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PF → Verity 083D 005
Fir 083D 035

COMMERCE RESOURCES CORP.

SUMMARY REPORT ON THE BLUE RIVER CARBONATITE PROPERTY

EAST-CENTRAL BRITISH COLUMBIA

Mineral Claims
Fir 1 to 12, Mara 1 to 7, and Verity 1 to 11

Geographic Coordinates

52_ 16' N to 52_ 27' N
119_ 04' W to 119_ 11' W

NTS Sheets 83P5, 83P6, 83P11-14

2000 12 31

by

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICIES

1. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

1.1 SUMMARY

The author was retained during September to December, 2000 by Commerce Resources Corp. to examine the mineralogy of several hand samples and one small bulk sample, and to prepare an independent evaluation of the Blue River Carbonatite Property. The property consists of two claim groups, Verity to the north and Fir to the south, totalling 197 units within the Kamloops Mining Division, east-central British Columbia. The claims are known to host several carbonatite

sills; the most extensively explored carbonatite, Verity, has previously been reported (Aaquist, 1982b) to contain about 2_Mt of 0.020 per cent tantalum (Ta_2O_5) and 0.118 per cent niobium (Nb_2O_5).

The Blue River Property is underlain by gneissic metasedimentary rocks of the Horsethief Creek Group. These gneisses have been intruded by a number of sills of carbonatite, which host the known tantalum-niobium mineralization. The mineralization is present primarily as igneous segregations within the carbonatites. Such processes have produced tantalum-niobium enriched zones in some of the Blue River Carbonatites. The reported tantalum concentrations are among the highest known worldwide, from carbonatite systems.

During the period 1980-1982, Anschutz (Canada) Mining Ltd. conducted extensive exploration at the Blue River Property; including, prospecting, airborne geophysics, surface sampling and diamond drilling. This work resulted in the discovery of five main mineralized carbonatites: Bone Creek, Fir, Mill, Paradise, and Verity. In general, the mineralized carbonatite sills contain significant tantalum values, with low grade niobium and phosphate mineralization. A detailed examination (Section 7) of publicly available information, indicates that the main Verity Carbonatite Sill contains an inferred mineral resource of at least 3.8 Mt with about 228 g/t Ta_2O_5, 647_g/t_Nb_2O_5, and 3.23 % P_2O_5. Mineral resources at Verity remain open for expansion.

Based upon publicly available information (primarily Anschutz (Canada) Mining Ltd.), the potential for the discovery of economic concentrationsof tantalum can be considered excellent, given: (a) previously reported tantalum mineralization at the Blue River Property, (b)_recent, large increases in the value of tantalum (from US $75.00/lb on February 24,2000 to a maximum of US_$475/lb on December 18,2000), and (c) the proximity of the project to infrastructure, such as rail, roads and power. Other factors which will impact the economics of the known discoveries, and which require further investigation include: mineralogy and metallurgy of the tantalum and niobium bearing phases.

1.2 CONCLUSIONS

The Blue River Property encompasses at least five tantalum-niobium bearing carbonatites. Prior exploration work, primarily by Anschutz (Canada) Mining Ltd. during the period 1980-1982, resulted in the discovery of 2 Mt with 0.020 per cent Ta_2O_5, and 0.118 per cent Nb_2O_5, at the Verity Carbonatite. A detailed examination of publicly available information (this report), indicates that the main Verity Carbonatite Sill contains an inferred mineral resource of estimated at 3.8 Mt with

about 228 g/t Ta_2O_5, 647_g/t_Nb_2O_5, and 3.23 % P_2O_5. This resource remains open for expansion.

In addition, prior exploration at the Fir Carbonatite has resulted in significant drill intercepts across potentially economic thicknesses; such as for Hole BC-19: 7.9 m of 0.037 per cent Ta_2O_5, 0.064 per cent Nb_2O_5, and 3.25 per cent P_2O_5. Based upon the current high-price for tantalum (up to US $475/lb.), the grades at both the Verity and Fir carbonatites are potentially economic. In addition:

(1) the Blue River Property carbonatites are present primarily as sills within the gneissic Horsethief Creek Group stratigraphy;

(2) the best values of tantalum and niobium occur in beforsite (dolomite carbonatite), especially in the thick upper sill at Verity and the thick body on the FIR claims. The tantalum and niobium values appear to occur in the minerals pyrochlore, columbite and fersmite; of which pyrochlore appears to be the most important, as it is reported to carry the vast majority of the tantalum values;

(3) the potential of the property mainly lies in the tantalum content. These carbonatites have very high levels of tantalum, compared with most other carbonatites worldwide (A.N. Mariano, personal communication, 2000). As well as tantalum and niobium, significant byproduct credits for apatite (phosphate), magnetite and calcite are possible, especially due to the property's close proximity to rail transport; and

(4) as the tantalum content is of significant economic importance, further study of the economics of tantalum in respect to these occurrences is most important. Specifically, what is the distribution of tantalum in the various mineral phases in the carbonatites, what grade of tantalum can be obtained in concentrate and what price would be received for the tantalum in a concentrate.

The distribution of tantalum amongst the various tantalum-bearing phases is important as the more mineral phases containing significant tantalum, the more complicated the processing flowsheet will be and the lower the recoveries. Fortunately, from reported work to date, it appears that only the pyrochlore contains significant tantalum. The data that A.N. Mariano has on the mineralogy of niobium and tantalum could be of great use in this area.

