Structural Report
on
the STAR 1-8 Claims
YB59270-YB59277

094154

Ketza River Area
105F/9
Latitude 61°30'N Longitude 132°15'W
Watson Lake Mining District
Yukon Territory

for Ron Berdahl
Box 5664
Whitehorse, YT
Y1A 5L5

For work performed in 1997 / report March 2000

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 800.00.

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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REPORT ON FIELD EXAMINATION
OF THE
STAR AND RIBA CLAIMS,
KETZA RIVER AREA
YUKON

Heather Plint, Ph.D., P. Geol.,
March, 2000

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INTRODUCTION

The Ketza River area of central Yukon hosts a variety of polymetallic mineral deposits that were mined for gold from 1988 to 1990, producing 400 tonnes of oxide ore per day. This report summarizes what is published about mineralization in the Ketza River area and presents field observations, gold and silver assays and recommendations for exploration on two claim blocks under consideration by company #743457 Alberta Ltd of Calgary, Alberta.

Mineral showings on two claim blocks, the "Riba" and "Star" blocks were examined over 2.5 days in July/August, 1997 by the author, accompanied by geologists Michael Marchand and Alli Marshall and prospector Ron Berdel. A half-day tour of the Ketza Mine was provided by mine geologists Anna Fonseca and Rob Stroshein

Location, Access and Physiography

The former Ketza River Mine and other nearby polymetallic showings and prospects are located in the Pelly Mountains, approximately 40 km south of the settlement of Ross River, Yukon (Figure 1). The mine site is located at approximately 61°30′ N and 132° 15′ W. The area is accessible via the all-weather 45 km Ketza Mine Road that intersects the Campbell Highway, 30 km southeast of the settlement of Ross River. Four-wheel drive roads that branch off the Ketza Mine Road provide access to most areas of the property.

Alpine to sub-alpine conditions dominates the area. Outcrop is abundant above tree line. Most outcrop below tree line is encountered in creeks. In general, the upper elevations are clear of snow from July to mid-September.

Land Status

The land under consideration by company #743457 Alberta Ltd. is held by Ron Berdel of Whitehorse, Yukon. Table 1 gives the claim information and schedule.

Table 1: Claims Schedule

Claim Name	Claim Number	Grant Number	Record Date	Expiry Date	
~~D~~	~~1-2~~	~~YB59266-59267~~	~~April 3, 1995~~	~~April 3, 2000~~	
~~E~~	~~1-2~~	~~YB59268-59269~~	~~April 3, 1995~~	~~April 3, 2000~~	
Star	1-8	YB59270-59277	April 3, 1995	April 3, ~~2000~~	April 3, 2001*
Dad	1-13	YB60965-60977	April 25, 1995	April 25, 2000	
Dad	14-17	YB62267-62270	Oct. 26, 1995	Oct. 26, 2000	
Dad	18-21	YB70832-70835	Aug. 25, 1995	Aug. 25, 2000	
Riba	1-6	YB60978-60983	Sept. 25, 1995	~~Sept. 25, 2000~~	

* if report is accepted

EXPLORATION AND PRODUCTION HISTORY OF THE KETZA RIVER AREA

In 1947, Hudson Bay Mining and Smelting first discovered silver-lead veins in the Ketza River area. These veins have been intermittently explored by drilling, trenching, and short adits by various companies with limited success. The best-explored and largest vein is the "Stump A1 Vein" discovered in 1966. It has probable reserves of 49,800 tonnes grading 20.0% lead and 719.9 g/t silver (Orssich et al., 1985).

Conwest Exploration Company Ltd. discovered gold in 1954-55 in the Ketza River area. Exploration from 1955 to 1960 defined sulphide reserves of 68,000 tonnes with an average grade of 12 g/t Au. Exploration ceased in 1960 due to economic pressures.

In 1984, Pacific Trans-Ocean Resources Ltd. optioned the property from Canamax resources. Over 3 years, they defined oxide reserves of 495,000 tonnes grading 18 g/t Au and a sulphide reserve of similar size grading 9 g/t Au. Mining began in 1988 and continued until 1990 when a drop in gold price and apparent exhaustion of oxide ore caused mining to be suspended. Remaining proven, probable and possible oxide reserves are 16,400 tonnes grading 9.7 g/t gold. Remaining proven, probable and possible sulphide reserves are 175,000 tonnes grading 11.3 g/t gold (Yukon Exploration, 1990, p. 6).

REGIONAL TECTONIC SETTING

The Ketza River deposits and prospects are hosted by Lower Paleozoic carbonate and clastic sedimentary rocks of the Cassiar Terrane (also called the Cassiar Platform). The Cassiar Terrane is part of the Proterozoic and Paleozoic continental miogeocline of ancient North America that has been displaced to the northwest by strike-slip motion along the Cretaceous to Tertiary Tintina Fault Zone. The Tintina Fault Zone lies less than 30 km to the east of the Ketza River Mine (Figure 2).

PROPERTY GEOLOGY

Stratigraphy and Intrusive Rocks

Miogeoclinal deposition along the ancient North American continental margin began in the late Proterozoic and continued into the Devonian. The oldest rocks exposed in the Ketza River area are shales and shaley quartzites of the Late Paleozoic Windermere Supergroup. These are overlain by Lower Cambrian limestone, calcareous argillite and dolostone. Cathro (1988) presents detailed stratigraphic divisions for the Lower Cambrian stratigraphy (Figure 3). Bluish-grey, thickly bedded to massive, archeocyathid-bearing limestone (unit 1d of Cathro, 1988) is the host to the Ketza River Mine.

A major depositional hiatus occurred in the Middle Cambrian. Unconformably overlying the Lower Cambrian strata is the Kechika Group. The Kechika Group comprises Upper Cambrian, chlorite-muscovite-quartz phyllite with minor lenses of chloritic phyllite conformably overlain by Early to Late Ordovician, recessive weathering, black graptolitic slate. Conformably overlying the Kechika Group is orthoquartzite and dolomitic siltstone of the Sandpile Group.

A second depositional hiatus occurred in the Devonian and is recorded by a disconformity or angular unconformity in the region. Upper Devonian and Mississippian slate, calcareous phyllite, siltstone and minor tuff of the Earn Group overly the unconformity.

Two klippen of volcanic rocks occur near the junction of Cache Creek and the Ketza River. These klippen are part of the Porcupine-Seagull Thrust Sheet (see below) and consist mainly of upper Cambrian to Ordovician quartz-muscovite-chlorite phyllite and green, moderately foliated, amygdaloidal volcanic rocks, minor chert and diorite (Cathro, 1988). These rocks are part of the Kechika Group (Mortensen, 1997, pers. comm.)

Strata of the Ketza River area are intruded by rare Mississippian syenitic sills and dykes. Approximately 20 km south of the mine site, the strata are intruded by Cretaceous-aged granitic plutons of the Cassiar suite (e.g. Abbott, 1986). Fleming (1988) reports minor diorite of uncertain age although further details are not given. Hall (1988) reported minor northeast-striking feldspar-phyric mafic dykes. He interpreted the dykes as Cretaceous-aged based on field relations that suggest the dykes cross-cut all structures and mineralization.

Structural Geology

Multiple phases of faulting and folding are present in the strata of the Ketza River area. Four large thrust faults, that strike northwest and dip gently southwest in the area are termed (from southwest to northeast): the McConnell, Porcupine- Seagull, Cloutier and St. Cyr. The Ketza area is also deformed by the Ketza-Seagull Arch (or "Ketza Uplift"), a northwest-trending, elongate window through the Porcupine-Seagull Thrust. This arch is interpreted to reflect doming over an unexposed Cretaceous intrusion (Abbott, 1986).

The structural history of the Ketza River Mine and surrounding area has been deciphered by Anna Fonseca (pers. comm. 1997) as part of an M.Sc. thesis. The following description and terminology (used throughout this report) is taken mainly from her work. Five phases of deformation are recognized:

Deformation Phases 1 and 2 (D_1 and D_2)

Two phases of ductile deformation are observed in the Ketza River area. D_1 resulted in large scale E-W trending, upright folds (F_1) with a well-developed axial planar foliation (S_1). D_2 produced large-scale F_2 folds, coaxial to F_1 folds, with moderately NNE dipping axial planes and an associated axial planar foliation (S_2). Locally, small scale F_2 folds fold S_1.

Deformation Phases 3 (D_3)

D_3 produced gently south-southwest-dipping, top-to-the-northeast thrust faults. Based on regional data, these faults are interpreted to be late Triassic to early Cretaceous aged as they involve Triassic-aged strata and are cut by mid-Cretaceous granitic plutons (J. Mortensen, pers. comm., 1996).

Deformation Phases 4 (D_4)

D_4 was an extensional block faulting event that may represent the brittle response to emplacement of a pluton. There is no regional expression of D_4 deformation. The most prominent D_4 fault is the east-west-striking, south-dipping, Peel fault. This normal fault divides the area into two stratigraphic domains: a northern domain composed of mainly Lower Cambrian argillites (unit 1a) and a southern domain composed of mainly Lower Cambrian limestone (unit 1d). Subsequent NNW-trending listric normal faults have broken the domains into four structural domains referred to as the (1) western half-graben, (2) central horst, (3) eastern graben and (4) eastern planar high-angle fault blocks (A. Fonseca, pers. comm., 1997).

Joints related to drag folds formed by D_4 listric faulting are closely associated with mineralized limestone. Several orebodies extend from the listric faults into mineralized limestone. Therefore, mineralization and D_4 faulting were contemporaneous.

Deformation Phases 5 (D_5)

At the Ketza Mine site, a late, high-angle, east- striking, reverse fault concealed most of the Peel Fault. D_5 was a local, post-mineralization event that caused only minor disruption of the orebodies.

MINERALIZATION

Mineralization in the Ketza River area has been divided into 4 types (Cathro, 1988, A. Fonseca, pers. comm., 1997):

1. auriferous quartz - arsenopyrite ± pyrite veins cutting Lower Cambrian argillite/quartzite (unit 1a of Cathro, 1988),
2. sulphide-rich and oxidized mantos and chimneys mineralization
3. limestone-hosted quartz-sulphide vein mineralization (generally barren)
4. silver-bearing galena-siderite quartz veins

Recent work by YGC Resources Ltd. has identified a fifth type of mineralization in the Ketza Mine area. This is a disseminated gold prospect, known as the "Shamrock Zone" hosted by Late Proterozoic to Early Cambrian argillites of unit 1a. A soil geochemistry anomaly of Au > 1.0 g/t that extends for over 1.9 km on surface in it's longest dimension overlies this zone. Numerous thin (millimetre scale) quartz ± pyrite lenses and stringers are present in the argillites and may contain the gold (Fonseca, pers. comm. 1997).

