Occurrence Details

Occurrence Number: 117A 027
Occurrence Name: Rapid
Occurrence Type: Hard-rock
Status: Showing
Date printed: 6/15/2025 6:53:37 PM

General Information

Primary Commodities: iron, manganese, phosphorus
Deposit Type(s): Iron Formation
Location(s): 68°33'35" N - -136°46'57" W
NTS Mapsheet(s): 117A09
Location Comments: .5 Kilometres
Hand Samples Available: No
Last Reviewed:

Capsule

Work History

Phosphate minerals were first identified in this area in 1962 by F.A. Campbell, who identified lazulite from specimens collected by B. Cameron from creek gravels at the junction of Blow River and Rapid Creek. Iron Formation was first noted on Rapid Creek, southwest of this point, by the Geological Survey of Canada in 1971, and was staked as Dawn and Mark cl (Y82551) in May/74 by Welcome North Mines Ltd and Bethlehem Copper, which performed sampling and evaluation later in the year.

The phosphate, iron and manganese-rich strata lie within a large area withdrawn from staking in Jul/78 pending creation of a National Wilderness Park, settlement of native land claims and development of a management plan for the Porcupine caribou herd.

Capsule Geology

Thick deposits of siderite and phosphatic ironstone in shale occur in the Rapid Creek Formation, which overlies a thick sequence of turbidite sandstones deposited during the late Early Cretaceous. The sequence consists of three units of cyclically interbedded siderite, mudstone and shale separated by two grey montmorillonite shale units. The phosphate minerals are thought to have been deposited by cold, northeast-flowing currents upwelling on the flank of a structural high which formed the eastern margin of the Blow Trough. In the Rapid Creek and Lower Big Fish River drainages, the Rapid Creek Formation forms an immense low-grade deposit that roughly contains reserves of 27,000,000,000 tonnes of ironstone with an average composition of 33% Fe_2O_3, 14% P_2O_5 and 5% MnO. The Rapid Creek iron-manganese horizon is ranked by Laznicka as the world's fourth largest manganese deposit, with 6.5% of the world's total manganese reserves.

The Rapid Creek Formation is the most northerly known phosphorite with a paleolatitude of 75° N. It varies from about 1000 m thick west of Rapid Creek to 60 m at Big Fish River. The phosphatic iron formation is composed of phosphate-siderite pellets and granules, detrital quartz and skeletal fragments in a matrix of sideritic mudstone. The phosphate-siderite pellets appear to have been redeposited and have an unusual chemistry which is more calcium deficient and more iron and magnesium rich than other marine phosphorites. Sampling in 1974 gave a grade of 16.7% total Fe across a thickness of 442 m. A direct reduction test gave 66.7% total Fe concentrate grade and a recovery of 72.5%.

The Blow River Formation is best known for the secondary minerals, chiefly phosphates, which are found as veins and breccia fillings in the Rapid Creek area. Thirty-two phosphate minerals have been identified, including ten new species. The best known is lazulite, Yukon's official gemstone. Robertson (1982) identified four phosphate mineral assemblages, each associated with a particular host rock type. Veins are most common in the more competent phosphorite beds, and are controlled by extensional cross fractures which accompanied Early Tertiary folding (Yeo, 1992). Primary fluid inclusions within the crystalline phosphate minerals give homogenization temperatures of 180-200°C.

Work History

Date	Work Type	Comment
12/31/1974	Geochemistry	
12/31/1974	Geology	

Assessment Reports that overlap occurrence

Report Number	Year	Title	Worktypes	Holes Drilled	Meters Drilled
090002	1975	Exploration Proposal Delta Iron Deposit	Rock - Geochemistry		
080340	1974	Delta Iron Deposit Mac 1-50 Mineral Claims, Mackenzie Mining District	Research/Summarize - Pre-existing Data		

Related References

Number	Title	Page(s)	Reference Type	Document Type
YEG2012_10	Preliminary observations on the geology and mineralogy of the Rapid Creek Formation, Blow River and Davidson Mountains map area (NTS 117A/8 and NTS 117A/9), Yukon		Yukon Geological Survey	Annual Report Paper

1992GeolVol3_02	Phosphorites, ironstones, and secondary phosphates in Mid-Cretaceous flysch of the blow trough, northern Yukon		Indian & Northern Affairs Canada/Department of Indian & Northern Development: Exploration & Geological Services Division	Annual Report Paper
YEG1979_80-pg115	The geology of the Rapid Creek-Big Fish River phosphatic iron formation Northern Richardson Mountains, Yukon		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
1984	RAPID CREEK - FISH RIVER TOTAL RESERVES (OPEN PIT)	Historical Estimate	iron	33 %	27,000,000,000		No	No	Unknown
1984	RAPID CREEK - FISH RIVER TOTAL RESERVES (OPEN PIT)	Historical Estimate	manganese	5 %	27,000,000,000		No	No	Unknown
1984	RAPID CREEK - FISH RIVER TOTAL RESERVES (OPEN PIT)	Historical Estimate	phosphorus	14 %	27,000,000,000		No	No	Unknown