1.3 RECOMMENDATIONS

Future exploration of the Blue River Property should involve two aspects; advancing the Fir and Verity carbonatites, and exploring for new tantalum and niobium bearing carbonatites. Phase_1A exploration work at the Verity and Fir carbonatites is estimated to cost $125,000, not including GST (Appendix 1); whereas Phase 1B reconnaissance exploration of the Blue River Property is

estimated to cost $75,000, not including GST. Both phases should be conducted jointly.

1.3.1 Verity and Fir Carbonatites

The present price of tantalum (as high as $475 US per pound) combined with results of prior exploration, indicate that the Verity and Fir carbonatites have excellent exploration potential. Hence, the following Phase 1A program (data compilation, exploration and metallurgical) is recommended to further explore the known tantalum-niobium mineralization.

(1) All available data requires compilation. Dahrouge Geological Consulting has initiated this task. The data held by A.N. Mariano could be invaluable, especially the data on tantalum-niobiummineralogy. Also, Mr. Mariano may have non-assessment versions of the Anschutz Mining Corporation reports which may have more data and will certainly be more legible. Acquisition of this data is recommended, if at a reasonable cost.

(2) An abbreviated drill program (300 meters) should be considered to (a) confirm prior grades, (b) confirm the continuity of mineralization between prior drill holes, (c) analyze for additional potentially valuable constituents, (d) determine specific gravities of the carbonatites, and (e) conduct further mineralogical determinations.

(3) The strike extensions of the upper Verity Carbonatite need to be explored, especially the west extension at lower elevations. Soil sampling along with detailed radiometric and magnetic surveys should be run first and followed by trenching and sampling. The western margin of efficient exploration will be limited by the presumed greater thickness of overburden as the valley bottom is approached.

(4) Mini-bulk samples (about four tonnes each to produce 1 to 2 kg of Ta_2O_5) should be collected from the upper Verity beforsite and the FIR carbonatite, in order to determine the metallurgical properties of these occurrences. Specific goals of the metallurgical work should include: (a) the study of recovery methods for the tantalum, niobium and phosphate bearing minerals. Specific attention should be given to tantalum recovery, (b) determination of tantalum and niobium mineralogy, and (c) determination of grade of tantalum-niobium concentrates. Strong emphasis must be given to the determination of mineralogical and metallurgical work early in the exploration of a rare metal deposit.

Favourable results from the Phase 1A exploration program, would necessitate a follow-up program of definition drilling at the Fir Carbonatite or Verity Carbonatite, the cost of which is not estimated herein.

1.3.2 Reconnaissance Exploration

Phase 1B reconnaissance exploration should be conducted in conjunction with Phase_1A exploration at Verity and Fir. The exploration should focus on extending the known deposits and to identify additional carbonatite occurrences. A review of

past exploration suggests that significant effort was previously directed at prospecting for exposed carbonatites; it appears unlikely that new large surface occurrences will be found, except along recently constructed logging roads. Additional carbonatites, concealed by a thin veneer of overburden, are likely since bedrock exposure is generally poor and carbonatite is recessive.

The mineralized carbonatites have three physical properties which may enable their remote detection: a) they are at least locally magnetic, due to higher than background amounts of magnetite and pyrrhotite, b) they are marginally radioactive, due to minor quantities of uranium and thorium; and c) they are chemically distinct from the host gneisses. In addition, the carbonatites are expected to weather relatively quickly, due to their high carbonate mineral content. Amongst other constituents, niobium and tantalum bearing minerals should be liberated and incorporated within the overlying soil profile. The steep and temperate environment should be conducive to detection of buried tantalum and niobium mineralization by soil sampling surveys. An orientation survey will be necessary to determine the best soil size fraction for analysis and the elemental suite, it is quite possible that phosphate and strontium will be a good pathfinders for carbonatite, but not necessarily for mineralized carbonatite. Stream sediment sampling in conjunction with regional prospecting, could be a good reconnaissance tool to locate further carbonatites. Radiometric surveys may help detect buried carbonatite, however the relatively moderate levels of radioactivity associated with the mineralized carbonatites could easily be masked by a thin cover of overburden. Scintillometers should be used during prospecting or grid work.

The generally elevated content of magnetic minerals within the carbonatites suggests magnetic surveys as another method of carbonatite exploration. This is hampered to some degree on this property by two factors. First, it appears that the mineralized carbonatite on the FIR claims is not associated with magnetic minerals. This and other potentially mineralized carbonatites would not be detectable by magnetic methods. Secondly the mineralized carbonatites which are magnetic, such as the Verity Carbonatite, are shallowly dipping sheets and thus will offer diffuse targets, except where faulted edges are present. Ground magnetic surveys will be most useful in helping to trace known mineralized areas laterally into areas of poor exposure.

Phase 1B exploration should include:

(1) Known carbonatite occurrences within the claim group (Bone Creek, Paradise, Mill) should be examined and priority rated for further exploration.

