Occurrence Details

Occurrence Number: 105G 008
Occurrence Name: Hasselberg
Occurrence Type: Hard-rock
Status: Deposit
Date printed: 6/15/2025 8:05:38 PM

General Information

Primary Commodities: lead, silver, zinc
Secondary Commodities: barite, copper, gold
Aliases: Wolf
Deposit Type(s): Volcanogenic Massive Sulphide (VMS) Kuroko Cu-Pb-Zn
Location(s): 61°20'24" N - -131°29'38" W
NTS Mapsheet(s): 105G06
Location Comments: .5 Kilometres
Hand Samples Available: Yes
Last Reviewed:

Capsule

Work History

Newmont Exploration of Canada Ltd discovered this showing in 1955 and first staked it as FH cl (Y13519) in Sep/66. In 1967, the company constructed a tote road from the Robert Campbell Highway to the claims and carried out geological mapping, soil sampling and hand trenching.
Restaked as Rover cl (Y64520) in Jun/72 by F. Hasselberg and as Sip cl 1-24 (Y74695) in May/74 by Hesca Resources Ltd, which drilled two x-ray holes (61 m) later in the year, both of which failed to reach their target.
Restaked in Aug/76 as Joe cl 1-10 (YA795) by Newmont and Asamera Oil Corporation Ltd, which carried out geochemical sampling, EM and magnetometer surveying, geological mapping and hand trenching; enlarged the property in 1977; and carried out bulldozer trenching and drilled 3 holes (528 m) in 1978.
Restaked as Zap cl 1-6 (YA68699) and Zoo cl 1-38 (YA68705) in Jul/82 by Amax of Canada Ltd which transferred its interest to Canamax Resources Inc which carried out geological mapping and geochemical sampling in 1983.
The original occurrence was restaked as Wolf cl 1-18 (YB16894) by YGC Resources Ltd in Mar/90. Days later, Cominco Ltd surrounded the Wolf claims with Fox cl 1-181 (YB16912) which extended 20 km along strike to the northwest. YGC tied on Lynx cl 1-14 (YB33211) to the southeast in Jun/90. Both Cominco and YGC carried out geochemical surveying in 1990. Cominco optioned the Wolf and Lynx claims from YGC in 1991 and carried out contour and grid soil sampling and limited geological mapping. In 1992, Cominco carried out UTEM and magnetic surveying over the Wolf claims, following which the company terminated its option.
In 1995 Atna Resources optioned the Wolf claims from YGC. The company carried out a reconnaissance evaluation in 1995; soil sampling, hand trenching and drilled 3 holes (399 m) in 1996; and geological mapping and drilled 12 holes (2,956 m) in 1997. In Sep/97 the company staked 15 additional Wolf claims (non-sequentially numbered, Wolf cl 19 = YB89893) around existing claims and the following month they carried out regional airborne geophysical surveying. In 1998 Atna drilled an additional 30 holes (6,625 m) on the main Wolf claim block. At the end of 1998 Atna earned a 65% interest in the Wolf claims from YGC Resources Ltd.
Pathfinder Resources Ltd staked Pup cl 1-8 (YB90049) at the southeast end of the Wolf claim block in Sep/97.
Atna undertook engineering studies during 2000.

