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GEOLOGICAL REPORT

on the

TAGA 3, TAGA 4 and BOB 5 CLAIM GROUP

OMINECA AND LIARD MINING DIVISION

NTS 94F/13W

Latitude: 57°59'N

Longitude: 125°50'W

by

R.C. Carne:

ARCHER, CATHRO & ASSOCIATES LTD.

for

WELCOME NORTH MINES LTD. (Owner)

and

GATAGA JOINT VENTURE (Operator)

Submitted March 3, 1981

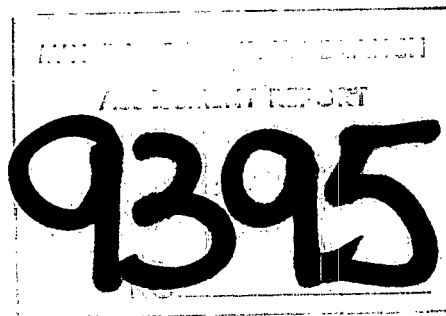


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LIST OF CLAIMS

<u>Claim</u>	<u>Mining Division</u>	<u>Record Number</u>	<u>Number of Units</u>	<u>Record Date</u>	<u>Expiry Date</u>
Taga 3	Omineca	570	16	Apr. 20/77	Apr. 20/81
Taga 4	Omineca	571	16	Apr. 20/77	Apr. 20/81
Bob 5	Liard	293	10	Apr. 28/77	Apr. 28/81

GEOLOGICAL REPORT

on the

TAGA 3, TAGA 4 and BOB 5 CLAIM GROUP

Introduction

The Taga 3 and Taga 4 claims were acquired by Gataga Joint Venture in 1977 in the name of Welcome North Mines Ltd. The Bob 5 claim was staked in 1977 by Welcome North on behalf of Gataga Joint Venture. The claims cover part of a northwest-trending belt of upper Devonian black shales which host lead-zinc mineralization in the nearby Driftpile Creek area on the P, D and Goof claims. Gataga Joint Venture (GJV) was formed in 1977 to explore for lead-zinc in northeast British Columbia, and is a syndicate composed of Aquitaine Company of Canada Ltd., Chevron Canada Limited, Getty Mines, Limited, Welcome North Mines Ltd. and Castlemaine Exploration Ltd. The program was managed by Archer, Cathro & Associates Limited and was directed in the field for the fourth successive season by R.C. Carne.

The Taga 3, Taga 4 and Bob 5 claims were geologically mapped at a scale of 1:5000 to provide a basis for prospecting and geochemical evaluation of the area. Topographic control for the survey was established with aid of a contoured 1:20,000 scale orthophoto map produced from aerial photography flown by GJV in 1979. The 1980 work was carried out between June 24 and August 11, 1980.

Location and Access

The Taga 3, Taga 4 and Bob 5 claims are located 10 km northwest of Gataga Lakes on NTS map sheet 94F/3W. The centre of the group is located at latitude 57°59'N and longitude 125°50'W. Access is by float-equipped, fixed-wing

