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FIRST RESOURCE ESTIMATE, THE LAC DORE VANADIUM PROJECT

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THE LAC DORÉ VANADIUM PROJECT: FIRST RESOURCE ESTIMATE

CHIBOUGAMAU, QUÉBEC, CANADA
NI 43-101 TECHNICAL REPORT

Presented to

VANADIUMCORP RESOURCE INC.

By

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IOS Services Géoscientifiques Inc

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Géopointcom Inc.

Effective date: April 10, 2015
Edited on April 13, 2015
Re-edited: May 21, 2015
Project: 991
Copy 1

Ville de Saguenay

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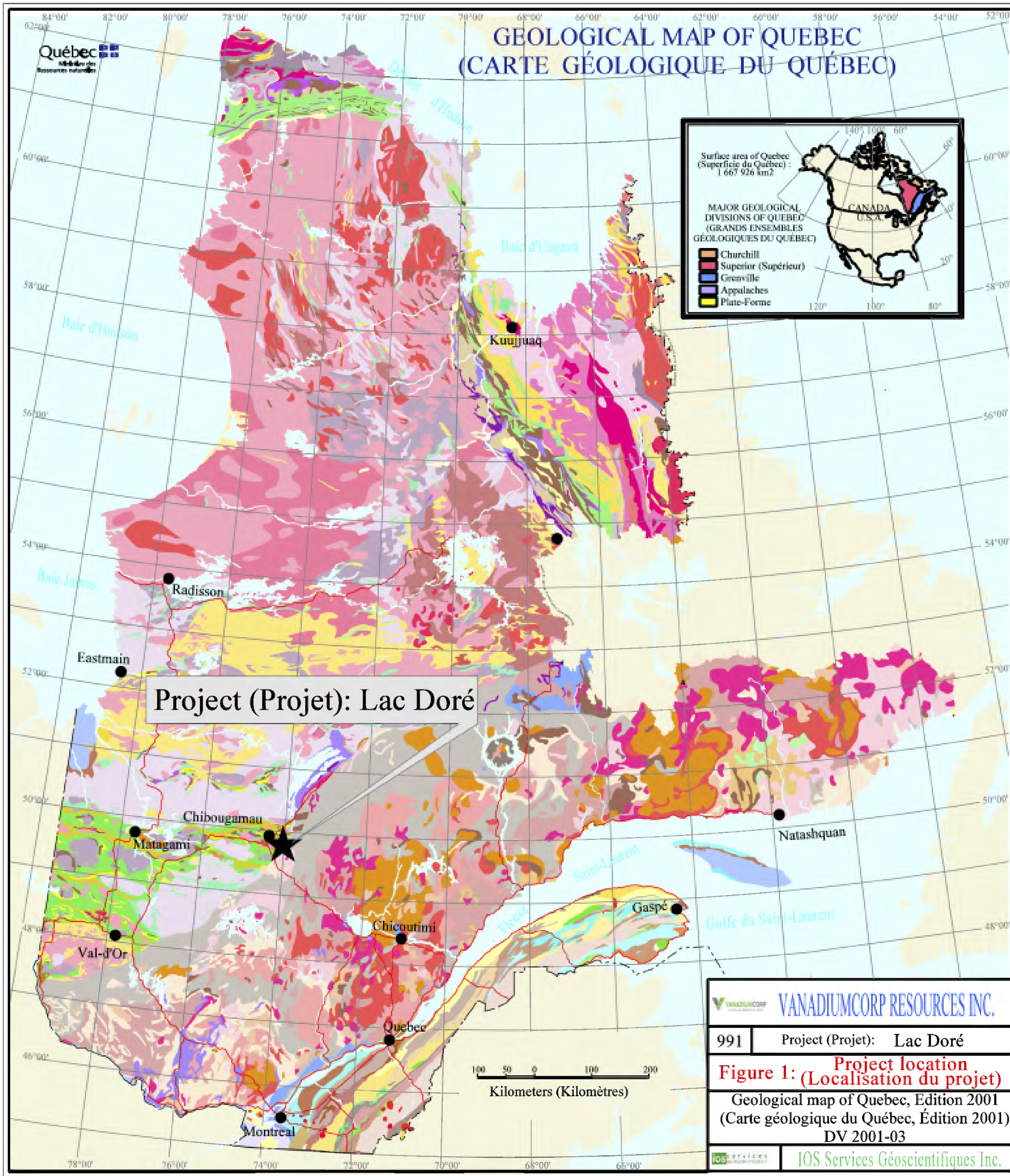
ITEM 1: SUMMARY

The **Lac Doré** project is a vanadium exploration project covering a group of mineral properties held 100% by VanadiumCorp Resource Inc. ("VanadiumCorp") in the Chibougamau area, Province of Quebec (***figure 1***). VanadiumCorp has undergone a series of corporate name changes, with no material changes in ownership of the Lac Dore project, throughout its history from Novawest Resources Inc. to Apella Resources Inc. to PacificOre Mining Corp. and finally to VanadiumCorp Resource Inc. This report will reference VanadiumCorp with respect to all previous work done by these related companies. In 2007, VanadiumCorp acquired the property through conventional field staking, after the claims were accidentally allowed to lapse by the former owner of the deposit, Lac Doré Mining Ltd., a fully owned subsidiary of McKenzie Bay International Ltd. The following report was prepared in support of the release of the first resources estimate on the project by VanadiumCorp Resource Inc., under s.43(1)(j) of IN-43-101. It was prepared in compliance with the CIM Guidelines for resources estimate disclosure as well as form F-1 of National Instrument 43-101 ("NI 43-101") of the Canadian Securities Administrators. The authorsare both considered as Qualified Persons in their respective field of expertise, and independent of VanadiumCorp according to NI-43-101 definitions.

The current report draws upon a former report written by the first author (Girard, 2014) on behalf of VanadiumCorp, effective June 10, 2014, and revised December 08, 2014, duly filed on Sedar. The first author, who supervised most of the work carried-out under McKenzie Bay, has reviewed all geological data related to the deposit conducted by former management of VanadiumCorp, plus all contracts and agreements made by VanadiumCorp relating to this property. The second author (D'Amours) is responsible for the resources estimate described in item 14.

A non-current bankable feasibility study was completed on the deposit in 2002 by SNC-Lavalin on behalf of the former owner, which study included a non-current mineral resource estimate. Furthermore, a non-current prefeasibility study was completed on the deposit in 2000 by Cambior, which study included another non-current mineral resource estimate. The current report draws upon certain aspects of these former non-current studies.

The first author has long been involved with the **Lac Doré** project, having worked on it intermittently since 1997 and possessing an intimate knowledge on most of the technical aspects related to geology, metallurgy, environment and industrial applications. He was involved as independent Qualified Person on this project since its beginning with McKenzie Bay, supervising the field work and being client advisor in the course of the


GEOLOGICAL MAP OF QUEBEC
(CARTE GÉOLOGIQUE DU QUÉBEC)
Québec
Surface area of Quebec (Superficie du Québec) : 1 667 926 km2
MAJOR GEOLOGICAL DIVISIONS OF QUEBEC (GRANDS ENSEMBLES GÉOLOGIQUES DU QUÉBEC)
Churchill
Superior (Supérieur)
Grenville
Appalaches
Plate-Forme
CANADA
U.S.A.
Baie d'Ungava
Baie d'Hudson
Baie James
Kuujjuaq
Radisson
Eastmain
Project (Projet): Lac Doré
Chibougamau
Matagami
Val-d'Or
Chicoutimi
Natashquan
Gaspé
Golfe du Saint-Laurent
Québec
Montreal
100 50 0 100 200
Kilometers (Kilomètres)
VANADIUMCORP RESOURCES INC.
991
Project (Projet): Lac Doré
Figure 1: Project location (Localisation du projet)
Geological map of Quebec, Edition 2001
(Carte géologique du Québec, Édition 2001)
DV 2001-03
IOS Services Géoscientifiques Inc.

preparation of the feasibility study. He was a technical consultant for BlackRock Metals for a short period, and is now involved as technical consultant for VanadiumCorp. The second author has extensive expertise in mineral resource estimation and geostatistical modelling.

The **Lac Doré** vanadium project is located 30 km southeast of the town of Chibougamau, central Québec. The project includes two properties which cover an area of 45.9 km^2 and consists of 81 posted claims of 16 hectares each, plus 60 map designated cells of approximately 55 hectares each, for a total of 4594.54 hectares.

Since its acquisition in 2007 by VanadiumCorp, a limited amount of exploration work has been conducted on the project, including:

- Three ground magnetometric surveys, encompassing almost completely the current properties.
- Stripping and surface sampling on **Lac Doré North** property in 2008, which were recently remapped.
- A 10 holes exploration drilling program on **Lac Doré North** in 2009.
- A brief channel sampling program on **Lac Doré** in 2012 aiming to duplicate former McKenzie Bay samples, the results of which are not available.
- A four holes confirmation drilling program in 2013 on **Lac Doré**, aiming to duplicate historical drill holes.
- A field verification and surveying of historical drill hole location in fall 2015.

The **Lac Doré** vanadium deposit has a protracted exploration history, spanning more than 60 years. It was evaluated by drilling or trenching on nine occasions through time, by the various past owners. These results are of variable quality, but many of them are sufficiently accurate to be incorporated into a resource estimation. A total of 54 holes and trenches are available on the property, for 15,006 metres, including some segments traversing onto adjacent properties:

- 1958: Jalore Mining, 5 holes for 773.38 metres
- 1970: MRN, 1 hole for 183.49 metres
- 1973: MRN, 9 holes for 914.99 metres
- 1979: SOQUEM, 19 holes for 3425.85 metres
- 1997: McKenzie Bay Resources, 27 trenches for 7225.21 metres
- 2001: McKenzie Bay Resources, 3 holes for 438 metres
- 2002: McKenzie Bay Resources, 3 holes for 450 metres
- 2009: VanadiumCorp Resource, 10 holes for 995.65 metres
- 2013: VanadiumCorp Resource, 4 holes for 600 metres

The current VanadiumCorp **Lac Doré** property encompasses the former Eastern and part of the former Western deposits, previously focused on by SOQUEM and subsequently McKenzie Bay, while the **Lac Doré North** encompasses part of the Northeast Extension. Through time, historical resource estimates were calculated on the Eastern and Western deposit, successively by the Québec department of Natural Resources, SOQUEM, LMBDS-Sidam on behalf of SOQUEM, IOS on behalf of McKenzie Bay Resources and finally Cambior. **All these previous resource estimates are considered as not current and therefore historical in nature** and will not be discussed in detail. A mining reserve was calculated by SNC-Lavalin in 2002 on behalf of McKenzie Bay Resources, which is also considered as historical and non-current by the authors.

The current resource estimation is based on historical drilling and trenching, with the exception of four confirmation holes drilled in 2013 by VanadiumCorp. All relevant data were captured under the authors' supervision, and thoroughly tested using redundance and various statistics and closure tests. Headgrade (core) and magnetite concentrate (Davis tube) assays conducted since McKenzie Bay program in 1997 included the insertion of the same certified reference material, providing a fair confidence on their precision and accuracy. Assays conducted prior to McKenzie Bay, thus including MRN1970, MRN1974 and SOQUEM 1980 were not as well controlled, and an uncertainty remains in regard of their accuracy. These historic results shall be considered as potentially discrepant, either overestimated or underestimated, up to 5% relative. This issue is raised both in regards to headgrade analysis as well as magnetite concentrate grade. No correction was applied to the data.

Grades from the present resources estimation were calculated based on magnetite abundance as obtained from Davis Tube testing, and the vanadium assaying of these magnetite concentrates. Davis tube testing was conducted through time using slightly different grinding parameters. For example, the MRN-1974 samples were ground at 80% at 325 mesh, while the Cambior 1999 test were conducted at 80% 100 mesh. Fineness of the grinding influence magnetite liberation: coarser is the material, more abundant are ilmenite and silicates, larger is the concentrate and lower is its vanadium grade. However, the overall vanadium recovery is almost similar, and all these test can be used confidently.

Systematic density measurements were available only from Cambior-2000 re-assaying of McKenzie Bay 1997 trench samples. About 20% of the measurements were discrepant and discarded. The measured densities were equated to the iron plus titanium grade of the samples, and this equation used for the computation of density on every headgrade sample.

Drill hole location were systematically verified in the field by the author's crew, and collar measured with the use of a DGPS wherever available. Evidence of the drilling pads was found in most locations, which enabled a precision on locations within 5 metres. Downhole measurements were taken from historic logs, most of them made with acid test.

Resources were calculated by C. D'Amours (OGQ n° 226), based on the data provided by R.Girard (OGQ n° 521). The resources were calculated using the Davis tube testing results to evaluate the abundance of magnetite, and the magnetic concentrate vanadium grades. This is in contrast will all previous historic estimations, which used the headgrade assays, to which an overall recovery factor was applied. The parameters used were:

- From section 6+50 East to section 24+50 East, for a total deposit length of 1.8 kilometres.
- Maximum depth of 200 metres from surface.
- Pit slope: 50°.
- Cut-off magnetite abundance of 15%.
- Easting: 257 cells, 10 m each.
- Northing: 117 cells, 10 m each.
- Elevation: 230 metres, 32 cells 11.9 metres each.
- Ordinary Kriging.
- Search radius: 200 metres, 10-25 composited samples.
- Grade of unsampled interval: 0%.
- Specific gravity calculated from Fe_2O_3+TiO_2+V_2O_5, 5% trimming.
- Omnidirectional variograms.
- Minimum profit required: 25%.
- Mining cost: $1.80 / metric tonne.
- Beneficiation cost: $2.50 / metric tonne.
- Roasting cost: $40 / metric tonne of magnetite.
- Market value: $5.50USD per pound of V_2O_5.
- Hydrometallurgical recovery: 95%.

Results of the resource estimates are, exclusively classified as inferred:

- Inferred resource tonnage: 99,104,000 metric tonne.
- Waste tonnage: 165,690,000 metric tonne.
- Magnetite content: 26,067,000 metric tonne or 26.3%.
- Vanadium grade in magnetite: 1.08% V_2O_5.
- Total vanadium in magnetite concentrate: 282,370 metric tonne V_2O_5.

A significant amount of metallurgical testing was historically conducted on the Lac Doré mineralization. These included both bench scale and pilot plant testing of magnetite beneficiation, including the grindability and energy consumption, magnetite concentration by magnetic separation, as well as pelletization. Vanadium production was tested through two different processes, intensive fusion and alkali roasting. Intensive fusion requires the smelting of the ore in an arc furnace to produce steel or pig iron and a vanadium-titanium slag. The second route involves the production of vanadium chemicals as primary product. It involves roasting of the magnetite in presence of soda ash in order to produce a leachable sodium vanadate, which can be refined by conventional hydrometallurgy. Successful tests were made for the production of pure vanadium chemicals by the latter process for the production of electrolyte.

VanadiumCorp's intent is to complete a preliminary economic assessment, focusing on the Eastern deposit.

ITEM 2: INTRODUCTION

AUTHORSHIP

Responsibility for the current report is taken by Mr Girard, professional geologist, assisted by his company's clerical and technical support staff charged with specific tasks. Mr D'Amours is responsible for the mineral resource estimate, stated in Item 14. Responsibility for historical data verification used for the resource estimate as stated in Item 12 is taken by Mr Girard. The report is based on publicly available information, including scientific reports, government databases and exploration assessment files, as well as the client's proprietary datasets and on the first author's personal knowledge of the deposit. It represents an opinion based on professional judgement and reasonable care. The conclusions are consistent with the level of details included in this study and based on the information available at the time of writing.

The authors authorize VanadiumCorp to file the report with the *Autorité des marchés financiers du Québec*, the *Ontario Securities Commission*, the *British Columbia Securities Commission*, the *Toronto Stock Exchange* and SEDAR. They authorize this report to be released into the public domain, and allows the use of excerpts by third parties so long as such excerpts do not alter the meaning of the content of this report.

The report presents the current status and all available information on the property for the purposes of making unbiased information available to shareholder's or potential investor's.

MANDATE

The authors, Réjean Girard, a professional geologist from IOS Services Géoscientifiques Inc. ("IOS") and Christian D'Amours, a professional geologist from Geopointcom Inc. (Geopointcom), were instructed by Mr Adriaan Bakker, President & CEO of VanadiumCorp Resource Inc., to prepare a first mineral resource estimate to be disclosed into an independent Technical Report ("the report") in compliance with NI 43-101, form F-1, for their **Lac Doré** project ***(figure 1)***. The report is a requirement according to 4.2j-i of the NI-43-101 rules and policies, following the disclosure of the resource estimate in a press-release dated February 26, 2015. The initial discussions between VanadiumCorp and the authors with respect to the mandate of estimating of the resource began in June 2014, from which results were delivered on February 26, 2015.

VanadiumCorp holds various other mineral exploration properties in the Chibougamau and Matagami areas, which are not considered in the current report.

SOURCE OF INFORMATION

The geoscientific information used in the preparation of this report was extracted from various government reports, predominantly from the *Ministère de l'Énergie et des Ressources naturelles du Québec (MERNQ)*, internal and consultant reports, corporate documents, from former SOQUEM archives, various documents obtained from McKenzie Bay Resources, and from public reports and data produced by IOS under the author's supervision on behalf of McKenzie Bay Resources. All geological data available to VanadiumCorp were provided to the author, in various formats. All of the available data was reviewed by the first author. All information released in the present report is publicly available.

Archives of SOQUEM were retrieved by the author in 1997, while he was acting on behalf of McKenzie Bay Resources. All geological information from McKenzie Bay Resources was collected by the author's team, and is considered as reliable. Information obtained from VanadiumCorp and its precursor was checked in detail from original documents and core, if available.

All agreements and contracts related to the project were provided by VanadiumCorp. Agreements relating to former ownership of the deposits were provided to the author, reviewed in detail, are considered obsolete. The good standing of claims was verified with the *"Service des titres miniers"* from *"Ministère de l'Énergie et des Ressources naturelles du Québec"* on March 13, 2015.

The underlying data supporting the statements made in this report have been verified for accuracy and completeness by the first author. No meaningful errors or omissions were noted or are to be expected, within the limitation stated in the report. The author has personally evaluated the validity of the available sources of information, including those archived and/or listed under the References section, as well as unpublished information acquired by IOS.

The first author and his firm have been involved with this property on behalf of previous owners intermittently since 1997. It is the first involvement of the second author and his firm with the project or the client.

PREVIOUS TECHNICAL REPORTS

The current technical report draws upon information described in a previous report written by the author on behalf of VanadiumCorp Resource Inc., dated on the 18th of June 2014, and revised on November 25th, 2014, available on Sedar.

No previous technical report was issued on behalf of VanadiumCorp's former management on the project.

MANDATORY FIELD VISIT

The first author made numerous field visits between November 20, 2013 and October 8, 2014. Most sites of work conducted by VanadiumCorp were visited, including stripping and drilling sites. The first author also has extensive knowledge of the regional geology and logistics pertaining to the project. The second author did not visit the property.

Picture 1*: Picture of the author taken during his first mandatory field visit, standing on the casing left on drill hole LD-13-04b.*

INDEPENDENCE

The ***Lac Doré*** and ***Lac Doré North*** properties were acquired ("staked") in 2008 under the recommendation of Mr Glen McCormick, a local prospector, then under the name of Novawest Resources without any involvement by the authors. The current mandate is the second obtained by the first author and the first obtained by the second author received from VanadiumCorp, which they obtained without solicitation. The authors were not involved in the acquisition process.

UNITS OF MEASUREMENT

Unless otherwise specified, all units of measurement (distance, area, etc.) are metric, and all monetary units are expressed in actual Canadian dollars. See ***table 1*** for abbreviations.

EM	electromagnetic
GPS	Global Positioning System
DGPS	Differential global positioning system
Kg	kilogram
m	metre
µm	micrometre
km^2	square kilometre
masl	metres above mean sea level
t	metric tonnes (1000 kg or 2200 pounds)
$	Canadian dollar
US$	United States dollar
ppm	parts per million
% V_2O_5	percent vanadium pentoxide

Table 1*: Glossaryof units of measurement and abbreviations.*

ITEM 3: RELIANCE ON OTHER EXPERTS

The authors have relied on technical data from government publications, assessment files and previous work conducted by prior operators for some sections of this report. Critical components include historical property assessment reports, internal company reports and Quebec and Canadian federal government publications and websites. Mineral Resource Estimates included in this report are based on historical data publically available as assessment files, plus a limited amount of data supplied by VanadiumCorp and by IOS Services Geoscientifiques Inc. Part of the information regarding the vanadium market provided in section 24 was provided by Mr Terry Perles of TTP-square Inc. through various communications. The authors have reviewed the private and public data and believe them to be accurate and reliable in their collection, disclosure and analysis of results and therefore can be relied upon and used for project evaluation. In cases of uncertainty, the authors have qualified that information with accompanying clarification and explanation.

The authors, not experts in legal matters, are required by NI 43-101 to include a description of the property title, terms of legal agreements and related information found in Section 4 of the report. The authors have relied on property agreement information provided by VanadiumCorp. Claim status information was obtained from *Gestim*, the on-line registry of the Quebec's Department of Natural Resources. A review of the claim title information was conducted by the authors on March 13, 2015. An independent verification of land title and tenure was not performed and as such, this report does not represent a legal title opinion. This report has been prepared on the understanding that the property is, or will be, lawfully accessible for evaluation, development, mining and processing.

Part of the information regarding vanadium market provided in item 24 has been provided by Mr Terry Perles of TTP-square Inc through various communications.

ITEM 4: PROPERTY LOCATION AND DESCRIPTION

CLAIM LIST

The claim list was obtained from the *Ministère de l'Énergie et des Ressources naturelles du Québec* on-line registry, on March 13, 2015. This list is provided in ***appendix 1***, along with credits and obligations. All the titles are duly registered under the name of Apella Resources Inc, which changed its name to VanadiumCorp Resources (intervenant #81845). Transfer forms from Apella Resources to VanadiumCorp have been submitted to the Ministry and are pending processing. A claims map is provided in ***figure 2****.*

The two properties, **Lac Doré** and **Lac Doré North**, consists of 60 map designated cells, approximately 55.5 hectares each. Map designated cells *"CDC"* are mining titles which are designated on map through the Gestim web-based system, according to a pre-established grid which is 30 seconds of arc by 30 seconds of arc.

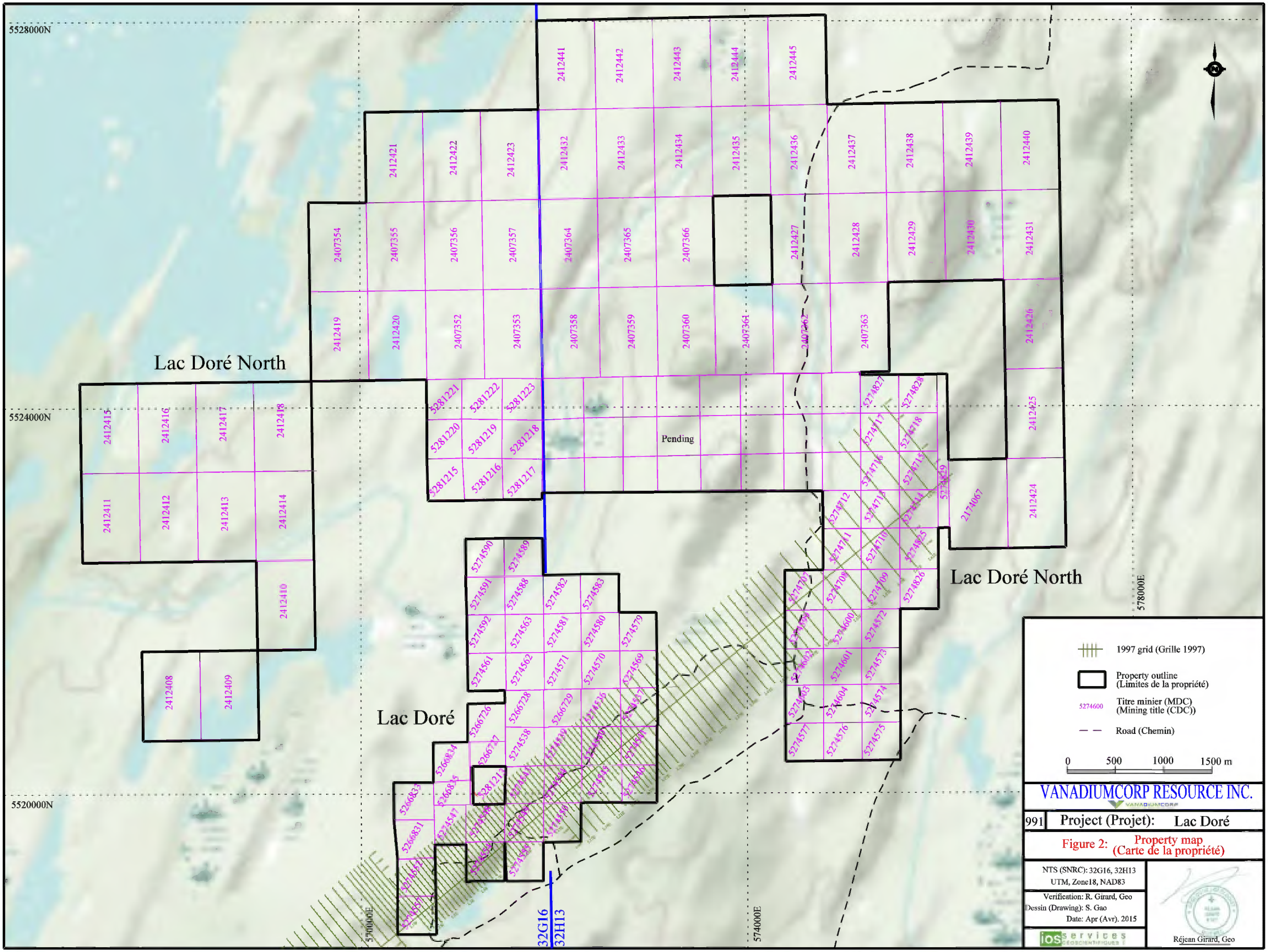
The properties also include 81 conventional claims, most of them of 16 hectares each, which needed to be posted in the field. Posted claims are remnants from the former mining regime, allowed only in *"parc de jalonnement"* neighbouring active claims predating the actual mining regime.

All the posted claims and staking parks within the Chibougamau area, are in the process of being converted into map-designated cell by the government, and because of such, the former staking parks in the area are currently subtracted from staking (*Renvois au Ministre,* dossier 32-9502 to 32-9510*)*. Actual cells boundaries were agreed upon by VanadiumCorp and neighbouring BlackRock Metals, meaning that after conversion, the property will bear the exact same outline, although the internal division will be according to the pre-established cell grid.

A group of 24 posted claims, for 384 hectares, were staked on behalf of VanadiumCorp in fall 2014, filling the gap between VanadiumCorp map designated cell to the north and BlackRock claims to the south. These claims were staked once the area was subtracted to staking, and are thus not currently recorded by the government. However, discussion with the government official indicated to the author that the area shall be granted to VanadiumCorp through the conversion process.

AREA AND EXTENT

The property covers two discontinuous groups of claims, **Lac Doré** and **Lac Doré North**, separated by a one kilometre gap to the east and 400 metres to the north of Lac Doré.



5528000N
5524000N
5520000N
570000E
574000E
578000E
Lac Doré North
Lac Doré North
Lac Doré
Pending
32G16
32H13
2412441
2412442
2412443
2412444
2412445
2412421
2412422
2412423
2412432
2412433
2412434
2412435
2412436
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5274562
5274571
5274570
5274569
5266726
5266728
5266729
5274538
5266833
5266831
5274600
5274601
5274604
5274573
5274574
5274575
5274576
5274577
5274827
5274828
5274826
1997 grid (Grille 1997)
Property outline
(Limites de la propriété)
5274600
Titre minier (MDC)
(Mining title (CDC))
Road (Chemin)
0
500
1000
1500 m
VANADIUMCORP RESOURCE INC.
991
Project (Projet): Lac Doré
Figure 2: Property map
(Carte de la propriété)
NTS (SNRC): 32G16, 32H13
UTM, Zone18, NAD83
Verification: R. Girard, Geo
Dessin (Drawing): S. Gao
Date: Apr (Avr). 2015
ios services géoscientifiques
Réjean Girard, Geo

They comprise a total of 141 titles for 4,594.54 hectares (45.94 km^2 or 11,353 acres). Of these, 43 posted claims, for 657.76 Ha, are attributed to **Lac Doré** property, the rest being **Lac Doré North** (***pictures 2*** *and* ***3***) for 60 map designated cells and 38 posted claims totalling 3,936.78 Ha. These claims extends over 4.5 kilometres along a northeast-southwest axis of the mineralized zone, encompassing part of the former Western deposit, the entire Eastern deposit and part of the North-Eastern deposits. The **LacDoré** property includes 59 map designated cells and nine conventional claims staked to the north of **Lac Doré** in provision for infrastructure.

Picture 2*: View of a group of claim pickets, on the western boundary of Lac Doré property, in contact with BlackRock Metals claims. Picture taken by the author in the course of his mandatory field visit. Notice the marks left on the bark of the tree, which shows overgrowth upon wires, from the previous McKenzie Bay claims. Located on UTMX 570732, UTMY 5518965.*

LOCATION

The **Lac Doré** property is located in Lemoine and Rinfret townships, straddling NTS map-sheets 32G/16 (Chibougamau) and 32H/13 (Lac Mitshisso), about 30 km southeast of the town of Chibougamau, Quebec and 50 km by road (***figure 1***). Its boundaries are latitudes 49°48'54" and 49°54'00" North and longitudes 73°56'15" and 74°01'20" West WGS-84 (UTMX: 570316 to 574833, UTMY: 5518516 to 5528058, NAD-83).

CLAIM STATUS

Claims are valid until their renewal anniversaries, the next group being on September 27th, 2015.The claim-to-cell conversion process currently underway will homogenize the expiry date, which date is currently not known. ***Table 2*** provides the anniversary dates, required credits and renewal fees. A total of $258,553 in assessment credits are currently available. The required assessment credits are either $500 or $750 per claim and $1,200 or $1,800 per cell, depending on the number of renewals they have had, while renewal fees are $28.25 for claims and $55.25 for cells. About $50,000 inv exploration expenditure is currently pending submission for assessment.

Exploration titles in Québec are required to be renewed every two years, sixty days prior to their anniversary or up to their anniversary with a penalty. A renewal fee is needed at each renewal. Renewal also requires assessment credits accumulated from exploration expenditures. The management rules of assessment credits are complex. In the current project, assessment credits are not evenly distributed among the titles and credit deficiency is expected for the next renewal of the claims recently acquired to the north, while the claims covering the deposits are secured for the next four renewals. It is estimated that $75,000 worth of work will be required by January 20, 2016 for their renewal. Notice that credit cannot be transferred from ***Lac Doré*** and ***Lac Doré North***, since properties are not contiguous.

Property	Claims and CDC	Surface	Available Credit	Required Credit	Next renewal
Total	141	4594.54 ha	$25,8553.74	$129,950	September 27, 2015
Lac Doré	43	657.76 ha	$16,9840.64	$27,500	September 27, 2015
LD North	98	3936.78 ha	$88,731.10	$102,450	December 06, 2015

Table 2*: Claim status and expenses.*

STAKING HISTORY

The first ***Lac Doré North*** claims were acquired in October 2007, in order to cover the North-Eastern Extension of the deposit. The rest of the claims were acquired in the following year, depending on when they were relinquished by McKenzie Bay. The area to the North was acquired last year for the purpose of accommodate eventual infrastructures, under the recommendation of the author.

VanadiumCorp has been active in the Chibougamau area since approximately 2005, during which time they have acquired and subsequently relinquished a large land position. VanadiumCorp now owns 143 other active exploration titles, posted claims for most of them, scattered into 7 properties in the Chibougamau area.

CLAIM IRREVOCABILITY

Lac Doré and ***Lac Doré North*** properties are dominantly made of conventional posted claims, which are notorious for being prone to be put into conflict. However, one year after a posted claim is recorded at the Ministry, or immediately after it is transferred, a posted claim cannot be challenged by a third party, unless a major staking flaw (such as the absence of posts) is demonstrated. In the course of the current conversion from posted claims to map designated cells, both VanadiumCorp Resources and BlackRock Metals agreed to maintain the actual claim outline, which would make it irrevocable.

Inversely, once officially registered, map designated cells are near to irrevocable by law so long as the owner fulfils its renewal obligations.

SURVEYING

Claims of ***Lac Doré*** property were staked in the field and their limits surveyed in 2009, although this surveying is not available to the author. Claims of ***Lac Doré North*** were not surveyed, but posts were located with the use of handheld GPS device, allowing precision of a few metres. To the author's best knowledge; surrounding claims belonging to BlackRock were not surveyed, except for those to the west of ***Lac Doré***.

However, in the course of the claim conversion to map designated cells process currently underway, the limits indicated in the government maps and registry, based on 2009 surveying, will be officialised, superseding the claim post in the field.

EMBEDDED CLAIMS

An isolated claim (CI5274422, indicated as to expireon March 30, 2015, but entrapped in the *Arrêté Ministériel*) belonging to BlackRock Metals is enclaved within ***Lac Doré*** property, close to its south-western end.

An isolated claim (CL5274560, expiring on 2016/02/25, excluded from statistics on the project) belonging to VanadiumCorp lies between the claims belonging to BlackRock Metals and those belonging to Cogitore Resources and recently optioned by BlackRock, south of the Armitage extension of the deposit, midway to the former Lemoine Mine (Cogitore). This claim is located very close to BlackRock's Armitage deposit. It is not included in the afore mentioned list.

CLAIM GAPS

One vacant gap of irregular shape, between the claims of ***Lac Doré*** property and BlackRock property, is discernible on *Ministère de l'Énergie et des Ressources naturelles* maps. In the course of conversion from claims to cell, the gap will be granted to either VanadiumCorp or BlackRock, but cannot be granted to a third party.

RELATION TO ADJACENT BLACKROCK METALS PROPERTIES

The **Lac Doré** property is totally surrounded by BlackRock Metals claims. To the north and northwest, only one row (400 metres) of BlackRock posted claims separates them from ***Lac Doré North***. To the southwest, the **Lac Doré** property limit is very close (100-120 metres, corresponding to the irregular claim 5277107) to the outline of the mining lease currently applied for by BlackRock, covering the South-western deposit.

Three encroachments along the **Lac Doré** property west border exist from claims belonging to BlackRock. These encroachments are near the Western deposit, and one of them is a clear hindrance to its development. Claim 5279561 is a regular 16 Ha claim which protrude into the property, covering a 400 metres stretch of the Western deposit. Claim 5279517 (expire date of September 18, 2015), is a 0.40 hectare sliver wedged between claims 5274554 and 5274555, which is not a serious hindrance. Third is claim 5256468, about 4.00 hectares, located north of the deposit, and which is not a hindrance.

BlackRock Metals owns a large continuous property, encompassing a long stretch of the magnetite bearing layers. The property extends for about 14 kilometres to the southwest of VanadiumCorp, including the South-western deposit, Armitage deposit, and a thin layer extending close to the Corner Bay mine. To the west, this property is almost adjacent to VanadiumCorp's **Cornerback** property, which is not related to vanadium exploration. BlackRock Metals property also includes a 2 kilometres long stretch of the North-eastern Deposit, separating the **Lac Doré** and **Lac Doré North** deposits.

HISTORY OF THE PAST AND PRESENT PROPERTIES

Claims over the Lac Doré vanadium deposit and its extensions have a long and protracted history spanning half a century, with numerous interwoven liens, involving 13 different companies, entities or individuals.

The Lac Doré deposit was first staked in 1966 on behalf of the Québec Government. These 21 "K" claims, 16 hectares, encompassed the actual East and West deposit. In 1977, ownership of the claims was transferred to SOQUEM, a mineral exploration Crown corporation. In 1997, the property was granted for option to McKenzie Bay Resources, and completely sold to this group in 1998. In 1999, the project was granted for option to Cambior Inc., who relinquished the option in 2000. In 2002, claim ownership was passed to Lac Doré Mining Inc, a fully owned subsidiary of McKenzie Bay International. These claims were accidently allowed to lapse in 2008, and the claims became available for staking.

A detailed account of the 30 transactions or events affecting the Lac Dore Project through history is available Girard, 2014. All contracts, acts and events affecting the claims were reviewed in detail by the author. Since the historical claims were allowed to lapse by the previous owner, any historical liens are now obsolete and non-transferable to the current claims, which were acquired by genuine staking. No remaining liens have been uncovered by the author. However, in 2008 Lac Doré Mining sold their remaining properties as well as all their intellectual properties to BlackRock Metals Corporation. It is not clear if VanadiumCorp Resources has any rights to the historical core drilled on it's properties and now stored by BlackRock Metals.

STATUS OF EXPLORATION EXPENDITURES

Up to the present time, with the exception of the acquisition cost and claim management cost, total exploration expenditures incurred on the properties by VanadiumCorp is estimated by the first author to be less than $1,000,000.

REMAINING ENCUMBRANCES

To the first author's best knowledge, all encumbrances accrued from Lac Doré Mining and previous owners are currently obsolete, due to the expiry of the claims and legitimate restaking by VanadiumCorp. No liens or royalties are reported by VanadiumCorp administration, and no hypothec was recorded at *Régistre des hypothèques du Québec*.

To the first author's best knowledge, all unpaid bills in the Chibougamau community, left by the former management of VanadiumCorp under the previous name, PacificOre Mining Corp., were recently paid by VanadiumCorp.

RIGHT OF ACCESS

The property straddles territories of the Chibougamau municipality, the James Bay municipality (MBJ) and the Domaine-du-Roy regional municipality (MRC). This partition implies that these various jurisdictions will need to be addressed regarding the issuance of permits, according to their respective regulations.

The deposit stands within the limits of the Chibougamau municipality and the James Bay municipality. Any infrastructure construction, such as camps, sewage, and roads, needs to be permitted by the respective municipal authorities in Chibougamau-Chapais, Matagami or St-Félicien. This area is included in the James Bay and Northern Québec Agreement *("Convention de la Baie James et du Nord Québecois")* as well as the subsequent *"Paix des Braves"* treaty between the Québec Government and the Cree nation. It is indicated as "*Terres de Catégories III*", and shall be therefore free of any encumbrances relating to exploration activities. The deposit lies within traditional trap line n° O59, belonging to Mr Matthew Wapache Sr. from Ouje-Bougoumou, except for its north-eastern limit which is within trap line n° O57, belonging to Mr James B. Wapache from Ouje-Bougoumou. According to the "*Paix des Braves*" agreement, any intervention affecting traditional trapping, such as logging, needs approval from the trap line tallymans.

About 20% of the claims of the **Lac Doré North** property are located to the south of the watercrest dividing the James Bay and St-Laurent watershed. The area southeast of the watercrest is located in non-organized territories (*"Territoires non-organisés"*) managed by the Domaine-du-Roy regional municipality (*"MRC Domaine-du-Roy"*) in St-Félicien. This area is not included in the James Bay and Northern Québec agreements, and therefore falls under the general regulation of the *Ministère de l'Énergie des Ressources naturelles du Québec* relating to forestry and mining, and under the general regulations of the *Ministère de l'environnement et du Développement durable du Québec* pertaining to environmental issues. The area lies within the Nitassinan, the traditional Innu (*"Montagnais"*) territory. A treaty, named the "*Approche commune"* is currently under negotiation between the Innus, the Québec and the Canadian governments.

There is nothing preventing a claim owner accessing his properties. The only permitting required relates to regulations regarding logging activity and access to wet lands. Notice that different permits, and slightly different permitting procedures, are required for intervention in *James Bay* or *Domaine-du-Roy* jurisdictions. Roads leading to the properties are public domain with no restriction to access.

It is required to inform and consult with the First Nation community as well as with the local tallyman (ie. Mr Wapache) concerning any planned exploration work, in order to minimize interference with hunting and fishing activities.

As mineral right owner, VanadiumCorp does not hold any surface rights. However, since the property is located on public lands, the claims grant a right of first refusal to obtain such surface rights within the property.

The property is straddling hunting and fishing zones 17 and 28. Exclusivity is not granted to outfitters or to the First Nations. No outfitters' camp is known to the author in the vicinity, and no hunting or fishing cabins were noted in the vicinity.

VanadiumCorp does not retain any rights to hydraulic, forestry, cynegetic or halieuthic resources. There are no rivers with hydraulic potential in excess of 225 kW within or near the property, to which restrictions could apply.

LEASES

There is currently no surface lease or private land within the perimeter of the properties. No "*bail non-exclusif sur les ressources de surface"*, or lease for earth and gravel, is currently valid within the property, although gravel pits are present. No mining lease or any other lease in regards to mineral resources was ever active within the property. No evidence of any undeclared mineral exploitation was noted by the author.

PERMITTING

With respect to the exploration work, permitting is required for:

- Setting-up a temporary or permanent camp. The permits are available at Chibougamau or James Bay municipality without difficulty.
- Logging is required in order to access drill site and clear drill pads, which needs to be requested from the forestry department of the *Ministère de l'Énergie et des Ressources naturelles du Québec*. For such, the Ministre must obtain approval from the Tallyman, according to the "*Paix des Braves"* and if one considers that less than 90% of the trap line was harvested, no difficulty is expected.
- Trenching in excess of 50 square metres requires a special permit from the Environment ministry (*MDDEFP*), and a rehabilitation plan may be requested.
- Extraction of more than 50 tonnes of ore from a claim requires a special permit from the Natural Resources Department. Although no difficulty is expected, there may be a request for a restoration plan.
- Permission to drill on lakes has to be requested from Environment Canada. No difficulty is expected.
- Establishing a temporary camp requires a construction permit from the James Bay Municipality and must be compliant with the MDDEFP regulations, CSST regulations and MAPAQ regulations.

ENVIRONMENTAL LIABILITIES

To the author's best knowledge, there are two known environmental liabilities left by McKenzie Bay Resources. These liabilities are not legally transferable to VanadiumCorp, although a proactive attitude is expected. The first one is the reclamation plan in regard of stripping done in 1997. A set of 36 trenches, for a total length of 8538 metres, of which 32 are located on the actual ***Lac Doré*** property, were dug on the deposit. Since this stripping exceeded the 10,000 cubic metres limit, McKenzie Bay was requested to file a reclamation plan in order to obtain its permit. According to this plan, McKenzie Bay has to backfill any digging in excess of 1 metre depth, and to replace top soil upon it. Second, McKenzie Bay had the liability in regard of a surface lease for its Laugon Lake camp. Thus, they were expected to clean the site, remove septic tanks and reclaim any soil contaminated by hydrocarbons. The camp site was cleaned by BlackRock Metals, with the exception of the septic tank removal and contaminated soil remediation. The cost of the trenches rehabilitation was estimated in 1997 at $18,510, or $35,000 in today's dollars.

ENVIRONMENTAL RESTRICTIONS

There is no sensitive breeding or spawning habitat known to the author or reported in the former McKenzie Bay environmental assessment study. There is no area where mining activity is restricted in the vicinity of the project, the nearest ones being the urbanized part of the town of Chibougamau and the *"Catégorie I"* land from Ouje-Bougoumou and Mistassini.

The Ashuapmushuan wildlife reserve (*"Réserve Faunique de l'Ashuapmushuan"*) is located about 20 kilometres to the south of the property, while the Assinica, Albanel, Mistassini and Waconichi Lakes wildlife reserve (*"Réserve faunique d'Assinica et des lacs Albanel, Mistassini et Waconichi"*) is located about 40 kilometres to the north. There is no severe restriction with respect of exploration activity within these reserves. A series of wildlife habitats (*"Refuges biologiques"*) are withdrawn from mineral exploration about 11 kilometres to the northwest, which shall not be considered as a hindrance.

Any mining or industrial activities conducted near a tributary to Chibougamau Lake, such as near the Armitage Lake, may face opposition from native communities or environmentalist.

HISTORIC ENVIRONMENTAL IMPACT STUDY

In 2002, McKenzie Bay International commissioned Groupe-Conseil ENTRACO Inc. ("ENTRACO") to perform an environmental assessment. This assessment included numerous aspects, among which a social and economic assessment, ecotoxicity, and baseline survey, with respect to surface water quality, biological sensitivity, and more for the area covering the main deposit as well as the surrounding area affected by infrastructure. No natural contamination by vanadium was detected. This element is considered to be practically insoluble in water, does not significantly bioaccumulate and is of low ecotoxicity. Some aspects of this study, especially those related to the access corridor, were included in BlackRock Metals environmental study, and covered by their authorization certificate granted by the *Ministère du Développement durable, de l'Environnement et des Parcs.*

There is no exceptional environmental restriction attached to the territory of the **Lac Doré** project. Only the usual *Ministère du Développement durable, de l'Environnement et des Parcs du Québec* rules and items included in the James Bay and Northern Québec Agreement apply.

The author did not note any exceptional ecosystems within the property, such as a full-grown ancestral forest.

ADEQUACY OF SIZE

The property of the ***Lac Doré*** Project is of adequate size for an eventual mining operation. Additional ground was acquired to the north in this respect, but which is separated from the deposit by a single claim wide strip belonging to BlackRock Metals.

ITEM 5: ACCESSIBILITY AND PHYSIOGRAPHY

PHYSIOGRAPHY

The ***Lac Doré*** deposit is located on a north-easterly trending hill culminating at a 530 metres elevation, limiting the Lac Doré lowlands to the north which have an elevation of 410 metres. A relief, reaching 120 metres, is therefore present at the site. The mineralized zone extends parallel to the stratigraphy, as expressed by the crest of the elongated hill *(**picture 3**)*.

The property is located along the line of height of land between the St-Lawrence River to the South and James Bay to the North. Drainage to the north of the watercrest flows toward Chibougamau Lake, via Villefagnan and Armitage rivers. Drainage to the south of watershed flows toward Lac St-Jean, by way of the Boisvert River. No large lake is present on the property, the largest being Laugon Lake to the Southwest. The property is well drained, with limited bogs and swamps on its southern limit.

Picture 3*: View from the East deposit looking north. In the distance we can see hills behind the town of Chibougamau, with the Chibougamau Lake just in front. The Campbell mine shaft used to be visible from this location.*

***Picture 4**: View of logging road taken in 1997 along the crest where the East and West deposits are located. Outcrops of anorthosite are visible on both side. The area was logged about 30 years ago.*

VEGETATION

The property is covered by immature second growth commercial taiga forest, dominated by black spruce (*Picea mariana*) and poplar (*Poplar Trembuloides)*. Vast strands of alders (*Alnus incana)*, white willows (*salix sp.)* and birches (*Betula paperyfera)* cover an area with poor drainage, such as southeast of the deposit. Heath (*Ericaceae*) are diverse and locally abundant. Most of the property was logged and reforested in the last 3 decades.

FAUNA

Large mammals are limited to moose and occasional wolf and black bear. Reindeer *(caribou forestier, a threatened species)* or white-tail deers *(chevreuil)* are not reported. Hares, ptarmigans, grouses, foxes and beavers are commons. Fishes are dominated by trout, bass and pikes.

CLIMATE

A cold continental climate prevails in the Chibougamau area. It is characterized by warm summers (15 ^{o}C July average) and cold winters (-20 ^{o}C January average). Average annual precipitations are in the order 919 mm of water, with prevailing winds from the West. Snow is present typically from late October to early May.

ACCESS

The property is accessible from the paved highway n° 167 between Chibougamau and St-Félicien (Lac St-Jean). At kilometre 197, access is provided by the forestry road n° 210 (known as "*Chemin de la mine Lemoine*" or *"Chemin Gagnon Frères"*). A network of poorly maintained forestry roads access the property at different locations from the Lemoine road. Some upgrading or maintenance will be needed on these roads for proper regular access. A distance of about 85 kilometres by road separates the centre of the property from the town of Chibougamau. The property can also be reached from the north by way of another gravel road (locally known as Cigam road).

The former Lac Audet railroad siding of Canadian National Railways' Chibougamau-St-Félicien line is located about 40 kilometres from the property, near the junction between highway n° 167 and Lemoine road. A seaport is available at La Baie (Port-Alfred), 400 kilometres southeast along the railroad. A commercial airport is located between the towns of Chibougamau and Chapais, about 60 kilometres from the property.

Most of the property is within the range of cellular phone towers.

SERVICES

The cities of Chibougamau and Chapais, a former copper and gold mining centre, have a combined population of 11,000 residents, plus the Cree community of Mistassini and Ouje-Bougoumou with a population of about 3000 residents each. Besides mining, the local economy is based on forestry and the service industry. Social, educational, commercial, medical and industrial services, as well as a helicopter base, airport and seaplane base are available at the town site, as well as forestry and mining offices of the *Ministère de l'Énergie et des Ressources naturelles du Québec*.

Chibougamau being a former mining community, abundant and skilled manpower as well as equipment is available, and is well served by heavy equipment service and maintenance providers.

INFRASTRUCTURE

No infrastructure except for the poorly maintained logging roads are present within the property. No infrastructure was left on Lemoine mine site after its reclamation. No infrastructure was left at the Gagnon Frères sawmill and Audet Lake siding.

The property lies about 40 kilometres from paved highway number 167. Daily buses and road carrier trucking are available in Chibougamau towards Lac St-Jean as well as Abitibi. The Canadian National Railway line (*CFILNQ)* and the Hydro-Québec 161 kV power line are located along Highway Q-170. Bi-weekly railroad freight service is currently available, linking the North American rail network, although the traffic density is low and track not well maintained. Loading facilities are available in Chibougamau. Water is plentiful.

There is no mining infrastructure currently available within the **Lac Doré** property. Infrastructure announcements for construction on the BlackRock Metals project, including a rail spur, a 235 kV power transmission line and a road, which could become available for VanadiumCorp.

ITEM 6: EXPLORATION HISTORY

The ***Lac Doré*** vanadium deposit has sustained a protracted exploration history, spanning almost 60 years. The amount of data available to the author is immense. Over 200 studies and reports, filling a complete bookshelf cabinet, both confidential and available to public, dealing with geology, assaying, metallurgy, market and technico-economic issues are available to the author. Therefore, the review of historical work will freely encompass both the main deposit and its extension as covered by the current project and all references will not be necessarily described in detail.

According to tradition, each of the succeeding owners or operators started their work with geological mapping and ground magnetometry. The largest effort in this regard was conducted by McKenzie Bay Resources in 1997 on the main deposit, and subsequent years for its extensions. The details available from this effort supersede the work by previous owners, except in regard of drilling. These previous campaigns will not be described in detail here.

ASSESSMENT AND GOVERNMENT WORK

The property being located in the vicinity of a historic mining district, abundant government and academic literature is available. More than 400 government and university reports and maps are available for NTS 32-G-16 and 32-H-13 map-sheet, plus more than 2000 assessment files submitted by exploration companies. A thorough review of all literature is not considered relevant to the current report. The most relevant governmental work is considered to be those of Allard (RP 567, 1967; RP 566, 1969; RP 589, 1970 and DPV 759, 1981) who mapped and described the magnetite series of the Lac Doré anorthositic complex, and from which Dr. Allard predicted the vanadium occurrence. A regional compilation of the complex was prepared by Daigneault and Allard (1990, MM 89-03).

***Photo 5**: Historic picture of Dr. Gilles Allard (centre with glasses) and his crew mapping the vicinities of Lac Doré in 1970's.*

EARLY EXPLORATION WORK

In 1948, Dominion Gulf discovered the magnetite deposit after an aeromagnetic survey (GM 1028, 3640, 3873). It is reported (GM 8571) that they conducted field work from 1954 to 1956, including geological mapping, trenching, sampling and some geophysics.

From 1957 to 1959, Trepan Mining Corporation Ltd. explored the aeromagnetic anomaly for its iron ore potential. Trepan conducted geological mapping, a ground magnetometer survey and three diamond drill holes. Drill hole locations are not available, although they are suspected to be near the former forestry road leading to Armitage Lake. Vanadium was not assayed (GM 06047, GM 06482, and GM 10012). These drill holes, being located outside the current property, will not be discussed.

Subsequent exploration work by Jalore Mining (a subsidiary of Jones and Laughlin Steel from Pittsburgh) and Continental Ore Corporation included a "dip-needle" (ground magnetic) survey, six diamond drill holes and some metallurgical testing on a 1000 tonnes bulk sample (GM 27165, GM 07301, GM 8571, GM 08572, GM 03640, GM 11061, GM 04411, GM 04653). The property was dropped because of the high titanium content rendering it's magnetite unsuitable for iron smelting. The core was not assayed for vanadium by Jalore, but was subsequently by the *Ministère des Richesses Naturelles* in 1970. This work is considered as of little use. The author searched extensively in 1997 to locate this core without success. However, it was apparently found by Cambior (Crépeaux, 1999). But since the Cambior technical team has been dismantled, the author has not been capable to locate this core. The core from the six holes is considered as lost.

WORK CONDUCTED BY THE "MINISTÈRE DES RICHESSES NATURELLES DU QUÉBEC"

The vanadium content of the titanium rich magnetite layers was indicated by Dr. Gilles O. Allard (1967, 1967b), at that time working for the Quebec Department of Natural Resources, currently the *Ministère de l'Énergie et des Resource naturelles*. The deposit was then staked on behalf of the Crown. From 1966 to 1975, the following work was completed:

- Geological mapping (Gobeil, 1976; Assad, 1968).
- Line cutting and surveying (Gobeil, 1976).
- Ground magnetometric survey.
- Bulk sampling.
- 13 exploratory diamond drill holes (Avramtchev, 1975; Assad, 1968), of which two are on the Southwest deposit (BlackRock project).
- Numerous metallurgical tests, both for alkali roasting and steel-slag smelting.
    - Cloutier *et al.* 1971;
    - Castonguay, 1975a, 1975b;
    - Boulay and Rubenicek, 1969;
    - Assad, 1967, 1968;
    - Canmet, 1976;
    - CRM, 1979;
    - QIT, 1978;
    - CRIQ, Union Carbide, IRSID (France), Ontario Research Foundation.
- Preliminary resource estimates (Assad, 1968; Kish, 1971; Cloutier, 1971; Avramtchev, 1975).

Geological mapping and ground magnetic surveys conducted by the MRNQ are considered as being superseded by the more detailed McKenzie Bay Resources surveys, as part of the drilling and metallurgical work discussed in the following sections.

Obsolete resources were calculated first by Assad (1968) and then by Kish (1971) and Avramtchev (1975). These estimates are not current and considered of minimal use, and as such will not be described in detail.