Capsule Geology

The area is located in the Pelly Mountains southwest of the Tintina Trench. The occurrence lies at the southeastern end of the Pelly Mountains volcanic belt, an arcuate belt of rocks measuring about 80 km long and up to 25 km wide that forms part of the Pelly-Cassiar Platform. In the 1970s several volcanic massive sulphide (VMS) deposits (Minfile Occurrence 105F 012 etc.) were discovered in the northwest end of the belt. After several years, interest in the belt waned, but interest was rekindled by the discovery of the Kudz Ze Kayah (Minfile Occurrence 105G 117) and Wolverine (Minfile Occurrence 105G 072) deposits in time-correlative strata in the Finlayson Lake area located to the east.
Rocks of the Pelly Mountain volcanic belt are considered to be Late Devonian to Early Mississippian. The belt unconformably overlies cliff-forming carbonate and limey siltstone/shale that range from probable mid-Silurian to Middle Devonian age. The volcanic belt is overlain by coarse-grained sandstone and grit, argillite and massive rusty weathering carbonate which have been interpreted as Ordovician Road River and (?) Earn Group-equivalent strata that has been thrust over the volcanic package, however this contact is not directly exposed.
In 1998 J. Hunt of the Yukon Geology Program carried out detailed geological mapping at the Wolf property. Results from this study show that the southeast end of the belt is made up of dominantly felsic volcaniclastic strata. The base of the succession consists of dominantly brown-pink lapilli tuff interbedded with argillite and lesser trachyte sills/dikes. The middle of the succession is made up primarily of heterolithic lapilli tuff with distinct argillite clasts, maroon matrix tuff with green lapilli-sized fragments and trachyte flows/sills/dikes; the upper part consists of chlorite-altered volcaniclastic rocks containing intermediate dikes and flows. The Wolf deposit is hosted within the middle portion of the volcanic succession proximal to a syenite intrusion. To the west, towards the centre of the volcanic belt the felsic volcaniclastic component decreases as the number of sills, flows and dikes becomes more numerous, and the amount of intermediate volcanic material increases.
Regionally, bedded barite and massive sulphide showings occur in Late Devonian to Early Mississippian intermediate to felsic pyroclastic rocks and minor flows which overlie thick-bedded mid-Silurian to Middle Devonian carbonate rocks. These volcanic rocks are in turn unconformably overlain by coarse-grained sandstone and grit, argillite and massive rusty weathering carbonate thought to be Ordovician in age.
The original occurrence is located 1.2 km northwest of Atna Resources Wolf deposit and consists of two massive sulphide lenses up to 1.2 m wide in a linear schistose zone striking northwest and dipping 50° southwest. A geochemical survey in 1977 outlined a 1,500 x 400 m lead anomaly with values of 100 to 3,120 ppm Pb, and an associated zinc anomaly. Trenching exposed pyrite, sphalerite and galena as disseminations and stratiform layers in bedded barite, associated with silicified and pyritized felsic tuffs. The best 1977 trench assays were 7.2% Zn, 0.02% Pb, 0.3% Cu, 1.37 g/t Ag and trace Au across 0.61 m and 4.2% Zn, 0.65% Pb and 13.1 g/t Au across 1.5 m, while the best 1978 drill intersection was 5.6% Zn, trace Pb, 27.4 g/t Ag and trace Au across 0.43 m in Hole 78-1.
Geological mapping carried out by Cominco in the Mt Vermilion area showed that the Devono-Mississippian strata appears to be continuous, with minor offsets along north-northeast cross faults. Footwall rocks consist of massive andesitic tuff and the hanging wall consists of rhyolite tuff and quartz-feldspar porphyry flows with pervasive potassium feldspar-sericite-clay-carbonate alteration. Lenses of bedded barite with wispy disseminated pyrite, sphalerite and galena occur near the top of the altered hanging wall rhyolite within strongly altered rhyolite lapilli-tuffs and porphyritic flows.
Cominco's 1992 UTEM survey over the Wolf claims traced the favorable horizon for 600 m. Cominco interpreted the anomaly as having limited strike length and no down dip potential indicating a limited tonnage potential. There was no coincident total field magnetic anomaly.
Atna Resources 3 diamond drill holes, in 1996, intersected significant, but sub-economic zinc, lead and silver values. The fourth hole (WF97-07) of the 1997 program intersected 25.2 m of 6.9% Zn, 2.8% Pb and 139 g/t Ag. Eight additional holes were drilled, all of which intersected the upper horizon of massive sulphides of varying thickness and grade. Follow-up drilling in 1998 further defined the Wolf deposit and delineated the East Slope zone.
Although conclusive evidence is lacking, it appears the stratigraphy at the Wolf deposit may be an overturned limb of a recumbent fold. The mineralogical sequence appears inverted so that stringer mineralization occurs above the massive sulphide deposit and an extensive barite-carbonate exhalite occurs below it.

