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GEOLOGICAL SURVEY OF CANADA — COMMISSION GÉOLOGIQUE DU CANADA

MINERAL OCCURRENCES

NAME	NUMBER	NTS	CLASS	MAJOR	MINOR	STATUS
Morley	105C 001	01	?	*	*	?
Kitchen	105C 002	08	VN	Ag,Pb	*	show
Bar	105C 003	09	SX,SK	Ba	Pb,Ag,Zn,Sn	pros
Lincoln	105C 004	07	?	*	U	anom
Teslin	105C 005	02	?	*	*	?
Sidnaw	105C 006	06	?	*	*	?
Tarfu	105C 007	04	?	*	*	pros
Slate	105C 008	13	VN	Ag,Pb,Zn	Mo	pros
Red Mountain	105C 009	13	PO	Mo,Cu,Ag,W	*	dept
Riba	105C 010	05	UM	Asb	*	show
Seaforth	105C 011	05	UM	Asb	*	show
Squanga	105C 012	05	MA	Cr	Pt	show
Hayes Peak	105C 013	06	UM	Asb	Cu,Pb,Ag	show
Haircut	105C 014	11	?	*	*	?
Gunsight	105C 015	11	?	*	*	?
Moose Hill	105C 016	11	VN	Pb, Ag	*	anom
Marlin	105C 017	11	SK	Mn,Rhd	Cu,Pb,Ag,Au	open
Mt Grant	105C 018	11	VN	Cu,Ag	Au	show
Evelyn	105C 019	14	?	*	*	?
Dry	105C 020	14	?	*	*	?
Iron Creek	105C 021	14	?	Ag	*	show
Lindsay	105C 022	14	MA	Copper	Au,Ag	pros
Sidney	105C 023	14	?	Cu	*	anom
Rosy	105C 024	13	VN	Cu	Ag,Au	show
Nisutlin	105C 025	15	?	*	*	anom
Deadman	105C 026	06	VN	Ag,Pb	*	anom
Quiet	105C 027	14	?	*	*	?
Dalayee	105C 028	05	VN	Au,Ag	Cr	pros
McCleery	105C 029	08	SK	Cu,Ag	F,Co,Sn,W	show
Muskrat	105C 030	11	VN	Mo	*	anom
Lampert	105C 031	11	?	U	*	anom
Meadow	105C 032	11	?	*	*	?
Eastman	105C 033	07	?	*	*	?
Brophy	105C 034	14	?	*	*	?
Englishman	105C 035	09	?	Mo	U,F,Pb	show
Mulligan	105C 036	08	SK	W,Sn	Cu,Zn,Au,Ag	pros
Coyote	105C 037	15	?	*	*	?
Mindy (Ork)	105C 038	09	SK	Sn	Pb,Ag,Zn,W, Cu,Ba,Mo,F	pros
Lisa	105C 039	04	?	*	*	?
Bas	105C 040	08	SK	Sn,W	U	anom
Peshke	105C 041	14	?	*	*	?
Thom	105C 042	11	VN	Cu	*	?
Henry	105C 043	06	?	*	*	?
Sears	105C 044	02	?	*	*	?
Tes	105C 045	11	VN	Cu	*	pros
Brault	105C 046	12	?	*	*	?
Sawas	105C 047	13	VN	Au,Ag	*	show
Too	105C 048	13	?	*	*	?
Nut	105C 049	05	?	*	*	anom
Ton	105C 050	05	?	*	*	?
Bryde	105C 051	03	?	*	*	?
Tha	105C 052	06	?	*	*	?
Haunka	105C 053	04	?	*	*	?
Marchand	105C 054	09	?	*	*	?
Eaglenest	105C 055	05	VN	Au,Ag	Sb,Ba,Hg	show
Iron	105C 056	14	?	*	*	?
Salmon	105C 057	14	?	*	*	?
Hombre	105C 058	12	?	*	*	?
Hyder	105C 059	01	?	*	*	?
Paula	105C 060	07	?	*	*	?

