Summary

- Yukon and adjacent NWT have a approximately 1 million tonnes of contained tungsten metal.
- Most significant tungsten deposits in Yukon are scheelite-pyrrhotite skarns developed in Selwyn Basin Cambrian limestone near contacts with mid-Cretaceous plutons.
- Scheelite is by far the most common mineral in Yukon tungsten occurrences. Only a few significant wolframite occurrences are known.
- Nearly 70% of all Yukon tungsten deposits are skarns; porphyry and vein occurences form the remainder.

Yukon tungsten occurrences can be classified as follows:

1) Scheelite-bearing skarn deposits developed in Paleozoic carbonate rocks of the Selwyn Basin near felsic intrusions of the mid-Cretaceous Tungsten or Tombstone plutonic suite;

2) Scheelite-bearing, quartz-molybdenite stockworks developed in Late Cretaceous/Early Tertiary felsic intrusions in the area of the Cassiar Batholith; and

3) Wolframite- and scheelite-bearing stockwork, sheeted quartz veins, breccias, skarn in hornfelsed sedimentary rocks associated with mid- and Late Cretaceous felsic intrusions.


skarn rock - Stormy property

Notable Tungsten Deposits in the Yukon

	tonnes	%WO_3	Contained metal tonnes	Metric Tonne Units (mtu)*	value@$50mtu
Bailey	405 000	0.96	3 888	490 290	24 514 502
Risby	2 700 000	0.81	21 870	2 757 881	137 894 073
Ray Gulch	7 260 000	0.87	63 162	7 964 943	398 247 163
Logtung	229 000 000	0.104	238 160	30 032 787	1 501 639 344
Mactung	60 000 000	0.95	570 000	71 878 941	3 593 947 037
Cantung-Pit zone	1 180 000	2.47	29 146	3 675 410	183 770 492
Cantung-Chert zone	3 350 000	0.65	21 775	2 745 902	137 295 082
Cantung-E-zone	4 000 000	1.6	64 000	8 070 618	403 530 895
Stormy	17 000	1.05	179	22 509	1 125 473
Lened	750 000	1.17	8 775	1 106 557	55 327 869
Total			**1 020 955**	**128 746**	**6 437 291 929**

Further Reading

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For more information, check the Yukon Geological Survey at:

www.geology@gov.yk.ca

Yukon Geological Survey
Department of Energy, Mines and Resources
Yukon Government
Box 2703
Whitehorse, Yukon
Canada
Y1A 2C6

phone: (867) 667-8508
fax: (867) 393-6232

Information in this brochure was compiled by:
Craig J.R. Hart and Lara L. Lewis

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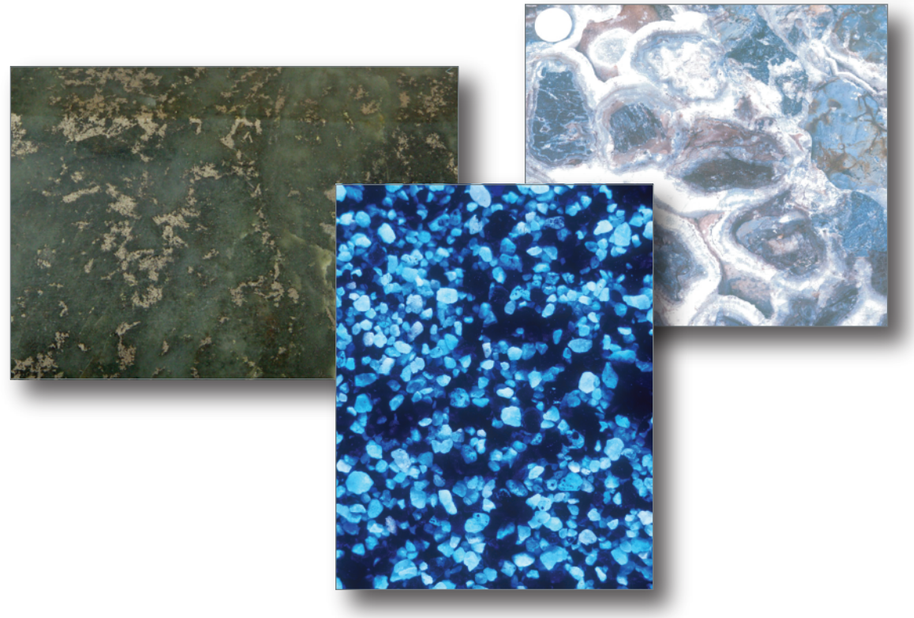
TUNGSTEN