(2) Orientation soil sampling surveys should be done in areas of known mineralization (the drilled part of the upper Verity beforsite). The soil survey lines must be run up slope into the gneiss to provide background data and down slope from the carbonatite as far as possible to see how far down slope the mineralization may be detected. The soil samples collected should be sieved into multiple size fractions and each fraction analysed separately for Nb, Ta, P_2O_5 and Sr.

(3) The FIR Carbonatite appears to be of relatively high-grade and under explored. The area of the FIR Carbonatite and especially the strike extensions of the slide outcrop be explored by soil sampling and radiometric surveys. Anomalous areas should be further explored by backhoe/cat trenching, washing with high pressure water and rock sampling, which may require road building (no legible map of the FIR area was made available to the author).

(4) The best mineralizedcarbonatites found to date were originally discovered by accidents of nature. Carbonatites in this area are expected to weather recessively and thus presently unrecognized carbonatites probably exist within the claim block and immediate area. After the results of the orientation soil sampling are obtained (and if it proves effective) reconnaissance soil sampling should be done over the entire claim block and to the south and east to explore for additional mineralized carbonatites. Sample lines should be run parallel to the topographic contours and sample lines spaced at 0.8 times the maximum down slope detection limit as define in the orientation survey. Samples should be taken at approximate 100 m spacing along lines, with location control provided by GPS. The soil sampling teams could also prospect along the sample lines, sample any streams or creeks encountered and should carry scintillometers.

Any anomalies detected by the soil, radiometric or magnetic surveys may require backhoe trenching. Trenching is recommended independently to expand the exposure of high tantalum carbonatite on the FIR claims.

2. ..... INTRODUCTION

2.1 TERMS OF REFERENCE

This independent evaluation of the Blue River Property (Verity and Fir carbonatites) has been prepared at the request of Jody Dahrouge, Vice President of Exploration for Commerce Resources Corp. and beneficial owner of Dahrouge Geological Consulting Ltd. (Dahrouge) . The report was prepared to assess the potential of the Blue River Property to host economic deposits of tantalum and niobium, and to propose future exploration, if warranted.

Due to snow cover (winter conditions), the author has not visited the property; however, the author does have extensive experience on carbonatite and rare element deposits in North America.

2.2 SOURCES OF INFORMATION

This report is primarily based upon publicly available information from prior exploration work conducted by Anschutz (Canada) Mining Ltd. during the period 1980 to 1982. Some of the reports are difficult to read in parts due to duplication problems. A compilation map of the Blue River Property at 1:4000 scale (Aaquist, 1982a) is also only semi-legible. Dahrouge complied the legible information at 1:5000 scale and has provide this author with the results of this compilation. Some small scale maps and sections referenced by the reports were not available.

The resource estimations contained herein, were completed by Dahrouge (Section 7). They were primarily completed to evaluate prior estimates by Aaquist (1982), and to assist in determining the exploration potential of the Verity Carbonatite. The author has audited and reviewed the estimates contained herein.

Additional information used in the compilation of this report included a discussion with A.N. Mariano (2000) who was involved with the early 1980 exploration of the property and who has extensive knowledge of the mineralogy of the Blue River area carbonatites. Dahrouge, who conducted limited surface sampling during 2000, supplied several hand specimens.

2.3 DISCLAIMER

It is important to note that this technical report relies entirely on data, information and samples provided or acquired by others (Section 2.2). The documentation of past exploration was primarily acquired from British Columbia assessment files, the quality of which is difficult to confirm. All opinions presented in this report are those of the author.

3. PROPERTY DESCRIPTION AND LOCATION

3.1 PROPERTY

The Blue River Property (Fig. 3.1) consists of two separate claim groups, Verity to the north and Fir to the south (Fig. 3.2). The Verity Carbonatite occurrence is held under 18 contiguous unsurveyed minerals claims (Verity 1 to 11 and Mara 1 to 7) which cover a total area of about 17_km^2 within the Kamloops Mining Division, B.C. (Table_3.1). The Fir Carbonatite is held under 12 contiguous unsurveyed mineral claims (Fir 1 to 12) which cover a total area of about 17_ km^2. Both Groups of claims are held 100 per cent by Commerce Resources Corp. The property is not subject to any royalties, back-in payments or other agreements.

The Verity 1 to 9 claims have an anniversary date February 15, 2001 with an assessment requirement of $900 while the Fir 1 to 9 claims have an anniversary date February 16, 2001, also with an assessment requirement of $900. In order to conduct detailed-exploration work, such as drill and bulk sampling, work permits must be obtained from the B.C. Government. To the knowledge of the author, these have not yet been obtained.

3.2 GEOGRAPHIC SETTING

3.2.1 Location and Access

The Blue River Property, which includes the Verity and Fir carbonatites, are located in the North Thompson River valley of east-central B.C. (Fig. 3.1), within NTS map area 83 D/6. The Verity Carbonatite is centred at about 52° 24' north latitude and 119° 09' longitude. The Fir Carbonatite is centred at about 52° 18' north latitude and 119° 10' longitude.

The property is accessible from B.C. Highway 5 and are approximately 40 km south of Valemount, British Columbia and about 40 km north of Blue River. Limited supplies and accommodations are available at both locations. The main line of the Canadian National Railway passes through the western parts of the property, while the rail-siding at Lempriere Station is located a few kilometres to the north of the property.