The dollar value of geological and metallurgical work carried out by the government has not been accurately assessed, but can be estimated at more than $5 million in 2014 adjusted dollar value.

WORK CONDUCTED BY SOQUEM

The ***Lac Doré*** vanadium project was transferred to SOQUEM, a Québec crown corporation, in 1977. This corporation did some geological work until 1979 until a non-current resource was recalculated, SOQUEM then carried out additional metallurgical testing until 1980. In 1981, SOQUEM abandoned the development program due to a weakening vanadium market.

- Exploration work:
  - Geological mapping: 1.1 km^2
  - Line cutting: 39.1 km
  - Magnetometer survey: 34.3 km GM 36034
  - Gravity survey: 17.5 km GM 36034
  - 19 diamond drill holes: 3325 m GM 36918
  - Resource calculations GM 36918
  - Pit design, LMBDS-Sidam 1981

- Metallurgical tests:
  - Pellet testing: GM 33840
  - Ti-V recovery: Hatch, 1980; Rautaruukki, 1980; CRM, 1981

SOQUEM's expenditures on the project have not been revealed, but its replacement value is evaluated to be at least $2 million dollars.

A non-current resource estimate was calculated by SOQUEM in 1980 (Dion, 1980) and again in 1981 along with a pit design (LMBDS-Sidam, 1981). These estimations are obsolete and as such will not be discussed in further detail.

From 1983 to 1989, the project was reviewed and evaluated by various groups on behalf of SOQUEM:

- 1983: CRM (Malensky and Castonguay, 1983)
- 1989: Hydro-Québec (Unsigned, 1989)

- 1989: Société Générale de Financement (Vallée, 1989)
- 1989: Hatch and Associates (Lachapelle, 1989)

WORK CONDUCTED BY McKENZIE BAY RESOURCES LTD.

IOS, on behalf of McKenzie Bay Resources Ltd., conducted a large stripping and sampling program in 1997 over the Southwest, West and East deposits (Tremblay et *al*, 1998). This campaign included the following:

- Line cutting, a ground magnetometer survey and detailed geological mapping over 70 line-km.
- Stripping and detailed mapping of 36 trenches for a cumulative length of 8650 metres *(**pictures 6** and **7**)*
- Sampling and assaying of 1734 samples (3 metres long) for a total of 4486.7 metres of diamond-saw cut channels.
- Structural mapping and analysis (Lamontagne, 1997 and Tremblay et *al.*, 1998)
- Analytical QAQC (Girard, 1997; Bédard and Girard, 1998)
- Ore microscopy and microprobe analysis (Lamontagne, 1997; Lamontagne et Lavoie, 1997; Bédard, 1998 and Tremblay et *al.*, 1998).
- Various market, processing and economic reviews (Girard, 1997).
- No metallurgical testing was carried out on behalf of McKenzie Bay within this program.

The 1997 work program, done on behalf of McKenzie Bay Resources, cost $1.5 million.

A non-current resource calculation was attempted by the first author, using assays from the trenching (Girard, 1997) and projecting downward. This estimation is obsolete as such will not be discussed in further detail (Girard, 2014).

Picture 6*: Mechanized stripping done for McKenzie Bay in 1997.*

Picture 7*: Trench 19+00E on the West deposit, which was cleared and cleaned very wide to provide an impressive view of the mineralization. See the pick-up truck for scale.*

Between 1998 and 2001, various brief field programs were carried out by IOS on behalf of McKenzie Bay over the Armitage and Northeast extensions, for the purpose of assessment credits. This work is mostly included in the extension of the historical deposits, the Armitage extension toward the southwest. It is scattered in numerous partial reports and includes:

- 1998: Line cutting (14.8 km), ground magnetometer survey and geological mapping over the Armitage extension (Lamontagne, 1998).
- 1999: Stripping of two trenches on the Armitage extension (Boudreault, 2000).
- 1999: Line cutting (23.1 km), ground magnetometry, and geological mapping over the Northeast extension. This campaign also included detailed mapping of 5 trenches dug in 1997 (14+00W to 24+00W) over the Eastern deposit (Villeneuve, 1999).
- 2000: Line cutting (21.2 km), geological mapping and ground magnetometer survey over the south-western extremity of the Armitage extension (Boudreault, 2000). This campaign also included mapping, channel sampling (116.2 m) with diamond saw and assaying (59 samples) of the two trenches excavated in 1999.
- From 1997 to 1999, IOS Services Geoscientifiques Inc. made a series of ground magnetometer surveys covering the whole strike of the deposit ***(figure 3)***. These surveys, made with analogical flux-gate magnetometer, are not properly levelled and must be used with care. They were helpful in selecting trenching and drilling sites. However, they are not reliable enough to make comparisons between the various parts of the deposit or to allow a reliable structural interpretation. The poor quality of these surveys led to the commissioning of the high resolution airborne survey by BlackRock Metals.

From 1998 to 2000, the following metallurgical tests were carried out for McKenzie Bay Resources by the author:

- Review of the historical metallurgical tests (Girard, 1998).
- Crushing, work index and liberation of magnetite (Lamontagne, 2000).
- Design of an optimum magnetite recovery process with Davis tube for a routine separation protocol (Girard, 2000).
- Distribution of vanadium among oxide and silicates minerals (Girard, 2000).

In 2001, a drilling campaign was carried out by IOS on behalf of McKenzie Bay (Huss, 2003). This campaign included 14 holes for a total 2187 metres of drilling, distributed as follow:

- Northeast extension: 7 holes 1016.7 metres
- Southwest deposit: 1 hole 153 metres
- Armitage extension: 6 holes 1017 metres

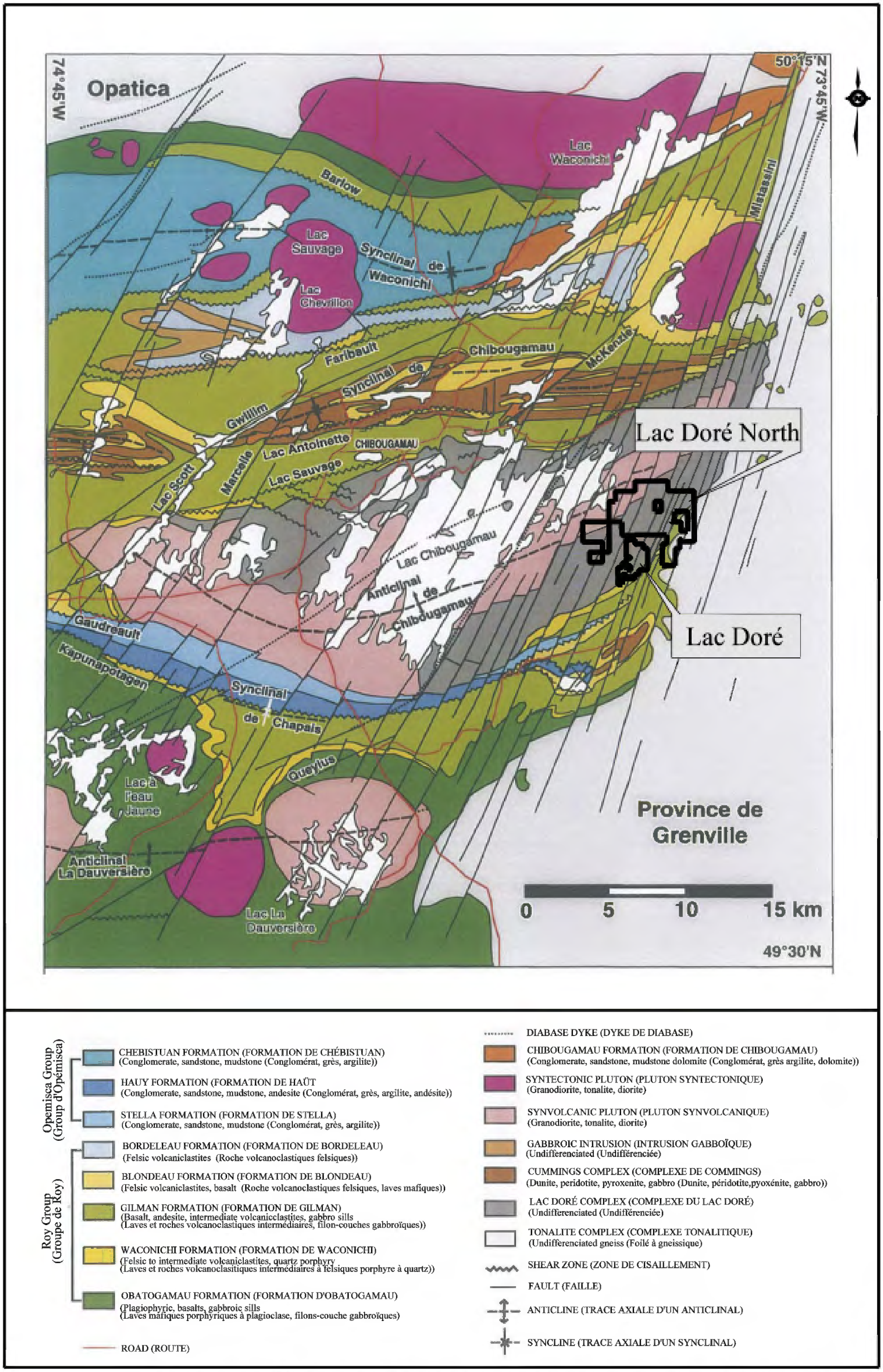

Figure 3: Geology of Chibougamau region, Quebec (after Daigneault et Allard 1996)

Of these holes, one is collared within the current ***Lac Doré North*** property, and two on ***Lac Doré*** property, for a total of 438 metres.

The overall value of the work conducted by McKenzie Bay Resources, as well as the work conducted on the Armitage, Southwest and Northeast deposits is evaluated at 2 million dollars.

WORK CONDUCTED BY CAMBIOR INC.

Within their option agreement with McKenzie Bay Resources, Cambior (currently Iamgold Corporation) completed a pre-feasibility study (Crépeau, 2000), which included:

- Preliminary resource calculations and pit design.
- Market study for vanadium pentoxide and ferrovanadium (Taylor, 1998 in Cambior 1999).
- Financial analysis (Services Techniques, 1999).

Subsequently, the following work was carried out, until financial difficulties forced Cambior to withdraw from the project:

- Detailed geological re-mapping of all trenches and re-logging of the core, including a due diligence and liability assessment (Magnan, 1999 in Cambior 1999).
- Davis tube testing (contracted to IOS, Villeneuve, 1999) and magnetite concentrate assaying, as well as magnetite content measurement using a *"Satmagan"*.
- Preliminary environmental assessment, contracted to *Entraco Groupe-Conseil* (Unsigned, 1999).
- Very thorough analytical testing to corroborate accuracy of assays and grade assessment (Crépeau, 2000). This verification confirmed the extent of the quality and robustness of available analyses.

Cambior calculated a resource estimate on the East and West deposits. This resource predates the implementation of NI 43-101 regulations, and cannot be considered as current (Crépeau, 2000). Parts of the calculation were made available to the author. Cambior invested about $340,000 in the project.

SNC-LAVALIN FEASIBILITY STUDY

On April 11th, 2001, McKenzie Bay Resources Ltd., in collaboration with SOQUEM, commissioned a full-scale bankable feasibility study to the mining group of SNC-Lavalin Inc., dated October 11th, 2002.

- (http://www.sec.gov/Archives/edgar/data/1144216/000109181802000450/ex99-02.txt),
- https://docs.google.com/file/d/0BxmBLfd5ee8sSDdtc2NWaDljUU0/preview
- (http://yahoo.brand.edgaronline.com/EFX_dll/EDGARpro.dll?FetchFilingHtmlSection1?SectionI D=2946136-56955-64407&SessionID=nHLt6vAzUL35qD7).

This study is **not considered current,** and will not be discussed in detail. This study cost in excess of $4.5 million, funded predominantly by public grants and was co-directed by Mr Serge Nantel from SOQUEM and Mr Michel Grégoire from SNC-Lavalin as project managers. The first author was involved as a client representative on the advisory board until April 2002. This study included:

- Diligent review of geological data and grade assessment.
- Three confirmation drill holes (450 metres in total) plus a small bulk sample, under IOS supervision (Boudreault, 2002, GM 60758).
- Non-current reserve calculation using Whittle's 4-D block model, pit design and mining plan.
- Detailed ore petrography and mineral analysis, (Girard, 2002, GM 60759).
- Ore beneficiation process design, bench scale and pilot plant testing in Lakefield Research facilities.
- Pilot plant scale alkali roasting in Krupp Polysius facilities, followed by calcine leaching in Lakefield Research facilities.
- Hydrometallurgical process and bench scale testing.
- Infrastructure design, including utilities, tailing and calcine ponds, communication systems, automation, buildings, etc.
- Market study for the production of vanadium redox battery electrolyte by Secor Inc.
- Operating and construction cost estimate and financial analysis.
- Environmental study, compliant with COMEX-COMEV regulations by Entraco Groupe-Conseil Inc. (Archambault et *al.*, 2002).
- Preliminary pit scope design and Geotechnical investigation.

These non-current mineral resource and minable reserve estimates offered by SNC-Lavalin were intended to be compliant with CIM Guidelines, and are provided here only because they are the last ones reported in the literature by previous owners. They are not considered as adequate by the author to be reported as current resources and shall not be relied upon.

The resource calculation included the same dataset used in previous estimations by Cambior, plus three confirmation holes ***(table 3)***. The project aimed only at vanadium production, and thus estimation targeted dominantly the P2 units. The estimation is based on headgrade analysis, so did not use the magnetite concentrates from Davis tube testing for the resource calculation. Magnetite abundance was calculated based upon various assumptions, such as simplified normative calculation, in regard of which the current author is in disagreement. Variogram analysis indicated that grades can be extrapolated up to 125 metres laterally and 30 metres across strike. The resource calculations were used for the Whittle-4D mining plan.

Resources, all categories and deposit included, were calculated by stratigraphic units at:

Unit	**Volume**	**Tonnage**	**Magnetite**	**Ilmenite**	**%V_2O_5**
P1	13,702,000 m^3	43,388 Kt	21.5%	7.2%	0.32%
P2	46,882,000 m^3	161,095 Kt	28.8%	14.3%	0.40%
P3	11,404,000 m^3	38,846 Kt	27.3%	12.6%	0.18%
Total	71,988,000 m^3	243,329 Kt	19.0%	8.8%	0.24%

***Table 3**: **Non-current** historic indicated plus measured resource estimated by stratigraphic units issued by SNC-Lavalin in 2002. Notice the discrepancy between total resource and the sum of the resources from the various stratigraphic units, here reported as stated in the report.*

Non-current Mineable reserves, all categories and using a cut-off headgrade of 0.29% V_2O_5, stand at ***(table 4)***:

Deposit	**Ore tonnage**	**%V_2O_5Grade**	**Waste tonnage**	**Pit Ratio**
East	100,568,700	0.42%	56,785,900	0.56
Southwest	40,106,900	0.48%	16,744,600	0.41
West	29,448,100	0.38%	13,390,400	0.45
Total	170,123,700	0.43%	86,920,900	0.51

***Table 4**: **Non-current** historic "mineable" reserve calculated by SNC-Lavalin in 2002.*

These results are similar to previous estimates. SNC-Lavalin did not discriminate between *"measured"* and *"indicated"* resources, a non-NI 43-101 compliant practice, and the status of these same resources contrasts with Cambior's opinion who classified their own estimationas *"inferred"* only, although estimated from the same dataset.

The SNC-Lavalin historical estimate encompasses the Western deposit, which VanadiumCorp does not hold in its entirety.

WORK CONDUCTED BY LAC DORÉ MINING

Since completion of the feasibility study by SNC-Lavalin and until the agreement with BlackRock Metals, very limited work was conducted on the property by McKenzie Bay Resources and subsequently Lac Doré Mining, a fully owned subsidiary. The author was informed that hydrometallurgical process were tested further at SGS-Lakefield, under the supervision of Mr Jan Mracek, who passed away in 2005. To the author's knowledge, no cohesive report was issued and very little of his work should beconsidered recoverable.

WORK CONDUCTED BY BLACKROCK METALS

BlackRock Metals, who acquired the remaining assets from Lac Doré Mining in 2008, conducted the following work over the VanadiumCorp's Lac Doré project, which was either conducted or supervised by IOS:

- Securing the historic core and clean the former McKenzie Bay Resources camp site at Laugon Lake (located on current VanadiumCorp's property). The historic core included the drill core from the East and West deposits as well as McKenzie Bay holes on north-eastern and Armitage extension.
- High resolution airborne magnetometer and topographic survey over the entire length of the deposit (Largeault et *al.*, 2008, GM 64819). The survey did encompass the East and West deposits, currently belonging to VanadiumCorp, although data from this portion was never provided to BlackRock. However, this part of the survey was then made available by the contractor to the author, who was supervising the work, and will be presented in subsequent sections. This survey replicates with better accuracy the former ground magnetometer survey.

OTHER KNOWN MINERAL OCCURRENCE

No other mineral occurrence of economic significance is known within the property boundaries. Some apatite concentrations are reported in the upper stratigraphic unit "P4" of the magnetite sequence, which are not volumetrically significant.

A small occurrence of gem quality vanadiferous titanite is reported within (or very near) the property, in the valley between Laugon and Coco lakes. The value of this has not been addressed, the occurrence never been properly located, and it shall be considered for the purpose of this report only as a mere curiosity.

VALIDITY OF THE VARIOUS SURVEYS AND INDEPENDENCE OF THE CONTRACTORS

The *Ministère des Richesses Naturelles* carried out all the work over the deposit using its own staff. There is no reason to doubt the integrity and independence of these authors, although some of them might not have been sufficiently trained for the type of work they conducted.

SOQUEM carried out their various surveys using its own staff, which work was conducted according to the industry standard of the time. SOQUEM to quality control of the analysis is worth noting.

The work carried out on behalf of McKenzie Bay Resources was completed by the author's crews. The geologists in charge of the various programs were experienced and the work conducted according to quality procedures of the time. An exception is the set of ground magnetometric surveys which was not conducted by properly trained staff, and thus is of undertermined quality. IOS was a thoroughly independent firm from McKenzie Bay.

Part of the work conducted for McKenzie Bay was conducted by Glen McCormick Exploration Ltd., who was paid in shares of the company. This contractor is therefore not considered as independent.

The work conducted by Cambior was of proper quality, with the exception of the geological re-mapping of the trenches and density measurements. The author has no reason to suspect any bias of execution.

The quality of work conducted by SNC-Lavalin cannot be addressed. The author does not have the expertise to evaluate engineering aspects. SNC-Lavalin is expected to be independent from SOQUEM and McKenzie Bay Resources.

DETAILS ON HISTORICAL DRILLING

The historical drilling is the most valuable set of information currently available, far more valuable from its mere abundance than drilling and sampling done by VanadiumCorp. This information is the basis for the calculation of the current resource estimate. Therefore, a thorough review of this data is presented in ***Item 10*** for the drilling, ***Item 11*** for the sampling procedure, and ***Item 12*** for the assaying procedure and quality controls. This historical data will be presented along with VanadiumCorp's drilling.

ITEM 7: GEOLOGICAL SETTING AND MINERALIZATION

REGIONAL GEOLOGY

The **Lac Doré** project is hosted in the Lac Doré Anorthositic Complex, aged at 2.728 Ga. This Archean complex is at the core of the Eastern end of the Northern domain of the Abitibi Greenstone Belt, Abitibi sub-Province, and Superior Province in the Canadian Shield. The regional stratigraphy is dominantly East-West trending, South or North verging depending on the side of the anticline, with a metamorphic facies grading southward from greenschist to amphibolite, ages of the rocks lying between 2.759 and 2.728 Ga (Chown et *al.*, 1992; Gouthier et *al.*, 1992).

The volcano-sedimentary sequence in the Chibougamau area is shaped like an East-West trending anticlinorium, both flanks of which have mirror stratigraphy ***(figure 3)***. The core of the anticlinorium is occupied by the Chibougamau pluton, the emplacement of which has resulted in tilting the enclosing volcanics into an upright position symmetrically on both sides. The stratigraphy is comprised of the volcanic Roy Group, and overlying volcano-sedimentary Opemisca Group. The Roy Group consists of two volcanic cycles, with the basaltic Obatogamau Formation and felsic volcano-clastic Waconichi Formation (2.728 Ga) in the lower part, and the basaltic Gilman Formation and felsic volcanoclastic Blondeau Formation in the upper cycle, capped by the volcano-sedimentary Bordeleau Formation. The Opemica Group is known to occur only on the south limb of the anticlinorium, including the epiclastite dominated Chebistuan, Stella and Haüy Formations.

The lower cycle Waconichi Formation is truncated by the near conformable Lac Doré Anorthositic Complex, itself truncated by the Chibougamau tonalitic pluton (2.718 Ga). Some other minor late intrusions are reported.

The rocks are affected by multiple deformation events, including regional dome-and-basin type folding and associated shearing. A dense network of late faults dissects the area, dominantly northeast trending. These faults are either associated with or reactivated by the Grenvillian event, the main expression of which being the Grenville Front to the Southeast.

Most of the mines from the Chibougamau camp are shear hosted within the Lac Doré anorthosite, typically associated with fault intersections. Over 44 million tonnes of gold-copper ore have been extracted to date. The only significant exception is the small base metals bearing volcanogenic massive sulphides, such as the Lemoine Mine, hosted in the Waconichi Formation.

LOCAL GEOLOGY

The Lac Doré Complex is a lopolith, a sub-tabular intrusive body of mafic to anorthositic composition, strongly differentiated near its top. The lopolith is emplaced within the Waconichi Formation, a felsic volcanic and sedimentary pile, and folded along by the regional anticlinorium. The deposit is hosted in a homoclinal sequence of magnetite bearing layers within the South flank of the Lac Doré Anorthositic Complex. Top of stratigraphy is to the south.

According to Allard (1967), the Lac Doré Complex is divided in four major units. From top to bottom they are:

- The border zone (top, South-East);
- The granophyre;
- The layered zone;
- The Anorthositic zone (base, North-West).

The layered zone hosts the vanadium deposit, while the anorthosite and the granophyre host most of copper-gold mineralization of the mining camp (outside of the ***Lac Doré*** property).

The anorthosite zone (approximately 3660 m in observed thickness) is composed of anorthosite, gabbro and magnetite-bearing gabbro, plus some minor pyroxenite. The magnetite as well as the vanadium content increase in the upper 150 metres of the unit, toward the layered zone.

The layered zone, which hosts the vanadium deposit, consists up of 450 to 900 metres of rhythmically layered beds rich in pyroxene, magnetite plus ilmenite, intercalated with layers of anorthositic gabbro. The vanadium deposit is located in the lowermost part, namely the P1, P2 and P3 units. Vanadium strongly partitions into magnetite, and thus into the first magnetite layers. Its content in magnetite decrease upward (Allard, 1967).

The vanadium-bearing magnetite deposit is described by Allard (1967) as:

> *"(…) an alternation of layers of solid titaniferous magnetite, magnetite rich gabbro, magnetite rich pyroxenite, gabbro and anorthositic gabbro. The solid magnetite layers range from a fraction of an inch to four feet. The magnetite band is everywhere at the same stratigraphic horizon, but each magnetite layer is discontinuous and exhibits marked changes in thickness and character along strike (…)"*

Minor vanadium-bearing layered series are reported on the north flank of the complex, near Magnetite Bay.

GEOLOGY OF THE DEPOSIT

The deposit was mapped both by MRNQ and SOQUEM geologists. It was at that time covered by forest and overburden with only about 1% outcrop. Since McKenzie Bay Resources stripping program and the recent logging activity, outcrops are more abundant and allow for a better understanding of the geology as presented at ***figures 4A*** and ***B***.

Dr. Allard's stratigraphy (P1-A1-P2-A2-P3) was partly revised by the author based on this mapping (Tremblay, 1998). Local stratigraphy is presently defined as follow, from bottom (North) to top (South):

- Footwall anorthosite, free of magnetite.
- P0: Anorthosite with small scattered beds of magnetite *(**picture 12**)*.
- P1: Anorthosite with abundant and thick beds of magnetite *(**picture 11**)*.
- P2: Magnetite and layered gabbros, main ore body *(**pictures 8** and **9**)*.
- P3: Magnetite-ilmenite bearing pyroxenite *(**picture 10**)*.
- Hanging wall, mainly gabbro and pyroxenite.

Lenses of anorthosite, metres to tens of metres in thickness, are intercalated within the above units, which were considered as stratigraphic units by Allard (1967).

***Picture 8**: View of the layered magnetite series from P2 unit. Notice the small anorthosite dyke in the lower right.*

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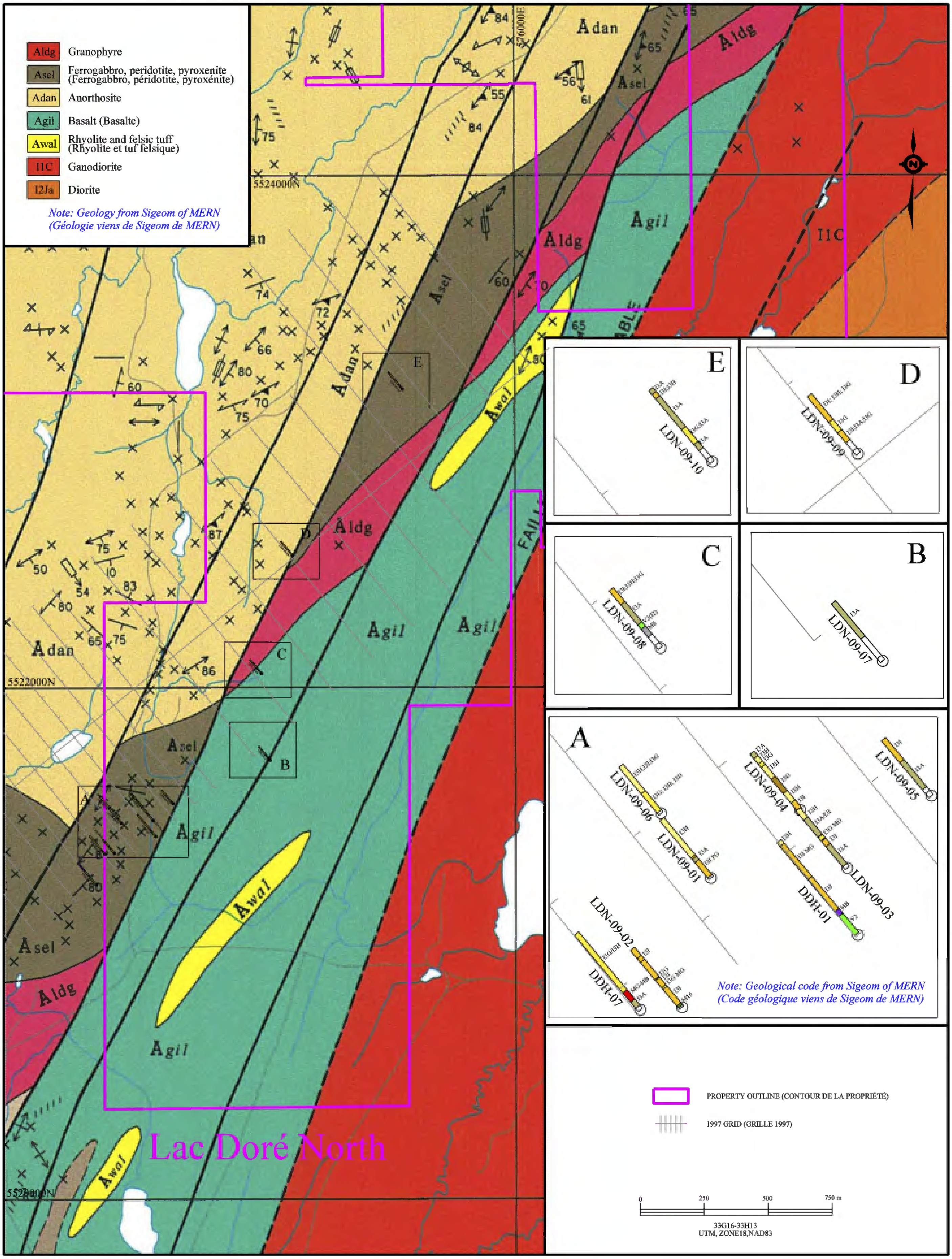

Figure 4b: Geology, Lac Doré North Property (Géologie, propriété Lac Doré North)

***Picture 9**: View of the layered magnetite bearing anorthositic gabbro from P2 unit. Notice the cross-bedding, indicative of sedimentary processes in the magma chamber.*

***Picture 10**: View of the layered gabbro with a magnetite band from P3 unit.*

***Picture 11**: View of a magnetite band in the layered anorthosite from P1 unit.*

***Picture 12**: View of thin magnetite layers within anorthosite, typical of P0 unit. Picture taken on Lac Doré North stripping.*

The stratigraphy is more or less continuous along strike for the whole deposit, from the south-western tip of the Armitage extension to the North-eastern end where it is truncated by the Mistassini Fault (Grenville Front). However, thicknesses are variable and complexities locally abundant.

The East and West deposits were reported as a bulge on P2, distinctly visible on the aeromagnetic survey. The presence of this prominent magnetic anomaly attracted exploration activity. Explorationists neglected the extensions of the deposit except for the limited work by McKenzie Bay Resources in the 1998-2000 periods.

All the various mineralized bodies, from Armitage to Northeast, correspond to a package of horizons steeply dipping toward the southeast. These horizons extend, almost continuously, for 17 kilometres in length, as expressed by the ground magnetometer survey and BlackRock's aeromagnetic survey. The various mineralized bodies, or extensions, were named on historical basis, being separated only by late faults, topographic features or claim boundaries. **However, the overall mineralized body is uninterrupted**. For example, the East and West deposits are separated by a valley related to a small cross-fault with minimal displacement. The West and Southwest deposits are offset by the Coil Lake cross-fault corresponding to a second valley, and are separated by a narrow stretch of lower grade material. The East and West bodies bulge to a thickness of 100 to 150 metres, reaching locally up to 200 metres. The Southeast body is narrower at 100 metres in thickness, locally injected of abundant anorthosite sills devoid of magnetite. The Armitage extension is continuous over more than 12 kilometres with 50-100 metres in width. Toward the Northeast, the geology and stratigraphy is more difficult to decipher, being offset by late faulting related to the Grenville Front.

The vanadium grade decreases sharply towards the stratigraphic top of the layered series as one proceeds south-eastward. This is related to the early partition of vanadium in the magnetite which progressively depleted the magma during magmatic differentiation. Also, in the gabbroic and pyroxenititic top layers, the remaining vanadium is scavenged by ferromagnesian minerals, and not amenable for metallurgical recovery. Therefore, layers above P3 are not considered as part of the deposit. Nelsonite horizons, made of ilmenite and apatite, are reported in the upper series and the over incumbent granophyre, which shall be just considered as curiosities.

Inversely, as one proceeds toward the base of the layers, north-westward, the grade of vanadium in the magnetite increases to a level which may be sufficient to justify mining of isolated magnetite bands within the anorthosite, such as P0. Only very preliminary results are available on this aspect.

GEOCHEMISTRY

The vanadium hosted in magnetite and ilmenite is relatively refractory. It is not expected to be liberated from the host minerals and to yield any geochemical anomaly in the secondary environment. Furthermore, vanadium is a ubiquitous element, present in trace amount in any type or rock, thus having little contrast with the deposit. Exploration geochemistry is therefore not considered as relevant.

A regional lake bottom sediment geochemical survey, conducted by the MRNQ in 2007 and 2011, covers the area, which is of little use for the project.

GEOPHYSICS

As the vanadium is contained in the magnetite, the mineralization is readily visible on aeromagnetic survey. The 17 kilometres long anomaly associated with the deposit is outstanding on the regional map. Ground magnetic surveys were carried out by the Gulf Mineral, Trepan Mining and Jalore in the 1950's, using a dip-needle compass, as well as by *Ministères des Richesses Naturelles* (Kish, 1971), SOQUEM (Nolet, 1980), and McKenzie Bay Resources (Tremblay et *al.*, 1998; Boudreault, 2000; Girard, 2001; Villeneuve, 1999). These surveys were carried out with an analog flux-gate instrument, which measures only the vertical component of the total field. Flux-gate was the standard instrument in the time of MRN and SOQUEM, and was chosen by IOS for the McKenzie Bay survey for being less sensitive to lateral gradient and saturation than then available neutron precession units. The various surveys conducted for McKenzie Bay are noisy, with numerous levelling discrepancies. For these reasons, the author recommended to BlackRock Metals in 2007 to commission a low-altitude high density airborne magnetic survey covering the entire area. This last airborne survey encompassed, for logistical reasons, a large part of VanadiumCorp's **Lac Doré** and **Lac Doré North** properties *(**figures 5**, **6A** and **6B**)*. It can be noted right away from this survey that the Eastern deposit has a significantly larger magnetic signature than the others.

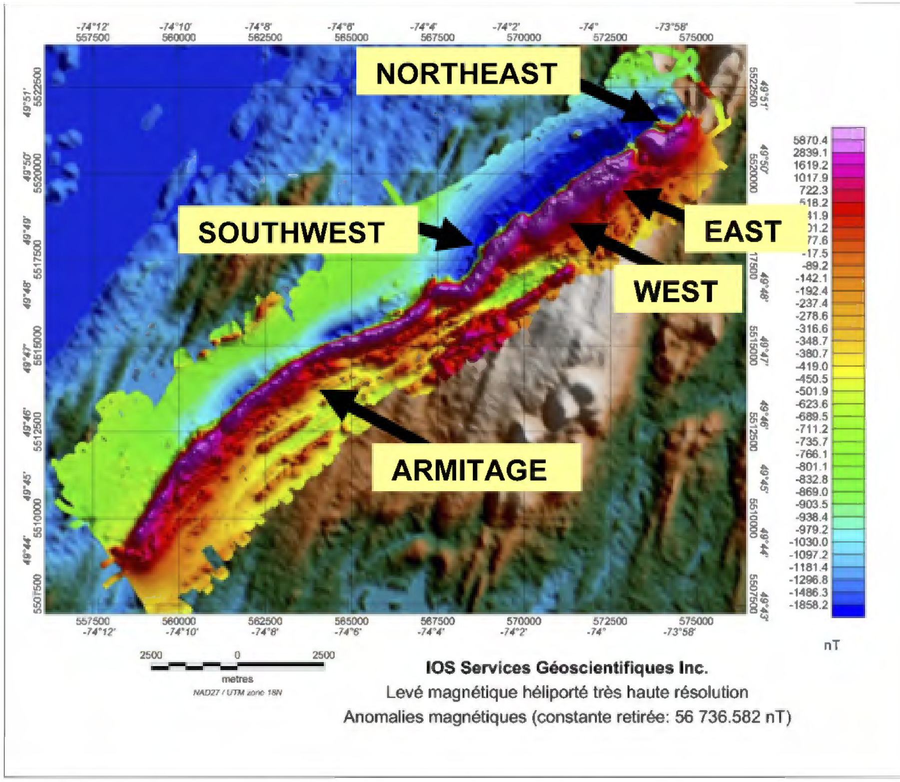

***Figure 5**: Preliminary results (bright colours) from the high density aeromagnetic survey over the entire length of the deposit, as provided by NovaTEM Inc. Dull colours in background are topography.*

No geophysical method allows detection or measurement of the vanadium itself.

Electromagnetic and gravimetric (Nolet, 1980) surveys were carried-out by the *Ministère des Richesses Naturelles* and SOQUEM, without providing conclusive results. It is in the author's opinion there is no need for testing other geophysical methods.

GLACIAL GEOLOGY

Glacial geology of Chibougamau area is dominantly covered by the Chibougamau Till (Martineau et Bouchard, 1984). This extensive till blanket is Winconsinian in age, and is reported to flow toward the Southwest in the area (see drumlin and elongated crest visible on ***figure 5***). The crest where the deposit is located is covered by a thin veneer of till, while periglacial sandy material dominates the plains to the North toward Lake Chibougamau. Fluvioglacial material is rare in the vicinity of the deposit.

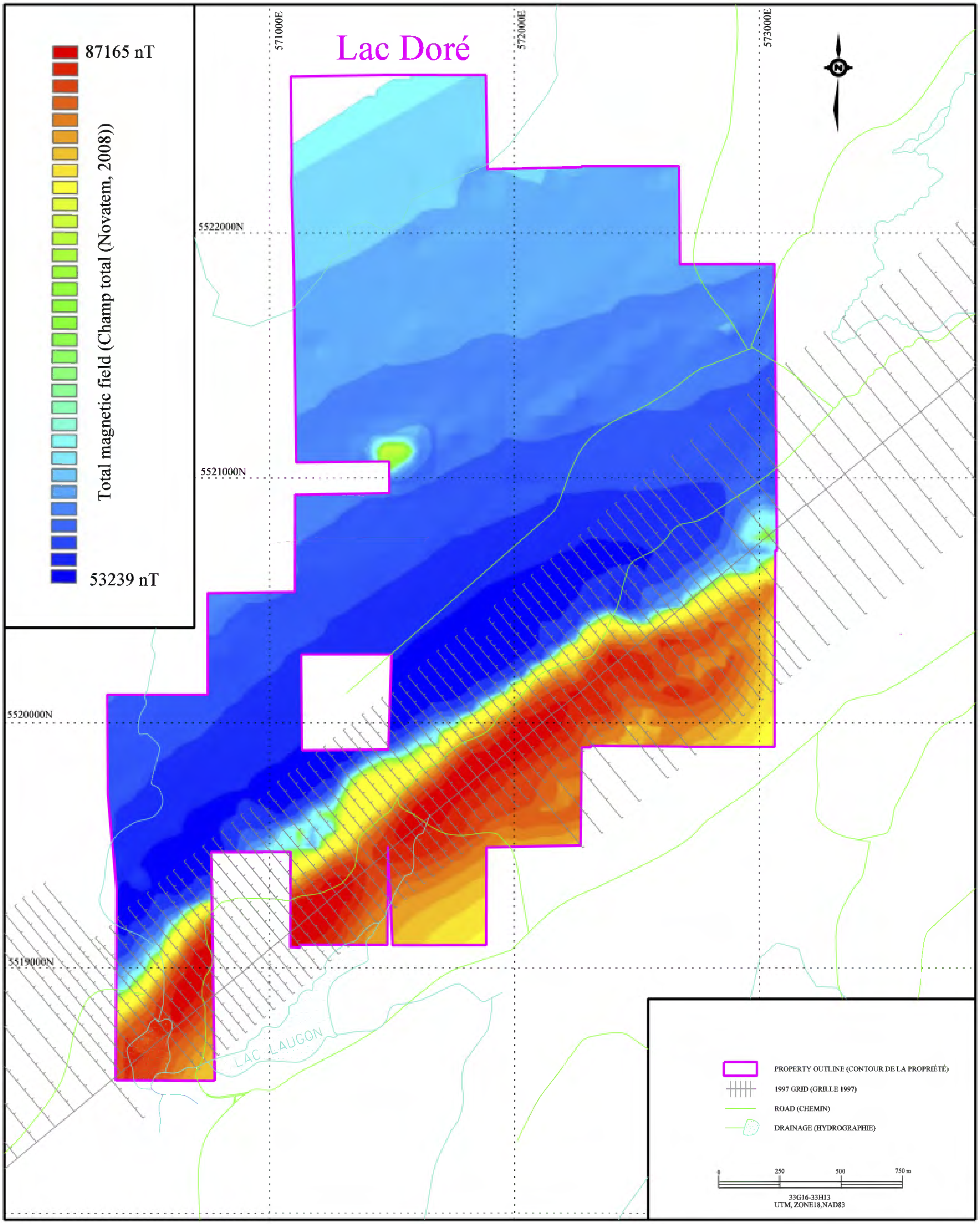

Figure 6a: Aeromagnetic survey, Lac Doré property (Levé aéromagnétique, propriété Lac Doré)

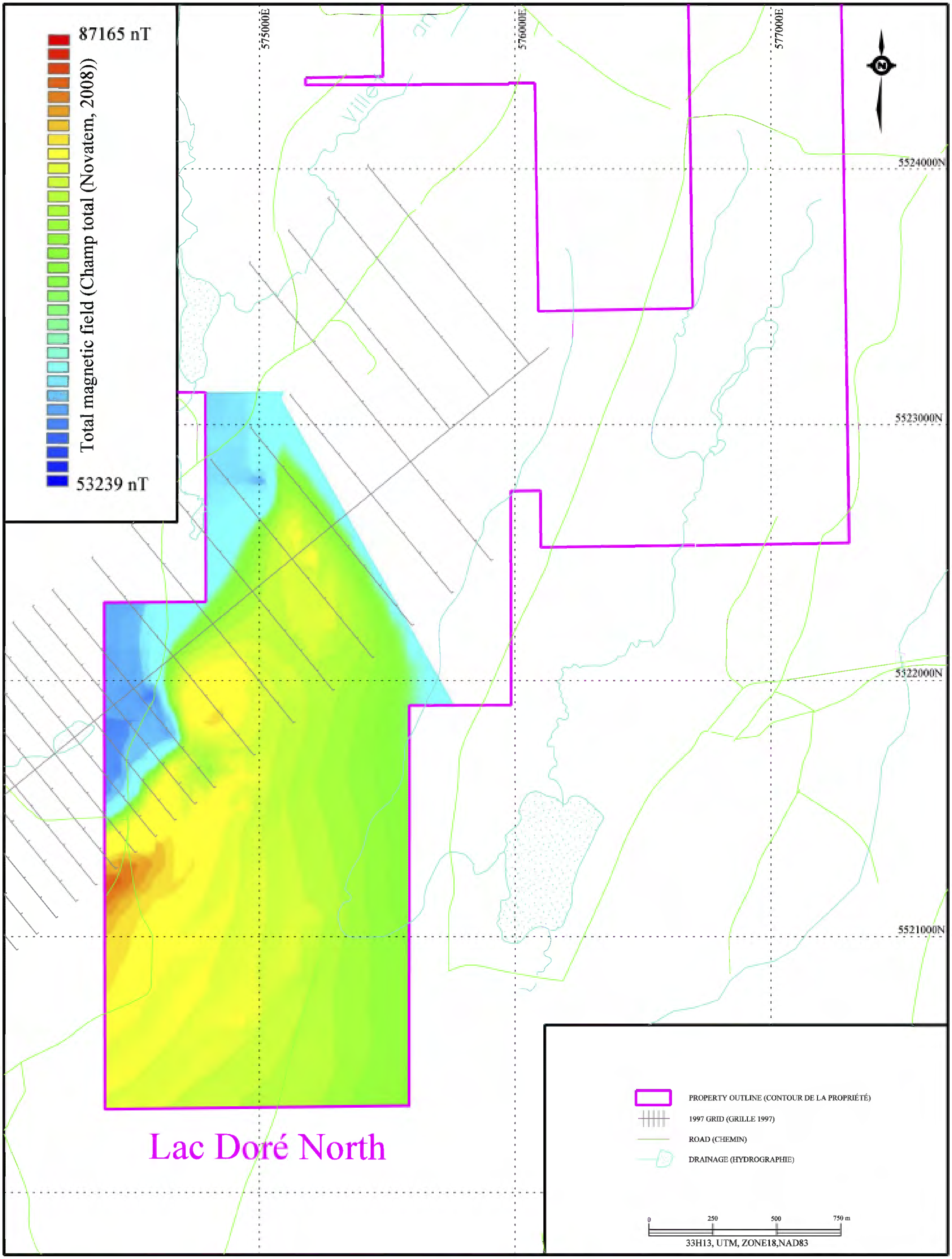

Figure 6b: Aeromagnetic survey, Lac Doré North property (Levé aéromagnétique, propriété Lac Doré North)

MINERALIZATION

Vanadiferous mineralization at Lac Doré is composed of titaniferous magnetite and ilmenite, hosted in anorthosite, anorthositic gabbros and gabbros, within the layered series of the Lac Doré Complex. Magnetite and ilmenite, associated in various proportions depending on stratigraphy, are found either as massive beds, decimetres to metres in thickness, or as dissemination within anorthosite and gabbros. Overall, the deposit contains about 30% magnetite, the main vanadium hosting mineral, plus 10% ilmenite. Oxides are best described as orthocumulate phase in the massive beds, or intercumulate while disseminated in host rock. Typical abundances and vanadium grades for the various units as estimated from McKenzie Bay channel samples (Tremblay et *al.*, 1998) are provided in ***table 5***.

	Thickness as calculated from sampling	V_2O_5	Fe_2O_3	TiO_2	**% Mgt** from visual estimation
P0	32 m	0.194%	20.1%	1.74%	10%
P1	49 m	0.340%	41.5%	4.27%	15-30%
P2	97 m	0.486%	64.3%	9.20%	>40%
P3	38 m	0.163%	48.6%	6.43%	20-30%
Total	216 m	0.353%	49.8%	6.49%	

Table 5*: Vanadium, iron and titanium grades in different facies.*

The magnetite bearing layers form a definite horizon which can be traced from the Grenville Front to the northeast, to the Lac Caché to the southwest, for a total stretch of 17 kilometres. Cross faults, with short displacement, are separating the Eastern from the Western deposits, as well as the Western and South-Western deposits. Magnetite beds are reported all along this horizon, with diverse abundance and thickness. The overall thickness of the sequence typically ranges between 60 to 100 metres, but increases to more than 200 metres in the Eastern deposit. The aeromagnetic signature is very linear, suggesting a near perfect homoclinal sequence dipping steeply to the southeast. Although the overall mineralized envelope is fairly regular, internal stratigraphy is very complex, injected by dismembering anorthosite sills. Local tight folds and truncation of the stratigraphy are noted, interpreted as representing magmatic slumps.

ORE PETROGRAPHY

Vanadium is hosted at 70-80% in magnetite (FeO-Fe_2O_3) and 10-15% in ilmenite (FeO-TiO_2). These two minerals are associated in a complex manner. Titanium is partitioned into hemoilmenite, ulvöspinel or titaniferous magnetite, which are co-precipitated from the magma, with granular relationship. Proportion of hemoilmenite and ulvöspinel is controlled by oxygen fugacity of the magma: more oxygen being available, more hemoilmenite being formed. The primary magmatic oxides typically have grain sizes of a fraction of a millimetre to a few millimetres. Titaniferous magnetite is a ferrous-ferric spinel (FeO-Fe_2O_3) which makes a discontinuous solid solution with ulvöspinel ($2FeO$-TiO_2) through a diadochic substitution at high temperature. At high temperature, this substitution can accommodate up to 20% TiO_2. No solid solution exists between ilmenite and titaniferous spinels. However, a complete solid solution exists between ilmenite and hematite at high temperature. At lower temperature, ulvöspinel is not stable and exsolves as ilmenite intergrowth in titaniferous magnetite. Titano-magnetite itself can accommodate up to a maximum of 4% TiO_2, the excess being exsolved as minute ilmenite intergrowths. Similarly, ilmenite ($FeTiO_3$) makes a complete solid solution with hematite (Fe_2O_3) at high temperature, and hemoilmenite exsolves as ilmenite-hematite intergrowth at lower temperature. These various iron and titanium oxides react with iron-bearing silicates (pyroxene, etc.) during the course of metamorphism, making secondary magnetite, with or without titanium, with or without vanadium, plus panoply of vanadium-bearing ferromagnesian silicates. These secondary oxides are mainly developed in P3, considering the original abundance of ferromagnesian minerals. Hematite is of very limited importance in Lac Doré ore, typically restricted to secondary minerals of metamorphic or alteration origin. Vanadium only weaklysubstitutes in hematite.

Headgrade in vanadium is at its maximum in P2, in the middle of the layered series. However, vanadium grades in magnetite decrease systematically upward, while titanium headgrade increases upward. Consequently, the best vanadium grades in magnetite concentrates are found in P0 and P1, while the bulk of the vanadium resources being hosted in P2. This is reflected in every former obsolete resource assessment which targeted P2 only.

The Lac Doré mineralization typically consists of 80% magnetite and 20% granular ilmenite ***(figure 7)***. The magnetite itself consists of 80% titaniferous magnetite with about 20% very minute intergrowths of ilmenite exsolution ***(figure 8)***. The presence of these ilmenite exsolutions makes this mineralization unsuitable for iron production from blast furnace without by-product. Titano-magnetite typically grades about 1.8% V_2O_5, while the ilmenite typically grades 0.3% V_2O_5. The abundance of these ilmenite exsolutions causes dilution of the vanadium grade in the magnetite. Vanadium grades in magnetite and ilmenite are rather constant in PO, P1 and P2, and drop drastically in P3. The difference in vanadium grade of the concentrates produced from P0, P1 and P2 reflects the abundance of ilmenite exsolutions within the magnetite. For a typical sample from P2, it is calculated that 86% of the vanadium is hosted in magnetite, 8% of vanadium is in ilmenite (exsolutions plus granular grains) and 5% is hosted in ferromagnesian minerals ***(table 6)***. It is technically possible, although not economical, to process ilmenite along with magnetite to recover its vanadium. However, processing ferromagnesian silicates is not technically feasible. Not processing ilmenite and ferromagnesian silicate explains the reported low vanadium recovery, tested at about 70-80%.

In oxide mineral, vanadium is present as sesquioxide V_2O_3 species, despite its grade being reported as pentoxide V_2O_5. The V_2O_3: V_2O_5 conversion factor being 1:1.21.

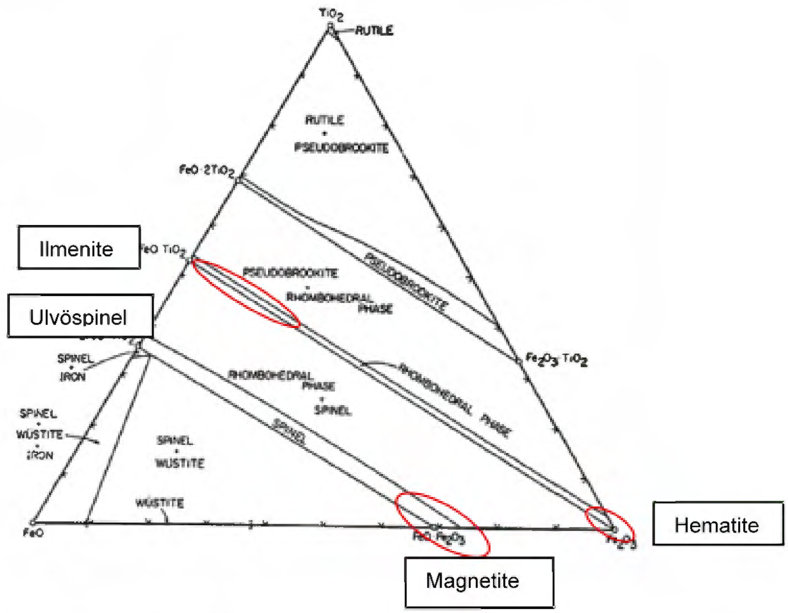

Figure 7: *Ternary diagram of the TiO_2-FeO-Fe_2O_3 system. Black field are for 1200° while low temperature limited solid solution field are in red.*

V_2O_5	P0	P1	P2	P3
Magnetite	1.78%	1.84%	1.74%	1.04%
Ilmenite	0.41%	0.41%	0.27%	0.15%
Magn. Conc.	1.6%	1.5%	1.3%	0.8%
Chlorite	-	-	0.1%	N/A
Amphibole	-	-	0.1%	N/A

Table 6*: Vanadium grade in different mineral species.*

Chromium is almost entirely partitioned into the titano-magnetite as chromite end-member. Inversely, manganese is partitioned into ilmenite as pyrophanite end-member. These are the only two contaminants significantly abundantin these oxides.

