

**Preliminary Report on Fieldwork
Performed in the
Frances Lake SMA Area**

November, 2000

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Draft

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Executive Summary

Yukon Government, Liard First Nations, and Ross River Dena Council agreed to create a 1500.94 km² Special Management Area designated as Natural Environment Park over Frances Lake. A 1710.8 km² Study Area surrounding the Core Area was proposed, but its current status is uncertain. The Frances Lake SMA covers an area of significant Pb-Zn-Cu mineralization, and encloses quartz claims over the Matt Berry deposit, owned by Barytex International.

Field work conducted in Summer 2000 by YTG Mineral Resources Branch showed that:

- Mineralization in the Matt Berry deposit is related to a previously unreported volcanic belt that extends over 30 km to the northwest;
- Matt Berry deposit has characteristics of VMS-style deposits, such as those in the Finlayson Lake Belt;
- The style of deformation interpreted for the Matt Berry deposit may represent repetition of the mineralization at depth;
- Maxi prospect (in the proposed Study Area) may constitute a deposit;
- Further analytical work is needed to characterize the mineral potential of the volcanic belt and of Maxi prospect.

Introduction

This report summarizes the current land status of Frances Lake SMA, and results of geological fieldwork performed in the proposed Frances Lake Special Management Area during the Summer, 2000. The last section provides preliminary recommendations regarding further compilation, analytical work, and mineral resources assessment. This report will be updated when analytical data is available.

LAND STATUS

Yukon Government, Liard First Nations, and Ross River Dena Council agreed to create a Special Management Area designated as a Natural Environment Park over Frances Lake (Figure 1). The Special Management Core Area consists of 1500.94 km² that are to be withdrawn from disposition upon finalization of the Liard First Nation and Ross River Dena Council Final Agreements. Interim protection may be installed previous to finalization of the Final Agreements. The core area is surrounded by a 1710.8 km² study area of uncertain level of protection. As of October, 2000, the Liard Land Claims negotiator is considering extinguishing the study area. It is unclear whether this means that only the core area will be considered for the SMA, or if the current study area will be incorporated into a larger core area.

A map notation of a proposed Territorial Park Reserve including both arms of Frances Lake, Mt. Hunt, Simpson Tower, and Lackie Lake was created in December, 1972. The map notation enclosed quartz claims over the Matt Berry deposit and several other quartz claim blocks that expired since. The claims owned by Barytex Resources over the Matt Berry deposit are the only active mineral claims in the area, as of October, 2000. Cominco's Fin property is adjacent to the northwest corner of the Study area.

ACCESS CONSIDERATIONS

The SMA core area is bounded by the Robert Campbell Highway to the west, and the study area is bounded by the Nahanni Range Road to the south. The SMA also includes the Upper Canyon (105H-03-001) flooding notation, identified for future hydroelectric development.

2000 FIELD WORK

Fieldwork towards a mineral resource assessment of Frances Lake SMA concentrated in areas of most significant mineral occurrences within and adjacent to the core and study areas: Matt Berry deposit, Simpson Tower, Maxi showing, Fluke skarn, and Anderson Creek skarn.

Geological work involved mapping at 1:10,000 (Matt Berry), 1:20,000 (Simpson Tower contact aureole), 1:50,000 (Anderson Creek and Maxi areas) scales, field checks at 1:250,000 scale (Nipple Mountain and Cenozoic Basalts), and collection of samples for geochemical analyses (ICP-MS, W-assay, research-grade trace elements); radiometric analyses (Pb-Pb and U-Pb); conodont dating; and petrographic analyses.

Regional Geology and mineralization of Frances Lake area

Frances Lake map sheet (105H) was mapped at 1:250,000 scale by Green and others (1966), and Blusson (1965). The maps are antiquated, and lack observations on the nature of geological contacts. Recent interpretations by Gordey and Makepeace (2000) (Figure 2) are based on Blusson's map, which has insufficient or faulty observations.

The Frances Lake SMA is located at the western edge of Selwyn Basin. Gordey (1992) defines Selwyn Basin as a topographic low that existed from late Precambrian through Middle Devonian time, bounded to the west by Pelly-Cassiar carbonate Platform, and to the east by Mackenzie

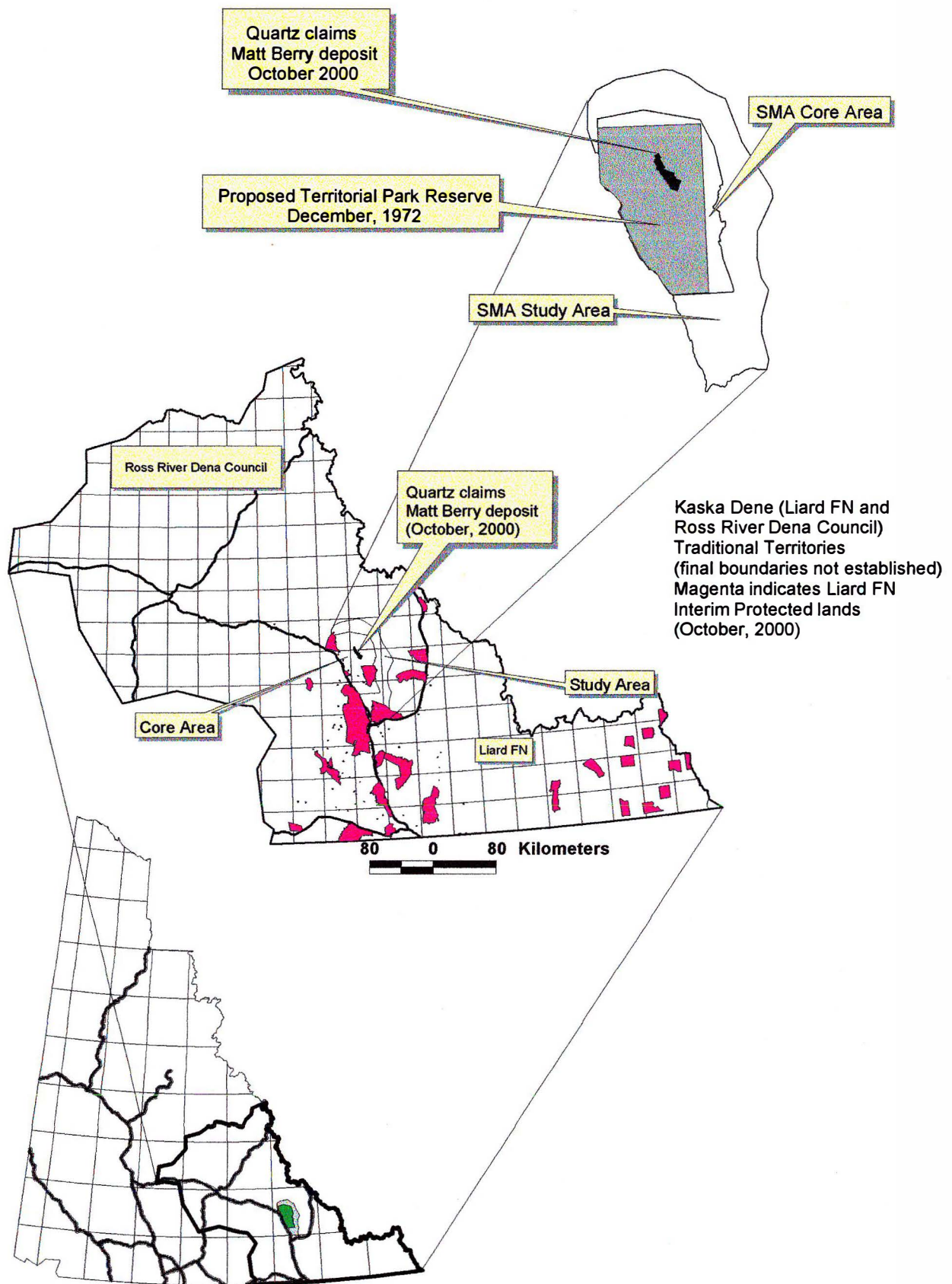


Figure 1. Location map showing Frances Lake SMA (Core and Study Areas and Kaska Dena Traditional Territories. Insets show currently interim protected lands, active quartz claims, SMA Core and Study Areas, and map notation of a Proposed Territorial Park Reserve (December, 1972).

