Occurrence Details

Occurrence Number: 105O 002
Occurrence Name: Mactung
Occurrence Type: Hard-rock
Status: Deposit
Date printed: 8/6/2025 2:17:20 AM

General Information

Primary Commodities: tungsten, tungsten trioxide
Secondary Commodities: copper
Deposit Type(s): Skarn W
Location(s): 63°16'56" N - -130°9'9" W
NTS Mapsheet(s): 105O08
Location Comments: .5 Kilometres
Hand Samples Available: Yes
Last Reviewed:

Capsule

Work History

Discovered and sampled in Aug/62 and staked as Judy cl 1-18 and Jill cl 1-16 (N41442) in Sep/62 by Amax Exploration Ltd (through a subsidiary, Southwest Potash Corporation), which transferred the property to Amax Potash Ltd in late 1971, to Amax Northwest Mining Company Ltd in early 1972, which took the claims to lease in late 1972.

Amax carried out geological mapping, rock geochemical sampling and magnetometer surveying in 1963; trenching and rock geochemical sampling 1964 and geological mapping and grid soil geochemical sampling in 1967; drilled 5 holes (1 416.4 m) in 1968; built a tote road in 1970; drilled 22 holes (2 370.1 m) in 1971 and 48 holes (6 954.3 m) in 1972; drove a 74.7 m adit at the 1 890 m elevation (of which 487.7 m was in the B Zone), drilled 43 holes (1 652.9 m) underground, drove a 27.4 m raise, and shipped a 295 tonne sample to Colorado for metallurgical tests in 1973; conducted environmental and feasibility studies in 1974-76; performed legal surveys in 1977; shipped another 91 tonne metallurgical sample and drilled underground in 1979; drilled 2 holes (300 m) on surface in 1980; carried out surface surveys and engineering studies in 1981 and 1982 and 1985 and underground exploration in 1983; obtained an underground metallurgical sample of about 180 tonnes in 1984;carried out road building in 1985.

The property was sold to Canada Tungsten Mining Corporation Ltd in 1986. Canada Tungsten staked Buck cl (YA83708) on the northwest side of the claim block in Aug/87 and restaked one of the original claims as Wasteful cl (YB3251) in Sep/89.
The first fringe staking took place in 1973, when Tyee Lake Resources Ltd and Saxon Industries Ltd added the Ken cl (Y69349 & A68001) to the west and south, and S. Belzburg staked 400 Shale, Ache, etc cl (Y69105 and A67912) to the northeast and southwest. Belzburg carried out magnetic surveying in 1973 and optioned 109 claims in Dec/74 to Regency Resources Ltd and Groton Minerals Ltd. Following a geochemical survey and mapping program, the Ken group was optioned from 1974 to 1975 by Canada Tungsten Mining Corporation, which carried out magnetic and Turam surveying in 1974 and drilled 2 holes (567.2 m) in 1975, and was investigated briefly by Union Carbide in 1976. In 1981, Lorcan Resources Ltd purchased the Ken group.

In 1993 Canada Tungsten Mining Corporation Ltd merged with Minerex Resources Ltd and Canamax Resources Ltd to form Canada Tungsten Inc. In Aug/94 Aur Resources Inc purchased a 48% interest in Canada Tungsten, before merging the two merged in Jan/97. In Oct/97 the Mactung deposit was sold to North American Tungsten Corporation Ltd. In 2005, a 2000 m in 25-hole diamond drilling program was completed. In 2006, EBA engineering was contracted to complete baseline environmental studies on the property.

An updated NI 43-101 compliant mineral estimate was prepared in 2007 by Scott Wilson Roscoe Postle Associated Inc (Scott Wilson RPA). Wardrop Engineering Inc. completed the feasibility study for the deposit. in 2009, basing their analysis on the 2007 report.

Capsule Geology

Scheelite occurs in five separate skarn horizons formed from limy layers in a 300 m thick sequence of Lower Cambrian phyllite near the margin of a Cretaceous stock. The lowest zone (A) occurs in a lens of limestone slump breccia surrounded by phyllite. The upper zone (E) appears to be conformable with overlying black shale of the Ordovician to Lower Devonian Road River Group. One or more unconformities are suspected to occur within the sequence but have not been identified. The skarn zones are separated by hornfelsed argillite, quartzite and minor conglomerate. The zones range in thickness from 15 to 60 m and average about 23 m. Mineralization is developed along a length of over 900 m, and over 300 m downdip from the intrusive contact. The sequence dips gently south away from the stock and is disrupted by north and east trending block faults.

The two lower zones (A & B) consist of scheelite, pyrrhotite and chalcopyrite and minor molybdenite and garnet in dark green diopside skarn, and grade better than 1% WO3. The upper three zones (C, D and E) are generally lighter in colour with a lower sulphide content and grade less than 1% WO3. Massive hydrous skarn containing amphibole, clinozoisite or biotite overprints and forms veins cutting the anhydrous pyroxene and garnet skarns.