? - unknown, uncertain
MA - magmatic
PO - porphyry
VN - Vein
SK - Skarn
SX - Sedex
UM - ultramafic assoc.

Asb - asbestos
Rhd - rhodonite

show - showing
anom - anomaly
pros - drilled prospect
open - open pit producer
dept - deposit

Mineral occurrence data from DIAND (1993)

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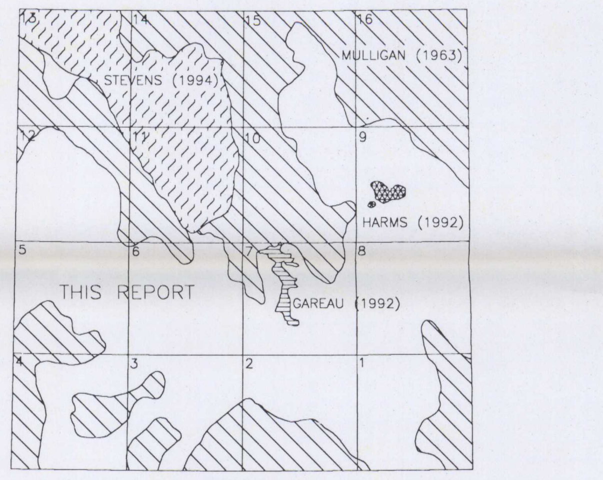
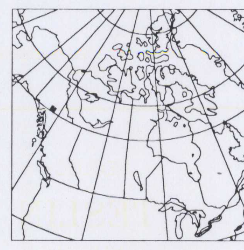
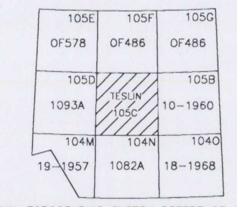


TESLIN (105C)
SOURCES OF INFORMATION
(1:50 000 NTS BOUNDARIES AND MAP NUMBERS INDICATED FOR REFERENCE)



LOCATION MAP



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO ADJOINING GEOLOGICAL SURVEY OF CANADA MAPS

TECTONIC FRAMEWORK

TERRANE INTERACTIONS

The Teslin area is underlain by six terranes (eg. Wheeler et al, 1991b) of contrasting sedimentary and structural histories that were juxtaposed in the Jura-Cretaceous and intruded by three main suites of post-tectonic plutonic rocks.

Kootenay-Cassiar-Slide Mountain

The contact of Kootenay terrane (Nisutlin subterrane) with Cassiar terrane (North American margin) separates rocks of strongly contrasting metamorphic grade and deformation style. Kootenay terrane rocks are greenschist to amphibolite facies and penetratively ductile-deformed whereas those of Cassiar terrane are of subgreenschist to greenschist grade, locally slaty-cleaved and effected by inhomogeneous spaced shear. A northeast-vergent thrust contact reconciles these differences and explains the topographically low exposures of low-grade, less-deformed rocks north of Nisutlin Bay as a window of Cassiar terrane strata. Fabrics within Kootenay terrane both near the window and at the thrust front near Wolf River are steeply dipping and apparently truncated(?) at the thrust. On the basis of 40Ar-39Ar cooling ages Hansen et al. (1991) implied overthrusting of Teslin-Taylor Mountain and Nisutlin (Kootenay terrane of this report) allochthons above North American margin at ~190 Ma. Consistent with this, the undeformed Early Jurassic intrusions form a "stitching" plutonic suite implying proximity of the two terranes by ~186 Ma (Gordey and Stevens, 1994). Whether the bounding thrust is truncated by an Early Jurassic pluton or whether there has been post-Jurassic displacement along this boundary is uncertain. The relationships portrayed for the Early Jurassic pluton near Nisutlin River are extrapolated beneath cover. The terrane affinity of units of foliated mafic schist, greenstone, sheared metadiorite, metagabbro and marble (PMgr, PMgrc, PMga and PMh) is unclear. These may be an intimate part of the Kootenay terrane, a separate terrane (ie. the Teslin-Taylor Mountain terrane of Hansen et al. (1991)), or metamorphosed and ductilely-deformed equivalents of the Slide Mountain terrane. Ultramafic rocks tentatively assigned to the Slide Mountain terrane are interpreted to form a large thrust sheet above Cassiar terrane strata. The terrane affinity of conglomerate (PMscg) and diorite (PMd) spatially associated with the ultramafic (PMu) is unclear.