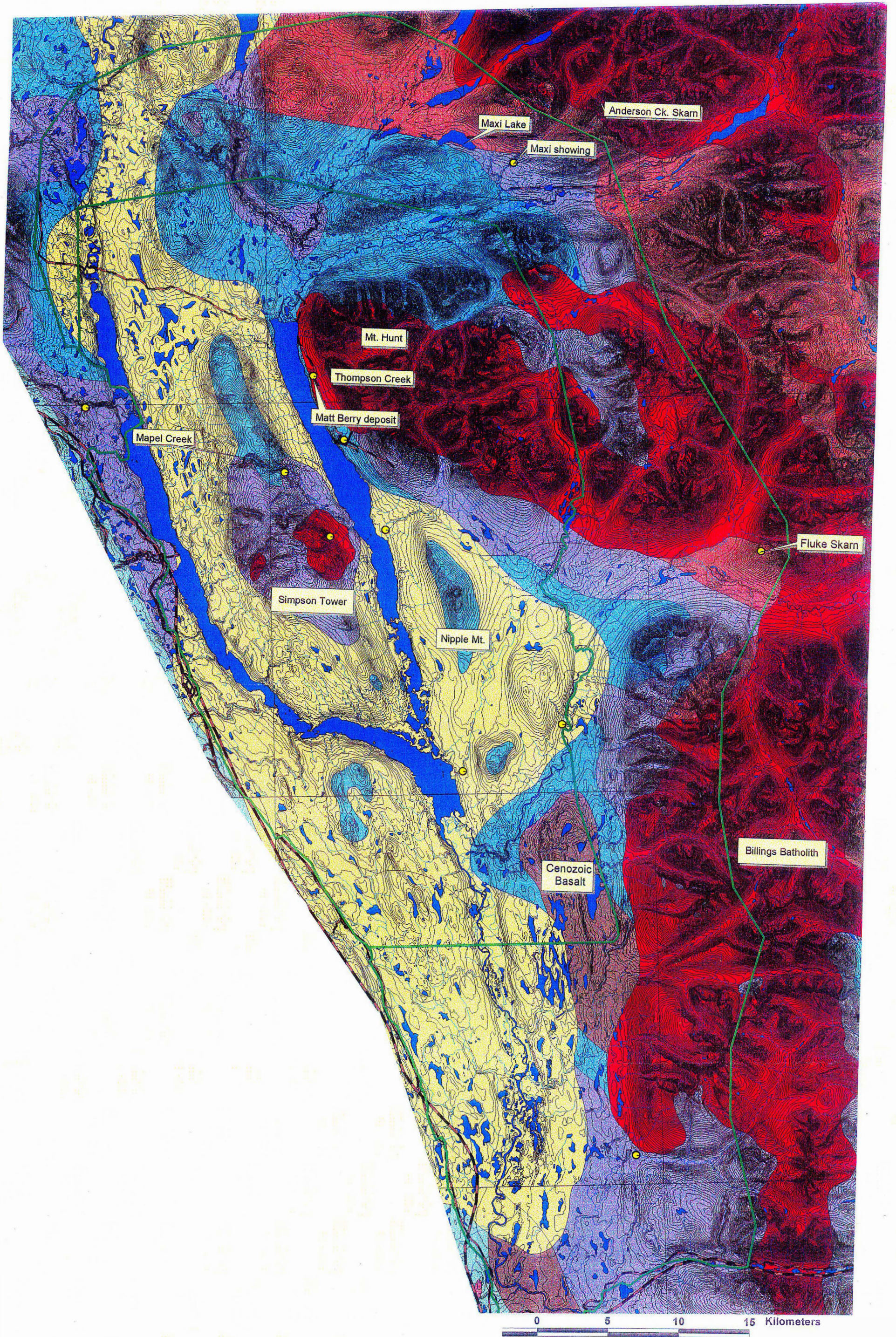


Figure 2. Regional geology (from Gordey and Makepeace, 2000), outline of Frances Lake Core and Study Areas, and features discussed in the text. Scale 1:250 000.

Platform. More loosely, Selwyn Basin refers to the geographic area where siliciclastic and carbonate deposition took place under different tectonic environments. It includes Earn Group and Triassic syn-orogenic clastic sediments.

Throughout its existence, three main extensional events affected Selwyn Basin, producing down-dropped blocks and second order basins where black shale, chert, and black limestone commonly deposited. Late Proterozoic to Early Cambrian extension resulted in shedding of a thick (>2000 m) turbidite sequence (Yusezyu Formation) represented mainly by grits and limestone, but containing abundant shale beds. Cambro-Ordovician extension is well documented in the Anvil district, where sub-basins contain the Faro, Grum, Vangorda, and Swim deposits. A regional, sub-Rabbitkettle Formation unconformity suggests that extension was widespread. Ordovician-Silurian extension lead to SEDEX mineralization in the Howards Pass area (Anniv and XY deposits). In Frances Lake map sheet, Ordovician to Silurian extension produced the Maxi prospect.

In Middle Devonian time, the source of clastic sediments changed drastically from westerly- (continent) derived to northerly- and northwesterly- derived, possibly in response to Ellesmerian orogeny. Earn Group turbidites flooded Selwyn Basin, Pelly-Cassiar Platform, and western Mackenzie Platform. Extension of Selwyn Basin during deposition of Earn Group sediments gave rise to SEDEX deposits in the Mac Pass area (Tom and Jason), and to the Matt Berry deposit in Frances Lake map sheet.

Siluro-Devonian rocks in the Frances Lake area have a different, shallower-water character from Road River Group rocks throughout the rest 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, and are correlated with Askin Group of Cassiar Platform.

Mafic and felsic volcanism occurred in Selwyn Basin during the deposition of Earn Group turbidites. The Marg VMS deposit and adjacent areas constitute the best documented volcanic district in Selwyn Basin, and is hosted in a thin felsic volcanic unit within a thicker, mafic sequence. The volcanic rocks are overlain by Keno Hill Quartzite. The entire sequence is intensely deformed and metamorphosed in the Tombstone strain zone (hanging-wall of Tombstone Thrust). Frances Lake SMA contains a Devono-Mississippian volcanic belt that is described in this report.

Mesozoic deformation started in Permo-Triassic time, and ended before emplacement of mid-Cretaceous granitic batholiths and plutons. Two, and locally three phases of penetrative regional deformation affected Selwyn Basin rocks in the Frances Lake map sheet. In mid-Cretaceous time, Billings Batholith and smaller granitic plutons and stocks of Tay River plutonic suite intruded Selwyn Basin strata, and produced large contact metamorphic aureoles and local skarn and vein prospects.

Cenozoic strike-slip movement along Tintina Fault juxtaposed metamorphic rocks of Yukon-Tanana Terrane (Finlayson Lake district) to those of Selwyn Basin. Cenozoic magmatism produced basaltic rocks that crop out in the southern area of Frances Lake SMA.

Core Area – Geology and Mineralization

Matt Berry deposit

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. No copper grades are quoted in the reserves.

LOCATION AND ACCESS

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

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 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 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 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 lapsed since.

GEOLOGY AND MINERALIZATION

A trench exposes a 45 cm thick massive sulphide bed on the south shore of Thompson Creek (Plate 1). 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.

An examination of drill core from Pulse Resources' 1991 exploration program revealed the existence of a previously unreported quartz-sericite-augen schist unit (Plate 2). Abundant angular quartz grains (Plate 3) and quartz and sericite replacing elongate feldspar crystals (Plate 4) suggest that the protolith was a quartz and feldspar bearing felsic volcanic rock. SW-NE-oriented cross-sections show the felsic volcanic unit consistently underlying the mineralization (Figure 3).

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 mineralization is hosted in Earn Group.

STRUCTURAL GEOLOGY

Easterly to east-northeasterly-directed thrusting brings the mineralized sequence closer to surface towards the east (Figure 3). 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, and is in line with structural observations recorded in the Matt Berry showing area (Figure 4).

Three foliations are observed in outcrop (Plate 5), 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.