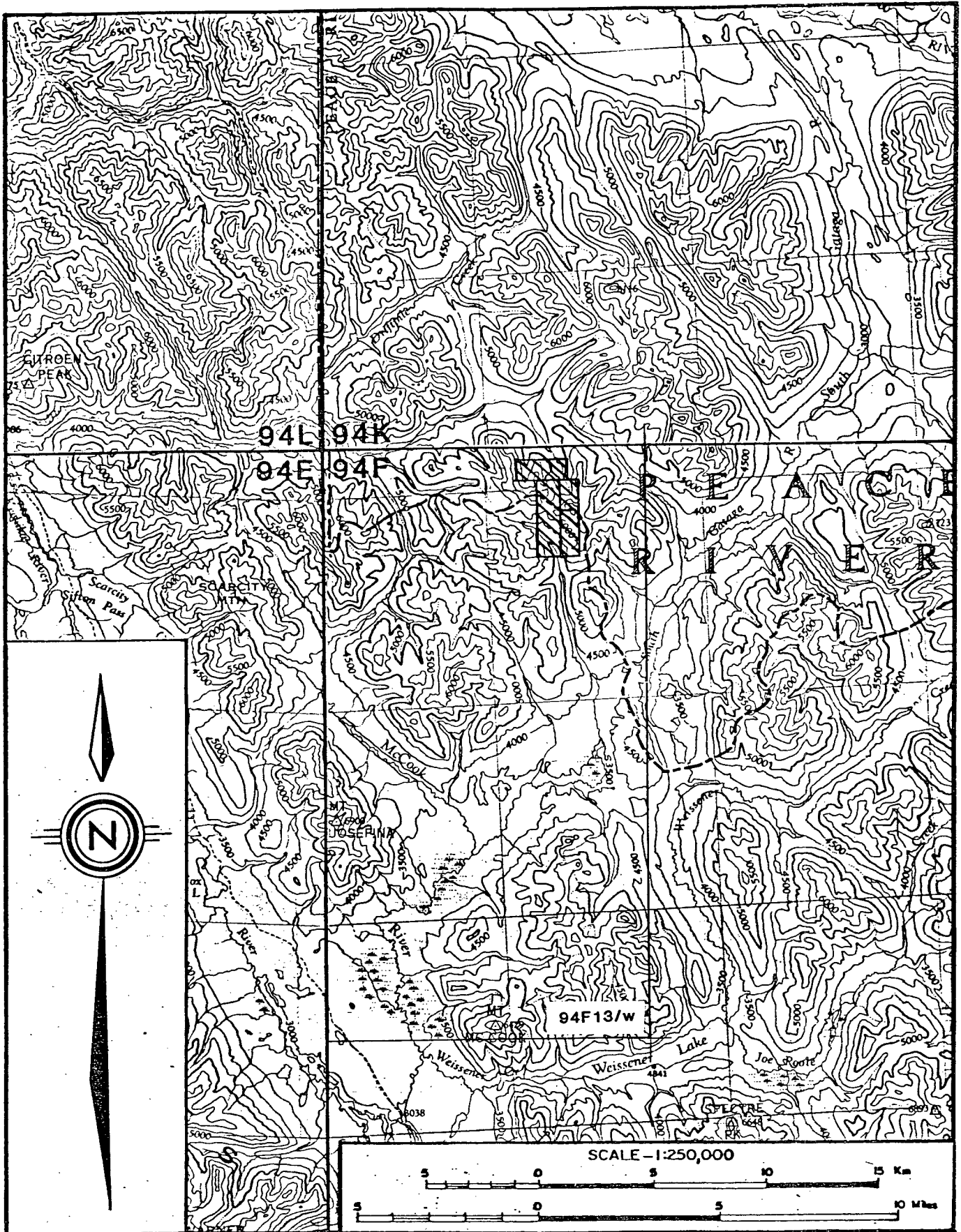


Figure 1: Location of Bob 5, Taga 3 and Taga 4 claim group (94F 13/W).

aircraft from Watson Lake, Yukon Territory, about 290 km to the northwest, to Mayfield Lake, located about 25 km northeast of the property. Access to the claims from the lake is by helicopter. The nearest large town, 210 km to the east, is Fort Nelson which does not have a float plane base. Fuel and camp supplies used for the 1980 program were trucked 300 km from Watson Lake to Muncho Lake (km 747 on the Alaska Highway) and ferried 100 km during mid-April, 1980 by ski-equipped, single Otter aircraft to Mayfield Lake. Field work was conducted with a helicopter supported program based from a permanent field camp located on Driftpile Creek, about 10 km to the northeast (Figure 1).

Regional Geology

The Gataga Lakes area lies within Kechika Trough, a southeasterly extension of the much larger Selwyn Basin. Sedimentary rocks range in age from Cambrian to lower Mississippian. Prior to upper Devonian, easterly derived clastic sedimentary assemblages reflect normal sedimentation patterns while the westerly derivation of upper Devonian to Mississippian sedimentary rocks resulted from block faulting and uplift along the continental margin. Regional stratigraphic relationships are summarized on Figure 3.

Structural geology of the area is dominated by northwesterly-trending, easterly directed thrust faults. Pelitic sedimentary rocks within thrust sheets are complexly deformed into upright to slightly overturned isoclinal folds cut by numerous near-vertical shear zones. A penetrative axial plane foliation is commonly well developed. Structural geology is complicated by deformation initiated prior to deposition of middle Devonian clastic rocks above a pronounced unconformity.

Upper Devonian siliceous and pyritic black shales are host to numerous stratiform barite and barite-lead-zinc deposits in the area, notably those at