Quesnel-Stikine-Kootenay-Cache Creek

Quesnel and part of Stikine terrane are bounded by two steep faults which merge south of Teslin and are contiguous with the Thibert fault in northern British Columbia. For the latter structure Gabrielse (1985) proposed 75 km of pre-Late Cretaceous dextral offset, but how this is partitioned along the two splays in Teslin area is unclear. One possibility is that most of this displacement has been taken up along the eastern splay. Restoration of 75 km of dextral slip along this structure and the Thibert fault adjoins Quesnel terrane of the Teslin area with similar and partly correlative Quesnel strata of the Nazcha and Shonektaw formations in Jennings River map area. In this instance the western strand along Teslin valley (the structure traditionally called the Teslin fault) may have limited strike-slip offset. Alternately, if most dextral displacement occurred along Teslin fault, restoration of 75 km of offset does not realign similar elements. Rather Quesnel strata of the Teslin area are restored adjacent to Stikine terrane. A complicating factor is the possibility of unspecified displacements of Jurassic age intimated by Gabrielse's (1985) restoration that ties the Thibert fault (and its contiguous strands in the Teslin area) with the Pinchi fault in central British Columbia.

The fault indicated between Quesnel and Stikine terranes near the Canol Road is assumed. Exposure in this area is poor and contact relationships unclear.

Cache Creek-Stikine

Traditional interpretation of the relationship of Cache Creek and Stikine terranes (e.g., Wheeler and McFeely, 1991) portrays Cache Creek strata to plunge beneath and form the basement to Stikine. However, relationships in western Teslin area indicate the opposite; the Cache Creek terrane forms a large thrust sheet above Stikine terrane. Steep northeast and northwest trending normal faults have broken both the sheet and its footwall so that horsts of Stikine strata have locally popped up through the overlying Cache Creek. Examples include the fault blocks southeast of Streak Mountain and north of Jakes Corner.

Mesozoic radiolarian ribbon chert and greywacke in the Cache Creek are the same age as the chert-free clastic succession of Stikine found along strike to the northwest. Westerly overthrusting of the Cache Creek terrane explains the juxtaposition of proximal (Stikine) and distal (Cache Creek) facies and intimates that before thrusting both were deposited within the same basin.

Mutual contacts of Stikine and Cache Creek terranes are largely defined by late steep normal faults, so little of the thrust at the base of the Cache Creek is potentially exposed. Most ultramafic bodies within the Cache Creek occur as fault slice(s) within volcanics. However, two bodies, one 17.7 km northwest of Streak Mountain and another in adjacent Whitehorse map area 26.4 km west-northwest of Streak Mountain (Wheeler, 1961) are surrounded by, and presumably rest directly above Stikine clastics.

The Cache Creek terrane is likely floored by the west-directed Nahlin fault (e.g., Wheeler and McFeely, 1991), a large thrust fault with ultramafic bodies near and at its base that surfaces to the south and west in the Atlin area. The age of structural duplication within the Cache Creek terrane and its time of emplacement above Stikine is constrained as pre- ~170 Ma (pre-mid-Bajocian (time scale of Harland et al., 1989)), the age of the post-tectonic Mt. Bryde pluton, and post-Pliensbachian or early Toarcian, the age of the youngest Cache Creek beds involved in deformation.

