represent a new metallogenic district in western Selwyn Basin. The proximity to this volcanic unit, unusually high copper grades, and small tonnage suggests that Matt Berry represents a hybrid deposit type that shares characteristics with SEDEX- and with VMS-type mineralization. The Wolverine deposit in Yukon-Tanana Terrane is another hybrid SEDEX-VMS deposit (Piercey, pers. comm.). The volcanic underlying the Matt Berry deposit extends northwesterly for at least 30 km, and is exposed in Cominco's Quest and Fin SEDEX prospects.

Proposed Pb-Pb analyses of ²⁰⁶Pb/²³⁸U dates demonstrate if a genetic link exists between MB + qz-cyl perp.

Simpson Tower

Recessive, medium grey limestone, shale, and calcareous shale correlated with McEvoy Platform form sparse outcrops in the most densely vegetated and lowest areas of Simpson Tower. The contact between McEvoy crinoidal limestones and overlying dark grey chert-pebble-conglomerate is exposed at Maple Creek. Siliclastic rocks forming the most extensive outcrops above tree-line show intense hornfels and calc-silicate alteration, and are folded along axes with seemingly random orientations and ^{shallow plunges} fold hinges. Fold hinges are defined by segregation of quartzose, calc-silicate, and biotite layers. Folds are interpreted as resulting from the intrusion of a large magmatic body at depth. Two ^{granitic} stocks are exposed in the central portion of Simpson Tower. Local sulphide mineralization (e.g., May occurrence MINFILE # 105H 019) includes py, po, and cp in intensely calc-silicate altered rocks. Rare calcite-quartz veins reach up to 70 cm width, and are cross-cut by chalcedony stringers. Several samples of vein, hornfels, and skarn were collected for ICP-MS analyses.

Fig 6 - ^{plate} Simpson - geo

Nipple Mountain

A thick, intensely jointed, coarsely laminated, white quartz-arenite forms a resistant cliff at the centre of Nipple Mountain. The outcrop area forms an anticline along a roughly NS-trending axis. To the south, quartz-arenite is overlain by recessive, medium grey limestone. The stratigraphic position of the quartz-arenite with respect to dark phyllites (probably Earn Group) hosting the Matt Berry deposit is uncertain. The current interpretation (Gordey, 2000) is that rocks of Nipple Mountain are part of McEvoy Platform, and underlie Earn Group. Alternatively, if the arenite overlies typical Earn Group rocks, it may represent equivalent lithology to the Keno Hill Quartzite. Limestone samples were collected for conodont dating, which could resolve this problem.

Petrography

Cenozoic Basalts

Outcrops of mafic rocks in the southeastern part of the SMA core and study areas were interpreted by Gordey (2000) as a klippe of Slide Mountain Terrane. Field observations show that the rocks are undeformed, allochthonous basalt, likely of Cenozoic age. Similar rocks are exposed along the Robert Campbell Highway, by the Tuchtua Road Camp. Basalt samples were collected for petrographic studies and possibly for geochemical (trace element) analyses.

Petrography

Study Area - Geology and Mineralization

Maxi sedex prospect

LOCATION AND ACCESS

Maxi showing is located on a tributary of Anderson Creek, approximately 2.5 km southeast of a lake where Utah Mines' exploration camp still stands. Access is by float plane or helicopter to Maxi Lake. The showing is in a densely vegetated area, where helicopter access may be difficult.

(Plate)

WORK HISTORY

~~Fig 7~~

Fig 7

Maxi and Midi claims were staked in 1977 by Welcome North Mining Limited. Welcome North performed geological mapping, geochemical sampling, geophysical surveys (magnetics and EM), and trenching. Later in 1977, Vestor Exploration Limited and Pacific Cassiar Exploration Limited staked claim blocks surrounding the original Maxi claims. Between 1978 and 1979 Utah Mines Ltd. drilled a total of 2147 m in 15 diamond drill holes, and conducted geological mapping, geochemical and geophysical (magnetics, IP, and EM) surveys, and trenching. Utah Mines dropped the option in 1980. Currently there are no active claims in the area.