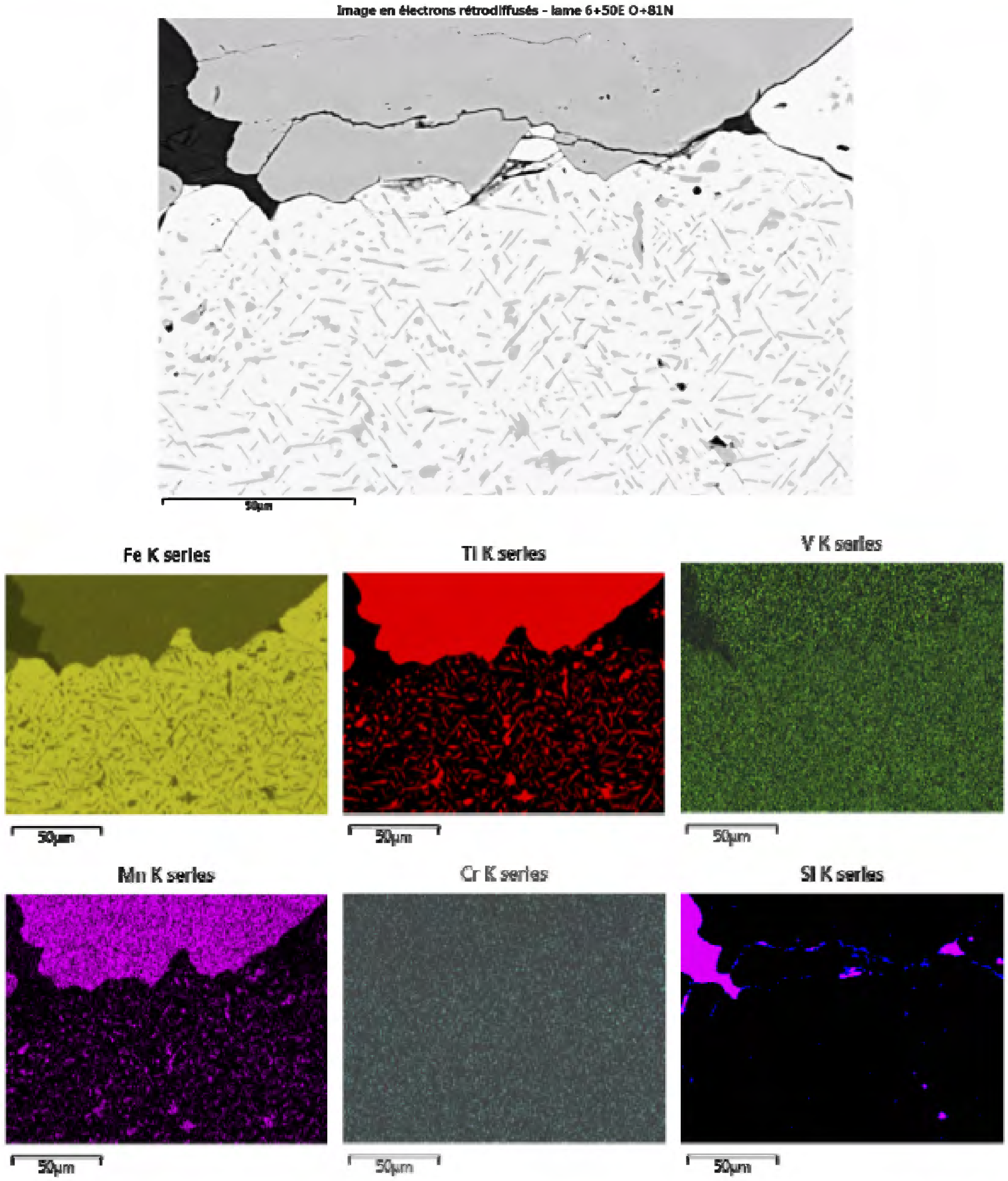

***Figure 8A**: X-Ray micromapping of a titano-magnetite and ilmenite grain from P2 horizon. Abundant ilmenite exsolutions, less than 10 µm across, are peppering the titano-magnetite (bottom), while no magnetite inclusion is present in granular ilmenite (top). A backscattered electron image (top, black and white) provide a clear view of the various minerals, while X-rays maps provide the distribution of each elements (colours). Image generated on IOS's scanning electron microscope.*

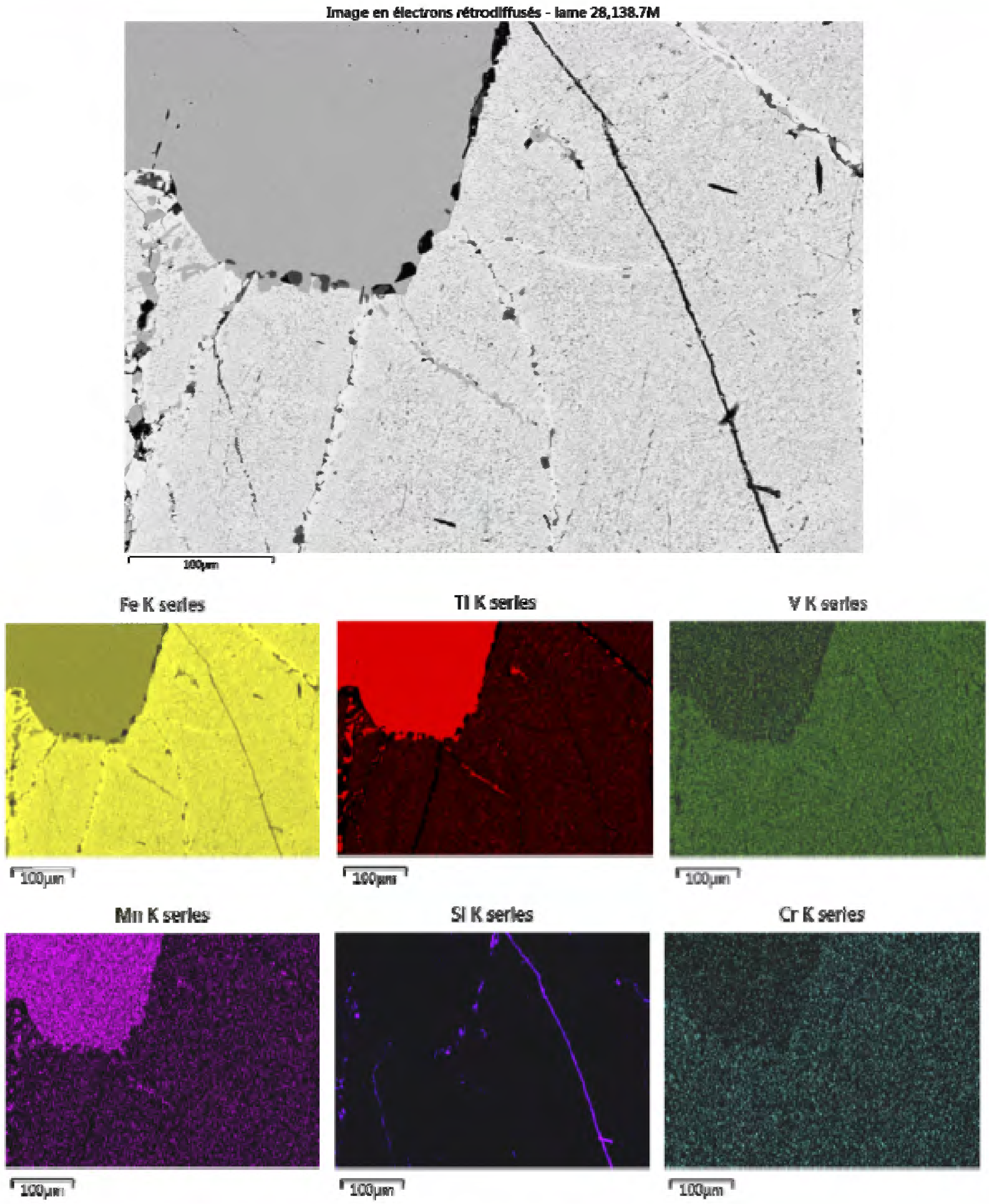

Figure 8B*: X-Ray micromapping of a titano-magnetite and ilmenite grain from P2 horizon. Ilmenite exsolutions, less than 1 µm across, are at the limit of the image resolution. Difference in vanadium, chromium and manganese distribution between ilmenite and titano-magnetite are clearly visible on X-Ray maps. Image generated on IOS's scanning electron microscope.*

ITEM 8: DEPOSIT TYPES

In his discovery report, Allard (1967) made comparisons between the magnetite series of the Lac Doré Complex and the ones of the Bushveld Complex in South Africa. Similar series are also reported in the Skaergaard Complex in Greenland, the Stillwater Complex in Nunavut, and the Cullin Complex in the British Tertiary Province. Another Archean equivalent is the Bell River Complex in the Matagami area, Quebec, Canada, which hosts the Iron-T Vanadium Project owned by VanadiumCorp. Such differentiated mafic intrusions are rather common, and many of them contain vanadium bearing magnetite series. More than 80% of the vanadium produced worldwide is from such occurrences, which also accounts for near to 100% of the primary production.

METALLOGENY

Vanadium is a ubiquitous element, reported at levels reaching hundreds of ppm in almost any kind of rock. Vanadium is a polyvalent transition metal, with valences between V^{++} to V^{+5}, which is the controlling factor in its distribution. Vanadium is constituently in minerals from supergene environments, representing very oxidizing conditions and where vanadium is present as tetravalent vanadyl $(V^{+4}O)^{+2}$ or pentavalent vanadate radical $(V^{+5}O_4)^{-3}$ such as pentagonite, mounanaite, bannermanite and more than 200 exotic mineral species.

In reducing systems, V^{+2} has a chemical behaviour similar to iron in regards to most common ferromagnesian minerals, such as chlorite or pyroxene, where it substitutes into M^{+2} sites. Vanadium therefore does not tend to concentrate in a specific mineral in silicate dominated magmatic, hydrothermal or metamorphic systems. Inversely, under higher oxygen fugacity, vanadium in its V^{+++} state tends to partition against Fe^{+++} in minerals such as magnetite (coulsonite or vuorelainenite are the vanadium end-member of the spinel family $(Fe\text{-}Mn)^{+2}V_2{}^{+3}O_4$) and hemo-ilmenite (karelianite V_2O_3 end-member as a diadochic substitution with $FeTiO_3$). Some other complex vanadium-titanium minerals are known, such as Kyzylkumite and Schreyerite, which are noted for reference only.

Massive iron oxide precipitation can occur in differentiating mafic magmatic systems, such as layered complexes. Triggering of this precipitation is apparently caused by silica saturation related to contamination of the magma by melted roof-rocks and the development of granophyre. Precipitation of these iron and titanium oxides may take on the form of rhythmically layered series such at Lac Doré or in the Bushveld, as massive oxide pockets such as the "*pipes*" in the Bushveld Complex or the St-Urbain Anorthosites, or as broad horizons such as nelsonites (ilmenite-apatite-magnetite magmatic rocks typically associated with anorthosite) and cumberlandite (magnetite-ilmenite-olivine magmatic rocks typically associated with troctolite) deposits in the Lac St-Jean Anorthosites. In all cases, vanadium is preferentially partitioned into the first oxides to precipitate. Only magnetite layers series and magnetite pipes are economically mined as vanadium sources. Vanadium within ilmenite ore is considered a contaminant in respect of titanium production. Vanadium bearing magnetite cannot be distinguished from common magnetite on the basis of its appearance or physical property, necessitating assaying.

Layered mafic complexes being large geological features, tens to hundreds of square kilometres in area, host extremely large magnetite deposits. Such occurrences are easily identified in mineral exploration due to their prominent aeromagnetic signature. However, in most occurrences, layers are thin or the magnetite is disseminated, rendering mining of these non-economical. The titanium content of such magnetite makes them not suitable for iron production through conventional blast furnace process.

ITEM 9: EXPLORATION

A large amount of exploration work was conducted on the East and West deposits by prior owners. The most detailed surveys were conducted by IOS on behalf of McKenzie Bay Resources, and are considered as superseding previous work done by SOQUEM or the *Ministère des Richesses Naturelles* not including previous drilling.

VanadiumCorp conducted two trenching programs, two limited drilling programs and three ground magnetometric surveys between 2007 and 2013, plus some road improvement and a GPS survey (Aurus, 2013). The author's firm conducted a field program on behalf of VanadiumCorp in fall 2014, which included a DGPS survey of drill collars, some verification and sampling of the 1997 trenches, re-mapping of 2008 trenches and re-logging of 2013 holes.

A certain amount of exploration data produced during VanadiumCorp's tenure as owner of the Lac Dore project has not been made available to the authors. This is due in large part to the nature of the transition between previous VanadiumCorp management and new management. Some data that was not filed as assessment work has been either withheld from current management or destroyed and was not available to the authors of this report.

GROUND MAGNETOMETRIC SURVEYS

Three ground magnetometric surveys were conducted on behalf of former management of VanadiumCorp, covering the **Lac Doré** (Tshimbalanga, 2009, 2012 and **Lac Doré North** (Tshimbalanga and Hubert, 2009) properties ***(table 7)***. All three surveys were conducted in a similar manner by Geosig Inc., from Québec City. The surveys were conducted with the use of 2 GSM-19WV Overhauser (neutron precession) magnetometers, a mobile and a stationary unit. Lines were spaced every 100 metres, oriented N315°, plus a baseline and tie lines. Station locations were measured with handheld GPS devices. A base station was established and calibrated at 57,000 γ, providing an accuracy of 1 γ. Isopleth maps and profiles were provided. No vertical or horizontal gradient was measured or calculated, and no modelization was generated. Results from these surveys were concatanated and re-gridded as a single map (***figures 9A*** and ***9B***).

For the purpose of the ground magnetometric survey, the former McKenzie Bay's picketed line network was refreshed and surveyed (Aurus, 2013).

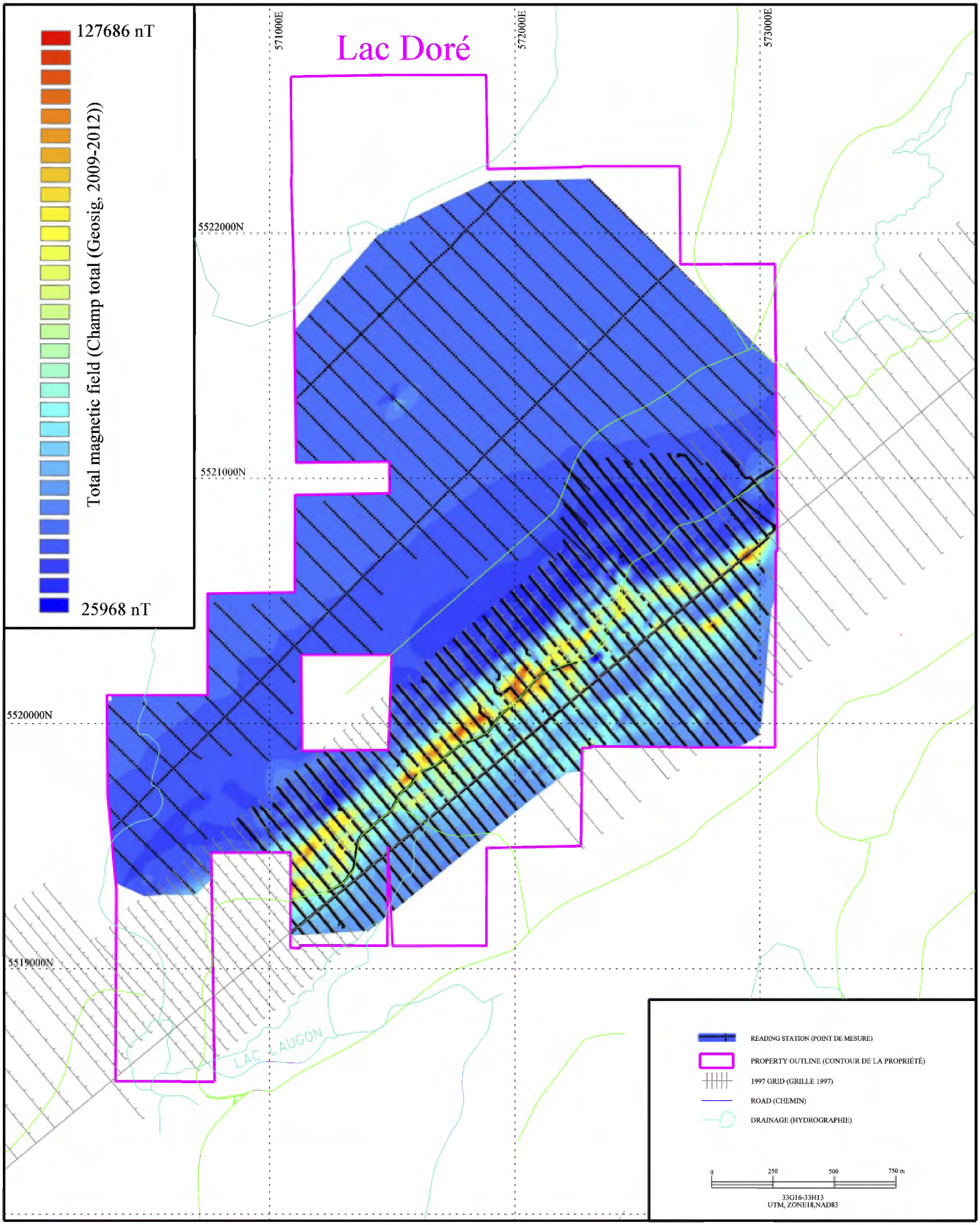

Figure 9a: Ground magnetic survey, Lac Doré property (Levé magnétique au sol, propriété Lac Doré)

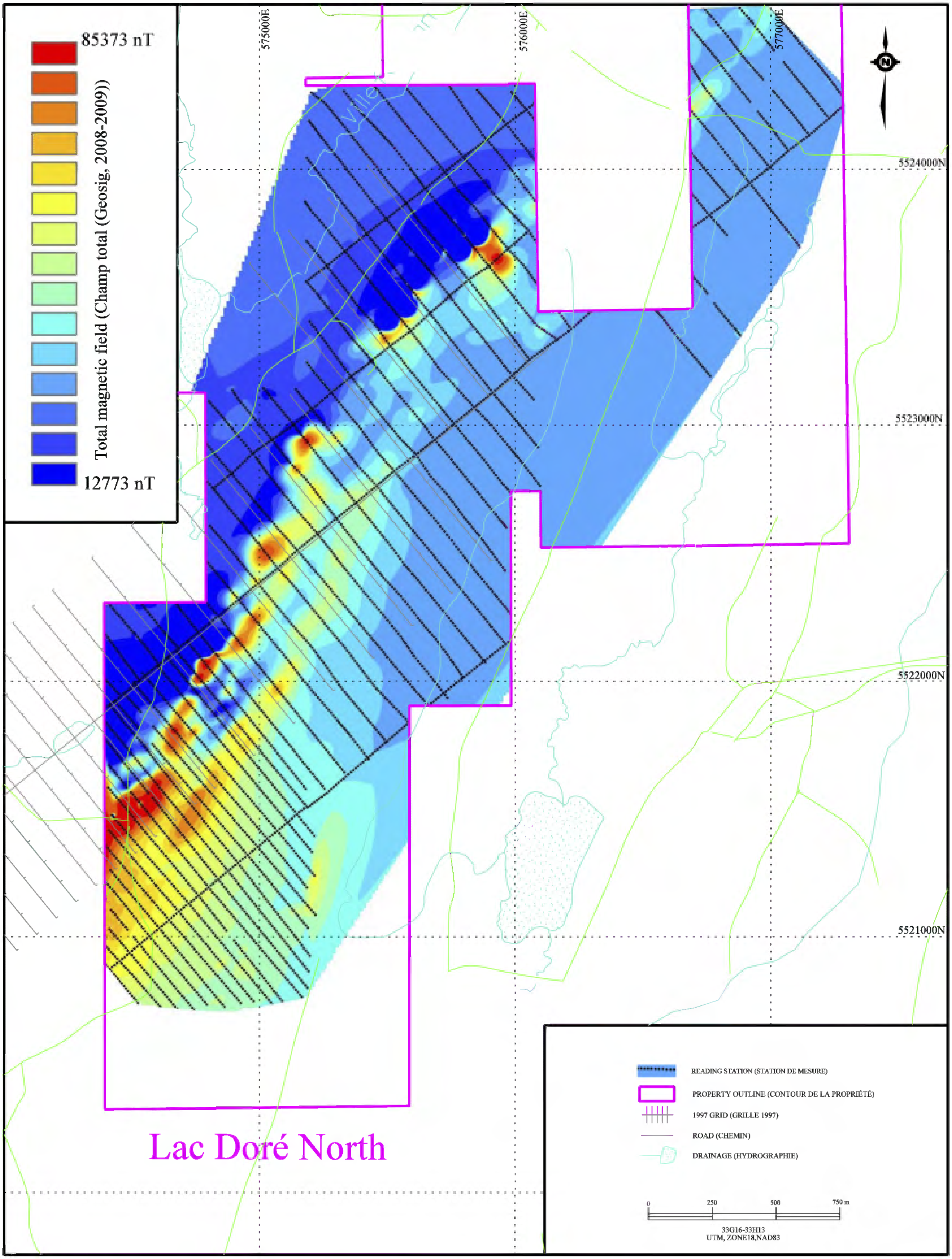

Figure 9b: Ground magnetic survey, Lac Doré North property (Levé magnétique au sol, propriété Lac Doré North)

Year	Property	Length	Line	Line-Spacing	Stations-Spacing
2009	Lac Doré	35 km	35	100 m	12.5 m
2009	Lac Doré North	66.7 km	38	50/100 m	12.5 m
2012	Lac Doré	45 km	53	50 m	12.5 m

***Table 7**: Magnetometric Surveys.*

2008 AND 2009 STRIPPING PROGRAM

Stripping programs were conducted on the South-Western extremity of the **Lac Doré North** property in 2008 and 2009. The area targeted seems to coincide with the most intense ground magnetometric anomaly reported (Tshimbalanga and Hubert, 2009).

No report, sample location, maps, field notes or assay databases regarding this stripping was made available to the author. For this reason, the stripping was re-mapped in the fall 2014 by one of the author's staff. Most sampling tags were still present, and assays available from certificates were relocated (Block, 2015).

***Picture 13**: View of the main stripping area excavated in 2008 on Lac Doré North property, as currently visible. Notice the massive magnetite layer in the middle of the picture.*

2012: CHANNEL SAMPLING

A channel sampling program was conducted in the summer of 2012 on the McKenzie Bay trenches in **Lac Doré** property. No data or reports were made available to the author, nor any report filed for assessment.

2014 PROGRAM

In the fall of 2014, a brief field program was conducted in preparation of the current resource estimate. It included:

- Locating the historic drill holes collars and surveying them with a DGPS.
- Mapping the 2008-2009 trenches.
- Verifying the current status of 1997 trenches and sampling any neglected intervals.
- Re-sampling and re-logging of 2013 drill holes.

VALIDITY OF AVAILABLE SURVEYS

The ground magnetometric surveys were conducted according to the industry standards but are superseded by the BlackRock Metals high resolution helicopter-borne survey.

As no report, sample location, maps, field notes or assay database regarding the stripping was filed with the government or made available to the author, the validity of the trenching programs will not be commented on.

INDEPENDENCE OF CONTRACTORS

Geosig Inc. is a well established contractor, the independence and integrity of whom is not questioned.

The trenching program was conducted by Glen McCormick Exploration, which was likely not independent from VanadiumCorp.

ITEM 10: DRILLING AND CHANNEL SAMPLING

Limited drilling has been completed by VanadiumCorp to date. Ten (10) short exploration holes were drilled on the ***Lac Doré North*** in 2009, and four confirmation holes were drilled in 2013. This is in contrast with the amount of historical drilling completed by previous owners, which is the basis for the current resource calculation. **Due to the importance of these historic drill holes and their use in the resource estimate, they will be described in detail in the following sections.**

Trench and drill hole locations from the **Lac Doré** project are summarized in ***figures 10A*** and ***10B***. The sampling and assaying procedures are provided in the following sections. Trench details and a collection of drill hole sections were compiled in Girard, 2014, but not considered relevant to the current report

1997 McKENZIE BAY RESOURCES TRENCHING

The 1997 stripping campaign carried out by the author on behalf of McKenzie Bay Resources provided quite systematic channel samples on more or less continuous section across the East and West deposits, spaced every 100 metres (Tremblay, 1998). A gap in the trenching pattern exists between 0+50E at the West end of the West deposit, and 2+00W due to topographic constraints. These trenches are quite systematic and continuous, being interrupted only on topographic accident or to avoid ripping out the road. Location of the trenches was established with the use of a magnetometer, to locate the limits of the mineralization. Land surveying was made in 1997 and recently reviewed (Aurus, 2013). Overburden was typically less than a metre thick. The quality of these trenches is sufficient to consider them as equivalent to horizontal drill holes for the purpose of the current resource estimate. Trenches within the actual VanadiumCorp's **Lac Doré** project are listed in ***table 8***. An example is depicted on ***picture 14.***

It should be noted that segments of trenches 2+50E, 3+50E, 4+50E, 5+50E, 2+00W, 3+00W and 4+00W are partly located on BlackRock Metals property.

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DIGITAL FORMAT

Non-standard size page(s) scanned and placed after these standard pages

***Picture 14**: Recent view, taken by the author in the course of his mandatory field visit, of the channel sampling carried out by McKenzie Bay in 1997. Notice the absence of gaps between samples and that sampling tags are still in place.*

No trenching was undertaken on Northeast deposit by McKenzie Bay.

Deposit	Line	Station from	Station to	Length (m)	Stratigraphy
East	24+50E	0+72S	3+66N	438	P0-P1-P2-P3
East	23+50E	0+00	3+405N	340.52	P0-P1-P2
East	22+50E	0+37S	3+38N	375	P0-P1-P2
East	21+50E	0+19N	2+66N	246.63	P2
East	20+50E	0+57S	2+72N	328.97	P0-P1-P2-P3
East	19+50E	0+13S	1+52N	164.9	P2-P3
East	19+50E	1+60N	2+88N	128.26	P1-P2
East	18+50E	1+86N	3+41N	155	P0-P1-P2-P3
East	18+31E	0+75N	1+90N	115.22	P2-P3
East	18+25W	1+00N	1+46N	45.74	P2-P3
East	18+25W	2+50N	3+88N	138.22	P0-P1-P2
East	17+50E	0+74N	3+30N	255.8	P0-P1-P2
East	16+50E	0+38S	3+12N	349.76	P0-P1-P2-P3
East	15+50E	0+00	4+37N	437.24	P0-P1-P2-P3
East	14+50E	0+08S	1+005N	108.57	P3

Deposit	Line	Station from	Station to	Length (m)	Stratigraphy
East	14+50E	1+55N	2+77N	122.13	P1-P2
East	13+50E	0+15N	1+64N	148.93	P3
East	13+50E	1+79N	3+04N	124.6	P1-P2
East	12+50E	0+44N	2+105N	166.44	P2-P3
East	11+50E	0+87N	1+765N	89.51	P2-P3
East	11+50E	2+21N	2+75N	54.22	P1
West	10+50E	0+70N	2+96N	225.97	P1-P2-P3
West	9+50E	0+67N	2+85N	218	P1-P2-P3
West	8+50E	0+20N	2+675N	247.51	P1-P2-P3
West	7+50E	0+25N	2+50N	224.6	P1-P2-P3
West	6+50E	0+50N	2+35N	185	P0-P1-P2-P3
West	6+50E	2+65N	4+015N	136	P0-P1-P2-P3
West	5+50E	0+54N	1+15N	61	P3
West	5+50E	3+45N	3+98N	53	P0
West	4+50E	4+30N	4+99N	68.65	P0-P1
West	3+50E	3+85N	4+50N	65	P0-P1
West	2+50E	2+55N	3+85N	130	P0-P1-P2
West	1+50E	1+73N	3+47N	174.14	P1-P2-P3
West	0+50E	1+50N	2+97N	146.67	P1-P2-P3
West	2+00W	1+25N	3+32N	206.7	P1-P2
West	3+00W	1+09N	2+15N	171.67	P2
West	4+00W	0+84N	0+95N	11	P2

***Table 8**: Location of 1997 trenches. Segments belonging to BlackRock were excluded.*

1958 DRILLING BY JALORE MINING LTD.

Six holes were drilled by Jalore Mining in 1958, of which 5 are within the main **Lac Doré** property. In the Jalore report, hole's azimuth were indicated as S28°E in the old four-quadrant system, which shall translate as N152° in the more conventional single quadrant system. However, every subsequent report indicates them as towards northwest. Since drill collars are not available anymore, field verification is not possible. These holes are thus considered or oriented N308° to 339° so about 20° clockwise of the actual grid. Drill collar locations were unidentified. The core was AX in diameter, and was split for sampling. Jalore assayed the core for iron and titanium in their private laboratory, and only results indicated in the log are available. The core was recovered by MRN in 1970, quarter-split and submitted for vanadium assaying and Davis tube magnetite concentrate at CRM (Kish, 1971). The core was not preserved. These holes are of little use and are not relevant to the current resource estimation.

1959 DRILLING BY TREPAN MINING

A series of five holes (T-1 to T-5) were drilled by Trepan Mining South-East of Armitage lake, on the Armitage deposit in 1959 (GM 10012). Being located outside the outline of the properties, no attempt was made to evaluate them, and they were not included in the current resource estimation.

1970-1974 DRILLING BY QUÉBEC GOVERNMENT

Ten of the 13 holes drilled by the *Ministère des Richesses Naturelles* are located within **Lac Doré** property, of which 9 are on the East deposit. Two of the remaining holes are on the South-West deposit while two others are on the West deposit but outside VanadiumCorp's property (BlackRock property).

Four holes were drilled in 1970 (DDH-07 to DDH-10), and logged by contract geologist of the MRN (Kish, 1971). Another nine holes (DDH-11 to DDH-19) were drilled in 1974 by L. Abvramtchev, of which only logs are available (***table 9***) devoid of a detailed report. The holes are oriented approximately parallel to current grid-lines, between N320° and N330°. MRN grid was oriented with an east-west baseline and due North lines, which explains why holes are indicated to an angle to the lines in the logs. No evidence of this grid remains in the field. Casings were not left behind and old drill pads are not readily visible. However, evidence of the pads or access trails were recently located (Block, 2015). Logging and footage markings on these holes were apparently not done in a conventional manner, without inserting marker blocks at the end of each tube. Accurate metering and re-logging of these holes is not possible. Furthermore, significant handling and transport of the core boxes caused the split core to shift in the boxes. And finally, the core resided for 20 years in the core-racks of Niobec Mine, near the tailing pond and is thus heavily contaminated with niobium carbonatite dust. Core is BQ in diameter, and was sampled by half-splitting. Drill logs were obtained from assessment files, as conventional paper logs, which were captured into a Microsoft Office Excel dataset by IOS in 1997, and converted to Geotic's database for the purpose of the current report. The core is currently stored at a BlackRock facility, but of little use due to its poor state of conservation.

The quality and level of details of the logging by the MRN is adequate except for potential issues with depth measurement. No RQD, density, photographs or other measurements are available. Precision of the azimuth is uncertain, considering the magnetic deviation occurring on the deposit, and the absence of GPS devices which did not exist at that time. Orientation was probably made by aligning the rig with the lines, the quality of which cannot be verified. The plunge of the hole was measured with acid tests. Sampling procedures are not described nor is the chain of custody. Only Davis tube magnetite analyses are available for the 1970 holes conducted at CRM (*Centre de recherche minérale*, a former governmental metallurgy research facility, currently COREM). Averages of headgrade analysis are reported, but individual analyses were not disclosed. Holes drilled in 1974 have both headgrade and magnetite concentrate assays.

The MRN holes are considered of sufficient reliability for the current calculation of inferred resources. However, it is in the author opinion that they shall be excluded from any subsequent indicated resource calculation.

Owner	Line	Station	Note	UTMX-83	UTMY-83	UTMZ	Précision XY
APELLA RESOUCES INC.	20+83E	0+88N	DGPS-2014-Collar	572276.951	5520245.674	505.35	1
APELLA RESOUCES INC.	16+31E	0+92N	DGPS-2014-Collar	571924.704	5519963.991	499.822	1
APELLA RESOUCES INC.	12+26E	1+11N	DGPS-2014-Collar	571565.328	5519689.772	497.671	1
APELLA RESOUCES INC.	9+45E	1+00N	DGPS-2014-Collar	571395.498	5519531.445	513.247	1
APELLA RESOUCES INC.	45+30E	3+74S	DGPS-2014-Collar	574456.718	5521443.34	461.374	1
APELLA RESOUCES INC.	44+32.6E	4+50S	DGPS-2014-Collar	574427.135	5521324.953	459.034	1
APELLA RESOUCES INC.	46+31.4E	4+46S	DGPS-2014-Collar	574581.287	5521451.879	454.796	1
APELLA RESOUCES INC.	46+31.4E	3+78S	DGPS-2014-Collar	574537.359	5521503.952	457.972	1
APELLA RESOUCES INC.	47+32.7E	4+44.5S	DGPS-2014-Collar	574658.156	5521515.61	457.655	1
APELLA RESOUCES INC.	45+30E	3+00S	DGPS-2014-Collar	574412.741	5521500.6	458.99	1
APELLA RESOUCES INC.	51+34.7E	5+58S	DGPS-2014-Collar	575039.042	5521685.824	474.514	1
APELLA RESOUCES INC.	53+22.5E	2+70.5S	DGPS-2014-Collar	575003.942	5522066.281	464.567	1
APELLA RESOUCES INC.	57+07E	0+10N	GPS-2014-PAD	575127	5522491	466	5
APELLA RESOUCES INC.	64+51E	2+40N	DGPS-2014-Collar	575536.566	5523137.464	486.576	1
Jalore Mining	25+00E	2+40.37N	Not located				
Jalore Mining	39+96.96E	1+78.4N	Not located				
Jalore Mining	46+30.94E	1+81.7N	Not located				
Jalore Mining	36+30.94E	2+20.36N	Not located				
Jalore Mining	31+82E	1+86N	Not located				
McKenzie Bay ressources ltd	46+00E	5+00S	GPS-2014-PAD	574593	5521388	448	3
McKenzie Bay ressources ltd	28+00E	1+75S	GPS-2014-PAD	572986	5520499	527	5
McKenzie Bay ressources ltd	26+00E	0+00	GPS-2014-PAD	572714	5520513	503	5
McKenzie Bay ressources ltd	44+00E	4+25S	GPS-2014-PAD	574392	5521318	457	10
McKenzie Bay ressources ltd	23+00E	1+60N	GPS-2014-PAD	572396	5520439	487	10
McKenzie Bay ressources ltd	21+00E	1+50N	GPS-2014-PAD	572251	5520300	494	10
McKenzie Bay ressources ltd	13+00E	1+70N	GPS-2014-PAD	571622	5519813	497	10

Owner	Line	Station	Note	UTMX-83	UTMY-83	UTMZ	Précision XY
MERN	36+92.15E	2+19.42N	GPS-2014-PAD	571762	5519934	-	10
MERN	37+32.72E	2+12.58N	GPS-2014-PAD	571799	5519951	-	10
MERN	37+81.94E	2+07.09N	GPS-2014-PAD	571841	5519976	-	10
MERN	38+35.16E	2+13.6N	GPS-2014-PAD	571878	5520013	-	10
MERN	39+0.43E	2+5.82N	GPS-2014-PAD	571948	5520062	485	10
MERN	39+74.95E	2+11.27N	GPS-2014-PAD	571996	5520093	486	10
MERN	40+96.02E	2+59.23N	GPS-2014-PAD	572064	5520202	486	10
MERN	41+74.14E	1+97.18N	DGPS-1997-Pad	572177.46	5520217.64	493.78	3
MERN	42+75.36E	1+68.81N	GPS-2014-PAD	572268	5520244	495	10
MERN	25+00E	2+40.37N	Not located				
Soquem	35+00E	1+00N	GPS-2014-PAD	571688	5519724	487	10
Soquem	36+00E	1+25N	DGPS-1997-Pad	571748.56	5519812.24	503.53	3
Soquem	36+50E	1+75N	GPS-2014-PAD	571753	5519877	485	5
Soquem	40+50E	1+80.5N	DGPS-1997-Pad	572124.86	5520145.34	498.35	5
Soquem	37+50E	1+41N	DGPS-2014-Collar	571851.264	5519897.838	498.718	1
Soquem	41+50E	1+93N	Calculated from grid	572152.96	5520192.14	495.3	15
Soquem	38+50E	2+11N	GPS-2014-PAD	571878	5520022	485	10
Soquem	39+50E	1+61N	GPS-2014-PAD	571998	5520035	492	5
Soquem	42+50E	1+75N	Calculated from grid	572244.46	5520237.34	493.78	15
Soquem	40+50E	2+69N	GPS-2014-PAD	572021	5520179	487	10
Soquem	42+00E	2+50N	DGPS-2014-Collar	572146.338	5520252.115	497.514	1
Soquem	42+50E	2+62N	Calculated from grid	572193.26	5520308.34	481.58	15
Soquem	42+00E	1+50N	DGPS-1997-Pad	572218.16	5520187.14	499.87	5
Soquem	40+50E	1+50N	DGPS-1997-collet	572388.36	5520296.34	496.21	3
Soquem	45+50E	1+50N	DGPS-2014-Collet	572487.544	5520381.272	504.867	1
Soquem	40+00E	1+50N	DGPS-2014-Collar	572044.598	5520050.242	495.055	1
Soquem	34+00E	1+50N	DGPS-2014-Collar	571565.418	5519689.618	497.632	1
Soquem	43+00E	1+75N	Calculated from grid	572265.7	5520278.7	493	15
Soquem	38+50E	1+50N	DGPS-2014-Collar	571924.697	5519963.96	499.824	1
Tranchée 1997	10+50E	0+70N	Calculated DGPS 1997	571498.06	5519584.14	502.62	5
Tranchée 1997	11+50E	0+87N	Calculated DGPS 1997	571569.46	5519667.03	496.82	5
Tranchée 1997	11+50	2+21N	Calculated DGPS 1997	571484.76	5519770.04	496.82	5
Tranchée 1997	12+50E	0+44N	Calculated DGPS 1997	571669.46	5519693.44	499.87	5
Tranchée 1997	13+50E	0+15N	Calculated DGPS 1997	571772.66	5519723.34	509.02	5
Tranchée 1997	13+50E	1+79N	Calculated DGPS 1997	571662.46	5519863.94	501.4	5

Owner	Line	Station	Note	UTMX-83	UTMY-83	UTMZ	Précision XY
Tranchée 1997	14+50E	0+08S	Calculated DGPS 1997	571851.86	5519786.44	510.54	5
Tranchée 1997	14+50E	1+55N	Calculated DGPS 1997	571750.76	5519906.44	502.62	5
Tranchée 1997	1+50E	1+73N	Calculated DGPS 1997	570748.76	5519097.74	502.31	5
Tranchée 1997	15+50E	0+00	Calculated DGPS 1997	571927.66	5519850.64	509.02	5
Tranchée 1997	16+50E	0+38S	Calculated DGPS 1997	572025.76	5519887.84	510.54	5
Tranchée 1997	17+50E	0+74N	Calculated DGPS 1997	572032.46	5520034.94	504.44	5
Tranchée 1997	18+31E	0+75N	Calculated DGPS 1997	572095.56	5520090.54	501.4	5
Tranchée 1997	18+50E	1+86N	Calculated DGPS 1997	572033.56	5520185.84	495.91	5
Tranchée 1997	19+50E	0+13S	Calculated DGPS 1997	572247.96	5520095.84	505.97	5
Tranchée 1997	19+50E	1+60N	Calculated DGPS 1997	572131.76	5520227.04	493.78	5
Tranchée 1997	2+00W	1+25N	Calculated DGPS 1997	570504.46	5518832.74	481.58	5
Tranchée 1997	20+50E	0+57S	Calculated DGPS 1997	572339.96	5520118.44	509.02	5
Tranchée 1997	21+50E	0+19N	Calculated DGPS 1997	572374.96	5520245.24	495.3	5
Tranchée 1997	22+50E	0+37S	Calculated DGPS 1997	572490.56	5520267.04	501.4	5
Tranchée 1997	23+50E	0+00	Calculated DGPS 1997	572540.46	5520358.34	501.4	5
Tranchée 1997	24+50E	0+72S	Calculated DGPS 1997	572667.46	5520368.94	509.02	5
Tranchée 1997	2+50E	2+35N	Calculated DGPS 1997	570781.46	5519203.34	504.44	5
Tranchée 1997	3+00W	1+09N	Calculated DGPS 1997	570440.76	5518760.24	484.02	5
Tranchée 1997	3+50E	2+04N	Calculated DGPS 1997	570877.06	5519245.64	513.59	5
Tranchée 1997	4+50E	1+30N	Calculated DGPS 1997	571002.06	5519254.14	524.26	5
Tranchée 1997	0+50E	1+50N	Calculated DGPS 1997	570683.66	5519012.04	493.78	5
Tranchée 1997	5+50E	0+54N	Calculated DGPS 1997	571126.76	5519256.24	524.26	5
Tranchée 1997	6+50E	0+50N	Calculated DGPS 1997	571201.86	5519314.14	521.21	5
Tranchée 1997	7+50E	0+25N	Calculated DGPS 1997	571295.86	5519359.14	519.68	5
Tranchée 1997	8+50E	0+20N	Calculated DGPS 1997	571379.26	5519420.34	505.97	5
Tranchée 1997	9+50E	0+67N	Calculated DGPS 1997	571423.96	5519521.94	507.49	5

***Table 9**: List of drill hole collar location with accuracy.*

1979 DRILLING BY SOQUEM

In 1979, SOQUEM conducted the first resource definition drilling program over the Eastern deposit, for 19 holes and 3325 metres (Dion, 1980). Holes were spaced between 50 to 100 metres along sections, with sections every 100-200 metres. Holes were oriented parallel to the sections or N324°, plunging toward the northeast. Collars were located by grid coordinates, but the grid was surveyed by a land surveyor, providing accurate relative location. However, the grid position was anchored on a local datum (E40+00.23, S0+25.07) no longer available. Some collars as well as most drilling pads were recently located and measured with a DGPS (Block, 2015). Drill core is BQ in diameter, with near perfect recovery. Orientation of the holes was apparently based on grid lines, while the plunge was measured with acid test. Sampling proceeded by splitting, typically 3 metres in length. The core was stored at Niobec mines until it was recovered by McKenzie Bay in 1997. It is currently stored as BlackRock facilities in Chibougamau. Access to the core was declined by BlackRock Metals. However, due to the numerous manipulations and transportation of the core, its integrity is uncertain. Assaying of headgrade was conducted by Chimitec of Québec City, while magnetite concentration by the use of a Davis tube was conducted by CRM on composite samples.

Results from SOQUEM drilling are considered as sufficiently reliable to be included in the current inferred resource estimation. However, it is uncertain if those results are reliable enough to be included in a subsequent resource category upgrade, mainly because of uncertainties related to assaying.

2001 EXPLORATION DRILLING BY McKENZIE BAY RESOURCES

In 2001, McKenzie Bay Resources conducted an exploration drilling campaign outside of the main deposit (Huss, 2003), for a total of 2187 metres. Of the 14 holes, one (DDH-01) is located on **Lac Doré North**, while two (DDH-5 and DDH-6) are within **Lac Doré**. The remaining 11 holes are collared on BlackRock's property. This drilling was conducted by L. Huss, profesional geologist, under the author's supervision and is compliant with industry standards.

Holes were located to intersect the ground magnetometric anomaly, oriented parallel to the grid, and located according to grid pickets. They were NQ in diameter, and deviation of plunge was measured with acid testing, thus lacking downhole azimuth. Accurate collar location were recently measured by DGPS for most holes. The core is currently stored in BlackRock facilities, the access to which was declined to the author.

Only Davis tube magnetite concentrates were analyzed, without headgrade analysis. Rejects were not preserved, so headgrade analysis is not possible anymore. Samples were typically 3 metres in length, for a total of 497 samples. However, due to budgetary constraints, samples were not assayed until 2003, under the Cambior Option. They were then concatenated into 197 samples, typically 9 metres in length. Of these, 166 were selected for Davis tube testing and assaying of the magnetite concentrate.

McKenzie Bay 2001 holes were not included in the currently resource estimate, being located outside the main deposit. However, their quality is considered sufficient for an eventual inclusion.

2002 CONFIRMATION DRILLING BY SNC-LAVALIN

Under the supervision of SNC-Lavalin, and as part of their due diligence on the resources of the deposits, IOS conducted a three hole drill program, aiming to certify former SOQUEM and MRN results on the Eastern deposit (Boudreault, 2002). These holes were not duplicates of former holes, but seem to rather test surface results obtained from trenching. The program was directed by Mr Alexandre Boudreault, junior engineer, under the supervision of the first author in the fall of 2002. Holes were NQ in diameter, and located according to line pickets. Dips were measured with clinometer at collar, and by acid test at depth, and thus lacking downhole azimuth measurement.

The core was logged according to industry standards, on a Microsoft Excel spreadsheet. However, this data was stored on floppy disk which is now corrupted and on tape-backups which cannot be read by modern computers, which means they were not available in numerical format and need to be recaptured. RQD were measured, the only ones over the whole project. Sampling was done with a core splitter, for a total of 107 samples, plus QAQC materials. The core is currently stored in a BlackRock facility, the access of which was declined to the author.

Additionally to the three drill holes, trench 11+50E was re-sampled for a length of 15 metres. Sampling proceeded with a diamond rock saw, cutting a 2" wide strip beside the former samples, for a total of 15 samples.

Samples were crushed and prepared at COREM for headgrade analysis. Davis tube testing was not conducted. Material from these samples are no longer available, and cannot be tested for magnetic concentration. It is in the author's opinion that the log description and sampling procedure were adequate. SNC-Lavalin holes were included in the current resources estimate.

2009 VANADIUMCORPDRILLING

In 2009, VanadiumCorp (recorded as Apella Resources in assessment filing registry) conducted a drilling program on their **Lac Doré North** property, for a total of 10 holes and 1129.94 metres. The program was conducted by Mr Roger Moar, P.Geo, under the supervision of Mr Christian Derosier, P.Geo. No report was produced on this program, only drill logs were submitted for assessment files, and only the Geotic drilling database was made available to the author. Drilling sites were visited by the author in the course of his mandatory visit ***(picture 15)***, and seem properly located and oriented. Accurate coordinates of collars were recently measured by DGPS. Casings were left on a few of the holes and capped with aluminium plugs. A wooden peg was inserted in the hole where no casing was left.

Core was HQ in diameter, and was stored in a previously rented facility in Chibougamau which is now closed. It was recovered by the first author's crew and moved to the IOS facility, located in Saguenay. The core was examined by Gennady Ivanov, P. Geo, and the log reviewed. The logs were of adequate quality and sufficiently detailed. A downhole survey was conducted by Flex-it device. However, since Flex-it measurement are based on magnetic anisotropy, downhole azimuth measurement are not reliable. RQD, density or magnetic susceptibility were not measured, nor were photographs taken.

Samples were taken with the use of a diamond saw, for a total of 254 samples, for length up to 3 metres. It was noted that wall rock to the magnetite bearing layers were not sampled. Samples were crushed and pulverized at the CEAQ-TJCM, in Chibougamau, and shipped for assay at ALS Mineral in Val-d'Or.

Most of the holes are located on the west side of the property, testing the large magnetic anomaly and the magnetite layers visible on their trenches. Four holes were testing other targets further east. Surprisingly, these do not coincide with magnetic anomaly, and their purpose is uncertain.

The holes were located outside the main deposits, and thus were not included in the current resource estimate.

***Picture 15**: View of the capped casing found at LDN-09-01 site.*

2013 VANADIUMCORP DRILLING

In 2013, VanadiumCorp, (recorded as PacificOre Mining in the assessment filing registry) conducted a short drilling program of four holes on their **Lac Doré** property, for a total of 600 metres (***picture 16***). These holes aimed to duplicate former SOQUEM and Jalore holes, as shown in ***table 10***. It should be noted that these duplicate holes were shorter than the original holes, with slightly different orientation and plunge, and that they were collared up to 20 metres away from the reported position of the original holes. Confusion in the labelled hole numbers were noted by the author between LD-13-03 (not existing in the field) and LD-13-04B (as indicated on the peg). The provided database also indicates that LD-13-04 is a twin of DDH-71-02 which do not exist, and considered as S-58-02.

2013 Hole	Historic hole	Line	Station
LD-13-01	S-77-31	43+00E	1+75N
LD-13-02	S-77-38	38+50E	1+50N
LD-13-04	S-58-02	35+00E	1+75N
LD-13-03	S-77-20	33+00E	1+50N

Table 10*: 2013 confirmation holes equivalents. A discrepancy was noted for LD-13-03, which is indicated as on section 34+00 in the provided database, but section 33+00 on the map.*

Holes drilled in 2013 were HQ in diameter. They were reportedly located with the use of handheld GPS, with downhole survey made from acid testing. Collars were all located by the author last fall, and their DGPS location recently measured (Block, 2015). They were originally described by Mr Christian Derosier, P.Geo, using a Geotic database. They were recently re-logged due to some deficiencies (Ivanov, 2015), and detailed photographs taken. RQD, recoveries and magnetic susceptibility were measured along with fracture description. Density measurements are not available. Half core was sampled with the use of a diamond saw, and samples shipped to the CEAQ-TJCM facilities in Chibougamau, for a total of 122 samples and 317.05 metres of core. The core was stored in a Chibougamau facility until it was recovered and transferred to IOS facilities in Saguenay. Coarse rejects were recovered from TJCM, re-assayed at Corem and magnetite concentrated by Davis tube.

***Picture 16**: Picture of the author at the LD-13-04 drill site.*

MINERALIZED INTERSECTIONS

Mineralized intersections were published officially only for the 2009 (November 30, 2009 press release) and 2013 programs (April 2, 2013 press release). Neither SOQUEM nor McKenzie Bay published their intersections or calculated them in their reports. Intersections were calculated for the purpose of the previous version of the report, using uniform parameters and *"Explorpac"* (*Gemcom*) software provided on ***figures 10A*** and ***10B***. McKenzie Bay channel samples were included in the calculation as "*horizontal holes"*, assuming unsampled interval as barren. Segments of holes or trenches outside the property (onto BlackRock property), naming trenches 3+50E, 4+50E, 5+50E and 6+50E, as well as for drill holes S1 and S7, were not excluded. Constraints used for this calculation were different from the parameters used for the current resources estimate. This means that intersections may differ in grade and length between the two versions of the report. A 3-D projection of the drill holes made by the first author is presented in ***figure 11***.

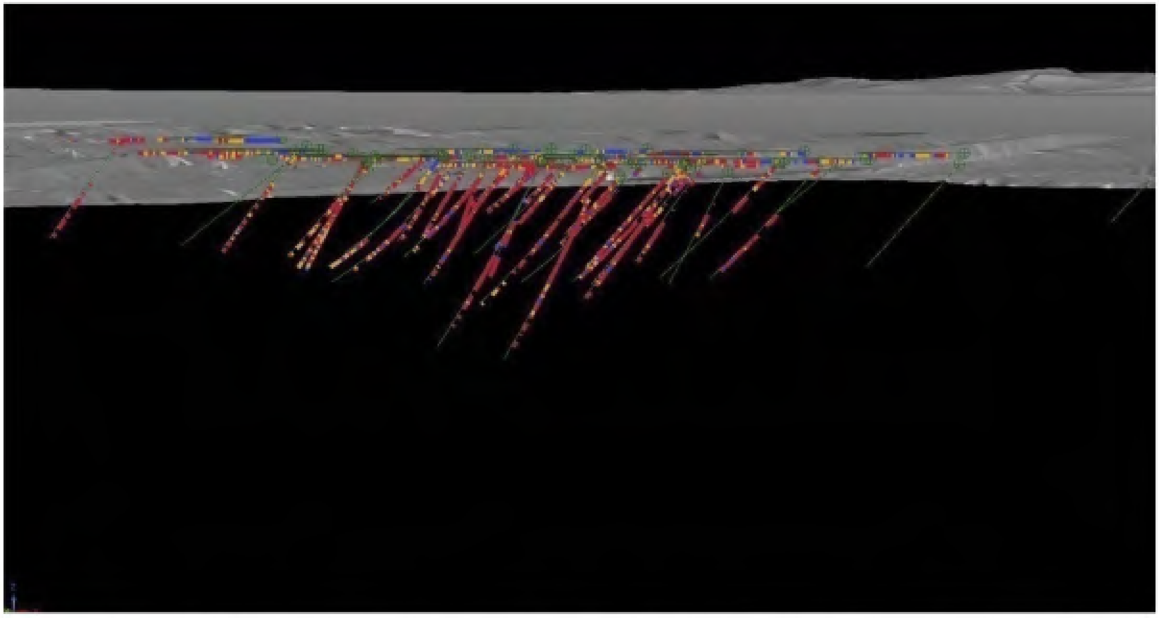

***Figure 11**: 3-D projections of trenches and drill holes on East deposit, view from underneath the surface from the South. Blue: 0.1-0.2% V_2O_5, Orange 0.2-0.5% V_2O_5, Red: >0.5% V_2O_5. Digital terrain model is from the aeromagnetic survey.*

DISCUSSION ABOUT DRILLING RESULTS

The VanadiumCorp properties include 54 drill holes, all from previous drill programs. The majority of these drill holes are located on **Lac Doré** property, specifically the Eastern deposit. Of the 35 holes available on the Eastern deposit, 4 are considered as not sufficiently documented and reliable to be used for a resource calculation. The remaining holes are considered sufficient quality to be incorporated into a resource estimation as inferred resources. Drilling on the Western deposit is sparse with only 4 holes, two of which are outside of the property, and two of which are split between VanadiumCorp and BlackRock's properties. Therefore, resources were not evaluated on the Western deposit. Similarly, 11 holes are within the North-Eastern deposit, 7 of which within a tight cluster. These provide only a partial interpretation of this deposit, and an adequate resource cannot be estimated from the North-eastern deposit.

The bulk of the drilling is located within P2 unit, which is the dominant resource of magnetite. Only a few intersections have passed through the entire stratigraphy of the magnetite layers, excluding the P0 which was not intersected by any drill holes. However, it shall be noted that discrimination of stratigraphy units has not been attempted for any drill holes except for the ones drilled in 2001 and 2002 by McKenzie Bay. Distribution of stratigraphic unit was extrapolated from the surface trenching, where it was carefully mapped (Tremblay, 1998).

The irregular drilling pattern contrasts with the regular and thorough channel sampling conducted by McKenzie Bay. Trenching results are of sufficient quality to be incorporated into resource estimation as sub-horizontal drill holes. Such systematic trenching is not available on the North-Eastern deposit and trenches on Western deposit are too spaced apart to be of any use for resource calculation.

Drilling of the North-Eastern deposit suggests the deposit is affected by faulting related to the Grenville Front, which creates stacking and truncation of the stratigraphy, in stark contrast to Eastern and Western deposits. Detailed interpretation of the north-eastern deposit has never been attempted. It seems that further to the East, the P2 unit disappears, leaving a thick non-economical P3 unit.

DRILL CORE STORAGE

The drill core from Trepan Mining and Jalore Mining is considered lost.

The drill core from the *Ministère des Richesses Naturelles* was recovered by SOQUEM and stored at Niobec Mines storage facility. In 1997, this core, along with SOQUEM core, was recovered from Niobec by McKenzie Bay Resources and stored at Laugon Lake. In 1999, core-racks were built at Laugon Lake, and the core properly stored. However, due to its improper storage, it is unlikely that the integrity of this core has been maintained.

The core from the 2001 drill holes completed for McKenzie Bay and SNC-Lavalin has also been stored at Laugon Lake. From 2001 to recently, this storage facility was left unattended, and some core was vandalized. Integrity of this core is likely partial.

In the summer 2008, the core stored at Laugon Lake was transferred in new core boxes with covers and strapped on palettes pending transfer to a secured BlackRock Metals facility. Access to the core was denied by BlackRock and its fate is not known to the author.

VanadiumCorp's drill core is currently stored in racks in the IOS secured facility, located in Saguenay, QC.

ITEM 11: SAMPLING, SAMPLE PREPARATION, ANALYSIS AND SECURITY

McKENZIE BAY CHANNEL SAMPLING

All the channel sampling for McKenzie Bay Resources was completed by IOS using a uniform protocol. Channels were cut with the use of diamond saws, about 4 centimetres wide and deep, parallel to the sections (trench axis). Samples are typically 3 metres in length, weighting 10-20 kg per sample. Aluminium tags were nailed on the rock for identification. Locations were chained from the line's pickets, and GPS location never recorded. Sample length disregarded the geology, and was kept as constant as possible. Samples were chiselled out of the channels, bagged and shipped to Laboratoire S.L. (1997) or IOS facilities (1998) for crushing and grinding. No witness samples were kept, since trenches are readily accessible. Rejects from crushing were kept temporarily for eventual metallurgical processing but were finally discarded in 2002. A rigorous chain of custody was implemented by the author, due to stronger regulatory measures imposed in the aftermath of the Bre-X.