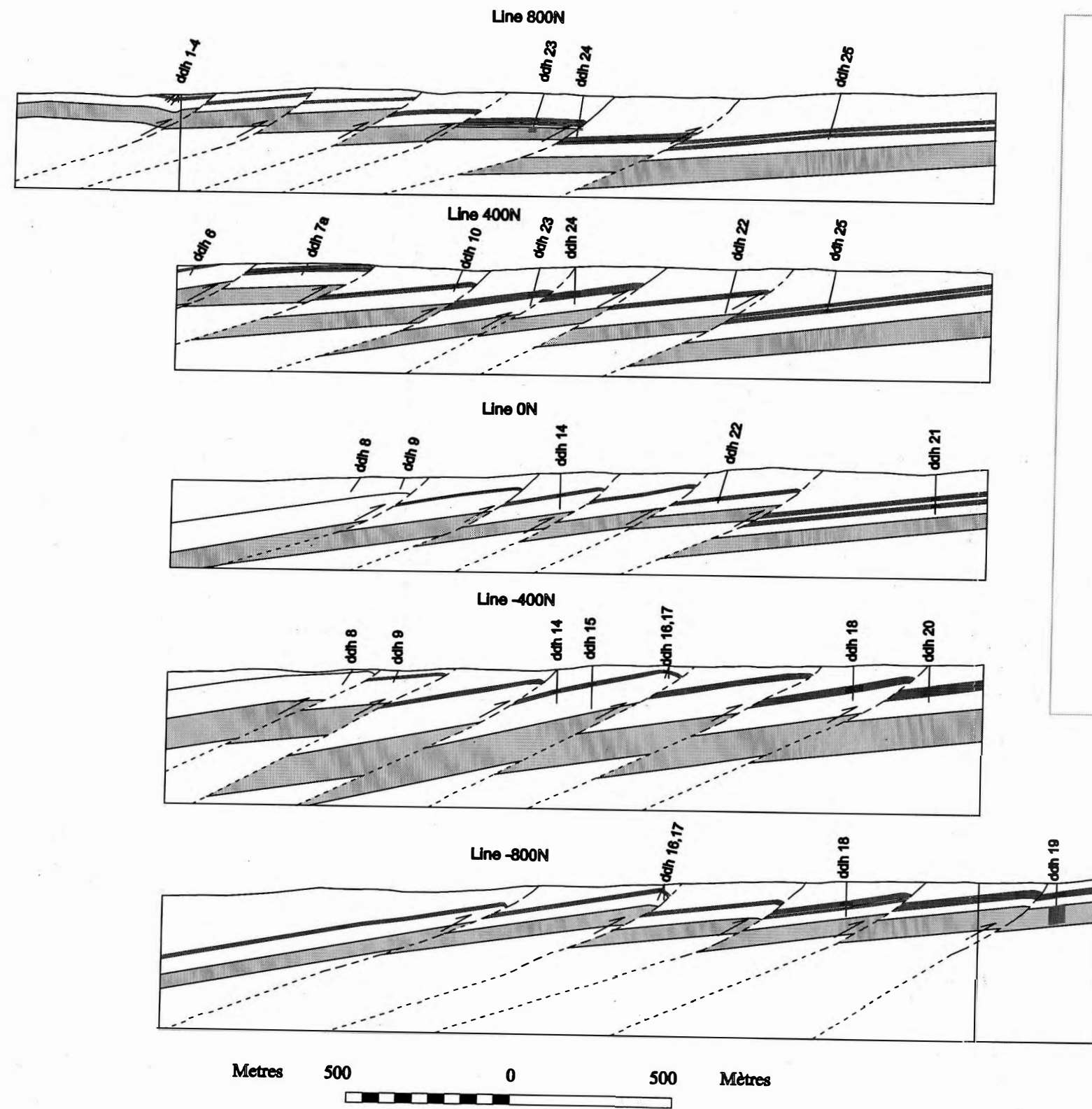
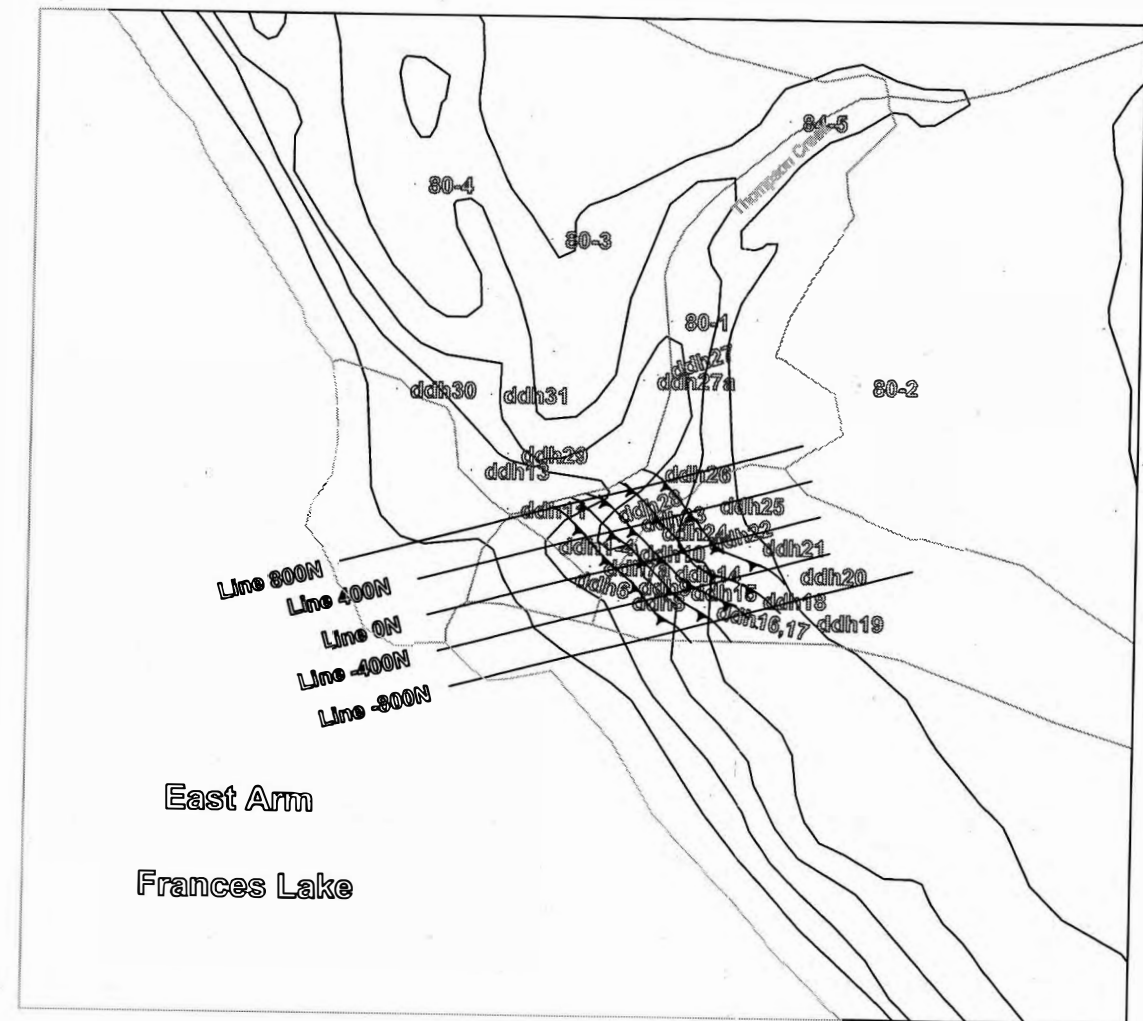





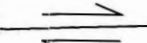

Figure 3. Cross-sections of Matt Berry deposit (looking northwest). Inset shows location of cross-section lines.



LEGEND

-  Ore horizon
-  Foliated, white sericite-quartz-eugen-echist
-  Dark grey to black, non-calcareous shale

SYMBOLS

- Fault (interpreted)..... 
- Drill hole (ore intercept)..... 

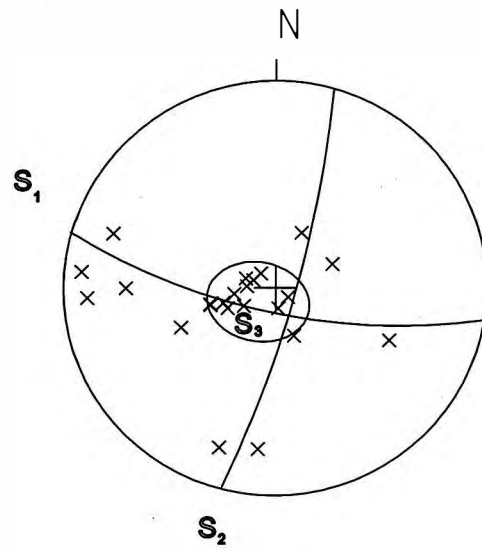


Figure 4. Stereoplot of poles to foliation planes in the Matt Berry showing, showing three populations.



Plate 1. Matt Berry showing. Galena-sphalerite-chalcopyrite mineralization exposed in a trench.

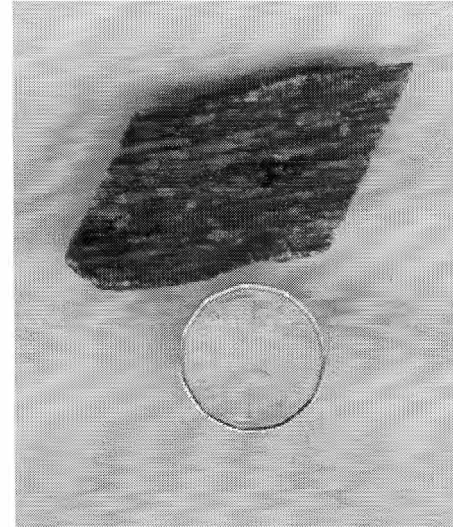


Plate 2. Strongly deformed, quartz-sericite-augen schist.

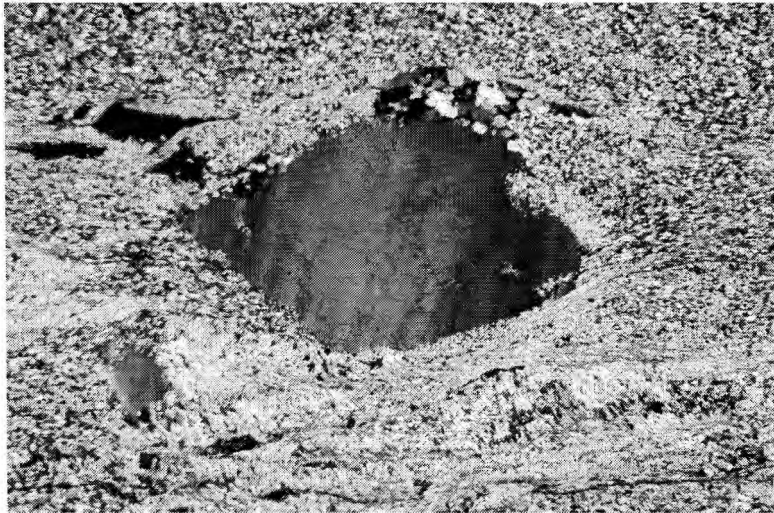


Plate 3. Angular quartz forming eye in felsic metavolcanic rock. Field of view = 7.2 mm.



Plate 4. Quartz and sericite replacing elongated feldspar grains in felsic metavolcanic unit. Field of view = 7.2 mm.

ORE PETROGRAPHY

A reflected light petrographic survey of ore from the Matt Berry showing demonstrated the copper-rich nature of the deposit. Locally, chalcopyrite makes up to 2% of the rock volume (Plate 6). Typical paragenesis in the showing is: quartz → sphalerite → quartz, chalcopyrite, pyrite → galena → covellite, marcassite, quartz, sericite. Chalcopyrite also occurs as exhalations in sphalerite. Principal gangue minerals are quartz, carbonate, and sericite. Volcanic textures were also observed in the contacts of ore and host rock (Plate 7).