The deposit is bisected by the Yukon-NWT border. The underground work showed that the A zone is only a folded portion of the main B Zone, which is 15 to 30 m thick and dips 30° south. The other three zones vary from 3 to 18 m thick, separated by bands of waste, and lie directly above the B Zone. Cantung found a zone immediately west of the boundary that assayed 0.23% W03 in a chip sample and another zone containing traces of sphalerite in shale of the Ordovician to Lower Devonian Road River Group. GSC sampling in 1978 of cherty phosphatic breccia cutting the shale to the south gave assays of up to 40 ppm U.
Recent studies suggest that an unroofed intrusion located south of the deposit is responsible for the mineralizing fluids rather than the Cirque Lake stock north of the deposit. Fluid inclusions indicate that the skarn-forming fluids were low in salinity (less than 5%) and contained methane but very little CO2. Gerstner et al. (1989) recorded homogenization temperatures and pressures in the range 470 to 325°C and 2.5 to 2.1 kbars. Most of the pyroxene skarn appears to have formed at about 430°C, while much of the garnet skarn formed at about 380°C. Biotite skarn formed under the same narrow range of conditions as the other two skarn types, but continued to develop down to 325°C.

Potentially mineable reserves of 25.3 million tonnes grading 0.88% WO3, based on samples from 140 surface and underground drill holes and results of underground exploration carried out between 1968 and 1980, were calculated by Strathcona Mineral Services Ltd as reviewed by Roscoe Postle Associates Inc (RPA) in 1992 and reported by Roscoe et al (2001). In its 1992 review, RPA used the Strathcona resource classification to estimate the amount of proven and probable reserves for the deposit and classified them as Mesured and Indicated Resources since the deposit has not yet been demonstrated to be economic. They report the Measured and Indicated Resources of 13 669 000 tonnes grading 0.95% WO3. In addition Roscoe et al report that the Strathcona estimates include an additional Inferred Resource of 13 785 000 tonnes grading 0.84% WO3, but do not specify the location of this material.

The 2005 surface diamond drilling program returned high-grade values, e.g., DDH MS156 - 9.80 m @ 1.77% WO3 and 35.20 m @ 1.55%. The 2005 Drill holes targeted a westerly plunging Z-fold in the higher grade underground horizon.

An NI 43-101 compliant mineral resource estimate was completed April 2007. An Indicated Resource of 33 029 000 tonnes @ 0.88% WO3 and an Inferred Resource of 11 857 000 tonnes @ 0.78% WO3 (0.5% WO3 block cut-off grade) were reported.

A 2009 feasibility study was completed by Wardrop. Using the krieged estimate from the 2007 study, a probable underground mineral reserve was calculated for the Yukon portion of the Upper 2B and Lower 2B zones. A total of 10,790,000 tonnes grading 1.1869% WO3 was calculated at a 0.616% WO3 mining cut-off grade.

References

ALLAN, J.F., AND FINDLAY, A.R., Apr/72. The MacMillan Tungsten Property. Talk presented at the Fourth Northern Resource Conference, Whitehorse.

AMAX EXPLORATION INC, Oct/67. Assessment Report #092555 by R.J. Cathro.

AMAX EXPLORATION INC, 1967. Assessment Report *#019045 by R.J. Cathro.

AMAX EXPLORATION INC and MACMILLAN PASS TUNGSTEN, 1968. Assessment Report *#019046 by A.R. Findlay.

AMAX EXPLORATION INC, Oct/72. Assessment Report #091293 by F. Harris.

CANADA TUNGSTEN MINING CORPORATION, 1974. Assessment Report *#061197 by P. Bailey et al.

DICK, L.A., 1980. A comparative study of the geology, mineralogy, and conditions of formation of contact metasomatic mineral deposits in the northeastern Canadian Cordillera. Unpublished Ph.D. thesis, Queen's University, p. 32-37, 81-84, 110-113.

DICK, L.A., Aug/76. Metamorphism and metasomatism at the Macmillan Pass tungsten deposit. Unpublished M.Sc. thesis, Queen's University.

GEOLOGICAL SURVEY OF CANADA Paper 69-55, p. 52-53; Paper 79-IA, p. 398-399; 1982-83 (NWT), p. 85-86.

GERSTNER, M.R., BOWMAN, J.R., AND PASTERIS, J.D., 1989. Skarn formation at the Macmillan Pass tungsten deposit (Mactung), Yukon and Northwest Territories. I. P-T-X-V characterization of the methane-bearing, skarn-forming fluids. Canadian Mineralogist, Vol. 27, p. 545-563.