TABLE 3.1 LIST OF MINERAL CLAIMS

Claim Name	Tenure Number	Units/Claim	Record Date	Actual or Expected Expiry Date
FIR 1	374663	1	2001-02-15	2001-02-15
FIR 2	374664	1	2001-02-15	2001-02-15
FIR 3	374665	1	2001-02-15	2001-02-15
FIR 4	374666	1	2001-02-15	2001-02-15
FIR 5	374667	1	2001-02-15	2001-02-15
FIR 6	374668	1	2001-02-15	2001-02-15
FIR 7	374669	1	2001-02-15	2001-02-15
FIR 8	374670	1	2001-02-15	2001-02-15
FIR 9	374671	1	2001-02-15	2001-02-15
FIR 10	382163	20	2001-10-28	2001-10-28
FIR 11	382164	20	2001-10-27	2001-10-27
FIR 12	382165	20	2001-10-27	2001-10-27
VERITY 1	374654	1	2001-10-27	2001-10-27
VERITY 2	374655	1	2001-02-15	2001-02-15
VERITY 3	374656	1	2001-02-15	2001-02-15
VERITY 4	374657	1	2001-02-15	2001-02-15
VERITY 5	374658	1	2001-02-15	2001-02-15
VERITY 6	374659	1	2001-02-15	2001-02-15
VERITY 7	374660	1	2001-02-15	2001-02-15
VERITY 8	374661	1	2001-02-15	2001-02-15

VERITY 9	374662	1	2001-02-15	2001-02-15
VERITY10	382159	20	2001-02-15	2001-02-15
VERITY11	382160	12	2001-10-28	2001-10-28
VERITY12	382161	16	2001-10-28	2001-10-28
VERITY13	382162	20	2001-10-28	2001-10-28
MARA 1	380030	20	2001-08-16	2001-08-16
MARA 2	380031	8	2001-08-16	2001-08-16
MARA 3	380032	20	2001-08-16	2001-08-16
MARA 4	380033	8	2001-08-16	2001-08-16
MARA 5	380034	1	2001-08-16	2001-08-16
MARA 6	380035	1	2001-08-16	2001-08-16
MARA 7	380036	1	2001-08-16	2001-08-16
	Totals	197		

Highway 5, which is less than one km west of the Blue River Property, provides road access from either Blue River or Valemount. Access to the Verity Carbonatite is via an active logging road one_km north of Lempriere Station on Highway 5. The Fir Carbonatite is accessible from a logging road which branches from Highway 5 about 23 km north of Blue River. Both occurrences are criss-crossed by active logging roads, which are well-maintained during summer months.

3.2.2 Topography and Climate

The Verity Carbonatite is at about 920 m above sea level. It is located along the steep, west-facing slope of the Monashee Mountains. At the Blue River Property elevations range from about 860 m to over 2,700 m. Mount Cheadle, one of the highest points in the region, reaches a maximum elevation of about 2,445 m about 3 km to the northeast of the Fir Carbonatite.

The steep slopes at the Blue River Property are typically covered by thick undergrowth. The undergrowthconsists of buckbrush, devils club, and huckleberry. Areas not affected by recent logging are covered by dense stands of hemlock, cedar, fir, and white pine. Timber line is about 2,000 m elevation. Precipitation averages about 50 inches per year, and snowfall is generally heavy.

4. HISTORY AND PREVIOUS EXPLORATION

The Blue River Property was originally staked for its vermiculite potential in 1950, by Mr. O.E. French (McCammon, 1950). Several trenches were completed, these showed that the vermiculite occurs in association with interbedded layers of coarse limestone (carbonatite) and gneiss (Table_4.1). In 1952, following the discovery of pyrochlore-bearing dolomitized limestone (carbonatite), St. Eugene Mining Corporation Ltd. optioned the property (McCammon, 1952). They

abandoned the property in about 1955, after conducting geologic mapping, prospecting, stripping and trenching, and sampling.

In 1976, the area was re-staked by John Kruszewski as the Verity and AR claims, who conducted additional stripping and trenching, and ground geophysical surveys (Jackson et al., 1978 and Ahroon, 1980).

In 1980 Anschutz (Canada) Mining Ltd. optioned the property form John Kruszewski, primarily for its tantalum and niobium potential. An aggressive exploration program was initiated in 1980, it resulted in the discovery of the Fir and Bone Creek carbonatites which were in addition to the Verity and Mill carbonatites. Exploration work included drilling 13 holes totalling 571.5 m at the Verity Carbonatite, 7 holes totalling 183.5 m at the Mill Carbonatite, and 11 holes totalling 311.8_m at Bone Creek (Appendices 2A and 2B).

During 1981, Anschutz (Canada) Mining Ltd., completed an additional 2,964.9 m of drilling (Aaquist, 1982a; Appendices 2A and 2B). Based primarily upon the 1980 and 1981 drilling Aaquist (1982a, p.1) concluded that

> "The carbonatite occurrences at Blue River, British Columbia have the highest tantalum concentrations of any carbonatite in the world."

Further work in 1982 resulted in the definition of approximately 2.1 million tons average 0.02_% Ta_2O_5 and 0.126 % Nb_2O_5 (Aaquist, 1982b). These estimates were reviewed by Dahrouge, and are discussed in detailed in Section 7.

