Occurrence Details

Occurrence Number: 106C 044
Occurrence Name: Leary
Occurrence Type: Hard-rock
Status: Prospect
Date printed: 12/15/2025 1:06:56 PM

General Information

Secondary Commodities: copper, gold, lead, silver, zinc
Deposit Type(s): Sediment hosted Mississippi Valley-Type Pb-Zn (MVT)
Location(s): 64°49'2" N - -133°36'37" W
NTS Mapsheet(s): 106C13
Location Comments: 1 Kilometres
Hand Samples Available: Yes
Last Reviewed:

Capsule

Work History

Staked as DTG cl 1-144 (Y95509) in Aug/74 by Amax Exploration Inc to cover lead-zinc showings discovered during followup of a regional sampling program. In 1975, Amax carried out geological mapping, prospecting and geochemical sampling.
In Jun/95 M. Stammers staked Auks cl 1-36 (YB64035) 3 km to the west for the Fairchild Joint Venture (Newmont Exploration Ltd and Westmin Resources Ltd). Pamicon Developments Ltd and Equity Engineering Ltd were hired by the joint venture group to manage the property. In the summer of 1995 they carried out geological mapping, prospecting and rock and soil sampling on the claim block. In Nov/96 Westmin staked Auks cl 37-48 (YB80814) at the south end of the claim block and in 1997 the Joint Venture drilled seven holes (1 151.23 m).

Capsule Geology

The region is underlain by a metamorphosed and altered sequence of Early Proterozoic Wernecke Supergroup clastic and carbonate rocks (Fairchild Lake Group, Quartet Group and Gillespie Lake Group, from oldest to youngest) that are intruded by Early to Middle Proterozoic mafic sills and dykes, and cut by Middle Proterozoic Wernecke Breccia. To the east, Wernecke Supergroup rocks are unconformably overlain by Middle Proterozoic Pinguicula Group rocks. According to Thorkelson (2000), Wernecke Breccia development is best modeled as a set of hydrothermal and/or phreatic breccias; brecciation being caused by explosive expanson of volatile-rich fluids. Hunt (2005) attributed Wernecke Breccia formation to periodic over-pressuring of dominantly basinal fluids, which lead to repeated brecciation of host strata and mineral precipitation.
The Fairchild Fault, a major structure, bisects the region. It extends from Fairchild Lake south along the Bonnet Plume River corridor past the Leary claims. To the north, it merges with the Knorr Fault, a major strand of the Richardson Fault array. This fault array was active in Late Proterozoic and Tertiary times.
The DTG claims (which cover the Leary occurrence) are underlain by slaty dolomite of the Gillespie Lake Group. Three northwest-trending fault splays extend eastward from the Fairchild fault across the Leary claims. Two types of mineralization are present:
1) Sphalerite with secondary dolomite and minor galena and marcasite occurs in a vein stockwork within a 120 m stratigraphic interval near the base of the dolomite. Narrow veins spaced about 10 cm apart occur within sheared and sheet-jointed zones up to 6 m wide within a 300 by 240 m area. Channel samples from separate outcrops in the main showing area returned assays of up to 1.74% zinc and 0.24% lead across 6.1 m.
2) At the southwest end of the claims chalcopyrite, hematite and pyrite are associated with a Wernecke Breccia body cutting Gillespie Lake Group dolomite. The best assay obtained by Amax was 1.34% copper and 15.1 g/t silver across 15 cm. A breccia sample collected by Thorkelson and Wallace (1994) assayed 1 463 ppb gold and 1.1% copper.
On the Auks claim block, to the west, Equity and Pamicon found that much of the western half of the claims is overlain by recent alluvium of the Bonnet Plume River. West of the river, pyrite veining, disseminated pyrite and strong goethite and jarosite alteration occurs in dolomite and dolomitic siltstone at several locations.
East of the Bonnet Plume River, the property is underlain by an approximately 1.0 km wide by more than 2.5 km long northwest- trending zone of Wernecke Breccia and Gillespie Lake Group rocks. This breccia zone is bounded both to the east and west by Gillespie Lake Group Dolostone. Three breccia types present include heterolithic breccia (BHT), homolithic breccia predominantly derived from shale (BHM) and homolithic breccia predominantly derived from dolomitic siltstone (BHMC). Breccias are gradational and fault-bounded with one another and with other rock types. Maroon-coloured hematite-altered shale and minor diorite also outcrop within this zone of breccia development.
Gillespie Lake Group dolomite (DOL) and dolomitic siltstone (DOL1) host the breccia. Contacts between breccia and these units are not well exposed but where observed are gradational or possibly structurally controlled. Both units DOL and DOL1 weather an orange-brown color and are a light grey color when fresh. Dolomitic siltstone outcrops east of the breccia zone, while dolomite is the more common rock type to the west of this zone. Diorite (DI), which was mapped at the southeast corner of the claim group, is typically fine-grained, dark green, weakly potassium feldspar- and chlorite-altered and may host very minor chalcopyrite mineralization. Northwest and northeast trending (normal ?) faults cross the claim group. Bedding where observed is variable with no clear structural patterns, striking and dipping moderately to shallowly in all directions.
Results of the 1997 drilling, while adequately explaining targeted soil anomalies, were generally disappointing. The best intersection from the first three holes (Hole LY97-1) was 3 235 ppm copper and 42 ppb gold over 4.5 m. The remaining four holes targeted a deep seated airborne magnetic anomaly detected during an airborne survey completed by Newmont. The only hole (LY97-10) to intersect magnetite-bearing core was abandoned early due to undermining of the platform footing. The magnetic susceptibilities measured from the available core samples were well below the values required to explain the airborne anomaly.