GEOLOGY AND MINERALIZATION

Exhalative pyrite, pyrrhotite, sphalerite and minor galena mineralization occurs along a steep creek canyon in interbedded black shale and black limestone. Rocks in the canyon dip steeply to the north. Pelitic rocks have a very well developed phyllitic foliation that is sub-parallel to bedding, and axial planar to second phase intrafolial folds. Foliaform pyrite and chalcopyrite is common in quartz-rich domains within black shales, and less common in gray shales and limestone. Quartz-carbonate veins contain pyrite, pyrrhotite, sphalerite, and galena. The sedimentary rocks are underlain by a fine- to medium-grained intrusion of bt-qz-monzonite composition, which is likely part of the Mt. Billings Batholith. Two Pb-Pb analyses of galena from the Maxi prospect were used to constrain the "Shale Curve" of Godwin and Sinclair (1982) and yielded a Silurian age.

X-sec ??
An initial examination of the core drilled by Utah Mines, and stored in the old exploration camp showed that core logging and sampling were inappropriate. Many mineralized intervals remain unsampled in the core boxes. Diamond drill hole XC-6 alone contains over 50 m of disseminated sulphide mineralization at different concentrations.

Petrography FINDINGS

The Maxi prospect is the most significant mineral occurrence in the study area. Wide intervals of unsampled, mineralized core in the old camp suggest that **the Maxi prospect may constitute an ore deposit.** ~~No records exist of~~ locations of 1979 drill holes are uncertain, + require further research

Fluke skarn prospect *metasomatic*

Blue-gray weathering, recrystallized limestone beds up to 15 m thick have skarn alteration adjacent to light tan weathering, coarse-grained dikes of biotite-granodioritic composition. Skarn minerals include garnet, diopside, magnetite, ^{carbonate} pyrite, pyrrhotite, and minor sphalerite. Limestone constitutes a minor lithology within a thick sequence of strongly hornfelsed, predominantly medium- to dark-gray shales and siltstones. The siliciclastic rocks have a well developed, SW-dipping second phase foliation that is generally sub-parallel to bedding, and a poorly developed, folded first phase foliation. Gordey (2000) interpreted the pelitic rocks as Yusezyu Formation (Hyland Group). Alternatively, these rocks may be strongly altered Earn Group.

Figure 8

Mineral showings adjacent to the study area

Anderson Creek Skarn

Garnet (grossular), diopside, wollastonite, and possibly minor scheelite form brown, white, and green bands within 2-5 m of monzonitic dikes and stocks. A series of fine- to medium-grained dikes cross-cuts and metamorphoses the sedimentary rocks. Skarn is developed in a thick, purple-gray weathering, silty-banded limestone that resembles Rabbitkettle Formation, and ~~this~~ is underlain (not clear if structurally or stratigraphically) by strongly hornfelsed siliciclastic rocks. The sequence dips steeply to the southwest, and is folded isoclinally along northeast-trending axes. Fold vergence is to NW. A southwesterly- to westerly-dipping foliation is poorly developed as a phyllitic cleavage in narrow pelitic bands, and as spaced cleavage in limestone and siliciclastic hornfels. Sulphides are restricted to narrow, rusty, silicified zones up to 25 cm wide. Sulphide-rich zones cross-cut bedding, and ~~have only been~~ *were* observed within 1 m of dikes or

intrusive margins. ~~Within the intrusion,~~ ^{sample intrusion} small enclaves of siliciclastic rock are pervasively altered to a gneissic composition, but retain original bedding and foliation orientation. Several samples were collected for ICP-MS and W-assay analyses.

Petrography

Scull/Canyon (Conglomerate Road)

Strongly oxidized black shales and interbedded, medium- to dark-gray shale and limestone form a lobe over Billings Batholith. Exhalative pyrite and pyrrhotite in graphitic shale common in core and in outcrop.