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 has characteristics of SEDEX- and VMS-type mineralization. The Wolverine deposit in Yukon-Tanana Terrane is another hybrid SEDEX-VMS deposit (S. Piercey, pers. comm.). The volcanic unit underlying the Matt Berry deposit extends northwesterly for at least 30 km, and is exposed in Cominco's Quest and Fin SEDEX prospects (D. Rhodes, pers. comm.). 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 volcanism and SEDEX mineralization.

Simpson Tower

Recessive, medium grey limestone, shale, and calcareous shale correlated with McEvoy Platform form sparse outcrops in the densely vegetated low elevations of Simpson Tower (Plate 8). The contact between McEvoy crinoidal limestones and overlying dark grey chert-pebble-conglomerate is exposed at Maple Creek. Siliciclastic 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 plunge (Plate 9). 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 granite 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 oxidized, calc-silicate altered rocks (Plate 10). Rare calcite-quartz veins reach up to 70 cm width, and are cross-cut by chalcedony stringers. Figure 5 is a geological map of the Simpson Tower area. Several samples of vein, hornfels, and skarn were collected for ICP analyses (Appendix II).

Nipple Mountain

A thick, intensely jointed, coarsely laminated, white, massive subangular to subrounded 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 phylites (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 unconformably underlie Earn Group. Alternatively, if the arenite sits stratigraphically above Earn Group rocks, it may represent equivalent lithology to the Keno Hill Quartzite. Proposed conodont dating of limestone overlying the quartz-arenite could resolve this problem.

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 and petrographic observations show that the rocks are undeformed, autochthonous basalt to gabbro, likely of Cenozoic age. Similar rocks are exposed along the Robert Campbell Highway, by the Tuchitua Road Camp.



Plate 5. Outcrop along East Arm Frances Lake shore, south of Matt Berry deposit. Second phase foliation is a folded and steeply dipping widely spaced cleavage. Third phase foliation is sub-horizontal, and sub-parallel to bedding. Field of view = approximately 15 metres.

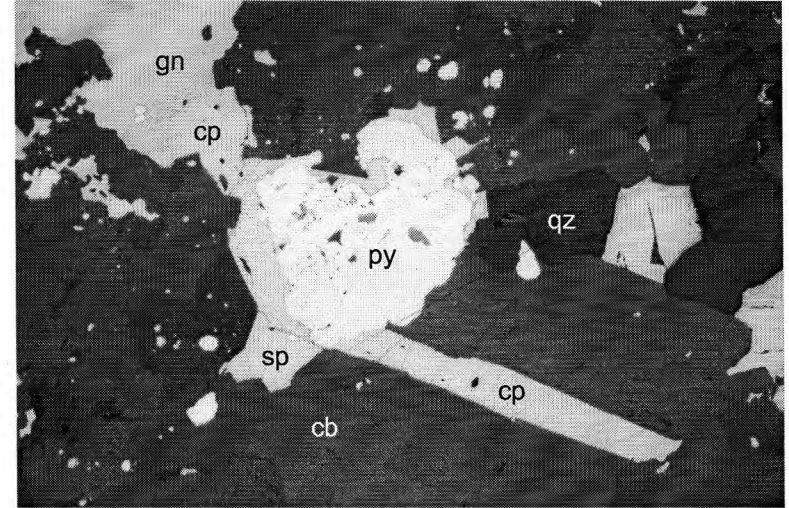


Plate 6. Large chalcopyrite crystal interstitial to pyrite, carbonate, quartz, and sphalerite. Field of view = 1.75 mm.

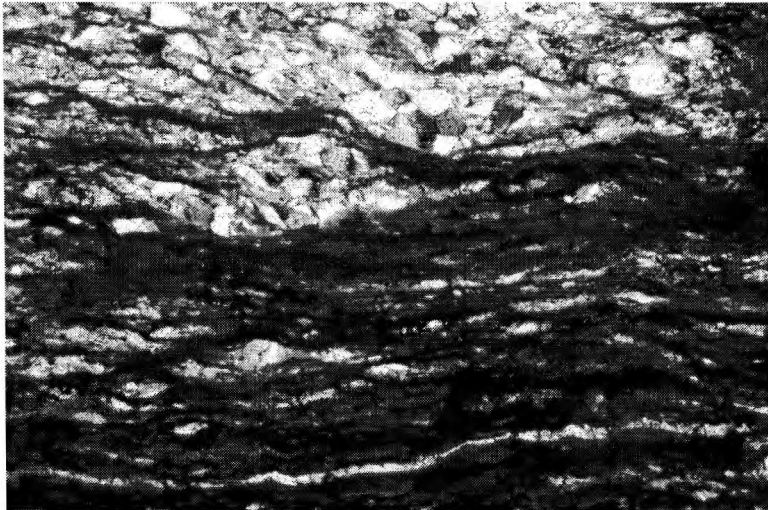


Plate 7. Angular quartz along the contacts of the Matt Berry ore zone.



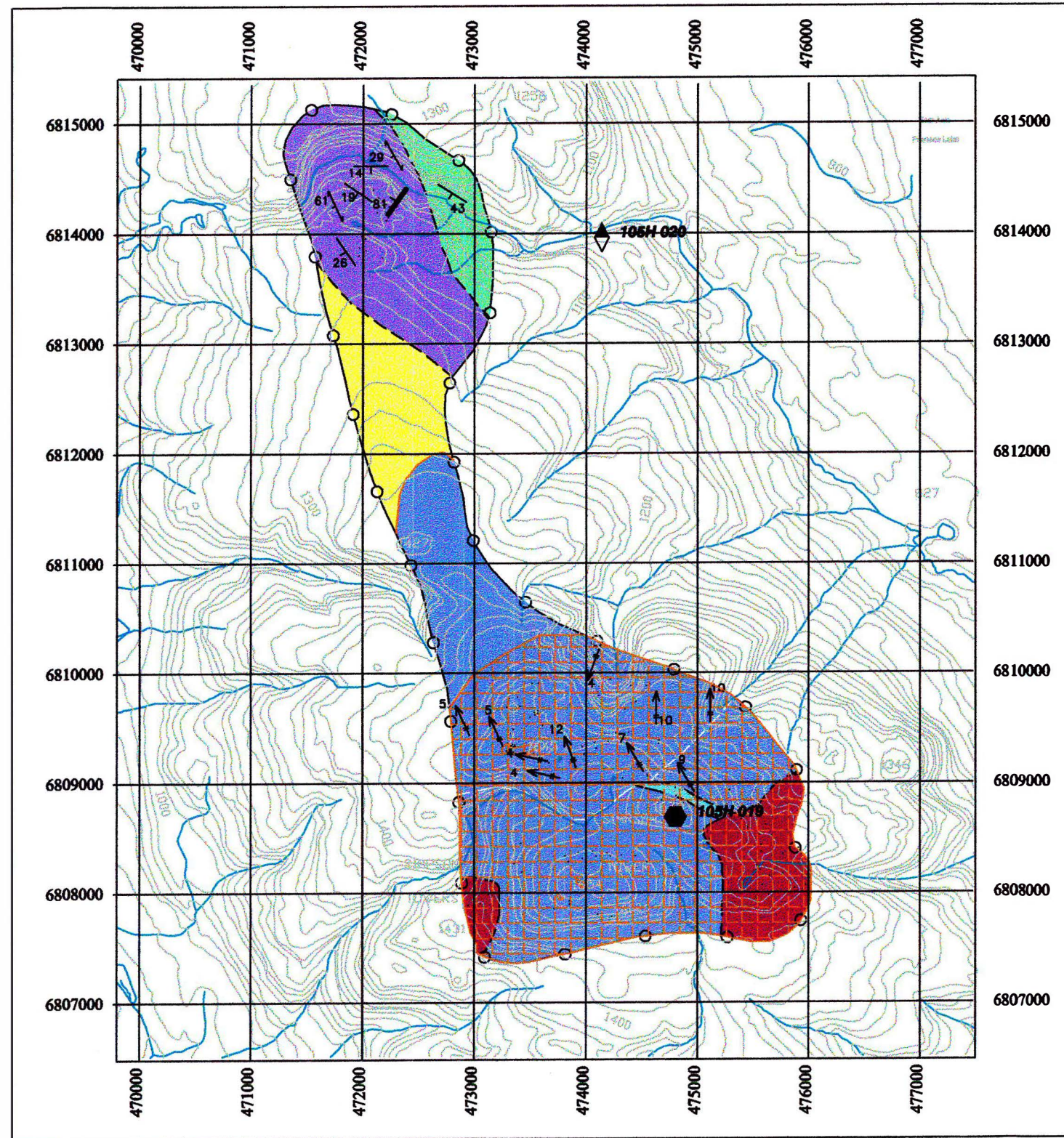
Plate 8. Simpson Tower (looking west from Matt Berry deposit). Vegetated, lower areas have sparse outcrops of McEvoy platform silty limestone; higher elevations have well exposed shale, sandstone, limestone, and chert-pebble conglomerate of Earn Group.



Plate 9. Strongly oxidized, calc-silicate altered outcrop in Simpson Tower.



Plate 10. Ductile folds in calc-silicate altered quartz-arenite (Simpson Tower).