TABLE 4.1 SUMMARY OF PRIOR WORK

Year	Description	Reported Expenditures
1950	Several Hand Trenches, mapping and sampling (McCammon, 1950)	-
1951-52	Extensive geologic mapping, test-pitting and sampling; primarily examined for its Uranium potential (McCammon, 1952)	-
1953	About 3 miles of road-building, stripping and trenching; Mill-showing discovered (McCammon, 1954)	-
1954	Minor sampling (McCammon, 1954)	-
1977-8	Ground magnetometer and scintillometer surveys, prospecting, trenching, sampling and analysis (Jackson et al., 1978)	-
1979-80	Airborne and ground geophysics, geologic mapping and sampling, and 1,066.8 m core drilling (Ahroon, 1980)	$ 230,457.98
1981	Diamond drilling at Mill, Verity, Bone Creek - Fir, total of 2,964.9 min. 28 holes; limited surface mapping and sampling; and a 1:4,000 scale topographic map constructed (Aaquist, 1982a)	_303,455.43

1982	Detailed mapping and sampling of known carbonatites (Aaquist, 1982b)	_27,247.56
2000	Prospecting of new occurences in recently logged areas, sampling of specimen pit for mineralogy (Dahrouge, 2000)	_10,000.00
	Total of Reported Expenditures:	$ 571,160.97

During February 2000, Commerce Resources Corp. recognized the potential of the Blue River area carbonatites for economic deposits of tantalum and niobium, and re-staked the known carbonatites. Several samples were collected from the Verity Carbonatite and forwarded to the author for mineralogical examination (Section 6).

5. GEOLOGICAL SETTING

5.1 REGIONAL GEOLOGY

The Blue River Property is within the Omineca Crystalline Belt of the Canadian Cordillera. The eastern flank of the Cordillera has previously been recognized as a locus of alkaline igneous activity (Currie, 1976). Pell (1987) has subdivided the Omineca Alkaline Province, within British Columbia, into three northwest trending belts:

a) an eastern belt, east of the Rocky Mountain Trench and encompassing most of the Main and Western Ranges of the Rocky Mountains;
b) a central carbonatite belt, which predominately encompasses the Rocky Mountain Trench and eastern part of the Omineca; and
c) a western belt.

The central carbonatite belt generally hosts multiply deformed and metamorphosed, sill-like bodies hosted by Late Precambrian to Early Cambrian metasedimentary rocks (Pell, 1987). This belt includes the Blue River area carbonatites: Fir, Verity and Paradise Lake; Howard Creek; and Mud Lake-Blue River.

5.2 PROPERTY GEOLOGY

The Blue River Property is underlain by metasedimentary rocks and derived gneisses of the Proterozoic Horsethief Creek Group (Fig. 5.1). At Verity, the gneisses have a general strike of 300° and dip 15° to 30° SW (Aaquist, 1982b). They are locally folded and cut by later faults. The Horsethief Creek rocks are intruded by sills of carbonatite. The carbonatite is either sovite (calcite-dominated) or beforsite (dolomite-dominated). Aaquist (1982a) states that significant tantalum-niobium mineralization is confined to the beforsites. Both rock types are medium-

to coarse-crystalline. Most exposures display layering defined by varying quantities of accessory minerals.

Aaquist (1982a) states that all the significant tantalum and niobium values discovered to date have been hosted by beforsite. The carbonatite sills discovered which were composed of sovite are generally thin and universally barren.

The carbonatites contain accessory minerals including Na-amphibole, pyroxene, phylogopite, olivine, magnetite, pyrite/pyrrhotite and apatite, as well as the niobium and tantalum bearing minerals.

Amphibolite and glimmerite (biotite rock) are closely associated with the carbonatite bodies. Nepheline syenite has been found in the area (Aaquist 1982b).

5.3 MINERALIZATION

5.3.1 Deposit Type

The host rocks to the mineral occurrences on the Blue River Property are carbonatites. Carbonatites are igneous rock bodies composed of more that 50% carbonate minerals. They are typically relatively rich in alkali elements and occur with other under saturated alkaline rocks (feldspathoidal syenites and rocks of the ijolite suite).

Economic deposits of tantalum and niobium within carbonate bodies were formed by primary magmatic concentration. The non-carbonate mineralogy in a carbonatite tends to segregate into bands thus a diffuse igneous layering is formed with bands richer and poorer in non-carbonate minerals. This process is enhanced by the relatively low viscosity of the carbonatite magma. If a magma pulse rich in tantalum and niobium is intruded, the minerals may segregate into non-carbonate mineral rich layers, and thus form potentially economic concentrations.

There is no current documented tantalum production within North America. World wide, tantalum production is dominated by the Greenbushes and Wodgina tantalum mines (Table 5.1), which contain the worlds largest known tantalum resources. The combined production from these two mines accounts for about 25 per cent of the world's annual production (Sons of Gwalia, 2000). A summary of some known tantalum deposits is provided in Table 5.1.