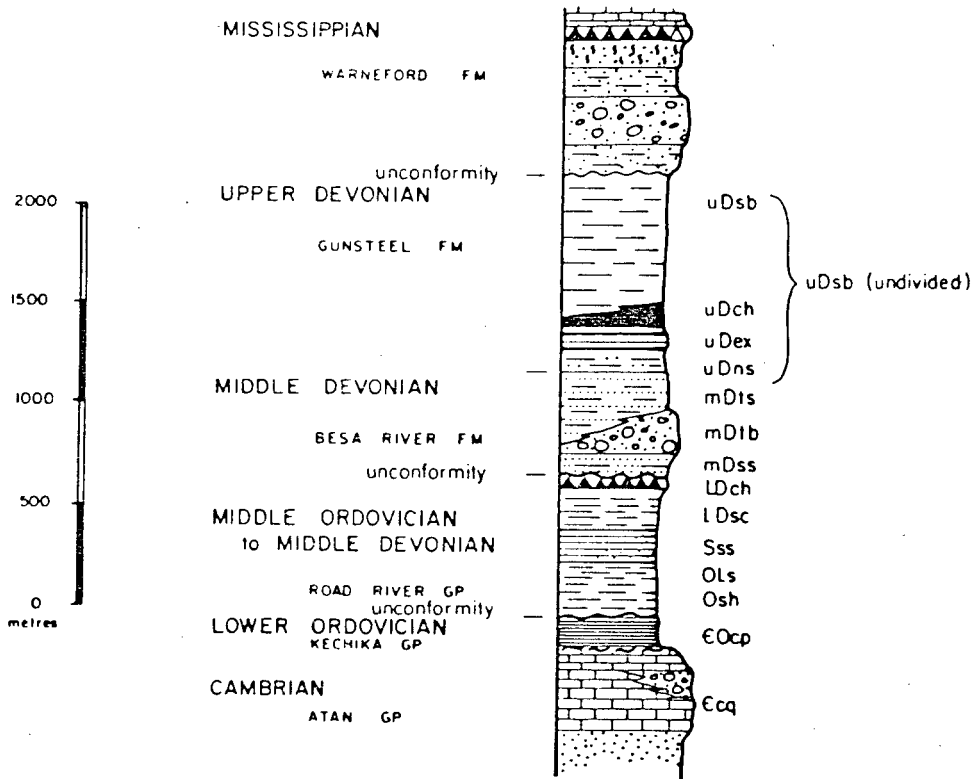


FIGURE 3

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STRATIGRAPHY
GATAGA LAKES AREA
GATAGA JOINT VENTURE

Driftpile Creek some 10 km to the northeast and at Cyprus Anvil's Cirque claims, located about 115 km southeast of the area.

Property Geology

Geology of the Taga 3, Taga 4 and Bob 5 claims and surrounding area is shown at 1:5000 scale on Figure 4.

Oldest lithologies exposed in the area are Ordovician to lower Devonian pelitic rocks of the Road River Group (Map Units Osh, Sss, LDsc and LDch). Medium to thick bedded calcareous black shale and mudstone of Map Unit Osh forms the basal part of the Road River section. An Ordovician age is assigned on the basis of poorly defined graptolite assemblages.

Orange-brown weathering, relatively resistant lithologies of Map Unit Sss form a distinctive marker horizon in the area. The Silurian age stratigraphic package is dominantly composed of dolomitic and ankeritic siltstone and silty mudstone with minor silty dolomite and cryptalgal laminated grey silty limestone.

Lower Devonian Map Unit LDsc occurs throughout the area although its thickness is extremely variable. The unit is primarily composed of carbonaceous, calcareous and non-siliceous black shale with lesser intervals of cherty black argillite with minor black chert successions.

Road River Group is intermittently capped by a thin siliceous unit consisting of black and bluish black, thin to medium bedded chert with minor carbonaceous shale intervals (unit LDch).

Middle Devonian lithologies of Besa River Formation (unit mDtb and mDss) unconformably overlies older rocks. Unit mDtb consists primarily of massive to thick bedded, very resistant chert pebble conglomerate and chert granule grit deposited as debris flows and proximal turbidites. Morphologies of channel deposits and paleocurrent indicators define an easterly direction of transport

for the sediment. Coarse-grained proximal turbidites grade laterally very rapidly to thick bedded, gritty black mudstone and muddy siltstone (Map Unit mDss) probably deposited as terrace or levee deposits. Distal equivalents of proximal and lateral facies are represented by Map Unit mDts. Brown weathering, thick bedded, gritty and fine grained mudstone and shale with thin interbeds of pyritic siltstone characterize the unit. Coarse, medium bedded intervals are scattered throughout the section.

Generally pyritic and fine grained, siliceous black shale of upper Devonian Gunsteel Formation conformably overlies coarser grained lithologies of Besa River Formation. Unlike older sedimentary units, facies changes within the formation are abrupt and bear no apparent relationship to regional trends. In simplest terms, the formation can be broken down into two members, Map Units uDns and uDsb, whose distribution is probably related to their physical environment of deposition. Discontinuous and irregular distribution of units uDch and uDex probably reflects their deposition as chemical sediments.