The source for mineralizing fluids in the Ketza River Mine area is a controversial subject. The presence of skarn mineralization (A. Fonseca, pers. comm. 1997) and $\delta^{18}O$ depletion halos around the mineralization (Staveley, 1992) suggest that a hydrothermal system driven by heat from buried plutons is a likely model for mineralization in the Ketza River area (Figure 4). However, the mineralization shows no spatial relationship to Mississippian volcanic and intrusive rocks. Most geologists who have studied the region consider mid-Cretaceous granitoid intrusions the most probable source for the mineralization (e.g. Fonseca, 1997, Staveley, 1992; Cathro, 1988; Abbott, 1986).

Type 1

The auriferous quartz – arsenopyrite ± pyrite veins occur in Lower Cambrian argillite and quartzite near the centre of the Ketza Uplift, where the argillites are strongly hornfelsed. The veins are moderately to steeply dipping with north to northeast strikes and consist mainly of coarse quartz and arsenopyrite locally with pyrrhotite and pyrite(?). Locally the veins are oxidized resulting in replacement of sulphides by scorodite and limonite and clay minerals. Oxidized veins have the highest gold grades, locally as high as 1000 g/t (Cathro, 1988). The veins are not extensive and account for only a small part of the gold tonnage in the Ketza River Mine. The orientation of the veins suggests that they may be related to D_4 normal faults (Cathro, 1988; Abbott, 1986).

Type 2

Type 2 mineralization is an epigenetic replacement mineralization developed in lower Cambrian limestone. The shape of the ore-bodies is irregular. Where mineralization is nearly stratabound it is referred to as "manto" (Spanish for "blanket"). Where it is strongly discordant to bedding, the mineralization is referred to as "chimneys" (Figure 4a). Type 2 mineralization was the main focus of mining activity at Ketza. The sulphide-rich mineralization consists mainly of semi-massive to massive pyrrhotite with varying amounts of arsenopyrite, pyrite, minor chalcopyrite and locally siderite. Quartz and calcite are the major gangue phases. Calcite, quartz and siderite veins related to the replacement process are common at manto margins (Staveley, 1992).

The oxide mineralization consists of limonite, hematite, other unidentified hydrous iron oxide minerals, clay minerals and quartz (Cathro, 1988; Staveley, 1992). The oxide-rich mineralization formed by in situ supergene replacement of the sulphide-mineralization. Oxidation is associated with an increase in gold grade and a decrease in environmental and milling problems. D_3 faults acted as barriers to meteoric water flow, preventing oxidation and preserving sulphide-rich mineralization. Where D_3 faults have been eroded away, oxide orebodies are developed (A. Fonseca, 1997).

Type 3

Type 3 mineralization veins are hosted by Lower Cambrian limestone. Its mineralogy is similar to limestone-hosted mantos: quartz, limonite, iron hydrous oxides, pyrrhotite, pyrite, arsenopyrite, scorodite and minor calcite. The quartz to sulphide ratio is highly variable. Locally the veins are oxidized. This mineralization is thought to be transitional to sulphide and oxide mantos (Staveley, 1992).

Type 4

The galena-siderite quartz-carbonate veins occur mainly east, north and south of the Ketza Uplift and cut Upper Cambrian to Mississippian strata (Cathro, 1988). The veins generally strike north or northwesterly and occur in or near NNW-trending faults (D_4 of Fonseca, 1997). The veins range from a few centimetres to over 5 metres wide and consist of variable proportions of galena, tetrahedrite, pyrite and lesser sphalerite, pyrrhotite and siderite. The veins are younger than the thrust faulting because they show no change in mineralogy or orientation across the thrust faults (Cathro, 1988). The largest of these veins is the Stump Mine A-1 Vein. It contains reserves of 50,000 tons of 17 oz/T Ag, 12% lead (Morin and Downing, 1984 referenced in Hall, 1988)

STAR CLAIMS

Four showings on the Star Claims were examined during the 1997 property visit: The F2 Vein, F2 Manto, Saddle Vein ("Trench 10") and Saddle Showing ("Trench 12") were examined. Previous exploration results and results from the 1997 property examination are given below for each showing.

F2 Vein

Previous Work and 1997 Property Visit

The F2 Vein is part of the Type 4 mineralization, originally discovered in 1949. An adit was put into the vein in the late 1960's after drilling intersected 3.35 metres of 21.6 g/t (0.63 oz/T) gold beneath the surface showing. Orssich and Harris (1986) describe the F2 vein as a "steeply dipping, north-trending vein fault with massive galena veins and lenses, siderite lenses and breccia zones".

From our 1997 examination of the area around the F2 Vein adit, the fault zone consists of several sub-parallel, north-northeast-striking, nearly vertical to steeply east-dipping faults that cut white, medium-grained quartzite. Slickensides on the fault planes are nearly vertical or pitch 60° or more to the north. Quartz and pyrite stringers trend parallel to or cut the bedding at the mouth of the adit and are truncated by the faults. Orssich and Harris (1986) reported brecciated quartzite cemented by quartz, disseminated pyrite, rare galena clots and cut by minor galena veinlets exposed in the adit.

Samples from 10 to 20 cm thick galena veins in the F2 adit assayed 925.7 g/t (27.0 oz/T) silver and 38.8% lead. Massive galena float found up to 300 metres from the adit returned values of 1172.6 to 2002.3 g/t (34.2 to 58.4 oz/T) silver and 51.6 to 80.4% lead. Siderite lenses in the fault zone range from 3.7 to 384.0 g/t (0.108 to 11.2 oz/T) silver, 2.22 to 19.7% lead, 20 ppb to 9.92 g/t (0.26 oz/T) gold and 172 ppm to 5.6% arsenic (Orssich and Harris, 1986). Sampling in 1987 (Abercrombie et al., 1987) returned assays of 12.55 g/t (0.366 oz/T) gold and 6.86 g/t (0.20 oz/T) gold.

Two holes were drilled in the vicinity of the adit in 1986 (IS-86-11 and IS-86-12). Hole IS-86-11 was a vertical hole drilled into the dolostone that stratigraphically underlies the quartzite. Quartz vein stockworks with minor pyrite and galena was cored in the quartzite and assayed 1691 ppm lead, 3.9 ppm silver and 65 ppb gold over 65 metres. No mineralization was encountered in the dolostone. Hole IS-86-12 intersected the F2 faults in quartzite and encountered 3.6 metres (true width) vein of ankerite, quartz, pyrite, calcite and sphalerite averaging 0.754 g/t (0.022 oz/T) gold. Quartz vein stockwork correlative with that encountered in hole IS-86-11 was intersected in hole IS-86-12 and averaged 108 ppb gold over 18 metres. Hole IS-86-13 tested the F2 fault ~135 metres south of the adit. In drill core, the fault is marked by 0.9 metres of intense quartz veining with minor pyrite and galena up to 3.6 metres in the footwall that assayed 34 ppm silver and 420 ppb gold.

In 1987 one hole was drilled to test the fault at depth (IS-87-26). It was collared in black shale and apparently followed the bedding plane. No mineralization was intersected.

F2 Manto

Previous Work

A soil geochemistry survey completed by Canamax in 1985 defined a broad intense Au-As-Ag-Pb anomaly that extended south from the F2 adit. Limonite, siderite and galena veins that assayed up to 8.8 g/t Au and a massive arsenopyrite boulder that assayed 17.21 g/t gold were discovered 200 m south of the adit. Subsequent mapping, soil survey, trenching and drilling by Canamax in 1987 revealed the north-trending, moderately east-dipping F2 Manto, exposed at surface over a 4 x 46 metre area. The F2 Manto lies at a thrust faulted contact between dolostone and quartzite and is composed of brown to orange limonite, green scorodaceous clay, altered dolostone and galena veins up to 10 cm wide. Length-weighted assays averaged 6.51 g/t gold, 46.29 g/t silver and 1.76% lead (Abercrombie et al., 1987).

Some drilling by Canamax in 1987 was completed before the F2 manto was located and thus, hole IS-87-27 apparently collared in the manto. Holes IS-87-28 and IS-87-29 were drilled to intersect the manto. Hole IS-87-28 was drilled 25 metres north of the trenched F2 manto. It encountered oxidized quartzite below a fault contact with siltstone but no manto. Hole IS-87-38 intersected the F2 manto that assayed 6.86 g/t Au over 3.5 metres (Abercrombie et al., 1987).

In 1988 an extensive drilling program of the F2 Manto was carried out to delineate the extent of mineralization. Fourteen holes with an aggregate length of 1506.33 metres tested a 125 by 250-metre area. Ten of the holes intersected dolostone beneath the quartzite but only four of those ten holes intersected gold-bearing sulphides. Drilling and trenching data indicate that the F2 Manto is developed in dolostone and is capped by a thrust fault. It dips moderately (40°) to the east and is bounded to the north and south by east-west-striking, steeply dipping reverse faults, to the west by the erosion surface and pinches out to lower grade to the east (Fleming, 1988: his Figures 5a and 5b). Marginal to the F2 Manto, coarse-grained ankerite, locally with massive galena and minor pyrite was encountered in drill core. Locally, this mineralization is gold-bearing. Assays for this mineralization are given in Table 2.

Table 2: Mineralized intersections from 1988 drilling of the F2 Manto

Drill Hole	**metres**	**Au (g/t)**	**Ag (g/t)**	**Pb %**
IS-88-44	2.4		222.52	7.21
IS-88-43		3.09	30.17	
IS-88-42	1.5		276.34	13.10
	0.6	1.71	84.34	4.42

Canamax considered that the extent of the F2 Manto was fully defined by drilling and a reserve of 9000 tonnes at a grade of ~ 6.86 g/t gold was estimated (Fleming, 1988). Outside the area of the F2 manto, dolostone was encountered beneath quartzite in only 2 drill holes. This was attributed to structural complications due to thrusting (Fleming, 1988).

1997 Property Visit

Examination of the F2 Manto by the author indicated that, on surface, it is composed of highly oxidized limonitic and hematitc material and variably oxidized dolostone. Massive sphalerite occurs in oxidized float and locally veinlets of brown, soft oxide material cut and brecciate the dolostone. Our observations confirmed the presence of the thrust fault structurally above the manto and the east-west striking, sub-vertical, reverse fault (south side down) at the south end of the manto (see Figure 4 of Orssich and Harris, 1986 and Figure 5a of Fleming, 1988). The thrust fault separates dolostone from stratigraphically overlying quartzite. In outcrop immediately overlying the trench in the F2 manto, a lens of non-calcareous grey phyllite is present along the thrust fault. The fault is curviplanar and where measured above the manto trench is oriented 322°/40°/NE. Deflection of phyllitic cleavage into the thrust fault suggest easterly-directed slip along the thrust fault. Reverse slip on the east-west striking faults (D_5 faults?) to the north and south of the manto have likely altered the attitude of the thrust fault from horizontal or gently southwest-dipping to its present northeast-dipping orientation. Numerous quartz-filled tension gashes were observed in the vicinity of the east-west-striking, reverse fault at the south end of the manto.

