### Specialty Metals In Canada



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#### **Cover Photo:**

Eudialyte  $[Na_4(Ca,Ce)_2(Fe^{++},Mn,Y)ZrSi_8O_{22}(OH,Cl)_2]$ , a rare earth element-bearing mineral (pink). Other major constituents are feld-spar (white and gray), sodic amphibole (dark green) and mosandrite and/or agrellite (graysh-buff). Sample from the Specimen Pit (Trench 1 of the Matamec Explorations Inc.), Kipawa, Quebec. Canadian quarter for scale.





#### **Specialty Metals in Canada**

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#### Abstract

Specialty metals (SMs) are critical for the development of green technologies, essential raw materials for high technology industries, and deemed strategic for national security by the USA and several European countries. More than one thousand Ta, Nb, Zr, Hf, Li, REE and Be occurrences are known in Canada. Only two Canadian SM deposits are being mined, the ferroniobium producing St. Honoré carbonatite (Niobec) and the Cs- and Ta- producing Bernic Lake deposit (Tanco Mine). Several Ta, Nb, REE and Li prospects are reaching pre-feasibility or feasibility stages. Examples are: Crevier Township, Nb-Ta (QC); Aley Carbonatite, Nb (BC); Blue River, Ta-Nb (BC); Nechalacho, REE (NT); Strange Lake, REE (QC); Kipawa, REE (QC); LaCorne Township, Li (QC); and Wabouchi (also known as Lac des Montagnes) Li (QC). Ontario has the greatest number of occurrences (373), followed by Quebec (195), NWT (115), British Columbia (108), Newfoundland (86), and the remaining provinces, Yukon and Nunavut (220, combined). These occurrences can be described as anomalies (140), showings (563), prospects (204), developed prospects (109), past producers (23), current producers (8), Li-bearing oilfield brines (48), and oil sands byproducts (2). Geologically, the occurrences can be grouped into 14 categories: carbonatite/syenite-related; peralkaline intrusion-related; pegmatite/granite/aplite; REE  $\pm$  P veins; placer/paleoplacer; sedimentary phosphates; REE- enriched Iron oxide copper gold ore (IOCG); sandstone-hosted xenotime; REE as uranium by-products; skarns; greisen/veins; Li-bearing brines; oils sands by-products; and other/unknown. Canada has excellent geological potential to supply SMs worldwide.

#### Introduction

The terms "specialty metal" (SM) and "rare metal" are synonymous. Thev refer to uncommon, nonferrous metals used in quantities of typically less than 150000 tonnes/year or derived from geographically restricted areas. The term SM was adopted by the Targeted Geoscience Initiative-4 (TGI-4) program and will be used throughout this paper. Examples of SMs include: tantalum (Ta); niobium (Nb); zirconium (Zr); hafnium (Hf); lithium (Li); beryllium (Be), and rare earth elements (REE). According to the International Union of Pure and Applied Chemistry (IUPA) the term "rare earth element" (REE) encompasses yttrium (Y), scandium (Sc) and the lanthanide series: lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb) and lutetium (Lu). This definition is used herein. REEs are further subdivided into light (LREE) and heavy (HREE) categories. Traditional definition of LREEs includes La, Ce, Pr, Nd, Sm, Eu and Gd and the term HREEs covers Tb, Dy, Ho, Er, Tm, Yb and Lu. More recently, industry defined LREEs as La-Eu and HREEs as Gd-Lu series. Y is also commonly considered an HREE, based on its geological association and chemical properties. Sc is not grouped either with LREEs or HREEs. Promethium (Pm) does not occur in nature. Germanium (Ge), gallium (Ga) and vanadium (V) are also classified as SMs, but they are excluded from this study because they are not covered under the mandate of the Specialty Metals component of the TGI-4 program (Simandl, 2010b).

The tonnage and value of specialty metals mined worldwide is minor compared to common industrial metals such as iron, copper, nickel, zinc, and lead. Nonetheless, high technology industries need a secure supply of SMs at competitive prices. Although other materials can substitute for several SMs, they are typically more expensive or less effective. For example: palladium and ultra-stable zeolite can replace REE's used as catalysts; andalusite, chromite, and kyanite can substitute for zircon in refractories; and Zn-Carbon and Ni-Cd can be used in batteries instead of Li. Many countries consider several SMs essential for national security as highlighted in the 2010 "Review of Critical Raw Materials for Europe", spearheaded by the European Commission. Table 1 describes the prices, uses, and market information for selected SMs.

The inventory presented on the accompanying map (Fig. 1) and in Table 2 is current as of Fall, 2011. It is based mainly on provincial and territorial databases, and documents occurrences and deposits that have at least one specialty metal listed as a commodity. The provincial data were collected, merged, examined, and classified using 14 deposit categories based on the association between the mineralization and the host rock. The resulting compilation was sent for verification to provincial and territorial geologists. Six data entries in Yukon Territory (#s 1, 2, 3, 4, 5 and 6) do not have a SM specified either as a primary or secondary commodity. In these cases territorial geologists felt very strongly that based on the deposit type, geological settings, and similarity with other occurrences that SMs have been probably overlooked or not reported.

In the following we discuss the global sources and production of specialty metals, describe the geological setting of Canadian deposits and occurrences, and consider applied mineralogical and metallurgical aspects.

## Global sources and production of specialty metals

#### **Rare Earth Elements**

Global production for 2011 is estimated between 100000 and 140000 tonnes of contained REOs. China currently controls the REE market by using a system of mining, separation and smelting, and export quotas. The high technology industry and governments of industrialized countries are concerned about China's control of the market and recent volatility of REO prices (Simandl, 2010a). More than 556 REE exploration projects are active Of these, 296 are worldwide. grassroots (no drilling), 157 have limited drilling, 66 are in the advanced exploration stage, 26 are in the prefeasibility stage, 7 are at the feasibility stage, and 4 are under construction (Intierra, 2012). New drilling results were announced from 54 projects; 19 are in Canada and 12 are in Australia (Intierra, 2012). Under the market conditions that follow the law of supply and demand (without production quotas or the governmental interferences), only the best of the above primary REE deposits will reach the production stage and remain economically viable over an extended period of time. The quality of a REE deposit is determined by mineralogy (Simandl, 2010a), grade, HREE-LREE ratio, tonnage, depth and shape of the ore zone, proven and simple metallurgy, infrastructure, and environmental constraints plus the availability of labour.

High potential exists for recovery of substantial tonnage of REE as a byproduct of uranium and/or phosphate fertilizer production (Simandl *et al.*, 2011a, b, c). Other potential sources include seafloor occurrences, which have recently received attention (Kato *et al.*, 2011).

#### Niobium

The global Nb supply for 2011 is estimated at 63000 tonnes of contained Nb (Papp, 2012a). Brazil (58000 tonnes) and Canada (4 400 tonnes) are the main producing countries. Niobium is traded mostly in the form of ferroniobium and as niobium alloys and metal. Most Nb is used in steel (75%) and superalloys (25%). For 2011, the value of US consumption is expected to be about \$400 million, as measured by the value of imports (Papp, 2012a). World Nb reserves were reported to be 3 million tonnes of contained Nb (Papp, 2012a).