The effect of weathering was tested upon a few samples, by collecting twin duplicates below the initial sample. No discrepancies were noted. No weathering is noticeable at the surface of the trenches (Tremblay et *al.*, 1998), and the quality of sampling was considered adequate.

JALORE AND TREPAN MINING CORE SAMPLING

No information is available on sampling procedure, else that the MRN re-sampled the core in 1971.

MRN CORE SAMPLING

Core drilled by the MRN, BQ in size, was split with a standard core splitter and shipped to CRM for assaying. Details are not available, and rejects were discarded. The author noted that depth markers were not inserted in the boxes, neither was samples limits, implying that it would be impossible to properly quarter-split this core to replicate the assays.

SOQUEM CORE SAMPLING

Core drilled by SOQUEM, BQ in size, was split with a standard core splitter and shipped to Chimitec in Québec City for assaying. Detailed sampling procedure is available (Dion, 1980), and rejects were discarded. According to our 1997 observation, sampling was according to industry standards. Contrarily to MRN core, the depth marks were properly located. Various sections of the core were re-sampled by quarter-splitting by the author in 1997, and submitted to ALS Chemex for confirmation assays. However, due to the multiple manipulations on the core through time, pieces shifted in the boxes and exact position cannot be certified.

McKENZIE BAY RESOURCES CORE SAMPLING

The NQ core from the 2001 and 2002 McKenzie Bay Resources drill program was split in half on site using a regular hydraulic core splitter by IOS crews, following industry standards. The samples were bagged and shipped to IOS facilities for crushing and pulverizing. This core is now likely stored at BlackRock facility and if such, it would be available for re-sampling. A proper chain of custody was implemented for the two McKenzie Bay programs.

VANADIUMCORP CORE SAMPLING

The NQ core from the 2009 and 2013 drill programs was halved with a diamond saw in a facility rented in Chibougamau, by Glen McCormick Exploration staff, following industry standards. The samples were bagged and shipped to TJCM facilities for crushing and pulverizing. This core, the coarse crushing rejects as well as the pulps are now stored in IOS facility. Coarse rejects from 2013 program were used for re-assaying and Davis tube testing. No chain of custody was implemented by former management of VanadiumCorp, while a strict chain is implemented in IOS facility.

SAMPLE SECURITY AND TAMPERING ISSUES

Historical drilling program were sampled either by government or a crown corporation representative, and falsification of the samples is not considered a concern.

Since the 1997, McKenzie Bay Resources trenching program was carried out just after the aftermath of the Bre-X saga, much care was devoted to sample security. Samples were trucked by IOS employees to IOS or Laboratoires S.L. preparation facilities, and preparation done under IOS supervision (Bédard, 1998). Tampering issues were discussed but considered practically irrelevant (Girard, 1997), considering the size of the sample, the abundance of vanadium and its embedding in the magnetite structure. McKenzie Bay representatives never acceded the samples in the course of the programs.

Samples from VanadiumCorp drilling programs were collected by Mr Glen McCormick, a local prospector and contractor, who was granted securities from the same companies. Mr McCormick, or his employees, are thus not considered independent. Tampering is not considered an issue.

JALORE AND TREPAN CORE ASSAYS

Core samples from Jalore Mining were initially assayed in their private laboratory for iron and titanium only (***table 11***).

Program	Year	Samples	Laboratory	Method	Davis tube	Lab.
Jalore	1953	361	Jalore		124	CRM
MRN	1971	122	CRM	XRF	109	CRM
MRN	1973	274	CRM	XRF	270	CRM
SOQUEM	1979	691	Chimitec	AA	150	CRM
MKBY	1997	1347	Chemex Lab	ICP-AES	481	IOS/COREM
MKBY	2001	497	Not assayed		166	IOS/COREM
MKBY	2002	107	Chemex Lab	ICP-AES	0	
Apella	2009	254	ALS-Chemex	ICP-AES	0	
PacOre	2013	210	Corem	XRF	109	IOS/COREM

Table 11*: Compilation of the headgrade assays and Davis tube testing for the various programs. Numbers encompass the entire historic database, thus including some segments of holes and trenches located on BlackRock property.*

MRN HEADGRADE ASSAYS

Core recovered from *Ministère des Richesses Naturelles* drill campaign was sent to *Centre de Recherches Minérales* ("CRM") for assay. CRM was then a governmental laboratory dedicated to mineral processing, with extensive expertise in iron ore dressing. Samples were ground at 75 µm (200 mesh), prior to being submitted for Davis tube testing. Headgrade was apparently assayed but not reported for iron, titanium, vanadium and chromium, and data considered as lost. Davis tube magnetite concentrates were assayed and reported for iron, titanium and vanadium. Analytical procedures were not disclosed, although the use of XRF on lithium glass bead is likely. Quality controls protocols and proficiency were not disclosed, if at all implemented.

It shall be noted the grinding prior to Davis tube testing was finer (75 microns) than subsequent McKenzie Bay Resources samples (200 microns) preventing direct comparison. This resulted in slightly higher vanadium and lower titanium grades in the concentrates, which will be discussed in detail in item 12.

SOQUEM HEADGRADE ASSAYS

Core from SOQUEM drilling was first assayed for vanadium, iron and titanium by Chimitec (Dion, 1980). Chimitec is a former Bondar-Clegg subsidiary, subsequently bought by Inscape Testing in 1980's, then by ChemexLab in the 1990's, and finally by ALS in 2000's. The then director of Chimitec, Mr Richard Deschambeault, still owns this data and much about the analytical procedure was obtained from him. A total of 691 samples were submitted, and analysed by atomic absorption for vanadium (digestion method not available), colourimetry for titanium and $K_2Cr_2O_7$ titration for iron. A quality control protocol was implemented, including re-assaying of 169 samples by the CRM, plus 60 aliquots of five different internal reference materials. SOQUEM also carried a redundancy proficiency test (*"round-robin"*) prior to selecting Chimitec, involving five (5) different commercially operated or institutional laboratories. Consider that implementing such QAQC protocol in the 1970's was not common practice. Chimitec was selected on the basis that they provided results close to the average of the test, plus economic consideration. However, it must be noted that no certified reference material was inserted in the test, meaning that only precision (precision being the capability to replicate the data properly, and thus represent the standard deviation on the replicated analysis of the material) was tested, but not accuracy (accuracy being the capability to obtain the true value, or that the average of the replicated analysis match the certified value). The samples assayed both at Chimitec and CRM within this proficiency test indicated a discrepancy of about 8%, suggesting that at least one of the datasets was biased (***figure 12***).

In the course of the Davis tube testing by CRM, this laboratory re-assayed the head sample. A comparison of the grades obtained on a 20 sample test run (Durocher, 1980 (99-1098-93)), which were duplicated; indicate a discrepancy of 4-5% between the two laboratories (***figure 13***). Similarly, the headgrade of sample submitted for routine Davis tube separation were measured by CRM, and can be compared to the Chimitec composited grades, which comparison indicates a 2.5% discrepancy (***figure 14***). Variations between the correlation factors between the three batches of samples suggest that one of the method being slightly unstable.

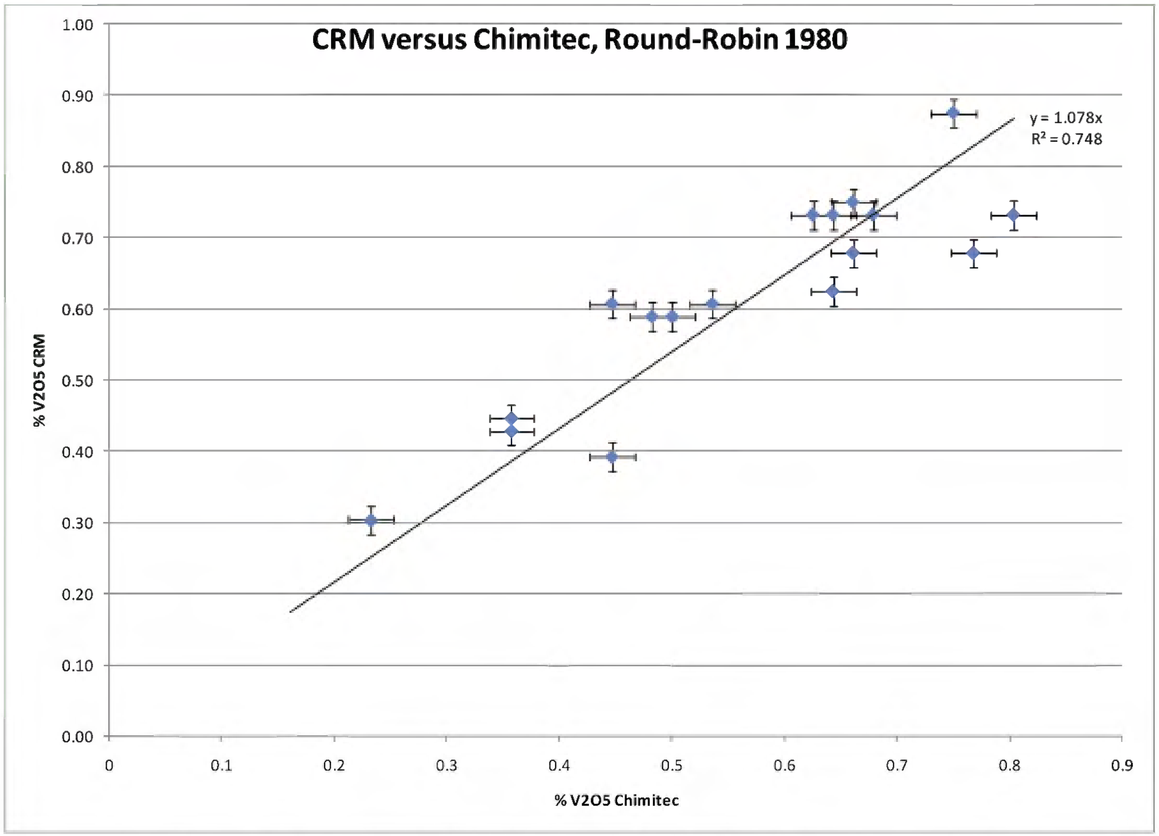

***Figure 12**: Correlation between Chimitec and CRM headgrade vanadium assays, as from SOQUEM proficiency test (Dion, 1980). Errors bars are ± 0.02% V_2O_5, regression is anchored at 0-0.*

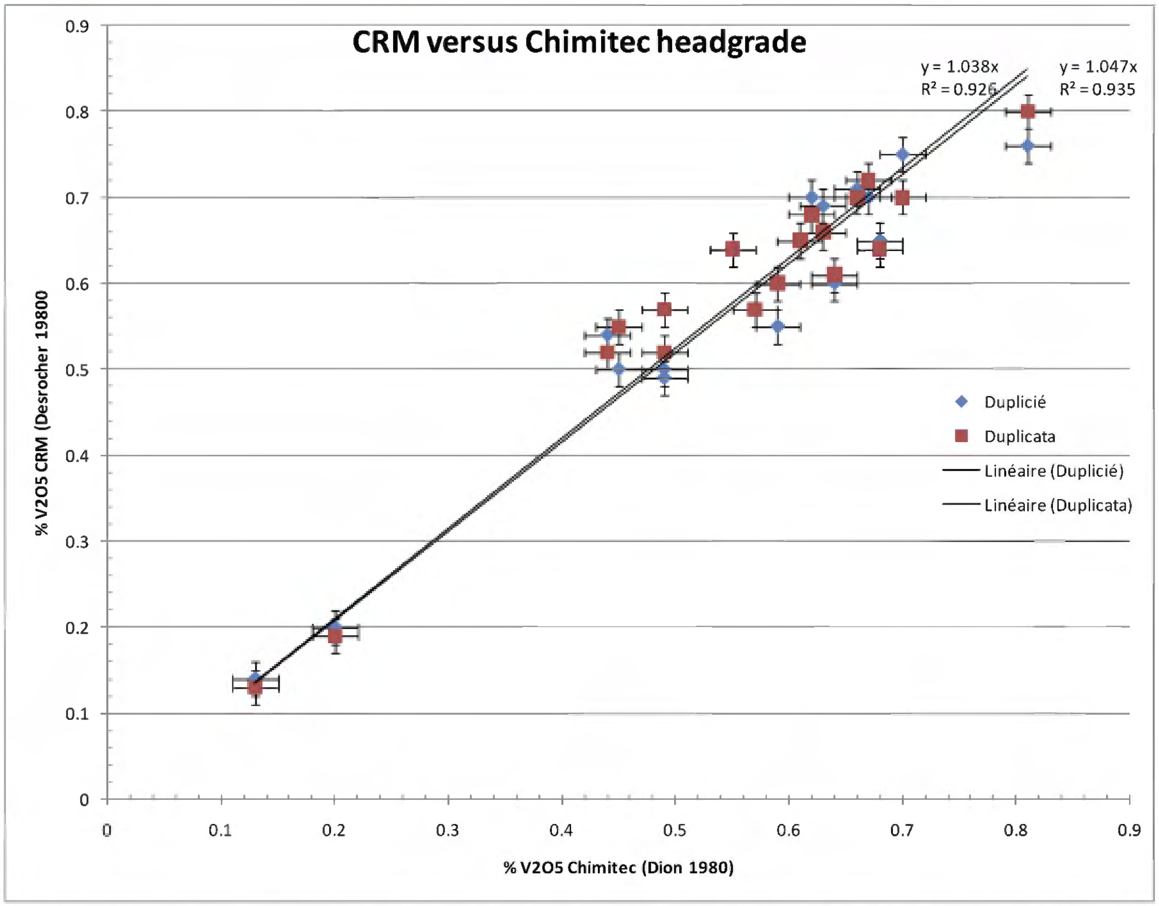

***Figure 13**: Headgrade vanadium assays duplicate between CRM (2 duplicates) and Chimitec (Desrochers, 1980). Errors bars are ± 0.02% V_2O_5 as suggested from the difference between the CRM duplicates, regression is anchored at 0-0.*

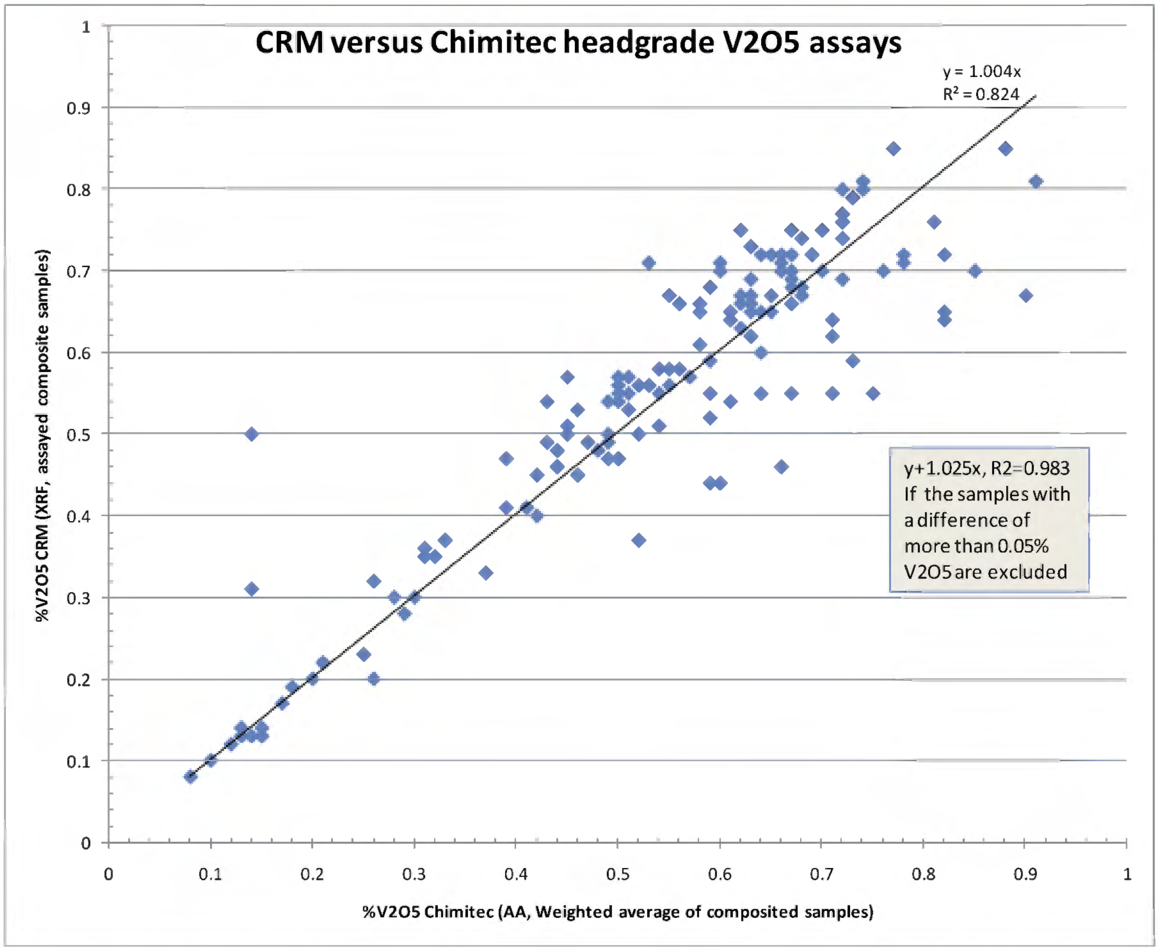

***Figure 14**: Headgrade vanadium assays duplicate between CRM and Chimitec (Desrochers, 1980). Assays from Chimitec represent a weighted average of the composited samples, while assays from CRM are the analysis of the headgrade of the composite samples used for Davis tube testing. Analytical errors are estimated at ± 0.02% V_2O_5 as suggested from the difference between the CRM duplicates, regression is anchored at 0-0. However, since Chimitec results were calculated by compositing numerous assays, calculated error is expected to be multiplied by the number of sample in the composite, or 3 times more elevated than for CRM, which is based on a single assay. Notice that if samples which have a difference between both methods exceeding 0.05% are excluded (assuming a wrong reading rather than just a calibration issue), the regression is slightly changed but both methods remain within 2.5% of each other. This suggest the symmetrical distribution of the errors.*

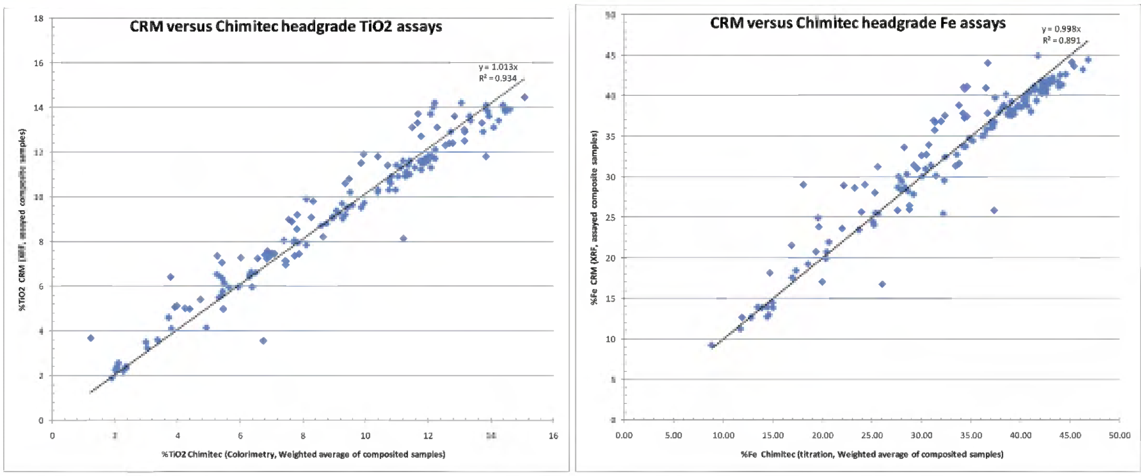

***Figure 15**: Headgrade titanium and vanadium assays duplicate between CRM and Chimitec (Desrochers, 1980). It can be noticed that the scattering is important, but the correlation coefficient is significantly higher than for vanadium. This scattering is suspected as caused by manipulation errors (these analysis predate computerization of the analytical process) and maybe errors on compositing process.*

A set of 10 quarter-splits of SOQUEM core was re-assayed by McKenzie Bay, using ICP-OES after multi-acid digestion at Chemex Lab. These samples were significantly contaminated by niobium-bearing carbonatite from Niobec Mine, and it is likely that limits of samples are likely slightly different from SOQUEM samples since no sample limit marks were left on the core. Re-analysis was aimed to enable the comparison of 1979 with 1997 analysis, and to merge them into a single coherent dataset. Bédard (1997), Bédard and Girard (1997) and Girard (1997) suspected the SOQUEM results being underestimated by 13% (relative). This discrepancy is not confirmed in the CRM-Chimitec analytical twins. Discrepancy arose concerning the adequacy of these assays in the course of historical project evaluation. Such underestimation may have impacted the conclusions of historic evaluations.

Laboratory accreditation did not exist at the time of these programs.

McKENZIE BAY HEADGRADE ASSAYS

Samples from the 1997 and subsequent trenching programs were assayed with the same protocol under IOS guidance. Headgrade analysis was carried out on behalf of McKenzie Bay Resources, while Davis tube testing and magnetite concentrates analysis were done on the behalf of Cambior Inc.

Samples were crushed at 1.6 mm (10 mesh), aliquoted to 500 grams, and pulverized at 63 µm (250 mesh) in IOS or S.L. Laboratories, prior to be shipped to Chemex Labs in

Rouyn-Noranda for final pulverization at 32 µm (325 mesh) with a CW ring mill. The pulps were then shipped to Vancouver for assaying at Chemex-Labs, using ICP-AES after a multi-acid digestion, except for vanadium analysed by atomic adsorption. Vanadium, chromium and major oxides were measured. Rejects and pulps were discarded.

Samples from the 2002 confirmation drilling was prepared and assayed according to the same protocol. Samples from the 2001 exploration drilling were not submitted for headgrade assays. Rejects and pulps are not available anymore.

QUALITY CONTROL OF McKENZIE BAY HEADGRADE ASSAYS

Accurate assaying of vanadium in magnetite is a complex process. First, for digestion-based wet or spectral chemistry, such as atomic absorption or ICP methods, vanadium is rather refractory and is put in solution only with difficulty, requiring very acidic and oxidizing condition. This creates a risk of vanadium sesquioxide flocculation in the digestion liquor. Sodium peroxide fusion is required to obtain robust results which is seldomly used. Vanadium is also notoriously difficult to measure by X-Ray fluorescence, due to peak interferences. Spectral line Kα for vanadium coincides with Kβ of titanium and Kβ of vanadium interfere with Kα of chromium. Since these three metals are present in the titano-magnetite, and because the less energetic Lα vanadium lines interfere with Kα of oxygen, vanadium cannot be measured directly and deconvolution of the signal is prone to miscalibration.

Rigorous testing of assayer's proficiency was carried out in 1997 prior to the selection of Chemex laboratories. A set of test samples taken from the SOQUEM core, plus a series of certified reference material (SARM-12, SARM-38, and SARM-12 doped with SARM-38 which is metallurgical grade V_2O_5) were submitted to Intertek, Chemex Laboratories, Metriclab, CRM, X-Ral, Australian National University and Mintek (a large metallurgical laboratory in South Africa, acquainted with vanadium metallurgy), who used a variety of analytical methods. Chemex accurately and precisely reported the expected values (Bédard, 1997). This test represented the first attempt to measure the accuracy of the assays, and the author is confident in its robustness.

Quality control included repeated assaying of certified material (SARM-12, plain and doped with SARM-38), internal reference material manufactured from Lac Doré bulk samples, and blanks. The internal reference material was assayed 37 times, and yielded a standard deviation of ± 0.02% V_2O_5 and a variation coefficient of 2.98%, if 2 outliers are excluded. Aliquotes of SARM-12 were reported properly. Four aliquotes of certified reference material, SARM-12 doped with SARM38, were assayed, which yielded quite discrepant values, suggesting an issue with the doping procedure or digestion of the refractory SARM-38. No sample duplicates or re-analysis in a separate laboratory was made.

ALS-Chemex was not, at the time of the project, an ISO-9001 accredited facility. Accreditation was obtained in 2008.

A subset of 1997 McKenzie Bay samples were submitted to Activation Laboratories and Corem for cross-check analysis by Cambior (Crépeau 2002). Actlabs analyses were made by activation analysis, which, to the author knowledge, is not commonly used for. Although reputed as a total content analysis, the reliability of the method, detection limits and linearity of the methods are not known to the author. Vanadium is usually not included in INAA packages, meaning that a customized irradiation-decay counting was required. X-Ray absorption issues are suspected for samples rich in magnetite, which may cause a non-linear relation between abundance and counts, usually not taken into account in the course of calibration by this method. Two batches of samples were submitted, in 1999 representing initial samples, and 2000 representing composited samples for Davis tube testing. It can be noted that regression between INAA and ICP-OES analysis are close to unity for both sample subsets, the composited sample being less accurate (***figure 16***). However, correlation of 1999 samples indicates that INAA samples are overestimated by 5.7%, while 2000 composites are underestimated by 2.3%. This suggests issues with the constancy of calibration with either one or both methods.

Similarly, the same set of composited samples selected by Cambior (Crépeau, 2000) was also submitted for analysis by atomic absorption at Corem. Comparison with ALS-Chemex results indicate a regression coefficient (R^2=93.5) similar to the INAA-ALS duplicates with the same discrepant doublets, suggesting that the bulk of the scattering being induced by ALS analysis. Atomic absorption are overestimated by 3.7% (***figure 17***).

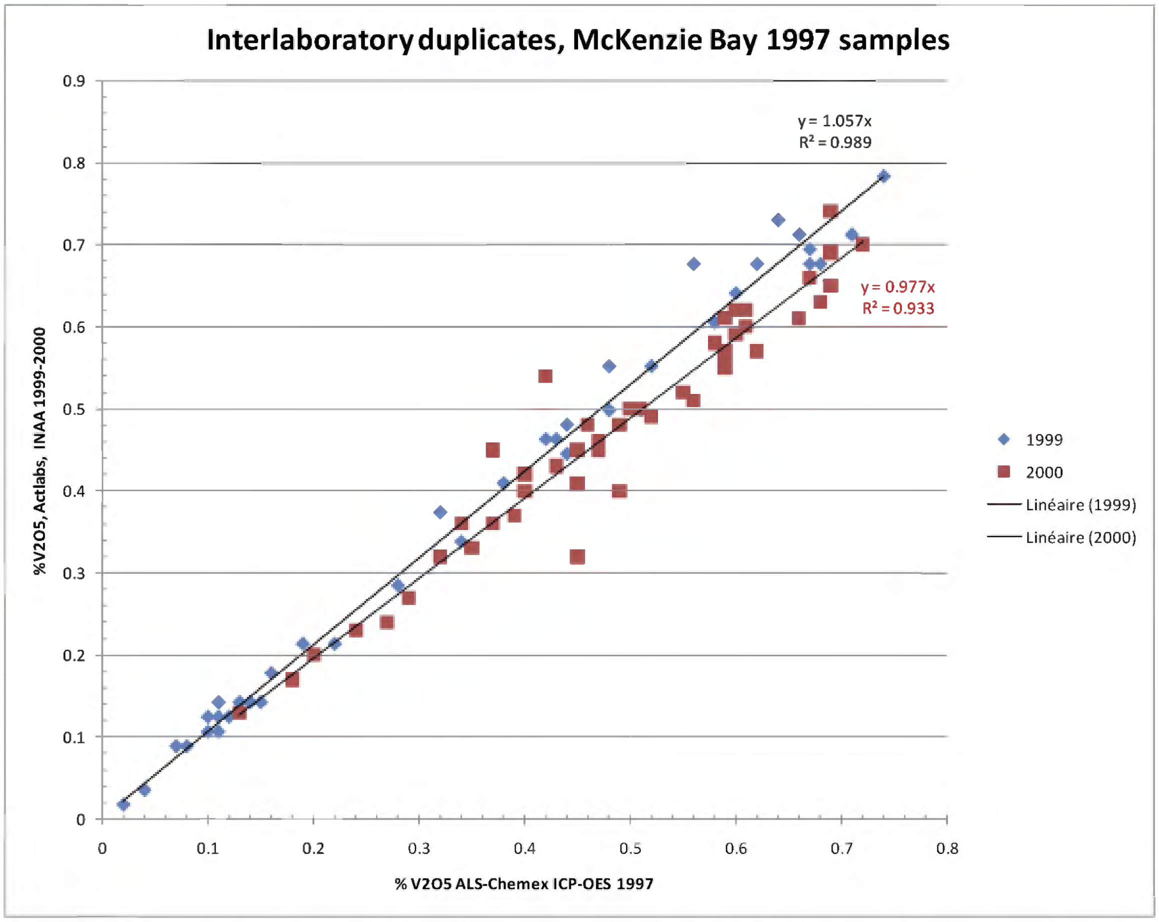

***Figure 16**: Comparison of vanadium assays by ICP-OES and INAA for initial and composited samples. Although little scattering is noted, the correlation coefficient is different for both sample subsets, suggesting issues with calibration stability.*

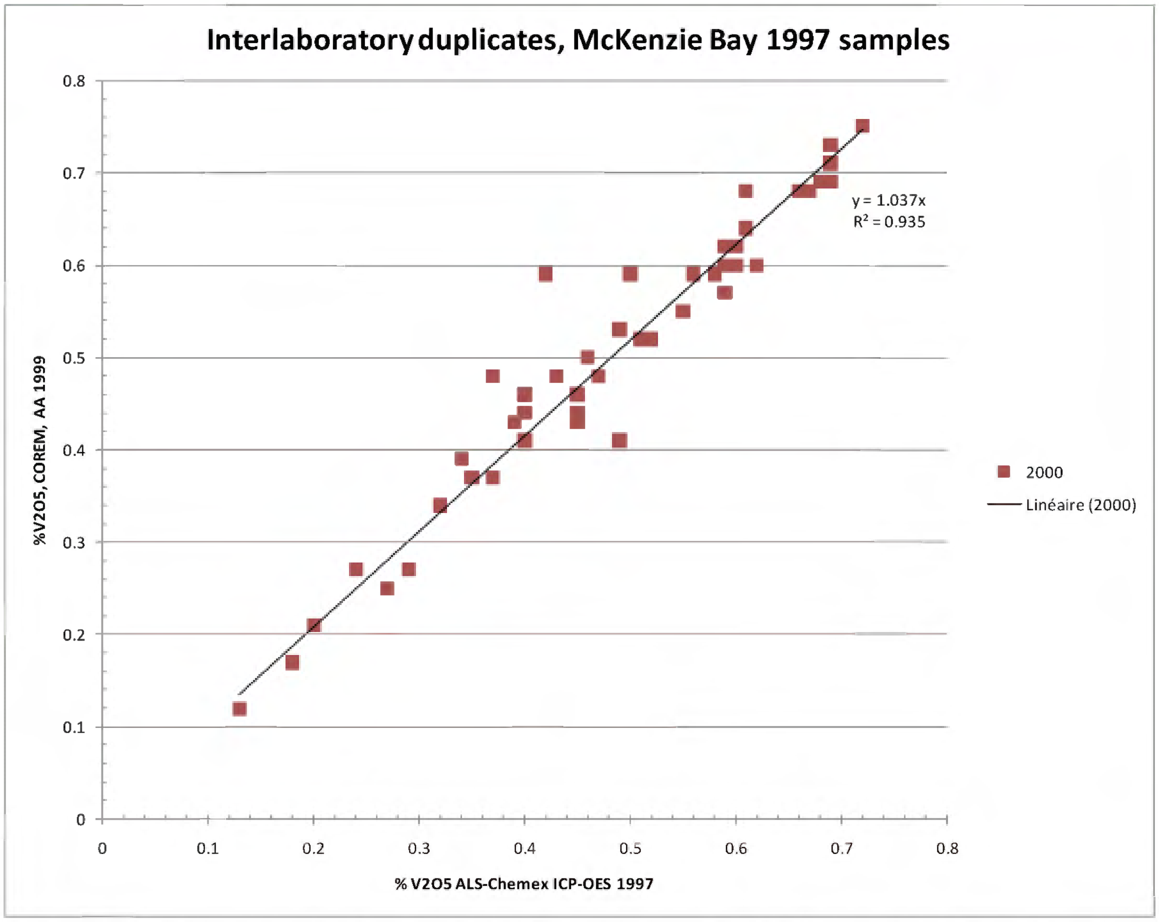

***Figure 17**: Comparison of vanadium assays by ICP-OES and AA for composited samples. Although little scattering is noted, the correlation coefficient is similarly divergent as for INAA-ICP doublets.*

SNC-Lavalin did not conduct any re-assays of the samples by their own, except for the three confirmation drill holes and a few duplicate of channel samples.

VANADIUMCORP HEADGRADE ASSAYS

2013 samples were prepared for assaying at the *Centre d'Étude Appliquée au Quaternaire (CEAQ)*, a Chibougamau based preparation laboratory run by the *Table Jamesienne de concertation minière (TJCM)*, a local mining development organization. Samples were dried, crushed to 70% passing 2 mm with a jaw crusher, split to 250 grams with a riffle splitter, and pulverized with a disk mill. Quality of milling is monitored by sieving every ten samples approximately.

Samples were then shipped by the *CAEQ* to ALS Minerals in Val-d'Or, who rerouted them to another facility for assaying. Major oxides and vanadium were analysed using

XRF on a borate glass bead, plus trace elements by ICP-MS after aqua-regia digestion for selected samples. Results were transmitted electronically to VanadiumCorp which integrated them into their database.

2009 samples were submitted to *CEAQ*, likely to be prepared according to the protocol described for 2013 samples. They were then shipped to ALS Minerals in Val-d'Or for assaying. Since no report is available, details are not disclosed, and only the analytical package is indicated on the certificates plus some details on the press release dated November 30, 2009. Certificates of analysis are available only as a companion to the assessment report stored at the MRN repository, originals or electronic copies were not provided to the author. These certificates indicate that major oxide and vanadium were analysed by XRF on a borate glass bead (ME-XRF-06 and V-XRF-10 packages), plus trace elements by ICP-MS after aqua-regia digestion for selected samples. However, in the logs, a second set of vanadium assays are indicated, for which no certificate are available. These second assays are discrepant from the previous one, when both are provided. Not all samples were apparently assayed with both methods, and results presented on sections without discriminating the dataset.

QUALITY CONTROL ON VANADIUMCORP ASSAYS

VanadiumCorp Resources implemented a quality control procedure for assaying of their core samples. However, no description of this procedure and its proficiency was provided to the author.

The 2013 drill logs indicate that eight (8) reference materials were inserted among the samples, distributed irregularly, representing 6.5% of the population *(**table 12**)*. These include three (3) blank materials, referred as *"Graymont limestone*", which shall be devoid of vanadium. Five other analyses refer to "*SITA, SITB or SITD*" internal reference materials which were prepared by CDN Resources Laboratories from Langley, B.C., and certified by Smee and Associates, who provided the author with the certification reports.

Analysis	Material	V% measured	V% Certified	Std-Dev
M742131	Lime	0.01%	?	
M742185	Lime	<0.01%	?	
M742159	Lime	0.01%	?	
M742219	SITA	0.10%	0.095%	0.008%
M742152	SITB	0.11%	0.101%	0.004%
M742162	SITB	0.11%	0.101%	0.004%
M742125	SITD	0.29%	0.273%	0.018%
54951	DITB	0.27%	0.273%	0.018%

Analysis	Material	V% measured	V% Certified	Std-Dev
M742142	LD	0.13%	0.121%	0.004%

***Table 12**: QCQA results on 2013 drilling reference materials. Sample 54951, with a different sequence number, is listed in the database but not on certificate.*

Although the population is not large enough to be considered as representative, it can be noted that every analysis exceeds the certified grade by about 0.1-0.2% V (10% relative). Coefficient of variation of these certifications is large, between 5-10%, which is of a concern as it shows a low precision of the method which will propagate to the resource estimates. A thorough review of the certification process would be required, but not conducted since these samples were re-assayed.

The *CEAQ* used an alloyed steel ring mill for pulverization, the steel of which containing up to 1.0% V (certificate of analysis of the steel made available to the author). It was noted by the author, in a previous project, that milling of magnetite-rich samples cause a severe wear to the mill, which contributes up to 1% of the sample weight, or 1% of iron in the analysis. The current vanadium content of the steel could then contribute to 0.01% vanadium to the sample, higher than the standard-deviation indicated for the assays. This would not be seen in the reference material, since they were not prepared by *CEAQ*. It is uncertain if the pulverization of the *"blank*" limestone would have caused such wearing, calcite being much softer than steel, while magnetite is of comparable hardness.

The 2009 drill paper logs includes 249 assays, while the numerical database includes 292 assays, the cause of the discrepancy in uncertain. The logs indicate that six (6) reference materials were inserted among the samples, for a total population of 2.4%. Assay results and the nature of these reference materials were not made available to the author, and Mr Moar, who logged the core, does not recall.

ALS Minerals was, at the time of the programs, an ISO-9001 accredited facility. It is uncertain if ALS had its ISO-17025 accreditation for vanadium assays. *CEAQ* does not have any accreditation.

All samples from 2013 drilling program were re-assayed in 2014. Pulps produced for the Davis tube testing were sent to Corem for assays. Corem successfully reproduced certified values of the reference material, but vanadium grades were systematically 10% lower than ALS results (***figure 18***). Since reference material analysed by Corem were properly reproduced and reference material analysed by ALS were also 10% overestimated, it is concluded that ALL assays from ALS in this period were such overestimated. Iron, titanium and silica analyses were in good accordance without bias.

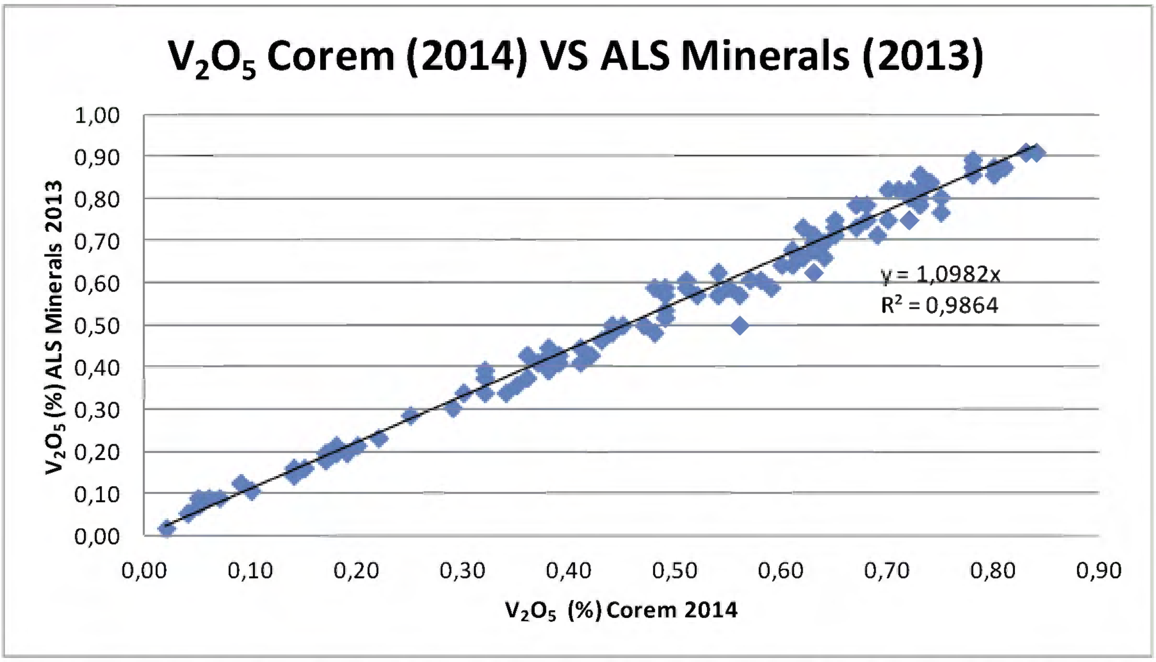

***Figure 18**: Binary diagram of the vanadium grade of 2013 drill core samples, assayed by ALS Minerals and Corem. It is considered that ALS results were overestimated by 10%.*

DAVIS TUBE TESTING OF JALORE, MRN AND SOQUEM SAMPLES

Samples from Jalore drill holes (spot samples), MRN and SOQUEM holes were tested for their magnetite content by Davis tube at the CRM. Little details are available on settings; other than the testing was performed on material grinded with a dry ball mill passing 60% at 200 mesh, using a 15 grams aliquot, 2 amperes and 10 minutes wash. A standardized protocol is expected. No grindability or liberation tests are available, which does not mean they were not conducted. Magnetite concentrate was assayed for iron, titanium and vanadium. No measurement of the remaining silica and lime is available, which require to be back-calculated form the non-closure to 100% (***figure 19***). Most of these Davis tube tests were conducted as individual metallurgical test, providing headgrade, concentrate and reject analyses (one sample out of 5 for MRN, Richard, 1975 (99-109-122)), allowing calculation of mass balances, which calculation were provided. A total of 653 tests were conducted, apparently using similar procedures, but without being possible to certify. Analyses were done by XRF on borate bead. Recall that assays from SOQUEM samples were made by Chimitec by atomic absorption while assays from Davis tube headgrade and concentrates were made by CRM by XRF, and these laboratories have documented discrepancies.

No Davis tube testing is reported by Jalore. However, such testing with iron assays are reported in a subsequent MRN report (Kish, 1971), but it is uncertain who conducted it. The report mentions that the MRN resampled the core, taking only "spot" samples at different depths, and processed by Davis tube testing to have the concentrates assayed for vanadium, titanium and chromium by CRM. Therefore, this testing was not conducted on intervals of the core, and shall not be considered as such. Also, from the author's experience, vanadium grades of the magnetite do not vary significantly over a short distance, despite that the magnetite abundance varies wildly. No details on analytical procedure are available, however, a similar procedure as for MRN core is suspected in regards to Davis tube testing. Analytical method is not disclosed, but likely by XRF calibrated with a linear regression. These results were discarded in regard to the current resource estimation.

For MRN 1975 testing, assays of the magnetite concentrate, the non-magnetic fraction and the headgrade are indicated, but it is unclear if the non-magnetic fraction assays were calculated or effectively analyzed.

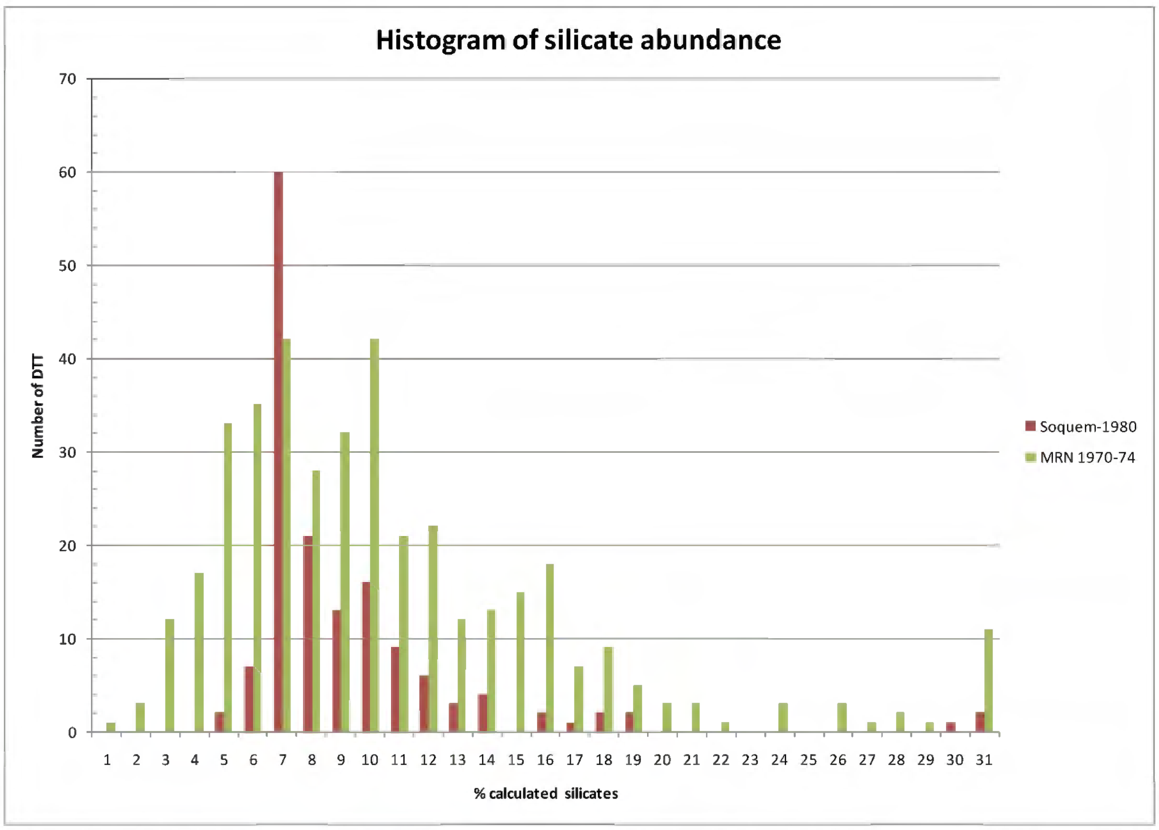

***Figure 19**: Distribution of silicates in the Davis tube magnetite concentrates, as calculated by the non-closure to 100% of the iron, titanium and vanadium assays. It can be noted right-away that MRN-1970-74 and SOQUEM 1980 testing were not conducted according to the same procedure, the MRN concentrates being less liberated. The maximum silicate abundance is elevated, at 7%, suggesting about 2% silica.*

A series of 17 SOQUEM samples were resubmitted for testing by Cambior (internal report, 2000). The samples were assayed by Corem, but they exact provenance and the protocol of the Davis tube tests are unknown. The test were not conducted by IOS, meaning that they are not fully comparable to the results produced for Cambior from McKenzie Bay samples in 1999. This test indicated that both magnetite abundance and vanadium grades in magnetite concentrates are about 5% higher by Corem in 1999 (***figure 20***). A low correlation (R^2 of 78%) is noted in regard of magnetite abundance, suggestive of a difference in procedure, likely liberation and grinding. Discrepancies in regard of vanadium abundance in the concentrate can be explained by the difference in liberation of the ilmenite exsolution, as shown from the lack of correlation between the titanium grade of the two sets of data.

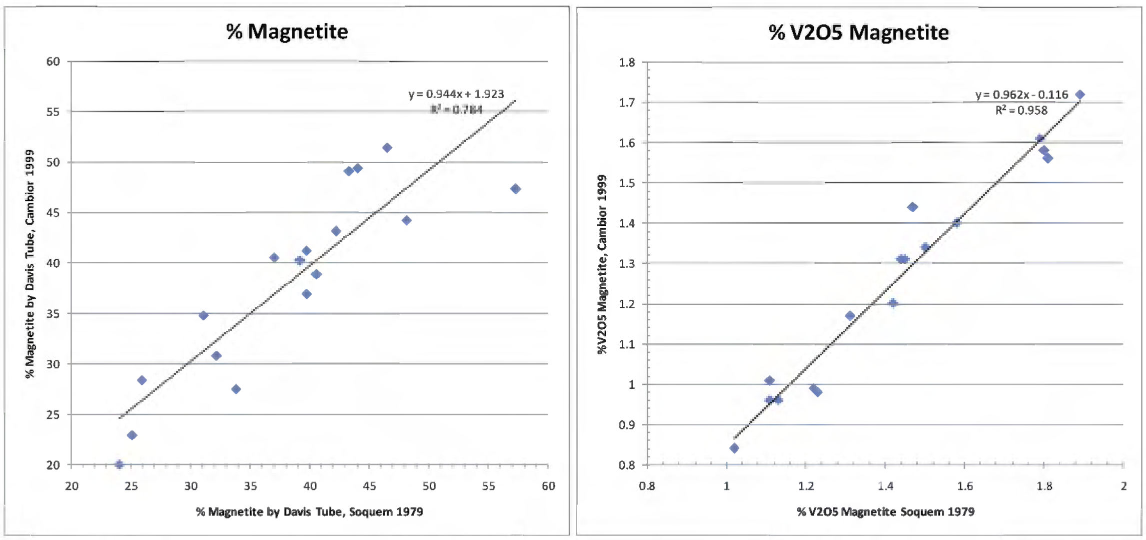

Figure 20*: Correspondence between magnetite recovered by Davis tube testing and its vanadium grade, as analysed in 1979 by CRM on behalf of SOQUEM and 1999 by IOS and Corem on behalf of Cambior. Notice the scattering of the magnetite abundance, which is caused by the changes in procedure. Also, the magnetite abundance and the vanadium content were both overestimated by about 5% by the CRM on behalf of SOQUEM.*

No laboratory accreditation existed at the time of the programs.

DAVIS TUBE TESTING OF McKENZIE BAY CHANNEL SAMPLES FOR CAMBIOR

A first series of Davis tube magnetite concentrates were made in 1997 on samples from the trenching program by MetricLabs from Montreal, and assayed at Chemex Laboratory by ICP-AES after sodium peroxide fusion. These concentrates and analyses were plagued with quality problems, the program was halted, and the results disregarded.

In early 1999, IOS was mandated by McKenzie Bay to initiate magnetite concentration on channel samples with the use of the Davis tube. An extensive series of tests were carried out to assess the grinding, concentration and assaying best protocol (Girard, 2000).

Production of magnetite concentrate was reinitiated by IOS on behalf of Cambior later in 1999. Adjacent samples aliquots were concatenated by group of typically three, in order to represent intersection of about 6 to 9 metres. Concatenation proceeded based on the number of samples only, which were not weighted according to sample length, according to Cambior's instruction. Of the 1347 samples, 481 magnetite concentrates were made, of which 401 are from the East and West deposits. Sample's aliquots were milled at 100 µm (150 mesh), and magnetite separated with the Davis tube according to a complex protocol and reprocessed until quality specifications were met (<4% silicates in the concentrate, <10% magnetite in the rejects, <5% losses, >5 grams magnetite) (Villeneuve, 2000). Concentrates and rejects were shipped to Cambior. Analyses were made at Corem (*"Consortium de Recherche Minérale", ex-CRM*) using XRF on borated fused beads for the magnetite concentrates and the non-magnetic rejects, as well as atomic absorption for vanadium only in headgrade. The magnetite concentrate was also analysed by neutron activation by Activation Laboratories for a subset of samples.

IOS did not had any laboratory certification at the time. Corem was, at the time of the program, an ISO-9001 accredited facility. However, it did not have the ISO-17025 accreditation for vanadium assays.

A thorough quality control protocol was implemented by Cambior in regards to their magnetite concentrate analysis, including inter-laboratory cross-checks, certified and internal reference material insertion, replicates and mass balance calculation. Quality control concerning the Davis tube concentration was implemented by IOS and included grain size control, mass balances and binocular examination of the concentrate. Cambior, in an internal note, indicated that these tests met specifications, except that grinding was slightly too coarse. Magnetite concentrates were assayed for all major oxides, yielding an average of 1.947% SiO_2 and 0.324% CaO. This average silica grade is comparable with most vanadiferous magnetite mines worldwide, but twice what was required and obtained from pilot plan magnetic separation. Fineness of the grinding is suspected as cause.

The abundance of silicate mineral can be estimated by the non-closure to 100% of the iron, titanium plus vanadium analysis (***figure 21***). The average content is 4.2% silicate, in accordance with the silica abundance (1.94% SiO_2). However, it should be noted that numerous samples contained more than 10% silicates, suggestive of deficient liberation.

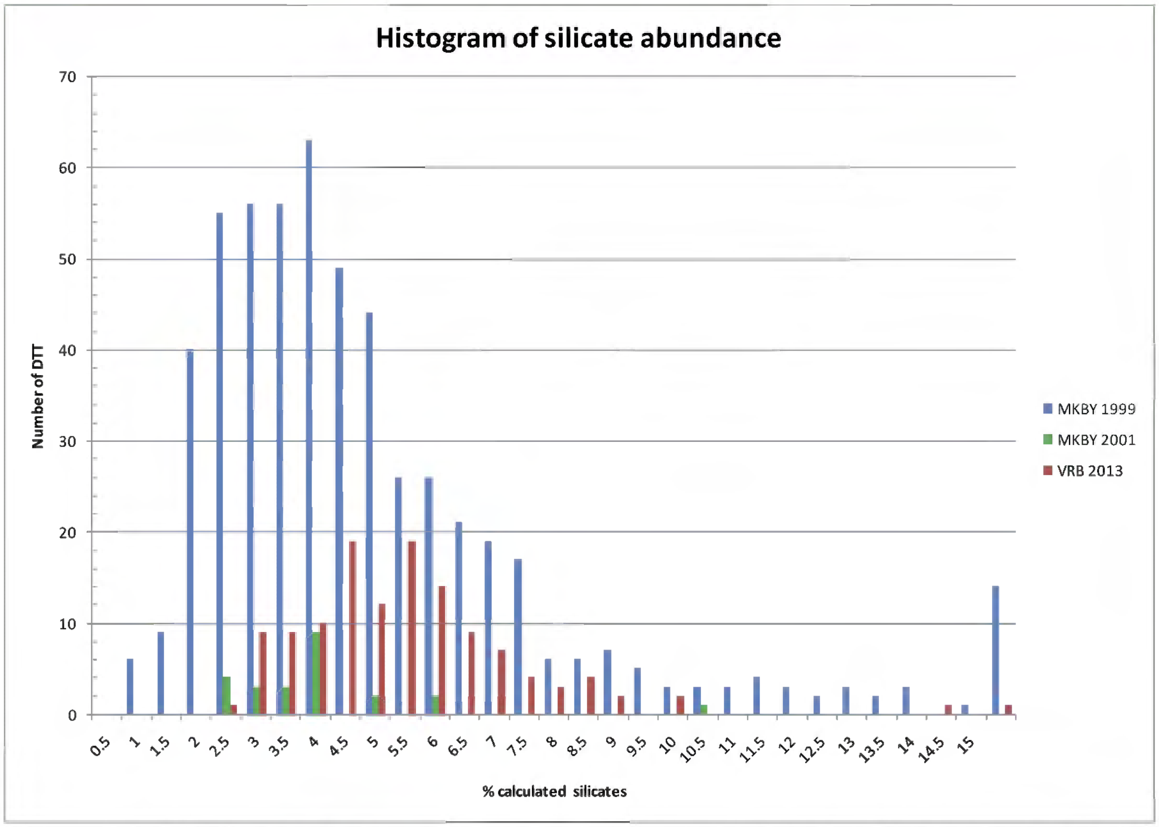

Figure 21: *Distribution of the calculated silicates retained in the Davis tube magnetite concentrates made by IOS for Cambior (1999), McKenzie Bay (2001) and VanadiumCorp (2013). The average 4.2% silicate content is in accordance with the silica analysis, and suggestive of liberation issues.*

Samples submitted to magnetic separation were composited from the coarse rejects of the core samples. In 1999, IOS was instructed by Cambior to use a 300 grams aliquot per sample and to combine them, typically in groups of three, as the composited samples, regardless of the length of the core used for the samples. Although most samples (1081 out of 1270, or 85%) were of uniform length, 15% of the samples were either shorter or longer, and this variation has not been taken into account. This procedure did not introduced bias, but did cause scattering (R^2=97.4% between the vanadium grade of the headgrade calculated using weighted and uniform aliquots, (***figures 22*** and ***23***).