HARRIS, F.G., 23 Apr/80. Geology of the Macmillan Pass tungsten deposit. Paper presented at the Annual General Meeting of the Canadian Institute of Mining and Metallurgy, Toronto.

MINERAL INDUSTRY REPORT 1973, p. 19-21; 1974, p. 20-21; 1975, p. 30; 1976, p. 20-32; (NWT) 1978, p. 136.

WARDDROP ENGINEERING INC., 2009. Technical Report on the Mactung Property – Yukon, Canada. Wardrop Engineering Inc. (April 3, 2009), by Nory Narciso.

NORTH AMERICAN TUNGSTEN CORP. LTD., News Release, 4 Oct/05; 14 Mar/07; 245 Sept/07; 23 Feb/09;

REGENCY RESOURCES LTD, 1975. Assessment Report *#061241 by D.W. Tully.

ROSCOE, W., POSTLE, J., RENNIE, D. and HUGHES-PEARL, J., 2001. Report on the Tungsten Assets of North American Tungsten Corporation Ltd, 150 p.

SCOTT WILSON ROSCOE POSTLE ASSOCIATES INC., 2007. Technical Report on the Mactung Tungsten Deposit, Macmillan Pass, Yukon. Report for NI 43-101, by P.A. Lacroix and R.B. Cook.

SOUTHWEST POTASH CORPORATION, Aug/63. Assessment Report #017468 by J.F. Allen.

SOUTHWEST POTASH CORPORATION, Oct/64. Assessment Report #017467 by H.G. Sherwood.

STRATO GEOLOGICAL LTD, 1973. Assessment Report *#060905 by S. Belzberg et al.

TYEE LAKE RESOURCES LTD, 1973. Assessment Report *#060937 by W.R. Bacon and D.W. Burns.

YUKON EXPLORATION AND GEOLOGY 1983, p. 26-27.

Work History

Date	Work Type	Comment
4/1/2007	Studies	Scott Wilson Roscoe Postle Associates Inc
12/31/2009	Studies	Wardrop Engineering Inc.
12/31/2007	Studies	42 boreholes -total depth of 225 m. 139 m of open-hole and 86 m of closed-hole drilling. 42 test pits for total of 125 m.
12/31/2005	Geochemistry	Amount of work done: 100 TONNES metallurgical testing.
12/31/2005	Drilling	Number of holes drilled: 25 Amount of work done: 6000
12/31/2005	Development, Underground	portal to adit was reopened and rehabilitated.
12/31/1985	Development, Surface	
12/31/1985	Other	Also engineering studies.
12/31/1984	Geochemistry	Amount of work done: 181.82 TONNES Underground sample for matallurgical testing.
12/31/1983	Other	
12/31/1981	Other	Also Engineering studies.
12/31/1980	Drilling	Number of holes drilled: 2 Amount of work done: 300 METRES

12/31/1979	Geochemistry	Amount of work done: 272.73 TONNES Metallurgical testing.
12/31/1979	Drilling	Underground drilling.
12/31/1977	Other	
12/31/1974	Other	
12/31/1973	Geochemistry	Amount of work done: 295.45 TONNES Metallurgic test.
12/31/1973	Drilling	Number of holes drilled: 43 Amount of work done: 1652.93 METRES Underground drilling
12/31/1973	Other	Amount of work done: 27.43 METRES
12/31/1972	Drilling	Number of holes drilled: 48 Amount of work done: 6954.32 METRES
12/31/1971	Drilling	Number of holes drilled: 22 Amount of work done: 2370.12 METRES
12/31/1970	Development, Surface	
12/31/1968	Drilling	Number of holes drilled: 5 Amount of work done: 1416.4 METRES
12/31/1967	Geology	
12/31/1967	Trenching	
12/31/1964	Geology	
12/31/1964	Trenching	
12/31/1963	Geology	
12/31/1963	Trenching	
1/1/1973	Development, Underground	adit and underground workings

Assessment Reports that overlap occurrence

Report Number	Year	Title	Worktypes	Holes Drilled	Meters Drilled
093827	1997	1997 Geological Assessment Report on Emerald Lake Claims	Rock - Geochemistry, Silt - Geochemistry, Soil - Geochemistry		
091012	1981	1981 Geological Geochemical Assessment Report Hess River Property	Orthophoto - Airphotography, Rock - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology		
091293	1972	Drill Logs for Drilling on Mactung property	Diamond - Drilling	9	1826.97
061013	1972	[more drill logs fro diamond drilling on the Mactung Property]	Diamond - Drilling	2	178.31
061016	1968	[more drill logs for diamond drilling on the Mactung Project]	Diamond - Drilling	7	1513.03
019046	1968	[Diamond Drill Report MacMillan Tungsten]	Diamond - Drilling	2	449
019035	1968	1968 Progress Report and Proposed Program 1969 Itsi Project	Silt - Geochemistry, Bedrock Mapping - Geology, Prospecting - Other		
092555	1967	Geological Mapping and Geochemical Soil Survey	Rock - Geochemistry, Silt - Geochemistry, Soil - Geochemistry, Detailed Bedrock Mapping - Geology		
017468	1963	MacMillan Pass Tungsten Showing Geological Survey - Claim Groups	Bedrock Mapping - Geology, Magnetics - Ground Geophysics		