A sample of vuggy, highly oxidized material was collected from the F2 Manto during the 1997 site visit and assayed 7.595 g/t gold and 12.24 g/t silver confirming the analyses reported by Canamax. A sample of more competent material was also collected and assayed 0.88 g/t gold and 9.3 g/t silver (Table 3)

<u>Saddle Vein and Manto</u>

Previous Work

In 1985, soil sampling and subsequent prospecting located siderite and oxide boulders in talus that returned values up to 1.66 g/t Au approximately 570 metres west of the F2 Manto. In 1986, three hand trenches failed to reach bedrock but oxide pebbles from the trenches assayed up to 45.0 g/t Au. Bulldozer trenching in 1986 indicated that the oxide material occurs in a zone oriented: 165°/ 73°/W. Siderite and oxide veins in dolostone were reported.

In 1986, 3 holes (IS-86-14, 15, 16) were drilled to intersect the northern inferred extension of the veins and two holes (IS-86-17 and 18) were drilled into the showing (called the "Saddle Vein" by 1987). Hole IS-86-14 to 16 encountered minor thin oxide veins with no anomalous precious or base metal values. Holes IS-86-17 and 18 encountered the oxide veins at depth and obtained the following gold assays:

Drill Hole	Width (m)	True Width (m)	Au (oz/T)	Au (ppm)
IS-86-17	1.7	1.18	0.094	3.22
	1.5		0.017	0.58
	0.8		0.015	0.51
	0.4		0.062	2.13

IS-86-18	3.1	1.26	0.138	4.73
including	0.6	0.24	0.35	12.0

Structural interpretation of the drill hole data by Orssich and Harris (1986) indicates an open fold with a steeply west-dipping axial surface. However, folds of this orientation are unknown in outcrop and the interpretation does not account for a dolomitic argillite unit intersected in hole IS-86-14. Also this fold was not intersected in drill holes at the Saddle Vein outcrop, a mere 100 metres to the south. These observations suggest that the area is structurally more complicated than initial interpretations indicate.

Trenching approximately 225 metres to the south of the Saddle Vein revealed some yellow oxide and siderite material that assayed 2.12 g/t AU, 18 g/t Ag and 1.6 g/t Pb. This area was termed Trench 12 in 1986 and the Saddle Showing in 1987.

In 1987, exploration continued in the Saddle area. Grab samples from the "Saddle Vein" of siderite and oxide material return gold assays of 6.24 g/t (0.182 oz/Ton). More trenching in the Saddle Showing exposed an oxide manto over a surface area of 34 by 4 metres and a depth of approximately 2 metres. Abercrombie et al. (1987) described the manto as orange clay, limonite oxide, oxidized limestone and green (?scorodaceous) clay with minor 2 cm wide galena veins. Channel samples across the Saddle Showing were taken every 2 metres over the 34 metre length. They averaged 1.44 g/t (0.042 oz/T) gold, 8.7 g/t silver, 5425 ppm Arsenic, 1219 ppm lead, 221 ppm zinc and 307 ppm copper. One sample of earthy limonite with 5 % green clay assayed 6.07 g/t (0.177 oz/Ton) gold.

More trenching revealed several small oxide zones to the northwest of the Saddle Showing. These oxide zones (Trench #13, 14, 15) were inferred to lie along the same black shale-dolostone fault contact as the Saddle Showing. Anomalous gold values were obtained for all samples but values from Trench #15 were the best: 14.4 g/t Au, 6.86 g/t Ag and > 1% lead from grab samples. A sample out of Trench #16 ran 13.85 g/t Au, 5.14 g/t silver and > 1% arsenic. This trench is located 7 metres south of the 1986 sample site of oxide cobbles collected in a hand-dug trench that assayed 45.0 g/t Au.

A total of 9 holes with an aggregate length of 792.5 metres were drilled in the Saddle area in 1987. Holes IS-87-32 and 33 were drilled to intersect the southern extension of the Saddle Vein but encountered no mineralization. One hole (IS-87-37) was drilled to test trenched area approximately 100 metres north of the Saddle Vein where high grade float was originally found in 1985. No mineralization was encountered.

Three drill holes (IS-87-29, 30 and 31) were drilled in the Saddle Showing ("Trench 12"). Hole IS-87-29 intersected a fault contact between black shale and dolostone but no mineralization. Hole IS-87-30 intersected red limonite oxide with manganese staining that assayed 0.788 g/t Au over 0.4 metres. Hole IS-87-31 intersected oxidized dolomite with 10% siderite and oxide veins that assayed 0.48 g/t gold over 0.3 metres.

Three drill holes (IS-87-33, 34, 35) were drilled to intersect oxide mineralization exposed in Trenches 13 and 14, approximately 40 to 80 metres northwest of the Saddle Showing. Only hole IS-87-34 intersected mineralized oxidized material than assayed 0.58 g/t (0.017 oz/T) gold over 4.5 metres.

1997 Property Visit

During the 1997 property visit, the Saddle Vein and Saddle Showing and outcrops between the two mineralized areas were examined. Overall, the distribution of rock types as mapped by Canamax in 1986 and 1987 is correct. The Saddle Vein and Saddle Showing lie on the west and east side (respectively) of a northeast-trending fault. The western block consists of massive or weakly bedded, tan weathering, very fine-grained, crystalline grey dolostone cut by minor northeast-trending mafic, feldspar phyric, mildly amygdaloidal dykes. The eastern block is underlain by steeply south-dipping, interbedded dolostone, phyllite and siltstone. Bedding in the east block and a mafic dyke in the west block are truncated by the fault. Displacement sense along the fault is unclear.

The Saddle Vein area is underlain by tan weathering, grey, finely crystalline dolostone. The oxidized material contains specular hematite and very minor pyrite. Although highly disturbed by trenching and later slumping, the oxide material appears to broadly follow a parting that may be bedding with an orientation of 168°/80°/W. This is consistent with the orientation determined by Canamax. It was not apparent during the 1997 site visit that this oxidized zone was a vein. It appeared to be an oxide manto. One sample was collected from this site (K97-SD2-2) and assayed 0.642 g/t Au and 3.60 g/t Ag (Table 3)

The Saddle Showing manto consist mainly of orange, yellow and brown, highly oxidized material. Host rock enclosed by the oxidized material is altered to siderite, pyrite and calcite. Trace amounts of pyrite also occurs in the highly oxidized material. Contacts of the oxidized material are not exposed in the trench. However, dolostone that is exposed in outcrop up slope from the trench is highly fractured suggesting the presence of a fault in the vicinity of the oxidized material/dolostone contact. Oxidation is common along the fractures and rare iron oxide nodules, ≤ 1 centimetre across, are present in the dolostone. Canamax interpreted a thrust fault at the top of the Saddle Showing manto that separates dolostone (hangingwall) from calcareous phyllite (footwall). Subsequent drilling by Canamax confirmed the interpretation by intersecting fault breccia and oxidized material at the dolostone-phyllite contact.

Our examination of the Saddle Showing suggests that a fault in the vicinity of the manto is probable although the exact nature of the fault is unclear. Thrust faults by definition place older rocks over younger rocks. The thrust fault as mapped at the base of the Saddle Showing manto by Canamax places younger stratigraphy over older stratigraphy.

Two samples were collected for gold-silver assay from the Saddle Showing (K97-SD-1 and K97-SD-2). Both samples were from highly oxidized material although sample K97-SD-2 is slightly more competent material. The best assay result was for sample K97-SD-2 that assayed 0.969 g/t Au and 8.00 g/t silver.

Recommendation for Further Exploration in the Saddle and F2 area

The extent of the F2 manto is well defined by drilling by Canamax and warrants no further work. However, further exploration in the Saddle area is recommended. If oxidized material in Trenches 13, 14 and 15 can be correlated with the Saddle Showing then a potential strike length for the manto mineralization of up to 230 metres is realized. It is interesting to note that in the Star Claims area, Canamax geologists did not identify the lower Cambrian limestone that hosts the Ketza Mine deposits. The presence of manto type mineralization in this area indicates that all carbonate strata in the Ketza area have the potential to host sulphide and oxide manto/chimney mineralization.

Current mapping does not adequately define the structure of the area. The northeast-trending fault identified by Canamax and confirmed during the 1997 site visit may be a D_4 fault. Canamax (Abercrombie et al., 1987, their Figure 4) identified several other northwesterly and easterly striking faults of unknown displacement that may also be D_4 structures. As D_4 structures are known to be synchronous with and spatially associated with mineralization at the Ketza Mine, understanding the structural geology of this area is important.

The presence of mafic dykes in the region may also be important. The truncation of the mafic dyke in the Saddle area indicates it is older than the fault but its age is unclear. Similar dykes on the Riba Claims have been interpreted to as mid-Cretaceous (see below). Numerous mafic dykes (mapped as "syenite" by Canamax) are exposed to the southwest of the F2 Manto. Fleming (1988) interpreted the dykes to lie along easterly striking faults (D_5??) suggesting that they are relatively young dykes (possibly mid-Cretaceous??). Detailed structural mapping (1:1000 scale) and more trenching along the inferred trace of the thrust(?) fault is required to adequately assess the economic potential of this area.

Magnetometer surveys have been very successful in identifying mineralization on the Riba Claims (Hall, 1988 -see below). Overall, there was a paucity of geophysical surveys in the Canamax exploration programs. A magnetometer survey over the Saddle area should help to detect and delineate mineralized zones.

RIBA CLAIMS

Previous Work

The Riba Claims lie along, and up to 1 kilometre to the south of, White Creek. A preliminary evaluation of one of the showings in the area that is now part of the Riba Claims was undertaken by Golden Pavilion Resources in 1985 (Hall, 1988). A more detailed exploration program of geologic mapping, soil, stream silt and rock sampling, a proton magnetometer survey and minor trenching was carried out in 1986 and 1987 (Hall, 1988).

