



To
A V.J. McNicoll
Continental Geoscience Division

From
De R.V. Kirkham

Security Classification - Classification de sécurité

Our File - Notre référence

M-MCNICOLL

Your File - Votre référence

Date

14 May 1993

Subject
Objet

Sulphurets Area, B.C. (104B/8,9) U-Pb Zircon Dating

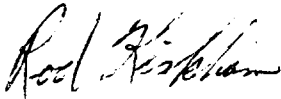
One sample (KQ-86-89/90A) of trachytoid quartz syenite-low silica granite from north of the Mitchell Glacier has been dated at 193.9 ± 0.5 Ma by Jim Mortensen (diagram attached). These are very potassic intrusive rocks closely related to copper deposition. You informed me that two samples (KQ-90-151A and 152) from southwest of the toe of the Hanging Glacier (location map attached) have been submitted for chemistry and results should be available for them in about 2 months time. Sample KQ-90-151A predates intense alteration and copper deposition and KQ-90-152 postdates this alteration and copper deposition. I am optimistic that these samples will closely constrain the age the porphyry copper deposit and associated widespread hydrothermal alteration in the area. In addition to these samples I would like two others from the area analyzed (KQ-90-154C and KQ-91-80B) (see attached location maps and information sheets). KQ-90-154C is from a sodic albitic porphyry near the Sulphurets Glacier with an extensive associated pyrrhotitic hornfels zone. This intrusion has minor associated copper but is very different in nature from the potassic intrusions closely related to the main copper deposit(s). I am still evaluating this intrusion to try to determine if it has a Au-As spatial association (?). KQ-91-80B is from extrusive Premier porphyry immediately below "Mount Dilworth-type" rhyolite on the north side of the Knipple Glacier. A date on this unit should date the upper part of the volcanic pile in the area and also would date extrusive two-feldspar Premier porphyry and permit correlations with intrusive Premier porphyry here and elsewhere. These two samples are probably at Tunney's Pasture.

In addition to the above samples I have shown the approximate locations of other people's samples that have either been analyzed or an attempt has been made to analyze them. Jack and Mariette Henderson also collected dyke sample(s) (91HSA 183-4) cutting folded Triassic Stuhini Group rocks and probably feeding overlying Lower Jurassic Hazelton volcanic strata (information sheet attached). I also collected a sample (KQ-91-59C) of rhyolitic ash

.../2

tuff with scattered lapilli and quartz eyes from north of the Mitchell Glacier (information sheet attached). Bob Anderson has sampled welded tuff(?) twice from this locality. The first sample did not yield a satisfactory date but I do not know the status of the second sample collected in 1991. If Bob so desires this sample could be used to supplement his samples. Samples 91HSA 183-4 and KQ-91-59C are probably both at Tunney's Pasture.

Please let me know your decision soon about analyzing KQ-90-154C and KQ-91-80B. They would both add important information to the magmatic and metallogenic story of this complex, highly mineralized area.