#### Tantalum

Global Ta supply for 2011 is estimated at 790 tonnes of contained Ta (Papp, 2012b). According to Mining Journal (2012), approximately 40% is being recovered from tin slags. The remainder is divided equally between primary Ta mines and secondary concentrates, which consist largely of columbite, struverrite, and recycled materials. The main producers are: Mibra mine in Nazareno (Brazil), with a capacity of 181 tonnes Ta<sub>2</sub>O<sub>5</sub>/year; Kenticha mine (Ethiopia), producing 200000 lb of Ta<sub>2</sub>O<sub>5</sub>/year; and Lovozero (Russia) producing 120000 lb/year (Mining Journal, 2012). Wodgina mine (Australia) could resume production should market conditions improve, and the Tanco mine (Manitoba) recently reactivated its Ta and Cs operation. A significant proportion of Ta-bearing concentrates originate from unstable regions of Africa such as the Democratic Republic of Congo, Uganda, and Rwanda. Columbitetantalite concentrates (or "coltan") from these countries are considered "conflict minerals". They can be tracked by distinctive geochemical signatures (Melcher et al., 2008). If the current movement to eliminate or reduce the use of conflict coltan in the western world takes hold, it may indirectly contribute to reopening Ta mines in

Canada and Australia or to the development of currently sub-economic deposits.

#### Zirconium/Hafnium

Global production of zirconium concentrates for 2011 is estimated at more than 1.4 million tonnes of contained Zr. Substantial increase in demand since 2010 has resulted in global price increases (Gambogi, 2012). Australia, South Africa, China, Indonesia, Mozambique, and Ukraine have traditionally been the main zircon producing countries. Baddeleyite was historically produced at Kovdor (Russia) and Palabora (SA) operations; only Kovdor remains in production. Most zircon is used as an industrial mineral for its physical properties or is transformed into engineered materials such as zirconia and stabilized zirconia or zirconia-based ceramics. It is used for ceramics, refractory and foundry applications, opacifiers, abrasives, chemicals, metal alloys, and welding rod coatings (Gambogi, 2012). Only a small proportion of Zr ore is transformed into Zr metal. Chemical

and nuclear industries are leading consumers of Zr and Hf metals. These two metals are not separated unless they are intended for use in the nuclear industry. Because the prices of zircon concentrate, currently about US\$2500/ tonne, free on board (FOB) Australia, and zirconium chemicals more than tripled from 2010-2011, it is expected that users will look for substitute materials in the short term (MacDonald, 2012). In the long term, zircon market conditions are promising.

#### Beryllium

Until the early 1960s, when bertrandite deposits at Spor Mountain were brought into production (Utah Spor Mountain, Materion Corporation), artisanally mined beryl, rejects from gemstone operations, and beryl derived as a byproduct of industrial mineral operations were the main Be raw material. World output of Be raw materials for 2011 was estimated at 240 tonnes of Be content. According to Jaskula (2012a), the main suppliers were the USA (210 tonnes), China (22 tonnes), and Mozambique (2 tonnes); however, it is likely that Kazakhstan and China also produced significant quantities. Beryllium products are used in aerospace and industrial components, automotive electronics, windows for industrial x-ray instruments, the oil and gas industry, semiconductor processing equipment, telecommunications, and defence-related applications (Jaskula, 2012a). World known resources are estimated at more than 80000 tonnes, 65% of which occur in non-pegmatite deposits in the United States. Proven bertrandite reserves in Utah are estimated at 15900 tonnes of contained Be (Jaskula, 2012a).

#### Lithium

In 2011, raw materials containing 34000 tonnes of Li were produced worldwide. The main producing countries were Chile, Australia, China, Portugal, Zimbabwe, and Argentina (Jaskula, 2012b). The chemical industry, including manufacturers of batteries and electric grid storage systems, which are the fastest growing segments of the market, commonly use Li carbonate as a starting material. Li carbonate can be produced from brines and pegmatite-derived ores. Historically, spodumene concentrate and SQI (spodumene-quartz intergrowth) were the main sources of Li, regardless of use. Since the development of large Li brine-based operations in South America, spodumene miners have been gradually losing their share of the chemical market outside of China. According to Lismore (2012), the average 2011 prices of Li-carbonate, free on board (FOB) Chile or Argentina, were approximately US\$ 4000/tonne and delivered US price averaged more than US\$ 5000/tonne

Several Canadian junior mining companies developing spodumenebearing pegmatites consider that they can compete with brine-derived Li carbonate products (which typically cost less to extract), based on prevailing prices, market projections, existing infrastructure, proximity to market, and inexpensive energy. Recent foreign investment in Quebec's Li projects east of James Bay, such as Lac des Montagnes (better known as Whabouchi) and Cyr, support this assertion.

### Canadian specialty metal -bearing occurrences and deposits

Previous summaries of specialty metals in Canada were presented by Ellsworth (1932), Rowe (1958), Mulligan (1965, 1968), Ferguson (1971), Dawson (1974) and Pell and Hora (1990). Because specialty metals commonly occur in clusters, it is hoped that the present compilation will help guide discussions about known occurrences and exploration in Canada.

The distribution of Canadian SM occurrences is detailed in Figure 1 and Table 2 (attached documents) and summarized in Figure 2. SM occurrences are known in all regions of the country, with the exception of Prince Edward Island. Figures 3-8 provide a synopsis of the regional distribution of REEs, Nb, Ta, Be, Zr, and Li occurrences across Canada. Each figure shows a breakdown by province and territory. Occurrences are further subdivided into primary and secondary. Primary occurrences denote where an element is considered of main economic interest. Secondary occurrences refer to where an element is not an essential constituent but could potentially be recovered as a coproduct. Of course, as the market for specialty metals is volatile, the relative importance of individual elements fluctuates as well.

Specialty metals have been grouped into fourteen categories based on the association between mineralization and host-rock or key lithologic units.

- 1) Carbonatite/syenite-related
- 2) Peralkaline intrusion -related
- 3) Pegmatite/granite/aplite
- 4) REE  $\pm$  P Veins (including Hoidas)
- 5) Placer/paleoplacer
- 6) Sedimentary phosphate
- 7) Iron oxide Cu Au (IOCG)
- 8) Sandstone-hosted xenotime
- 9) REE as uranium by-product
- 10) Skarn
- 11) Greisen/vein
- 12) Li-bearing brines
- 13) Oils sands: by-product
- 14) Other/unknown

Pegmatite/granite/aplite-related deposits account for more than 50% of Canadian SM occurrences, followed by carbonatite/syenite- and peralkaline intrusion-related mineralization, placers, Li-bearing brines, and skarn deposits (Figure 9). The 14 deposit categories are described below. Ion adsorption clay deposits, as defined by Bao and Zhao (2008) and Simandl (2012), are unknown in Canada.