TABLE 5.1 SUMMARY OF AVAILABLE INFORMATION ON SOME TANTALUM BEARING DEPOSITS

Location Deposit	Tonnage (million)	Grade (Ta_2O_5 %)	Other Commodity(s)	Comments
Carbonatite Deposits				
St. Honore (Niobec)[1]	10.1	-	Nb_2O_5	The Niobec underground mine, is

Quebec				operated by Teck as a joint venture with Cambior Inc.
Crevier-Lagorce[1] Quebec	15.2	0.020_	Nb_2O_5	The deposit is in Crevier-Lagorce townships Quebec
Peralkaline Deposits				
Thor Lake, NWT[2]	64	0.040_	Nb_2O_5; ZrO_2; $(REE)_2O_5$	The deposit is located near Great Slave Lake, NWT the Lake Zone represents a large metasomatized breccia zone
Brockman, Western Australia[2]	8.97	0.038_	Nb_2O_5; ZrO_2; $(REE)_2O_5$; HfO_2; Ga	Complex mineralogy, extremely fine-grained
Greenbushes, Australia[3]	27	0.0298	Li_2O	Sons of Gwalia established the open pit mine in 1992; estimated mine-life is 15 years
Wodgina, Australia[3]	27	0.042	-	Sons of Gwalia established the open pit mine in 1988; estimated mine-life is 20+ years

[1] After Richardson and Birkett, 1996a
[2] After Richardson and Birkett, 1996b
[3] After Sons of Gwalia, 2000

The present interest in these types of deposits is predicated on the recent vast rise in the price of tantalum. For instance, on December 8, www.metalprices.com (2000) documented a recent sale of tantalum-niobium concentrate at $443.90 US/lb. The total value of the concentrate (205,000 Lbs contained Ta) was $91,000,000 US. Further increases in demand are probable, as indicated by Houston Lake Mining (2000):

> "Tantalum markets are currently experiencing severe shortages of tantalum powder used in capacitors in various electronic equipment and cell phones and are in turn causing these high technology items to backorder ... This shortfall is expected to intensify due to new applications such as sputtering (a coating method used in fiberoptics to increase transmission quality)...Tantalum is used in a number of applications, including capacitors which are used extensively in the electronics industry for cell phones, computers, avionics, automotive and in communications technology."

5.3.2 Mineralogy

At the Blue River Property, the tantalum and niobium are found in three minerals, pyrochlore $(Ca,Na)_2Nb_2O_6(OH,F)$, columbite $(FeNb_2O_6)$ and fersmite $(Ca,Na)Nb_2(O,OH,F)_6$, which occur exclusively in the carbonatite. Tantalum may substitute for niobium in any of these minerals. Mineralogical study (Aaquist 1982a) suggests that virtually all the tantalum is found in the pyrochlore. The variable Nb/Ta ratios found in the analytical data from this property probably reflect different mineralogical ratios. The pyrochlore in samples the author examined from this property is typically dark red, although, Mariano (2000; Aaquist 1982a) recognizes black and yellowish coloured pyrochlore as well. The pyrochlore seems to occur in two habits, as euhedral to subhedral octahedrons and as anhedral

porous masses. The pyrochlore is between 0.2 and 2 mm in diameter and should present no concentration problems.

A.N (Tony) Mariano, an expert on the mineralogy and economic geology of carbonatites and rare metals, indicated (Mariano, 2000) that his work on the Verity and Fir carbonatites for Anschutz (he is referenced in all Anschutz reports) included a large amount on mineralogical and petrographic work.

5.3.3 Mineral Occurrences and Deposits

At the Blue River Property prior exploration has resulted in the discovery of at least five distinct tantalum/niobium bearing carbonatites: Bone Creek, Fir, Mill, Paradise, Verity. The two best mineralized (and explored) carbonatite bodies are the thick upper carbonatite-sill at the Verity claims (Fig. 5.2), and a thick carbonatite sill discovered on the Fir claims. In all cases the tantalum and niobium values are contained within the minerals pyrochlore, columbite and fersmite (relative proportions unstated).

The upper carbonatite sill at Verity, which is poorly exposed at surface, has been exposed by at least two trenches (Columbite Pit and Specimen Pit) near its western end. It has been intersected by 19 drill holes (of 30 total), completed in 1980 and 1981, totalling 2,060 m, with 715 samples collected from split drill core and analyzed for tantalum, niobium and phosphate. The Verity Carbonatite is composed of beforsite and tectonic beforsite breccia. Layering of accessory minerals is commonly displayed in outcrops (Aaquist 1982a). Aaquist (1982a, p.24) indicates that the thick beforsite sill is interpreted to have formed from a series of magmatic pluses, each varying slightly in mineral content. The central part of this sill contains the best mineralization. A tonnage was calculated for this central zone, which was divided into 10 blocks for calculation purposes. The result of this calculation is a mineral inventory of 2.1 million tonnes grading 0.126% Nb_2O_5 and 0.02% Ta_2O_5 (Aaquist, 1982b, Appendix IV).

The Verity upper carbonatite is reported to be disrupted by faulting (Aaquist 1982b, p. 9). In two of the sections from the drilling report (50,120E and 49,950E; Aaquist 1982a) the southern hole on each section is barren of carbonatite, whereas the holes further to the north (five holes and three holes respectively) in each section contain thick intersections of mineralized carbonatite. Faulting may be the cause of this loss of the carbonatite, a hypothesis which needs to be tested in order to better understand this intrusive.