Volcanogenic sulphide mineralization and exhalative barite occur at four stratigraphic levels within the Wolf property. The Wolf deposit occurs as a tabular massive sulphide horizon across a 600 m strike length and approximately 500 m in the down-dip direction of the uppermost stratigraphic unit. A higher-grade, thicker 'keel' to this horizon, which is open at depth, was defined over a 120 m width, 12 m average thickness, and 400 m down-dip extent. A thrust fault is interpreted to have terminated the mineralization towards the northwest.
The massive sulphide mineralization consists primarily of fine-grained pyrite with bands of amber-colored sphalerite and fine-grained, steely-grey galena. Also present is medium-grained botryoidal sphalerite and galena within a gangue of buff-colored Fe-Mg carbonate and more rarely barite. Generally, sulphide intersections within the upper horizon grade from banded galena/pyrite to variably textured medium-grained sphalerite-pyrite. An extensive semi-massive barite/carbonate exhalite occurs immediately below the massive sulphide. The barite/carbonate hosts disseminated to semi-massive sulphides in a banded, well-foliated fine-grained matrix which generally maintains a relatively uniform thickness of three to five metres throughout the Wolf deposit area.
Six diamond drill holes from the 1998 drill program intersected massive and semi-massive sulphides at the East Slope zone located 1,200 m east of the Wolf deposit. The zone consists of 5 narrow sulphide horizons within an approximately 80 m thick sequence. One hole, WF98-45, intersected 4.6 m true width of massive, semi-massive, mostly bedded sulphide, siliceous exhalite and mineralized lapilli tuff grading 5.7% Zn, 2.1% Pb and 42.6 g/t Ag. None of the six holes penetrated through the succession, which is greater than 80 m in true thickness.
In Jan 1/99, Atna calculated an in-house resource for the Wolf deposit (not including the East Slope zone) of 4.1 million tonnes grading 6.2% Zn, 1.8% Pb and 84 g/t Ag. The 2000 engineering studies indicate that the upper part of the Wolf deposit could be mined by open pit methods, particularly if further resources are defined up-dip.
Future exploration of the Wolf deposit will be pursued when mine development in the area proceeds.

Work History

Date	Work Type	Comment
12/31/1998	Drilling	Thirty holes, 6,625 m. Drilling on Wolf deposit and East Slope zone.
12/31/1997	Drilling	Twelve holes, 2,956 m.
12/31/1997	Geology	
12/31/1997	Airborne Geophysics	Also magnetic and VLF-EM surveys.
12/31/1996	Drilling	Three holes, 399 m.
12/31/1996	Geochemistry	
12/31/1996	Trenching	
12/31/1995	Other	
12/31/1992	Ground Geophysics	Also UTEM survey.
12/31/1991	Geology	
12/31/1991	Geochemistry	
12/31/1990	Geochemistry	
12/31/1983	Geology	
12/31/1983	Geochemistry	
12/31/1978	Drilling	Three holes, 528.52 m.
12/31/1977	Geology	
12/31/1977	Geochemistry	
12/31/1977	Ground Geophysics	Also magnetic survey.
12/31/1977	Trenching	
12/31/1974	Drilling	Two holes, 61 m.
12/31/1967	Geology	
12/31/1967	Geochemistry	
12/31/1967	Trenching	
12/31/1967	Development, Surface	
12/31/1955	Other	Newmont discovered showing.
12/13/2000	Studies	Engineering study.

Assessment Reports that overlap occurrence

Report Number	Year	Title	Worktypes	Holes Drilled	Meters Drilled
096999	2016	2016 Geophysical and Geochemical Report on the Wolf Property	Magnetic - Airborne Geophysics, VTEM - Airborne Geophysics, Drill Core - Geochemistry		
093983	1998	Geological & Geochemical Report on the Starr Property	Rock - Geochemistry, Silt - Geochemistry, Soil - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology, Detailed Bedrock Mapping - Geology, Prospecting - Other		
093789	1997	Report on a Combined Helicopter-Borne Electromagnetic, Magnetometer and VLF-EM Joint Aerodat Survey Wolf Deposit and Nearby Belt Yukon Territory	Electromagnetic - Airborne Geophysics, Magnetic - Airborne Geophysics		