### Carbonatite and carbonatite-syenite complex-related deposits

Carbonatites are carbonate-rich igneous rocks consisting of more than 50 percent carbonate minerals (Wolley and Kempe, 1989). Some of the rocks identified in the field as carbonatites may be of carbothermal origin (Mitchell, 2005). Carbonatites form plugs, dikes, sills, and breccia zones and are associated with fenitization (Na, K, Fe alteration) of the host rock. Some carbonatites contain economic concentrations of Nb (± Ta), LREEs and/or Fe, Sr, Mo, Cu, U, Th, Ca- and Mg-carbonates, fluorite, barite,

Rare Met al	Annual Pro- duction Esti- mate (at the mine site)	Representative Price (US\$ unless noted otherwise)	Main Produc- ing Countries	Main Uses
REE	140 000 tonnes of REO content (including Y)	REOs (FOB China; bulk, 99%): Ce <sub>2</sub> O <sub>3</sub> : \$30-40/kg; Eu <sub>2</sub> O <sub>3</sub> : \$3400-3800/ kg; La <sub>2</sub> O <sub>3</sub> : \$30-40/kg; Nd <sub>2</sub> O <sub>3</sub> : \$150-170/kg; Pr <sub>2</sub> O <sub>3</sub> : \$160-180/kg; Dy <sub>2</sub> O <sub>3</sub> : \$1350-2000/kg	China (95% of total production)	Catalytic converters, permanent magnets, rechargeable batteries for electric and hy- brid vehicles, glass additives, glass- polishing compounds; catalysts in oil re- fining, armaments, base-metal alloys, lighter flints, pyrophoric alloys, electronic thermometers, fibre optics, lasers, oxygen sensors, superconductors, x-ray- intensifying screens
Nb	63 000 tonnes of Nb content	Ferroniobium (65% Nb): \$41/kg	Brazil (9%) Canada (7%)	Steel industry (76%, ferroniobium); aero- spatial/military applications (24% super alloys)
Та	790 000 tonnes of Ta content	Tantalite concentrate: \$286/kg of Ta <sub>2</sub> O <sub>5</sub> con- tent	Brazil, Mo- zambique, Rwanda, Aus- tralia, and Canada	Ta capacitors (60% of total use) are essen- tial for automotive electronics, pagers, personal computers, and portable tele- phones etc.
Zr- Hf	Zircon or baddeleyite (industrial min- eral): >1.4 mil- lion tonnes	Zircon conc: FOB Australia \$2400-2600/ tonne; Fused ZrO <sub>2</sub> mono- clinic, CIF European port: \$6500-7800/tonne; Zr metal: \$64/kg; Hf metal: \$562/kg	Australia, South Africa, China, Ukraine, Indo- nesia and Bra- zil	Zircon: ceramics, foundry, opacifier, and refractory products Zr metal: noncorrosive applications in nuclear industry, oxygen sensors, combus- tion control, flue gas monitoring, con- denser ceramics; cubic zirconia
Be	240 tonnes of Be content	Beryllium-copper mas- ter alloy: \$451/kg of contained Be metal	USA, China, Mozambique, Kazhakstan, and Russia.	Computer and telecommunications (> 50%), also: aerospace / defence, appli- ances, automotive electronics, medical and industrial x-ray equipment
Li	>34 000 tonnes of Li content	Li carbonate (USA), large contracts: 5.50-6.60/kg; Spodumene concen- trate: > 7.25% LiO <sub>2</sub> CIF USA (FOB West Virginia): 790-850/tonne; Petalite: 4.2% LiO <sub>2</sub> , FOB Durban: 165-260/tonne	Chile, Austra- lia, China, and Argentina	Ceramics and glass (31%); batteries (23%); lubricants (10%); continuous cast- ing, 4%; aluminum production (3%)
Cs	Not available	\$661/50 grams of 99.8% Cs	Canada Pollucite pro- duced at Ber- nic Lake is transformed into Cs for- mate and rented to oil and gas drill- ing companies	Formate brines (high-density, low- viscosity drilling fluids), atomic resonance frequency standard in atomic clocks, GPS satellites, internet, cell phone transmis- sions, aircraft guidance systems and medi- cal applications

Table 1: Production, prices, source countries, and uses of selected speciality metals. Based on data from Gambogi (2012), Jaskula (2012 a, b), Papp (2012 a, b) and information gathered from the industry. CIF: cost of insurance and freight included. FOB: free on board. REOs: rare earth oxides.



Figure 2: SMs occurrences in Canada.



Figure 3: REE occurrences in Canada.



Figure 4: Nb occurrences in Canada.



Figure 5: Ta occurrences in Canada.



Figure 6: Be occurrences in Canada.



Figure 7: Zr occurrences in Canada.



Figure 8: Li occurrences in Canada.



Figure 9: Specialty metals occurrences in Canada by deposit type.

vermiculite, apatite, and other minerals (Mariano, 1989a,b; Richardson and Birkett, 1996a; Birkett and Simandl, 1999). Be enrichments of carbonatite are relatively uncommon. They have been described in fenitized zones at Muambe (Mozambique), where Y-REE bearing fluorite contains up to 1% BeO adjacent to fenitized breccias, and in a few other localities in the southern Urals (Barton and Young, 2002). Carbonatites are commonly associated with syenite and either, or both, of these rock types may be mineralized.

Only two carbonatite-related deposits have contributed significantly to SM production in Canada: the Saint Honoré deposit (QC), currently the only North American Nb-producing mine; and the Oka complex near Montreal (QC), a past Nb producer. A number of carbonatite-associated SM deposits in Canada are approaching the prefeasibility or feasibility stage or are the subject of advanced exploration. Examples are: the Aley Carbonatite (BC, Taseko, 2012), Eldor (QC, Laferrière, 2011), Wicheeda Lake (BC, Lane, 2009), Crevier Township (QC, Duplessis, 2009), and Montviel (QC, Desharnais, 2011). Other carbonatites, such as Eden Lake (Chakhmouradian *et al.*, 2008), were covered by mapping and laboratory work but have not reached the same level of development.

