

Location/Identification

MINFILE Number:	083D 005	National Mineral Inventory Number:	083D6 Cb1, Vm1
Name(s):	<u>VERITY</u> LEMPRIERE, VERITY FIRST, AR, AR 1-4, MILL, BLUE RIVER		
Status:	Developed Prospect	Mining Division:	Kamloops
Regions:	British Columbia	Electoral District:	Kamloops-North Thompson
BCGS Map:	083D035	Resource District:	Thompson Rivers Natural Resource District
NTS Map:	083D06E	UTM Zone:	11 (NAD 83)
Latitude:	52 23 58 N	Northing:	5807654
Longitude:	119 09 21 W	Easting:	353331
Elevation:	870 metres		
Location Accuracy:	Within 500M		
Comments:	Specimen pit on the Verity First claim approximately 60 kilometres south of the town of Valemount (Assessment Report 10274).		

Mineral Occurrence

Commodities: Niobium, Tantalum, Phosphate, Uranium, Rare Earths, Vermiculite

Minerals

Significant:	Pyrochlore, Columbite, Apatite, Vermiculite		
Significant Comments:	Refer to capsule geology for detailed mineralogy.		
Associated:	Dolomite, Calcite, Magnetite, Amphibole, Zircon, Pyrite, Pyrrhotite, Olivine		
Associated Comments:	Deposit classification is metasomatic.		
Alteration:	Amphibole, Biotite, Albite, Perthite		
Alteration Comments:	See comment under associated minerals.		
Alteration Type:	Fenitic		
Mineralization Age:	Devonian-Mississipp.		
Isotopic Age:	325 Ma	Dating Method: Uranium/Lead	Material Dated: Zircon
Deposit	Character:	Stratiform, Concordant, Disseminated	
	Classification:	Magmatic, Industrial Min.	
	Type:	N01: Carbonatite-hosted deposits	
	Shape:	Tabular	
	Dimension:	800x30x0 metres	Strike/Dip: 095/32S
	Comments:	Radiometric date is from two zircon separates. Potassium-argon dates on richterite from beforosite are 92.5+/-3.2 and 80.2+/- 2.8 Ma. These ages represent metamorphic ages (Bulletin 86, in press).	

Host Rock

Dominant Host Rock: Metamorphic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Hadrynian	Horsethief Creek	Undefined Formation	-----
Proterozoic-Paleoz.	-----	-----	Shuswap Metamorphic Complex
Isotopic Age	Dating Method	Material Dated	
-----	-----	-----	
-----	-----	-	
Lithology:	Carbonatite, Beforosite, Sovite, Fenite, Schist, Pelite, Amphibolite, Quartz Hornblende Mica Schist		
Comments:	In Semipelite-Amphibolite Unit.		

Geological Setting

Tectonic Belt: Omineca **Physiographic Area:** Monashee Mountains
Terrane: Kootenay
Metamorphic Type: Regional **Relationship:** Post-mineralization
Grade: Amphibolite
Comments: Carbonatite in central (Omineca) division of carbonatite belt.

Inventory

Ore Zone: VERITY **Year:** 2001
Category: Inferred **Report On:** N
Quantity: 3,060,000 tonnes **NI 43-101:** N

Commodity	Grade
Niobium	646 per cent
Phosphate	3.2 per cent
Tantalum	196 per cent

Comments:

Reference: Press Release - Commerce Resources Corporation, July 25, 2001.

Capsule Geology

The property is located in the North Thompson River Valley, approximately 60 kilometres south-southeast of the town of Valemount.

The property is underlain by Proterozoic Horsethief Creek Group metasedimentary rocks and derived gneisses. Medium to coarse crystalline sovitite and beforosite carbonatite sills intrude the Horsethief Creek rocks.