References

AMAX EXPLORATION INC, Jan/76. Assessment Report #090061 by J.B. Alsen and G.M. Leary

HUNT, J., 2005. The geology and genesis of iron oxide-copper-gold mineralisation associated with Wernecke Breccia, Yukon Canada, PhD thesis, James Cook University, Australia, 2 volumes, 120 p.

MINERAL INDUSTRY REPORT 1974, p.62; 1975, p.55-56

NEWMONT EXPLORATION LTD, Jan/96. Assessment Report #093376 by A.T. Montgomery.

NEWMONT EXPLORATION LTD, Feb/68. Assessment Report #093774 by M.A. Stammers.

THORKELSON, D.J. AND WALLACE, C.A., 1994. Geological Setting of mineral occurrences in Fairchild Lake map area, (106C/13), Wernecke Mountains, Yukon. In: Yukon Exploration and Geology, 1993, Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 79-92.

THORKELSON, D.J. AND WALLACE, C.A., 1998. Geological Map of Fairchild Lake area (NTS 106 C/13), Wernecke Mountains, Yukon. Exploration and Geological Services Division, Yukon,

Indian and Northern Affairs Canada, Geoscience Map 1998-10.

THORKELSON, D.J., 2000. Geology and mineral occurrences of the Slats Creek, Fairchild Lake and "Delores Creek" map areas (106 D/16, 106C/13, 106C/14), Wernecke Mountains, Yukon Territory. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Bulliten 10, 73p.

YUKON EXPLORATION & GEOLOGY 1995, p. 12.

Work History

Date	Work Type	Comment
12/31/1997	Drilling	Number of holes drilled: 7 Amount of work done: 1151.23 METRES
12/31/1996	Other	Staked Auks cl 37-48.
12/31/1995	Geochemistry	
12/31/1995	Geology	
12/31/1995	Geochemistry	
12/31/1995	Other	
12/31/1975	Geology	1: 500 scale.
12/31/1975	Other	
12/31/1975	Other	
12/31/1974	Geology	
12/31/1974	Other	
12/31/1974	Other	
12/31/1974	Other	

Assessment Reports that overlap occurrence

Report Number	Year	Title	Worktypes	Holes Drilled	Meters Drilled
095646	2007	2007 Geological, Geochemical and Geophysical Report on the Werneckes Project	Diamond - Drilling, Rock - Geochemistry, Silt - Geochemistry, Soil - Geochemistry, Detailed Bedrock Mapping - Geology, Regional Bedrock Mapping - Geology, Magnetics - Ground Geophysics, Scintillometer - Ground Geophysics, Prospecting - Other, Backhoe - Trenching, Hand - Trenching, Handblast - Trenching	28	6537.96
095242	2006	Assessment Report Describing Airborne Geophysics, Diamond Drilling and Prospecting at the Bonnie Property	Gamma-Ray Spectrometry - Airborne Geophysics, Magnetic - Airborne Geophysics, Diamond - Drilling, Drill Core - Geochemistry, Prospecting - Other	3	491.93
094956	2006	2006 Geological, Geochemical and Geophysical Report on the Werneckes Project	Reverse Circulation - Airborne Geophysics, Rock - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology, Scintillometer - Ground Geophysics, Prospecting - Other		
090061	1975	Dolores Creek Pb-Zn Property DTG 1-144 Claims	Detailed Bedrock Mapping - Geology, Prospecting - Other		
061207	1974	Report on Geological and Geochemical Field Work 1974 EG Claim Group	Rock - Geochemistry, Soil - Geochemistry, Detailed Bedrock Mapping - Geology, Prospecting - Other		

Related References

Number	Title	Page(s)	Reference Type	Document Type
ARMC008086	Dolores Creek detail map area - Reef project		Property File Collection	Geoscience Map (General)
ARMC007822	Geochemical values map - Sample sites - Reef project - Dolores Creek detail area - Figure 5		Property File Collection	Geochemical Map
ARMC007823	Geology map - Reef project - Dolores Creek detail area - Figure 4		Property File Collection	Geoscience Map (Geological - Bedrock)