### Peralkaline Intrusion-related deposits

Alkaline intrusions are characterized by their content of feldspathoids, alkali amphiboles and pyroxenes (Sørensen, 1986). Based on molar ratios of [Na<sub>2</sub>O +  $K_2O$ ] relative to  $Al_2O_3$  they are classified as metaluminous or peralkaline. In peralkaline intusions  $Na_2O + K_2O > Al_2O_3$  (Marks et al. 2011). Peralkaline intrusions are described as agpaitic if their agpaitic index ((Na + K) / Al) is greater than unity (Salvi and Williams-Jones, 2004). Like carbonatites, some peralkaline intrusions, especially those of agpaitic type, contain large resources of SMs, although the ore mineralogy and chemistry differ significantly from carbonatites. Peralkaline intrusionassociated deposits contain Zr, Nb, Ta, Y, HREEs, Th, and Be (Richardson and

The Birkett, 1996c). REE mineralization in these deposits displays relatively flat chondritenormalized patterns and may have negative Eu anomalies, as exemplified by deposits from the Nechalacho project near Thor Lake in the Northwest Territories (Williams-Jones, 2010), the Strange Lake Complex on the border of Quebec and Labrador (Kerr, 2011), and the Kipawa area of Quebec (Constantin, 2010; Constantin and Fleury, 2011). Several large peralkaline intrusionrelated SM deposits in Canada, Greenland and elsewhere have reached advanced exploration stages. These deposits represent important undeveloped resources of HREEs and Y. In some cases, peralkaline inrusionrelated SM deposits are located in pegmatitic rocks or near the main In such cases these SM intrusion. occurrences are classified as "peralkaline intrusion-related" rather than "pegmatite/granite/aplite"-type as described below. A number of peralkaline intrusion- and peralkaline volcanic rock-hosted mineralized zones in New Brunswick are currently

included in this group. When better mineralogical information becomes available, they may be reclassified. Historically, relatively demanding metallurgy of these deposits prevented their development. The metallurgy is now better understood, but it remains challenging. Peralkaline intrusionrelated deposits may diversify the global supply of HREEs and reduce reliance on Chinese exports.

The same peralkaline intrusions may also contain potentially economic Bebearing greisens, such as within the T– zone of the Blachford Lake complex (NWT, Trueman *et al.*, 1988). This mineralization consists of phenakitebertrandite-gadolinite-rich quartzfluorite-polylithionite greisen overprint. Be enriched zones are also present at Illimausassaq, Mt.Saint-Hillaire, Lovozero and Khibiny (Sørensen, 1997), and within Nb-Zr-Ta REEbearing tuffaceous metavolcanic rocks at Brockman in Western Australia (Ramsden et al.,1993).

#### Pegmatite/granite/aplite

Granitic pegmatites are major sources of Ta, Li, Rb, Cs, Be, Sn and a number of other industrial mineral commodities (Sinclair, 1996). Rocks clearly linked with peralkaline complexes or syenite intrusions that display pegmatite textures are not included in this category. In general, SM-bearing pegmatites and aplites, commonly belonging to the Lithium-Cesium-Tantalum (LCT) family of rare element pegmatites as defined by Černý (1991a, b), are derived from a granitic source to which they are geographically and temporally related. Chemical evolution of a Li-rich pegmatite group is reflected by enrichment in volatiles, increased fractionation, and increased complexity in the zoning of individual pegmatites. The idealized sequence reflecting the chemical evolution of granite through primitive pegmatite into an evolved pegmatite is as follows:

- granite to
- barren (ceramic) pegmatite to
- Be pegmatite to
- Be, Nb, Ta pegmatite to
- Li, Be, Ta, Nb pegmatite to
- Li, Cs, Be, Ta, Nb pegmatite.

The complexity of pegmatite zoning also increases with distance from the granitic source (Trueman and Černý, 1982; London, 2008). Pegmatites containing economic concentrations of Ta and/or Li are uncommon. Some examples are the Tanco pegmatite (Manitoba, Canada), which is more than 2 km long, 820 metres wide and over 100 metres thick, and the Bikita pegmatite (Zimbabwe), which is about 2 km long and up to 230 metres wide (Černý et al. 1981; Sinclair, 1996). Smaller pegmatites containing potentially economic concentrations of  $Li \pm Be$  minerals in eastern Canada are currently in the pre-feasibility stages of development. The Tanco Mine in Manitoba (historically a major producer of Ta, Li, and Cs), remains the main source of Cs-bearing pollucite ((Cs,Na)  $(AlSi_2)O_6 \cdot nH_2O).$ Some pollucite concentrate from Tanco Mine is sold on the open market, but most is used for production of Cs-formate brines for drilling by the oil industry. Cabot Corporation, the owner and operator of the Tanco Mine restarted Ta production in November 2011. Other Canadian Li- bearing pegmatites that

received attention are Whabouchi (QC), James Bay Cyr (QC), and LaCorne Township (QC) Li-bearing pegmatites (Raymond, 2011). Big Whopper (Separation Rapids) is known for its Li-Rb-Ta content (Tindle and Breaks, 1998). Hellroaring Creek pegmatite (BC) was investigated for its Be content (Legun, 2004; Soloviev, 2012).

There is no apparent link between peraluminous rare metal granites with magmatic disseminated mineralization, peraluminous granite-related SMbearing deposits of hydrothermal origin and the above described LCT family of pegmatites that originate at deeper levels (Černý et al., 2005). Nevertheless, these deposits are grouped together here because field descriptions in provincial databases commonly do not allow them to be distinguished, with the exception of greisens. Granite-related greisen and vein-type mineralizations are clearly identified in most field descriptions in provincial databases, particularly in eastern Canada, and are therefore listed as a distinct deposit type.

The Niobium-Yttrium-Fluorine (NYF) family of pegmatites (Černy; 1991a, b) has higher REE contents than the LCT family and is also enriched in Be, Ti, Sr, and Zr. NYF pegmatites have an alkaline affinity and occur in the same intracontinental rift settings as peralkaline- and carbonatite-related mineralization (London, 2008). Based on these characteristics, NYF pegmatites are probably genetically equivalent to late metasomatic phases of peralkaline intrusions characterized by pegmatitic textures. The Platt mine (Wyoming) is the only pegmatite that was mined for its REE content. Approximately 10000 tonnes of euxenite  $[(Y,Ca,Ce)(Nb,Ta,Ti)_2O_6)]$  ore were recovered between 1956-1958 (Houston, 1961).

Large-tonnage, low-grade, Tabearing granitoids such as those currently under evaluation in Egypt (Küster, 2009) are included in this category. Agpaitic peralkaline graniterelated mineralization is grouped with layered peralkaline intrusions, based on its distinctive mineralogy.

#### REE ± P veins (including Hoidastype)

High-grade REE-bearing veins, including the historic monazite-apatitequartz Steenkampskraal vein in South Africa (300 m long, 2 m wide), Hoidastype deposits (Saskatchewan), and similar occurrences elsewhere may represent viable exploration targets under current market conditions. The Steenkampskraal vein, which cuts or is in contact with granitoids in a granulite grade terrain, was a historical source of Th and REEs (Andreoli et al. 1994). Rareco estimates that 117500 tonnes with an average grade of 16.74% total REEs may be recoverable. Additional resources may be available in the form of historical dumps and tailings (Dalgliesh et al. 2011).