ECONOMIC GEOLOGY FRAMEWORK

Two terranes within the map area host showings and have potential deposit types that are terrane specific. Ultramafic bodies in the Cache Creek terrane locally carry asbestos, and one small body of podiform dunite is known to host small concentrations of chromite (Squanga occurrence, DIAND (1993)). Carbonate alteration within ultramafic rocks (listwanite) that carries gold-quartz veins, as seen in similar ultramafics of the Atlin camp in British Columbia (Ash and Arksey, 1990), is recorded locally (Dalayee (Tog) property, DIAND (1993)). Potential deposit types in strata of Cassiar terrane include sedimentary exhalative barite-Pb-Zn-Ag and/or volcanogenic massive sulphide deposits (e.g., Bar occurrence, DIAND (1993)) in strata of Mississippian age.

The majority of the twenty-two known mineral occurrences in the Teslin area (ie. excluding unmineralized targets; DIAND, 1993) include Ag-Pb-Zn vein deposits as well as Pb-Zn, Cu-Fe and Sn-W skarns. These are hosted by Kootenay and Cassiar terrane rocks and all are likely related to Cretaceous plutonism. Tin-bearing skarns are genetically associated with the Hake batholith (and Seagull batholith to the southeast in Wolf Lake area (Abbott, 1981)) and compositionally similar Cretaceous plutons in the Thirtymile Range. The most intensively explored property in the map area, the Red Mountain porphyry Mo prospect, is hosted in a small intrusion of quartz monzonite porphyry about 95 Ma old (Brown and Kahlert, 1986; Stevens et al., 1982).

GEOLOGY

TESLIN

YUKON

Scale 1:250 000

Kilometres 5 0 5 10 15 20 Kilometres

LEGEND

Q	unconsolidated glacial and alluvial deposits

MESOZOIC IGNEOUS SUITES

CRETACEOUS
UPPER CRETACEOUS

uKv	basalt, dacite

LATE CRETACEOUS

lKg	quartz monzonite porphyry, dacite(?) and rhyolite porphyry(?)

MID-CRETACEOUS

Kg	undivided; 1, biotite-hornblende quartz monzonite and quartz monzodiorite; 2, locally porphyritic biotite granite and quartz monzonite; 3, leucocratic biotite granite

JURASSIC
MIDDLE JURASSIC

mJg	hornblende monzodiorite and hornblende-biotite quartz monzodiorite; minor hornblendite

EARLY JURASSIC

eJg	hornblende tonalite, quartz monzodiorite, granodiorite, and quartz diorite; minor hornblendite and porphyritic hornblende-augite gabbro

QUESNEL TERRANE

JURASSIC(?)

Ju	dunite, minor pyroxenite
Jg	chloritized hornblende-pyroxene diorite and gabbro

UPPER TRIASSIC AND(?) JURASSIC

uTrJsv	augite-bearing greywacke and lesser siltstone and shale; minor volcanic breccia with clasts of augite and augite-feldspar porphyry; minor(?) augite-feldspar crystal tuff; minor dykes and sills of augite porphyry

CACHE CREEK TERRANE

CACHE CREEK GROUP (TrJts, Pv, CPv, CPl, CTru, CTrg)

TRIASSIC AND JURASSIC

TrJts	well bedded, grey to green ribbon chert; shale, siltstone and greywacke; chert and clastics are structurally interleaved and/or interbedded in members from 30-200 m thick

CARBONIFEROUS TO TRIASSIC(?)