Mapping by Hall (1988) shows that the Riba Claims are underlain by dominantly Lower Cambrian limestone and phyllite and Ordovician-Silurian graphitic shale that dip moderately southwest and are folded about west-northwesterly trending, horizontal to gently east-plunging axes. Late massive to plagioclase phyric, mafic dykes trending northeast and associated horizontal sills that cut all other rock types and mineralization are reported by Hall (1988). On the basis on the geologic maps, the dykes are younger than the folding although their timing of emplacement relative to the northwest-striking normal faults is unknown.

Hall (1988) documented east-west trending folds and at least two phases of cleavage. The first phase cleavage (S_1) is parallel to bedding and the second phase (S_2) cuts S_1. These structures can be attributed to D_1 and D_2 deformation.

Several northwest-striking, steeply dipping, east-side-down, normal faults were identified by Hall (1988) based on stratigraphic offsets in outcrop and by truncation of magnetic anomalies. Hall (1988) interpreted these faults to be relaxation features related to regional thrust faulting. Tempelman-Kluit (1977) mapped a northeasterly striking fault along the White Creek valley during regional mapping ("White Creek fault").

Over 35 mineralized showings were located by Golden Pavilion's exploration program, 25 of which are manto-type (Hall, 1988). The main showings are (from east to west) the Jessica, Ridley, Young, Gray, Main and Sonny Showings. Hall (1988) reports that soil geochemistry anomalies and magnetic anomalies coincide with areas of known mineralization and are useful prospecting tools.

1997 Property Visit

Structural Geology

The Ridley, Young, Gray, Main Showings were examined during the 1997 site visit. The presence of a mainly southerly dipping, folded sequence of phyllite, limestone and dolomitized limestone was confirmed. Although examination of outcrop in the vicinity of the Ridley showing indicated more folding than is reported on Gold Pavilion's geological maps, the general sequence of folding and subsequent normal faulting as defined by Hall (1988) is correct. However, Hall (1988) found no evidence for the White Creek Fault as defined by Tempelman-Kluit (1977). From our brief examination, it appeared that mesoscopic close to tight, east-west trending folds with steep northern limbs, that are exposed west of the Ridley Showing, may continue on the ridge north of White Creek. Given the small interlimb fold angle of these folds and the presence of the same(?) fold hinge exposed at a higher elevation along trend of the fold axis on the next ridge, then a normal fault, south-side down, in the White Creek valley is probable. The White Creek Fault is probably a D_4 fault like the east-west-striking Peel Fault exposed ~ 5 km to the north. If so, the north-west-striking normal faults that cut the Riba Claim area, may be analogous to the D_4 listric normal faults developed in the Ketza Mine site. Detailed geologic mapping with a structural focus of the Riba Claims and ridge north of White Creek are required to assess this interpretation. As D_4 faults are known to be synchronous with mineralization at the Ketza River Mine (A. Fonseca, 1997, pers. comm), the presence of D_4 faults in the claim area increases it's economic potential.

Mineralization

Ridley Showing

The Ridley Showing consists of siderite, carbonate, specular hematite, dark green chlorite and pyrite in mantos and chimneys that follow and cut bedding parallel cleavage in the dolomitized limestone host rock. Where the mineralization cuts the cleavage, it has a planar fracture cleavage oriented 180°/78°/N. No samples were collected during the 1997 visit. Hall (1988) collected a 13 channel samples and 2 grab samples from this showing, none of which returned anomalous metal values except for iron. The highest gold value attained was 31 ppb in Sample B-614.

Young Showing

The Young Showing is a gossanous zone in a creek bed. No outcrop at this showing was examined during the 1997 visit but Hall (1988) reports veins of pyrite, galena, pyrrhotite and arsenopyrite hosted in massive Lower Cambrian Limestone. Assays for four grab samples collected by Gold Pavilion are tabled below:

Table 4: Assays from the Young Showing

	Au	Ag	Cu	Pb	Zn	As	Sb	Bi	Fe
	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
C307	6	112.4	384	16813	42	10	104	19	46.85
C308	24	156.6	381	14947	36	11	149	34	43.79
C309	3	270.4	425	14898	33	11	289	24	41.29
C310	280	160.5	232	15507	53	4	157	2	50.86

Grey Showing

A trench in the Grey Showing was examined during the 1997 visit. It is unclear if this trench is 87-1 or 87-2 of Hall (1988) although the host rock is a fine grained dolomitic limestone and no galena was observed which suggests that it was Trench 87-1 that was examined. The area consists of a prominent gossanous zone on a northwesterly facing slope. Slumping had obscured some of the exposure.

Mineralization in the trench is hosted by massive sugary grey limestone and consists of variably oxidized material containing pyrite, dolomite, ?siderite, and minor chlorite intergrown with magnetite. The orientation of the oxidation with respect to bedding could not be determined.

Channel samples by Hall (1988) from Trench 87-1 did not return high gold values. The two highest assays were 510 ppb Au (C-507) and 465 ppb (C-510). Channel sample C-544 from Trench 87-2 contained the highest gold at 1.02 ppm and the highest Pb (14386 ppm), Ag (61.9 ppm), As (14998 ppm) and Sb (95 ppm). Hall (1988) noted that the higher gold values occurred in the most oxidized material in Trench 87-1 and the most sulphide-rich vein material in Trench 87-2. During the 1997 site visit, samples were taken from Trench 87-1 (?) from irregular patches of soft, highly leached material with boxwork after sulphides (sample K97-GS-1) and slightly more competent, oxidized material containing disseminated euhedral pyrite crystals (sample K97-GS-2). Sample K97-GS-1 assayed only 0.040 g/t gold and 0.74 g/t silver whereas sample K97-GS-2 assayed 2.54 g/t gold and 5.10 g/t silver (Table 3). The latter sample contains more gold than any sample reported by Hall (1988).

Main Showing

The Main Showing is prominent gossanous manto of highly fractured material exposed over a surface area of approximate 20 by 15 metres. The oxidized material consists predominately of hydrous iron oxides, siderite and locally pyrite cut by quartz and quartz-carbonate veins generally 5 to 20 cm wide. The oxidized material is highly fractured with prominent subvertical to vertical fracture sets trending northwest and northeast. Some of the quartz-carbonate veins trend parallel to the fracture sets, others have no preferred orientation. The oxide material is parallel to slightly discordant with steeply dipping bedding in a limestone unit and lies a few metres above a contact to the north with grey phyllite. The oxide cuts a well-developed, easterly striking, shallowly south-dipping cleavage (010°/25°/SE) in the limestone. The regional significance of this cleavage is unclear. Pinkish calcite veins were observed near the lower contact of the oxide manto.

Hall (1988) reports that sampling at the Main Showing indicated elevated but non-economic values of Fe, Cu, W, Pb, As, Ag, Bi and Sb. Three samples were collect during the 1997 site visit (Table 3). Extremely weathered, crumbly oxidized material (K97-MS-3), slightly more competent, vuggy oxide material containing minor pyrite (K97-MS-1) and the quartz-carbonate veins (K97-MS-2) were sampled. The oxidized material returned anomalous gold and silver values of 0.130 g/t Au, 0.39 g/t Ag and 0.196 g/t Au, 0.27 g/t Ag. The quartz-carbonate veins assayed the highest gold at 0.340 g/t but low silver (0.01 g/t Ag).

Jessica and Sonny Showings

These showings are outside the Riba Claim block and were not examined during the 1997 property visit. Hall (1988) reported that te Jessica Showing consists of massive and vein siderite hosted by Lower Cambrian massive limestone. Rock sampling did not return significant metal values.

The Sonny Showing is described by Hall (1988) as massive siderite mineralization containing minor disseminated and vein pyrite. A magnetic (high) anomaly is associated with the Sonny Showing. However, rock samples collected by Hall (1988) returned Au values of only 1 ppb. Abbott (1986) describes the Sonny showing as three mantos of unknown orientation, composed of siderite, pyrrhotite, pyrite and quartz, exposed over a strike length of ~ 1 kilometre. Soil sampling yielded anomalous gold values (10 ppb with a background of 1 ppb) over the Sonny showing (Hall, 1988).

Quartz Veins

Hall (1988) reports several quartz-sulphide veins hosted in the Lower Cambrian limestone that also hosts the showings discussed above. These are likely Type 1 mineralization. Most of the veins strike east-northeast and dip gently south or north. Sulphides in the veins are pyrite, chalcopyrite or galena. These veins are generally anomalous in copper or lead-zinc and slightly anomalous in gold (e.g. Au 365 ppm).

Magnetometer Survey

A ground magnetometer survey was carried out by Gold Pavilion and the survey results are presented by Hall (1988). Examination of the results shows that the showings are associated with magnetic highs (paired with magnetic lows – a dipolar affect). These magnetic high/low pairs are attributed to pyrrhotite in the mineralization by Hall (1988). This is a very reasonable interpretation given the non-magnetic nature of the host rocks.

Oxidation will destroy the magnetic signature of the sulphides (e.g. Criss et al. 1985). Considering that the oxidized mineralization has the highest gold grades at the Ketza Mine site, isolated magnetic lows on the Riba Claims should also be considered exploration targets. One isolated magnetic low approximately 400 metres northwest of the Main Showing was defined by the magnetometer survey. Two hundred metres down slope from this anomaly, soil geochemistry yields anomalous gold values in three samples, ranging from 13 to 37 ppb. Another pronounced, isolated magnetic low occurs approximately 500 metres northeast of the Ridley Showing. Soil geochemistry indicates anomalous gold to the west of this magnetic low.

Recommendation for Further Exploration on Riba Claims

- detailed magnetometer survey over Grey Showing where have obtained best Au assays and where a D_4 (?) fault is mapped (Galena Fault of Hall, 1998); survey spacing at about 10 metres is suggested
- detailed soil and magnetometer surveys over isolated lows mentioned above – note that this requires more staking west of the current claims for the mag low northwest of the Main Showing
- if the area west of the current claims is staked to cover the isolated mag low northwest of the Main Showing, it is recommended that the claims extend over the Sonny Showing and a detailed soil and rock sampling program over the showing be undertaken.
- more trenching and sampling pending results of the magnetometer survey
- Lower Cambrian phyllites, poorly exposed at low elevations in the map area should be prospected for disseminated gold prospects. Approximately 550 metres northwest of the Jessica Showing in the east part of the area explored by Hall (1988) and along lower sloped northeast of the Ridley Showing, where lower Cambrian phyllites are exposed or extrapolated, anomalous gold values from soil samples have been obtained. The Au values average 10-15 ppb with a regional background value of 1-2 ppb. Although the anomaly is not as intense as the gold anomaly as that reported over the Shamrock Zone to the north, disseminated gold mineralization is a recent concept in the Ketza River area and should be considered in the Riba Claim area.