R.V. Kirkham

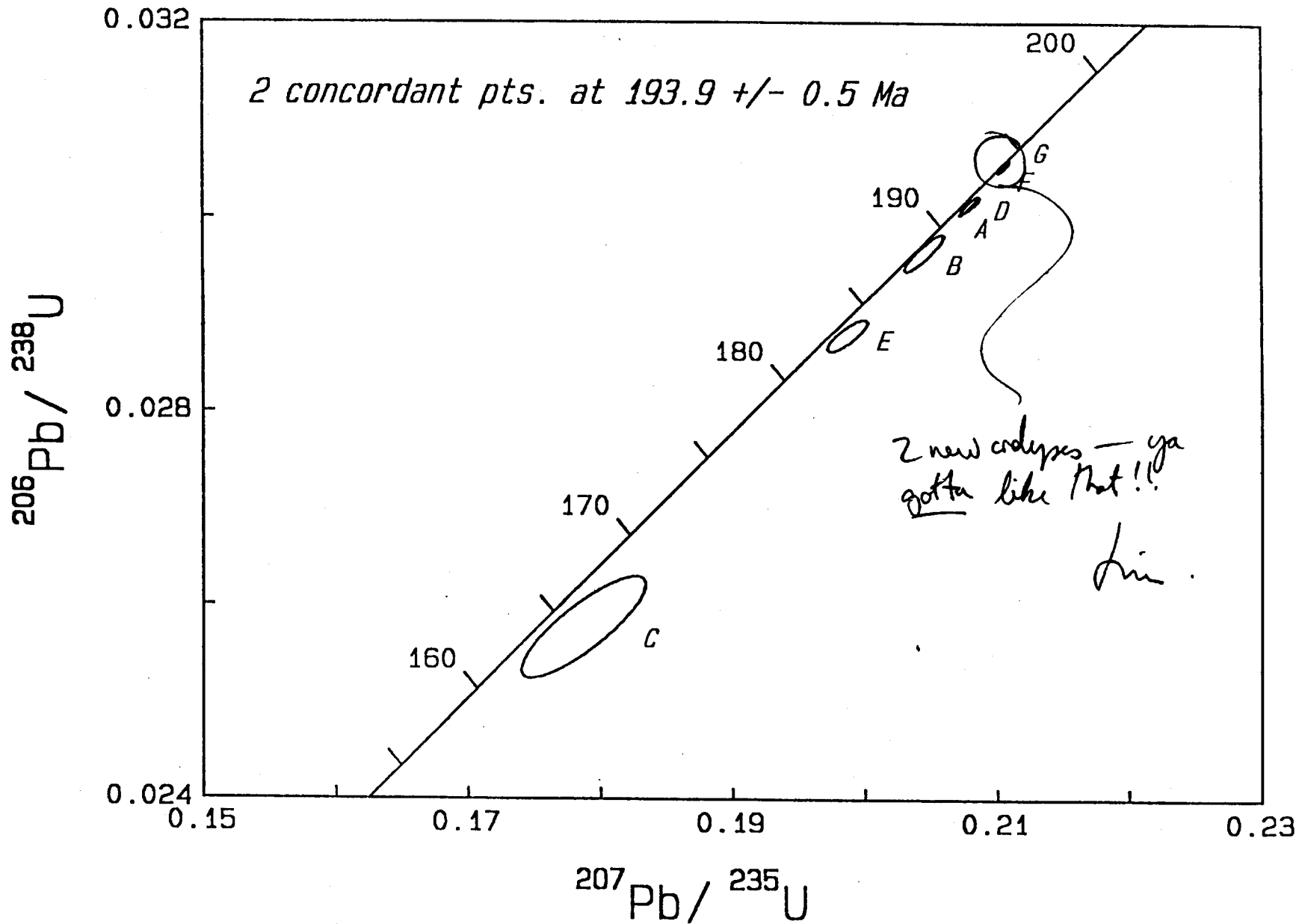
RVK/lo

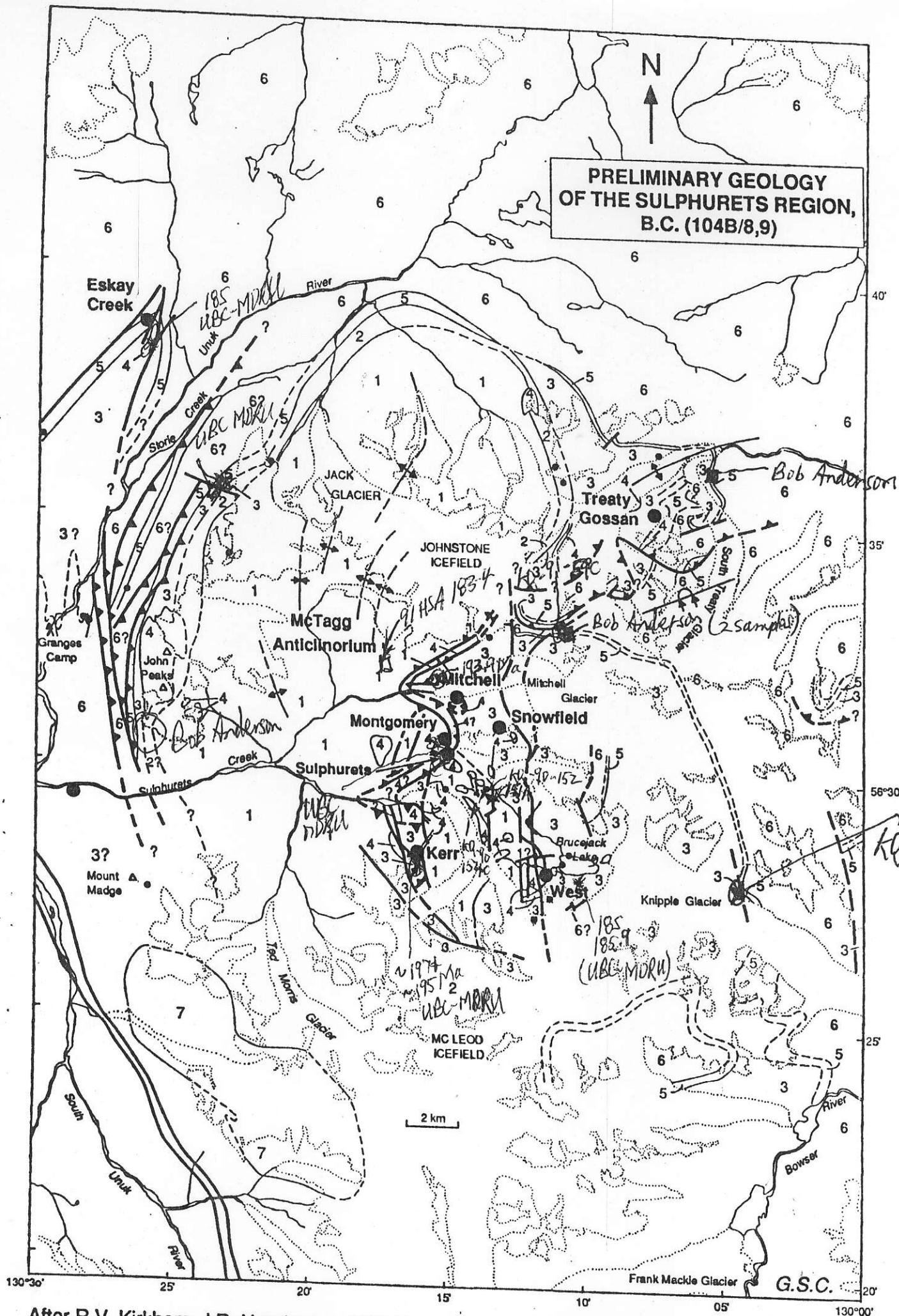
Attachment

cc: R. Parrish
J.K. Mortensen

Jan. 1991

KQ-86-89/90A





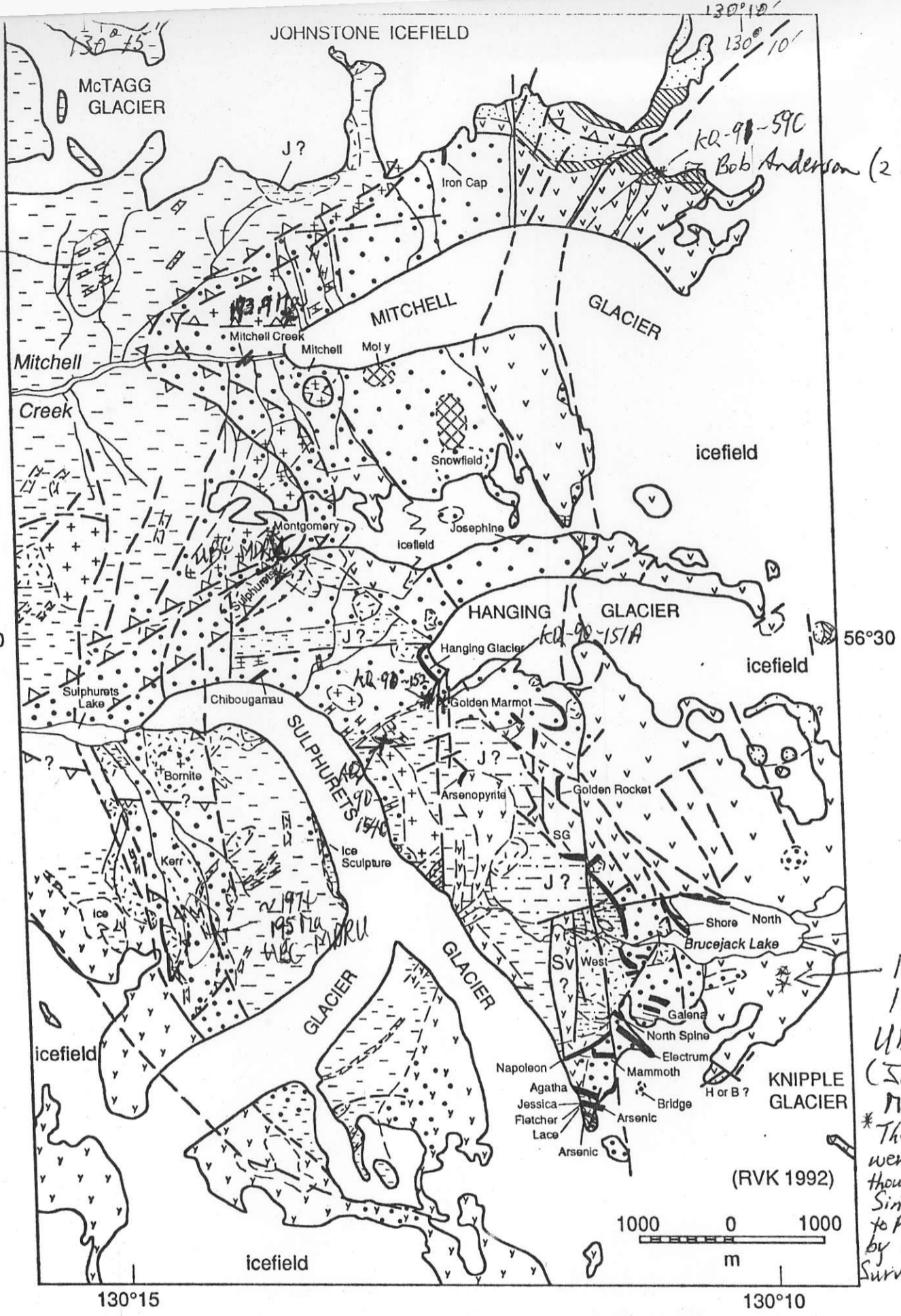
After R.V. Kirkham, J.R. Henderson, M.N. Henderson, and T.O. Wright (1991) with contributions from J.G. Payne, P.D. Lewis, D.J. Alldrick, J.M. Britton, R.G. Anderson, and D.J. Thorekelson

May 13/93 U-Pb zircon samples

91 HSA
183-4

KQ-91-59C
Bob Anderson (2 sam)

1854
185.9 Ma
UBC-MBRU
(James
Macdonald)
* These rocks
were previously
thought to
be Sinemurian
to Pleensbachian
by B.C. Geol.
Survey Branch