Yukon Tungsten Advantage

YGS Brochure 2006-7



- Yukon and adjacent NWT host 20% of the world's tungsten resources (1 million tonnes contained metal)
- Cantung mine resumed operations in 2005 and is a major world producer
- MacTung is one of the world's largest deposits at 13.7 million tonnes of 0.95% WO_3
- Tungsten deposits are mostly scheelite skarns; there are also significant porphyries and some vein deposits

www.geology.gov.yk.ca

Introduction

Yukon and adjacent NWT have a approximately 1 million tonnes of contained tungsten metal, with a current market value of about $6 billion (at US$50/mtu). This enrichment is mainly due to the interactions of mid-Cretaceous felsic plutons with Lower Paleozoic calcareous rocks of the Selwyn Basin. There are, however, intriguing variations on this model that unlock exploration potential for previously unprospective rocks.

Exploration Models

There are three deposit models for Yukon tungsten exploration:

1) Scheelite-bearing skarn deposits developed in Paleozoic carbonate rocks of the Selwyn Basin at, or near, their contact with felsic intrusions of the mid-Cretaceous Tungsten or Tombstone plutonic suite. Pathfinder elements: copper and zinc. Skarn mineralogy: pyrrhotite and diopside, *e.g., Mactung, Cantung.*

2) Scheelite- and wolframite-bearing, quartz-molybdenite stockwork and veins developed in, or near, Late Cretaceous/Early Tertiary felsic intrusions of the Cassiar suite. Associated elements: molybdenum, tin and bismuth. Notable accessory minerals: beryl, fluorite, *eg., Logtung, Fiddler.*

3) Wolframite- and/or scheelite-bearing sheeted quartz veins, stock-work, breccias and skarns occur in hornfelsed sedimentary rocks and felsic intrusions. Pathfinder elements: tin, gold, silver, bismuth. Alteration minerals: tourmaline, chlorite. Plutonic association is either Late Cretaceous McQuesten suite or mid-Cretaceous Tombstone suite, *e.g., Kalzas, Scheelite Dome, Pukelman, Ray Gulch, Zeta.*

RAY GULCH (MAR)
· geological resources of 7.26 million tonnes grading 0.87% WO_3
· sulphide-poor scheelite skarn occurs as a pendant overlying the south flank of the mid-Cretaceous Dublin Gulch pluton
· near Dublin Gulch gold porphyry deposit but the skarn contains no gold

SCHEELITE DOME
· scheelite occurs in auriferous diopside skarn lenses on the north and south sides of the mid-Cretaceous Scheelite Dome intrusion and likely represent the same calcareous horizon
· Cominco and Aber zones are exoskarns with disseminated pyrrhotite, scheelite and chalcopyrite
· Tom zone hosts phlogopite-rich skarn with as much as 0.2% WO_3, 12 g/t Au and elevated arsenic and bismuth
· scheelite also occurs in sheeted quartz veins within the intrusion

KALZAS
· Yukon's largest wolframite deposit
· quartz-wolframite veins, sheeted veins and stockwork with minor cassiterite, scheelite, molybdenite, galena, beryl and feldspar
· occurs in a 2 X 2.5 km region of alteration overprinting hornfelsed Neo-Proterozoic Hyland Group sedimentary rocks
· alteration: potassic core, through quartz-tourmaline-sericite to peripheral phyllic zone
· unexposed pluton?