LEGEND

QUATERNARY
 Uncorroborated alluvium, colluvium and glacial deposits

INTRUSIVE ROCKS

CRETACEOUS
Tay River plutonic suite
 Medium-grained white weathering biotite-granite

LAYERED ROCKS

MIDDLE MISSISSIPPIAN
McEvoy
 Dark to medium grey crinoidal lime mudstone and crinoidal boundstone, minor dolomite

DEVONO-MISSISSIPPIAN
Eam Group

Dark grey to black lime mudstone, minor interbedded grey shale

Undifferentiated: ductilely deformed grey shale, siltstone, calcareous shale, minor sandstone; calcareous beds and bands are commonly calc-silicate altered, and terrigenous bands are hornfelsed

Dark to medium grey, subarkose chert wackes to chert pebble conglomerate

HYDROTHERMAL ALTERATION
 Calc-silicate alteration in calcareous siliciclastic rocks and limestone; biotite-hornfels in non-calcareous, pelitic rocks; locally strong oxidation

SYMBOLS

Geological contacts (defined, approximate, assumed, covered).....

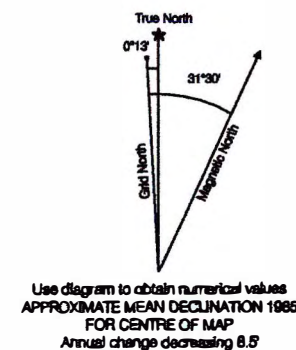
Fault (assumed, covered).....

Limit of mapping.....

Bedding.....

Foliation (first phase; second phase).....

MINERAL OCCURRENCE Yukon Minfile (1997)		
105H 018	●	MAY Skarn
105H 019	◆	MAPEL Vein



105 H/12	105 H/11	105 H/10
105 H/5	THIS MAP	105 H/7
105 H/4	105 H/3	105 H/2



Simpson Tower - Frances Lake
 YUKON TERRITORY
 SCALE 1:50 000

Miles 1 0 1 Miles

Mètres 1000 0 1000 2000 3000 Mètres

CONTOUR INTERVAL 20 METRES
 Elevations in metres above Mean Sea Level
 North American Datum 1983
 Transverse Mercator Projection

Topographic base produced by
 SURVEYS AND MAPPING BRANCH
 DEPARTMENT OF ENERGY, MINES
 AND RESOURCES
 Copyright Hay Malmby the Queen
 in Right of Canada

ONE THOUSAND METRE
 Universal Transverse Mercator Grid
 ZONE 9

Figure 5. Geological map of Simpson Tower. 1:50 000 scale.

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 and core rack still stand. Access is by float plane or helicopter to Maxi Lake. The showing is in a densely vegetated area, where helicopter access may be difficult. Figure 6 is a geological map of Maxi and Anderson Creek prospects.

WORK HISTORY

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 (Plate 11). Rocks in the canyon dip steeply to the north. Pelitic rocks have a very developed phyllitic cleavage 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 granitic intrusion, 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.

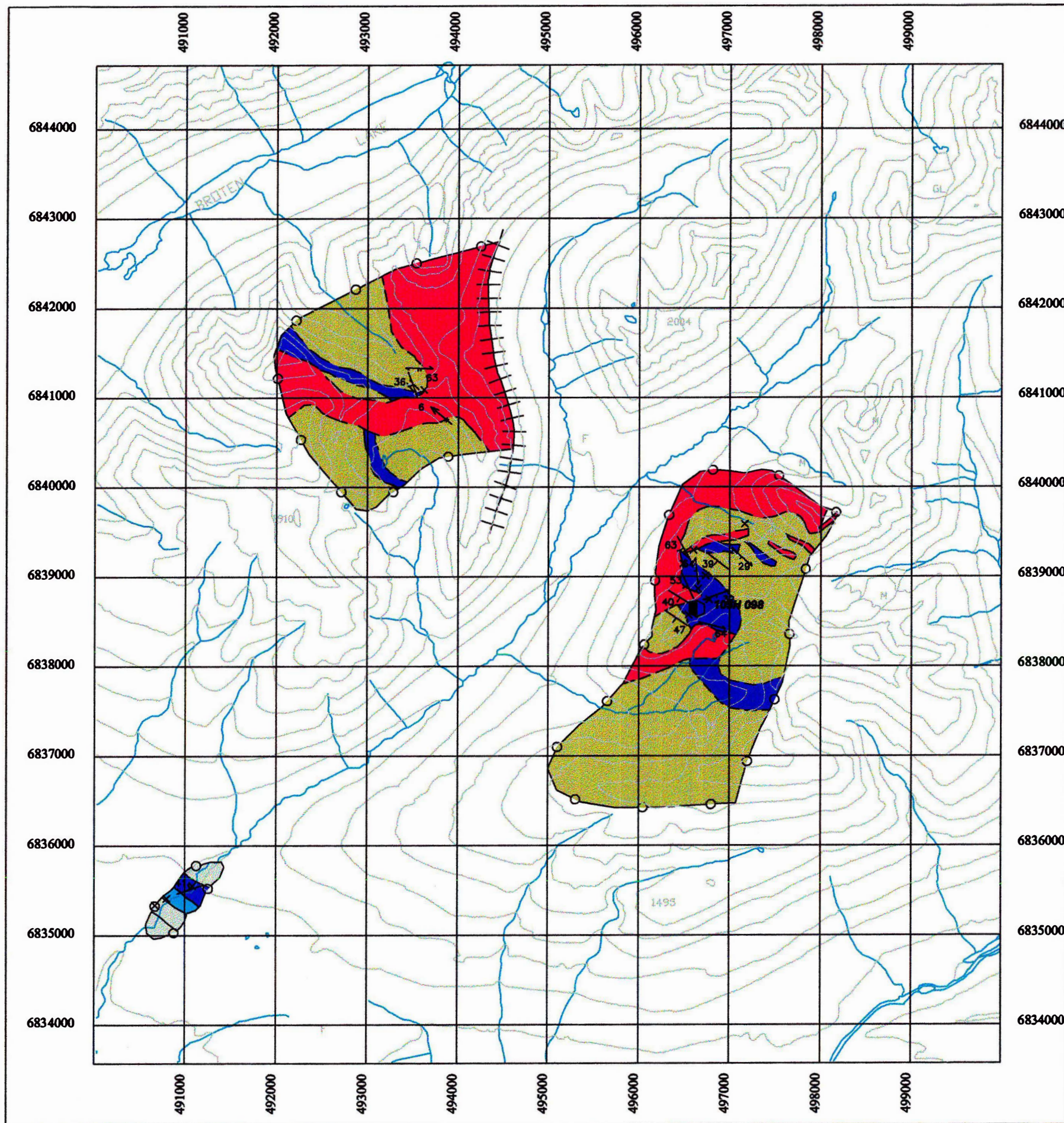
An initial examination of the core drilled by Utah Mines, and stored in the old exploration camp (Plate 12) showed that core logging and sampling were inappropriate. Many mineralized intervals remain unsampled in the core boxes. Diamond drill hole XC-6 alone contains over 50 m of disseminated sulphide mineralization at different concentrations. Four rush ICP analyses of core samples from Maxi prospect yielded Zn values between 0.03 and 0.11%.

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**. Maps of the 1979 drill hole collars were not filed for assessment, and Utah Mines no longer has that data. Further research and analyses of core samples are required in order to reconstitute the geometry and extent of the mineralization.

Fluke skarn prospect

Blue-gray weathering, recrystallized limestone beds up to 15 m thick have skarn alteration adjacent to light tan weathering, coarse-grained dikes of granitic composition (Plates 13, 14). Macroscopic and microscopic alteration minerals include garnet, diopside, magnetite, 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 and Makepeace (2000) interpreted the pelitic rocks as Yusezyu Formation (Hyland Group). Alternatively, these rocks may be strongly altered Earn Group. Figure 7 is a geological map of the Fluke prospect.



LEGEND

INTRUSIVE ROCKS

CRETACEOUS

Tay River plutonic suite

Medium-grained biotite-quartz-monzonite and biotite-granite (batholith and dikes)

LAYERED ROCKS

DEVONO-MISSISSIPPIAN

Road River Group

Dark to medium grey shale, minor finely bedded grey silty lime mudstone and calcareous shale

Medium to dark grey, finely bedded lime mudstone

Finely interbedded medium to dark grey shale, and dark grey to black lime mudstone

LATE PROTEROZOIC TO EARLY CAMBRIAN

Hyland Gp (?)

Medium grey-brown shale, siltstone, minor fine-grained subarkose wacke

Grey weathering white limestone

SYMBOLS

Geological contacts (defined, approximate, assumed, covered).....

Fault (assumed, covered).....

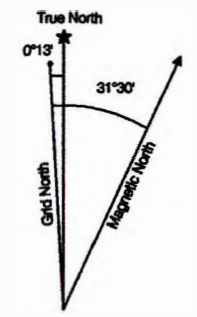
Limit of mapping.....

Bedding.....

Foliation (first phase; second phase).....