OTHER CLAIM BLOCKS

Mineralization on the D, E and Dad Claims was not examined during the property visit. Type 1 quartz-sulphide veins are known to occur on the D Claims (e.g. Abbott, 1986). Lower Cambrian limestone and D_4 structures (including the Peel Fault) underlie the area of the Dad 3, 4, 5, and 6 claims. Exposure is poor below tree-line on these claims. Therefore, a review of reports for this area, a ground check of the known showings followed by a magnetometer survey is recommended for this area. Pending results, a trenching and detailed sampling program should be carried out in favourable areas.

BASE METAL POTENTIAL ON THE RIBA PROPERTY

Base metal mineralization, if present on the Ketza Property, would likely be in the form of a Ag-Pb-Zn sulphide vein/replacement of carbonates or calcareous strata. Mid-Cretaceous plutons and dykes would provide the hot acidic fluids to dissolve the carbonate and presumably a metal source and existing or syn-plutonic faults would provide the fluid channelways. A similar mineralization model is proposed for carbonate-hosted skarn, vein and replacement deposits in the Rancheria district of north-central British Columbia and south-central Yukon. There, the favourable hosts are the mid-Devonian McDame Group (e.g. Midway Deposit) and Lower Cambrian Kechika Group (e.g. Amy Prospect). All three intrusive episodes in the region (100 Ma, 70 Ma and 50 Ma) can be linked to mineralization in the region. Estimated reserves for the Midway Deposit are 1.2 million tonnes grading 410 g/t silver and 12% combined lead and zinc (Nelson and Bradford, 1993).

Base metal potential on the Riba claims is considered to be low given that known sulphide manto mineralization is pyrrhotite-dominated. Lead anomalies identified in early soil geochemistry surveys probably reflect a combination of sulphide manto mineralization and quartz-sulphide vein mineralization. Hall (1988) attributed anomalous lead in soil samples to minor galena present in the sulphide mantos. However, the main components for Ag-Pb-Zn sulphide vein and replacement mineralization of carbonates are present in the Ketza River area and if soil surveys are carried out on the Riba claims, samples should be analysed for both precious and base metals.

RECOMMENDATIONS FOR EXPLORATION IN THE KETZA AREA

The Ketza River area warrants more exploration as discussed above. It is reasonably accessible by road which would greatly reduce exploration costs compared to helicopter accessible properties. Given the presence of mineable reserves in the region, the probability of discovery of more economic mineralization in the Ketza area is high. A work crew of 4 people (2 to establish flagging grids and 2 to conduct the geological and geophysical surveys) would be required for approximately 2.5 months to complete the recommended exploration. However, given the currently low gold prices, it is recommended that company #743457 Alberta Ltd. decline further work commitments at this time in favour of properties with base-precious metal mineralization potential or better defined (i.e. drillable) precious metal targets.

Table 3: Gold and Silver Assays for 1997 Ketza Samples

Location	Sample	Assay Number	Au (ppm)	Ag (ppm)
F2 Manto	K97-F2-1	261525	7.595	12.24
	K97-F2-2	261526	0.880	9.30
Saddle Zone	K97-SD-1	261522	0.540	4.59
	K97-SD-2	261523	0.968	8.00
	K97-SD2-1	261524	0.642	3.60
Riba Claims	K97-GS-1	261517	0.040	0.74
(Grey Showing)	K97-GS-2	261518	2.540	5.10
Riba Claims	K97-MS-1	261519	0.130	0.39
(Main showing)	K97-MS-2	261520	0.340	0.01
	K97-MS-3	261521	0.196	0.27

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Statement of Cost

The report subtitled "Report on the Field Examination of the STAR Reba Claims Ketza River Area, Yukon, March 2000" by H. Plint Ph.D. P. Geol. cost at least $800.00 to produce.

Ron Berdahl

Statement of Qualification

Heather Plint has written this report based on a property visit and listed references. She has a Ph.D. in structural geology and is a P.Geol.