MITCHELL INTRUSIONS

- + Mf + Felsic : syenite, monzonite
- \ Mm Mafic : diorite, monzodiorite

LAYERED ROCKS

- B BOWSER LAKE GROUP
- HAZELTON GROUP
- MD Mount Dilworth formation
- v H v Unuk River & Betty Creek formations
- J Jack formation

STUHINI GROUP
sedimentary rocks; volcanic rocks

- Geological contact
- Thrust Fault
- Fault
- Pyritic (pyrrhotitic) altered rocks
- X X X X Quartz vein stockwork
- Vein
- Approximate limit of mineral zone

May 13/93 U-Pb zircon samples

AGE DETERMINATION SUBMISSION FORM

GEOCHRONOLOGY

GEOLOGICAL SURVEY OF CANADA

DATE: October 23/90 PROJECT OFFICER: R. V. KirkhamDIVISION: MR FIELD PROJECT NUMBER: 700059GEOCHRONOLOGY STAFF MEMBER THIS PROJECT DISCUSSED WITH: J. K. Mortensen

ISOTOPE SYSTEM REQUESTED:

Rb-Sr K-Ar U-Pb Pb-Pb Sm-Nd Other MINERAL (S) (ie. zircon, w.r. etc.): zircon and hornblendeFIELD OR SAMPLE NUMBER: KQ-90-154CAMOUNT OF SAMPLE SUBMITTED: about 50 kg?LOCATION: PROVINCE B.C. DISTRICT Iskut NTS 104B/BLAT ~56° 29' 58" N LONG ~130° 14' W or UTM 62 6100 N 423900 ETOPOGRAPHIC LOCATION: About 250m north of SulphuretsGlacier along southeast creek from Hanging (Freegold)GEOLOGICAL INFORMATION: (Please include geological setting, rock name, type, grain size, texture, mineral composition, etc.) Glacier.