In Canada, multiple LREE-enriched alkaline veins or dykes are in the Churchill Province in Saskatchewan (Figure 1). They were emplaced in shear zones superimposed on deepseated crustal discontinuities (Rogers, 2011), such as the Hoidas-Nisikkatch fault (Normand *et al.*, 2009). REEs are contained largely in fluorapatite and allanite-Ce. Monazite, bastnaesite, and chevkinite are minor constituents (Halpin, 2010), and Ba-rich feldspar is commonly associated with mineralization. The veins are predominantly enriched in La, Ce, and Nd. Mineralization is complex, with the chemical and mineralogical compositions changing with each vein generation. Based on high concentrations of REE, Sr, and Ba, plus a relative depletion in high field strength elements, Halpin (2010) indicates that these occurrences may be alkaline intrusion- or carbonatiterelated. The JAK Zone at Hoidas Lake is the best documented Canadian example (Normand et al., 2009). Drilling has defined the deposit over 750 metres along strike, to a depth of 150 metres (Rogers, 2011). Based on a 1.5% total REE cut-off grade, a recent ore estimate (including measured, indicated, and inferred) is 2847000 tonnes grading approximately 2% total **REE** (Great Western Minerals Group Ltd., 2011a). Other styles of monaziteand allanite-bearing mineralization in the same general area are described by Normand (2010, 2011).

#### **Placers /Paleoplacers**

Placers are accumulations of heavy minerals eroded from primary ore deposits or from non-mineralized rocks (where they occur as accessories) and concentrated by fluvial, marine, and eolian processes based on specific gravity. Placers and paleoplacers are significant sources of precious metals (especially gold, platinum, and palladium), uranium, zircon, titanium oxides (commonly ilmenite, leucoxene and/or rutile), Ta- and Nb-bearing minerals, REE minerals (mainly monazite and xenotime), a variety of industrial minerals (such as kyanite, garnet, staurolite and magnetite), and gemstones. Zircon and REE minerals are economically recovered as byproducts of Ti-oxide placer operations.

Nearly 440 placers/paleoplacers are known in British Columbia alone and many more occur across Canada. Detailed placer classification is provided by Morison (1989) and Garnet and Bassett (2005). They are classified either as 'marine' or 'surficial' placers and are described by Levson (1995a, b, respectively). Marine placer deposits are located along the west coast of British Columbia (Levson, 1995a; Barrie, 1994; Barrie et al., 1988). SMbearing paleoplacers were also identified within the Athabasca Basin (Harper, 1987), and in the NWT (Maurice and Plant, 1979). Some of the above summary reports do not provide enough information regarding concentrations of monazite or xenotime to determine if these minerals could be potentially recovered as a by-product. Some offshore placers contain significant resources of Ta-Nb minerals, zircon and/or monazite as potentially recoverable by-products of Ti. SM-bearing surficial placers are found in southeastern British Columbia. They are near areas of alkaline igneous activity and are characterized by a Nb, U, Th,  $\pm$  REE,  $\pm$  Ta,  $\pm$  Zr assemblage. Some of these placers were originally staked for uranium during the post-World War II uranium rush. SMbearing surficial deposits are probably also present in other provinces. For

example, at least four Ti, Fe ( $\pm$  Zr and REE) placer/paleoplacer occurrences have been reported in Quebec. Furthermore, Y and other REEs were historically recovered as by-products of processing uranium ores from the Blind River - Elliot Lake area (Ontario). These uranium deposits are considered by many researchers to be paleoplacers (Roscoe, 1996; Cuney, 2010). The heavy mineral sands on the east coast of Canada may also contain appreciable concentrations of SMs. The gold potential for placer deposits on the Newfoundland shelf was addressed by Emory-Moore (1991). Marine placers along the north shore of the Gulf of Saint Lawrence are considered by Hein et al. (1993). Little information is available regarding SM content of Canada's off-shore placer deposits.

#### Sedimentary phosphate

Sedimentary phosphate deposits contain significant concentrations of lanthanides and Y (Simandl *et al.*, 2012). In British Columbia, some upwelling-type phosphate deposits (Simandl *et al.* 2011a, b) contain significant quantities of REEs (Pell, 1994; Simandl et al., 2012). Summaries of sedimentary phosphate deposits and their REE contents in British Columbia are provided by Pell (1991), Butrenchuk (1996), and Simandl et al. (2011a, b, c). The Fernie Formation in southern British Columbia and the Whistler Member of the Sulphur Mountain Formation in northeastern British Columbia are two of the more promising geological units for REE. Phosphate deposits in Alberta are described by MacDonald (1987); those in the Athabasca Basin in Saskatchewan by Ramaekers (1979, 1980, 1981).

Recovery of REEs from phosphate rocks was considered or attempted by several companies in the 1960s and 1970s when market conditions precluded long-term commercial success. Recent market conditions may make recovery of REEs from phosphate rock commercially viable (Simandl *et al.* 2011c). The metallurgical procedures for REE recovery during phosphate fertilizer manufacturing are described by Habashi (1985). Other papers considering the extraction of REE during phosphate fertilizer manufacturing include those by Ionescu *et al.* (1980), Lounamaa *et al.* (1980), Kijkowska (1980) and Fidelis (1980). Commercial REE production from phosphate rock (Habashi, 1985), most likely apatite concentrate, took place between 1965 and 1972 in Finland by Kemira Oy.

#### **REE-bearing IOCG deposits**

The term "Iron oxide copper-gold (IOCG) deposit" is evolving. This evolution is apparent from documents published by Ray and Lefebure (2000), Williams et al. (2005), and Corriveau (2007). The approaches of Ray and Lefebure (2000) and Williams et al. (2005) are appropriate for this study. They group under the IOCG heading a variety of commonly sulphide-deficient hydrothermal deposits containing low-Ti magnetite and/or hematite forming breccias, veins, disseminations, and massive lenses enriched in Cu, Au, Ag, U, P, Bi, Co, Nb and REE. This definition is compatible with definitions used by most of the provinces and

The use of the broader territories. definition (eg. Corriveu, 2007) would create an overlap with skarn-type deposits as established by Dawson, (1996 a,b,c), Dawson and Kirkham (1996), and Gross (1996) and carbonatite-related deposits as described by Richardson and Birkett (1996a) and Birkett and Simandl (1999). The most economically significant deposit enriched in REEs is Olympic Dam. It contains the world's largest uranium resource (1.4 Million tonnes), the fourth largest copper resource (42.7 Million tonnes) and fourth or fifth largest gold resource (55.1 Million ounces) as reported by Western Mining Corporation (2003) and Coriveau (2007). The breccia zone of the deposit, especially the central hematite-quartz zone, is reported to average between 3000 and 5000 ppm total REE (Reynolds, 2000). REEs are not currently recovered at Olympic Dam.

Corriveau (2007) reviews the IOCG deposits in Canada in a "broad" sense. If we disregard the carbonatite-related mineralization suspected at Eden Lake (Manitoba) and the Heff skarn occurrences (British Columbia), then Kwyjibo (Cu-REE-Mo-F-U-Au) and seven other occurrences in Quebec (Gobeil *et al.*, 2003; Gauthier *et al.*, 2004) appear to be the main known IOCG occurrences in Canada that are significantly enriched in REEs. The most prospective settings for IOCG deposits in Canada are Proterozoic granitic and felsic gneiss terranes of the Canadian Shield, and parts of the Cordilleran and Appalachian orogens (Corriveau, 2007).