It should be noted that the Specimen Pit, one of the discovery locations of the upper Verity carbonatite appears from present work to not lie within the upper Verity

beforsite, but in an overlying band. The Specimen Pit has returned high values of niobium (up to 0.51% Nb_2O_5) and tantalum (up to 490 ppm Ta_2O_5).

The main carbonatite body on the Fir claims was intersected by four 1981 drill holes and a near vertically orientated surface outcrop. This sill has the highest background niobium and tantalum values of any of the carbonatites discovered to date in the area (Aaquist 1982a). No map showing the geology of this area is available. Incidentally, this outcrop was only exposed by a recent landslide (Ahroon 1980). Ahroon (1980) indicates that the FIR carbonatite would not have been discovered if not for this fortunate occurrence.

A 15 m thick exposure of the carbonatite was sampled in the slide area in 1982. It averaged 0.32% Nb_2O_5 and 250 ppm Ta_2O_5. Two surface samples from the FIR area taken in 2000 returned 0.22% and 0.30% Nb_2O_5 and 250 and 240 ppm Ta_2O_5 respectively. The best intersection obtained during the drilling of the FIR property was Hole BC-19: 7.9 m of 0.037 per cent Ta_2O_5, 0.064 per cent Nb_2O_5, and 3.25 per cent P_2O_5, which is probably the same horizon of carbonatite as the surface exposure. At least ten intersections grading greater than 200 ppm Ta_2O_5 over potentially mineable widths were cut in the four holes. The striking thing about the analytical results from the FIR claims is the much higher amount of tantalum in the samples, compared with the other Blue River occurrences: values below 100 ppm Ta_2O_5 are rare.

6. EXPLORATION

Exploration by Commerce Resources Corp. has been limited to a short visit to the property (by Dahrouge) to examine and sample previously discovered pits and exposures of mineralized carbonatite, mostly to obtain check analysis and to provide rock samples for verification purposes (Appendices 3A and 3B). The sampling confirmed the presence of high values of tantalum and niobium at the Verity Carbonatite. Several hands samples were examined, with the aid of a binocular microscope (Appendix 3C), by the author. The conclusions form this examination were:

(1) the textures, mineralogyand analyticalchemistry confirm that these rocks are carbonatites; and

(2) the mineral pyrochloreis present in many of the samples, with two distinct habits; as euhedral to subhedral octahedrons, and as porous, anhedral masses. Pyrochlore was seen in both the rocks themselves and in mineral concentrates prepared from one sample by heavy liquid separation and total dissolution of the carbonate minerals present. Both

concentrations were preformed at Loring Laboratories Ltd. in Calgary, Alberta under the supervision of the author.

7. MINERAL RESOURCES

Potential resources of Tantalum and Niobium at the Blue River Property, were previously estimated by Aaquist (1982b) for the Verity Carbonatite. Although potentially economic grades were encountered while drilling the Bone Creek, Fir and Mill carbonatites, no resource estimates were attempted due to a lack of data. At Verity, Aaquist (1982b) provides a mineral inventory of 2,133,898 tonnes within 10 mineral blocks, with an average grade of 0.019 per cent Ta_2O_5 and 0.099 per cent Nb_2O_5. The British Columbia Ministry of Energy and Mines Inventory Report (Minfile Number: 083D 005 - Verity) provides the following estimate: 2 Mt Indicated, Niobium 0.118_% and Tantalum 0.020%.

Estimation of potential resources of Ta_2O_5, Nb_2O_5, and P_2O_5 for the Verity Carbonatite were completed by Dahrouge, in order to evaluate the results previously reported by Aaquist (1982b). Based upon a "Gemcom Solid Model" utilizing publicly available information (30 drill holes totalling 2,060 m and 715_samples; Appendices 2A and 2B) the Verity Carbonatite is estimated to contain an Inferred Resource of 3.8 Mt with an average grade of with an average grade of 228_g/t Ta_2O_5, 647 g/t Nb_2O_5, and 3.23_per_centP_2O_5 (Appendices 4A and 4B).

7.1 RESOURCE ESTIMATIONS

Estimation of potential resources for the Verity Carbonatite were based upon and classified according to the classification scheme and definitions provided by the Committee on Reserve Definitions (CIM, 1996, p. 41):

> "Inferred Resources is the estimated quantity and grade of a deposit, or a part thereof, that is determined on the basis of limited sampling, but for which there is sufficient sampling, geological information and a reasonable understanding of the continuity and distribution of metal values to outline a deposit of potential economic merit."

7.1.1 Sample Density, Survey Information and Topography

The Verity Carbonatite forms a shallow dipping sill on a steep, west-facing slope, of the Monashee Mountains (Fig. 6.4). Here, it forms a partial dip slope with an approximately orientation of 148°/20° to 30° SW. The main sill is between 15 and 31 m thick (Ahroon, 1980) and is apparently

disrupted by faulting to the south (Aaquist, 1982b). Based upon the foregoing, the geologic complexity is considered moderate.

At Verity, prior drilling was conducted with several drill fences spotted along an east-west axes. Drill fences of two to three holes were spaced at approximately 50 to 75 m. Core hole locations were surveyed by transit and tape, and reported with a local co-ordinate system (Ahroon, 1980; Aaquist, 1982a). All core holes were NQ-size. Core recoveries of the mineralized carbonatite averaged approximately 95 per cent (Ahroon, 1980).