REPORT ON FIELD EXAMINATION OF THE STAR AND RIBA CLAIMS, KETZA RIVER AREA YUKON

Heather Plint, Ph.D., P. Geol.,

March, 2000

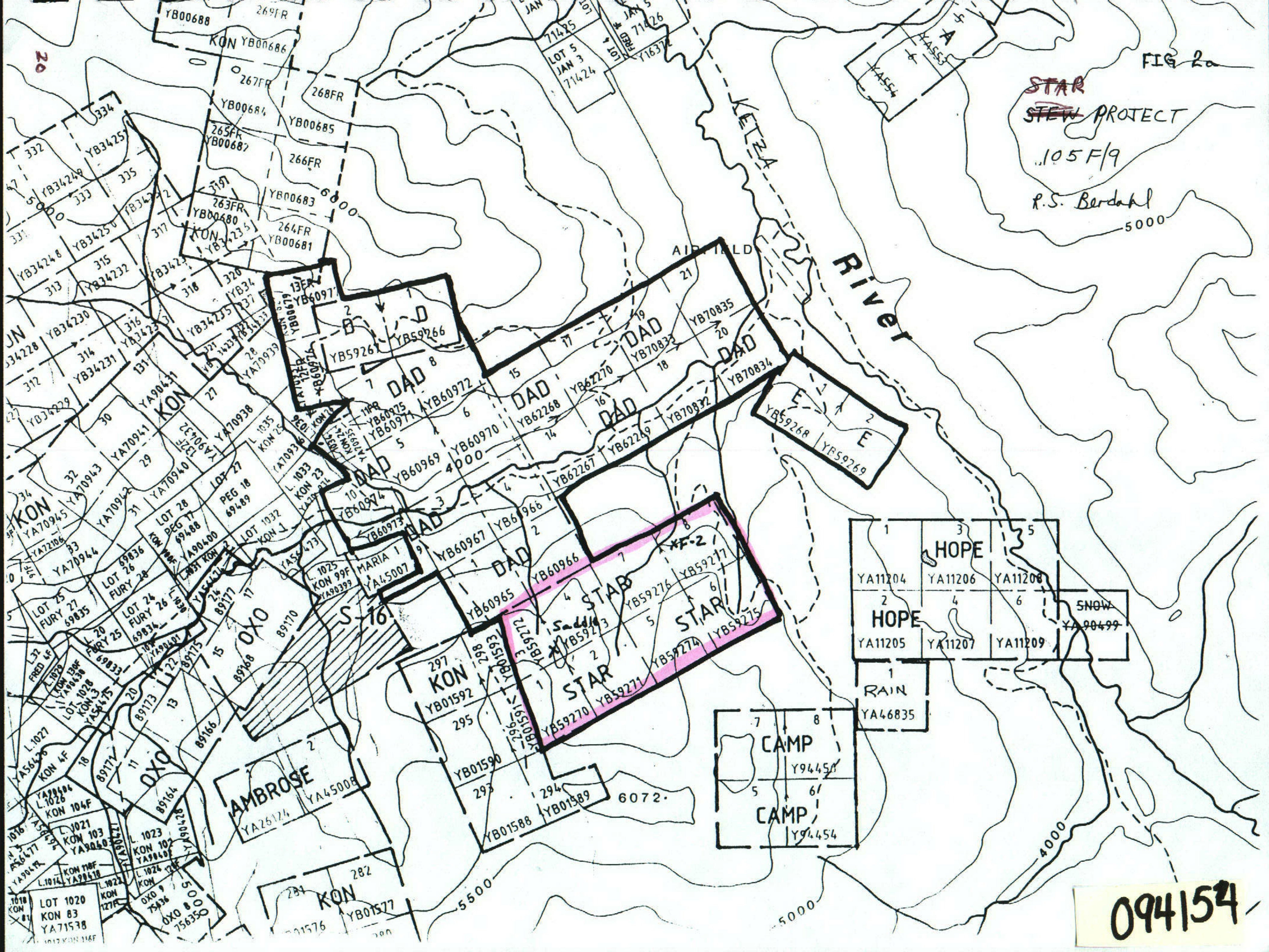

FIG 2a
STAR
STEW PROJECT
105 F/9
R.S. Berdahl
KETZA
River
AIRFIELD
DAD
STAR
XF-2
Saddle
HOPE
SNOW
YA90499
RAIN
YA46835
CAMP
Y94454
KON
OXO
AMBROSE
YA26124
YA45008
MARIA
YA45007
S-16
6072
5000
5500
4000
6000
YB59270
YB59271
YB59272
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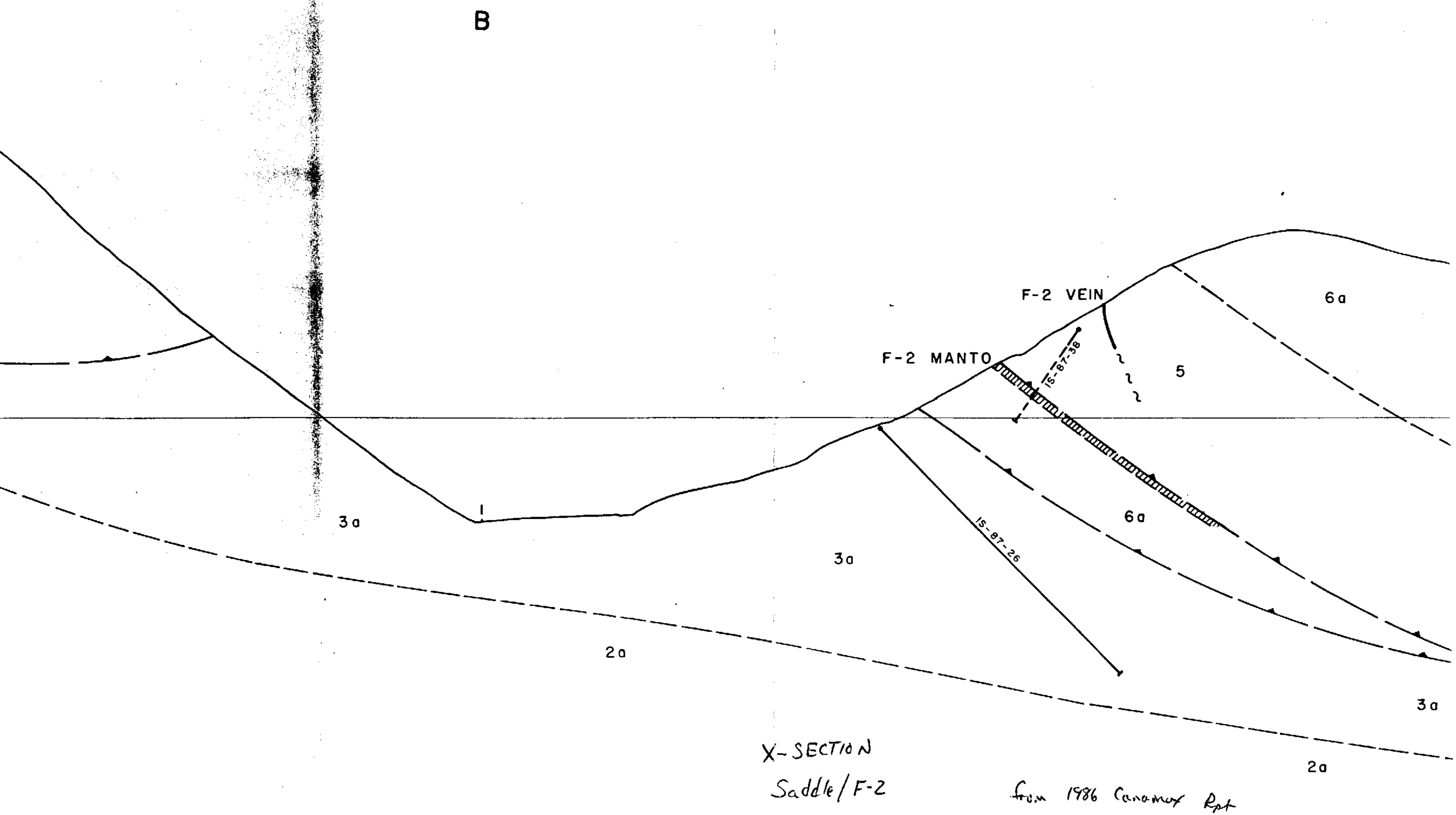
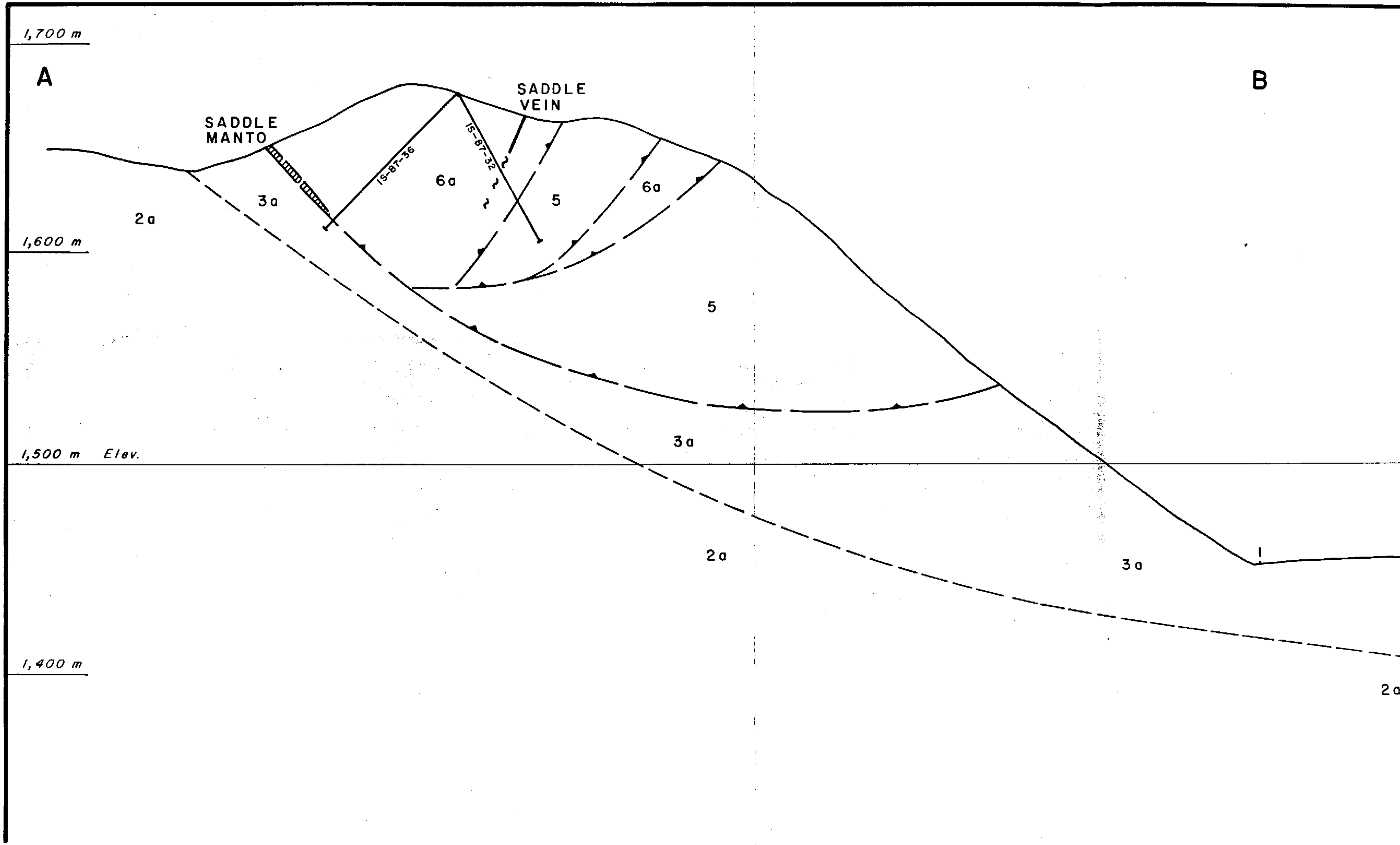


B
F-2 VEIN
F-2 MANTO
6a
5
IS-87-38
1
3a
6a
IS-87-26
3a
2a
3a
2a
X-SECTION
Saddle/F-2
from 1986 Canamax Rpt


1,700 m
A
B
SADDLE VEIN
SADDLE MANTO
IS-87-36
IS-87-32
6a
5
6a
3a
2a
1,600 m
5
3a
1,500 m Elev.
2a
3a
1
1,400 m
2a

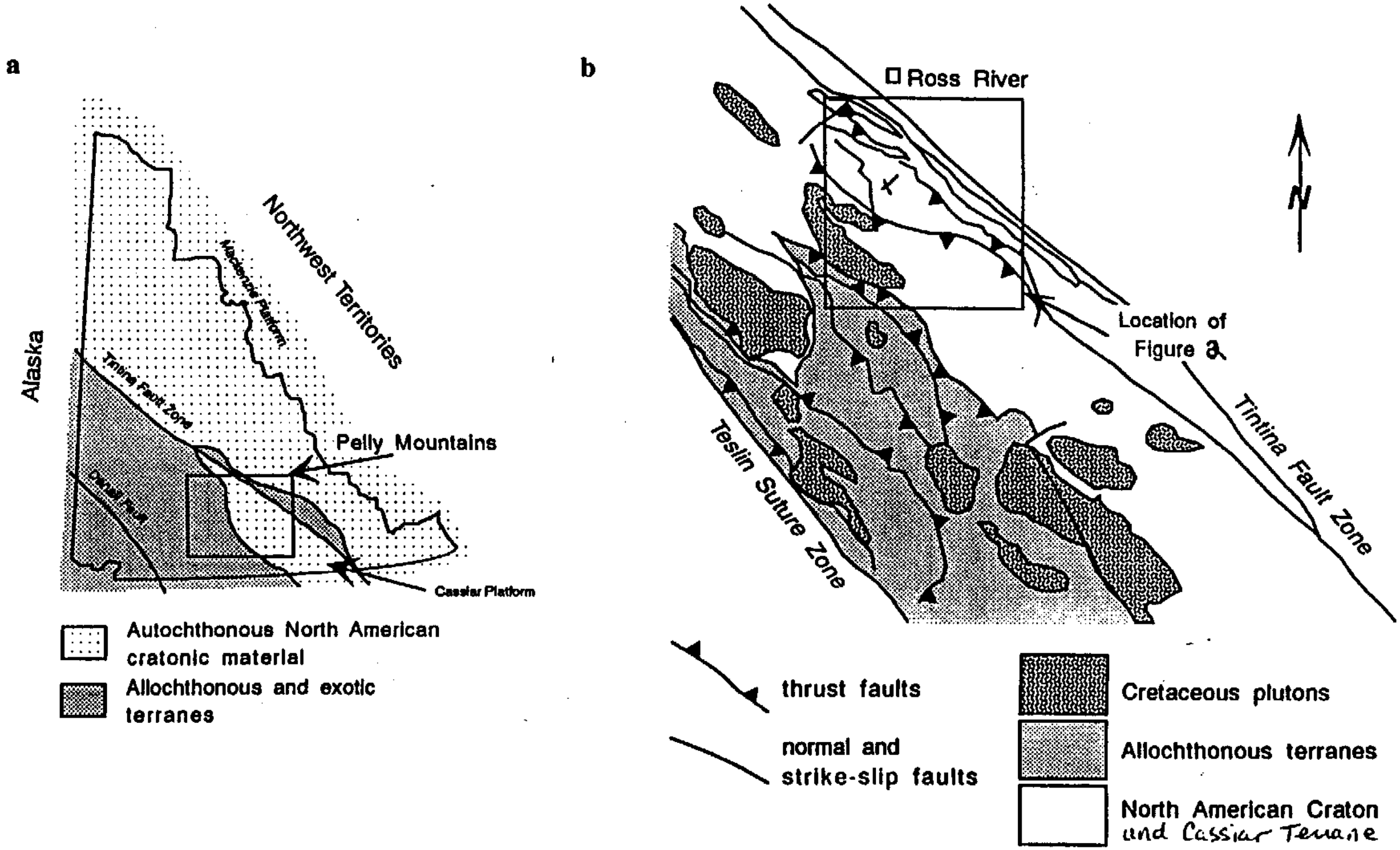


Figure 1: Tectonic and lithologic units of a. Yukon Territory and b. Pelly Mountains area (b. simplified from Wheeler and McFeely, 1991)