Medium bedded, non-siliceous, slightly gritty black shale of Map Unit uDns forms the basal part of Gunsteel Formation throughout the Gataga District. A diagnostic feature of the member is the presence of 2 mm to 1 cm diameter, spheroidal nodules composed of silica, calcite and clay minerals. Cross-bedded laminae or thin beds of a similar composition are sometimes associated with the nodules. Origin of these features is, at present, unknown but their mineralogy suggests possible derivation from water-lain tuffs in the north part of the district. Thickness of unit uDns varies from areas where it appears to be absent to over 200 m on the adjoining Bear claims.

Bulk of the Gunsteel Formation consists of medium to thick bedded, siliceous and non-siliceous, carbonaceous black shale (unit uDsb). Stratigraphy within this member is very poorly defined because of the absence of identifiable

marker horizons coupled with its generally recessive nature.

Distinctive lithologies of Map Units uDch and uDex always appear in close proximity to each other but relative ages of the two appear to vary within the district. Unit uDch consists of cherty argillite and black chert with siliceous shale partings. Thin beds of galena and sphalerite were also observed in drill core from this unit on the adjoining Bear claims. Map Unit uDex consists of bedded barite and interbedded chert, cherty argillite, pyrite and nodular or blebby barite. Massive, pyritic sulphide deposits occur within this unit on the D, P and Goof claims at Driftpile Creek and on the GJV Bear claims. Silica, iron and barium content of uDex and uDch is thought to be derived from submarine hot-spring or exhalite activity during early deposition of the upper Devonian Gunsteel Formation.

Economic Geology

Both map units uDch and uDex are chemical sediments and, as such, hold the potential for base metal mineralization. Lead and zinc mineralization in the area commonly occurs in two forms - baritic and pyritic, although appreciable amounts of pyrite occur with both types. Limonite gossans associated with map unit uDex on the claims suggest the presence of significant amounts of pyrite. No unoxidized sulphide minerals were located, however, in the course of mapping. Apparently barren bedded barite was located in outcrop in the central part of the Bob 5 claim. Detailed prospecting of this barite occurrence failed to discover any lead or zinc mineralization.

Conclusions and Recommendations

The Gunsteel Formation which hosts potentially economic lead-zinc occurrences on the nearby D, P and Goof claims is exposed as a broad belt which traverses across the east part of the Bob 5, Taga 3 and Taga 4 claim group. Numerous limonitic gossans are located along the mapped extent of baritic, pyritic and cherty sedimentary rocks which occur within the unit. Further detailed prospecting, geochemical sampling and hand trenching is recommended along the belt to fully assess its potential for stratiform massive sulphide deposits.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LIMITED



R.C. Carne

APPENDIX I

STATEMENT OF QUALIFICATIONS

I, Robert C. Carne, geologist, with business and residential addresses in Vancouver, British Columbia, hereby certify that:

- 1) I graduated from the University of British Columbia in 1974 with a B.Sc. and in 1979 with an M.Sc. majoring in Geological Sciences.
- 2) I am a member of the Geological Association of Canada.
- 3) From 1974 to the present, I have been actively engaged as a geologist in mineral exploration in British Columbia and Yukon Territory.
- 4) I have personally participated in or supervised the field work reported herein and have interpreted all data resulting from this work.



Robert C. Carne

SUMMARY OF COSTS

on work performed on the

BOB 5, TAGA 3 and TAGA 4 CLAIMS

between June 24 and August 11, 1980

FIELD EXPENDITURES

Salaries and Wages

R.C. Carne (Geologist) June 24-26, July 9,12,20,
August 2-4,7,11
11 days @ \$177/day \$ 1,947.00

Camp Maintenance (includes fixed-wing aircraft costs)

11 mandays @ \$35/day 385.00

Helicopter (includes fuel costs on site)

Northern Mountain Helicopters Ltd.
Bell Jet Ranger 206B @ \$406/hr x 8.8 hrs 3,572.80