Preliminary Recommendations

- Perform radiometric analyses (1 U-Pb and 4 Pb-Pb) to determine the absolute age of volcanism, and establish the relationship between volcanism and mineralization in the Matt Berry deposit;
- ~~Divulge the character and extent of the Frances Lake volcanic belt at Geoscience Forum, in support of the mineral industry,~~
- Properly split and sample core from the Maxi prospect, to determine if it constitutes ore ^{or deposit};
- ~~Conduct~~ Conduct a detailed Mineral Resource Assessment of the SMA core and study areas, in support of the mineral industry, and once all analytical data is ready and compiled;
- Due to confidentiality of the land claim negotiations, government economic geologists Mike Burke, Grant Abbott, and Craig Hart, and retired Cominco geologist Bruce Mawer would be ideal participants in the mineral assessment panel.

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→ Green and Roddick (1960),
→ Roots (1953),

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- Danielle
- Scotty
- Mike Burke
- Jo Anne (land claims)
- Monique + Shirley

SIMPSON TOWER

AF-74A

plag, qz
wkly foliated
chilled margin?

AF-79A

Intrusion md-coarse grd → granite

- bt ~ 7%
- qz ~ 40
- kspen ~ 4%
- fspar ~ 12

20

ductile fold axis 2.5 x TL, XP



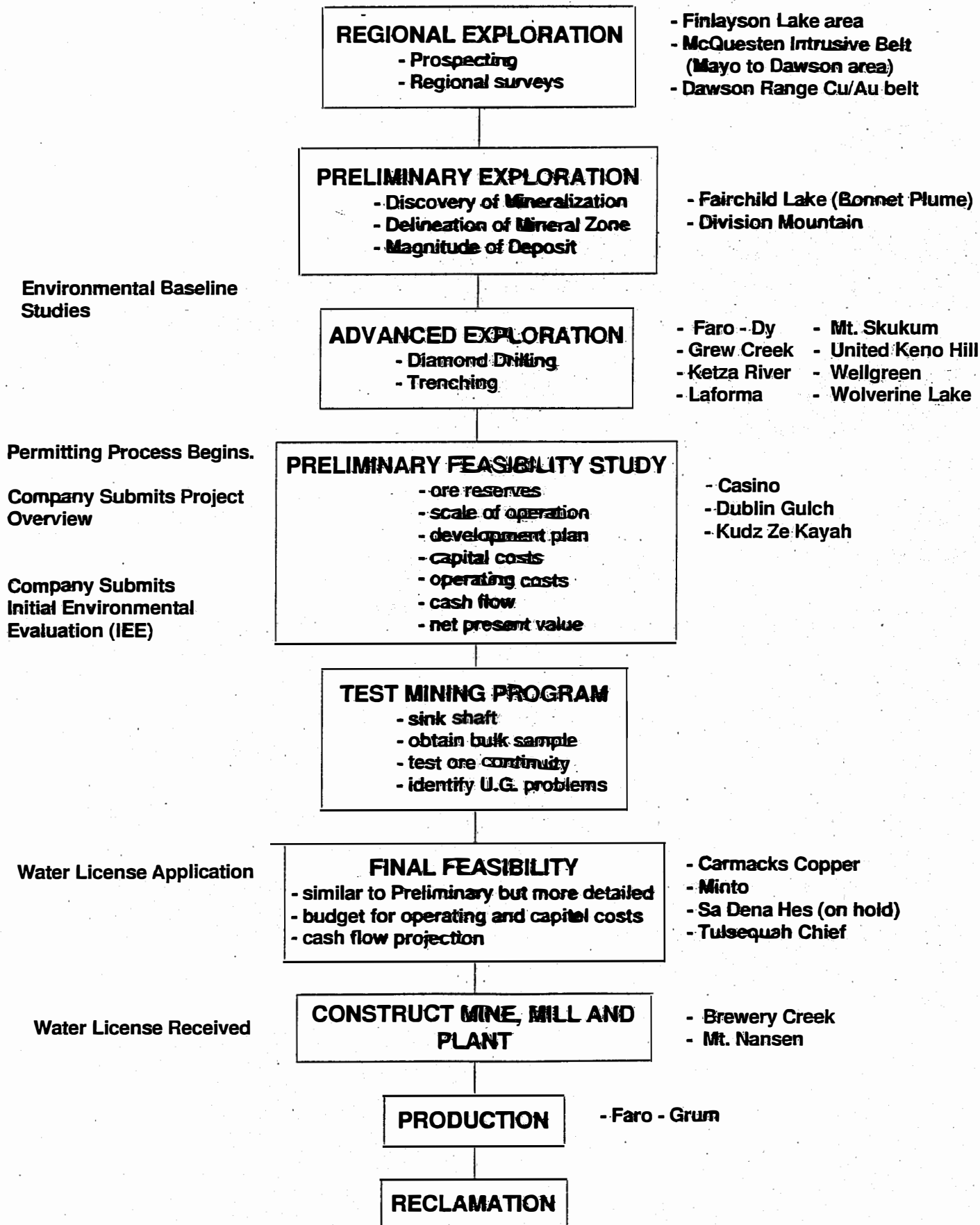
AF-69 calcareous sst

Dike

- accessory sphene
- qz > ~~30~~ 30
- plag ~ 10%
- kspen = 250%

qz - rich granitoid
granite

STAGES OF MINING



(13)

qz-eye schist 2.5 X, XP, TL
angular qz → volc.

(14)

SAAB 2.5 X, XP, TL

(15)

2 foliat : 2.5 X, XP, TL

(16)

qz + mica (sc) replacing plag (?) 2.5 X
(seriatizat) XP, TL

(17)

qz, py, cp eyes 2.5 X TL, XP

(18)

py along qz-rich segregat 2.5

(19)

dissolut of qz-eye 2.5

NIPPLESS

Subrounded

qz - arenite ^{to angular}, locally well rounded