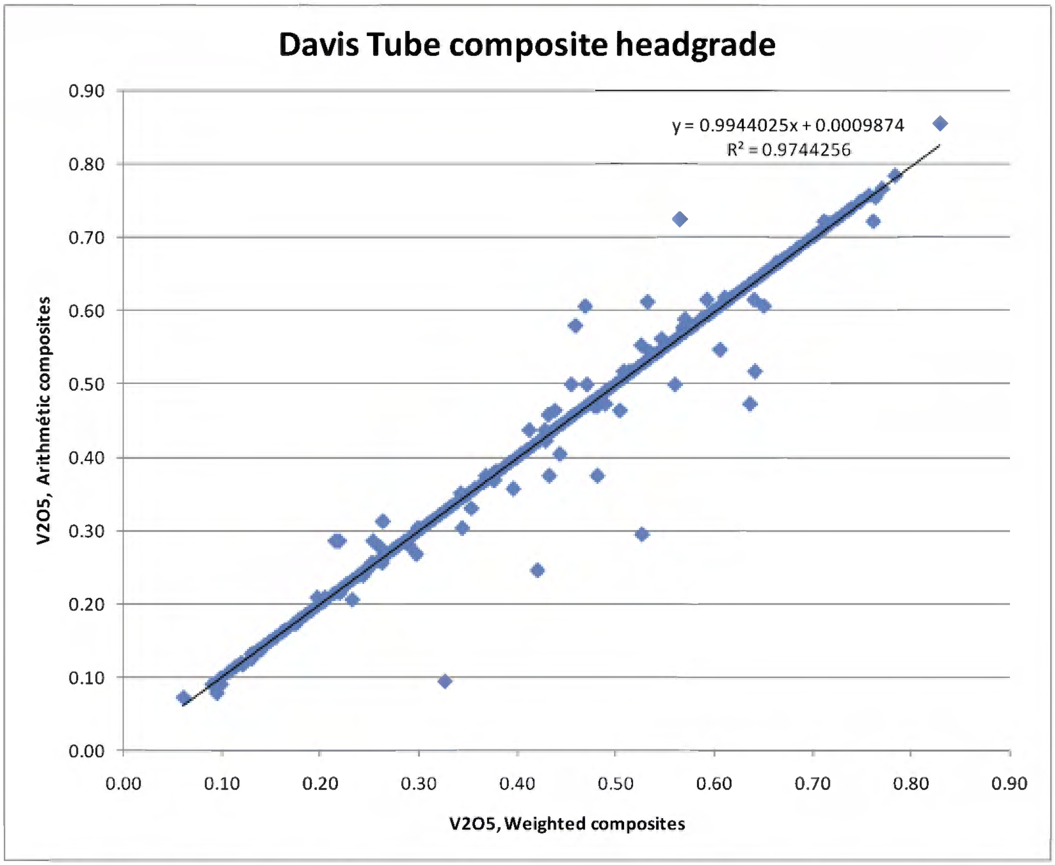

Figure 22: *Binary diagram of the vanadium headgrade of composite samples calculated using a weighted average grade of the composite versus the grade calculated using a simple arithmetic average. Notice the absence of overall bias, but the presence of about 3% discrepant composite samples, corresponding to the introduction of sample with a length different of 3 metres.*

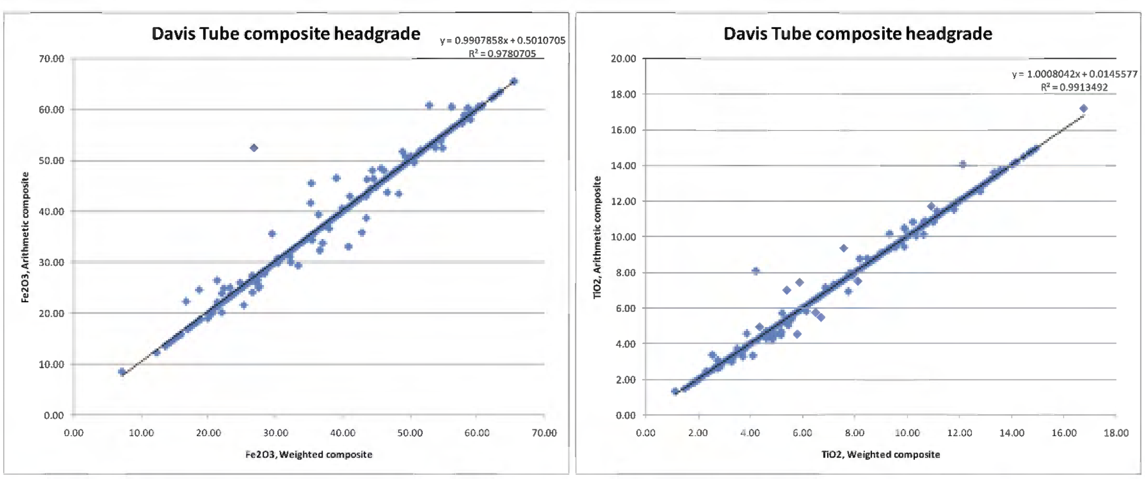

Figure 23: *Binary diagram of the iron and titanium headgrade of composite samples calculated using a weighted average grade of the composite versus the grade calculated*

using a simple arithmetic average. Notice the absence of overall bias, but the presence of about 3% discrepant composite samples.

The abundance of magnetite was also measured with the use of a magnetic susceptibilimetre, or "*Satmagan*", by Corem. Correlation between *Satmagan* and Davis tube measurement is noisy and present a severe bias, *Satmagan results being underestimated by* up to 30% in magnetite rich samples (***figure 24***). This discrepancy is explained by the fact that magnetite concentrates are in fact a mixture of titano-magnetite and minute ilmenite exsolutions, plus a certain amount of silicates. Therefore, only about 85% of the concentrate is magnetite (6,000 x 10^{-3} SI), and is the dominant response detected by the *Satmagan*. Ilmenite has a magnetic susceptibility about on third that of magnetite (1500 x 10^{-3} Si), and 10^{-3} times lower for ferromagnetic silicates. Furthermore, magnetic susceptibility of magnetite decrease with the abundance of ulvöspinel molecule, thus with the titanium content. Therefore, these do not contribute significantly to the overall apparent magnetic susceptibility, reducing the expected signature. Since the abundance of exsolution and inclusion cannot be accurately measured, *Satmagan* measurement cannot be properly corrected and are considered inaccurate.

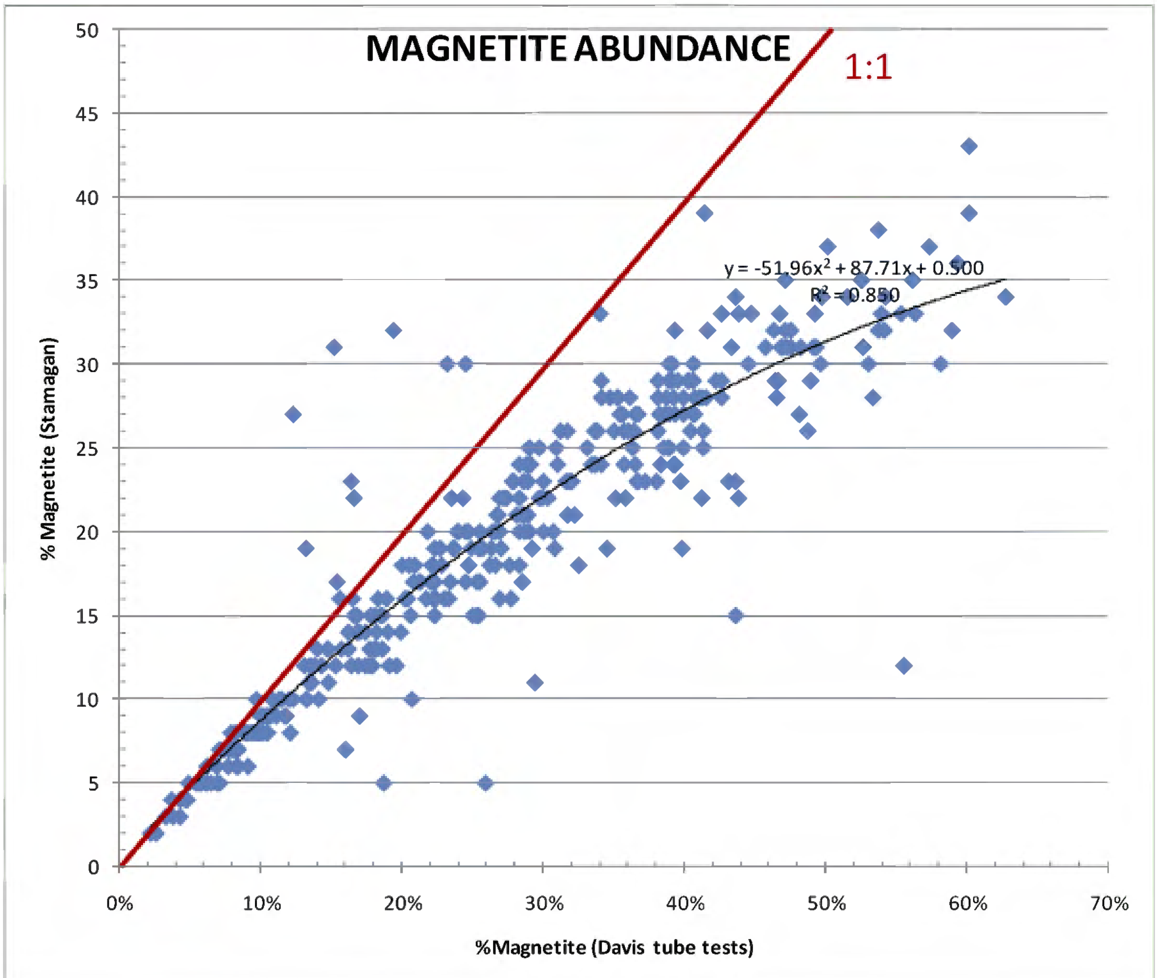

Figure 24*: Comparison between the magnetite abundance in 1997 McKenzie Bay samples as measured by Davis tube testing and Satmagan magnetic susceptibilimetre (Crépeau, 2000). Discrepancies are significant, mainly for magnetite-rich samples, the cause of which being partly related to the abundance of ilmenite exsolutions. Notice the abundant erratics. A second order polynomial regression and a 1:1 reference lines are provided.*

Since the non-magnetic fractions were submitted to analysis, a mineralurgical mass balance can be calculated. Theoretically, the amount of vanadium in the head sample shall balance with the amount of vanadium in the magnetite concentrate plus the non-magnetic rejects. Discrepancies can be caused by the proximity of detection limits in the non-magnetic fraction, the elutriation of fines (deschlamming) in the Davis tube concentration process as well as propagation of measurement errors. Discrepancies are close to propagated analytical errors for both the composited samples assayed at ALS-Chemex and Corem (***figure 25***) as well as the samples assayed at Actlabs by INAA (***figure 26***). About 6% of composited samples are discrepant, many of which being due to typographic errors in original reports on rejects analysis. Very similar correlation is noted for iron and titanium, with the same outliers, suggesting the error is from the compositing process. Similar calculations were not made on older CRM Davis tube separation (Durocher, 1980). Mass balance was indicated in these reports and is of appropriate quality.

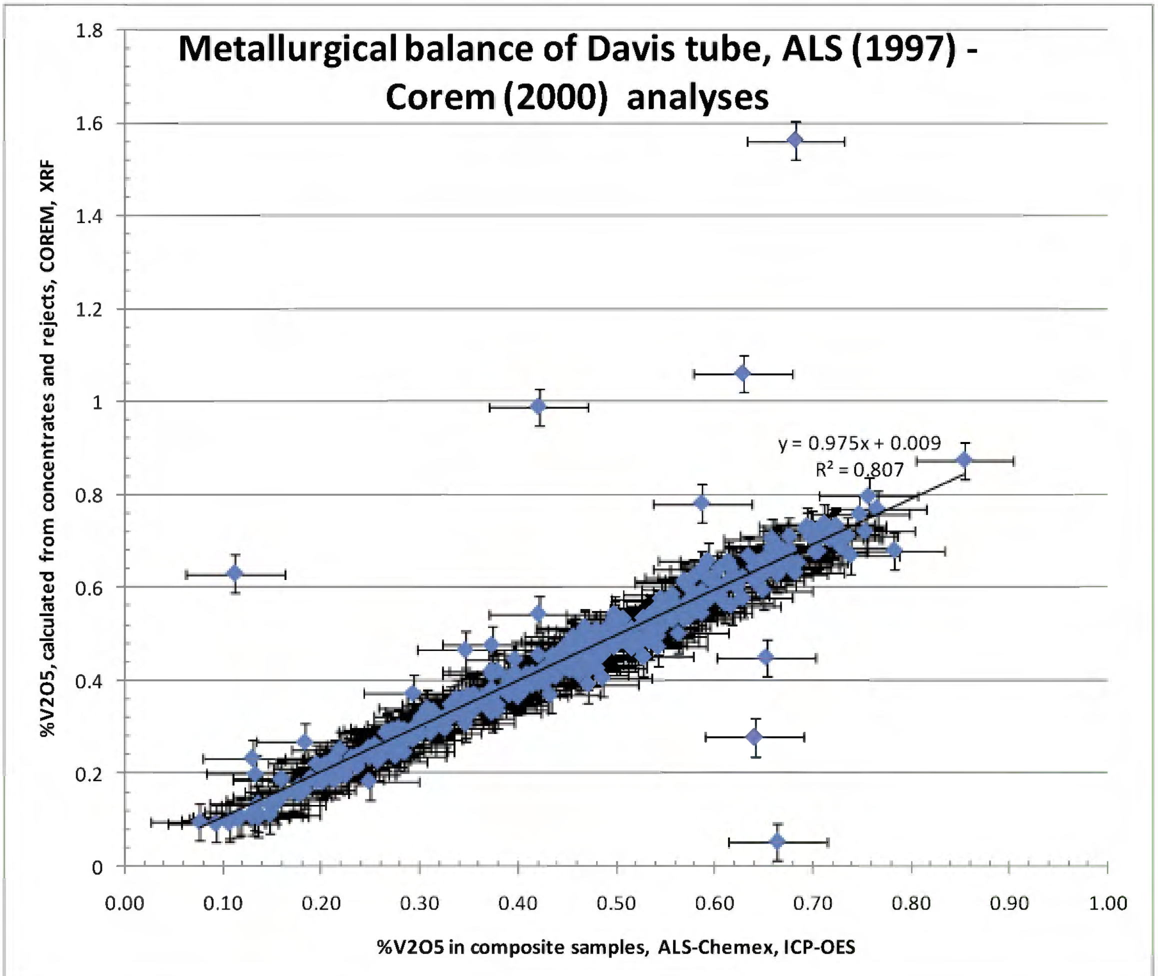

***Figure 25**: Comparison of the vanadium metallurgical balance calculated from magnetite concentrates and rejects versus the composited sample head analyses. Results are within the propagated precision of the analysis, which are estimated at 0.05% V_2O_5 for the composited head samples and 0.04% for the metallurgical balance. Note the few erratics.*

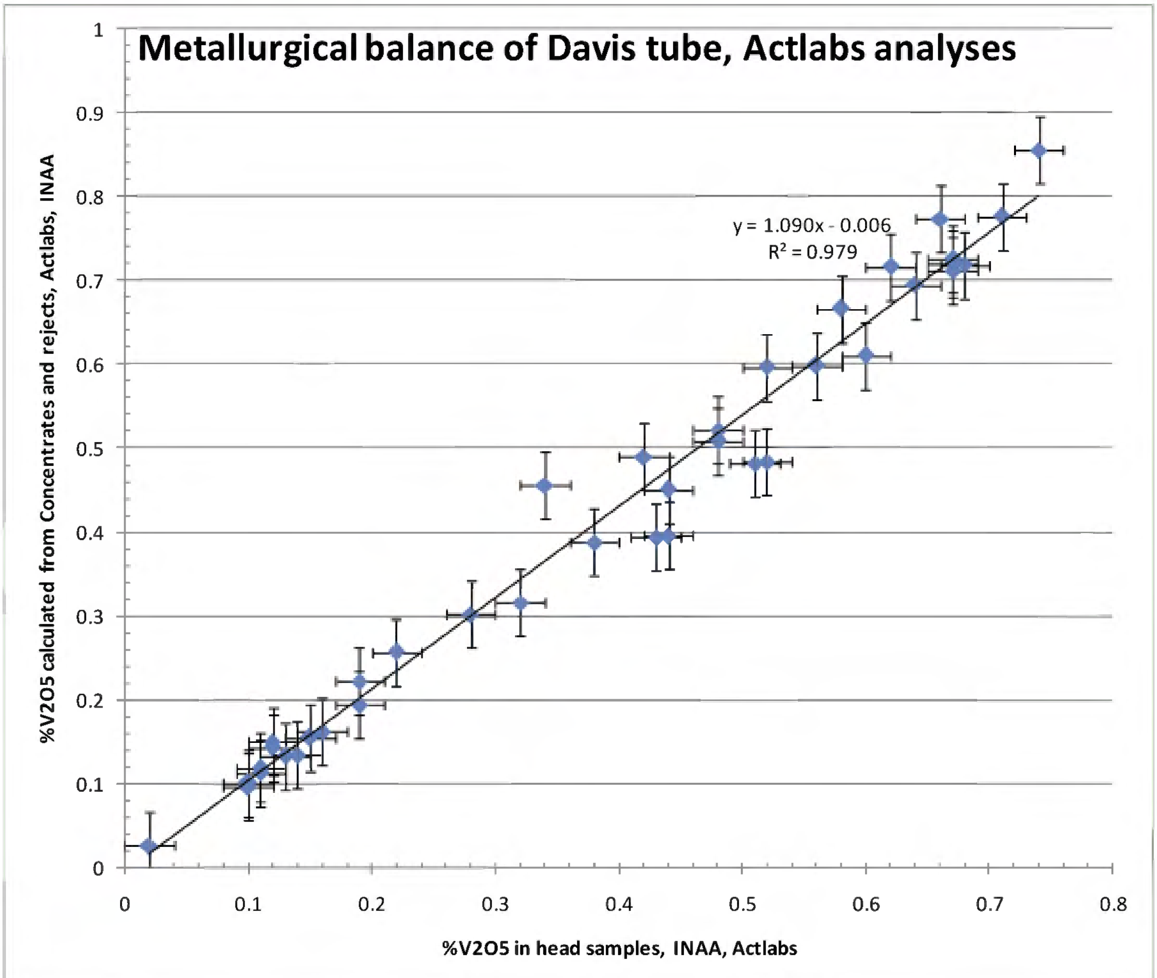

***Figure 26**: A comparison between the vanadium as assayed in head sample versus the vanadium calculated from the mass balance of the magnetite concentrate and rejects. Note that the mass balance of the Davis tube is overestimated by 9%. Error bars are based on a 0.02% V_2O_5 precision on assays, and thus of 0.02% on head samples and approximated at 0.04% on metallurgical balance. Error on Davis tube was estimated at 2% relative, but is near nullified by being a system closed at 100%.*

A thorough quality control process was implemented by Cambior for the analysis of the magnetite concentrate, as well as for head samples and non-magnetic rejects (Crépeau, 2000). About 2% of certified reference material was inserted and monitored, including SARM-12 (0.093% V_2O_5 or 520 ppm V) and JSS-831-1 (0.535% V_2O_5 or 0.30% V), all results being within tolerance limits. Cambior also had three internal reference material manufactured at Corem from Lac Doré material and certified only for their vanadium content (MRI-99-08 at 1.178% V_2O_5, MRI-99-09 at 0.493% V_2O_5 and MRI-99-10 at 0.647% V_2O_5). Their internal reference material was inserted for about 10% of the population. Averages obtained from the assays of these IRM were slightly overestimated.

Finally, 95 analytical duplicates were assayed at Corem, with variation within tolerance.

DAVIS TUBE TESTING OF McKENZIE BAY DRILL CORE SAMPLES

Samples collected from McKenzie Bay Resources drill holes in 2002 were not submitted for Davis tube testing.

Samples collected from McKenzie Bay Resources drill holes in 2001 were submitted for Davis tube testing in 2003, but were not submitted for headgrade analysis. Of the 497 samples, typically 3 metres in length, 197 concatenated samples were made and 166 magnetite concentrates prepared. Grinding, magnetic separation and assaying protocols were near to identical to the one used by Cambior, and results considered comparable. Grinding was set at 85% <150 µm. Analyses were made at Corem, using XRF on borated beads, for the magnetite concentrate and the non-magnetic rejects. Vanadium of the head samples were assayed by atomic absorption at Corem. Metallurgical balance cannot be calculated due to the lack of head sample assays. According to mass balance, the headgrade of the samples are underestimated by 5% compared to the mass balance.

Quality control on Davis tubes testing included grain size control, mass balance and binocular microscopic examination of the concentrate. Quality control on assaying included mass balance as well as certified and internal reference material insertion, available in the author's archives.

Davis tube tests by IOS for McKenzie Bay Resources on samples outside the main deposit, such as on drill core from Southwest deposit, Armitage and the abutted Northeast extension, currently held by BlackRock Metals, were carried out with the same protocols as for Cambior on the main deposits, and are considered as comparable.

Of these program, only 26 concentrates were produced from drill holes located within VanadiumCorp properties, which were not included in the current resource estimate being located outside the main deposit. Detailed description is not considered relevant.

DAVIS TUBE TESTING OF VANADIUMCORP CORE SAMPLES

Samples from 2009 drill core were not tested for the magnetite content with a Davis tube.

Samples from the 2013 drill program were recently tested by Davis tube (Ivanov, 2015). The magnetic concentration of 109 of the 210 available samples was conducted by IOS, while analysis of the magnetite concentrates was conducted by Corem by mean of XRF on borate beads. Samples were not composited, but only samples with sufficient iron grades were processed.

A liberation test was conducted (***figure 27***), by pulverizing the material with laboratory rod mills for variable time ranging from 5 to 60 minutes. Liberation was reached after 45 minutes, for 97.4% minus 75 microns, after which a plateau is reached in regard of magnetite purity (63.59% Fe) (Ivanov,2015).

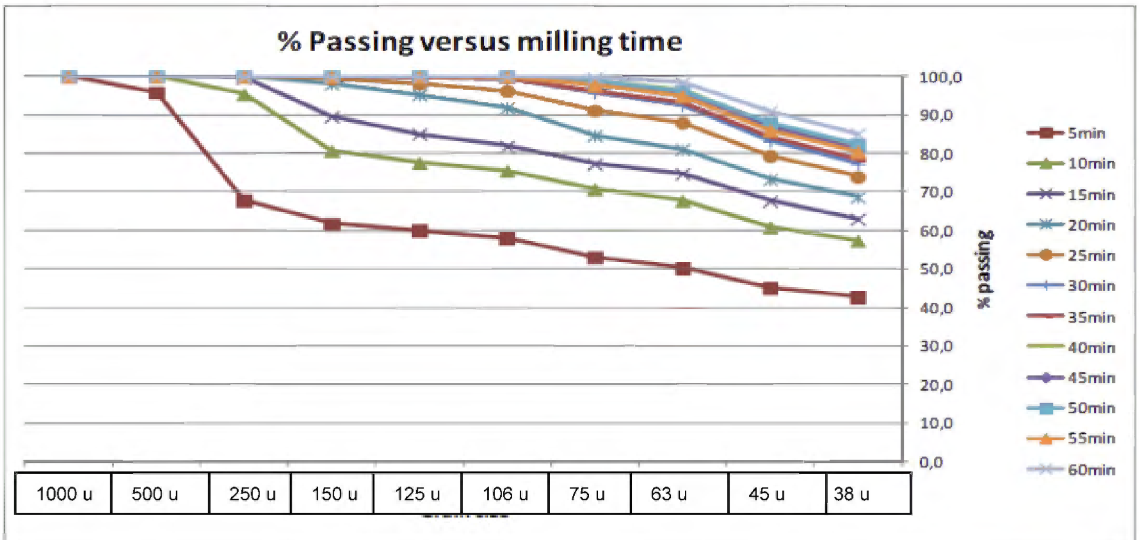

Figure 27: *Grindability curves obtained by the laboratory rod mills on VanadiumCorp samples. A plateau of magnetite concentrate purity is obtained after 45 minutes milling.*

Magnetite was concentrated from samples between 5 and 50 grams using 3200 gauss magnetic field, which is some what more intense than usually used. An average of 1.7% SiO_2 was achieved, which exceeds the purity of previous programs, but still fails to match the targeted level of contaminant.

The quality control on these magnetic separation tests was multiple:

- Quality of analysis was monitored by insertion of 15% of certified and internal reference materials, plus blanks.
- Purity of the concentrates were monitored prior to be sent to Corem by the use of an hand-held XRF. Concentrate not matching purity requirement (2% SiO_2) were reprocessed.

- Purity of the concentrates as well as rejects was further monitored by a microscopy examination, which still outlined liberation and sweeping issues.
- 12 non-magnetic rejects were reprocessed by the Davis tube, which indicates negligible amount (<0.1%) of swept magnetite.
- Grain size curves were measured for every sample with the use of a laser dispersion analyser (Fritsch Analysette 22).

On ***figure 21***, it can be noted that the amount of contaminant estimated from the non-closure to 100% is more elevated than previous program. This is not thoroughly in accordance with the analytical results, which suggest an average abundance of 4% silicates (SiO_2 + Al_2O_3 + MgO + CaO + Na_2O), the discrepancy not being accounted for.

The author is confident on the quality of the 2014 analysis, and recommends this protocol being used for subsequent drilling programs.

DENSITY MEASUREMENTS

Accurate density measurement is essential for the calculation of resources in iron mineralization. Density may varies from 2.7 g/cc in a barren silicate rock to 5.5 in pure magnetite. Contained resource is a square function of the iron grade, this grade influencing both the amount of metal per tonne as well as the amount of tonnes per cubic metres. Experience of the author with a different magnetite deposits indicated that using average density over the deposit instead of real measured density on every sample significantly underestimated the total resource.

No reliable density measurements were made by Jalore and MRN. A total of 51 measurements are reported by Kish (1971) on typical lithofacies. A second set of 90 density measurements were made by Abvreamtchev on selected samples from 1974 drill program, mentioned by Dion (1980). A third series of 50 samples were measured by Nolet (1980) and reported by Dion (1980). These data are of limited use, considering they represent selected samples not corresponding to core intervals and their important variability of the magnetite content.

An attempt was made by Nolet (1980) on behalf of SOQUEM to calculate the density by estimating the amount of magnetite from the measured magnetic susceptibility:

$$D = 2.99897 + 0.02237K$$

Where K is the magnetic susceptibility in 10^{-3} CGS. The author does not consider such estimation as dependable.

Dion (1980) mentioned systematic density measurement on core, without providing data. However, the author has located a list of density measurements handwritten on a set of copies of analysis certificates from SOQUEM. According to Dion, the density was calculated from the volume and weight of the core. Volume was estimated by measuring the length of the core sample time its half diameter, while weight was obtained with a dynamometer (spring scale). A total of 692 such measurements are available, for an average density of 3.77 g/cc. Dion indicated a theoretical accuracy of about 6% of the measurement, while review of the calculation method suggests to the author that propagated errors alone are in the order of 7%. Recall that the core was halfsplit, and that its volume did not exactly fit the volume of a half cylinder. Since density is controlled by the magnetite and ilmenite abundance, the density is expected to relate to iron and titanium abundance. A plot of measured density versus Fe_2O_3 + TiO_2 suggests a second order polynomial relation with correlation coefficient R^2 of 80% (***figure 28***). Notice the lower intercept for barren rocks (0% iron and titanium) at 2.76 g/cc.

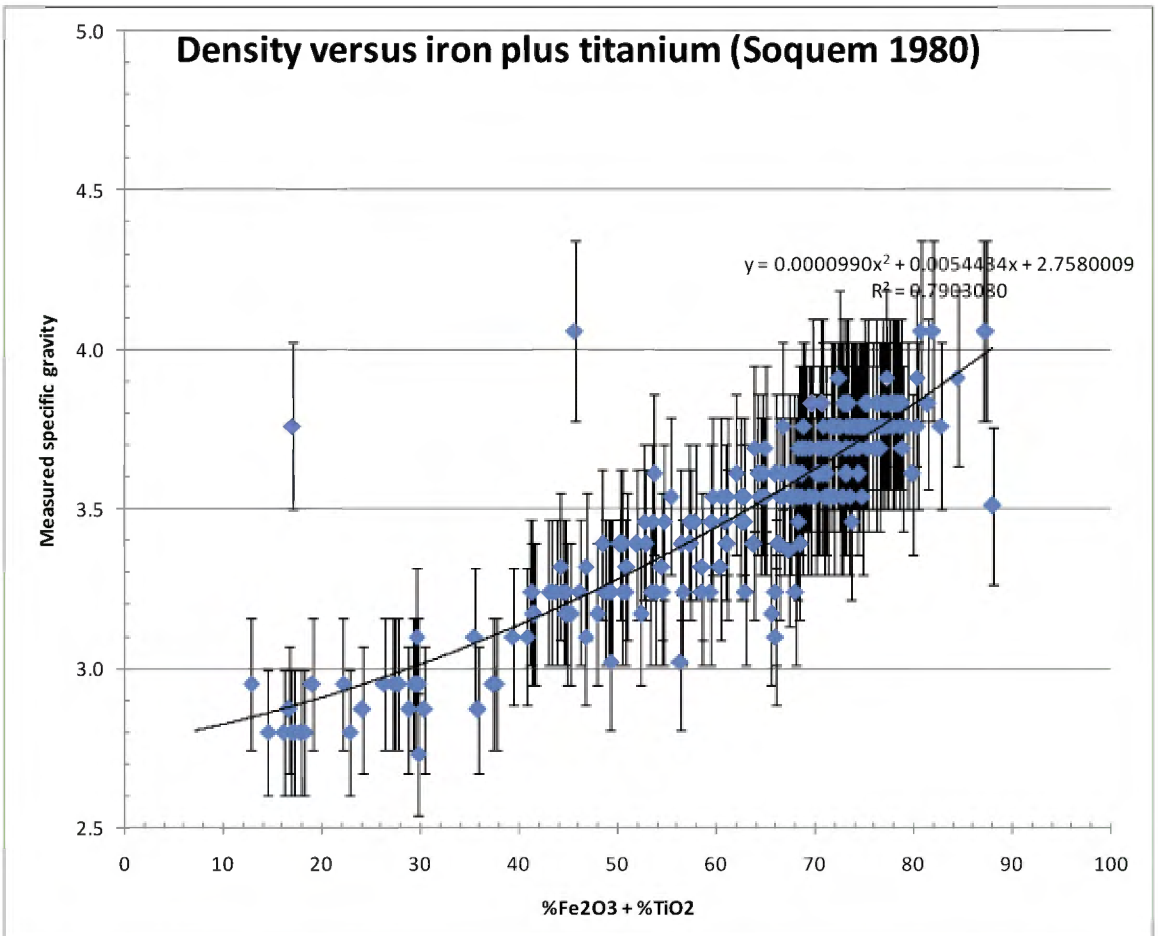

Figure 28*: Measured density compared to the iron plus titanium content for SOQUEM samples. Notice the second order polynomial relation. Error bars on density are set at 7%.*

Cambior measured the density on 1689 samples from 1997 McKenzie Bay Resources channel samples (Crépeau, 2000). Since no hard samples were available except for a few determination on SOQUEM's drill core, they measured the density by water displacement on coarse crushing rejects. For such, a sample aliquot was weighted, and the sample immerged in water in a graduated cylinder to calculate volume. Calculation datasheets are available to the author and density recalculated. The propagated error on measurement is calculated at 2.5%. The comparison between the measured density and the iron plus titanium content indicates a second order polynomial relation, with a zero intercept at 2.82 g/cc and a regression coefficient R^2 of 73% (***figure 29***). It is noted that 261 measurements, or 15% of the population, are discrepant by more than 7% of the regression. These discrepant data are considered as errors caused by manipulation, entrapped air in the granular material, deschlamming or typing (in Cambior report). If such discrepant measurements are removed, the regression coefficient R^2 is improved at 93% (***figure 30***). Density is then calculated by the following equation, which is used for the current resource estimation:

$$SG = 0.0000677(Fe_2O_3 + TiO_2+V_2O_5)^2 + 0.009832(Fe_2O_3 + TiO_2+V_2O_5)+ 2.78977841$$

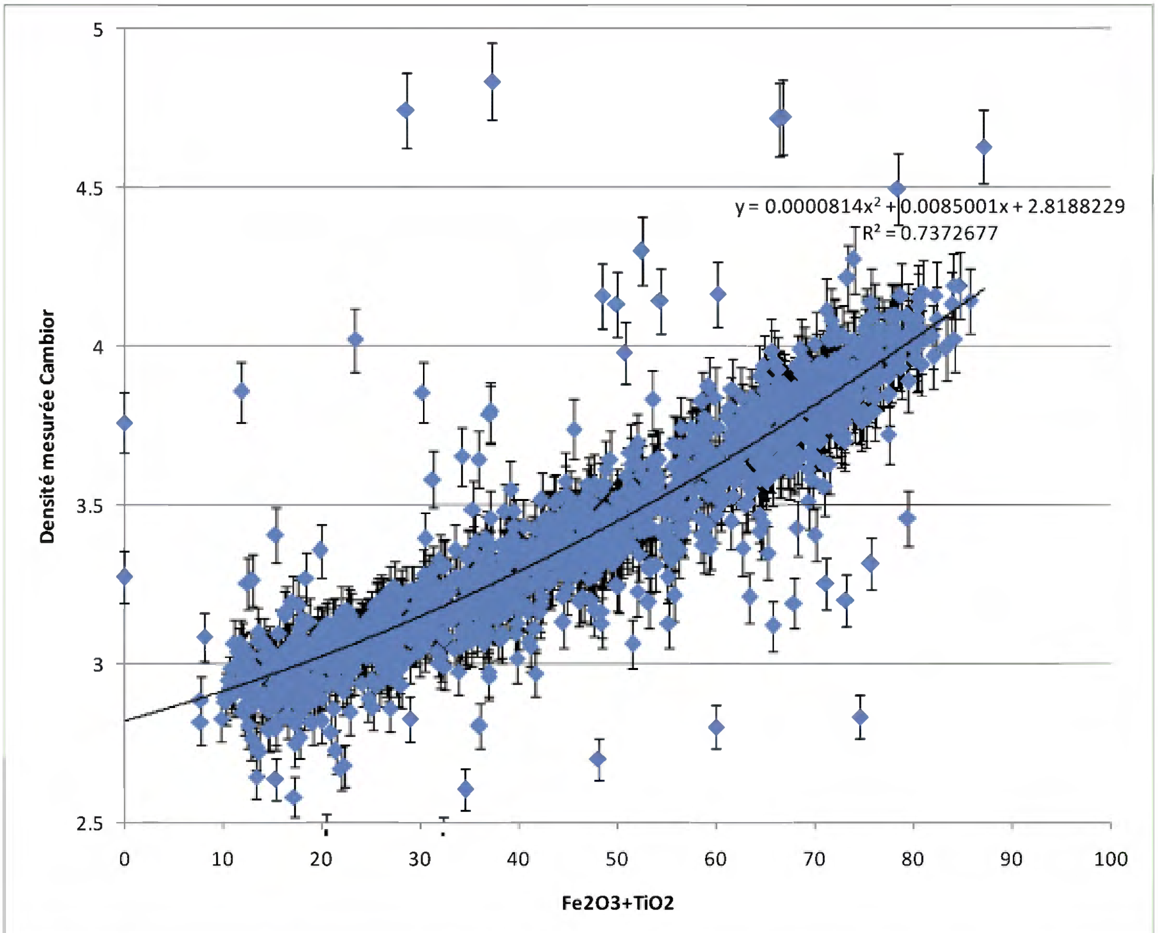

***Figure 29**: Diagram of the density as measured by Cambior (2000) versus iron, titanium plus vanadium abundance. A second order polynomial correlation is indicated.*

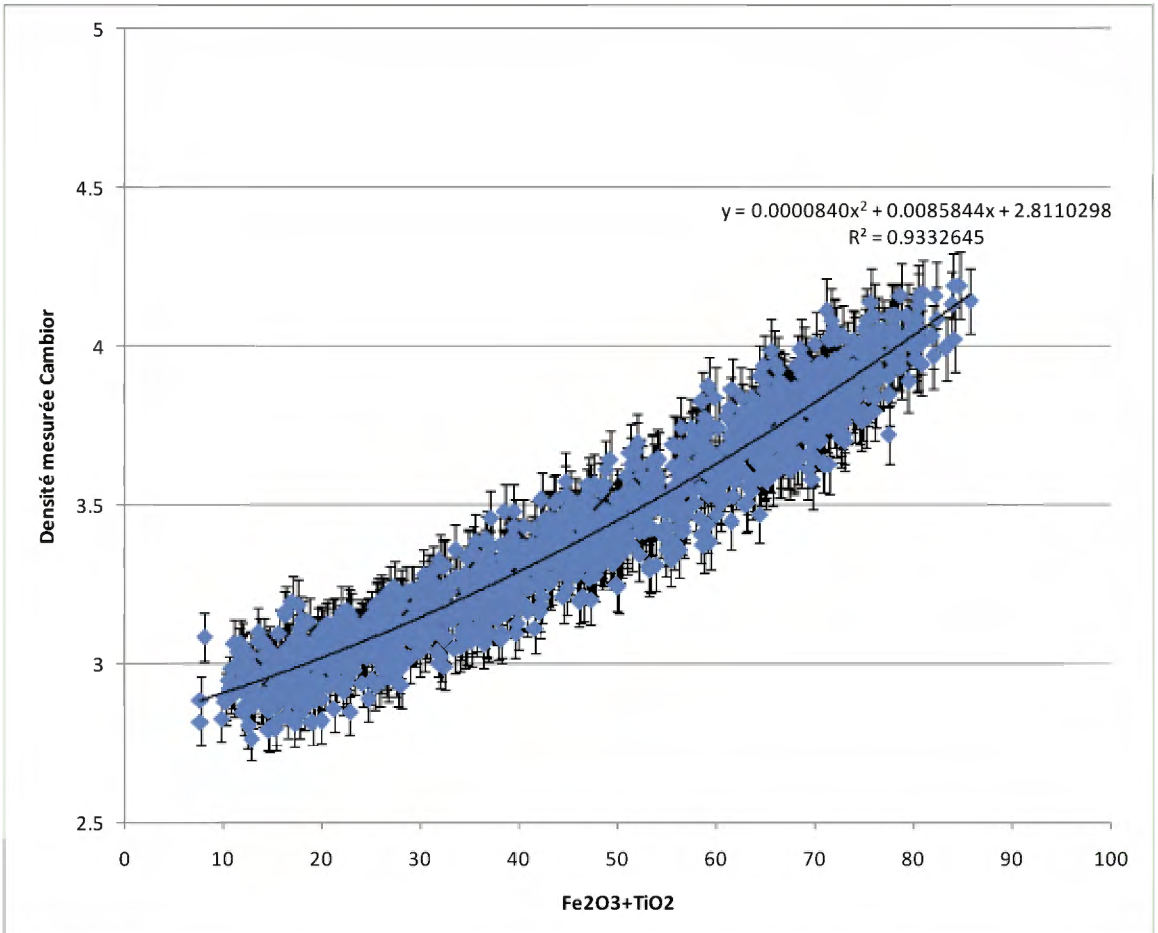

***Figure 30**: If samples with a discrepancy in excess of 7% between the measured density and the regression on previous figure are removed, being likely caused by manipulation errors, the regression coefficient R^2 is improved to 93%, and an equation can be drawn to calculate density.*

ITEM 12: DATA VERIFICATION

Considering the project spans over 60 years of work, by numerous groups, with different goals and methods, and considering the very large and heterogeneous database involved, thorough data verification was completed to the best of the first author's capability. Girard takes liability for this verification process.

HISTORIC REPORTS

Most of the over 200 historical reports relating to the deposit were read by the author through time, and significant information, maps, drill-holes and assays were captured into database and mining software. Most of these reports were handed to the author in 1997 by SOQUEM, and are available only as hard copies. No database was transferred to the author by SOQUEM.

Most of the historic reports are old photocopies, some of them of poor quality, incomplete or with handwritten annotations. Part of the data is available only as handwritten datasheets. Numerical data were typed by the author's assistant, or decrypted with OCR software (ReadIris Pro V. 12.5). Drill logs were typed and formatted into modern drill hole software (Geotic's Log format), although simplification or omission of details were made.

McKENZIE BAY RESOURCES DATA

The author supervised the data collection by his various field crew during the McKenzie Bay period, which was then carried out according to the best industry practices of the time. Data results as well as most metadata were reported in details (Tremblay, 1997; Huss, 2001; Boudreault, 2002). However, the original numerical data, all based on Lotus-123 spreadsheet, have been stored on 3.25" inches floppy disks now corrupted and on DOS-based back-up tapes, which cannot be read anymore with modern equipment without extensive efforts. Therefore, original computer files are not easily accessible anymore, and it was considered more effective to retype the significant data by the author's assistant or to capture them by OCR. The author is confident in the quality and robustness of the original data, with the exception of the ground magnetic survey. Trenching data and plans were captured in a manner to enable their use with Geotic' or Gemcom drill hole management software, which required them to be translated or reformatted. The meaningful data from these trenches were reformatted as *"horizontal drill holes"*, with lithofacies coded and sampling intervals. Origin of the trench has been set at its southeastmost extremity.

CAMBIOR DATA

Cambior completed a limited but highly relevant amount of data, including the Davis tube testing and assaying, plus density measurements. Davis tube metadata were available in numeric format from the archives of the author, while other Cambior data were available only as printed files, as well as original analysis certificates. Relevant data were either retyped or captured by OCR, including metadata for the density measurements.

GROUND MAGNETIC SURVEYS

The author is of the opinion that the quality of the ground magnetic survey data carried out for VanadiumCorp by Geosig Inc. is of adequate quality, notably with regard to the density of reading stations. No significant levelling issues are noted.

The set of ground magnetic surveys conducted for McKenzie Bay contains severe levelling issues, which cannot be properly corrected. They shall be used for illustration purposes only, and no modelling shall be attempted from these data.

The author does not have the expertise to fully interpret or reprocess the Novatem airborne magnetic survey.

VANADIUMCORP RESOURCE DATA

A negligible amount of data from the two trenching programs conducted under the previous management of VanadiumCorp was made available to the author. The only information recovered was part of the sample booklets and what is stated in press releases. To reconstruct the data, the trenches were remapped in late 2014, and the certificates recalled from ALS Minerals (Block, 2015). Drill logs from 2009 were compared meticulously with the core, and considered of acceptable quality. The trenching and drilling located outside of the current resource estimate are not considered as essential, and not reviewed in detail. Collar locations were visited by the author, and coordinates taken with the use of a DGPS (Block, 2015).

Drill core from 2013 (Derosier, 2013) was re-logged (Ivanov, 2015) directly into Geotic' database. The sample's meterage were thoroughly checked, corrected if needed, and the sampling intervals completed. Collars were located in the field by the author, and coordinates taken with the use of a DGPS (Block, 2015). Assaying results were numerically transferred into database once QAQC approved.

DATABASE VALIDATION

Building a database from heterogeneous data in various states of robustness raises issues with its reliability. Errors accumulate through the process, starting from errors within the initial typewrite reports and errors in capturing these data. Validation was a complex task, and all actions taken cannot be described in details.

- Every critical data, such as assays and footages, was checked by the use of redundancy. All data were typed or acquired through OCR. These were then checked against the former database wherever available. Likelihood that the same typing error being captured in both dataset is minuscule. Any entry which was discrepant between both datasets were then individually checked in original data or analytical certificate, and corrected to the limit of the available data. Both datasets are now identical and less than 0.25% of the entries are estimated to remain wrongful and impossible to correct. However, if a data was discrepant in the original reports, it would not be detected by this process.
- Data which were of importance but not available as database, such as the results of Davis tube testing, were typed twice, using a different database structure or a different sources (example: report and certificates). Again, every discrepant entry was checked and corrected from the original data. Certificates were considered as the original data in regard of assays.
- Typing of the data included, whenever available, the metadata, such as calculation and statistics. The data was then checked against the metadata (example: if an average was indicated, the average of the data was calculated and compared to the one indicated in the report).
- In regards to assays, various elements were added and the total compared to the indicated sum or theoretical closure.
- Mass balance for the Davis tube was available in MRN and SOQUEM reports, which data was captured and recalculated.
- Length of composite samples was checked against the sum of the individual sample length. Resulting average or weighted grades were checked against assays of the composite samples wherever available.
- Consistency of field contents has been systematically checked with the use of *"filters"* in Excel.

REMINISCENT ERRORS

Difficulties have arisen in verifying core assays from SOQUEM. Some drill logs photocopies were truncated, and typographic errors were relatively abundant. Some of the data were not indicated on the drill log, and only handwritten on one of the copies of the certificates, and some assays from the same sample were scattered on many certificates. Furthermore, errors are suspected on certificates, which were typewritten. For example, a series of samples were indicated with the wrong number sequence on certificates, causing apparent duplication. These errors were corrected to the best of the author capacity, and every certificate was checked.

Reports from CRM and Corem, such as Davis tube reports, were practically free of typographic errors.

Despite the efforts by Cambior to control the quality of the data and assays, the data generated by them contained abundant errors. Example is the density measurement, previously discussed, which included about 15% discrepant data. Numerous issues were noted in reporting assays from Davis tube testing. Samples were inverted, and in some instance, concentrates and non-magnetic rejects were inverted. These errors were corrected in the extent they were detected by the author.

The most severe issue with Cambior data remains the inconsistencies in compositing the samples for Davis tube testing. The compositing list was provided to IOS who was instructed to proceed according to list. Comparing the list with the sample position in trenches outlined issues:

- In a few cases, samples numbers were misindicated on the original list, and irrelevant samples were inserted in composited sequence.
- In numerous cases, unsampled intervals were left in composited intervals. In other cases, a sample was isolated by tens of metres away from the sequence of contiguous samples in the same composite. In such case, for the purpose of making the database compatible to the resource estimation software, these non-contiguous composited samples were disjointed into two separated samples with identical grades, and the unsampled intervals were left as a barren interval.

Validation of drill holes location and orientation was done by plotting them and comparing with maps of original reports. Discrepancies were detected and corrected.

OVERALL CONSISTENCY OF ASSAY RESULTS

The quality of assays had always been a concern with the current project, mainly regarding their accuracy. Vanadium hosted in iron-titanium oxides is difficult to assay, and prone to analytical discrepancies. A quality control was implemented by McKenzie Bay Resources in 1997, and all datasets acquired since then are considered as being accurate and compatible with each other. The protocol included insertion of certified reference material on a regular basis, using the same set of material. The author is confident in the compatibility of these batches of assays.

In 1997, a proficiency test was conducted (Bédard et Girard, 1998) involving five commercial laboratories (Intertech, Chemex, Metriclab, CRM and X-Ral), plus two research facilities (Mintek and Australian National University). The test included ten samples from previous SOQUEM drill core, a triplicate of an internal reference material, plus an aliquot of SARM-12 certified reference material.

Further testing were made by Cambior, including re-analysis of two batches of samples plus analysis of the composited samples. Cambior used the same reference material as McKenzie Bay (SARM-12 and JSS-831-1).

Re-assaying of 2013 drill core was controlled using the same reference material as McKenzie Bay, as well as the internal reference materials used by Cambior.

Validation of the accuracy of historic SOQUEM and MRN assays is a more difficult task, since no certified reference material was inserted, and only limited QAQC protocols were applied. Quality control on assays carried on behalf of *Ministère des Richesses Naturelles* were not disclosed, if any. The Ministère sent a series of 11 samples to four different governmental laboratories in 1968, but had to have the assays done at CRM. Discrepancies were significant between these laboratories, but the lack of certified material impedes proper conclusion.

SOQUEM performed a similar test, sending 16 samples to five laboratories (Dion, 1980). Again, no certified reference material was included, which later proved to be a severe concern. Chimitec, which was chosen for headgrade analysis, reported values underestimated by 7% compared to CRM, used for Davis tube testing (Vallée, 1989). Re-analysis of some of these samples by McKenzie Bay in 1997 confirmed the underestimation issue, suggestedby 13%. However, McKenzie Bay tests were not sufficiently exhaustive to provide a conclusive comparison. SOQUEM's resource calculation used the Chimitec assays, but inter-laboratory discrepancies were reported (LMBDS-Sidam, 1981). Since the majority of drill core assays on the project are from SOQUEM, this discrepancy was perpetuated in the subsequent resource calculations and the uncertainties remained.

Cambior did a thorough quality control on assay results; including some re-assays of McKenzie Bay Resources channel samples and SOQUEM core samples. They reported that Chemex results done by ICP-OES after multi-acid digestion for McKenzie Bay samples were 3% lower than Corem (previously CRM) by XRF on borate glass. Discrepancies were also noted for the SOQUEM core.

Program	*#Sample*	*Original laboratory*	*Cross-checked laboratory*	*Discrepancy*
SOQUEM	17	Chimitec (AA)	CRM (XRF)	+7.45%
SOQUEM	20	Chimitec (AA)	CRM (XRF)	+3.8%
SOQUEM	20	Chimitec (AA)	CRM (XRF, dup)	+4.7%
SOQUEM	151	Chimitec (AA, comp)	CRM (XRF)	+2.5%
Cambior	22	ALS (ICP-OES)	Actlab (INAA, 1999)	+5.7%
Cambior	48	ALS (ICP-OES)	Actlab (INAA,2000)	-2.3%
Cambior	50	ALS (ICP-OES)	Corem (XRF)	+3.7%
VanadiumC.	122	ALS (ICP-OES)	Corem (XRF)	-9.8%
Cambior	17	CRM (XRF-DTT)	Corem (XRF)	-3.8%
Cambior	28	Corem (XRF-DDT)	Actlab (INAA)	-6.7%
Cambior	50	Corem (XRF-DDT)	Actlab (INAA)	-2.7%

***Table 13**: Compilation of the various interlaboratory cross-checks.*

It is in Girard's opinion that the uncertainties on drill core head assays remain, and are expected to be in the range of plus or minus 5% of the reported grade. Correcting this issue would require systematic re-assaying of quarter-splitted core, the access to which was denied.

DAVIS TUBE TESTING GENERALITIES

Davis tube testing is the industry standard protocol to routinely measure the abundance of magnetite in iron ore. It is a wet high strength magnetic separation, operating up to 3000 gauss under a water current to wash the non-magnetic fraction. It is considered by metallurgists that Davis tube testing is a fair simulation of industrial wet magnetic separator. The quality of the magnetite concentrate is dependent on liberation of the magnetite grains, and thus to grain size and grinding process, as well as the settings of the various other parameters such as magnetic field strength and water current. Such settings are not disclosed in every report. Some laboratories use "standard" settings, while others will optimize them through a grinding test. Magnetite abundance obtained by Davis tube testing and its analyses can be used directly into resource estimation and block modelling, as done in the current resource estimate.

The discrepancies which arose between MRN, SOQUEM and McKenzie Bay head assays are even more significant with regards to magnetite concentrates made by Davis tube testing. Each set of data were made according to different specifications, especially with respect to grinding. Samples submitted by Jalore Mining and MRN to the CRM were ground at 90% -325 mesh (<50 µm), SOQUEM samples were ground at 85% -200 mesh (<75 µm), McKenzie Bay and Cambior samples at 85% - 100 mesh (<150 µm) and VanadiumCorp samples at 95% -200 mesh (<75 µm). Since these different grinding specifications affect the silicates and ilmenite liberation, vanadium grades and abundance of magnetite are not directly comparable, although it does not mean that they are inaccurate. To circumvent such issue, Cambior did normalize all test results to 90% magnetite, a correction which has not been applied in the current resource estimate.

The vanadium grade obtained in the magnetite concentrate is a function of the efficiency to remove minute ilmenite intergrowths. The finer the comminution, the more efficient is the removal, but the lower is the overall vanadium recovery. Optimization of the grinding and beneficiation process in regards to the kiln requirement will be complex. To grind finer means cleaner kiln feed and lower reactants consumption, but also increased grinding costs and fly ash issues. Grinding cost is a square function of the fineness and represents the bulk of the beneficiation circuit operating costs. Conversely, less grinding means less beneficiation cost and better recovery due to the processing of vanadium bearing ilmenite, but a higher roasting cost due to the lower feed grade and higher soda ash consumption.

Silicate minerals contaminating the magnetite concentrate is dominated by calcic plagioclase. During roasting, the silica of the plagioclase consumes the soda ash to form metasilicate, which ends in the pregnant liquor and forms silica gel. It is the main cause of soda losses in the process. Sodium metasilicate cannot be regenerated into soda carbonate. Second is the calcium from the plagioclase which reacts with vanadium pentoxide in the kiln, to form partly insoluble calcium vanadate. This is likely the main cause of vanadium non-recovery in the course of the roasting hydrometallurgical process. Therefore, cleanliness of the magnetite concentrate is of great importance to the efficiency of the process, which is dictated by grinding.

The effect of grinding on liberation can be visualized from Davis tube tests. Such testing is a magnetic separation done routinely on individual samples, currently regarded as a standard procedure in the iron industry. Davis tube concentrates done for Cambior were grinded at 120 µm, and yielded 1.2% V_2O_5 and high ilmenite content, while the metallurgical tests completed when grinding at 60 µm yielded 1.4% V_2O_5 and lower titanium content. The decision for grinding at 120 µm for testing was made after a series of tests which indicated that the bulk of oxides were liberated at such fineness. Grinding at 60 µm for the metallurgical test allowed production of a cleaner (<1% SiO_2) and richer concentrate, but quadrupled the grinding cost and reduced recovery.