OFFICE EXPENDITURES

Salaries and Wages

R.C. Carne (Geologist) 5 days @ \$177/day 885.00

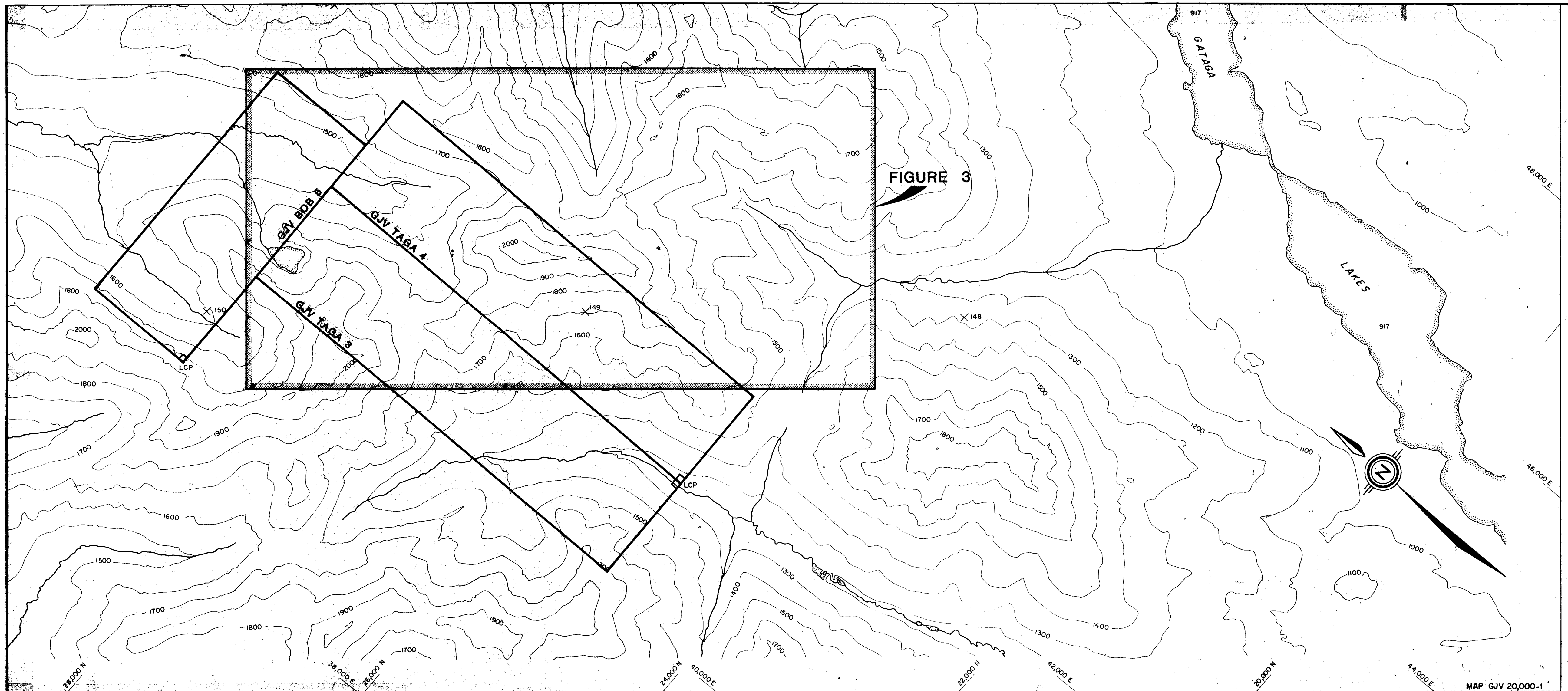
\$ 6,789.80

Report Preparation and Administration @ 10%

679.00

TOTAL EXPENDITURES

\$ 7,468.80



COMPILED FROM AERIAL PHOTOGRAPHY
 TAKEN AUGUST 15, 1979 AT A SCALE OF 1:24,000

N.B - Legal Corner Posts were located in the field
 with the aid of a 1:5,000 scale orthophoto

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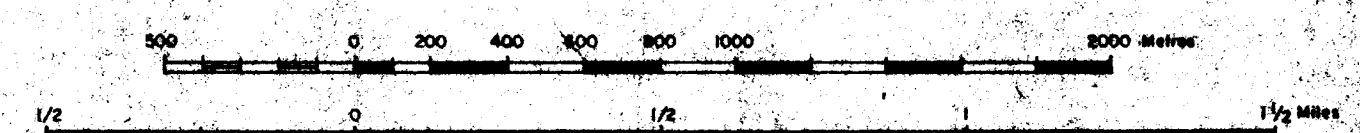
FIGURE 2
 ARCHER, CATHRO & ASSOCIATES LTD