WHITEHORSE AREA
· scheelite associated with copper skarn mineralization in the Whitehorse Copper Belt
· scheelite occurrence is a quartz-carbonate vein with 1.7% Cu, 0.51 g/t Au and 0.38%WO_3

Cover: left to right - MacTung scheelite-pyrrhotite-diopside skarn, placer scheelite under ultraviolet light, Fiddler scheelite-bearing breccia

Legend

Cretaceous Plutonic Suites

C	Cassiar (106 - 99 Ma)
DR	Dawson Range (106 - 99 Ma)
K	Kluane (127 - 120 Ma)
SL	South Lansing (95 - 93 Ma)
TR	Tay River (106 - 96 Ma)
Te	Teslin (123 Ma)
To	Tombstone (94 - 90 Ma)
Tu	Tungsten (97 - 92 Ma)
W	Whitehorse (115 - 109 Ma)
A	Anvil (112 - 100 Ma)
AA	Anvil Alaska (112 - 100 Ma)
Un	unassigned

Tungsten silt geochemistry (GSC)
15 - 50 ppm
50 - 800 ppm
placer tungsten occurrences

Tungsten MINFILE occurrences
past producer, deposit
prospect, drilled prospect
showing, anomaly, unknown

NORTH YUKON
· wolframite-bearing tungsten deposits are associated with Devonian granites in the British Mountains
· tungsten occurrences at Mt. Fitton, Mt. Sedgwick and near Old Crow

RISBY
· scheelite, pyrrhotite, diopside skarn with minor chalcopyrite
· reserves estimated at 2.7 Mt 0.81% WO_3

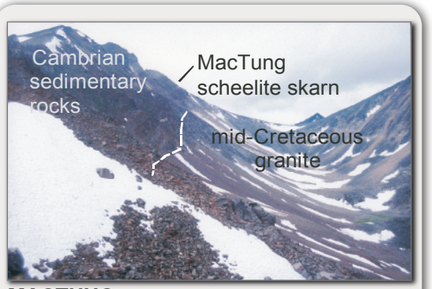
LOGTUNG
· world's largest intrusion-hosted tungsten deposit
· geological resources of 229 million tonnes grading 0.104% WO_3 and 0.05% Mo
· unique porphyry-style - scheelite-bearing stockwork within a high-level felsic intrusion
· recent exploration focused on quartz-vein swarm with high-grade beryl, wolframite and scheelite south of main deposit

FIDDLER
· underground workings, but no production
· 610-m-long silicified scheelite-bearing breccia
· series of en echelon quartz veins and breccias with wolframite, minor scheelite, muscovite, fluorite and cassiterite that cut Cambrian phyllite and limestone near the contact of Cretaceous Cassiar batholith
· dating suggests that an unroofed Early Tertiary intrusion may be responsible for the mineralization

Placer Deposits

Placer tungsten, mainly in the form of scheelite, has been observed in the many creeks that drain the Mayo-McQuesten area. In particular, the Dublin Gulch and Scheelite Dome areas contain placer scheelite with gold and in places cassiterite.

Outside of the Mayo area, placer wolframite has been found in Canadian and Casino creeks in the Dawson Range.



MACTUNG
· among the largest tungsten deposits in the world
· minimum geologic resource of 57 million tonnes of 0.96 WO_3
· folded sedimentary rocks in association with mid-Cretaceous granite
· Upper zone: 3 skarn lenses developed in folded limestone beds interbedded with unmineralized pelite
· Lower zone: in a limestone slump breccia overlyng early Cambrian clastic rocks
· scheelite-pyrrhotite-chalcopyrite skarn with minor molybdenite, garnet and diopside