(21) well rounded qz - arenite
2.5x, TL, XP

(22) SAAB

(23) SAAB

GABBRO

(24) undeformed gabbro 2.5x, TL, XP

MAXI

(25) sx along fold hinges 2.5, PPL, TL

(26) ? XG6 @ 117.5 2.5x, XP, TL

(27) XG6 @ 4.5m ~~2.5x~~ 5x, PPL, TL

Flute

(28) 10x, PPL, TL

skarn bands w/ opaque s(sx), ht. stain (yellow)

qz, sc, px

(29) gt (hi relief), sx, cb, chl 2.5x PPL, TL

Nordenskiold

Ecoregion: Yukon-Plateau-Central

Status: Temporary withdrawal from staking since 1997
PC order ~~should~~ expire August 2000

First Nation: Little Salmon/Carmacks

Process: Land Claims SMA

Mineral Interest: 6 MINFILE records adjacent to the boundaries, ^{central} ~~many~~ more within 10 km

Size: 77 km²

Access: Entirely along North Klondike Hwy.
Several minor roads and trails west of the highway

Previous geological work: 1:250,000 scale mapping by Tempelman-Kluit (1984)

Proposed work: 10 days of field work;
1:20,000 scale mapping and prospecting in the HPA and immediately adjacent areas

Purpose of fieldwork: To refine mapping of coal-bearing units;
To characterize the geological environment and metallogeny of skarn showings.

Products: Final report, 1:20,000 ^{identify access} compilation map and cross-sections, and extended MINFILE descriptions – November, 2000. ^{considerable}

Assessment workshop: Fall 2000

ANDERSON CK

Intrusives

moderately foliated

→ granodiorite
fine to med gr

~~30~~
b.t. ~ 25%
dike plag 35
qz 25
Kspars 15

(30) intrusive XP, TL, 2.5 Y

intrusive: coarse-grained granite
(b.t. < 1%)

(5) gm (most of background, qz (dg) +

(6) ??? prismatic, greenish tint

↳ pleochroic

yellowish

greenish

~~stannite?~~

po

20x

octagonal sections

(7) qz, cp, gm, sp 20x

(8) qz, py, cp, gm 20x

(9) cp interstitial to sp 20x

(10) covellite 20x

(11) Same as # 1, 3 5x

(12) qz + ~~po~~^{eb?} 10x, T.L., XP