CTru	peridotite and serpentinized peridotite
CTrg	massive, heavily chloritized, medium to coarse grained, hornblende-pyroxene diorite and gabbro

PERMIAN

Pv	massive, aphanitic, locally tuffaceous(?) greenstone containing scattered pebble- to decimetre-sized clasts of limestone and chert

CARBONIFEROUS TO PERMIAN

CPv	massive, andesitic and basaltic greenstone; commonly spherulitic and locally pillowed; 1, chert; 2, limestone; 3, greywacke; 1, 2, and 3 occur as local small exposures included within or adjacent the volcanic
CPl	massive, fine crystalline, locally crinoidal and fusiline, medium grey limestone

STIKINE TERRANE

TRIASSIC AND JURASSIC
EARLY AND(?) MIDDLE JURASSIC
LABERGE GROUP (Jps)

Jps	massive, fine to medium grained greywacke, shale and siltstone; minor conglomerate with limestone, granitoid and volcanic clasts

UPPER TRIASSIC
LEWES RIVER GROUP (uTrl, uTrs)

uTrl	massive, fine crystalline limestone; minor laminated chert
uTrs	massive greywacke; may include Jps

Limit of outcrop
Geological boundary (defined or approximate, assumed or extrapolated beneath overburden)
Bedding, top known (horizontal, inclined, vertical, overturned)
Bedding, top unknown (inclined, vertical)
Cleavage, foliation (inclined, vertical)
Crenulation cleavage (inclined, vertical)
Schistosity, mylonitic fabric (horizontal, inclined)
Igneous foliation (inclined, vertical)
Axis of small-scale fold of bedding (horizontal, inclined)
Axis of small-scale fold of fabric, wrinkle lineation (horizontal, inclined)
Mineral lineation, rodding (horizontal, inclined)
Fault, displacement uncertain (defined or approximate, assumed or extrapolated beneath overburden)
Fault, steeply dipping (defined or approximate, assumed or extrapolated beneath overburden; solid circle indicates downthrown side)
Fault, thrust (defined or approximate, assumed or extrapolated beneath overburden, overturned; teeth indicate upthrust side)
Fault, transcurrent (defined or approximate, assumed or extrapolated beneath overburden; arrows indicate relative movement)
Displacement on transcurrent fault in cross-section (cross indicates displacement of block away from viewer, point indicates displacement of block towards viewer)
Anticline (defined or approximate, extrapolated beneath overburden)
Syncline (defined or approximate, extrapolated beneath overburden)
Mineral occurrence (showing, unclass. or unmin.)
Fossil locality

Geology by S.P. Gordey (1990, 1991, 1993) and R.A. Stevens (1990, 1991, 1992)
(contributions of Stevens and others indicated on reference map)

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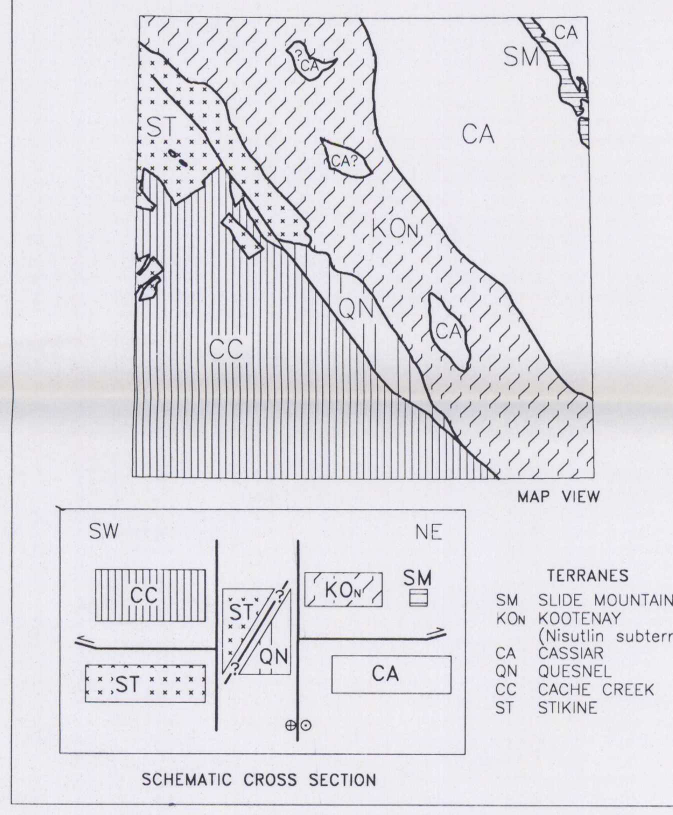
1994: Preliminary interpretation of bedrock geology of the Teslin area (105C), southern Yukon; Geological Survey of Canada Open File 2886, (map, scale 1:250 000).