LOCATION PLAN

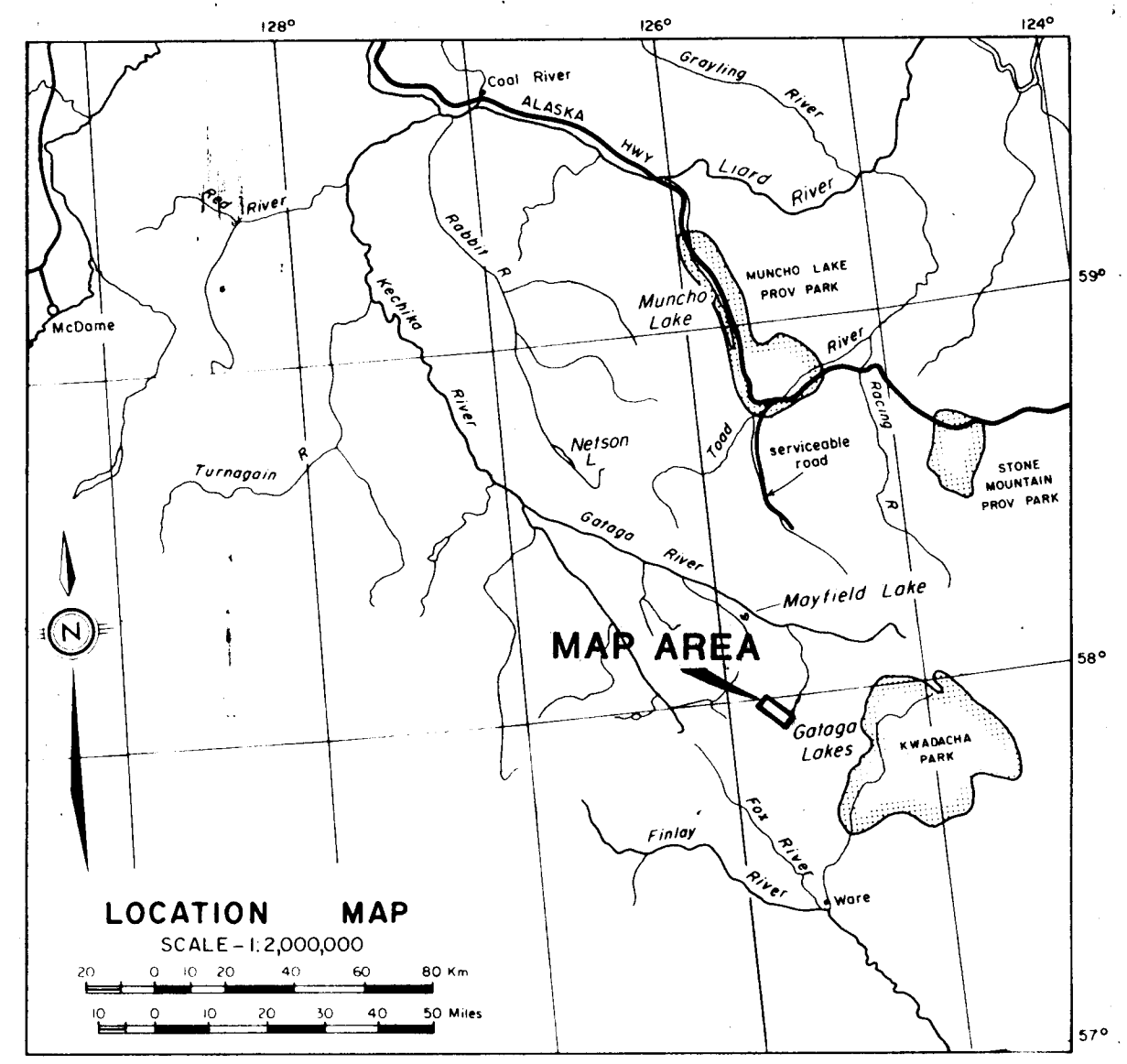
TAGA 3, TAGA 4 AND BOB 5 CLAIMS

GATAGA JOINT VENTURE

SCALE 1:20,000