"From Sulphurets Porphyry" (new name for porphyry in small stock) a ^{pale grey} crowded sodic plagioclase - hornblende porphyry.

AGE PROBLEM: (Please be specific in the objective of this study and specify accuracy required.)

Date porphyry and thermal cooling history. It is probably Lower Jurassic subvolcanic to the upper part of the Hazelton Group volcanic pile. This intrusion might have a specific metallogenetic suite (Au, As, Cu) around it.

GEOCHRONOLOGY AGE DETERMINATION SUBMISSION FORM

Project Number 700059
 Date March 12/92 Geochronologist J. K. Mortensen
 Geologist R. V. Kirkham Division MR

Isotope system: Rb-Sr K-Ar U-Pb Pb-Pb Sm-Nd
 Other Minerals Zircon

Sample number KQ-91-80B (800C) Amount submitted ~70-80 lbs?

Country Canada Prov/Terr B.C. NTS 104B/8

Lats 56° 27' 30" Longs 130° 4' 30" UTM: Zone 9
 East 433 North 6258020

Location North side of Knipple Glacier about 75m ea. of Brucejack Lake.

Geological Unit Hazleton Group ("Premier Porphyry")

Geological Locality Sulphurets region

Rock Type pink- to maroon-grey, flow-layered and brecciated

Rock Description: Setting plagioclase - K-spar ^{hornblende} porphyry
(extrusive flow unit)

Name _____ Grain size _____

Texture _____

Mineral composition _____

Age problem Would date extrusive Premier Porp. and permit rigorous correlation with intrusive Premier Porphyry in the vicinity of the mineral deposits in the Sulphurets area to the west.

KQ-91-80C is somewhat less altered sample about 25m stratigraphically below 80B. KQ-91-80C is probably the best sample to attempt to date first.

GEOCHRONOLOGY AGE DETERMINATION SUBMISSION FORM

Project Number 700059
 Date March 12/92 Geochronologist J. K. Mortensen
 Geologist R. V. Kirkham Division MR

Isotope system: Rb-Sr K-Ar U-Pb Pb-Pb Sm-Nd

Other _____ Minerals Zircon

Sample number KQ-91-59C Amount submitted ~70-80lbs?

Country Canada Prov/Terr B.C. NTS 104 B9

Lats ~56° 32' Longs ~130° 14' UTM: Zone 9 626735
 East 427200m North 676350

Location North of Mitchell Glacier very close to sample collected by R. G. Anderson.

Geological Unit Mount Dilworth Formation

Geological Locality Mitchell-Sulphurets area

Rock Type white-weathering, slightly maroon-green ash tuff

Rock Description: Setting with scattered lapilli and quartz

Name _____ Grain size _____

Texture _____

Mineral composition _____

Age problem Would date Mount Dilworth Formation in this area. This ash tuff unit is identical to the one on Troy Ridge which R. G. Anderson sampled for zircons (1991) and sits on the welded tuff which R. G. Anderson (and D. Aldrick) has sampled for zircon at this locality.

Sample information for Geochronology Section database

Submitted by: Jack Henderson (HSA prefix to Field Number)

Field Number: 91HSA 183-4

Province or Territory and District: British Columbia

NTS: 104 B9

Lat.:

Long.:

UTM Easting: 421600

UTM Northing: 6267660

Radiometric dating technique: U-Pb

Thin Section number: 91 H 183-4

Geological Unit: intermediate (andesitic) dyke cutting Stuhini

Geological province or tectonic domain: Mc Tagg anticlinorium, north of Mitchell Glacier (Iskut River map)

Rock type and brief description: intermediate dyke, plagioclase phyrlic, little quartz, few euhedral apatites, one observed euhedral zircon

Brief description of geological problem, regional context, previous work, other pertinent information: undeformed dykes cutting folded Triassic Stuhini Group argillites, are possibly feeders to overlying Hazelton volcanics.