TERRANE RELATIONSHIPS



SLIDE MOUNTAIN TERRANE

PALEOZOIC AND/OR MESOZOIC

PMu	peridotite, pyroxenite, serpentinite
PMscg	conglomerate, greywacke, limestone; affiliation with Slide Mountain terrane unclear
PMd	diorite; affiliation with Slide Mountain terrane unclear

KOOTENAY TERRANE (Nisutlin subterrane)

PALEOZOIC AND/OR MESOZOIC

PMgr	foliated actinolite-chlorite-epidote quartzofeldspathic schist and greenstone (± sphene ± carbonate ± biotite ± hornblende); 1, hornblende megacrystic greenstone
PMgrc	marble
PMga	massive to weakly foliated, coarse grained metagabbro; locally mylonitic; includes dykes and pods of PMgr
PMh	sheared hornblende metadiorite and metagabbro; sheared amphibolite and hornblendite; cut by massive felsite, hornblendite and hornblende diorite dykes

DEVONIAN AND MISSISSIPPIAN

DMg	massive to mylonitic, medium grained, metamorphosed hornblende-chlorite-biotite tonalite to quartz diorite; 1, includes abundant interbands of PDsq

PROTEROZOIC TO MISSISSIPPIAN

PMgp	rusty red to black graphite-muscovite phyllite; locally calcareous; minor quartz-muscovite-chlorite schist, quartzite and interlayered marble; 1, marble

PROTEROZOIC TO DEVONIAN

PDsq	protomylonitic to mylonitic quartz-muscovite ± chlorite ± epidote ± feldspar ± biotite ± garnet ± amphibole schist and muscovite-chlorite quartzite; minor chlorite ± actinolite schist and marble; graphitic muscovite phyllite, schist and quartzite; 1, locally abundant interbands of DMg; 2, mafic schist containing more chlorite+biotite +actinolite than muscovite
PDsqc	quartz-tremolite-muscovite sucrosic marble and calcareous schist; rarely contains epidote and garnet

CASSIAR TERRANE (NORTH AMERICAN MARGIN)

MISSISSIPPIAN

Mv	intermediate to mafic, rarely augite phyric, fine grained volcaniclastics and flows; 1, biotite meta-andesite to meta-basalt, metamorphosed equivalent
Ml	fine crystalline, light grey, locally coralline and crinoidal limestone and minor dolostone; locally with irregular masses and nodules of chert; minor quartz arenite; locally mylonitic
Mp	muscovite-chlorite phyllite, impure, fine grained quartzite and siltstone; locally calcareous; locally mylonitic

DEVONIAN(?) AND CARBONIFEROUS

DMps	shale, chert sandstone and chert-pebble to cobble conglomerate; locally mylonitic

ORDOVICIAN(?) TO MISSISSIPPIAN

OMt	dark grey to black chert and siliceous argillite; minor(?) chert sandstone and chert pebble conglomerate; locally mylonitic

INGENIKA GROUP? (Ps, Pc)

PROTEROZOIC

Ps	arkosic quartz-eye sandstone to quartz feldspar grit; siltstone; locally mylonitic; 1, identity uncertain, may include Mp or other units of Cassiar terrane
Pc	fine crystalline limestone and dolomite; locally hornfelsed to tremolite marble; minor quartz arenite
PPn	biotite+muscovite+sillimanite+quartzofeldspathic schist to gneiss; biotite-pyrite quartzite to quartz schist; cut by massive sills and dykes of biotite quartz monzonite and felsic pegmatite; affiliation with North America (Cassiar) terrane uncertain

Canada

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