Topographic base produced by
SURVEYS AND MAPPING BRANCH
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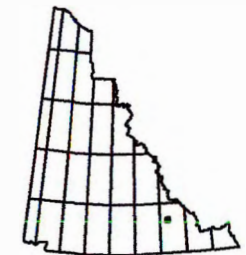
ONE THOUSAND METRE
Universal Transverse Mercator Grid
ZONE 9



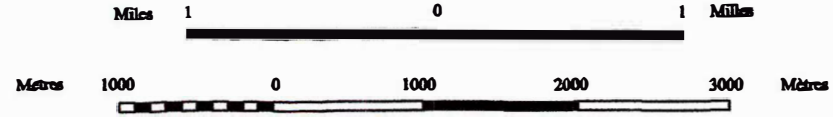
Use diagram to obtain numerical values
APPROXIMATE MEAN DECLINATION 1985
FOR CENTRE OF MAP
Annual change decreasing 8.5'

MINERAL OCCURRENCE Yukon Minfile (1997)			
105H 098		ANDERSON	skam

105 H/13	105 H/14	105 H/15
106 H/12	THIS MAP	106 H/10
	106 H/11	
105 H/5	105 H/6	105 H/7



Anderson Creek and Maxi Prospects - Frances Lake
YUKON TERRITORY
SCALE 1:50 000



CONTOUR INTERVAL 20 METRES
Elevations in metres above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection

Figure 6. Geological map of Anderson Creek and Maxi prospects. 1:50 000 scale.



Plate 11. Steep Canyon along a tributary of Anderson Creek, where the Maxi prospect is located.



Plate 12. Collapsed core rack at the old Utah Mines' Maxi camp.



Plate 13. Granitic dike (white) causes skarn alteration in the Fluke Prospect. Looking northeast.

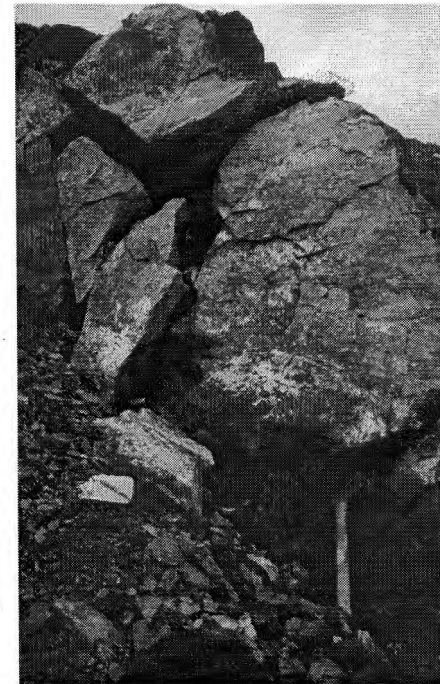
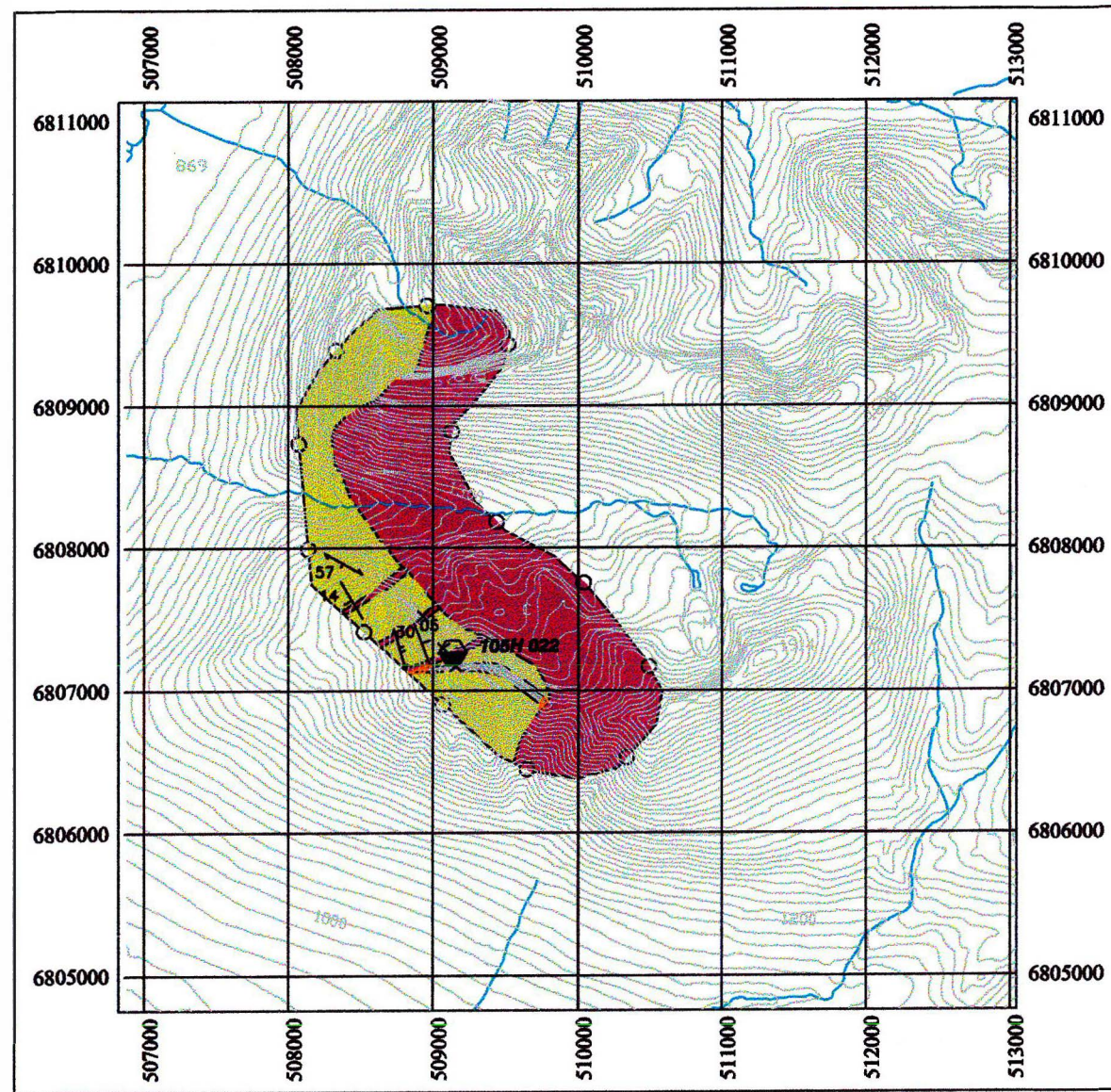
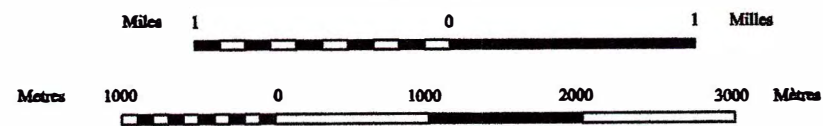
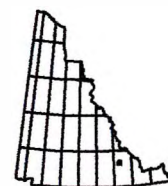


Plate 14. Intense oxidation and garnet-skarn alteration in white weathering limestone, near dike contacts (Fluke prospect).



Fluke Skarn - Frances Lake
YUKON TERRITORY
SCALE 1:50 000



CONTOUR INTERVAL 20 METRES
Elevations in metres above Mean Sea Level
North American Datum 1983
Transverse Mercator Projection

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ONE THOUSAND METRE
Universal Transverse Mercator Grid
ZONE 9

LEGEND

CRETACEOUS

Tay River plutonic suite

Medium- to coarse-grained, white-weathering biotite-granite (dikes and batholith)

INTRUSIVE ROCKS

LAYERED ROCKS

LATE PROTEROZOIC TO EARLY CAMBRIAN

Hyland Group (?)

Medium grey-brown shale, calcareous shale, minor limestone. Contact metamorphism is moderate to strong.

White-weathering, micritic limestone, locally skarn altered

HYDROTHERMAL ALTERATION

Skarn alteration in limestone; biotite-hornfels in siliciclastic rocks; intense oxidation

SYMBOLS

Geological contacts
(defined, approximate, assumed, covered).....

Fault (assumed, covered).....

Limit of mapping.....

Bedding.....

Foliation (first phase; second phase).....

106 H/12	106 H/11	106 H/10
105 H/5	105 H/6	105 H/7 THIS MAP
105 H/4	105 H/3	105 H/2



Use diagram to obtain numerical values
APPROXIMATE MEAN DECLINATION 1985
FOR CENTRE OF MAP
Annual change decreasing 8.5'

MINERAL OCCURRENCE Yukon Minfile (1997)

106H 022 FLUKE skarn

Figure 7. Geological map of Fluke showing. 1:50 000 scale.

Mineral showings adjacent to the study area

Anderson Creek Skarn

Garnet, diopside, wollastonite, and 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 (Plate 15), and is underlain (not clear if structurally or stratigraphically) by strongly hornfelsed siliciclastic rocks. The sequence dips steeply to the southwest, and is folded isoclinally (Plate 16) 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 were only been observed within 1 m of dikes or intrusive margins. Small enclaves of siliciclastic rock in the intrusion are pervasively altered to a gneissic composition, but retain original bedding and foliation orientation.

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. The analyses will help characterize the applicable mineral deposit models, extent and possible correlations of the volcanic belt;
- Properly split and sample core from the Maxi prospect, to determine if it constitutes ore blocks;
- Conduct research to find the location of drill hole collars of the Utah Mines' 1979 exploration program in the Maxi prospect, and determine the geometry and extent of mineralization;
- Conduct a detailed Mineral Resource Assessment of the SMA core and study areas, in support of the mineral industry once all analytical data should be ready and compiled;
- Due to confidentiality of the land claim negotiations, government economic geologists Mike Burke, Grant Abbott, Craig Hart, and Lee Pigage should participate in the mineral resource assessment workshop

Acknowledgements

Steve Piercey, Daniele Heon, Gary Stronghill and Scott Heffernan volunteered to assist in the fieldwork. Cominco geologists Bruce Mawer, Dereck Rhodes, and Paul MacRobbie provided maps and expert advice on the geology and mineralization in the Frances Lake area. Mike Burke assisted in obtaining information on the Maxi prospect. JoAnne VanRanden provided information on the Land Claims negotiations and interim protected lands. Shirley Abercrombie and Monique Schoniker provided administrative support for the fieldwork.