For the same reasons, cautions are to be applied to compare Davis tube tests done at different laboratories with different protocols. The tests done by IOS for Cambior on McKenzie Bay's channel samples does not readily compare with the tests done on the drill core by the *Centre de Recherche Minérale* for SOQUEM and *Ministère des Richesses Naturelles*. **The vanadium grade achieved on the magnetite concentrate is sensitive to grinding process.**

A mere statistical comparison (***table 14****)* of the magnetite abundance or vanadium grade from the various series of Davis tube testing would not be significant, considering that the various series do not represent population from the same segments of the deposit. Thus, tests conducted for MRN, which represent almost uniquely samples from strongest magnetic anomalies, are enriched in magnetite, while samples from SOQUEM, which are the core of P2 unit, are statistically enriched in Vanadium. Cambior (1999) samples are lower in magnetite since they tap into P1 and P0 units.

Batch	***Sample***	***% Magnetite***	***%V2O5***	***%Fe2O3***	***% TiO2***
Total	*1262*	*32.5±16.2%*	*1.24±0.29%*	*87.4%*	*9.36%*
MRN-1970	*121*	*39.4±11.3%*	*1.05±0.21%*	*88.2%*	*8.50%*
MRN-1974	*274*	*39.1±17.7%*	*1.32±0.21%*	*86.17%*	*10.44%*
SOQUEM	*150*	*32.9±14.8%*	*1.44±0.24%*	*89.1%*	*8.22%*
Cambior-99	*556*	*28.8±15.1%*	*1.18±0.29%*	*87.5%*	*9.64%*
MKBY-2001	*26*	*21.1±15.2%*	*1.11±0.43%*	*84.0%*	*6.68%*
VRB-2014	*135*	*30.1±16.6%*	*1.25±0.32%*	*88.1%*	*8.53%*

Table 14*: Statistics on magnetite concentrate assays.*

The relation between the vanadium grades in the magnetite concentrate versus the abundance of magnetite is complex (***figure 31***). It is controlled by the provenance within the deposit, the abundance of magnetite of metamorphic origin, as well as the effect of dilution caused by non-liberation of ilmenite and silica during the Davis tube testing. The effect of the concentration process is visualized on ***figure 32***, where the various batches of samples were isolated. The discrepancies are readily visible, especially between the MRN-1970 and MRN-1974 batches, which represent samples from the same area of the deposits, processed by the same laboratory (CRM) apparently with the same methods. Similarly, a discrepancy is noted between SOQUEM-1980 samples which are from drilling mainly in P2 unit, and Cambior-1999, which is from McKenzie Bay surface samples. Since McKenzie Bay samples encompass the entire deposit, a larger scattering in vanadium grade as well as more abundant samples with low magnetite abundance is present compared to former SOQUEM and MRN samples. SOQUEM samples are distinctive by being more vanadium rich, a difference considered as the effect of finer grinding and better liberation as well as potential analytical discrepancies.

The discrepancies noted in vanadium grade of the magnetite concentrates are not present in the head sample vanadium grade (***figure 33***). On the vanadium grade versus magnetite abundance diagram, the trends defined by the various batches are coincident, with scattering towards lower grade due to the inclusion of P3 samples.

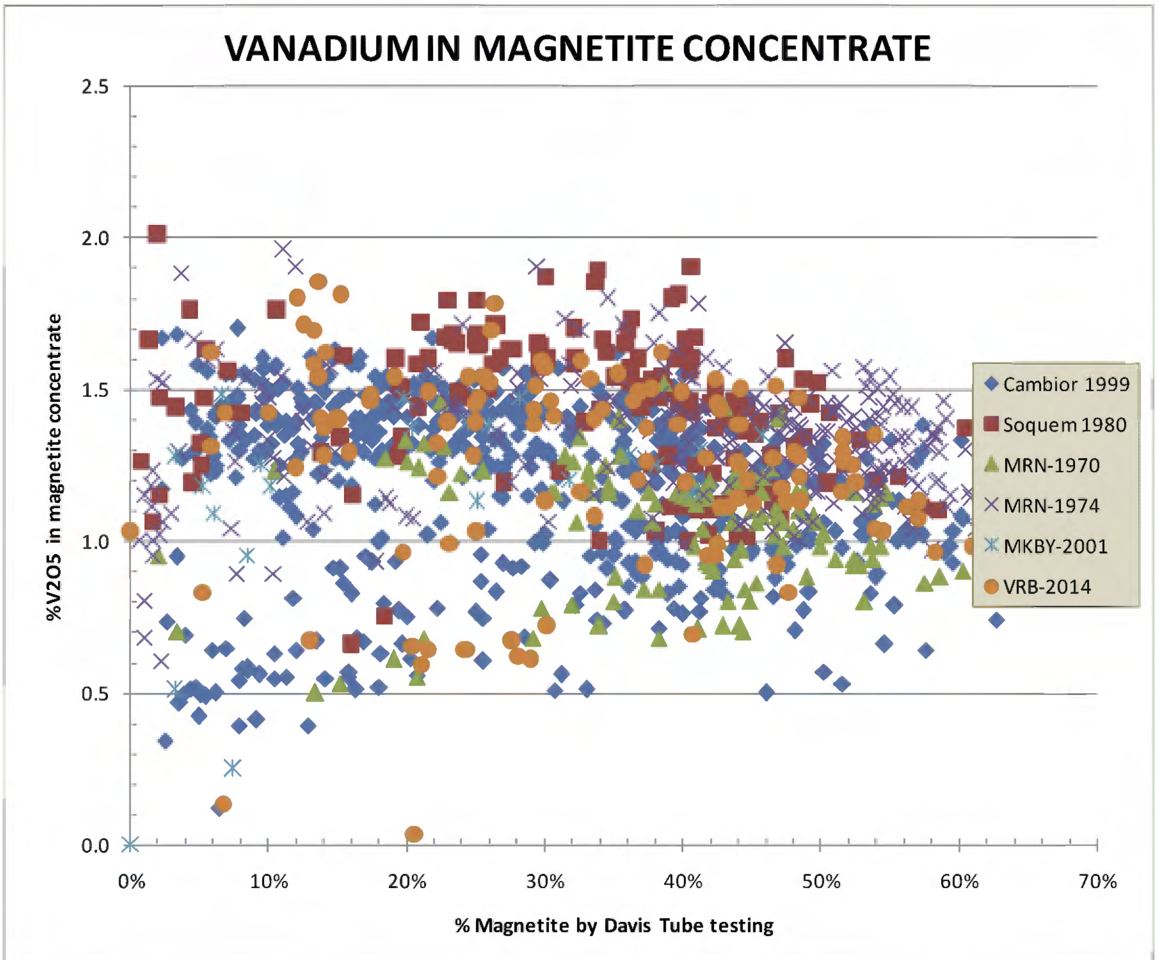

***Figure 31**: Diagram of the vanadium content of the magnetite concentrate versus the magnetite abundance as recovered by Davis tube. Although fuzzy, two distributions are visible, mainly in the magnetite poor samples, with about 90% of the samples with about 1.4% V_2O_5, and a second much smaller population intercepted mainly in Cambior 1999 testing at about 0.5-0.7% V_2O_5. It is expected that this second population represent samples from P3 unit. It can also be noted that SOQUEM drill core samples (red squares) includes a population which is significantly enriched in vanadium (>1.6% V_2O_5), which population was not detected in Cambior trench samples.*

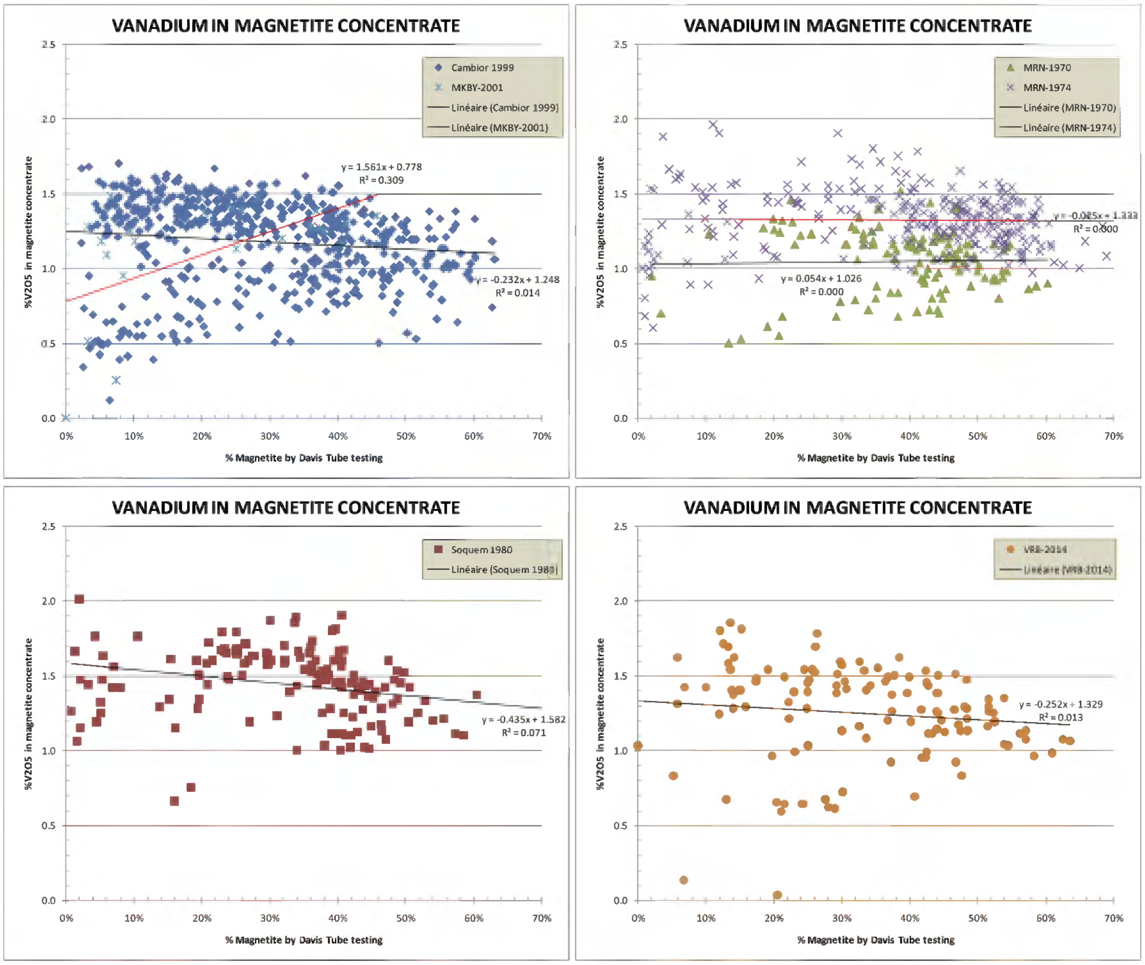

Figure 32*: Series of diagram of the vanadium grade in magnetite concentrate versus the magnetite abundance, separated by sample batches. Differences are readily visible, although difficult to quantify. The fact that each batches do not fit on similar trends implies discrepancies of results between the various batches. Such phenomenon cannot be explained by the mere abundance of sampling the various units by the various program, would have simply cause shifting along similar trends. Differences are obvious between MRN 1970 and 1974 batches, as well as between SOQUEM 1980 and Cambior 1999 batches.*

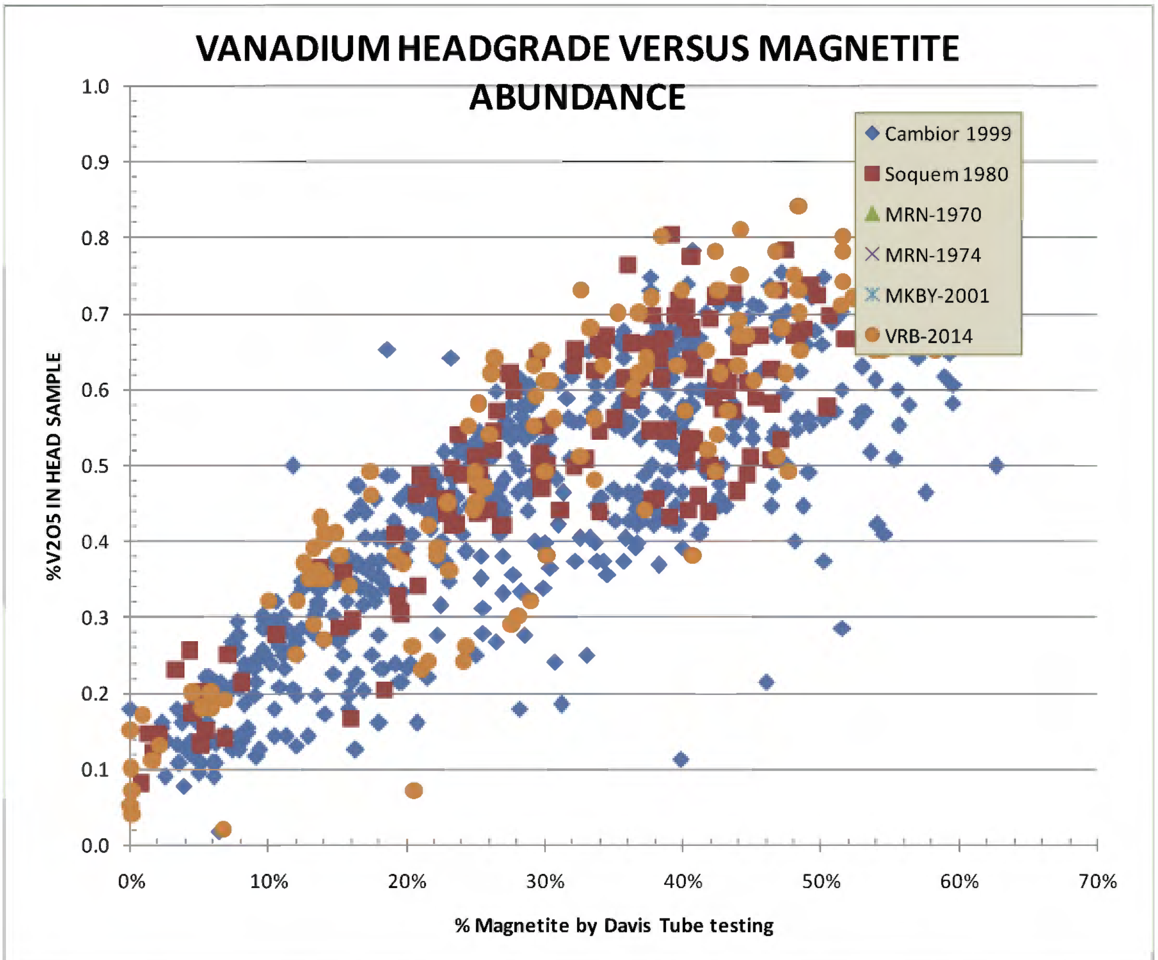

***Figure 33**: Diagram of the head sample vanadium grade versus the magnetite abundance. Unlike for the vanadium grade of the magnetite concentrate, the various batches of samples fell on a quite narrow trend, with scattering towards low vanadium grade related to samples taken higher in the stratigraphic sequence.*

Since the grinding influences the magnetite liberation and dilution by ilmenite plus silicate, such relation shall be reflected in the iron content of the magnetite concentrate. Pure magnetite, Fe_3O_4, contains 72.4% Fe or 103.5% Fe_2O_3. Since the average magnetite concentrate grades 87.4% Fe_2O_3, the difference (± 15%) is considered from dilution by titanium in ulvöspinel in solid solution within the magnetite, ilmenite as exsolution and entrapped liberated grains, plus dilution from entrapped/non-liberated silicates. The quality of the liberation and amount of dilution of the concentrate is readily visible on ***figure 34 left***. All samples fall on a quite narrow trend, with the various batches not easily differentiated. Discrepant samples are from Cambior 1999 and MRN-1974 batches, and clearly related to the coarseness of the grinding and poor liberation. A quite linear relation is present between the total iron in head sample regard of the magnetite abundance (***figure 34 right***). The various batches of samples are quite coincident. A lower intercept at 10% Fe_2O_3 suggests that this amount of iron is held in silicate and not amenable for magnetic separation. Iron recovery tends towards 100% for samples with more abundant magnetite.

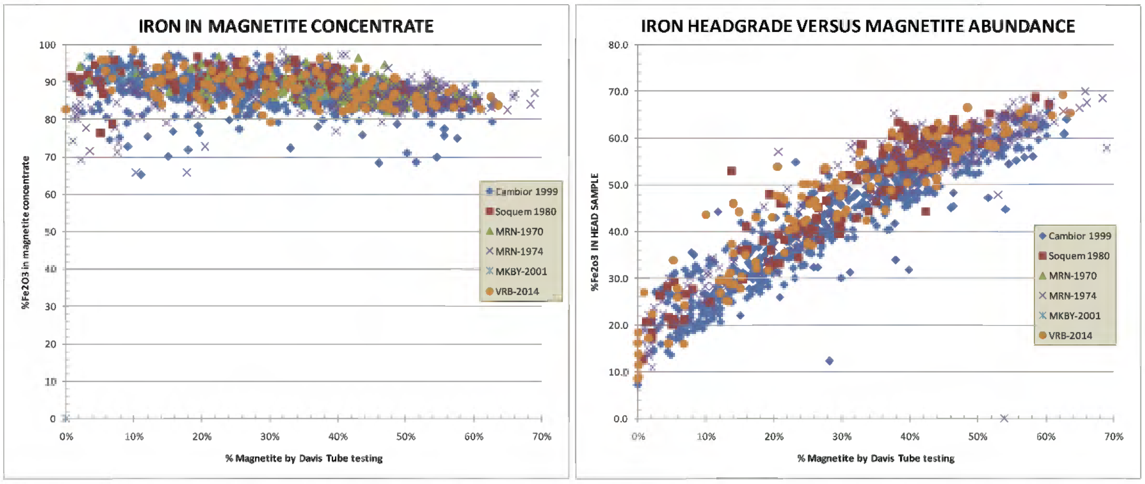

***Figure 34**: Diagram of iron grade in magnetite concentrate (left) and head sample (right) against the magnetite abundance as recovered Davis tube testing. No significant differences are noted between the various sample batches. Scattering in magnetite concentrates relates to the purity of the concentrate, while scattering in head sample grade is caused by the presence of iron in non-recovered silicates and ilmenite. Note that headgrade analysis is not available for MRN-1970 and MKBY-2001 (in Boudreault 2002) samples.*

The effectiveness of liberating the ilmenite exsolution is easily estimated from the titanium content of the magnetite concentrate (***figure 35***). The titanium grade of the various batches of concentrates differs, indicative of the different liberation of ilmenite exsolution with grinding. Titanium is more abundant in Cambior-1999 concentrates, these being rather coarsely grind at 70 mesh, while the titanium is minimal in CRM-1970 (Kish, 1971) which is grinded at 325 mesh. Such relation is not noted in titanium head grade, the general trends of each batch being coincident. Titanium enrichment is however noted for part of the samples, regardless of the batch, which samples being from higher in the stratigraphy.

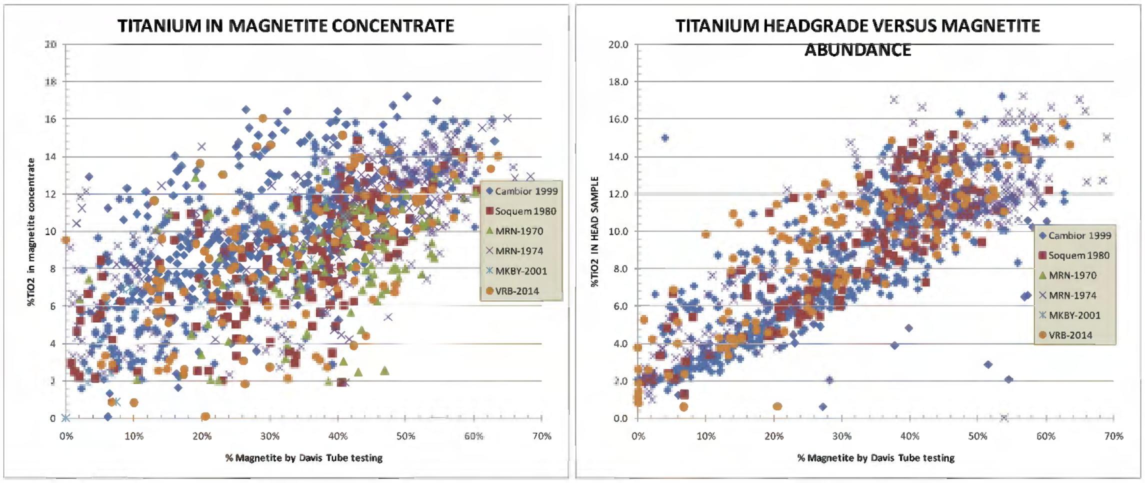

***Figure 35**: Diagram of titanium grade in magnetite concentrate (left) and head sample (right) against the magnetite abundance as recovered by Davis tube testing. The amount of titanium in the magnetite concentrate is directly related to the liberation of ilmenite inclusion, and thus to the grinding process. The amount of titanium in the head sample relates to the abundance of oxides as well as to the stratigraphic position of the sample.*

The effect of fineness of the grinding is expected to be seen through the abundance of silicate contaminant left in the sample. Silica and other contaminants are available only for Cambior-1999 concentrates and subsequent ones, which data has not been compiled. For older analysis, which includes bulk of the drilling, only iron, titanium and vanadium were assayed, and the contaminant abundance can be approximated by the lack of closure to 100%. On ***figure 36***, it can be noted that contaminant levels are similar, although not identical, between the batches. Cambior-1999 concentrates includes some heavily contaminated concentrates, related to their coarseness. Overall, it can be noted that samples with low magnetite abundance are more contaminated, an effect quite pronounced on MRN-1974 samples. The cause is not explained.

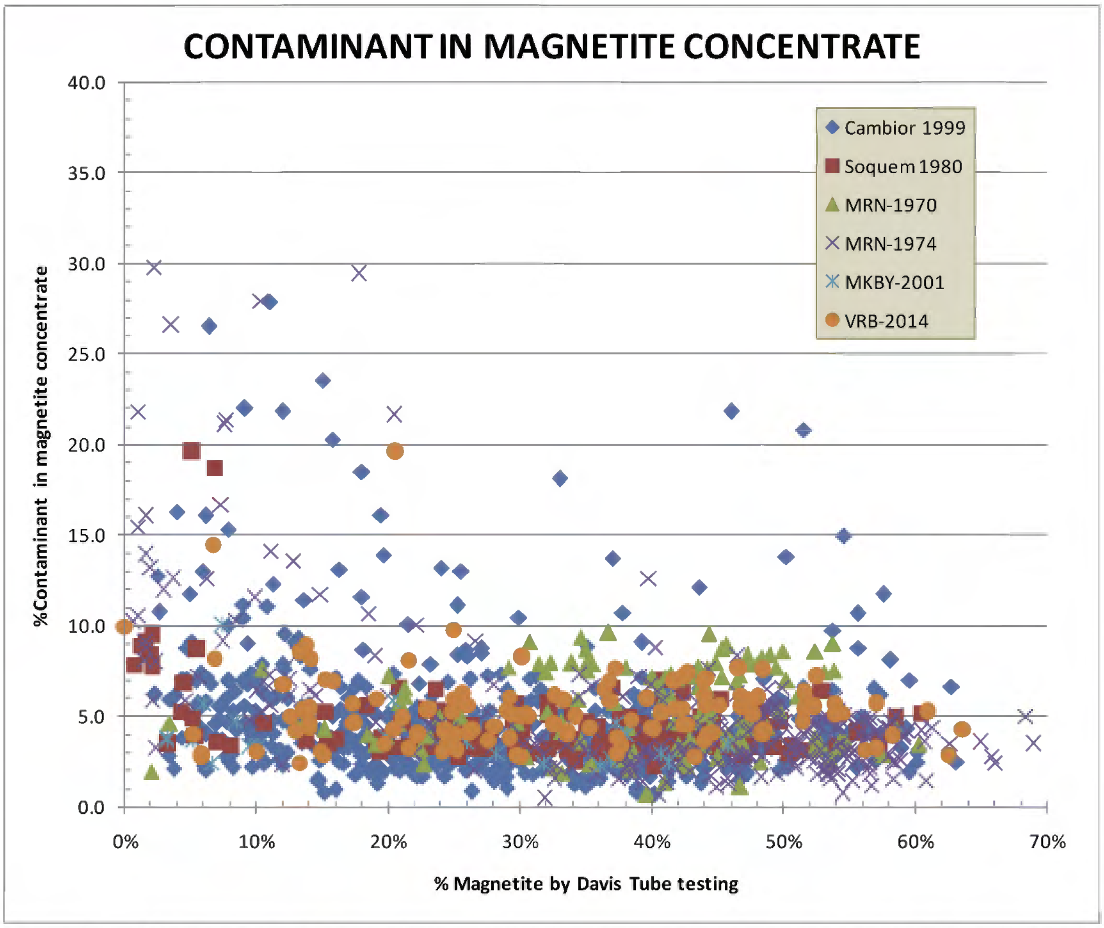

***Figure 36**: Abundance of contaminant in the concentrate compared to the magnetite abundance. Contaminant is approximated by the non-closure to 100% of the iron, titanium plus vanadium grade for all batches of analysis, for the sake of comparativeness. Notice that samples with low magnetite abundance are more contaminated, suggesting either a grinding or a cleaning issue.*

Finally, vanadium recovery can be calculated for each test, which equals vanadium grades in magnetite times magnetite abundance, divided by vanadium headgrade. This recovery represents the amount of vanadium extracted from the rock through beneficiation of magnetite, the rest of vanadium being hosted in silicate or liberated ilmenite. The recovery is dependent on magnetite abundance (***figure 37***), nearing 90% for magnetite-rich sample, and dropping progressively to 60% for samples with less than 15% magnetite, and then collapse to zero on magnetite-poor samples. Samples from MRN-1974, Cambior-1999 and those processes for VanadiumCorp in 2014 have concordant recovery/grade curves. However, samples from SOQUEM 1980 shows abnormally high recoveries, some even exceeding 100%. This suggests that the vanadium grade of the magnetite concentrate is overestimated by about 10%. This discrepancy is not readily detectable from the mere concentrate analysis, which more or less succeeded the quality control test. This enrichment is also discernible on ***figure 39***, where SOQUEM samples do not coincide with the other concentrate grade versus magnetite abundance curve. A slight overestimation of about 5% was detected by Cambior (Crépeau, 2000) on these samples. The metallurgical mass balance of these samples is correct, as long as the calculation is based on CRM headgrade analysis, which are 5% higher than initial ALS analysis. Using the CRM headgrade instead of the Chimitec headgrade may correct the appearance of correctness, but the uncertainty will remain.

The discrepancy between the concentrate grades obtained on SOQUEM drilling samples and the various other samples sets is of concern, since SOQUEM drilling dominates the current resource estimate. It was agreed by both authors that no correction on the data would be applied to correct this issue and that the estimation shall be based only on original assays without introducing further bias.

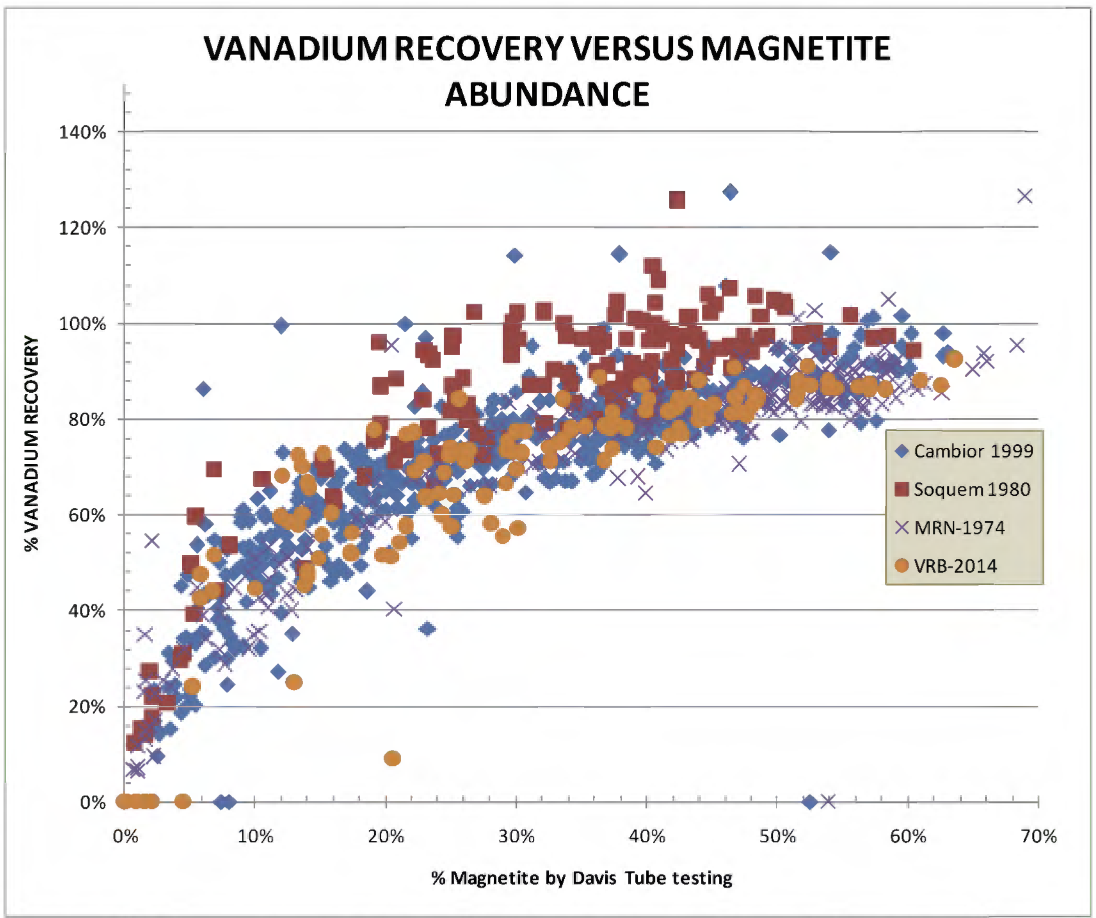

Figure 37*: Recovery-grade curve for the various batches of Davis tube concentrates. Samples from MRN-1970 and MKBY-2001 are lacking headgrade analysis, showing a 0% recovery. It can be noted that samples from SOQUEM 1980 shows abnormally high recoveries, suggestive of overestimated grade of the magnetite concentrate.*

ITEM 13: MINERAL PROCESSING AND METALLURGICAL TESTS

Titano-magnetite is notorious for not being suitable for iron production, unless coupled with vanadium and titanium co-production and smelted by direct reduction and arc furnace. Conventional blast-furnace smelting of titano-magnetite was attempted in the early 1900's for various deposits located in Québec (St-Charles de Bourget, St-Urbain, Natashquan, etc.) without commercial success.

Since its discovery by Gulf Mineral in 1956, more attention was placed on the metallurgy of the Lac Doré magnetite mineralization than on the characterization of the deposit itself. Successively, Jones and Laughin Steel, the Québec Departement of Natural Resources (*Ministère des Richesses Naturelles*), SOQUEM, McKenzie Bay Resources and BlackRock Metals did extensive work on the metal recovery and various aspects of the metallurgy. Extraction of ferroalloys is usually more complex than for base or precious metals and requires metallurgical testing early in the exploration process. The overall profitability of a project, independently of its grade and resources, is usually dictated by the choice of metallurgical process and the capital requirements attached to the selected process.

Presenting the Lac Doré project systematically raises questions about efficiency of the metallurgical process and availability of essential know-how. Extensive metallurgical testing on Lac Doré mineralization was carried out by past owners of the project, **and indicates clearly the suitability of the mineralization to beneficiation, and the recoverability of vanadium by conventional alkali-roasting as well as smelting processes**. Both tested routes are commercially operated worldwide upon similar ore for more than 50 years and are proven technologies. Laboratory and pilot plant tests on Lac Doré mineralization were carried out by various independent facilities, which indicated clearly that the mineralization behaves similarly to other vanadiferous-titaniferous-magnetite deposits in production in South-Africa, China and Russia. Concentrate and recovery grades were similar to other ores when tested with both methods. Overall metallurgical efficiency is thus forecasted with acceptable certainty.

Titaniferous magnetite is the cleanest vanadium ore and requires the simplest metallurgical process. Vanadium extraction out of shales, phosphorite, uranium ore, flue ashes, bauxites, non-titaniferous iron ore, stone coal or clays is known as complex and expensive (Gupta and Krishnamurthy, 1992), and shall not be compared to titaniferous iron ore processing.

All metallurgical tests conducted through time on the deposit were done on bulk samples were taken from P2 in the East deposit. It was amply demonstrated that the mineralization from the West deposit is very similar to that of the East deposit, as well is the mineralization from BlackRock's Southwest and Armitage deposits. Mineralization from Northeast deposit may behave differently in the course of beneficiation, due to metamorphic overprint causing sintering, grain coarsening and the presence of abundant iron silicates such as chlorite. No metallurgical test has ever been conducted on material from the other stratigraphic units.

The deposit is zoned in regard of stratigraphy, both in grade and mineralogy. Beneficiation and metallurgical efficiency is thus expected to be dependent on the specific stratigraphic unit. Conversely, the decision as to which unit is to be mined, and thus tested, is dependent on the process selected in the metallurgical tests, and which metals are to be recovered. Production of vanadium alone by alkali roasting requires high vanadium grade in the magnetite and may tolerate low magnetite abundance of P1 and P2, while co-production of vanadium, iron and titanium by intense fusion is less sensitive to vanadium headgrade but requires high magnetite content such as P3.

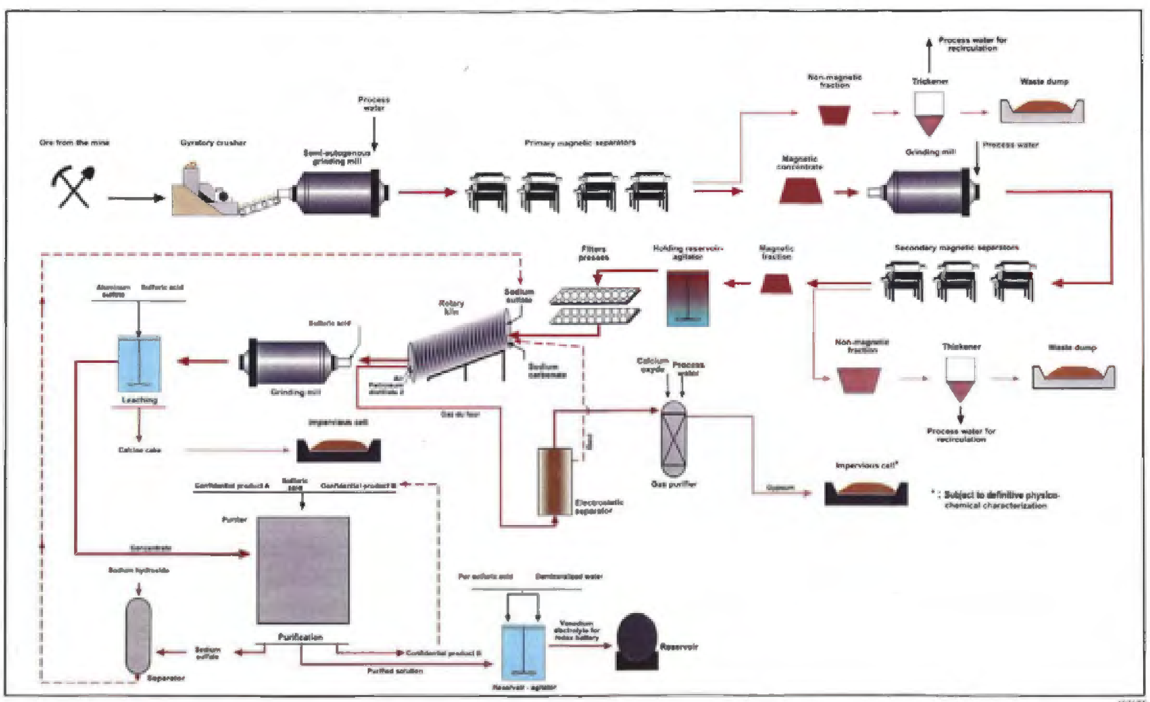

Figure 38: Process for Production of vanadium pentoxide or VRB Electrolyte (Entraco, 2002).

BULK SAMPLES

The *Ministère des Richesses Naturelles du Québec* collected successively three bulk samples of 30, 200 and 600 tonnes in late 1960' and early 1970'. These samples were taken from the P2 magnetite rich beds of the Eastern deposit. It is uncertain if these three bulk samples were taken at the same location. These samples are considered as likely biased toward a higher headgrade than the average deposit. They were taken within the area of the initial pit design for SOQUEM, the site still being visible in the field ***(picture 17)***.

Picture 17*: Sampling site for 600 tonnes bulk sample collected by the Ministère des Richesses Naturelles in 1971.*

***Picture 18**: Sampling site for the 50 tonnes bulk sample collected for SNC-Lavalin in 2001.*

A series of eight (8) small 1 tonne bulk samples were collected by McKenzie Bay in 1997, from various stratigraphic units. Bench tests including grinding, energy consumption and magnetite concentration were carried-out on one of these samples (T1) (Lamontagne, 1998). SNC-Lavalin also used these for preliminary beneficiation tests. These are the only bulks samples taken from P0, P1 and P3, and it is uncertain if they were processed individually or were composited.

A 50 tonnes sample was collected for SNC-Lavalin in 2001, which was used for the pilot plant testing carried out within the scope of the feasibility study. This sample was collected from the P2 horizon in Eastern Deposit, close to the former MRNQ site ***(picture 18)***.

BENEFICIATION AND MAGNETITE CONCENTRATE QUALITY

Beneficiation of the ***Lac Doré*** magnetite is apparently a relatively easy process. The specifications to be met are what is needed to produce a pure magnetite-ilmenite concentrate containing less than 1% silica and 0.1% lime. These two elements are the most deleterious in regards to vanadium recovery and alkali consumption. Magnetite can be easily separated with the use of cascading magnetic separators in conjunction with various step grinding. Various designs were tested both at the laboratory and pilot plant scales. Reported results in the literature are sometimes confusing, since they do not always provide details of the tests. In every single test, specifications were apparently exceeded positively.

The efficiency of subsequent metallurgical processing is sensitive to the grinding and beneficiation process employed. With the roasting process, the finer the magnetite concentrate, the more fly ash is generated in the rotary kiln. Leaching gets more effective and filtration less efficient. Inversely, smelting is likely to require pelletization, rendering the process less sensitive to fineness. The Lac Doré mineralization is not expected to be suitable for conventional direct reduction smelting such as RTIT (QIT) process without pelletization.

BENEFICIATION TEST CONDUCTED BY JALORE MINING LTD

Jalore Mining Ltd. reported a limited beneficiation test relating to the potential production of iron ore. They were unable to produce a magnetite concentrate with titanium content low enough to be suitable for blast-furnace iron smelting.

BENEFICIATION TEST CONDUCTED BY CAMPBELL-CHIBOUGAMAU MINES LTD

A 35 tonnes bulk sample, taken from the Campbell-Chibougamau deposit, was sent to CRM for magnetite concentration in 1966. The report is not available. This deposit is located at the same stratigraphic level of the Lac Doré Complex, about 40 kilometres to the west.

FIRST CRM BENEFICIATION TEST, 1967

The first beneficiation test done on the ***Lac Doré*** mineralization was carried by the CRM on drill cores recovered from Jones and Laughlin drilling. At the time, four small samples representing 50 kilogrammes were selected by Dr. Gilles O. Allard and tested. Concentration was done by Davis tube and Sala magnetic separator, on samples grinded at 325 mesh. A bench-scale alkali roasting tests were subsequently performed on these concentrates.

BENEFICIATION TEST BY IRSID, 1970

A pilot plant beneficiation test was performed by IRSID (*"Institut de recherche sidérurgique")* in Nancy, France in 1970, on behalf of the *Ministèredes Richesses Naturelles* (Gerbe et *al.*, 1970; Astier et *al.*, 1970). It processed 5 samples of 4 tonnes each from the MRNQ bulk samples ***(table 15)***. Autogenuous grinding energy requirements were established at 8.15 to 12.7 kWh/t. A dry route test included primary grinding and low strength magnetic separation (usually referred as *"scalping"* by metallurgist). Subsequent humid route involved secondary grinding, magnetic separation and recycling. Ilmenite was concentrated using a high strength magnetic separator and gravity separator from rejects of primary magnetic separation (Astier and Boudier, 1969). The results for the five samples are listed below. The low vanadium grade is probably a result of sampling parts of the P3 unit, vanadium distribution not being understood at that time. The material was not assayed for contaminants.

IRSID	Yellow	Red	Bleu	Brown	Green
Fe	85.3%	83.8%	82.3%	80.8%	81.7%
V	1.39%	1.26%	1.16%	0.87%	1.19%
TiO_2	9.5%	11.0%	12.4%	15.6%	12.1%

***Table 15**: Analysis of IRSID concentrates.*

2nd BENEFICIATION TEST BY THE CRM

A second beneficiation test was carried in 1971 (Cloutier, 1971) by the CRM using aliquots of the same samples than IRSID tests. Conventional wet methods were used for comminution and separation, including multiple steps crushing and grinding down to 270 mesh. Magnetic separation was done using a Sala separator and then a Davis tube. This work aimed mainly to establish the effect of grinding mesh on concentration.

BENEFICIATION TEST BY FOOTE MINERALS

Tests were carried on the Lac Doré mineralization by Foote Minerals for an American Steel producer. Only a shipping statement is available at this point, no results were found.

3rd BENEFICIATION TEST BY CRM

A pilot plant concentration test (Delisle et Dessureaux, 1977) was done by the CRM ***(table 16)***. The samples were extracted from trenches T-1 (45 tonnes) and T-3 (200 tonnes). Such large tonnage was needed for subsequent smelting test. The rock was first crushed to -28 mesh and submitted to a first magnetic concentration ("*scalping*"). Rejects were treated with Humphrey spirals for ilmenite recovery (3%). The concentrate was then grinded to 90% -325 mesh and submitted to a second magnetic separator. Grinding indexes were calculated at 12.7-13.0 kWh/t for the rock and 23.9-26.0 kWh/t for the magnetite concentrate.

Drums of this concentrate were submitted to various laboratories for pelletizing, roasting and smelting tests.

	1	2	3	4	5	6
Fe_{total}	65.9%	64.7%	64.1%	65.0%	64.37%	66.0%
FeO		32.5%	30.6%	--	32.25%	--
Fe_2O_3		--	57.7%	--	56.19%	--
TiO_2	9.6%	8.0%	7.97%	7.5%	7.75%	0.54%
V_2O_5	1.46%	1.61%	1.48%	1.6%	1.56%	0.77%
SiO_2		1.20%	0.80%	1.0%	0.88%	2.8%
Al_2O_3		0.81%	0.67%	0.8%	0.78%	0.36%
MgO		0.24%	0.25%	0.24%	0.45%	3.86%
CaO		0.17%	0.15%	0.17%	0.14%	0.05%
P		0.0017%	--	--	--	0.01%
As		< 0.001%	--	--	--	--
Cr_2O_3		0.06%	0.13%	0.13%	0.12%	--
MnO		0.15%	0.20%	--	0.15%	--
Na_2O		0.07%	0.05%	--	--	--
K_2O		0.05%	--	--	--	--
S		0.02%	--	0.02%	--	0.02%
Ni		0.011%	--	--	--	0.06%

***Table 16**: Analysis of the magnetite concentrate from the 3rd CRM test.*

1: CRM pilot plan concentrate reported by CRM; 2: CRM pilot plan concentrate analysed by Rautaruukki Oy; 3: CRM pilot plan concentrate analyzed by Hatch Associate; 4: CRM pilot plan concentrate as mentioned in CIM Bulletin; 5: CRM pilot plan concentrate used by QIT fusion.

BENEFICIATION TEST DONE BY LAKEFIELD RESEARCH FOR SNC-LAVALIN

A pilot plan beneficiation test was commissioned to Lakefield Research in 2001 by SNC-Lavalinon behalf of McKenzie Bay International (https://docs.google.com/file/d/0BxmBLfd5ee8sSDdtc2NWaDljUU0/preview). This included the bench-scale processing of the eight 1 tonne bulk samples collected in 1997 by McKenzie Bay, plus the pilot plan processing of the 50 tonnes bulk sample collected in 2001. The test includes primary grinding, magnetite scalping at low magnetic intensity, secondary closed circuit regrinding and triple drum low intensity magnetic separation (***figure 39***). Results were apparently within specifications, yielding a magnetite concentrate at <1.2% SiO_2 and <1.2% V_2O_5, from a feed of 0.47% V_2O_5 and 32% magnetite. Subsequent beneficiation test for ilmenite were reported by McKenzie Bay, the results of which are not available.

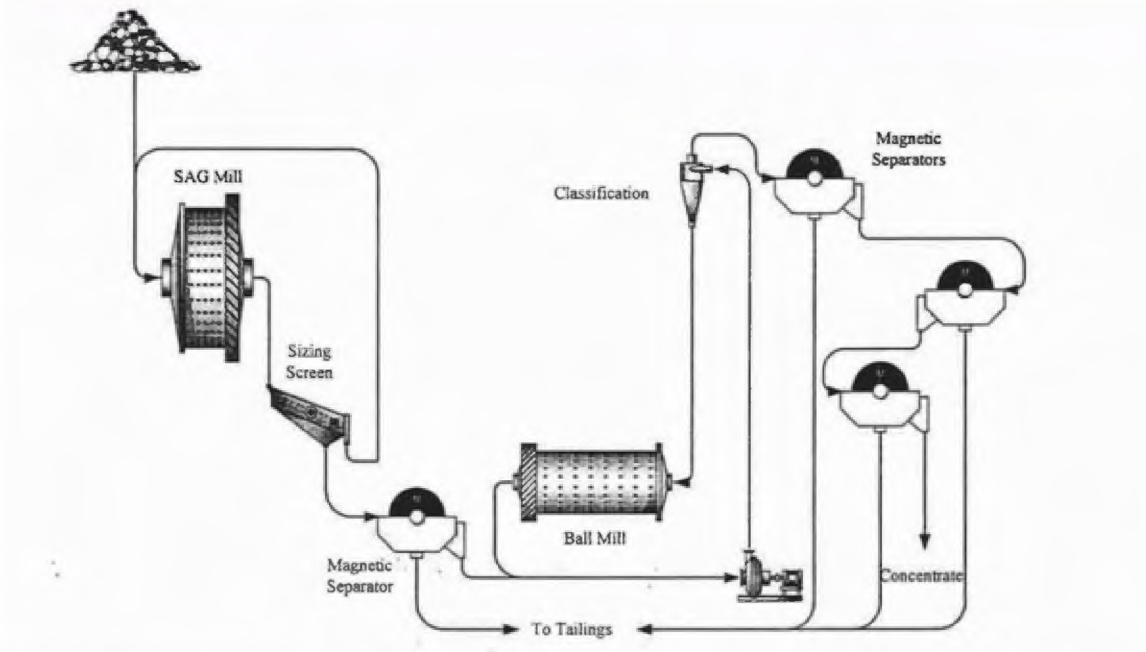

Figure 39*: Magnetite beneficiation flow diagram.*

PELLETIZATION

Numerous pelletization tests were carried on the ***Lac Doré*** magnetite concentrate. These were done by Rautaruuki (Finland), Ontario Research Foundation (Fossen, 1977) and CRM (Naldo, 1978) from the CRM magnetite concentrate. Pellet quality was considered as excellent.

HIGHVELD-TYPE SMELTING TESTS

The ***Lac Doré*** magnetite mineralization, because of its titanium content, is not suitable for iron smelting in standard shaft or blast furnaces. *"Should this process be used to smelt magnetite ore, the carbon reduces the titanium dioxide TiO_2 content to titanium sequioxide Ti_2O_3, which then combines with the air blast to form titanium nitrides and carbides. This results in the precipitation into a solid agglomeration which shuts down the furnace by choking up the blast passages"* (www.evrazhighveld.co.za/processoverview.asp). Early attempts to smelt similar titanium bearing magnetite from St-Charles-de-Bourget and St-Urbain deposits failed, the magnetite was reported as too refractory.

However, the magnetite can be smelted by direct reduction in electrical furnaces. Lac Doré concentrates were tested through two variancesof the process, namely Highveld and QIT. These processes involved direct reduction and intensive fusion in an arc furnace for the production of either steel or pig iron, and a vanadium-titanium slag. Direct reduction accounts for the production of about 74 million tonnes of iron annually for the world (www.midrex.com/uploads/documents/MDX%20STATS%202012%207-3-13Final.pdf), mainly in "*minimills*", or 4.6% of the total steel production. *Minimills* are a small steel production concept, developed by Co-Steel Lasco, currently Gerdau Corporation, who built small intensive fusion steel mills in proximity to their market, such as car assembly plants. One such mill is present in Oshawa, ON, Canada. Smelters using this process for the co-production of steel and vanadium are currently in operation only in China and New-Zealand. The Highveld steel plant in South Africa has been recently shut down, maintaining only the conventional alkali roasting process in production. The fate of Evraz's Nizhny Tagil plant, in Russia, is not known to the author, the vanadium facility of this plant having been shut down on recurrent basis. Finland based Rautaruukki Oyj plant closed its vanadium recovery plant in the 1980's. Finally, a small vanadium by-production is reported by New-Zealand Steel, from the Taharoa sand.

Smelting is currently not contemplated by VanadiumCorp as a means of vanadium production, considering that all previous studies indicated excessive capital requirement and poor economic perspectives. Smelting of the ore and recovery of titanium slag as well as vanadium pentoxide has been demonstrated as technically feasible at a pilot plant scale, including a full smelting scale test in QIT direct reduction furnace. Numerous scenarios were contemplated, including the production and sale of hot metal to other steel mills and rolling plants, such as Sidbec (now Arcelor-Mittal) in Contrecoeur. An account of the historic smelting tests and results is provided in Girard, 2014.

ALKALI ROASTING

Alkali roasting is the process used to extract the vanadium pentoxide out of most mineral material *(**figure 40**)*. It can be used on vanadium bearing slag (Highveld), clays (Union Carbide), uranium mine by-products (Colorado plateau), oil and tar residues (defunct Carbovan in Alberta, Canadian patent #4798709 and #4966761) as well as primary vanadiferous magnetite concentrate. Although the general process is constant, differences in recipes and furnace or vessel configurations are noticed. It is the only process used for commercial production of primary vanadium, as well as being used for processing vanadium as by-product from other commodities which also includes vanadium recycling. The overall process is divided into roasting itself, leaching, cleaning, precipitation and cracking (Bradbury, 2002).

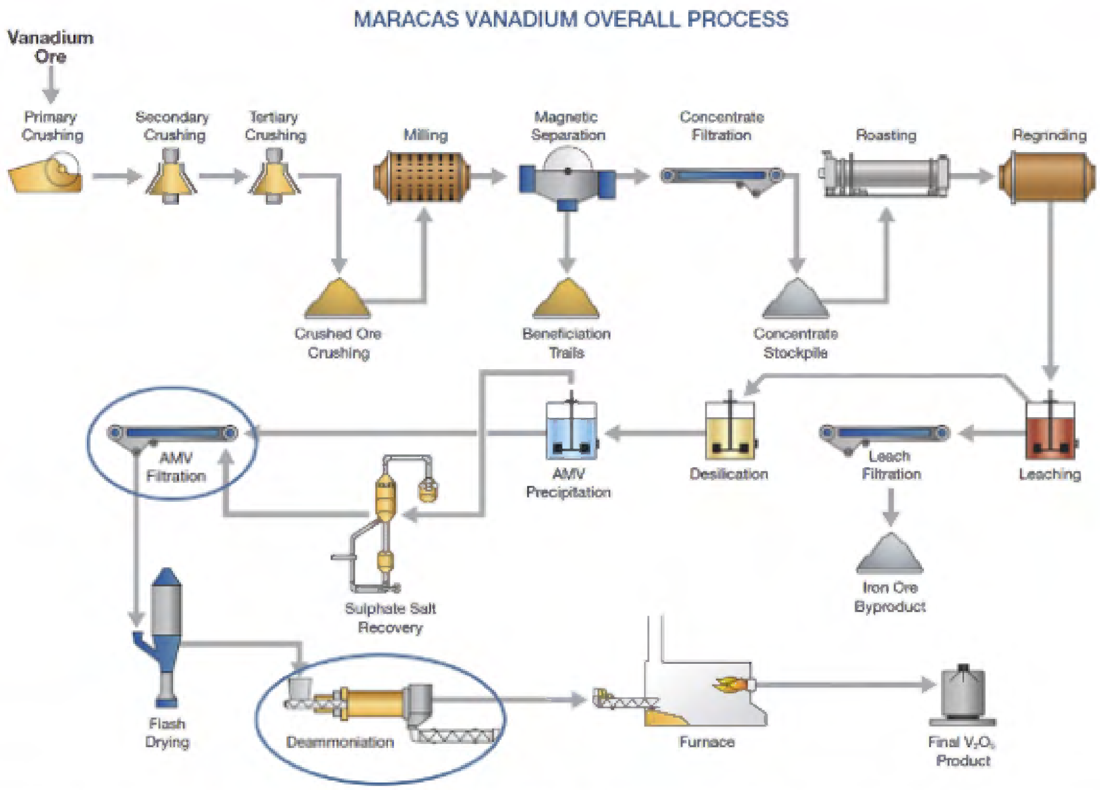

Figure 40: *Process uses by Largo Resources in Brazil, for their operation. This process is the conventional alkali roasting and AMV route.*

Roasting is a delicate operation. The principle is to produce a sodium vanadate out of the feed-stock, which is leached in water. Sodium vanadate is produced through complex reactions between molten sodium oxide and vanadium sesquoxide while expelled out of the magnetite (or other feed-stock). Sodium oxide is produced by the breakdown of any volatile based sodium oxysalt, soda ash (Na_2CO_3) being the most convenient, or sodium sulfate (Na_2SO_4) if a sulfuric acid scrubber is added at the exit of the kiln. Sodium oxalate ($Na_2C_2O_4$) was used in the ill-fated Windimurra project, Australia. Sodium chloride cannot be used due to corrosion issues.