#### Sandstone-hosted xenotime deposits

Several xenotime-rich sandstone-hosted occurrences are reported from Athabasca Basin (Harper, 1987). REE mineralization forms lenses parallel to bedding within medium-grained, weakly foliated, hematite-bearing sandstones of the Athabasca Group. Samples from the Douglas River project, where the mineralization is interpreted to be of late diagenetic or hydrothermal origin because detrial xenotime grains are lacking and mineralization is controlled by structure (Pearson, 2011; personal communication) are reported to contain up to 4.8%  $P_2O_5$ , 4.9% Y, 9100 ppm Dy, 2990 ppm Er, 1440 ppm Yb and 2150 ppm Tb (Great Western Minerals Group, Ltd, 2011b). Other occurrences are in the MAW REE zone, which is characterized by breccias/conglomerate zones impregnated by tourmaline and silicified (MacDougall, 1990). Sandstone-hosted, xenotime-rich deposits are characterized by a relatively high HREE/LREE ratio relative to carbonatites.

#### **REE as uranium by-product**

Historically, Y has been extracted as a by-product of uranium mining, in the Blind River-Elliot Lake area (Goode, 2012). During processing, large volumes of nearly U-free Th-and REEcontaining liquor is produced, and both Rio Algom Mines and Denison Mines were able to recover REE by solvent extraction (Lendrum and McCreedy, 1976). The method involved successive pH adjustment of barren (nearly U-free) solution to remove Th followed by another readjustment of the pH to allow a solvent extraction step to separate the Y and lanthanides (Lucas and Ritcey, 1975). The Eco Ridge deposit in the same area, currently investigated, is reported to contain indicated mineral resources of 14.3 Mt, at grades of 0.048% U<sub>3</sub>O<sub>8</sub>, and 0.164% total rare earth oxides (total REO), and inferred mineral resources totalling 33.1 Mt, at grades of 0.043% U<sub>3</sub>O<sub>8</sub> and 0.132% total REO (Cox *et al.*, 2011).

Several U + REE deposits are in Athabasca Basin (Harper, 1987). Major deposits including Key Lake, Cigar Lake, and McArthur contain significant concentrations of REEs. Uranium ore minerals in these deposits may contain up to 12 000 ppm total REEs (Fayek and Kyser, 1997). Substantial enrichment may have developed along late oxidation-reduction fronts (Mercadier *et al.*, 2011). REEs are also closely associated with high uranium concentrations in a number of occurrences in the NWT (Maurice, 1979).

The concept of REE extraction as a by-product of U-ore processing could probably be applied to other types of U deposits. For example, in 2009 Sumitomo Corporation, and, more recently, Toshiba, in collaboration with Oil, Gas and Metals National Corporation, tested new techniques to recover REEs as a by-product of uranium in Kazakhstan (Yomiuri Shimbun, 2010). At least one major Uproducing company operating mines in Athabasca Basin would consider coproducing REEs should the prices stabilize near recent highs. We did not incorporate all uranium occurrences as part of this study, their importance as an REE source is likely greater than suggested by Figure 9.

#### Skarns

Skarns are contact metamorphic or metasomatic zones formed by mass and chemical transfer between igneous rocks and adjacent host (commonly carbonate-rich) lithologies. Typical skarns consist of pyroxene, garnet, idocrase, wollastonite, actinolite, magnetite, hematite, and epidote. The same mineral assemblage may also form from the interaction of silica-rich and carbonate-rich lithologies during regional metamorphism and the difference is commonly detected based on field observations (Simandl *et al.*, 1990). Skarn deposits are important sources of gold, base metals, iron, tungsten, and a variety of industrial minerals including garnet and wollastonite (Dawson, 1996a,b,c; Dawson and Kirkham, 1996; Gross, 1996; Ray and Webster, 1997; Simandl *et al.*, 1999).

Several skarns contain notable concentrations of U and REEs (Kwak and Abeysinghe, 1987; Lentz, 1991). The REE-rich U skarn at Mary Kathleen mine (Queensland) contained 6 million tonnes grading 0.1% U<sub>2</sub>O<sub>3</sub> and 2.6% total REE (Kwak and Abeysinghe, 1987). The total REE grades were as high as 7.6% (Cruikshank et al. 1980). U was found mainly in uraninite, whereas REEs were present in allanite and, to a much lesser extent, in stillwellite and andradite (Kwak and Abeysinghe, 1987). REEs were not recovered. The Heff deposit in British Columbia is another good example (Ray and Webster, 1997, 2000a).

Beryllium-bearing skarns typically have a tungsten or tin affinity, although Be also seems to be associated with Zn-Pb or Mo skarns described by Ray and Webster (1997). Tungsten and tin skarn deposits are characterized by Ray (1995a, b) and Dawson (1996c). The Be-F (-Zn-Pb-Mo) Ermakovskoe replacement mineralization contained within a skarn system linked to aegirine granite and related dykes (Lykhin et al., 2001) is an historic producer.

#### Greisens and related veins

Greisens and veins are typically near the contacts between highly evolved peraluminous, or metalumineous granitoids with country rocks, most commonly near stock and batholith cupolas (Černý *et al.* 2005). Veins are characterized by wolframite series minerals and cassiterite and may include: scheelite, molybdenite, bismuthinite, base metal sulfides, tetrahedrite, arsenopyrite, stannite, native bismuth, fluorite, and beryl. Gangue minerals include quartz, muscovite, biotite, feldspar, tourmaline, topaz, pyrite and chlorite (Cox and Bagby, 1986; Reed, 1986). U, Th, REE minerals, and phosphates are commonly only minor constituents, but in few localities such as the Cínovec-Zinwald cupola (Germany) -hosted Li-Rb-Cs-Sn -W deposit, Li and Rb concentrations can reach up to 6990 ppm and 4900 ppm respectively (Seifert et al. 2011). Greisen deposits consist of disseminated cassiterite and cassiteritebearing veinlets, stockworks, lenses, pipes, and breccias in a gangue composed of quartz, mica, fluorite, and topaz. Most Canadian examples are in the eastern provinces. If these deposits contain SMs in acceptable concentrations and if SM prices hold near their current highs, it is possible that SMs could be extracted from these deposits as a by-product.

#### **Li-bearing Brines**

Oil field brines in North Dakota, Wyoming, Oklahoma, east Texas, and Arkansas contain up to 700 mg/L (Evans, 2008) and in Grand County, Utah, they have been reported to contain 1700 mg/L lithium (Durgin, 2011). Such brines represent a volumetrically significant, but relatively low grade, resource of Li. Brines containing lower Li concentrations were reported from the Western Canada Sedimentary Basin in Alberta (Eccles et al. 2011) and Saskatchewan (Rostron et In Alberta, such brines al. 2002). contain up to 140 mg/L Li (Clarke, 2010; Ecless et al. 2011, Eccles and Berhane 2011) and in Saskatchewan, brines from two wells contain over 100 mg/L Li (Rostron et al. 2002). Wells containing more than 75 mg/L of Li are shown Figure 1. Potential Canadian oil field brine operations would have to compete with relatively Li-rich evaporite-and pegmatite-hosted Li deposits. It is therefore unlikely that under current market conditions these brines would be of economic interest without simultaneous production of hydrocarbons and benefits from existing installations. Such benefits may include heat recovery from gas processing plants to compensate for lack of solar pre-concentration (Clarke, 2010), production of other products (e.g., Mg, borates, bromine and potash), and reduced costs of brine disposal.