In British Columbia, carbonatites are found in a broad zone parallel to and encompassing the Rocky Mountain Trench, extending from the Elkford area northward to Williston Lake. Occurrences within this belt have been subdivided into three sub-belts. Most carbonatite occurrences are found in the central belt, which is predominantly within the Omineca Belt of the Canadian Cordillera and hosts most known stratiform carbonatites in the area between Revelstoke and Valemount. Within this northwest-trending belt, a number of carbonatite layers containing anomalous strontium, niobium, tantalum and rare earth elements occur within the Semipelite-Amphibolite division of the Hadrynian Horsethief Creek Group in the Monashee Mountains near Blue River (Fieldwork 1984). All of these carbonatites have sodic pyroxene and amphibole-rich fenitic margins and are associated with nepheline and sodalite syenites, urtites to meltergites. The time of emplacement of these carbonatites appears to be prior to the deformation and metamorphism associated with the Jura-Cretaceous Columbian orogeny and, in part, related to extension and/or rifting along the western continental margin. A third major extensional event at the end of the Devonian (circa 350 Ma) resulted in the intrusion of carbonatites. Carbonatites and surrounding metasedimentary rocks have been regionally metamorphosed to upper amphibolite grade (kyanite to sillimanite zone; Open File 1987-17; Bulletin 88).

The Verity carbonatite is easily reached by trails and logging roads that cross the North Thompson River and intersect Highway 5 at Lempriere Station, approximately 40 kilometres north of Blue River. This showing has the most varied stratigraphy of all the carbonatites in the area and is similar texturally and compositionally to the Paradise showing (083D 006) and the Lempriere carbonatite showing (083D 028). The Verity also contains the best mineralization of the Blue River carbonatites.

Carbonatite, consisting of banded beforosite and sovitite (locally intruding each other), occurs as a 15 to 30-metre thick sill within quartz-hornblende-mica schist and can be traced from the Specimen pit up the hillside for 800 metres to the east-northeast. It likely continues to the Paradise showing, 4.5 kilometres to the east-northeast. A tectonic breccia showing hairline fractures is common in the beforosite. A banded texture caused by layering of the accessory minerals apatite, amphibole, olivine, magnetite, vermiculite, biotite, pyrite, pyrrhotite, pyrochlore, columbite and zircon is common in the sovitite unit and less developed in the beforosite unit. Coarse olivine and apatite in sovitite units form bands 1 to 5 centimetres thick. Magnetite occurs as discontinuous lenses in sovitite layers up to 20 centimetres in diameter. The pyrochlore and columbite crystals occur as octahedrons up to 4 centimetres. The major elements in pyrochlore are sodium, tantalum, niobium and calcium, and locally minor uranium. The major elements in columbite are niobium and iron.

The Blue River property was originally staked in 1950 for vermiculite by O.E. French, a homesteader in the area. Later investigations by French resulted in the discovery of the pyrochlore-bearing carbonatites. In 1952, St. Eugene Mining Corporation Ltd. optioned the property and additional claims were staked. Most of the exploration work, consisting of trenching, sampling and blasting, was confined to the Verity and Mill claims. The property was dropped by St. Eugene and remained idle until June 1976, when J. Kruszewski restaked the area. In June 1978, another trenching and sampling program was conducted under the supervision of E. Myers of Calgary, Alberta, with Kruszewski's assistance. A total of 840 cubic metres of

stripping was undertaken and two grab samples were taken. In 1979, Kruszewski was approached by Anschutz (Canada) Mining Ltd. and an option contract was signed in February 1980. In 1981 and 1982, the company conducted geological mapping, drilling and sampling on the Bone Creek, Fir, Mill and Verity carbonatites.

A 1.1-metre sample taken in 1952 assayed 0.6 per cent niobium, 0.095 per cent uranium and 4.85 per cent phosphate (Minister of Mines Annual Report 1952). In 1982, the highest drill intersection was 0.025 per cent uranium over 1.5 metres. The Verity carbonatite has indicated reserves of 2 million tonnes of 0.118 per cent niobium and 0.02 per cent tantalum (Assessment Report 11130). Rare earths occur in the carbonatite as indicated by assays of a sample with the following values: 0.0171 per cent lanthanum, 0.0371 per cent cerium, 0.0147 per cent neodymium, 0.0001 per cent ytterbium and 0.002 per cent scandium. This sample also assayed 0.015 per cent tantalum (Open File 1987-17, page 42). Sovites at the Verity showing also contain greater than 4 per cent phosphate and more apatite than any other carbonatite (Assessment Report 10274). The rare earths are thought to be in fluocarbonate.