Sodium vanadate is solubilized in leach tanks to produce the *pregnant liquor.* The addition of ammonia salt to the leach liquor precipitates ammonium poly-vanadate (*APV route)* or ammonium metavanadate *(AMV route),* which is be broken into vanadium pentoxide and ammonia by heating. Although apparently complex, this process is used by most vanadium producers upon a wide variety of material, and is also used for the production of other polyvalent transition metals such as molybdenum, tungsten, and chromium.

The roasting reaction is sensitive to various factors, the most important being the roasting temperature, the residence time, the soda ash excess, the content of silica and lime of the concentrate. Various tests indicated that heating and chilling times, as well as titanium content do not significantly affect the reaction. Recovery usually increases with rising temperature, time and soda content, although a threshold needs to be in balance since each parameter interacts with each other. Temperature is dictated by the firing process and BTU input, plus the fact that magnetite oxidation into hematite is an exothermic reaction. Soda ash consumption is the principal operating cost and minimizing its losses in the process lead to substantial savings. Finally roasting time is the important factor influencing the engineering, as it dictates the size of the kiln. Doubling the roasting time doubles the kiln size or reduce throughput by half, and physical limitations do exist. Construction of the kiln is largest capital cost of a plant.

In laboratory tests (Malinsky, 1981), the best recoveries on non-aggregated magnetite were obtained using a temperature of 1300 °C, with the use of about 2% weight of soda ash and a residence time of 1 hour. This recipe yielded a 94% recovery of V_2O_5. Using these parameters is optimal in terms of soda ash consumption (40% of operating cost in South Africa) and in term of roasting time (optimization of the throughput of the kiln). Kilns in South Africa are usually fired at 1150-1200 °C, with 5% soda ash and a few hours of roasting time. The author is unsure if rotary kilns can economically withstand protracted firing at 1300 °C. No pilot plant testing was done on this process by CRM.

Tests were carried on pellet, cake, beads, as well as on powdered material (McDonough, 1980). Best recoveries were from pelletized ore. Powdered material tends to agglutinate, especially at very high temperature, requiring very skilled kiln operators to avoid *"donuts"* formation.

Tests involving various heating and chilling times were conducted, indicating that these parameters do not significantly influence recoveries (Gabra, 1979; Grégoire, 1979). However, they do alter the mechanical property of the calcine, especially its grinding index.

A roasting cage test was carried inside the Rautaruukki vertical shaft furnace (Tolonen and Lindholm, 1978). Cages filled with pelletized Lac Doré magnetite were incorporated in the load of the furnace and recovered afterward. Recoveries up to 92% were obtained. Shaft furnaces are notorious for a non-uniform temperature distribution, leading to a variable recovery, which was noted as expected. Such phenomenon is not encountered in a rotary kiln, meaning that better recovery should be obtained (Malinsky, 1980).

Silica content of the feed-stock influences the recovery process (Desrochers, 1980). Silica reacts with soda forming leachable sodium metasilicate, thus consuming the reactant. Furthermore, metasilicate forms a silica gel in the reactor, resulting in the clogging of the filtration units. More than half the soda used in South African operations is lost through sodium metasilicate. A larger amount of reactants is thus needed to counteract this, which means that the cleanest ore should be used as kiln-feed. South Africans tolerate 2% SiO_2 in feed-stock. The Lac Doré beneficiation test produced <1% SiO_2 in the magnetite, which can still be improved. However, coal firing produces about 5% SiO_2 ashes. Thus burning the required 5 tonnes of coal versus 100 tonnes of magnetite leads to the addition of 0.25% silica contamination in the calcine. A delicate economical balance must be achieved between finer grinding (improved liberation and lower silica) and alkali consumption. Furthermore, the molten sodium peroxide is prone to create stickiness to the magnetite, forming "*donuts*" rims which may cause hot-spots the kiln. The favourably low silica level at Lac Doré is expected to reduce cost at production stage compared to current producers.

Alkali-roasting has also been tested on Lac Caché deposit by Campbell-Chibougamau Mines, with similar results (Delisle, 1972).

Various furnace designs were considered, including standard rotary kiln (Union Carbide), air-recirculated rotary kiln (SNC) and shaft furnace (Rautaruuki). Other furnace configurations were mentioned but not discussed or tested, such as fluidized bed, Herrendorf furnace, Herrendorf-fluidized bed, nitrogen plasma furnace, etc. Agnew Cough, an ill-fated plant in Australia, used a triple deck fluidised bed which exploded after a short operating life, is often taken as case history in regard of risk inherent to introducing new technologies in extractive pyrometallurgy.

LEACHING AND PRECIPITATION

Sodium vanadate $Na_2V_2O_6$ is water soluble. In the conventional process, it is leached from calcine in agitated slurry tanks, drained and filtered. The pH of the pregnant liquor is adjusted with sulfuric acid, and then mixed with ammonium sulfate or chloride. Through agitation, vanadium polymerize with ammonia to produce either ammonium metavanadate (AMV:NH_4VO_3), hexavanadate (*AHV:* $(NH_4)_2V_6O_{16}$) or polyvanadate (*APV:* $(NH_4)_2O\text{-}3(V_2O_5)$) depending on acidity and concentration, which precipitates. The vanadate is filtered, dried and roasted again. During this roasting, ammonium vanadate cracks down into fused V_2O_5 flakes and ammonia or NOX (Kougioumoutzagis, 1981).

Bench scale leaching tests were made, both on roasted magnetite and slag from smelting tests (Malinsky, 1979). More specific tests were made on resin-exchange column for vanadium recovery (Drapeau, 1978), on effluents conditioning, on chromium elimination (Kougioumoutzakis, 1980), on ammonium vanadate precipitation, on the effect of lime, titania and silica as contaminant, and on sodium metasilicate precipitation. Solvent extraction process, such as those developed by the CRM for the Mingan deposit (Ritcey et Lucas, 1979) were apparently not tested on Lac Doré material.

VANADIUM ELECTROLYTE

Vanadium redox flow batteries use vanadyl sulfate VSO_4 as basis for their electrolyte. This compound can be obtained by reaction of sulfuric acid with vanadium pentoxide, or through acidulation of the pregnant liquor. The production of such electrolyte requires a very low contaminant level in the soluble vanadium compound, notably for silica (<10 µg/l) and sodium (<100 µg/l), for an overall 99.999% purity. Such contaminant level cannot be achieved by conventional hydrometallurgy, and require addition of ion exchange resin or solvent extraction (Bradbury, 2002). Chemicals with such purity are currently produced by Stratcor (USA), Vanchem (RSA) and Dalian Bolong (PRC).

FERROVANADIUM

About 90% of the world production of vanadium pentoxide is dedicated to ferrovanadium conversion. As demonstrated by Niobec Inc., the adjunction of a ferroniobium facility to their pyrochlore (niobium oxide) production improved significantly their overall profitability and robustness. Surprisingly, ferrovanadium conversion of the Lac Doré pentoxide has never been tested. A problem historically faced by the project was a worldwide excess of ferrovanadium converting capacity, compared to a lack of V_2O_5 flakes production capacity. No incentives were perceived for conversion.

OTHER NON-CONVENTIONAL PROCESS

Vanadium has a tendency to be scavenged by organic matter, typically by reduction of vanadate solution in contact with carbon-based reducing material. For such reason, organic rich materials are typically enriched in vanadium, such as tar-sand fly-ashes, orimulsion fly-ashes, and anthracite (stone-coal). Based on salt roasting, these processes are typically complex, especially in regard of hydrometallurgical refining, and of lower economic robustness. A number of companies announced, in the last few years, new hydrometallurgical processes to extract titanium and vanadium as well as other metals from titano-magnetite concentrates, without preliminary salt roasting. Various processes were announced; some currently in pilot plant, but none have been evaluated by the author.

ITEM 14: MINERAL RESOURCES ESTIMATES

Christian D'Amours, P.Geo. (OGQ n° 226) from Geopointcom was contracted by VanadiumCorp to complete a Resource Estimate for the Lac Dore project. The resources were estimated by Christian D'Amours, P.Geo. who is a qualified person and independent of both the issuer and the title holder, based on the tests outlined in National Instrument 43-101. The current estimation is restricted to the Eastern deposit and the easternmost part of Western deposit as defined in historical reports, and does not encompass the main portion of Western or North-Eastern deposits.

The resource estimation work was performed from November 2014 to February 2015. The last drill hole included and considered is LD-13-04. This hole was drilled in March 2013. Since that time, no new information was added to the database.The Mineral Resource Estimates included in this report are based on data supplied by VanadiumCorp and IOS Services Géoscientifiques Inc. and validated by the author. The effective date for the resource estimate is April 10, 2015.

The main objective of this work was to publish the results of a mineral resource estimate and evaluate the amount of work required to upgrade confidence and resource categories.

The resource estimations are based on a scenario considering an open pit mining method (50° slope) up to a maximum depth of 200 m. Mineralized block selection is made in two steps. First, the abundance of magnetite (Davis tube magnetite concentrate) must be over 15%. Then, the amount of V_2O_5 measured in the magnetite concentrate must be over the cut-off limit. The cut-off limit is the breakeven point between cost and revenue for the specific cell. In this case, the cost for extracting V_2O_5 from magnetite bearing rocks varies in relation to the abundance of magnetite within the rock. Thus, the V_2O_5 cut-off cannot be a constant and is taken as a function of the magnetite abundance in the rock.

Mineral resources are not mineral reserves, not having demonstrated their economic viability.

Christian D'Amours was responsible for the 3D model and geostatistical analysis as well for resource estimation and classification.

METHODOLOGY

The Mineral resource estimate and geostatistical study detailed in this part of the report was performed using Isatis (V.14.02) software. The method involves a 3D block model of

10 m X 10 m X 11.9 m estimated by ordinary kriging (OK). Then an iterative procedure allowed for selecting cells and optimizing the pit design.

DRILL HOLE AND TRENCH SAMPLE DATABASE

The actual Geotic / MS Access diamond drill holes and trench database was setup and created by the author using all the data submitted. It contains 83 surface diamond drill holes and trenches, for 14,559 m of core (trenches are considered as core equivalent). A total of 2880 headgrade samples were assayed for V_2O_5, Fe_2O_3 and TiO_2, while specific gravity (*SG*) was calculated according to the procedure described in *Item 12*. Almost all sampleswere also flagged with a lithological code. Most of the intervals previously assayed for headgrade were tested for their magnetite content using a Davis tube magnetic separator, and the magnetite concentrate assayed for V_2O_5, Fe_2O_3 and TiO_2. Original sample limits were not systematically respected. Headgrade samples were combined in longer intervals in most cases prior to the Davis tube process, to create composite samples. Thus, the database contains 3751 samples tested for magnetite content with the use of a Davis tube and assayed for TiO_2, Fe_2O_3 and V_2O_5 (hereafter referred as magnetite concentrates).This method allows measuring the V_2O_5 content within the magnetite concentrate with minimal contribution from other mineral phases. This magnetite concentration method is very similar to the method proposed for an eventual milling process. Thus the current estimate is based solely on results from the Davis tube testing, and any headgrade estimate are based on cells selection from magnetite concentrates.

INTERPRETATION OF MINERALIZED ZONES

Interpretation and modeling of all lithological contact was performed in two phases using mostly rock code and the measure of Fe_2O_3 reported in headgrade samples when available. The main difficulty here was to interpret and model a series of barren anorthosite sills and dykes within the P2 Unit.

First, the author used all trenching information combined with all available surface mapping information to create a consistent three dimensional lithological model fitted to the topographical information. At this point it is important to note that trenching was not systematically sampled. Un-sampled sections may either represent dykes or poorly mineralized rocks, typically a topographic high, or may represent sections where stripping was not possible, typically a depression or underneath the road. Both types of unsampled segments were managed differently, either attributed with a grade of 0% within mineralized rock, or a grade of 0% within barren anorthosite.

The next step consisted of adding all pertinent drill holes information to the previous surface model. In regard of drill holes, unsampled section, especially within the P2 Unit, were considered as an internal barren anorthosite sill or dyke.

In the cases,of narrow intersections or inconsistencies with surrounding information, it was impossible to correlate all lithological variations. Hence, samples which clearly represent dykes were left within different lithological units. Inversely some mineralized units may be included inside barren unit. Such instances are not abundant and do not affect the quality of the estimation.

The final wireframe solid was created by digitizing interpretations onto 35 sections (spaced 50 m apart in the SW area and 25 m apart in the NE), and then using tie-lines to complete the wireframes (***figure 41***).

At this point, modelled lithologies were coded back to drill holes and trenching, allowing to match rock code for sample selection during the interpolation process.

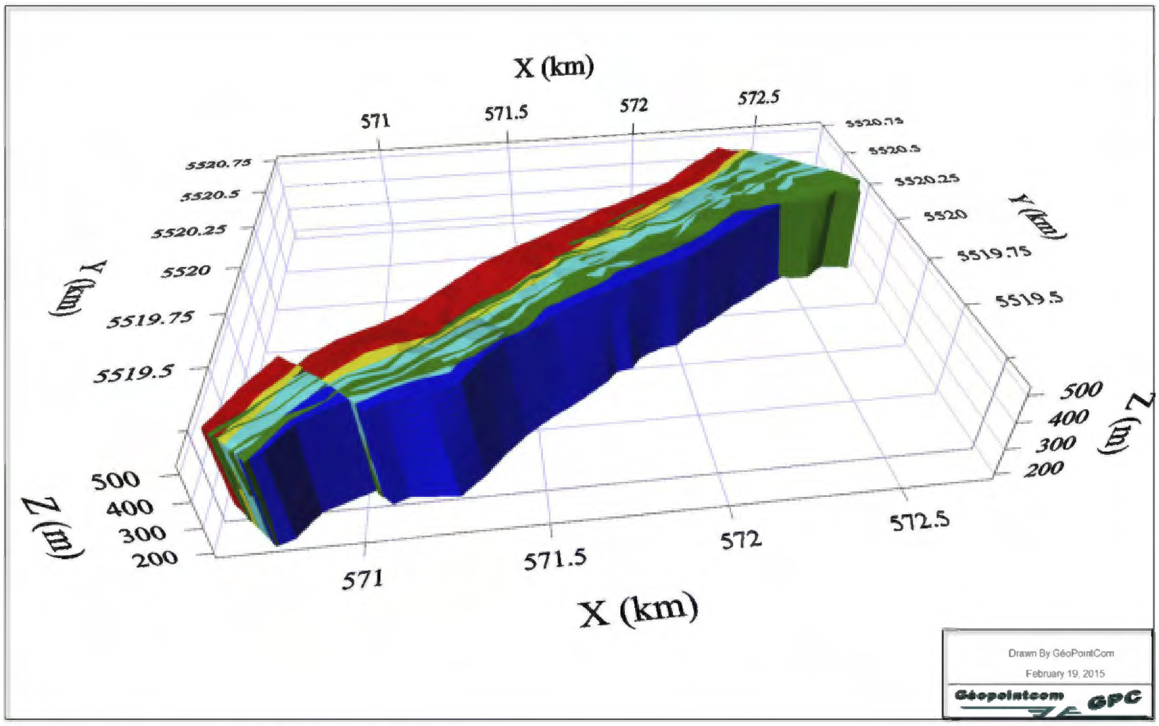

***Figure 41**: Wireframe solid model.*

COMPOSITING AND STATISTIC

The estimation method chosen requires that all samples represent the same volume of rock (same length). Compositing was processed using the SG calculated from each head grade sample but magnetite abundance and V_2O_5 grades were taken from the Davis tube samples. All samples were composited as close as possible to 3 metres within each lithological interval as previously defined from the 3D model. Within each lithological interval, remaining shorter mineralized intervals were redistributed over the whole composite. Thus the average length of all composites is 2.99 metres, the smallest composite is 1.77 metres and the longest 4.48 metres (***table 17***). While creating a composite, SG and magnetite abundance were weighted solely on core length while V_2O_5 was weighted both on core length and magnetite abundance.

Table 18 shows how the averages shift when extreme data are trimmed off. Trimming 5% means removing 2.5% from the highest value as well as 2.5% from the lowest value. The author used this table to select default specific gravity value based on lithological code where data are missing.

		Number of 0 value*	Number Over 0	Mean	Standard Deviation	Coefficient of Variation	Minimum	Maximum	10th Percentile	90th Percentile
SG	Dyke	0	1304	3.18	0.21	0.07	2.8	4.1	3.1	3.5
	P-0	0	172	3.12	0.18	0.06	2.9	3.9	3	3.4
	P-1	0	301	3.26	0.27	0.08	2.8	4	3	3.7
	P-2	0	1724	3.51	0.33	0.09	2.8	4.2	3.1	3.9
	P-3	0	250	3.25	0.21	0.07	2.8	3.9	3.1	3.5
Magnetite (%) Over 0	Dyke	1187	117	11.97	12.61	1.05	0.01	56.97	0.89	31.01
	P-0	132	40	6.11	4.94	0.81	0.09	18.7	0.38	11.9
	P-1	45	256	17.1	9.3	0.54	0.04	57.3	6.5	31.46
	P-2	130	1594	35.26	12.66	0.36	0.06	68.85	18.01	50.27
	P-3	136	114	14.44	10.55	0.73	0.45	41.12	2.93	31.63
V2O5 (%) Over 0	Dyke	1170	134	1.28	0.31	0.24	0.6	2.34	0.91	1.67
	P-0	132	40	1.38	0.17	0.13	0.82	1.67	1.17	1.66
	P-1	38	263	1.43	0.14	0.09	0.31	1.67	1.27	1.58
	P-2	133	1591	1.3	0.25	0.2	0.21	2.01	0.93	1.61
	P-3	139	111	0.66	0.19	0.29	0.34	1.3	0.42	0.99
Length of composite (m)		0	3751	2.99	0.12	0.04	1.77	4.48	2.89	3.08

* 0 values are absent date (not assayed) these where exclude from other statistics

Table 17*: Basic statistics for composite used.*

Trimmed average for SG						
Percent trim	**5%**	**10%**	**15%**	**25%**	**35%**	**45%**
P-0	3.099	3.098	3.079	3.075	3.092	3.100
P-1	3.246	3.233	3.222	3.204	3.180	3.181
P-2	3.505	3.505	3.506	3.526	3.539	3.545
P-3	3.234	3.221	3.210	3.190	3.170	3.194
Dyke	3.150	3.124	3.106	3.100	3.100	3.100

Table 18*: Trimmed average for SG (g/cm^3).*

The distribution of SG (***figure 42***) is indicative of the relevance of the lithological coding achieved from the lithological 3D model (very low IQR for barren dykes and P0). Barren anorthosite and P0 anorthositic units are well constrained with only few results over 3.2 g/cm^3. However the presence of some high values is probably due to some erratic mineralized intervals within barren units. P1 and P3 units are quite similar, their SG being confined between 3.1 and 3.4 g/cm^3. The bimodal distribution of P2 specific gravity shows the presence of some barren anorthosite samples within the unit.

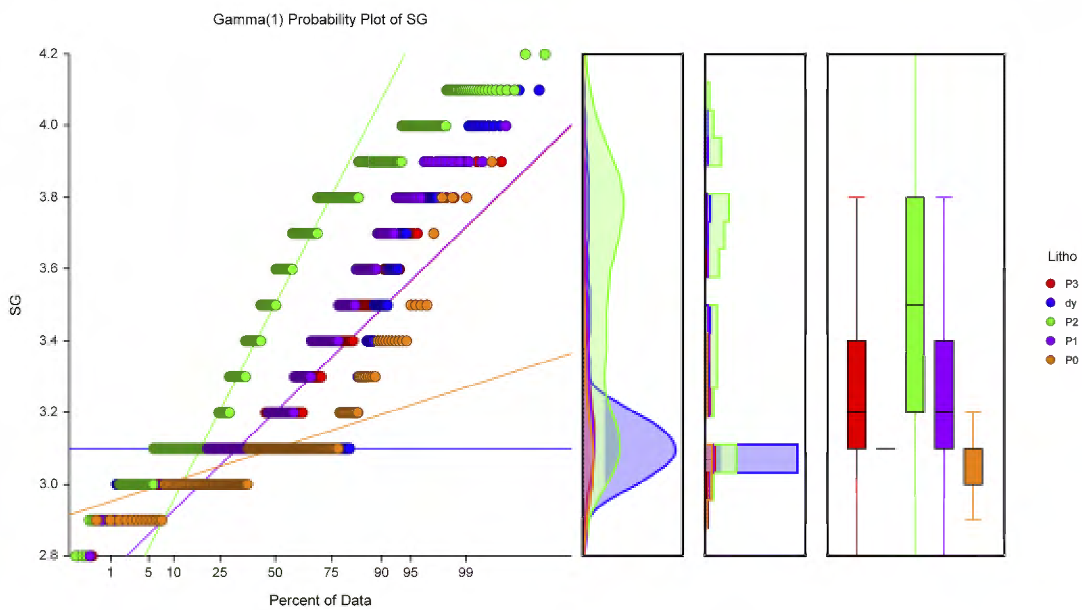

***Figure 42**: Specific gravity probability plot and distribution per rock code.*

The V_2O_5 content of P1 and P2 units (***figure 43***) is very similar and are distinctive from other units. Inversely, the amount of magnetite is discriminant between P1, P2 and P3 units (***figure 44***).

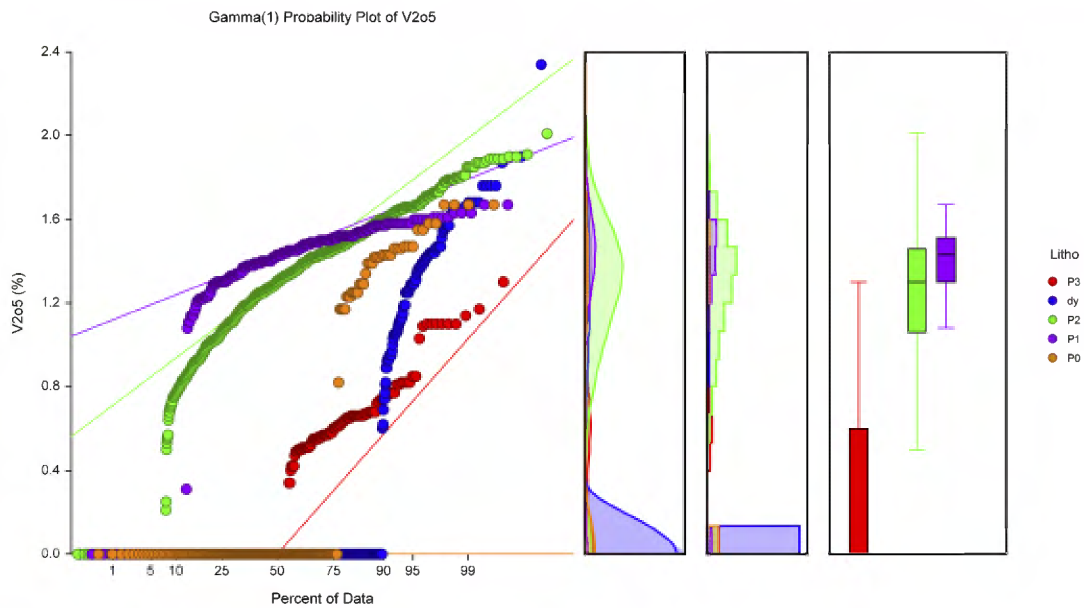

***Figure 43**: V_2O_5 probability plot and distribution per rock code.*

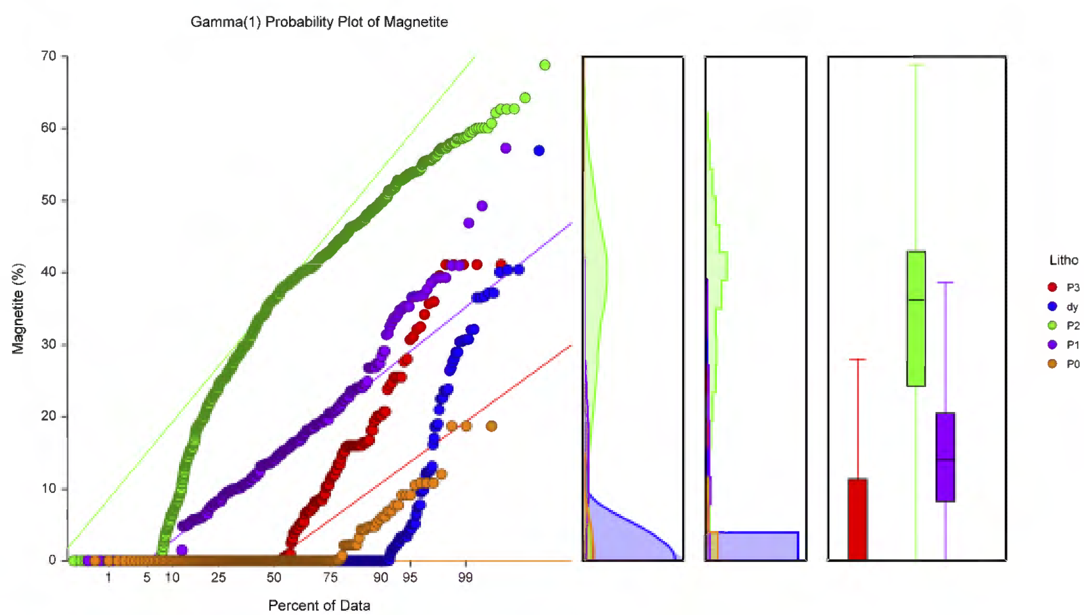

***Figure 44**: Magnetite (%) probability plot and distribution per rock code.*

VARIOGRAPHY

Variography was modeled using Isatis software. Because of the sampling density and stationary effect, only composites from the P2 unit were used. The author was unable to identify any consistent and relevant geometrical anisotropy. Therefore, the variogram model (***figure 46***) was built on an experimental omnidirectional variogram (***figure 45***).

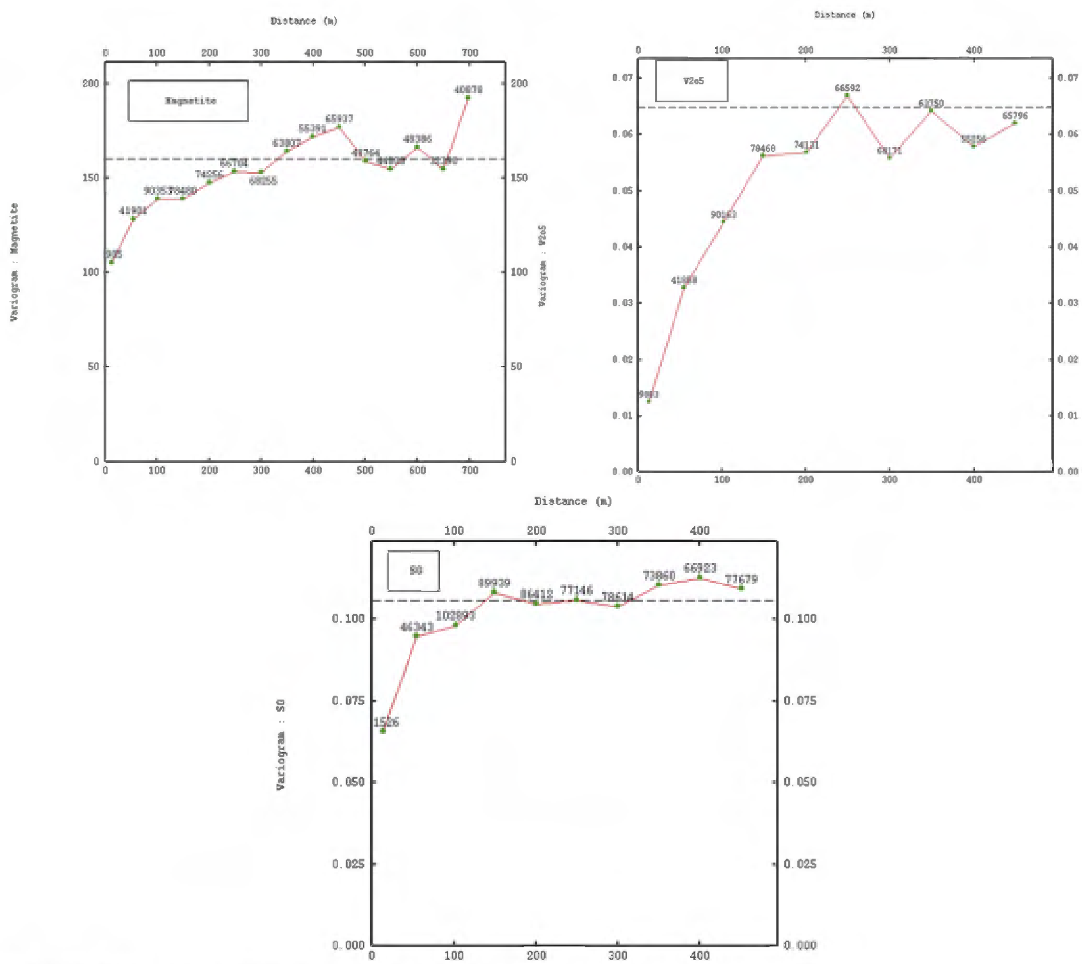

Figure 45: *Experimental omnidirectional variograms.*

Model	Nugget effect	Spherical 1		spherical 2	
	sill γ	sill γ	range (m)	sill γ	range (m)
SG	0.05	0.04	70.7	0.01	400.9
V_2O_5	0.007	0.028	150.2	0.024	265.7
Magnetite (%)	96.6	27.0	75.1	44.3	511.6

***Figure 46**: Model Variogram.*

$$\gamma(h) = C\left[\frac{3}{2}\left(\frac{\delta h}{a}\right) - \frac{1}{2}\left(\frac{\delta h}{a}\right)^3\right] \quad (h>a)$$

$$\gamma(h) = C \quad (h<a)$$

$\delta = 1$

Where "γ(h)" is the semi-variance, "h" is the lag distance, "a" is the range and "C" is the nugget effect.

BLOCK MODEL GEOMETRY

A block model was established encompassing the entire drilled area. Origins of the model are as follows (center of the front, bottom, left cell):

Easting: 571180 m E (257 cells x 10 m each)
Northing: 5518770 m N (117 cells x 10 m each)
Elevation: 230 m (32 cells x 11.9 m each)

The block model was rotated 39 degrees anticlockwise around the Z axes. The relative volume occupied by each rock unit within each cell was estimated using an array of 5 x 5 needles oriented parallel to the rotated Y axes of the block model.

ROCK DENSITY

For each cell, rock density was estimated from specific gravity by ordinary kriging (OK) using the model presented in ***figure 46***. Neighboring was set to a minimum of 10 and a maximum of 25 composites within a search radius of 200 metres without any constraint regarding neither the hole names nor the octant distribution. The only constraint was matching rock code from cell to composite. When the search ellipsoid was unable to find the required minimum number of composites, default values were applied. The default value of 3.1 g/cm^3 was used for barren anorthosite and P0. The default density was set to 3.2 g/cm^3 for P1, and P3 units. When required, the default density for the rock code P3 was 3.2g/cm^3 (***table 18***).

GRADE BLOCK MODEL

Abundance of magnetite (%) and vanadium grade (V_2O_5 %) of the concentrate where estimated in the same manner as for specific gravity but with correspondent spherical model (***figure 46***). The author used the same neighboring strategies and the same search ellipsoid size. The only difference was in the case where the minimum number of composites could not be found, then the value was set to 0% magnetite and grade.

RESOURCE CATEGORIES

The resource classification definitions used for this report are those published by the Canadian Institute of Mining, Metallurgy and Petroleum in their document "CIM Definition Standards for Mineral Resources and Reserves" dated of November 27, 2010. The CIM definition is reproduced here.

Inferred Mineral Resource

An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

Due to the uncertainty that may be attached to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource as a result of continued exploration. Confidence in the estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of feasibility or other economic studies.

Indicated Mineral Resource

An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, *trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.*

Mineralization may be classified as an Indicated Mineral Resource by the qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource estimate is of sufficient quality to support a Preliminary Feasibility Study which can serve as the basis for major development decisions.

Measured Mineral Resource

A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

Mineralization or other natural material of economic interest may be classified as a Measured Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such that the tonnage and grade of the mineralization can be estimated to within close limits and that variation from the estimate would not significantly affect potential economic viability. This category requires a high level of confidence in, and understanding of, the geology and controls of the mineral deposit.

In the present case, variability and distribution (continuity) of the three dominant parameters (specific gravity, magnetite abundance and V_2O_5 of the magnetite concentrate) seem to be relatively simple, comprehensive and predictable (refer to variography). However, uncertainties related to the data are multiple:

- The paucity of drilling do not enable to build a reliable lithological model allowing to clearly identify and localise a barren dyke within a mineralized unit.
- Information is partly incomplete, built from various incongruent database.
- Uncertainties remain regarding the accuracy and comparativity of the assays as well as Davis tube test results from the various drilling programs.
- Most holes are poorly localised and lacking downhole surveying.

- Majority of drill holes and trenches have undescribed and unsampled intervals.

These limitations have a major impact on resource classification. All resources estimated in the current report must be classified as **inferred**.

MINIMUM CUT-OFF VALUE

The cut-off value is defined as the breakeven point considering total potential cost and revenue generated by the operation. In the current estimation, potential milling and processing costs vary with the abundance of magnetite in the mineralization, since only magnetite concentrate needs to be processed by roasting. Since roasting capacity is the main constraint on production rates, the grade of the roasted concentrate has a major impact on potential revenues and cost. Thus, cut-off grade cannot be a simple uniformly applied grade, but requires calculation to be a function of magnetite abundance. ***Table 19*** show the calculated cut-off when considering certain financial parameters as constant. The retained scenario is US$5.50 per pound for V_2O_5 as indicated in Item 24. The three year (April 2012-2015) average selling price of vanadium pentoxide on the European market is US$5.54 per pound for V_2O_5.

Production cost used the following parameters, as detailed in Item 25:

- Potential mining cost, including waste removal, based on similar operation: $1.80 per tonne.
- Potential milling and beneficiation cost, based on similar operation: $2.50 per tonne.
- This is based on a power consumption of 17 KwH/t at "L" rate. It includes cost for tailing management.
- Potential roasting and hydrometallurgy cost at $40/tonne of magnetite.
- Reactants are estimated at $21 per tonne of magnetite (soda ash and coal mainly, without salt recovery plant), to which manpower and calcine disposal need to be added.

V_2O_5 (within the concentrate) Cut-Off as a function of magnetite (%) and market value of V_2O_5 *					
V_2O_5 market price ($/pound)	4.00 $	5.00 $	5.50 $	6.00 $	7.00 $
Magnetite (%)	Cut-Off	Cut-Off	Cut-Off	Cut-Off	Cut-Off
10.00%	0.94%	0.75%	0.68%	0.63%	0.54%
15.00%	0.78%	0.62%	0.57%	0.52%	0.44%
20.00%	0.70%	0.56%	0.51%	0.46%	0.40%
25.00%	0.65%	0.52%	0.47%	0.43%	0.37%
30.00%	0.62%	0.49%	0.45%	0.41%	0.35%
35.00%	0.59%	0.47%	0.43%	0.40%	0.34%
* Mining cost = 1.80$/ Metric Ton; Magnetite separation = 2.50$/ Metric Ton;					
V_2O_5 extraction from concentrate (roasting) 40.00$/ Metric Ton					

***Table 19**: Cut-off relative to magnetite content.*

Resource was also calculated using revenues based on US$4.00 and US$7.00 per pound of V_2O_5 for comparative purposes. The cut-off grade will require to be re-evaluated in light of prevailing market conditions and other factors including exchange rate, mining method, related costs, etc.

PIT OPTIMISATION

Pit optimisation was performed by iteration using in-house software. The following parameters were used:

- Pit slope = 50º.
- Minimum content of magnetite = 15%.
- Minimum profit required = 25%.
- Selectivity can be smaller than cell unit.
- Pit depth is limited to 200 m.
- Overburden thickness is unknown over almost 50% of the proposed pit. Even if suspected as thin, it was considered as unspecified rock.
- Mining cost = $1.80 per metric tonne of rock.
- Magnetite separation = $2.50 per metric tonne of rock.
- V_2O_5 extraction (roasting) = $40.00 per metric tonne of magnetite concentrate.
- Market value for V_2O_5 = US$5.50 per pound, based on last 3 year average.
- Density for unspecified rock = 3.1 g/cm^3.
- Hydrometallurgical recovery of V_2O_5 from magnetite concentrate = 95%, as suggested from historical metallurgical testing.

MINERAL RESOURCE ESTIMATE RESULTS

Given all the parameters listed above, the inferred resource located within this pit can be estimated as 99,104,000 tonnes of mineralized rock containing 26,067,000 tonnes of magnetite concentrate grading 1.08% recoverable V_2O_5. This represents a total of 282,370 tonnes of V_2O_5 or 621 million pounds of V_2O_5. This pit also contains 165,690,000 tonnes of waste. Thus thepotential stripping ratio (waste: mineralization) is estimated at approximately 1.67. Even if headgrade is not a relevant figure for this estimation procedure, it was calculated and reported for comparison purposes. Headgrade is estimated 0.43% V_2O_5 (***table 20***).

Geopointcom is of the opinion that the current Mineral Resource Estimate is representative of what is actually known from this zone. This estimate is compliant with CIM standards and guidelines for reporting mineral resources and reserves.

Resource sensitivity to market price			
Market price V2O5 ($/pound)	4.00 $	5.50 $	7.00 $
Waste (Ton)	103 808 000	165 690 000	205 388 000
Mineralization (Ton)	68 798 000	99 104 000	111 209 000
Magnetite concentrate (Ton)	19 633 000	26 067 000	28 844 000
Ratio W:O	1.51	1.67	1.85
V2O5 (Ton)	226 090	282 370	303 660
Recoverable grade of the concentrate (V2O5)	1.15%	1.08%	1.05%
Eq. Grade for mineralization in place (66.6% net recovery)	0.49%	0.43%	0.41%

Table 20*: Influence of market price on resource estimates.*

COMPARISON WITH PREVIOUS MINERAL RESOURCE ESTIMATES

The resource and reserve estimate produced in 2002 by SNC-Lavalin within their bankable feasibility study **is obsolete and not current** and cannot be compared with the current estimate. This non-current estimate used the conventional approach based on headgrade analysis and metallurgical recovery factors, rather that magnetite abundance as the current one.

The present estimation used assay results of the magnetite concentrate as well as measured magnetite abundance (Davis tube). This method is radically different from all historic estimation approach, as well as from most other current projects. The result is reported in terms of tonnage of magnetite concentrate and grade of this concentrate, which is more realistic when considering the overall operating cost are dominated subsequent roasting and hydrometallurgical processing. To allow a comparative figure with previous estimations as well as with other projects, the author estimated the V_2O_5 resource as measured in rock, using unchanged estimation parameters. These results were compiled using only the cells selected within this actual estimation based on magnetite abundance. The value obtained is **99,104,000 tonnes of mineralized rock grading 0.43% V_2O_5**. An overall recovery factor of 66.3% is calculated, in close accordance with metallurgical tests, although details in regard of cells may vary greatly.

The recovery factor can be calculated for each cell within the selected pit (***figure 47***). This factor varies proportionally with the magnetite abundance. If considered as a constant, as done in all previous estimates, it may lead to a high local bias.

The method proposed with the current estimation certainly allows for a more precise local estimation.

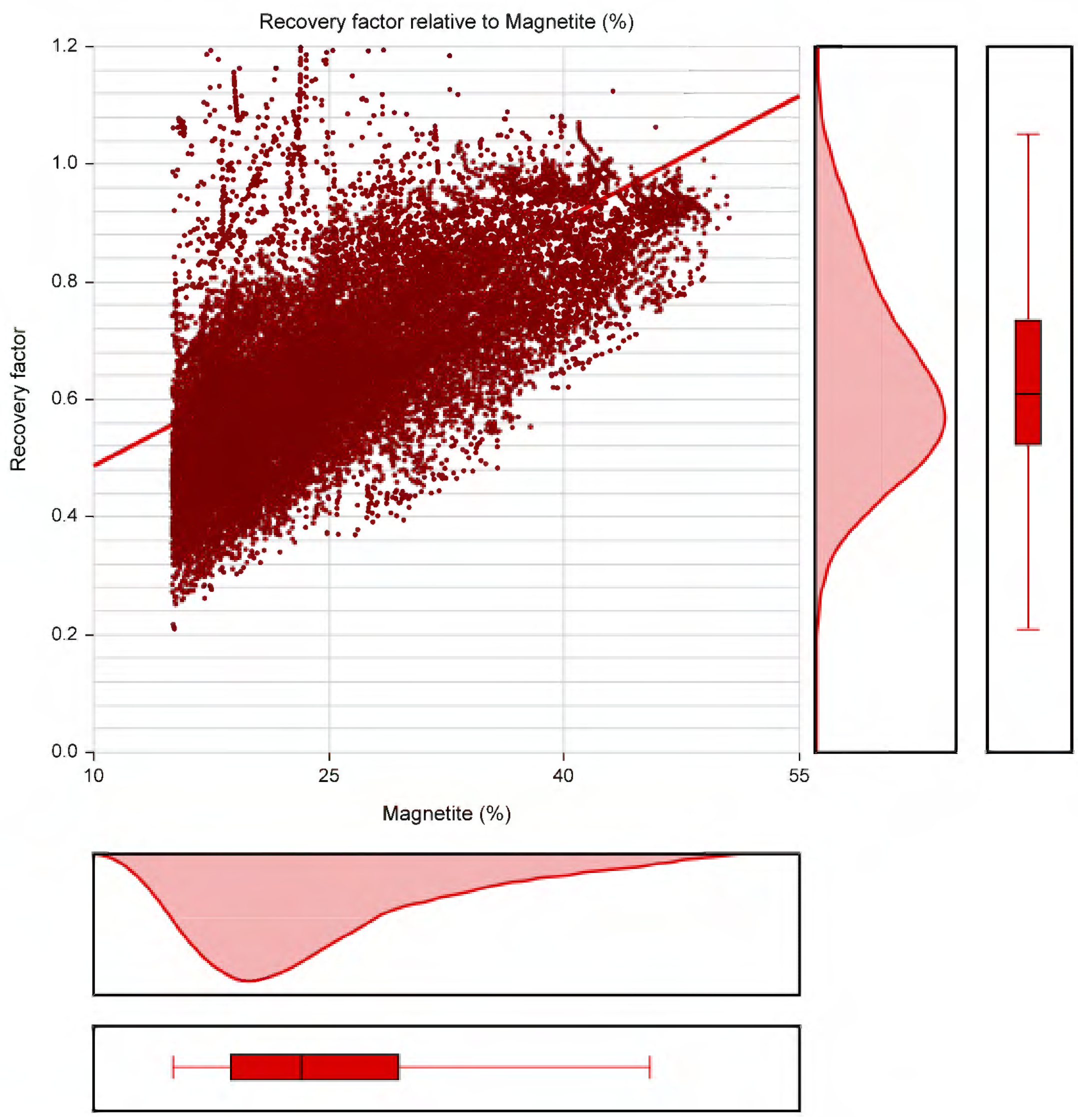

Figure 47*: Local recovery factor.*

RECOMMENDATION

Lack of drilling information and uneven quality of data forced the author to **classify resources as inferred only**. Upgrading this classification will necessitate systematic drilling to be conducted with the objective of building a reliable lithological model including accurate distribution of barren anorthosite within the P2 unit. The author recommends a drilling program to cover 40 sections spaced 50 metres apart. On each odd section, 600 metres of drilling will be required to cover the proposed pit area with 100 metres between each hole. On each even section, 300 metres of drilling will be required to drill in-between traces from the previous section in a quincunx pattern. It is very important that all drill holes be entirely sampled without gaps. The author also recommends following this drilling pattern from one end to the other of the deposit regardless the presence of historic drill holes or trenches. This will ensure uniformity and systematicity for all data. This will require 18,000 metres of drilling.

Drilling will require to be optimized as well for geotechnical purposes, metallurgical sampling and estimating overburden thickness. This is especially important on the south side where the proposed pit will extend outside of currently drilled area.

ITEM 15 TO 22: ADDITIONAL REQUIREMENTS FOR ADVANCED PROPERTY

Items 15 to 22 relates exclusively to advanced property, dealing with mining reserves estimates (*Item 15*), mining methods (*Item 16*), recovery methods (*Item 17*), project infrastructure (*Item 18*), market studies and contracts (*Item 19*), environmental studies, permitting and social or community impact (*Item 20*), capital requirement and operating cost (*Item21*) and economic analysis (*Item 22*).

ITEM 23: ADJACENT PROPERTIES

The ***Lac Doré*** and ***Lac Doré North*** properties are located in vicinity of the Chibougamau mining district. The area has experienced intense exploration activity in the past, and recurrent waves of staking. VanadiumCorp properties are currently enclaved, and surrounded by various other companies (***figure 48***) except to the north of **Lac Doré North**.

LAND AVAILABILITY

The area encompassing the 17 kilometres long aeromagnetic anomaly associated with the magnetite layers is currently entirely covered by either VanadiumCorp or BlackRock. VanadiumCorp's **Lac Doré** property is surrounded by BlackRock property, while the **Lac Doré North** is partly enclosed. Land is available for staking to the north and to the east of the properties, either by conventional posted claims or map designation.

The whole area is temporarily substracted for staking, due to the ongoing process of claim to map-designated cells. Substraction shall be lifted in the coming months.

PROPERTIES IN CONFLICT

No dispute of claims is currently reported in vicinities of **Lac Doré** and **Lac Doré North** properties.

SURROUNDING PROPERTIES

BlackRock Metals Inc.

BlackRock Metals hold nine (9) map-designated cells and 291 posted claims covering the Southwest and Armitage deposits, as well as surrounding lands for exploration or infrastructure. Their titles are in good standing and well managed. BlackRock conducted important stripping and drilling efforts in order to estimate resource on the Southwest and Armitage deposits, and are currently concluding a feasibility study. Infrastructure construction is expected to begin in the coming years, pending conclusion of their financing.

A strip of claims to the south of BlackRock Metal property, still recorded under the name of Cogitore, were recently acquired by BlackRock (Cogitore press release, November 7, 2014).

NUMÉRIQUE

Page(s) de dimension(s) hors standard numérisée(s) et positionnée(s) à la suite des présentes pages standard

DIGITAL FORMAT

Non-standard size page(s) scanned and placed after these standard pages

Work conducted by BlackRock metals and available in assessment files includes:

- The Southwest deposit was trenched (1638 metres, 2009) and drilled (103 holes for 23,066 metres in 2010-2011-2012).
- The Armitage deposit was trenched and drilled (81 holes for 18,763 metres (2011-2012).

In May 2012, BlackRock completed a bankable feasibility study (Genivar, 2012). However, being a privately owned company, BlackRock has no obligation to disclose such study, which is maintained strictly confidential. Resources estimates were not published, although incomplete numbers were disclosed in some public presentations. Since these are promotional documents, the author notes an unreliability in regards to this information.

The BlackRock environmental and social assessment study, conducted by Entraco Groupe-Conseil, was published by the *Canadian Environmental Assessment Agency* (Federal Agency) on May 2013 (www.ceaa-acee.gc.ca/050/documents_staticpost/62105/90328/vol1-eng.pdf). It contains limited information regarding the mine and its resources, but is currently the most detailed and reliable description of the project. Descriptions provided in other BlackRock presentations cannot be relied upon.

On April 14, 2014, Camex Energy Corporation announced that a letter of intent was signed with BlackRock Metals Inc. for the purpose of a reverse take-over transaction. This transaction is yet to be completed.

LIMITATIONS ON SIMILARITIES

The mineralization found on *Lac Doré* and *Lac Doré North* properties is a continuation of the mineralization on the adjacent BlackRock Metals properties. **However, there is no guarantee that VanadiumCorp's deposits are equivalent to BlackRock's deposits in regard to the resource and economic viability.** Only a thorough feasibility study, including all the various aspects of such a project, will establish the economic viability of the project.

Yorbeau Resources Inc.

Yorbeau Resources Inc., recently acquired the former Cogitore property to the south of BlackRock Metals, which properties are interlocked to the East. Yorbeau is a company dedicated towards base metal exploration, and their presence is not considered as a hindrance. Their property is anchored on the former *Lemoine Mine*, which was a small but rich volcanic massive sulphide deposit. Important exploration efforts were conducted by Cogitore on this property.

Third parties

To the Northeast, the **Lac Doré North** property is bounded by map designated cells belonging to 2736-1179 Québec Inc. and Réjean Raymond, both unknown to the author. To the Southeast, the property is bounded by map designated cells belonging to *Ressources Metchib* (expiry date of November 2nd, 2015) from Chibougamau. A 500 metres wide band of land is available for staking between **Lac Doré North** and Metchib's claims. Three map designated cells, indicated as available for staking, were very recently acquired by VanadiumCorp. Some of these two properties cover weak aeromagnetic anomalies. They represent opportunistic staking and are not considered as hindrance. Very limited exploration work was conducted on these properties.

LAND AVAILABLE FOR STAKING

Ample land is available for staking to the North and North-east of **Lac Doré North** properties. A strip of land will be available to the west of **Lac Doré**, as soon as the staking restriction is lifted by the government.

AVAILABILITY OF INFORMATION

Information regarding the adjacent properties was obtained from the *Gestim* on-line registry of the Natural Resources Ministry. Information regarding exploration work upon these property was obtained from the *Examine* on-line report library available at the *Ministère de l'Énergie et des Ressources naturelles du Québec.*

INDEPENDENCE OF THE AUTHORS

Most of the available information on neighbouring properties was acquired from public domain assessment files, government work, press releases and web sites. The author is independent of the holders and operators of the adjacent properties. However, IOS was involved on BlackRock project in 2008 when the company was structured. In the same period, an IOS geologist was hired by Cogitore to work on Lemoine project in 2007-2009 period.

VALIDATION OF THE INFORMATION

Most of the historical information pertaining to the neighbouring properties was acquired under the author's supervision. This information is considered adequately verified.

Work conducted by BlackRock and Cogitore on their properties has not been verified by the author.

ITEM 24: OTHER RELEVANT INFORMATION

Most of Item 24 is taken from the previous version of the report, dated June 10, 2014, and has not been updated, except for current prices. It is not expected that significant changes occurred in the Vanadium industry since that date, except for the decline in Vanadium price.

VANADIUM USES

Vanadium is dominantly used as an alloying agent in high strength metals, which represent 95% of its consumption *(**figure 49**)* (Roskill, 1985, p. 59). As an alloying agent, it can be used in steel (85%) or in aluminum-titanium alloys (11%). The remaining 4% is used as a catalyst agent by the chemical industry. Vanadium and niobium are interchangeable in some cases in microalloyed steels, however the substitution is not without operational or performance compromises. Vanadium generally does not have any substitutes in oxidation catalysts and titanium alloys. Vanadium-based electrolyte currently account for a very small portion of the market.

In microalloyed steels, vanadium precipitates as vanadium carbide or vanadium carbonitride promoting increased strength as a result of grain refinement and precipitation hardening. In full alloy steels, precipitation of vanadium carbides and carbonitrides promotes fine grain structure leading to increase in high temperature abrasion resistance. Vanadium is used in a variety of steels which are intended for use in rolled condition including hot rolled coil, plate, structural members, bars and forging steels, atop of some stainless steel. Vanadium is also used to strengthen titanium and aluminum alloys, especially for aircraft structures.

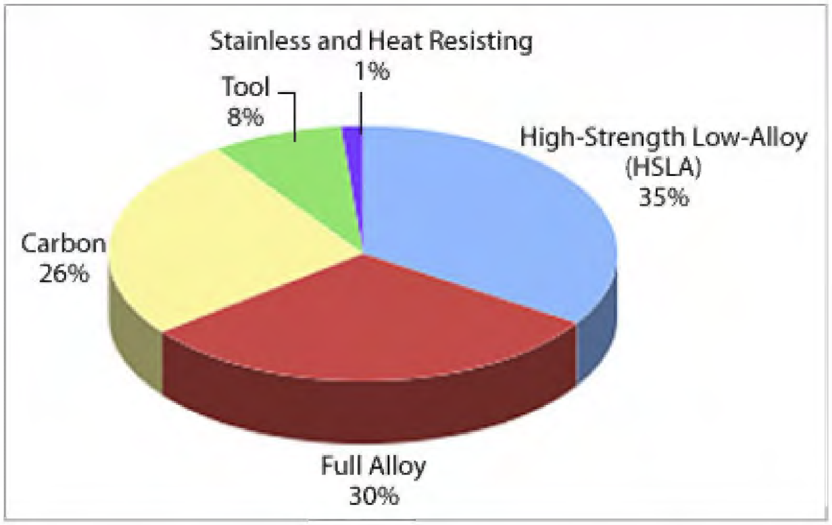

***Figure 49**: Pie-chart of the vanadium usages in steel, which account for 85% of the vanadium consumption (Source: USGS website). The largest share is used for HSLA steel, such as rolled steel or rebar.*

Vanadium is used in a variety of forms and applications in catalysis usually as an oxidation reaction catalyst, including vanadium pentoxide for sulfuric acid and maleic anhydride production, vanadium chlorides as Ziegler Natta catalysts for the synthetic rubber polyethylene polymerization, and ammonium metavanadate for the production of adipic acid.

Some other applications exist including vanadium metal for the nuclear industry and as heat sinks in computer hard drives, superconductors, vanadium oxides and downstream chemicals in glass coatings, non-food crop micronutrients, anti-fouling agents in marine paints, pollution control catalysts and pharmaceutical applications. Although strategic, these applications consume a minor amount of vanadium.

World vanadium consumption is basically driven by two variables: global steel production rates and specific vanadium consumption rates within the steel industry, or *"vanadium intensity"*. In recent years vanadium demand has shown compound annual growth rates in excess of 6% (***figure 50***). High strength steel production is growing faster than the standard steel production, especially for construction applications in China, vanadium-bearing pipeline and automotive part grade steel. Typically, while the amount of steel used for a single car decreases, the amount of vanadium in the same car increases.