Related References

Number	Title	Page(s)	Reference Type	Document Type
ARMC900009	Progress Reports - Selwyn Project 1973		Property File Collection	Miscellaneous Company Documents
YEG1983	Yukon Exploration and Geology 1983	26-27	Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Annual Report
MIR1973	Mineral Industry Report 1973	19-21	Indian & Northern Affairs Canada/Department of Indian & Northern Development: Geology	Annual Report
MIR1974	Mineral Industry Report 1974	20-21	Indian & Northern Affairs Canada/Department of Indian & Northern Development: Geology	Annual Report
MIR1975	Mineral Industry Report 1975	30	Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Annual Report
MIR1976	Mineral Industry Report 1976	20-32	Indian & Northern Affairs Canada/Department of Indian & Northern Development: Geology	Annual Report
ARMC016468	Geology map overlay of Keele Peak - Hess project - Figure No. 24 - 105O/8		Property File Collection	Geoscience Map (Geological - Bedrock)
BROCK000085	Aeromagnetic series - Map 4361G - Sheet 105O/8 - Keele Peak with handwritten notations		Property File Collection	Geoscience Map (General)

Resource/Reserve

Year	Zone	Type	Commodity	Grade	Tonnage	Amount	Reported Amount	43-101 Compliant	Cut-off
2009	Upper and Lower 2B, YT only (UNDERGROUND)	Probable	tungsten trioxide	1.1869 %	10,790,000		No	Yes	0.616% WO3
LOM production of 8.175 Mt ore mined at a head grade of 1.09% WO3 and 80% recovery for a total of 7.115 million mtu's of dry tungsten concentrate. Wardrop 2009 and Scott Wilson RPA, 2007.									
2007	MACTUNG YT & NWT (UNDERGROUND)	Inferred	tungsten trioxide	.78 %	11,857,000		Yes	Yes	0.5%WO3
92,000 metric tonnes or 9,.2 million mtu contained WO3. Scott Wilson RPA, 2007.									
2007	MACTUNG YT & NWT (UNDERGROUND)	Indicated	tungsten trioxide	.88 %	33,029,000		No	Yes	0.5%WO3
290,000 metric tonnes or 29 million mtu contained WO3. Scott Wilson RPA, 2007.									
2001	MACTUNG - TOTAL RESERVES (OPEN PIT & UNDERGROUND)	Inferred	tungsten	.84 %	13,785,000		No	Unknown	Unknown
Measured and Indicated Resources are listed as a combined figure in the 2001 report. No breakdown between the two resource categories are given and are reported here as Indicated Resources, the category requiring the lower confidence of the two.; ROSCOE, W., POSTLE, J., RENNIE, D. and HUGHES-PEARL, J., 2001. Report on the Tungsten Assets of North American Tungsten Corporation Ltd, 150 p.									
2001	UPPER SKARN (OPEN PIT)	Indicated	tungsten	.8 %	8,617,000		No	Unknown	Unknown
Measured and Indicated Resources are listed as a combined figure in the 2001 report. No breakdown between the two resource categories are given and are reported here as Indicated Resources, the category requiring the lower confidence of the two.; ROSCOE, W., POSTLE, J., RENNIE, D. and HUGHES-PEARL, J., 2001. Report on the Tungsten Assets of North American Tungsten Corporation Ltd, 150 p.									
2001	LOWER SKARN (UNDERGROUND)	Indicated	tungsten	1.2 %	5,052,000		No	Unknown	Unknown
Measured and Indicated Resources are listed as a combined figure in the 2001 report. No breakdown between the two resource categories are given and are reported here as Indicated Resources, the category requiring the lower confidence of the two.; ROSCOE, W., POSTLE, J., RENNIE, D. and HUGHES-PEARL, J., 2001. Report on the Tungsten Assets of North American Tungsten Corporation Ltd, 150 p.									
2001	MACTUNG - TOTAL RESERVES (OPEN PIT & UNDERGROUND)	Indicated	tungsten	.95 %	13,669,000		No	Unknown	Unknown
Measured and Indicated Resources are listed as a combined figure in the 2001 report. No breakdown between the two resource categories are given and are reported here as Indicated Resources, the category requiring the lower confidence of the two.; ROSCOE, W., POSTLE, J., RENNIE, D. and HUGHES-PEARL, J., 2001. Report on the Tungsten Assets of North American Tungsten Corporation Ltd, 150 p.									