To accompany report dated March 3, 1981



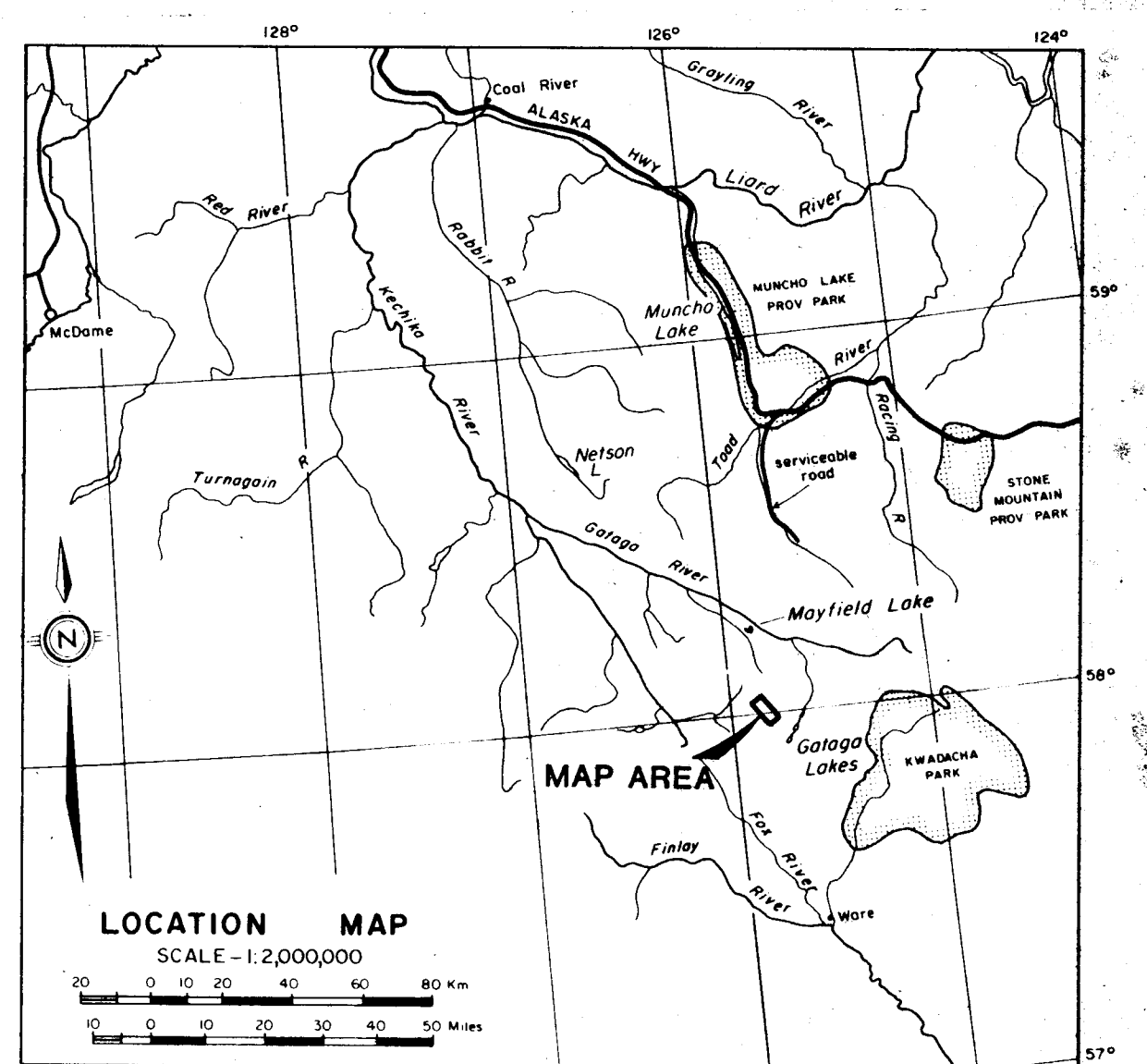
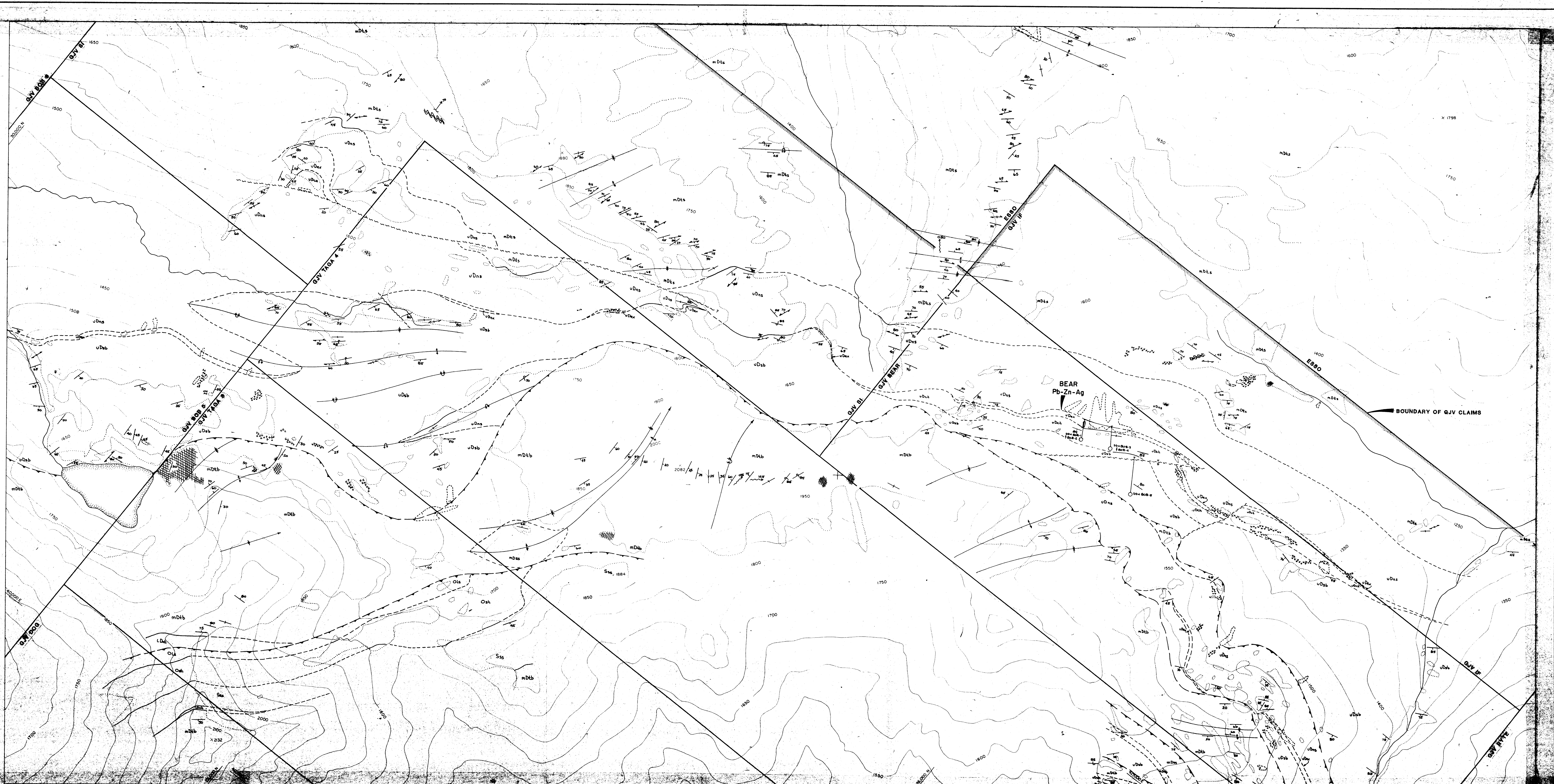