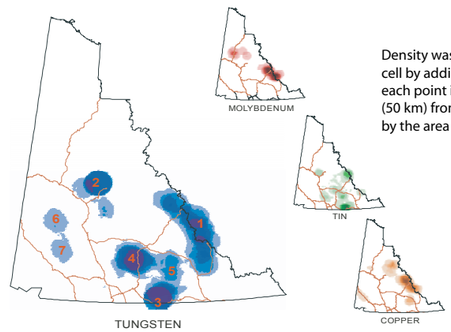
STORMY
· Molydenite is the most abundant mineral
· scheelite occurs only in small amounts
· Ore minerals are densely disseminated, mainly within the dioritic intrusion and to a lesser extent, the adjacent skarn
· Small reserves of 14 000 tonnes 0.73% Mo and 15 000 tonnes 1.05% WO_3 have been determined

LENED
· 750 000 t of 1.17 % WO_3 occurs as two zones on either side of a narrow highly altered dyke
· vanadium emeralds in associated pegmatites

CANTUNG
· a major world tungsten producer (only one in North America)
· ran from 1952 to 1986, when (accounted for about 85% of Canadian tungsten production - over 28 000 tonnes of tungsten)
· reopened from 2000 to 2002 and again in late 2005
· pyrrhotite-scheelite-chalcopyrite skarn
· occurs in folded and overturned Lower Cambrian limestone above a mid-Cretaceous pluton

BAILEY
· three skarn zones developed over a 4 km strike length
· B-zone has a geological resource of 405 000 t of 1.0% WO_3

Regional Geochemistry



Density was calculated for each cell by adding the ppm values for each point in the search radius (50 km) from point and dividing by the area of the circle in km.

There is a good correlation between regional geochemical surveys for tungsten and areas known to host significant tungsten showings. The tungsten density plot indicates five anomalous areas. The large arcuate region (1) along the Yukon-NWT border correlates with the distribution of the Tungsten plutonic suite and the locations of the Mactung, Lened, Clea, Cantung and Bailey deposits.

Anomalies in the Mayo area (2) overlie mineralization in the Scheelite Dome, Dublin Gulch and Clear Creek areas. Anomalies near Swift River (3) correlate with the Logtung area and the Seagull Batholith in the Cassiar Mountains where tin anomalies occur. A notable anomalous region surrounding the Nisutlin Batholith (4) partly correlates with the Risby and Stormy properties but indicates more extensive (undiscovered) mineralization.

Tungsten anomalies in the Finlayson Lake area (5) are significant because tungsten is a pathfinder element for emerald, which was recently discovered in that area. Anomalies in the the mid-Cretaceous Dawson Range batholith (6) and the Nisling Range (7) are likely associated with Early Tertiary alaskite bodies.

Molybdenum and copper anomalies coincident with tungsten anomalies occur in east-central Yukon, in an area intruded by rocks of the Tombstone and Tungsten plutonic suites. The main deposit in the area, Mactung, is character-ized by an ore element assemblage of tungsten, copper and minor zinc and molybdenum.

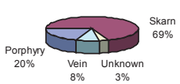
Geology

Most significant tungsten deposits in Yukon are scheelite-pyrrhotite skarns developed in Selwyn Basin Cambrian limestone near contacts with mid-Cretaceous plutons.

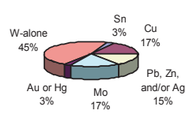
Most deposits consist of sulphide-rich assemblages overprinting silicate skarn. The sulphide minerals are mostly pyrrhotite with lesser pyrite and chalcopyrite. Silicate assemblages are dominated by diopside and chlorite with garnet, biotite and epidote.

Nearly 70% of all Yukon tungsten deposits are skarns; porphyry and vein occurences form the remainder.

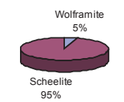
Tungsten Showings by Deposit Type



Tungsten showings by Mineral Association



Tungsten Showings by Tungsten Mineral



Scheelite is the dominant tungsten mineral in all the skarns and most other Yukon occurrences (95%). Only a few significant wolframite occurrences are known: Kalzas, Fiddler, Alaskite Creek and the Canadian Creek occurrence (source still undiscovered).