Plate 15. Silty-banded limestone, resembling Rabbitkettle Formation.

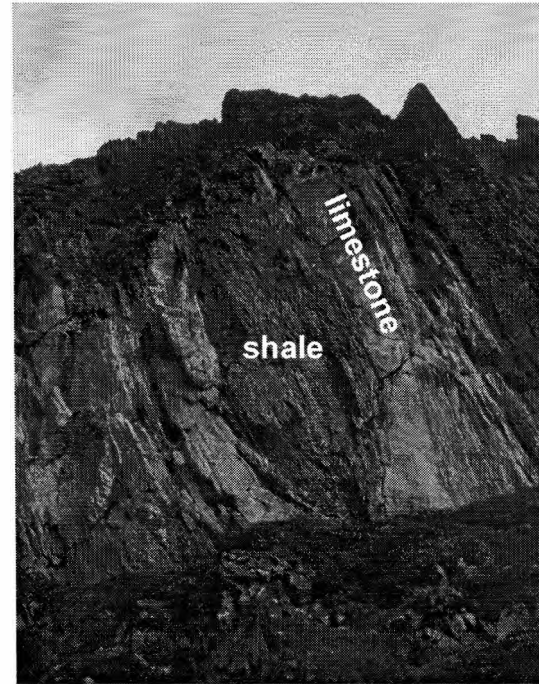


Plate 16. Tightly folded sedimentary sequence, looking southeast. Field of view approx. 50 m.

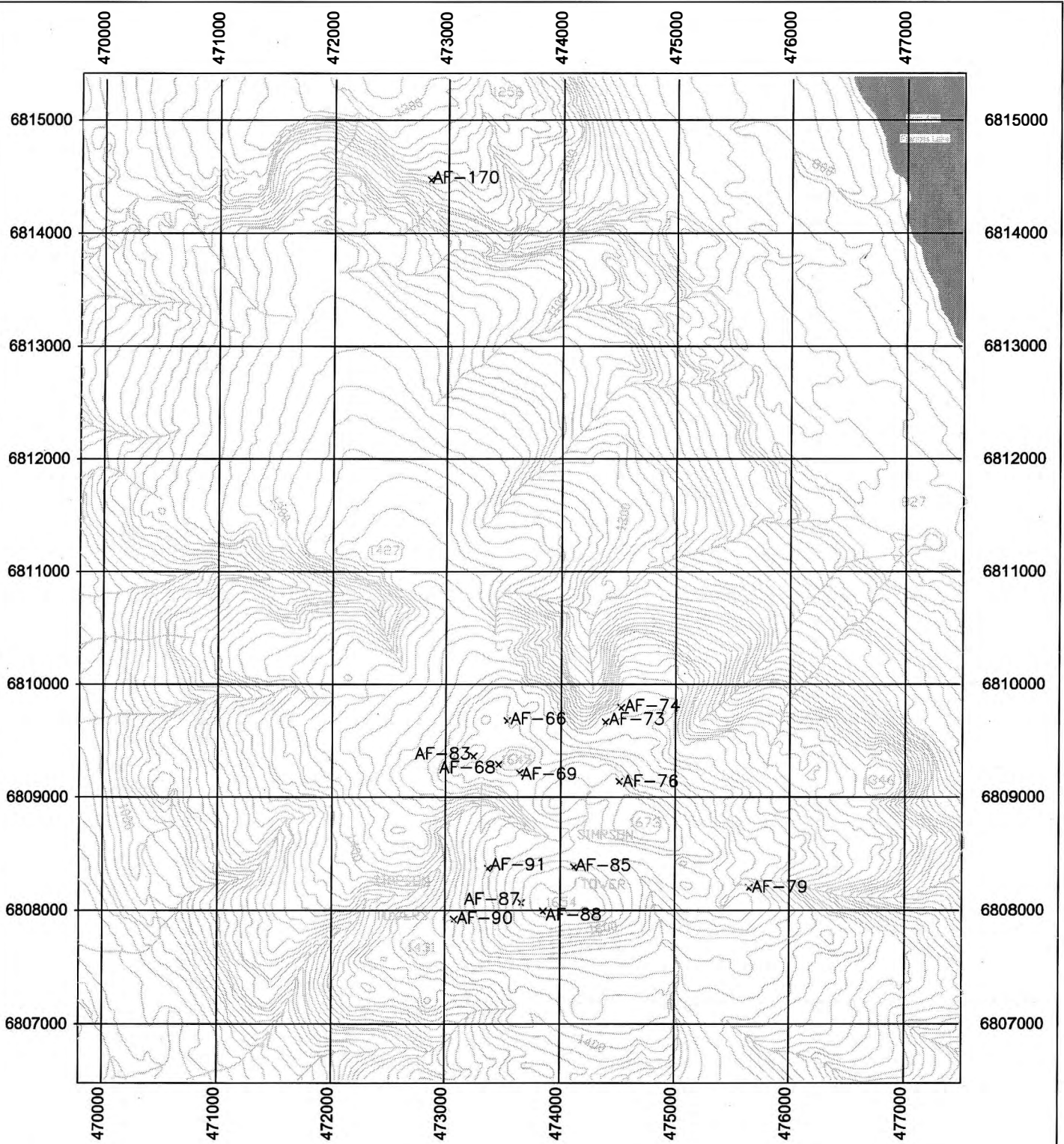
References

- Blusson, S.L., 1965**, Geology of Frances Lake, Yukon Territory and District of Mackenzie, 1:250,000 scale. GSC Map 6-1966.
- Dawson, G.M., 1887**, Report on an Exploration in Yukon District, N.W.T. and Adjacent Northern Portion of British Columbia. Geological Survey of Canada, Annual Report (New Series) Volume III, Part 1, 1887-88.
- Godwin, C.I., and Sinclair, A.J., 1982**, Average lead isotope growth curves for shale-hosted zinc-lead deposits, Canadian Cordillera. *Economic Geology*, v. 77, p. 677-690.
- Gordey, S.P., 1993**, Evolution of the Northern Cordilleran Miogeocline, Nahanni Map Area (1051), Yukon and Northwest Territories. Geological Survey of Canada, Memoir 428.
- Gordey, S.P., and Makepeace, A.J., 2000**, Yukon Digital Geology. GSC Open File D3826; Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1999-1(D).
- Green, L.H., Roddick, J.A., and Blusson, S.L., 1966**, Geology, Frances Lake, Yukon Territory and District of Mackenzie; Geological Survey of Canada, Map 6-1966.

Appendices

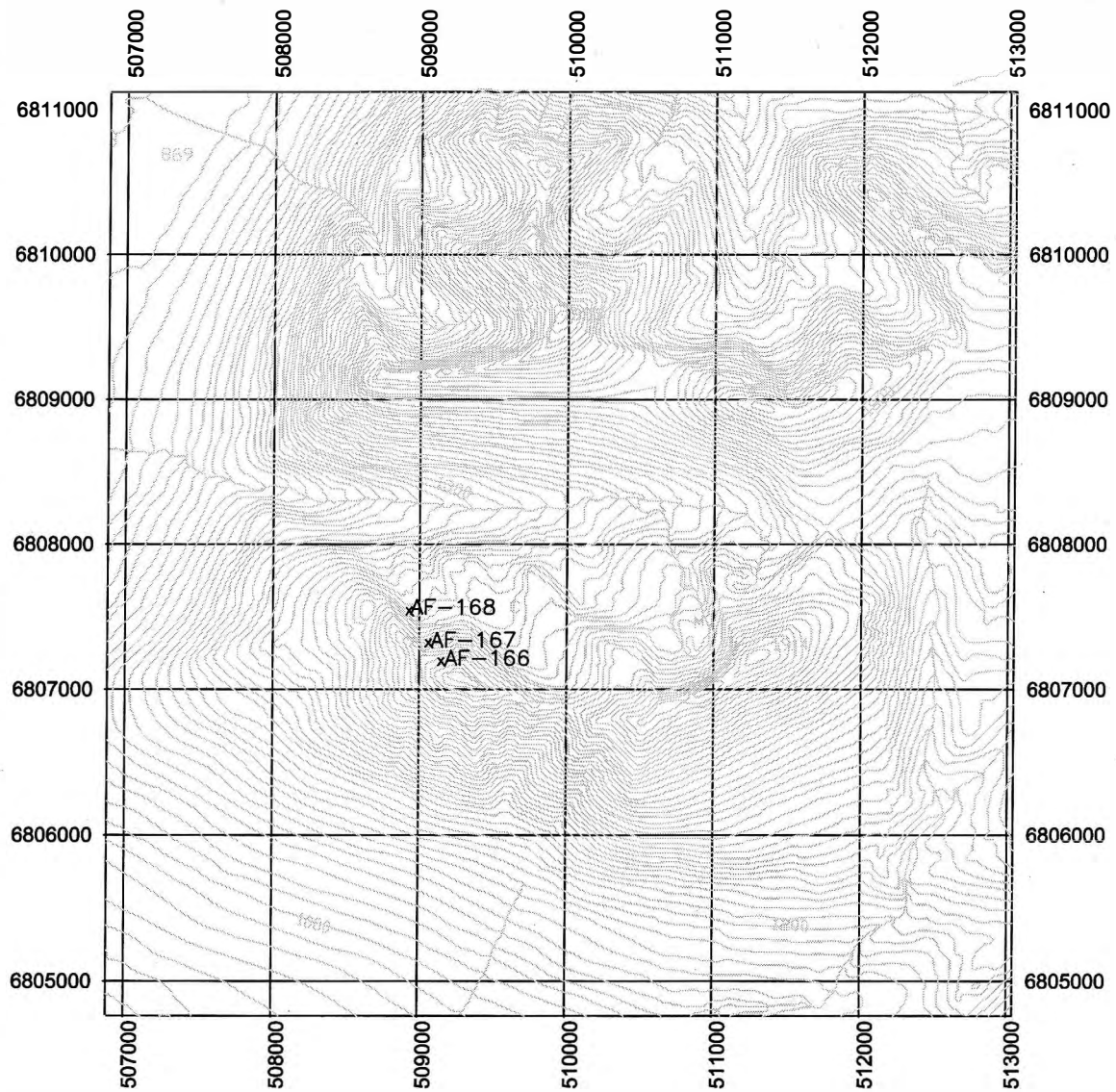
Samples collected during 2000 Field Season