TABLE OF FORMATIONS

UPPER DEVONIAN

- Gunsteel Formation**
- uDb medium to thick bedded, siliceous and non-siliceous, carbonaceous black shale
 - uDs medium bedded, non-siliceous, slightly gritty, nodular black shale (may be locally absent)
 - uDe bedded barite, interbedded chert, pyrite and bity barite, massive pyrite, galena, sphalerite and barite deposits, cherty argillite and black chert, minor silver-bearing galena-sphalerite beds on Bear claims, (may be locally absent)
 - uCh undivided Gunsteel Formation

MIDDLE DEVONIAN

- Besa River Formation**
- mDts thick bedded distal turbidites (coarsely black shale with minor siltstone intervals)
 - mDss medium to thick bedded intermediate turbidites (silty black shale with conglomerate and siltstone intervals)
 - mDtb thick bedded to massive proximal turbidites and debris flows (chert pebble conglomerate and chert granule grit)
 - mDex thin bedded and nodular grey to black barite and siliceous shale, very minor pyrite

MIDDLE ORDOVICIAN TO LOWER DEVONIAN

- Road River Group**
- LOWER DEVONIAN**
- LDk black and bluish black, thin to medium bedded chert with minor carbonaceous shale intervals
 - LDs interbedded carbonaceous black shale and cherty black argillite, minor black argillite successions
- SILURIAN**
- Ss orange weathering dolomitic and ankeritic siltstone, minor silty dolomite and cryptalgal laminated grey limestone

ORDOVICIAN

- Ork medium to thick bedded calcareous black shale and mudstone
 - Ors grey and white limestone with black and green chert lenses
- UPPER CAMBRIAN TO LOWER ORDOVICIAN**
- Kechika Group**
- EOp brown weathering calcareous phyllite and "wavy-banded" silty limestone
- MIDDLE CAMBRIAN**
- Atan Group**
- EOq massive to thick bedded grey limestone and calcareous quartzite, minor green calcareous phyllite

SYMBOLS

- extent of outcrop
- geologic contact (known, assumed)
- bedding (inclined, vertical, overturned)
- cleavage (inclined, vertical)
- normal or strike slip fault
- thrust fault (known, assumed)
- anticline (upright, overturned)
- syncline upright, overturned)
- plunge of fold axis
- paleocurrent direction
- ⊙ fossil locality (graptolite)
- ⊞ quartz vein stockwork
- ⊞ ferricrete deposit
- ⊞ kill zone or gossan

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FIGURE 4
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GEOLOGY
BOB 5, TAGA 3 AND TAGA 4 CLAIMS
GATAGA JOINT VENTURE