#### **Oil sands: by-product**

The Athabasca oil sands are universally recognized as an important source of energy. They also locally constitute a significant low-grade resource of disseminated zircon and titaniumbearing minerals (Majid, 1988; Kaminsky, 2008). Progress is being made toward recovery of these minerals during bitumen processing.

### Other deposit types and occurrences of unknown affiliation

Most occurrences in this category lack sufficient information to assign a deposit type. Also included are occurrences with controversial origins and those assigned to more than one deposit type. Clays deposits where most REEs are not adsorbed (loosely attached) to the surface of clay particles belong to this category

REE-enriched manganese nodules (Hein *et al.*, 2011) and REE-bearing muds of the Pacific Ocean described by Kato *et al.* (2011) may also be present in Canadian offshore areas, but they are not covered by this study.

### Applied Mineralogy and Metallurgical Considerations

Applied mineralogy and metallurgy, including technical, environmental and economic aspects, are as important, if not more so, as geological and geotechnical constraints for the development of SM deposits. These aspects should be used during early screening of exploration projects and the preliminary conceptual assessment of all SMs projects. Essential concepts used to assess conventional REEs, Nb, Ta, Be, Zr and Li deposits are provided below. Should any potential nontraditional SM sources, such as some of the peralkaline-rock related deposits, greisens or skarns containing complex REE-, Be-, Ta-, Nb- and Zr-bearing minerals be developed, then the list of economically significant minerals would be extended. In some deposits SMs are closely associated with anomalous levels of U and Th. High content of these radioactive elements affect marketability of the concentrate, mine permitting, regulations related to

concentrate transport and processing, and by-product Th storage and waste disposal (O'Driscoll, 1988; Simandl, 2002; International Atomic Energy Agency, 2011; Paul and Campbell, 2011).

#### Rare Earth Element-bearing Minerals

The above comments are especially true for REE-bearing deposits. All the universal (including textural and grainsize) principles of applied mineralogy are valid when assessing REE deposits.

Generally, REE-bearing carbonates and fluoro-carbonates are easy to deal with using conventional methods. An example of an operation that relies on fluoro-carbonate ore minerals (mainly bastnaesite [(Ce, La)(CO<sub>3</sub>)F]) is the Mountain Pass (USA).

Deposits containing REE phosphates (mainly monazite [(La,Ce,Nd)PO<sub>4</sub>]) typically contain higher Th concentrations. Because Th is radiogenic, these deposits are considered slightly more difficult to deal with during permitting than REE fluorocarbonate-bearing deposits. Additional precautions are also required during transportation and metallurgical processing of monazite, and Th disposal or stockpiling costs may be incurred. Good examples of past producers are the Steenkamskraal monazite-apatitequartz vein (South Africa) and the monazite placer deposits in Brazil and Australia (Castor, 1994).

Minerals that currently pose a higher degree of metallurgical difficulty than monazite include REE- bearing silicates (eg., allanite [(Ca,Ce)<sub>2</sub>(Al,Fe<sup>2+</sup>,Fe<sup>3+</sup>)<sub>3</sub> (SiO<sub>4</sub>)(Si<sub>2</sub>O<sub>7</sub>)O(OH)]) and a number of exotic minerals associated with peralkaline intrusion-hosted deposits, such as eudialyte [Na<sub>4</sub>(Ca; Ce)<sub>2</sub> (Fe<sup>2+</sup>;Mn<sup>2+</sup>)ZrSi<sub>8</sub>O<sub>22</sub>(OH; Cl)<sub>2</sub>]. Currently, REEs are not commercially produced from silicates. However, recent press releases by Canadian and Australian companies suggest that significant progress in REE extraction from silicates has been achieved.

Recovery of REEs as a by-product of phosphate fertilizer adds complexity to plant circuits, but should not interfere with production. Similarly, economic recovery of Y from uranium ores from Eliot Lake-Blind River was successful (Goode, 2012).

#### Niobium – Tantalum Minerals

The principal niobium ore minerals are pyrochlore  $((Ca, Na)_2(Nb, Ta, Ti)_2O_6)$ (OH,F), ferrocolumbite  $(Fe^{2+}Nb_2O_6)$ and fersmite ((Ca,Ce,Na)(Nb,Ta,Ti)<sub>2</sub>  $(O,OH,F)_{6}$ ). In Russia, Nb is also recovered from loparite ((Ce,Na,Ca)<sub>2</sub>  $(Ti,Nb)_2O_6$ ). The main economically important tantalum ore minerals are tantalite ((Fe,Mn)(Nb,Ta)<sub>2</sub>O<sub>6</sub>; 42-84 %  $Ta_2O_5$ ), columbotantalite ((Fe,Mn))  $(Nb,Ta)_2O_6$ ; 20-50% Ta<sub>2</sub>O<sub>5</sub>), columbite  $((Fe,Mn)(Nb,Ta)_2O_6; 1-40 \%Ta_2O_5),$ wodginite  $(Mn_4(Sn>Ta,Ti,Fe)_4(Ta>Nb))$ <sub>8</sub>O<sub>32</sub>), microlite (Ta-rich mineral of the pyrochlore group) and strüverite (Simandl, 2002). Columbite-tantalite minerals are the most widespread of Ta-Nb minerals, in some cases they are replaced by fersmite or microlite.

#### **Beryllium Minerals**

Over 100 Be minerals have been documented (Grew, 2002). Some are hosted by pegmatites, but most are not (Barton and Young, 2002). Be and Becompounds are commonly derived from beryl  $[Be_3Al_2(Si_6O_{18})]$  and bertrandite  $[Be_4(Si_2O_7)(OH)_2]$  bearing ores. Phenakite  $[Be_2SiO_4]$  was historically mined in Khazastan. Beryl is derived mainly from LCT pegmatites and is of main interest in Canada. Bertrandite is the main ore mineral in shallow, hydrothermal deposits associated with high silica rhyolites of Spor Mountain (Utah). Phenakite and bertrandite could be potentially recovered by flotation from peralkaline-related deposits, such as T-Zone in the Thor Lake area (NWT; David Trueman, personal communication, 2012). Bertrandite contains 42% BeO; in contrast, beryl contains approximately 14% BeO. The advantage of commercial beryl concentrate is that it typically contains more than 10% BeO and can be shipped worldwide. Although bertrandite from Spor Mountain has a higher BeO content, it is fine-grained and cannot be readily concentrated. In 1998, the company estimated that the average grade of bertrandite ore at Spor Mountain was 0.72% BeO.