FROM: Staveley, 1992

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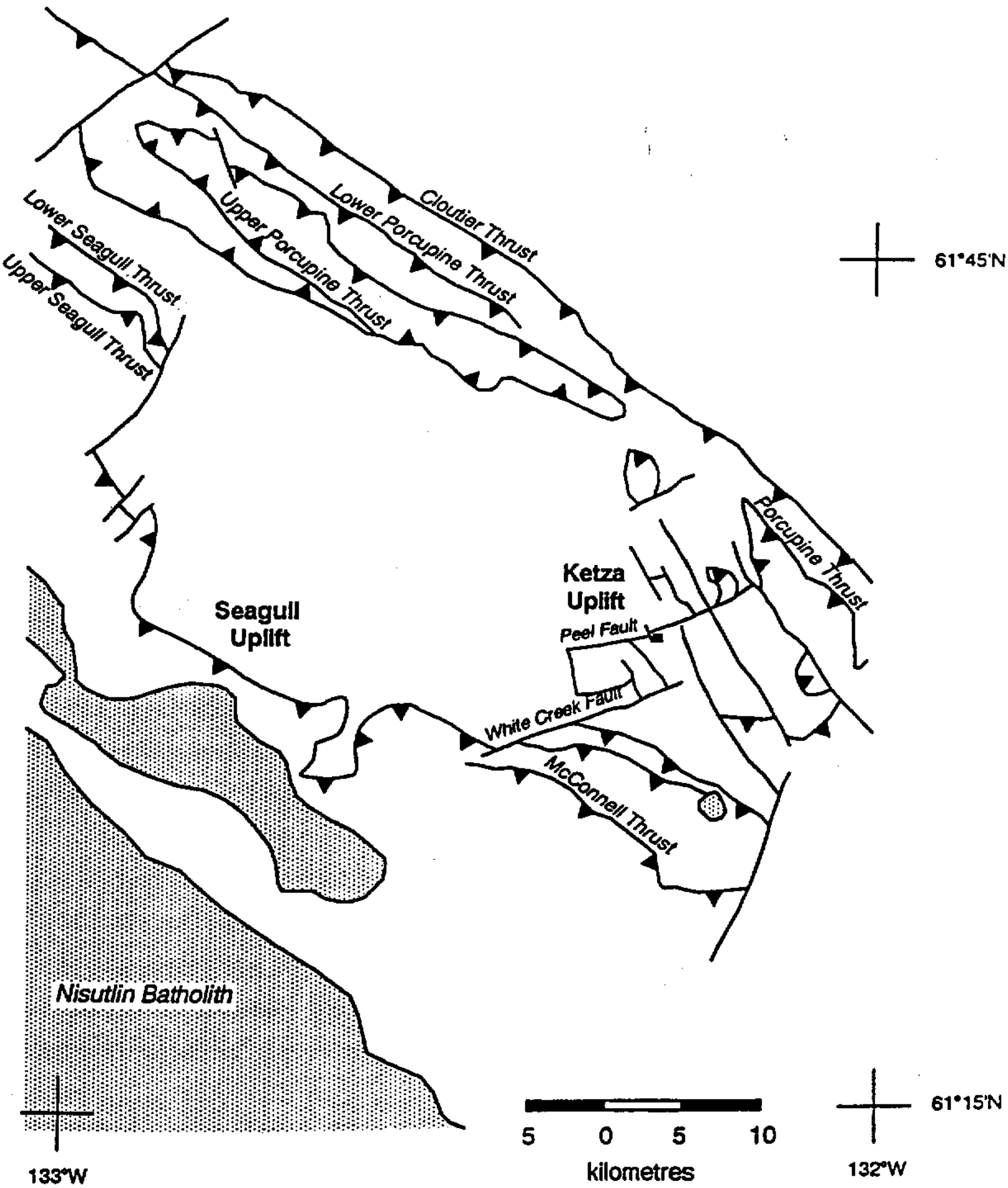

Figure 3: Major thrust faults in the Ketza-Seagull District, modified from Abbott (1986).

From: Staveley, 1992

rugged St. Cyr Range of the Pelly Mountains (N.T.S. 105 F 09, '32'N, 132°15'W). A 45 km gravel road connects the Canamax ıp with the Robert Campbell Highway at a point 23 km southeast loss River.

The first discovery in the district was a silver-lead vein found 947 by Hudson Bay Mining and Smelting Co. Ltd. The Ketza r gold deposit (formerly known as the BOOM or WOODCOCK wing) and many of the larger silver-lead occurrences, were overed by Conwest Exploration Co. Ltd. and others in 1954 and 5. The silver-lead veins have been intermittently explored with :hing, drilling, and underground work (12 short adits) by various ests until the present with only limited success. Only very minor uction of hand cobbed ore has taken place. The STUMP (or in, discovered in 1966, is the best explored and by far the largest e veins with probable reserves of 49,800 tonnes grading 20.0% nd 719.9g/t Ag (Orssich et al., 1985).

Conwest explored the Ketza River gold deposit with trenching 59 drill holes from 1955 until 1960, and outlined sulphide ves of 68,000 tonnes grading 12 g/t Au (Rotherham, 1958). property then lay dormant until 1984 when Pacific Trans-Ocean urces Ltd optioned the property from Conwest and entered in- joint venture agreement with Canamax Resources Ltd. Ag- ive drilling and underground development to the end of 1986 lelineated reserves of 1.0 million tonnes averaging 13.7 g/t Au hern Miner, February 9, 1987).

Two factors have been primarily responsible for the greatly in- ed tonnage and economic viability of the Ketza River gold sit: 1) appreciation by Canamax geologists of the geometry and ontrols of similar deposits in the U.S. and 2) recognition of the tial for large tonnages of metallurgically superior oxide alization in structurally prepared zones.

IONAL GEOLOGY

s summary of the regional geology is based on published tions of the geology of the Pelly Mountains and Ketza River t, including Wheeler et al. (1960), Tempelman-Kluit (1977a,), 1979, in prep.), Tempelman-Kluit et al. (1975, 1976), Read), and Abbott (1986). The Ketza River district is underlain by ately folded and faulted Paleozoic miogeoclinal strata of the Cassiar Platform (Fig. 1), which are interpreted as ithonous and parautochthonous to the North American craton mpelman-Kluit (1977a).

our significant thrust faults, the McConnell, Porcupine-Seagull, er, and St. Cyr Thrusts, run parallel to the Tintina Fault and rerally southwest (Abbott, 1986). Most rocks in the Ketza River t are part of the Cloutier Thrust Sheet although two small klip- long to the overlying Porcupine-Seagull Thrust Sheet. Thrusting oly occured during the Late Jurassic and Early Cretaceous elman-Kluit, 1979). The northwest-trending Tintina Fault d 15 km northeast of the District, (Fig. 1), has experienced at 450 km of dextral, transcurrent offset since the middle eous (Gabrielse, 1985).

ne most prominant structural feature in the Pelly Mountains Ketza-Seagull Arch (Abbott, 1986), an elongate, northwest- ıg window through the Porcupine-Seagull Thrust that is pro- inderlain by, and related to buried Cretaceous intrusions. Ab- nsidered the Arch to be made up of two smaller domal struc- he Seagull Upleft and Ketza Uplift. Structure in the window acterized by steeply dipping normal faults.

ıe Ketza Uplift, situated in the center of the Ketza River District was first postualted to be underlain by an intrusion by Parry 984). This theory is supported by the presence of a magnetic y, hornfelsing, and hydrothermal alteration immediately north Ketza River gold deposit. The hornfels has been dated by whole- Ar as Middle Cretaceous (101 ±4 Ma; K.M. Dawson. .S.C., pers. comm. to S.E. Parry).

L GEOLOGY

e Ketza River District is underlian by five main units that range rom Lower Cambrian to Missisippian. These are shown in

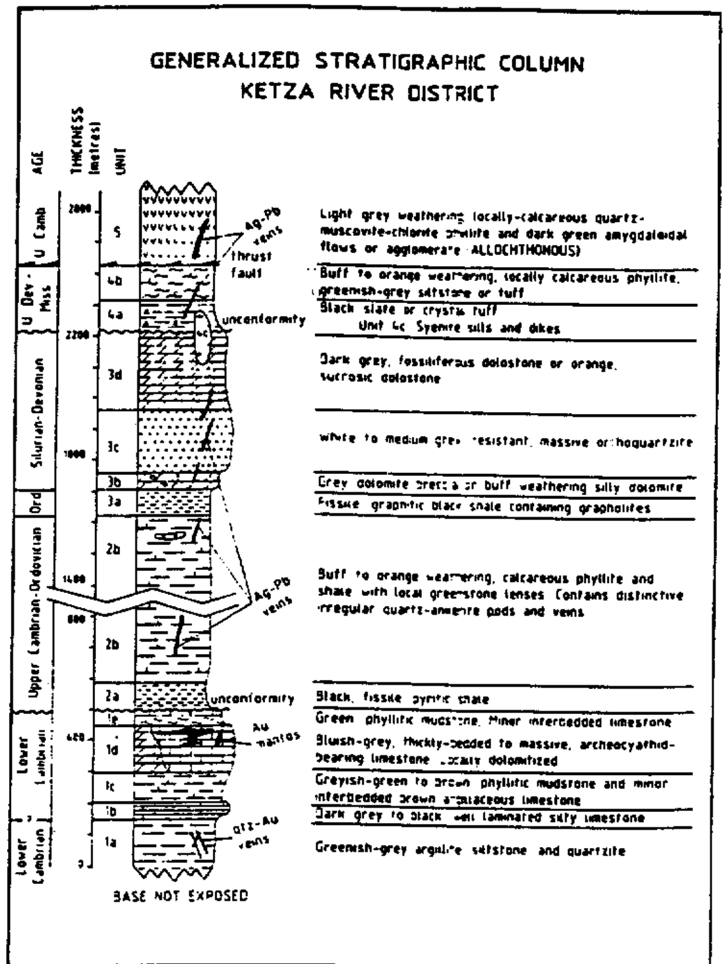

Figure 3. Generalized stratigraphic column for the Ketza River District including the relative positions of important mineral deposit types (modified after Tempelman-Kluit, 1977a; Read, 1980; and unpublished Canamax Resources reports). FROM: Cathro 1988

Figures 2 (generalized stratigraphic column) and 3 (simplified geology map). Cambrian through Mississippian strata of units 1 to 4 belong to the Clouteir Thrust Sheet and strata of unit 5 belong to the structurally overlying Porcupine-Seagull Thrust Sheet.

An excellent description of the Lower Cambrian sedimentary rocks (Unit 1) near the Ketza River gold deposit has been presented by Read (1980). His terminology of subunits within Unit 1 is adopted here with minor modifications. The other units are mainly modified after Templeman-Kluit (1977a) and unpublished company maps.

Unit 1: Lower Cambrian

The Lower Cambrian succession has been split into five lithostratigraphic subunits (1a through 1e) with an aggregate thickness greater thatn 500 m. The lower contact is not exposed and the upper contact is an uncomformity of probable Upper Cambrian age.

Unit 1a contains the oldest rock exposed and comprises green argillite, siltstone, and quartzite. The unit contains a strong hornfels on the north side of the ridge that hosts the Ketza River gold deposits.