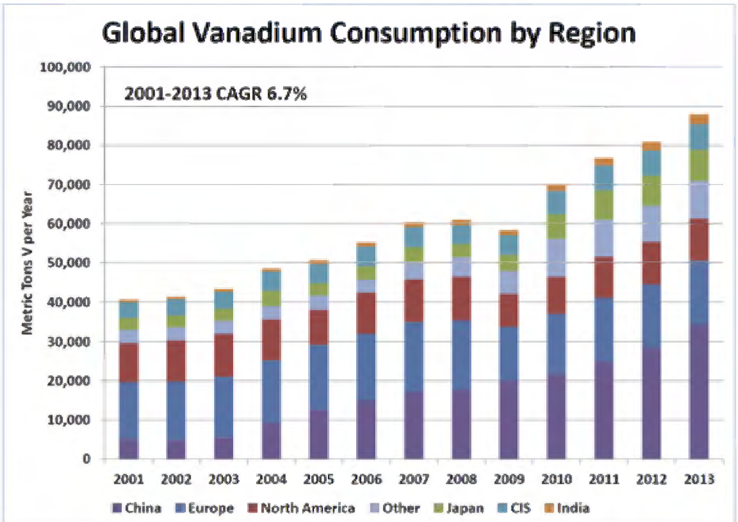

***Figure 50**: Vanadium consumption since 2001. The increase in demand is essentially driven by China (Perles, 2013).*

Vanadium is usually added to steel in the form of ferrovanadium or vanadium carbonitride alloys, although in some cases vanadium oxides are used in conjunction with vacuum degassing. Converters of oxides to ferrovanadium or vanadium carbonitride alloys are thus the main consumers of pentoxide. The ferrovanadium and vanadium carbonitride converting capacity is divided into integrated and non-integrated producers. Integrated plants couple steel plant, pentoxide refinery and converter. They are usually large producers, such as Evraz in Russia and South Africa, Panzhihua Iron & Steel and Chengde Iron & Steel in China.

Non-integrated converting facilities rely on traded pentoxide as feedstock, such as Masterloy in Ottawa, Bear Metallurgical in USA, Korvan and Woojin in Korea, and a host of Chinese converters. The largest capacity for conversion of vanadium oxides into ferrovanadium and vanadium carbonitride alloys exists in China. The dominant trend in the vanadium industry is towards integration of production.

VANADIUM PRICE

The March 2015 published vanadium pentoxide median price was US$3.92 per pound FOB in Rotterdam warehouse (Metal Pages website), down from US$4.96 two month ago and US$5.70 last year. The base price was rather stable in the range of US$5.00-US$5.20 per pound for V_2O_5 (technical 98% grade) over the past 10 years (April 3rd, 2015, Resource Investing News website. US$5.00-5.20 per pound). Since 1980, the mean vanadium pentoxide published price was US$6.25/pound V_2O_5 (not adjusted for inflation) and the annual average price has ranged from US$1.34/pound V_2O_5 in 2002 to

US$16.25/pound V_2O_5 in 2005 (Metal Bulletin website). Ferrovanadium (80%V) currently sells at approximately US$19.50 per kilogram. According to Metal Bulletin, the average three year European vanadium pentoxide price, corrected for inflation, is calculated at US$5.53/pounds, the 5 years average at US$5.94/pounds and the 10 years average at US$7.79/pounds.

Vanadium prices are characterized by occasional short-term spikes, historically recurring every 7-10 years and related to triggers or destabilizations in the market ***(figures 51, 52)***. In February 1989, vanadium pentoxide prices reached US$10.95/pounds V_2O_5. In years prior to this time, vanadium prices were extremely weak causing the Russian steel mill Nizhny Tagil to eliminate the duplex process in the BOF shop which generated vanadium bearing slag. This slag was the source of vanadium production in China and eventually the market reacted to the contraction of supply. Once the market reacted the Russian supply restarted and prices quickly came back to normal levels.

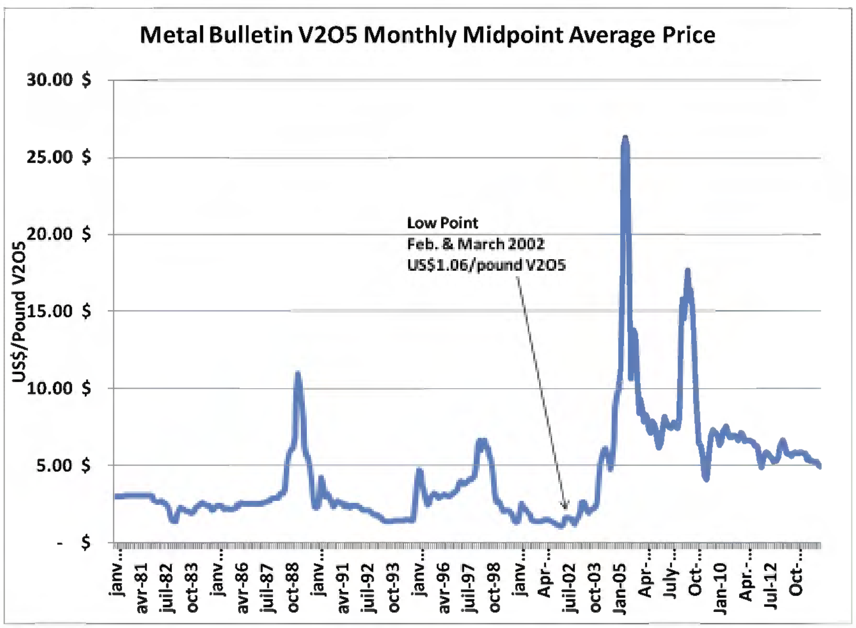

Figure 51*: Monthly vanadium pentoxide price, FOB Rotterdam (T. Perles, personal communication).*

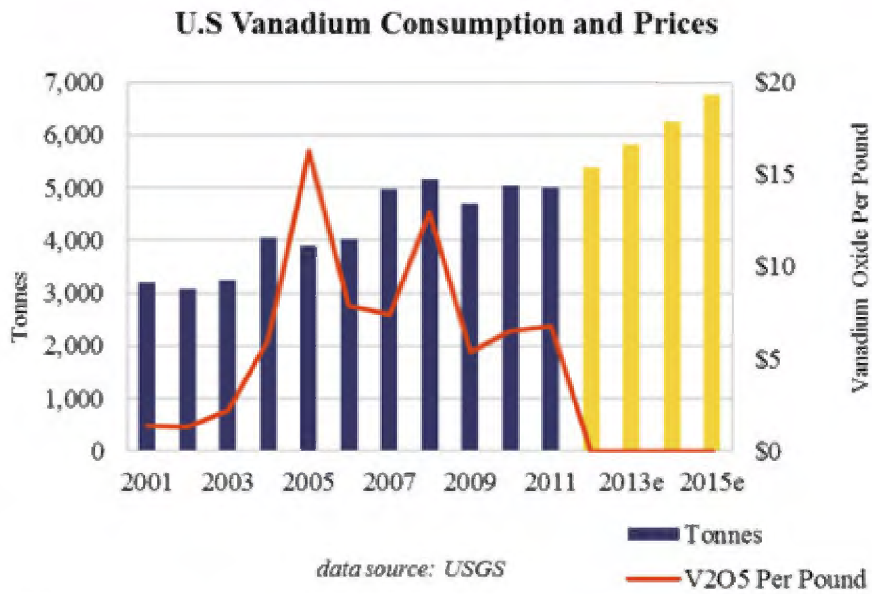

Figure 52: *Price of vanadium on the American market, as monitored by USGS. Most of the vanadium remains sold under private contract, the pricing of which is elusive.*

In May 2005 vanadium pentoxide prices reached US$26.25/pound V_2O_5 (equivalent to US$35.85/lbs V_2O_5 today). This relates to the implementation in China of a new standard for high strength, high ductility reinforcing bar used in construction applications, which resulted in massive new applications for vanadium and continues to impact the growth rate of vanadium consumption today. Very high prices for vanadium resulted in investment in new sources for production, including carbon based "stone coal" ore in China, and eventually added capacity combined with substitution of Vanadium with Niobium in some rebar applications, resulted in prices moving back to reasonable levels in a matter of months.

In 2008 power shortages and load shedding in South Africa resulted in reduced vanadium production from this important source of global exports, leading to vanadium pentoxide prices reaching US$17.66/pound V_2O_5 in June 2008 (equal to US$16.94/pound V_2O_5 today). The Global financial crisis which struck in mid-2008 resulted in a significant decrease in global demand and plummeting prices in a matter of months.

The occasional spikes in vanadium prices to very high levels are typically a result of market disruptive events. In the past, these events have proven to be unsustainable over the long term and very high prices have exhibited short time duration. These price spikes shall not be considered when forecasting prices for economic studies.

The prices shown are FOB in a Rotterdam warehouse, duty unpaid. Chinese domestic prices are currently available, quoted in renminbi, currently around 80 Rmb/lbs (equivalent of US$12/pound of contained V). However, prior to the influence of the Chinese market, most vanadium was sold close to quarterly published prices set by Highveld (South Africa).

A price of US$6.00 per pound V_2O_5 can be accepted as a realistic long term price, in balance with production costs. It should be the maximum price accepted for any feasibility study. **A price of US$5.50 was used as base scenario for the current resource estimate.**

A significant proportion of vanadium is sold through long-term contracts between steel makers and integrated vanadium producers or major traders with off-take agreements with producers. Typically this contract business is based on formula prices with a single digit discount to the published price indexes.

VANADIUM WORLD PRODUCTION

Reliable figures of world production of vanadium products have been difficult to obtain in the past. As a result of the fact that major producers are minor parts of international corporations who consolidate production and financial reporting, the specific detail about vanadium production was difficult to discern. As China has grown to become a major producer with dozens of small producing plants, the situation has become even more opaque since 2004.

In recent years VANITEC (the Vanadium International Technical Committee), an industry group comprised of major vanadium producers has published statistics on vanadium production and consumption levels. VANITEC data can be summarized by the following table ***(table 21)*** (data in units of metric tonnes vanadium contained per year):

Year	Production (m. tonnes)	Consumption (m. tonnes)
2011	76,166	71,700
2012	71,289	75,500
2013	79,534	79,301
2014	85,122	85,802

***Table 21**: Production and consumption of vanadium (contained) in recent years, according to Vanitec (2014: 6 months x2).*

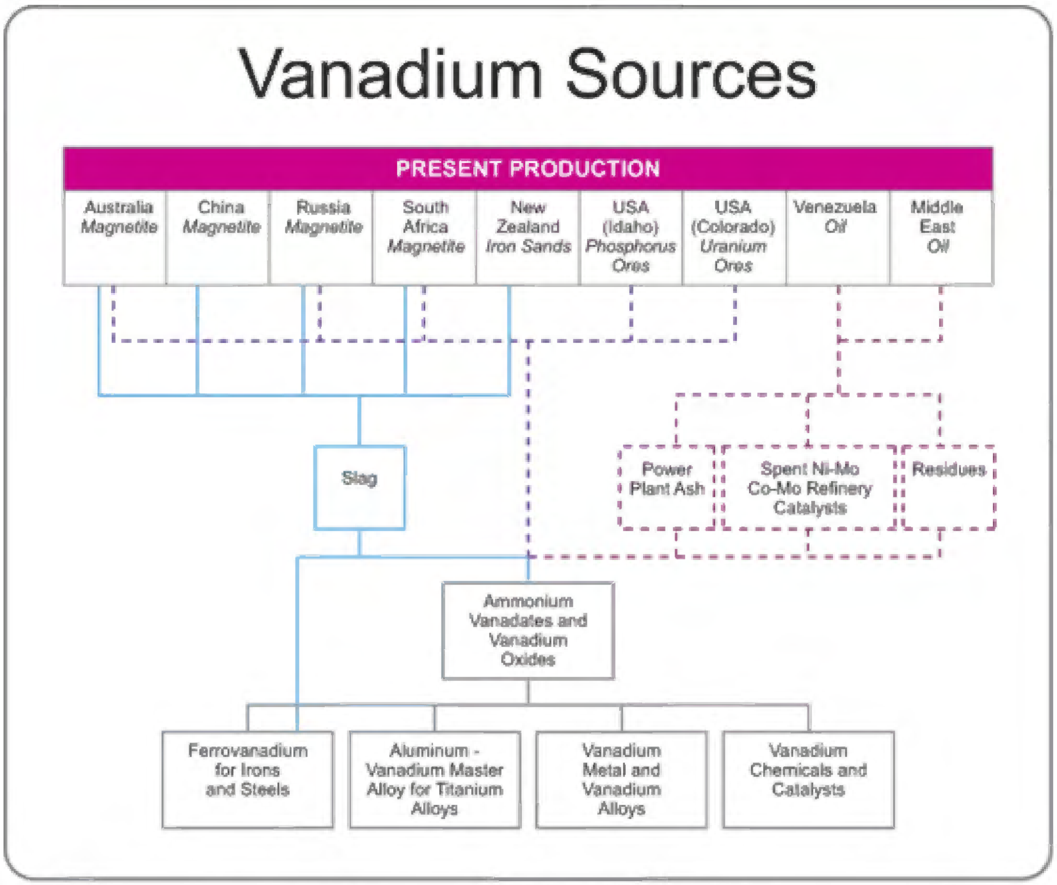

***Figure 53**: Vanadium sources, per country and type of raw materials (Vanitec website).*

The VANITEC methodology for development of the data would seem to be accurate regarding production data given the fact that the majority of the vanadium producers contribute to the data (***figure 53***). The consumption data is more difficult to assemble particularly given the opaqueness of consumption in China and CIS countries. Other sources indicate global vanadium consumption in 2015 as high as 92,000 metric tonnes vanadium (T. Perles, personal communication).

The size of the vanadium market is comparable to the cobalt market, is 40% of the molybdenum market, or 10% of the chromium market. Uses of these metals are all dominated by the ferroalloys industry.

World reserves of commercially exploitable vanadium are estimated (excluding The Lac Doré Vanadium deposit) at 17 million tonnes of vanadium pentoxide (Roskill, 1995, page 1), including both magnetite ore and oil residues. However, reserve in lower grades are enormous, just the Julia Creek deposit in Australia being reported to contain a resource of near 20 million tonnes of vanadium pentoxide equivalent. The current resource estimate on Lac Doré suggests it may represent about 8% of the worlds disclosed resources.

Today's production is concentrated in South Africa, Russia and China, which collectively account for more than 90% of the production of vanadium raw materials ***(figure 54)***. China, Russia and South Africa remain major exporters of both vanadium raw materials and refined vanadium products. According to Perles (2013), there are six (6) current vanadium-slag producers in China, with a production of about 42,000 tonnes of equivalent vanadium, dominated by Pangang and Chengde. Pangang currently produces about 20,000 tonnes equivalent vanadium per year, which requires the consumption of about 2 million tonnes of magnetite concentrate with a grade of 0.53% V_2O_5 and the production of 1.3 million tonnes of steel. Total titano-magnetite consumption in China is estimated at 4.5 million tonnes per year, mainly from low grade ore (Pangang being mined at 0.27% V_2O_5).

In addition there are currently at least 10,000 metric tonnes of vanadium per year capacity from processing of "stone coal" (anthracite) ore in China. Most of this capacity is considered relatively high cost and is not in production today.

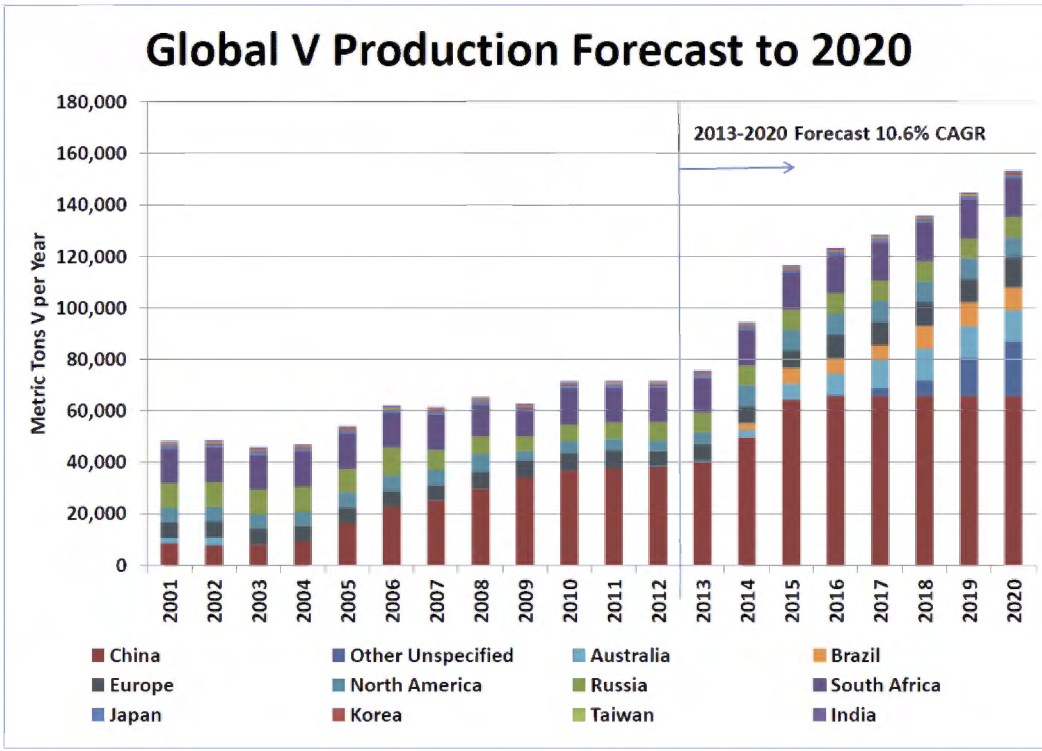

***Figure 54**: Vanadium production, by country. The intense increase in production by China since 2005 is driven by their steel production and consumption (Perles, 2013).*

In South Africa, three producers of vanadium refined products exist. Highveld Steel and Vanadium, formerly part of Anglo-American, acquired by Evraz in 2006, and partly resold to a domestic investment fund in August 2014, and recently shut down, was the major supplier of vanadium bearing slag. The slag is produced from their steel mill and refined at other South African vanadium operations and Austria. The Highveld steel mill generated approximately 8000 metric tonnes vanadium contained in vanadium slag as a co-product from the steel operations. This vanadium slag was processed by three companies for refinement to final vanadium products with an approximate recovery rate of 81% from slag to vanadium oxide. The vanadiferous magnetite ore comes from the Mapochs mine, which still have significant reserves, but which is located 110 kilometres away from the smelting-roasting plant. This mine was opened in replacement to the former Kennedy Vale pipe mine, an exhausted vanadium-rich massive magnetite pipe.

The Vanchem vanadium refinery, adjacent to the Highveld steel mill, used to refine both vanadium slag from the steel mill as well as iron ore fines from the Mapochs iron ore mine which contain vanadium, but is now limited to process magnetite concentrate. The Vanchem vanadium plant, which was sold by Highveld/Evraz to Duferco Steel as part of the agreement between the EU government and Evraz Group in conjunction with the Highveld Steel and Vanadium acquisition, used tp produces a total of about 4800 metric tonnes vanadium per year as pentoxide, sesquioxide, ferrovanadium and vanadium chemicals. The current production is not known.

Vametco Alloys, also a part of the Evraz group, similarly process both slag from the Highveld steel mill and ore from their mine in the Bushveld complex. Vametco Alloys produces a total of about 3500 metric tonnes vanadium per year in the form of V_2O_3 which is converted into vanadium carbonitride alloy (Nitrovan© trade name).

Rhovan, the primary vanadium mine owned by Glencore (formerly a part of Xstrata) also mines vanadium bearing titaniferous ore from the Bushveld complex and produces approximately 5000 metric tonnes vanadium per year as oxides and ferrovanadium.

Highveld slag represented the major source of raw material for production of vanadium by Treibacher in Austria. Approximately 80% of Treibacher's annual production of 6500 metric tonnes of vanadium was based on the processing of Highveld slag. Treibacher production as well as minor production by GFE in Nurembrug is currently based on the processing of vanadium bearing ashes, slags or spent catalyst secondary materials resulting from burning vanadium bearing oil in power stations or oil refineries processing vanadium bearing crude oil.

In Russia, Evraz Group produces in excess of 14,000 metric tonnes vanadium slag each year, as a co-product from the Nizhny Tagil steel mill in Ural. This slag is predominately processed at the Evraz vanadium refinery in Tula, resulting in 7800 metric tonnes of vanadium as vanadium oxides each year. The Tula refinery capacity is apparently not capable of processing all of the slag from Nizhny Tagil. As a result in past years Evraz has sent excess slag to China as well as to its sister company Stratcor facility in Hot Springs Arkansas. The vanadium production line in Nizhny Tagil has been shut down intermitently in the past.

North America produces about 5% of the world total vanadium output, essentially as secondary production from oil residues resulting from oil originating in Venezuela (Orimulsion) and Mexico. The Athabasca oil sands of Alberta contribute for a small amount of vanadium raw materials to North America today, with the potential for future growth, as expressed by the ill-fated Carbovan project.

Three plants in the USA process secondary materials from Venezuela, Mexico and Canada into final vanadium products; Evraz in Hot Springs Arkansas, Gulf Chemical and Metallurgical in Freeport Texas, and AMG Vanadium in Cambridge Ohio. Total production of vanadium final products in North America in 2013 was approximately 4000 metric tonnes vanadium while consumption was close to 12,000 metric tonnes vanadium. Stratcor, a division of Evraz, is currently capable of producing high purity vanadium chemical producer, suitable for battery electrolyte.

Windimurra mine (Atlantic Vanadium), the ill-fated Australian producer, has gone back into production in 2010, but the accidental destruction of the refinery in February 2014 re-halted the production.

Maracas Menchen mine, property of Largo Resources in Brazil, started its production in the course of 2014, and is currently ramping up its production toward 7000 tonnes vanadium per year.

VANADIUM MARKET STRUCTURE

The bulk of the vanadium market is steel related, 60% of the consumption being for HSLA steel (high-strength low-alloy steel, typically containing 0.015% to 0.55 vanadium) plus 25% for specialty steels. And, in this regard, metallurgical grade vanadium pentoxide is a "commodity", which means its value is independent of the producer, as long as the specifications are met. The selling price is more or less dictated by market, and the ones surviving in difficult periods are producers with lowest production cost or greater flexibility. Vanadium is mainly (96%) used to make other commodities, and its market remains therefore highly dependent on other commodities performance.

The vast majority of world vanadium production is as co-product (68%, Perles, 2013) or secondary production (21%), which makes its production capacity rather non-elastic. Only 11% of the vanadium is a primary production which can react to market outcomes. Vanadium production is then controlled by demand for other commodities, mainly steel, and not by its intrinsic demand. It is therefore a "co-commodity". Furthermore, the steel industry is simultaneously its major consumer and dominant source of supply. So demand and production are related and dependant. The only buffer available in the vanadium market seems to be stockpiles accumulation in low market, and stockpiles depletion in a boom market, and all the impacts of market fluctuation are absorbed by the primary producers. Therefore, as vanadium production is not related to its selling price, variations in demand are directly reflected in price fluctuation. Because of these factors it can be difficult to invest and build new facilities for primary production. Consequently, during the last 20 years and despite a 100% increase in overall production, only two facilities entered the market, Windimurra (currently temporarily closed) in Australia, and Largo in Brazil. Each of these projects represents about 8% of the market.

In the last ten years, American production of vanadium has waned due to the decreasing availability of vanadium bearing raw materials. The vast majority of vanadium production in North America is based on secondary refinement of vanadium bearing ashes, slag and residues originating from burning Venezuelan Orimulsion. Each year the vanadium grade of these oils decreases. Total oil production in Venezuela is also in a downward spiral, and more and more of the Venezuelan oil is being shipped to China rather than North America. Today consumption of vanadium in USA plus Canada is approximately 11,000 metric tonnes per year compared to a production from domestic raw materials sources of less than 1000 metric tonnes vanadium per year. The increasing dependency of supply of vanadium demand in USA and Canada from unstable or government oriented jurisdictions like Venezuela, South Africa, Russia and China is of great concern. No strategic stockpile is available anymore in United States.

There is a certain desire in the manufacturing industry for a dependable source of vanadium located in a politically stable and market controlled economy. As a reference, a similar situation prevails in the niobium industry, where the Niobec Mine (located near Chicoutimi, Québec, a Magris Resources subsidiary) was kept in production for the last 40 years for the sole sake of market stability.

Ferrovanadium imports in the USA from China and South Africa are essentially non-existent as a result of dumping duties. Import duty on ferrovanadium from countries not subject to dumping are typically 3.7% and imports of V_2O_5 into the USA generally carry a 5% import duty. Lac Doré production would be exempted of such duty, considering the North America free trade agreement.

VANADIUM BATTERY

Due to its multiple valences (V^{++}, V^{+++}, V^{++++} and V^{+++++}), its high solubility under wide acidity ranges and its high electrical density, vanadium is a metal with one of the highest electroactive capacities. Hence the interest in vanadium based batteries.

Currently, two categories of vanadium based batteries are emerging on the market, the vanadium redox flow batteries and lithium-vanadium batteries. Vanadium redox flow batteries "VRB" are one of the most promising chemistries, because of vanadium's ability to maintain different states of charge as a standalone element, unlike other chemistries like zinc-bromine or iron-chromium. But getting these efficiency advantages from theoretical to real-world working model status has taken years of effort and some significant changes along the way. The vanadium redox battery exploits the ability of vanadium to exist in solution in four different oxidation states, and uses this property to make a battery that has just one electroactive element instead of two. The main advantages of the VRB's are that it can offer almost unlimited capacity simply by using larger storage tanks, it can be left completely discharged for long periods with no ill effects, it can be recharged simply by replacing the electrolyte if no power source is available to charge it, and if the electrolytes are accidentally mixed the battery suffers no permanent damage.

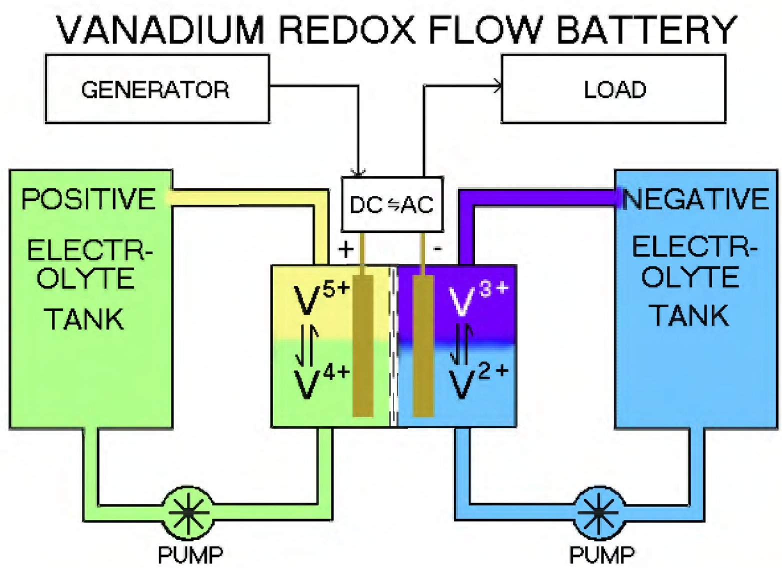

***Figure 55**: Diagram of the vanadium redox battery, made of two electrolyte tanks, which electrolyte are pumped into a fuel cell where electricity is generated or the electrolyte regenerated (Wikipedia.org).*

The vanadium redox flow battery was developed by Dr. Maria Skyllas-Kazacos, from New-South-Wales University (Australia), patented in 1989 (***figure 55***). Dr. Skyllas-Kazacos is currently on the advisory board of VanadiumCorp, as well, she was involved with the former McKenzie Bay project. The battery uses a VO^{++} ==> VO_2^{+} reduction electrolyte and V^{++} ==> V^{+++} oxidation electrolyte upon discharging. Both electrolytes are put in semi-contact through an electroporous membrane for electron exchange. Since both electrolytes are made of the same metal, cross contamination is not an issue. Since both electrolytes are liquids, they can be pumped through the cell, and stored in tanks. Then, the storage capacity is dependent on the tanks size and power is dependent on membrane surface. Thus the battery runs as two electrolyte storage tanks, a membrane unit (fuel cell) and pumps for circulating the electrolyte in the charge or discharge cycles. These batteries then represent large storage capacity (Kw/h to Mw/h) suitable where high power is required. Applications are multiple:

- Full electric vehicle, where the batteries can either be recharged on grid, or "*refuelled*" with charged liquid electrolytes. The official release of such a vehicle happened at the Sydney 2000 Olympic Games, where it propelled public transportation. Promoters claim that it may likely replace the standard Pb-Pb car battery as well as dominate the electric car market.

- Power back-up for a small community isolated from national electrical grid, such as islands, Nordic villages and jungle or desert outposts. Electric power for such communities is usually produced with diesel powered generator, which have a near constant fuel consumption regardless of the power output. Therefore, the generators needs to be built to supply peak demands, and thus runs constantly at full fuel consumption. Coupling storage battery with generators or even windmills enables to supply peak demands with significantly lower generating capacities. An example is the Windstor System, developed by Dermont Engineering, a subsidiary of McKenzie Bay International, a system which was successfully installed in Rouyn-Noranda in 2002.
- Grid stabilization of industrialized areas subjected to supply reliability which do not match the needs, such as California's silicon valley. Such large scale batteries are considered sufficiently powerful to supply industrial complexes sensitive to electrical power outage, such as robotized assembly lines and computer centers. It is reported that a single power outage of a car assembly line cost about a million dollars to restart.
- Grid stabilization for large communities, enabling levelling of peak demands. Cost of electricity is, on most grids, dependant on demands, meaning it may quadruple during peak periods (such as dinner time every day and extreme cold or heat periods). The only large power stations which can easily cope with short-term variations are hydro-electricity, which represents only a fraction of North-American production. As an example, Hydro-Québec is the only utility company vastly relying on hydro-electricity. Although its net exports are near to nil, Hydro-Québec imports off-peak power from New-England at low cost, and export at peak demands at high prices, generating hundreds of millions dollars in profits.
- The need for grid stabilization for wind farms is self-evident.

The storage capacity of the generation one vanadium redox battery relates directly to the amount of vanadium, with a capacity of 250 watt-hours of energy per 1 kilogram of vanadium used in the electrolyte. A megawatt-hour size battery then requires 5000 metric tonnes of vanadium electrolyte, nearly a year of eventual Lac Doré production. The commercialization of vanadium batteries would create a tremendous pressure on the vanadium price. The reader shall recall the non-elasticity of the current production, and therefore the need for domestic primary-source of vanadium to fulfil the battery market to both supply vanadium and maintain stability in pricing.

Vanadium redox flow batteries have clearly demonstrated the ability to meet the challenge of integrating energy from variable and intermittent sources such as wind and solar power onto the electricity grid while maintaining grid stability. However, these batteries have been limited in their ability to perform in a wide range of temperatures, their relatively high cost, their low energy density and the need for high purity vanadium electrolyte.

In 2006, the basic patents relating to the vanadium battery expired and new developers entered the market, namely UniEnergy near Seattle in the US and their strategic partner, Dalian Bolong New Material Co., Ltd. “BNM”. BNM is now the leading producer of vanadium products in the world. In 2011 scientists at the Pacific Northwest National Laboratory "PNNL" in the USA improved the performance of redox flow technology by increasing the energy density by 70% and simplifying the system in comparison with standard storage batteries. Purity requirements of the generation 3 vanadium redox batteries were also decreased, which may result in decreased cost of production for vanadium electrolyte suppliers. The advent of this third generation VRB by PNNL has come at a pivotal time with renewable energy at the forefront of the market, price stability, viable technology and North American VRB companies following the success of VRB commercialization in China, Japan, Korea and Europe. North American supply of Vanadium will become a significant concern as commercialization increases in scale.

The second type of vanadium based battery is the lithium-metal (vanadium)-polymer “LMP” battery and lithium-vanadium-phosphate battery “LVP”. Originally developed by Avestor, a Hydro-Québec subsidiary who still owns patents on the technology, in the late 1990's, the LMP solid-electrolyte battery uses lithium ions as the anode and avanadium oxide polymer as the cathode. In 2010, GS Yuasa in Japan developed and prototyped the LVP battery with vanadium phosphate as a cathode material for lithium-ion batteries. The use of vanadium in the cathode allows the reaction to release more energy under discharge and to recharge more quickly. The battery stores more energy and can be recharged much faster than Li-ion batteries. Vanadium also allows the battery to provide power while recharging. The LMP & LVP main application is electric vehicles, where it may deliver a higher power/weight ratio than regular lithium ion batteries. Although this battery has numerous advantages over conventional lithium-cobalt iron batteries, its commercialization is uncertain.

MARKET OUTLOOK

Historically, until 2005, the vanadium demand and production has grown about 4-5% annually, related to increasing in steel production and of its vanadium content. Since 2005, due to the Chinese increase in steel production as well as the implementation of higher strength and ductility specifications for construction steels in China, vanadium demand and production has increased by about 70%, for a growth of 7-8% annually. Although the growth rate of the Chinese steel industry has decelerated for the last 2-3 years, the demand in vanadium as alloying agent increased. The phenomenon related to the usage "*intensity*", which relates to the proportion of the steel produced that is alloyed or microalloyed. Traditional steel produced and consumed in China is used in regular carbon steel. However, the proportion of HSLA steel consumption has steadily increased, and the intensity of world vanadium use in steel has steadily increased by 5% in the last decade (50% total), multiplied by the steel production which has doubled. This increase translates into 0.002 kg of vanadium per tonne of steel (Perles, 2013). This represent a 7% overall increase in consumption per year by the steel industry. Despite the slowdown in steel production, the vanadium intensity increase is on a long term outlook, which shall sustain a 5% annual growth of vanadium consumption by the steel industry. The bulk of the non-alloyed steel produced by China is dedicated to its domestic market. The last quinquennial economic plan of the Chinese government indicates the will to improve the quality of domestic steel consumption, thus to sustain the trend in vanadium growth consumption.

The market for vanadium chemical to be used in the various types of batteries currently stands at less than 2000 tonnes per year. It is currently difficult to forecast future demand in this emerging market, but 10,000 tonnes per year by 2017 was proposed by Perles (2013). However, the demand can vary wildly depending if lithium-vanadium-phosphate batteries get more acceptances by the car industry, and mostly if large scale VRB power storage systems get fully commercialized. The construction of a single VRB unit to back-up the Hoover Dam electricity production, enough to sustain a city the size of Vancouver, would require about 5000 tonnes of V_2O_5 equivalent as electrolyte! The supply for such increase in demand could not be derived from an increase in direct reduction steel production, and would have to come from primary production.

ITEM 25: INTERPRETATION AND CONCLUSION

VanadiumCorp owns a significant portion of the series of vanadium bearing magnetite layers historically defined on the South limbs of the Lac Doré Anorthositic Complex. It is calculated that the Eastern Deposit alone, between sections 6+50 East and 24+50 East and to a depth of 200 metres, host an inferred resource 99,104,000 tonnes of mineralized rock at 26.3% magnetite, thus containing 26,067,000 tonnes of titano-magnetite grading 1.08% V_2O_5. Resources were calculated using magnetite recovery from Davis tube testing, and vanadium assay of the magnetite concentrate. This method is considered more dependable than using the conventional approach of calculating headgrade and applying uniform magnetite recovery. If calculated back, a headgrade of 0.43% V_2O_5 is obtained for the whole resource. It is considered that using Davis tube magnetite recovery emulate the performance of a mill, thus no mineralurgical recovery is factored in. It is considered that recovery of vanadium from magnetite, through conventional alkali roasting, is in the order of 95%. Therefore, 282,370 metric tonnes of vanadium pentoxide would be present in the concentrate, or near to 621 million pounds. No credit was allocated for by-products.

The resource model is based on a 25% in-bedded profit on each individual block. Revenues are assuming an average sales price of US$5.50 per pound, while cost are estimated on the following:

- Mining cost, based on similar operation: US$1.80 per tonne.
- Milling and beneficiation cost, based on similar operation: US$2.50 per tonne.
- This is based on a power consumption of 17 kwH/t at "L" rate. It includes cost for tailing management.
- Roasting and hydrometallurgy cost at $40/tonne of magnetite.
- Reactants alone are estimated at $21 per tonne of magnetite (soda ash and coal mainly), to which manpower and calcine disposal need to be added.

The current resource estimate is based on data compiled from the various historic reports. Very little of this data is VanadiumCorp data. Although extensive verification was made, less than 1% of errors are likely remaining in the data set. Assaying results generated since McKenzie Bay Resources work in 1997 were subjected to quality control, including the insertion of certified reference material. It is in the author opinion that these data are coherent and accurate, both in term of headgrade and concentrate analysis. However, assays obtained from historic work completed by MRN and SOQUEM are lacking proper quality control. Although their precision is acceptable, their accuracy is expected to be only within 5% of the true grade. Since systematic bias observed on some sets of conflicting data is uncertain, correcting these data may worsen their accuracy. **Therefore, no correction for suspected bias were applied**. It is considered that, whatsoever the effort, conciliation of the dataset cannot be significantly improved. **Therefore, upgrading the category of the current resource cannot be based upon the current dataset and will require a systematic and properly controlled drilling program over the deposit**.

The deposit had experienced advanced stages of development four times in its history, including massive metallurgical testing. Building on the current resource estimate and tapping on these previous studies shall enable VanadiumCorp to proceed with a *Preliminary economic assessment "PEA"* of the project. Preparation of a preliminary economic assessment from existing data would require about six months of work.

It is in the author opinion that a resource category upgrade, involving a significant investment in drilling, shall not be undertaken until profitability is suggested from the *preliminary economic assessment.*

ITEM 26: RECOMMENDATIONS AND BUDGET

The author has reviewed relevant information to the VanadiumCorp owned **Lac Doré** and **Lac Doré North** properties and the surveys carried out to date. The progress made on the Lac Doré deposits and the geological continuity between the various segments of these deposits provide abundant evidences of important vanadium endowment and the technical capabilities to economically recover this metal. The historic work completed on their deposits provides VanadiumCorp with the opportunity to quickly proceed from the current inferred resources estimation to a Preliminary Economic Assessment. The author suggested sequence of work for the development as follows:

PHASE 1: PRELIMINARY ECONOMIC ASSESSMENT

Completion of a Preliminary Economic Assessment for establishing primary vanadium production is considered a prerequisite to justify the financing of a drilling program to upgrade categorization of the resource as well as metallurgical testing.

The author recommends that the Preliminary Economic Assessment be based upon the inferred resources provided in the current report, since it's purpose is primarily to justify the important investment related to drilling in order to upgrade the resources.

To be completed, the preliminary economic assessment will require:

- Limited field verifications.
- Detailed review of the historic work regarding beneficiation, roasting and hydrometallurgy process. Such review shall be conducted by a metallurgist with vast experience with vanadium.
- Elaboration of a preliminary mining plan and pit design, based on the available resource model.
- Handling, logistic and expediting scenarios.
- Estimation of the capital cost and operating cost of a vanadium refinery, including the construction of a large size rotary kiln.
- Detailed market study for the metallurgical grade vanadium pentoxide, including the outlook for ferrovanadium, carbonitride and high purity electrolyte chemical.
- Review of the available portion of the former McKenzie Bay Environmental and Social impacts study, and upgrade of this study in regard of the current socio-economic context.
- Evaluation of the capital requirement, cash-flows and net present value of the project. The author insists this study being carried solely with the perspective of metallurgical grade pentoxide production. Such working hypothesis is needed to

ensure the robustness of the project, the electrolyte production being currently too uncertain.

- Outlining the weakness of the project, in order to address the sensitive issues and provide options for solutions.

Phase 1 program shall be initiated as soon as mandated by VanadiumCorp, likely this year.

Budget for phase 1 is as follow, not including VanadiumCorp corporate cost:

Field work	$2000/day	20 days	$40,000
Data verification	$80/hours	200 hours	$16,000
Metallurgy review	$120/hours	500 hours	$60,000
Applied mineralogy	$250/hours	100 hours	$25,000
Mining plan	$100/hours	200 hours	$20,000
Market study	$120/hours	500 hours	$60,000
ESIS review	$120/hours	200 hours	$24,000
Cost estimation	$120/hours	200 hours	$24,000
Community relations			$100,000
Claim maintenance			$50,000
Contingencies			$50,000
Total Phase 1			$470,000

PHASE 2: RESOURCE DEFINITION DRILLING AND METALLURGICAL TESTING

Conditional to a preliminary economic assessment indicating a reasonable chance for the project to be profitable, the resource will need to be upgraded into the indicated and measured category. For this phase, it will be needed to drill the deposit, in a systematic pattern and according to the current industry best practices. As detailed in Item 14, it is recommended to drill a complete profile every 100 metres, for 20 profiles, with 2 holes of 300 metres length for 600 metres per profile, plus 20 intermediate profiles at 50 metres spacing on a quincunx pattern with one hole of 300 metres length per intermediate profile. This will sum to 18,000 metres of drilling in order to cover the entire Eastern deposit. It is recommended that drilling being made with PQ diameter (8.5 cm diameter) to enable collecting sufficient material for metallurgical testing, including fragment sufficiently large for a drop-mill test. This will represent about 350 tonnes of material. For this, about 2000 metres of geotechnical holes will be required for pit stability design and hydrogeology measurement for a total of 20,000 metres.

The core will need to be logged for both the lithological and geomechanic parameters. Sampling for headgrade and Davis tube testing will be needed, plus some geometallurgical testing. It is estimated that about 12,000 metres of core will require assaying, for 2400 Davis tube testing and about 5000 assays. Subsequent of the program, resource and block model will require to be recalculated.

Testing for the production of high purity vanadium chemical will require a complete pilot plant testing, including magnetite beneficiation on 350 tonnes of material, alkali roasting and hydrometallurgical testing as recommended and supervised by a qualified metallurgist or process engineer. Planning of such testing is complex and will need to be prepared during the drilling program. Some bench-scale metallurgical testing shall be initiated in this regard. Finally, an update of the former environmental base-line study is expected as needed.

Budget for phase 2 is as follow, not including VanadiumCorp corporative cost:

Drilling	20,000 metres	$100 per metres	$2,000,000
Davis tube	2400 test	$200 per test	$540,000
Assaying and prep.	5000 samples	$70 per assays	$350,000
Geology, engineering	4000 hours	$100 per hours	$400,000
Technical staff	6000 hours	$60 per hours	$360,000
Logistic and camp	$1000/day	200 days	$200 000
Resource estimation			$100,000
Bench scale met testing			$250,000
Base-line env. study			$250,000
Contingency	10%		$500,000
Total phase 2			**$5,000,000**

The author considers the budgets and targets presented in the above recommended program to be realistic and legitimate, and, if properly managed, they will provide a reasonable chance of upgrading the category of the resource, notwithstanding the risks inherent to any exploration project.

Signed in Saguenay and Val-d'Or on May 21, 2015
Effective date of the report: April 10, 2015

Lac Doré, Vanadium, May 21, 2015

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IOS Services Géoscientifiques inc.

Lac Doré, Vanadium, May 21, 2015

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GéoPointCom incl.

ITEM 27: REFERENCES

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ITEM 28: CERTIFICATE OF QUALIFICATION

RÉJEAN GIRARD, PROFESSIONAL GEOLOGIST

I, Réjean GIRARD, P. Geo., do hereby certify that:

1. I am currently employed as a senior geologist by:
   IOS Services Geoscientifiques Inc
   1319 Boulevard St-Paul
   Chicoutimi, Québec, G7J 3Y2
2. I graduated with a degree in geology from *Université Laval* in Ste-Foy, Québec, in 1985. In addition, I completed 5 years of graduate studies in mineral resources at *Université du Québec à Chicoutimi*.
3. I am a member of the *Ordre des Géologues du Québec*, #521.
4. I have worked as a geologist for 30 years since my graduation from university.
5. I have been involved as project manager regarding the work conducted on the current deposit since 1997 with various past owners, including being McKenzie-Bay Resources representative during the competion of the now-obsolete SNC-Lavallin feasibility on the Lac Doré. I have also been involved in numerous other vanadium or iron-titanium projects located in Québec, and overall in more than 1300 different exploration projects across the world. I have also directed a commercial mineralogy and mineralurgy testing facility for 20 years.
6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI-43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI-43-101), and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purpose of NI-43-101.
7. I am responsible for the preparation of the technical report entitled "The Lac Doré vanadium project: First resources estimate, Chibougamau, Québec, Canada, NI-43-101 technical report", revised on May 21th, 2015, with an effective date of April 10th 2015 and relating to the **Lac Doré** and **Lac Doré North** properties. I visited the properties on November 10, 2013 and more recently on October 6 to 10, 2014.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report of which the omission to disclose would make the Technical Report misleading.
9. I am independent of the issuer and their former partner, having applied all the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101-F1, and the Technical Report was prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange or other regulatory authority, and any publication of the Technical Report by them on their publicly accessible websites.

Dated 21 to May, 2015

Lac Doré, Vanadium, May 21, 2015

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Réjean Girard
Professional Geologist, OGQ n° 521
IOS Services Géoscientifiques inc.

CHRISTIAN D'AMOURS, PROFESSIONNAL GEOLOGIST

I, Christian D'Amours, residing at 895, rue Lévis, Val-d'Or, Québec, do hereby certify that:

1. I am an independent geologist with the consulting firm, GeoPointCom, located at 895 rue Levis, Val d'Or, Québec, Canada, J9P 4B8.
2. I graduated in geology, as a professional geologist, from the University of Québec in Montréal.
3. I have been practicing the profession of geologist on an ongoing basis since May 1985
4. From 1985 to 1994 the practice of my profession was mainly oriented towards exploration. From 1994 to 1999, I worked primarily in the field of mining. Since 1999, I have been working predominantly in the evaluation of resources, reserves and geostatistics.
5. I am a member of the Order of Geologists of Québec (#226);
6. I have read the definition of "qualified person" set out in Regulation 43-101/NI43-101 and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of Regulation 43-101.
7. I am responsible for the preparation of Section 14 and co-author of sections 1 and 25 to 27 of the report titled "The Lac Doré Vanadium Project: First Resources Estimate (according to National Instrument 43-101 and Form 43-101F1)" (the "Technical Report"), effective date of April 10, 2015 and revised on May 21, 2015, prepared for VanadiumCorp Resource inc.
8. I had no prior involvement with the property that is the subject of the Technical Report.
9. I did not visit the property.
10. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which would make the Technical Report misleading.
11. I am independent of the owners of the lands covered by this report within the meaning of section 1.5 of National Instrument 43-101 Standards of Disclosure for Mineral Properties ("NI 43-101").
12. I have read the NI 43-101 and Form 43-101F1, and hereby certify that this report was prepared in compliance with NI 43-101 and Form 43-101F1. The report gives a true picture of the state of scientific and technical knowledge as of April 10, 2015.

Dated May 21, 2015

Lac Doré, Vanadium, May 21, 2015

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Christian D'Amour, Professional Geologist, OGQ n° 226
GéoPointCom incl.

APPENDIX 1

CLAIMS LIST

Property	NTS Map	Township	Rang/Bloc/Pa	Row/Range	Column	Superficy	Title #	Registration	Renewal	Credits	Requirement	Fees	Registred owner
LDN	SNRC 32H13		Map cell	13	8	55.51	2174067	2008-11-04	2016-11-03	- $	1 800.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	15	59	55.49	2407352	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	15	60	55.49	2407353	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	16	57	55.48	2407354	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	16	58	55.48	2407355	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	16	59	55.48	2407356	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	16	60	55.48	2407357	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	1	55.49	2407358	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	2	55.49	2407359	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	3	55.49	2407360	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	4	55.49	2407361	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	5	55.49	2407362	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	6	55.49	2407363	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	1	55.48	2407364	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	2	55.48	2407365	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	3	55.48	2407366	2014-07-16	2016-07-15	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	11	54	55.53	2412408	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	11	55	55.53	2412409	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	12	56	55.52	2412410	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	13	53	55.51	2412411	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	13	54	55.51	2412412	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	13	55	55.51	2412413	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	13	56	55.51	2412414	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	14	53	55.5	2412415	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	14	54	55.5	2412416	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	14	55	55.5	2412417	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	14	56	55.5	2412418	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	15	57	55.49	2412419	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	15	58	55.49	2412420	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	17	58	55.47	2412421	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	17	59	55.47	2412422	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16		Map cell	17	60	55.47	2412423	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	13	9	55.51	2412424	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	14	9	55.5	2412425	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	15	9	55.49	2412426	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	5	55.48	2412427	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	6	55.48	2412428	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	7	55.48	2412429	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	8	55.48	2412430	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	16	9	55.48	2412431	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	1	55.47	2412432	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	2	55.47	2412433	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	3	55.47	2412434	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	4	55.47	2412435	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	5	55.47	2412436	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	6	55.47	2412437	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	7	55.47	2412438	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	8	55.47	2412439	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	17	9	55.47	2412440	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	18	1	55.46	2412441	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	18	2	55.46	2412442	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	18	3	55.46	2412443	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	18	4	55.46	2412444	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32H13		Map cell	18	5	55.46	2412445	2014-09-22	2016-09-21	- $	1 200.00 $	55.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	28	2	15.39	5266726	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	27	2	9.62	5266727	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	28	3	15.41	5266728	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16,3	RINFRET	Claim	28	4	15.57	5266729	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	LEMOINE	Claim	25	41	16.34	5266831	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	LEMOINE	Claim	26	41	16.2	5266833	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	27	1	15.24	5266834	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	26	1	9.27	5266835	2007-09-13	2015-09-12	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	28	5	15.6	5274536	2011-03-31	2017-03-30	1 724.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	28	6	15.56	5274537	2011-03-31	2017-03-30	2 224.54 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	27	3	16.19	5274538	2011-03-31	2017-03-30	2 724.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16,3	RINFRET	Claim	27	4	16.17	5274539	2011-03-31	2017-03-30	2 224.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	27	5	16.07	5274540	2011-03-31	2017-03-30	31 167.91 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	27	6	15.55	5274541	2011-03-31	2017-03-30	3 224.54 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	26	3	15.59	5274543	2011-03-31	2017-03-30	2 724.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16,3	RINFRET	Claim	26	4	15.55	5274544	2011-03-31	2017-03-30	34 167.90 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	26	5	15.51	5274545	2011-03-31	2017-03-30	2 724.54 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	26	6	14.63	5274546	2011-03-31	2017-03-30	2 724.54 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	25	1	13.15	5274547	2011-03-31	2017-03-30	2 725.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	25	2	15.76	5274548	2011-03-31	2017-03-30	35 168.90 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	25	3	16.08	5274549	2011-03-31	2017-03-30	35 168.91 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16,3	RINFRET	Claim	25	4	16.06	5274550	2011-03-31	2017-03-30	3 225.54 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	LEMOINE	Claim	24	40	15.54	5274552	2011-03-31	2017-03-30	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	24	2	16.06	5274554	2011-03-31	2017-03-30	2 224.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	24	3	15.78	5274555	2011-03-31	2017-03-30	3 224.53 $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	LEMOINE	Claim	23	40	15.83	5274557	2011-03-31	2017-03-30	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	29	2	15.48	5274561	2007-09-28	2015-09-27	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	29	3	15.48	5274562	2007-09-28	2015-09-27	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	30	3	15.87	5274563	2007-09-28	2015-09-27	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	29	6	14.87	5274569	2007-09-28	2015-09-27	1 242.32 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	29	5	15.47	5274570	2007-09-28	2015-09-27	1 228.29 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16,3	RINFRET	Claim	29	4	15.48	5274571	2007-09-28	2015-09-27	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	30	12	15.92	5274572	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	29	12	14.99	5274573	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	28	12	15.69	5274574	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	27	12	15.68	5274575	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	27	11	15.68	5274576	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	27	10	15.48	5274577	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	30	6	15.24	5274579	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	30	5	15.8	5274580	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16,3	RINFRET	Claim	30	4	15.84	5274581	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %

Property	NTS Map	Township	Rang/Bloc/Pa	Row/Range	Column	Superficy	Title #	Registration	Renewal	Credits	Requirement	Fees	Registred owner
Doré	SNRC 32G16,3	RINFRET	Claim	31	4	15.81	5274582	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32H13	RINFRET	Claim	31	5	15.92	5274583	2008-06-26	2016-06-25	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	31	3	15.71	5274588	2007-10-16	2015-10-15	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	32	3	15.71	5274589	2007-10-16	2015-10-15	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	32	2	15.71	5274590	2007-10-16	2015-10-15	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	31	2	15.71	5274591	2007-10-16	2015-10-15	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Doré	SNRC 32G16	RINFRET	Claim	30	2	15.87	5274592	2007-10-16	2015-10-15	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	30	10	15.88	5274599	2007-12-07	2015-12-06	27 591.00 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	30	11	15.97	5274600	2007-12-07	2015-12-06	11 169.04 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	29	11	14.99	5274601	2007-12-07	2015-12-06	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	29	10	14.75	5274602	2007-12-07	2015-12-06	13 771.74 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	28	10	15.45	5274603	2007-12-07	2015-12-06	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	28	11	15.69	5274604	2007-12-07	2015-12-06	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	31	10	16.51	5274707	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	31	11	16.44	5274708	2008-01-31	2016-01-30	11 180.39 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	31	12	16.39	5274709	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	32	12	16.95	5274710	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	32	11	16.95	5274711	2008-01-31	2016-01-30	10 135.04 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	33	11	15.86	5274712	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	33	12	15.86	5274713	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	33	13	15.86	5274714	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	34	13	15.87	5274715	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	34	12	15.87	5274716	2008-01-31	2016-01-30	12 413.16 $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	35	12	15.84	5274717	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	35	13	15.84	5274718	2008-01-31	2016-01-30	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	32	13	16.93	5274825	2009-01-20	2017-01-19	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	31	13	16.39	5274826	2009-01-20	2017-01-19	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	36	12	15.87	5274827	2009-01-20	2017-01-19	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	36	13	15.87	5274828	2009-01-20	2017-01-19	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
LDN	SNRC 32H13	RINFRET	Claim	34	14	17.17	5274829	2009-01-20	2017-01-19	- $	750.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	26	2	1.09	5281213	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	34	1	16.31	5281215	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	34	2	16.34	5281216	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	34	3	16.17	5281217	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	35	3	16.18	5281218	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	35	2	16.38	5281219	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	35	1	16.43	5281220	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	36	1	16.79	5281221	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	36	2	16.79	5281222	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %
Extension	SNRC 32G16	RINFRET	Claim	36	3	16.66	5281223	2014-09-29	2016-09-28	- $	500.00 $	28.25 $	Apella Resources inc. (81845) 100 %

APPENDIX 2

REPRESENTATIVES PROFILES AND LEVEL PLANS