Digital topographic data was obtained from Land Data, British Columbia (Government of British Columbia), for use in constructing a detailed geologic model.

7.1.2 Resource Estimates

In preparation of resource estimations at the Verity Carbonatite, all available information was compiled into a standard database. Such information included, for both drill holes and surface samples: analysis, geology, sample location (from and to), and survey locations. For each drill hole was composited (Appendix 4A), based in part upon the following guidelines and limitations:

a) grade cutoffs of 150 g/t were employed; average grades were determined by weighting thickness for chemistry;
b) a maximum of 2.00 m internal waste was allowed;
c) a minium thickness of 3.00 m was used; and
d) although specific gravity determinations were not available, that previously used (2.75) by Aaquist (1982b) was employed, as it concurs with that for standard (carbonate) limestone.

The Verity Carbonatite could represent a potentially 'open-pit resource', given its position on a partial dipslope (Fig.'s 6.3 and 6.4).

The polygonal method of resource determinations was employed to estimate resources within the near continuous, southwest dipping, shallow, Verity Carbonatite. The polygonal method for estimating resources assumes constituent concentrations and thicknesses of material are constant over an area of influence centered upon the core hole. At Verity each drill hole used a maximum area of influence of 75 m (Fig. 6.3).

Geologic and resource models were constructed using the criteria discussed above. Using appropriate modelling software, intervals were correlated between adjacent holes, and variable thickness were allowed for each polygonal solid. Once each polygonal solid was created, it was trimmed against topography, thereby reducing volume and providing limits to the northern solids. Tonnages were determined by multiplying volume by specific gravity. A summary of results is provided in Table 7.1 with additional details provided in Appendix 4B.

TABLE 7.1 RESOURCE ESTIMATIONS FOR THE THE VERITY CARBONATITE

Notes: The following specific gravity was used: 2.75

Polygons (Upper Zone)	Tonnage	Chemistry		
		Ta_2O_5 (g/t)	Nb_2O_5 (g/t)	P_2O_5 (%)
West Block (2,3,4,7,9,14,15,16, 22 and 27)	3,064,078	232	601	3.29
Centre Block (13, 20, 21 and 25)	330,272	261	1015	3.14
East Block (19 and 24)	476,363	182	690	2.91
Totals:	3,800,000	228	647	3.23

8. .....DISCUSSION

Review of the results of the previous exploration on the Blue River Property, and examination of recently collected samples confirms that the rocks which host the tantalum and niobium mineralization are carbonatites. The elements of interest occur mainly in pyrochlore, which is typical of carbonatite-hostedtantalum-niobium deposits worldwide. The tantalum content is very high compared with other carbonatite deposits. The worth of the property will be largely based on the tantalum content of these carbonatites.

The upper Verity carbonatite and the FIR carbonatite sills are sufficiently thick to host potentially economic volumes of mineralization. Drill intersections obtained to date are sufficiently thick to be potentially economic. Continuity between drill hole intersections has been suggested in the case of the upper Verity Carbonatite. Continuity has not been established at the FIR Carbonatite, due to lack of drilling.

It should be stated again that because of the importance of tantalum to the economics of this property it is imperative that the value of the contained tantalum be established; what is the value of tantalum per pound in a pyrochlore

concentrate? This value will be needed to establish a realistic cut-off grade for future exploration and mining, and to guide the interpretation of field exploration results.

The casual nature of the discovery of some of the carbonatites found to date (ie; in recent landslides), and the assumed low amount of bedrock exposure strongly suggest that additional carbonatite bodies remain to be discovered. Recent logging road construction may have provided new bedrock exposures. Trenching, geochemical and geophysical methods will prove useful in the discovery of additional carbonatites.

The upper Verity and FIR mineralized carbonatites are open in at least two directions. Niobium/tantalum mineralization in carbonatites is not localized by structural features, nor is it associated with alteration halos large or small. These deposits are formed by primary igneous processes. These systems have not been well studied academically.

Once a mineralised carbonatite has been found, exploration is done by tracing the carbonatite itself and by drilling. In certain occurrences (the Oka carbonatite for example) certain suites of accessory mafic minerals are more closely associated with economic mineral concentrations than others. Also favourable are areas where wall rocks have been included and assimilated by the carbonatite magma. Whether these exploration guides will be useful on this property is unknown.

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10. QUALIFICATIONS

I, Alexander Walter Knox of Calgary, Alberta do state that:

- I have received my B.Sc. In Geology (University of Calgary, 1976) and my M.Sc. In Geology (University of Calgary, 1980)
- I am a Registered Professional Geologist (P.Geol) with the Association of Professional Engineers, Geologists and Geophysists of Alberta (Member number M51311)
- I have been working an a mineral exploration geologist for over 23 years.
- I have been a consulting mineral exploration geologist for ten years.
- I was involved in exploration for carbonatite-hosted niobium mineralisation and other rare metals exploration for seven years with Unocal Canada Limited
- I have no financial interest in the subject properties of this report or in Commerce Resources Corp., nor I do not expect to have such interests in the future.
- That I consent to the use of this report in a Prospectus of Statement of Material Facts for the Purpose of a private or public financing.

Alex W. Knox, M.Sc., P.Geol
APPEGA member number M51311