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.

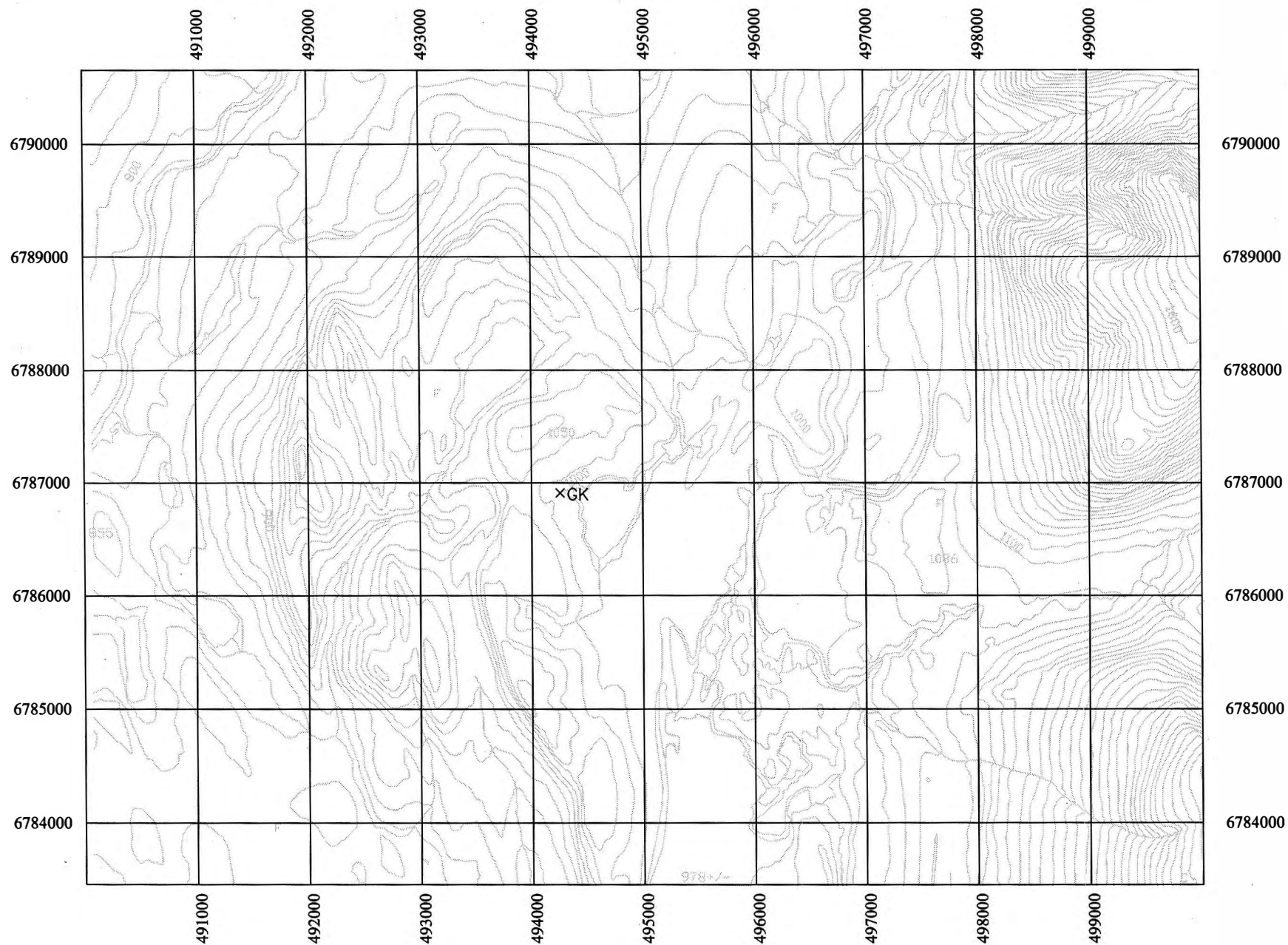


Simpson Tower - Sample location

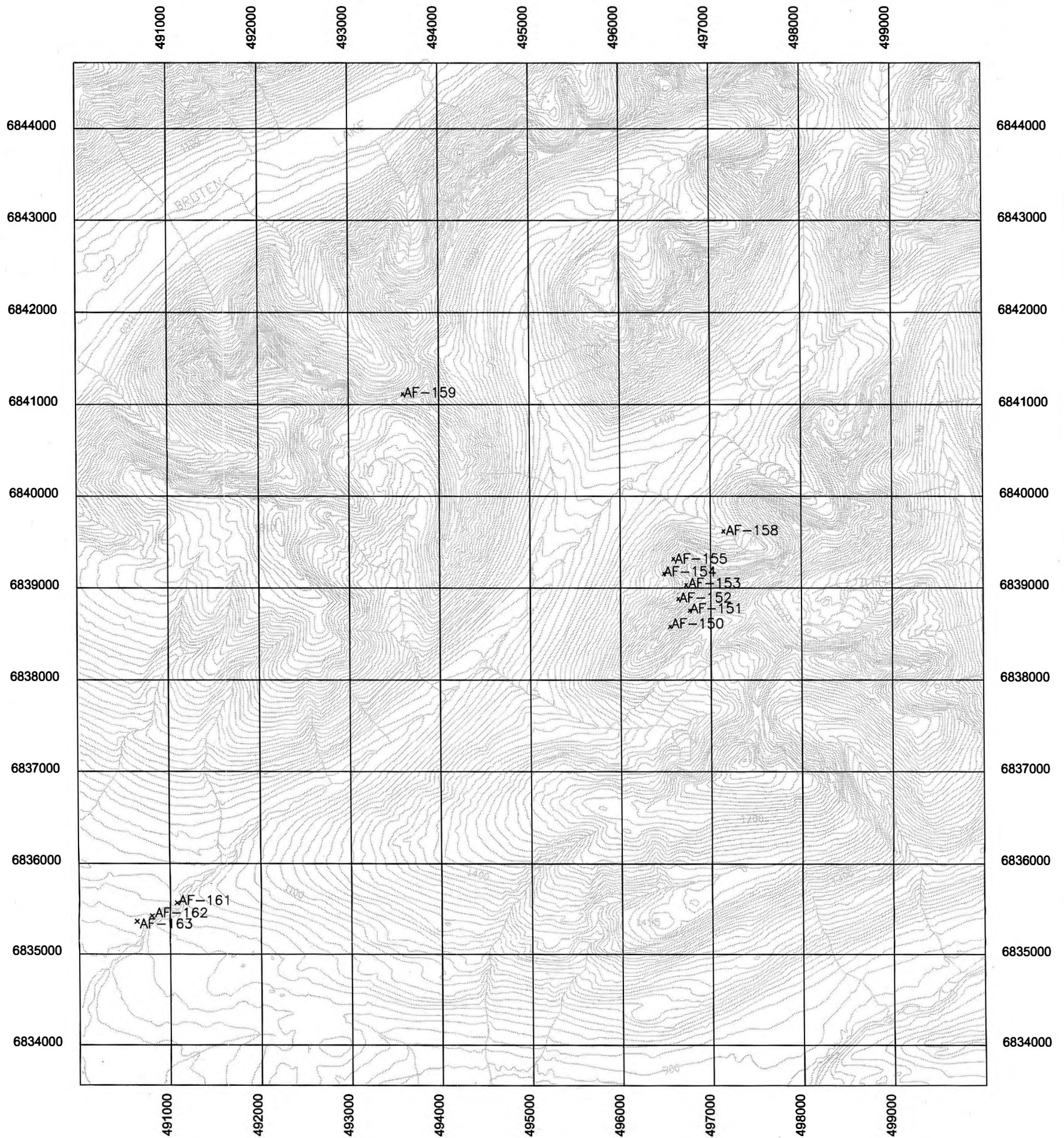
scale 1:50,000



Fluke - Sample location
Scale 1:50,000



Cenozoic Basalt - Sample location
Scale 1:50,000



Maxi and Anderson - Sample location

scale 1:50,000

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 UPLIMT 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