Unit 1b, a narrow bed (25 to 60 m thick) of resistant, dark grey to black, well laminated, silty limestone conformably overlies Unit 1a. Contacts are sharp and the unit is an excellent marker.

Unit 1c consists Early Cambrian fossils and is composed of greyish green to brown, recesive-weathering, calcareous, phyllitic mudstone with minor interbedded argillaceous limestone. Large pyrite cubes may be present. This unit may be as much as 100 m thick. The upper contact with Unit 1d is gradational and arbitrary since it is defined as the point where carbonate makes up to more than half of the rock (Read, 1980).

Unit 1d, the main host for gold mineralization, is distinctive grey-blue, thickly bedded to massive, archeocyathid-bearing, cliff-forming limestone (Fig. 4). The unit is 120 to 180 m thick and made up

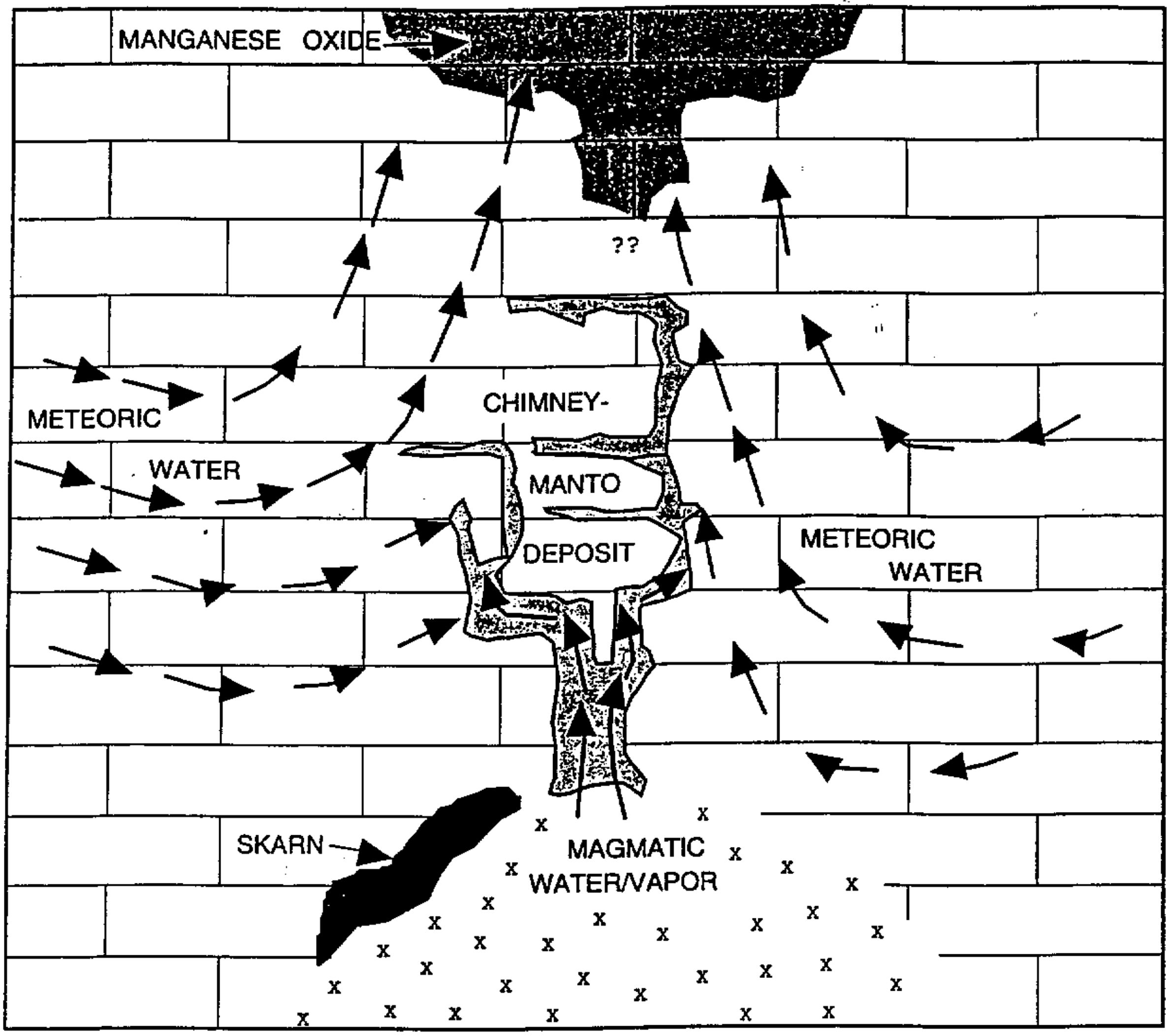

Figure 4A Schematic illustration of a chimney-manto deposit showing possible relation to underlying magmatic and peripheral meteoric hydrothermal systems.

sulfides with carbonate, quartz or fluorite gangue or Ca-Fe-Mg-Mn skarn with or without sulfides (Einaudi et al., 1981; Graybeal et al., 1986; Megaw et al., 1988). Both the skarn and massive sulfide bodies are thought to form largely by replacement of massive carbonate rock (Prescott, 1916; Stone, 1956; Hewitt, 1968), although open-space filling textures have been reported locally (Megaw et al., 1988) and could have been an important precursor to larger-scale replacement (Rye, 1993). Fluid inclusions from ore and gangue minerals in these deposits have salinities of up to 60% NaCl and homogenize at temperatures of 200 to 650°C (Sawkins, 1964; Erwood et al., 1979).

Many chimney-manto deposits appear to have formed in hydrothermal systems centered on igneous intrusions. Some districts are above regional domal uplifts that could be cored by intrusions, and dikes and sills of fine-grained felsite are common in some deposits (Stone, 1956; Hewitt, 1968; Megaw et al., 1988). Support for a genetic relation between magmas and ores comes from observations such as those by Ruiz and Barton (1985), who described a single ore body at Naica that grades downward from massive sulfide trough massive sulfide with a central skarn to skarn with a central felsite dike. Stable isotope evidence for the involvement of magmatic water and carbon in some deposits was reported by Rye (1966), Ruiz and Barton (1985) and Sweeney (1987), and Rye (1993) used these data to suggest that chimneys were formed by magmatic vapor plumes ascending through carbonate rocks. Other chimney-manto deposits lack strong evidence for close association with magmatic fluids and could have
heated by intrusions or possibly e
(Frimmel, 1995; Smith, 1995). R
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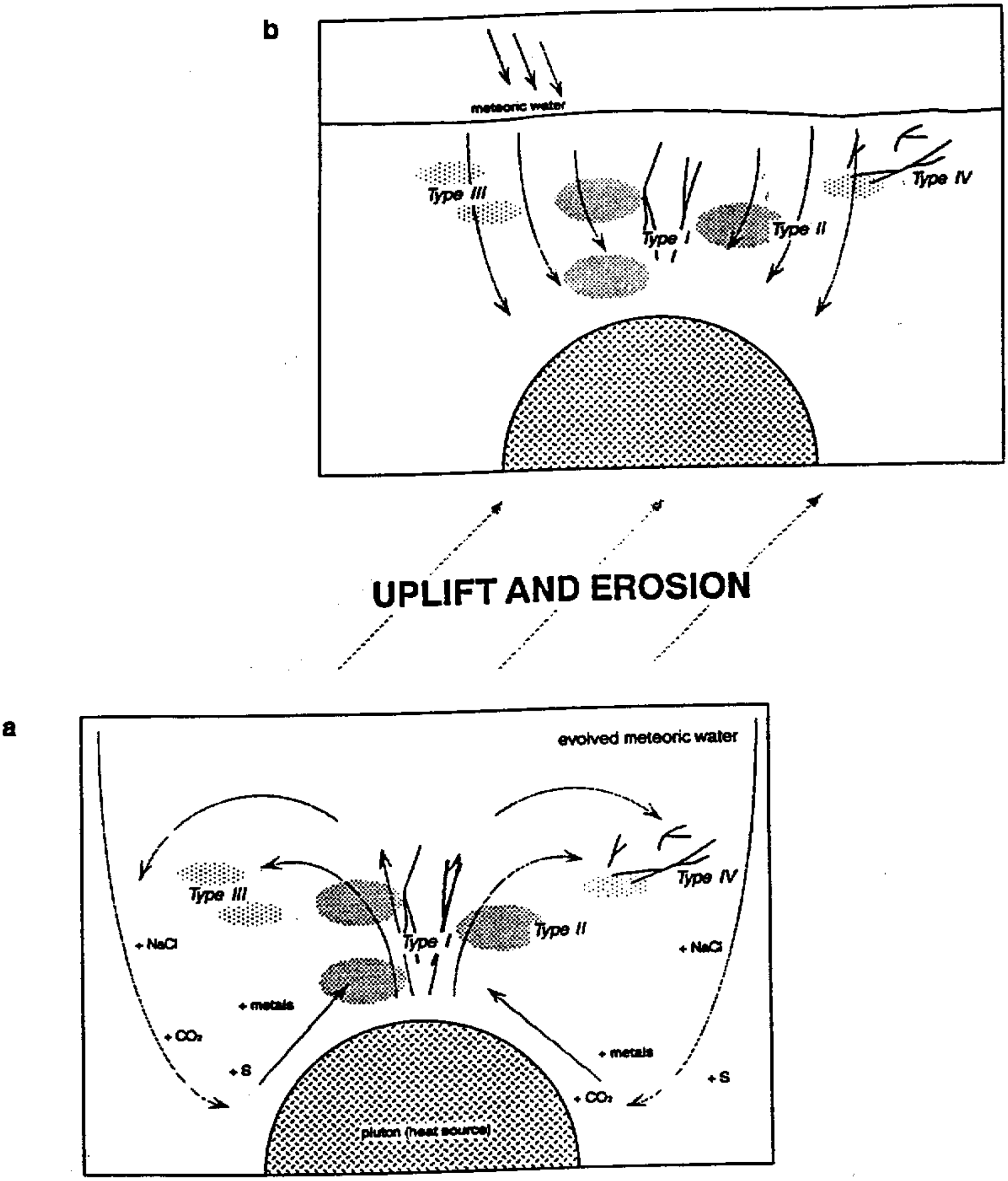

Figure 4B: Model of the Ketza River hydrothermal system responsible for producing the mineralisation styles described in the text - Type I: Au-quartz-sulphide veins; Type II: massive sulphide mantos; Type III: quartz-sulphide bodies; Type IV: Ag-Pb veins. a. Main mineralising event, a pluton-driven hydrothermal cell; b. Oxidising event, influx of low temperature meteoric water.

From: Staveley, 1992