The property was acquired by Commerce Resources Corporation in 2000 and was grouped together in 2002 with the company's other carbonatite projects in the area to form the Blue River property. In 2000, Commerce Resources undertook a geological mapping and limited sampling program. Work continued the following year with prospecting, stream sediment sampling, ground geophysical surveys, soil sampling and diamond drilling. Commerce Resources Corporation drilled 410 metres over five holes in 2001 and, based on previous drilling, reported a new inferred resource of 3.06 million tonnes grading 196 grams per tonne tantalum, 646 grams per tonne niobium and 3.2 per cent phosphate (Press Release - Commerce Resources Corporation, July 25, 2001). Geophysical work in 2001 demonstrated that magnetic properties of the Verity Paradise Carbonatite Complex could be used to trace the subcrop edge and potentially locate new carbonatite occurrences.

Bibliography

- EMPR AR 1950-223-229; *1952-115-119; 1954-111; 1968-222
EMPR ASS RPT *1630, 6741, 7236, 8216, *9566, *10274, 10955, *11130, *12361, 26550, 26733, 26796, 27131, 27412
EMPR BULL *88
EMPR EXPL 1978-117; 1980-149; 1981-250; 1982-127,128; 2001-33-43,73-82
EMPR FIELDWORK 1979, pp. 118-119; 1980, pp. 111-112; 1981, pp. 68-69, *1984, pp. 84-94, 95-100
EMPR MAP *22 (#33)
EMPR OF *1987-17; *1990-32
EMPR PF (Unidentified news clipping; Knox, A. (2000): Summary Report on the Blue River Carbonatite Property, from Commerce Resources Corp. website)
GSC BULL 239, pp. 121,122,150
GSC EC GEOL 16 (2nd Ed.), p. 236; *18, pp. 31-35
GSC MAP 15-1967
GSC OF 551
GSC P 89-1E, pp. 95-100
CJES 1988 Vol.25, No.8, pp. 1323-1337
PR REL Commerce Resources Corp., Jul.25, Sept.4, Oct.22, 2001, May 16, Jun.5, Jul.19, Sept.*17, 2002, Mar.5,*10, 2003
CMJ Nov.17, 2004
WWW <http://www.commerceresources.com>; <http://www.commerceresources.com/s/Home.asp>;
[http://www.infomine.com/index/properties/BLUE_RIVER_\(FIR_VERITY\).html](http://www.infomine.com/index/properties/BLUE_RIVER_(FIR_VERITY).html)
Canadian Mineralogist 1961, Vol.6, pp. 610-633
Pell, J. and Hora, Z.D. (1990): Rifting, alkaline rocks and related magmatic deposits in the southern Canadian Cordillera; Ministry of Energy, Mines and Petroleum Resources, Geological Survey Branch, 8th IAGOD Paper
Gorham, J. (2007-06-20): Technical Report on the Upper Fir Tantalum-Niobium-Bearing Carbonatite - Blue River Property
Stone, M., Selway, J. (2010-03-30): Independent Technical Report - Blue River Property
Chong, A., Postolski, T. (2011-01-31): NI 43-101 Technical Report - Blue River Ta-Nb Project
Chong, A., Postolski, T. (2011-09-29): NI 43-101 Technical Report on Preliminary Economic Assessment - Blue River Tantalum-Niobium Project
Chong, A., Postolski, T. (2012-06-22): NI 43-101 Technical Report on Mineral Resource Update - Blue River Tantalum-Niobium Project
Kulla, G., Postolski, T. (2013-06-21): NI 43-101 Technical Report on Mineral Resource Update - Blue River Tantalum-Niobium Project
Kulla, G., Hardy, J. (2015-02-28): NI 43-101 Technical Report on Mineral Resource Update - Blue River Tantalum-Niobium Project
Kulla, G., Hardy, J. (2015-03-18): Project Update Report - Blue River Tantalum-Niobium Project
EMPR PFD 650091, 650092, 5222, 5223, 5224, 880000, 881146, 881147, 881148, 881149, 889340, 889341, 889342, 889343, 889344, 889345, 503807

Date Coded:	1985/07/24	Coded By:	BC Geological Survey (BCGS)	Field Check:	N
Date Revised:	2020/05/15	Revised By:	Karl A. Flower (KAF)	Field Check:	N