093955	1997	Helicopter-borne EM, Magnetic and VLF Survey on the Wolf 1-19, 21, 23, 25, 29, 31, 33, 35, 37, 39-43 Claims	Electromagnetic - Airborne Geophysics, Electromagnetic - Airborne Geophysics, Magnetic - Airborne Geophysics, Magnetic - Airborne Geophysics		
093084	1992	1992 report on Geophysiocal Surveys, Wolf Property	Bedrock Mapping - Geology, EM - Ground Geophysics, Magnetics - Ground Geophysics		
093017	1991	1991 Assessment Report Fox-Wolf-Lynx Property Soil Geochemistry and Geological Mapping	Rock - Geochemistry, Soil - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology, Bedrock Mapping - Geology		
092952	1990	Assessment Report, Soil Geochemistry, Fox Property	Soil - Geochemistry		
091465	1982	1982 Geological, Geochemical Assessment Report	Rock - Geochemistry, Soil - Geochemistry, Bedrock Mapping - Geology		
091156	1978	Drill Logs for Joe and Cyr Claims	Diamond - Drilling	5	914

Related References

Number	Title	Page(s)	Reference Type	Document Type
ARMC008064	Pelly project 1977 summary - Geochemical map - Figure 15b		Property File Collection	Geochemical Map
ARMC008065	Geophysical survey map - Upper Hoole River		Property File Collection	Geophysical Map
ARMC013981	Sample descriptions and geochemical assay values - R83 - Zap group		Property File Collection	Miscellaneous Company Documents
ARMC016337	Geochemical results map 105G/6 - Pelly project		Property File Collection	Geochemical Map
ARMC013979	Claim map of Zap group - 105G-7		Property File Collection	Geoscience Map (General)
YEG1998_06	Preliminary stratigraphy and distribution of Devono-Mississippian massive sulphide-bearing volcanic rocks in the Mount Vermilion (Wolf) area, Pelly Mountains (105 G/5 and G/6), southeast Yukon		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Annual Report Paper
YEG1998_21	The Wolf property - 1998 update: Volcanogenic massive sulphides hosted by rift-related, alkaline, felsic volcanic rocks, Pelly Mountains, Yukon		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Annual Report Paper
1998-5	Preliminary Geological Map of the Mt. Vermillion Area, Southern Yukon (parts of 105G/5 and 6)		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Open File (Geological - Bedrock)
YEG1997_Holbek	The Wolf Discovery: A Kuroko-style volcanogenic massive sulphide deposit hosted by rift-related, alkaline felsic volcanic rocks		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Annual Report Paper

Resource/Reserve

Year	Zone	Type	Commodity	Grade	Tonnage	Amount	Reported Amount	43-101 Compliant	Cut-off
2000	HASSELBERG (WOLF) - TOTAL RESERVES (OPEN PIT & UNDERGROUND)	Historical Estimate	lead	1.8 %	4,100,000		No	No	Unknown
Company reported this figure as in-house resource (company classified resource as Inferred). Does not meet National Instrument 43-101 standards. Based on 31 drill holes.; Atna Resources Web Site, Sep/2003, Wolf Deposit. Also reported in Assessment Report #093955 p. 1.									
2000	HASSELBERG (WOLF) - TOTAL RESERVES (OPEN PIT & UNDERGROUND)	Historical Estimate	silver	84 g/t	4,100,000	344400000	No	No	Unknown
Company reported this figure as in-house resource (company classified resource as Inferred). Does not meet National Instrument 43-101 standards. Based on 31 drill holes.; Atna Resources Web Site, Sep/2003, Wolf Deposit. Also reported in Assessment Report #093955 p. 1.									
2000	HASSELBERG (WOLF) - TOTAL RESERVES (OPEN PIT & UNDERGROUND)	Historical Estimate	zinc	6.2 %	4,100,000		No	No	Unknown
Company reported this figure as in-house resource (company classified resource as Inferred). Does not meet National Instrument 43-101 standards. Based on 31 drill holes.; Atna Resources Web Site, Sep/2003, Wolf Deposit. Also reported in Assessment Report #093955 p. 1.									