#### **Zirconium minerals**

Zircon  $[Zr_{0.9}Hf_{0.05}REE_{0.05}SiO_4]$ , and to lesser extent baddeleyite [ZrO<sub>4</sub>], occur as accessory minerals in a wide variety of rocks. Zircon is currently recovered commercially from placer deposits; baddelevite has been recovered at the Palabora and Kovdor complexes. Currently, the Kovdor deposit is the only baddelevite producer, with output in the 6000 tonne range. Most of the zircon concentrate is used directly in refractory and foundry applications. Zircon is also transformed into a variety of zirconia products and zirconium metal. Baddeleyite has a much higher Zr content than zircon. It is natural zirconia that can be used directly in refractories and advanced ceramics. Consequently, it has a higher unit value than zircon. Under special circumstances, other minerals have the potential to become secondary sources of Zr including complex Zr silicates, such as eudialyte  $[Na_4(Ca,Ce)_2]$  $(Fe^{++}, Mn, Y)ZrSi_8O_{22}(OH, Cl)_2],$ gittinsite [CaZrSi<sub>2</sub>O<sub>7</sub>], and other complex peralkaline intrusion-hosted minerals where Zr is associated with Fe, Ca, Na, Mn, Ti, Nb, REEs, and other elements.

#### **Lithium Minerals**

Lithium compounds are derived mainly from brines/evaporites and hard rock (LCT pegmatites) deposits. The main lithium-bearing pegmatite ores consist of spodumene [LiAlSi<sub>2</sub>O<sub>6</sub>], petalite [LiAlSi<sub>4</sub>O<sub>10</sub>], minerals of the amblygonite  $[(Li,Na)Al(PO_4)(F,OH)]$ montebrasite [(LiAl (PO<sub>4</sub>) (OH)] series o r SQI (spodumene-quartz intergrowths). Lithium-bearing micas such as lepidolite  $[K(Li,Al)_3(Si,Al)_4O_{10}]$  $(F,OH)_2$  ] and eucryptite [LiAlSiO<sub>4</sub>] may also form ores under special circumstances. Recently, a Li-bearing clay (commonly referred to as hectorite  $[Na_{0.3}(Mg,Li)_{3}Si_{4}O_{10}(OH)_{2}])$  highly valued for its industrial mineral applications and mined in the San Bernardino County (Nevada), was rediscovered as potential source of Li (Crocker et al. 1988). A large jadarite [LiNaSiB<sub>3</sub>O<sub>7</sub>(OH)] deposit was discovered recently by Rio Tinto, in Jadar basin (Serbia). Jadarite is now recognized a as potential Li and B ore

mineral (Stanley *et al.* 2007). Both hectorite and jadarite are associated with deposit-types that are unknown in Canada.

#### **Cesium Minerals**

Polucite (Cs,Na)<sub>2</sub>Al<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>(H<sub>2</sub>O) is the main Cs ore mineral. It belongs to the zeolite group and forms a series with analcime. It is found mainly in evolved LCT group pegmatites such as Tanco mine (MB), which is a Canadian example currently in production.

#### Summary

Canada has an exceptional specialty metal endowment. More than one thousand SM occurrences are reported in Canada, but only a handful are currently in production or in an advanced stage of development. Many of the occurrences, shown on Figure 1 and listed in Table 2, are unlikely to be of economic interest by themselves. Their location could be used as an indicator of favourable geological conditions.

This compilation may serve as a starting point for those considering SM exploration programs in Canada or those looking for background information required for mineral policy decisions. There is uncertainty in the classification of some occurrences due to the scarcity of information or the unusual nature of particular occurrences. The economic significance of most of these occurrences cannot be estimated because the size, shape, depth, grade, and orientation of mineralization are not well defined. Environmental parameters, including U and Th concentrations, availability of existing infrastructure, and geotechnical and engineering considerations are unavailable for most of the occurrences. Detailed mineralogy and textural information is typically unavailable and consequently no prediction can be made regarding metallurgical properties.

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# Specialty Metal Deposits and Occurrences in Canada

### Introduction

This table, in combination with Figure 1, summarizes specialty metal deposits and occurrences in Canada. Descriptions of deposit types and background information on specialty metals are provided in the accompanying text. This information is based on provincial and territorial databases complemented by data from provincial and industry geologists. The table contains four columns identifying the deposit/occurrence number (NUMBER) used on the map (Figure 1), deposit/occurence name (DEPOSIT NAME) commodities (COMMODITIES), and corresponding provincial identification number (PROVINCIAL ID) for each data entry.

In this table, and in Figure 1, deposits/occurrences are grouped and numbered by province. Within each province, deposit numbers increase from northwest to southeast. In the commodity column, primary commodities are listed first and separated from secondary commodities by a slash (/). The specialty metals may be primary or secondary. For example although Denison Mine in Ontario (number 181) was exploited for uranium, it contains significant concentrations of REEs. Abbreviations for minerals and elements are defined in the lower right hand corner of this sheet. Contact information for provincial and territorial geologists is also provided.

### Newfoundland

NUMBER DEPOSIT NAME

1 Strange Lake

2	Ytterby 2
3	Ytterby 3
4	Topaz Point Southeast
5	Flowers River South #22
6	Flowers River South #26
7	Flowers River South #23
8	Flowers River South #7
9	Flowers River South #25
10	Flowers River South #24
11	Flowers River South #20
12	Flowers River South #21
13	Flowers River South #18
14	Flowers River South #8
15	Flowers River South #19
16	Flowers River South #17
17	Flowers River South #10
18	Flowers River South #11
19	Flowers River South #12
20	Flowers River South #9
21	Michelin #1
22	Mann #2
23	Mann #1
24	Two Tom Lake
25	North Red Wine No. 1
26	Block 3 North #1
27	Dory Pond
28	North Red Wine No 2
29	North Red Wine No 3
30	North Red Wine No 4
31	Playfair South #3
32	Playfair South #2
33	Playfair South #1
34	Fig River West
35	Fig River South
36	Pope's Hill
37	Popes Hill T1
38	Popes Hill T2
39	MRT
40	Goose South #1
41	Porcupine Strand North Beach
42	Highree Island
43	Foxtrot
	Eox Harbour Zirconium
44	
44 45	BB Shot
44 45 46	BB Shot Bingo
44 45 46 47	BB Shot Bingo Fox Island River Area
44 45 46 47 48	BB Shot Bingo Fox Island River Area Indian Head
44 45 46 47 48 49	BB Shot Bingo Fox Island River Area Indian Head Lost Pond
44 45 46 47 48 49 50	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake
44 45 46 47 48 49 50 51	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite
44 45 46 47 48 49 50 51 52	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove
44 45 46 47 48 49 50 51 52 53	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing
44 45 46 47 48 49 50 51 51 52 53 54	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7
44 45 46 47 48 49 50 51 52 53 54 55	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 4
44 45 46 47 48 49 50 51 52 53 52 53 54 55 56 56	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12
44 45 46 47 48 49 50 51 52 53 52 53 54 55 56 57 57	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 11
44 45 46 47 48 49 50 51 52 53 52 53 54 55 56 57 58 58	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond
44 45 46 47 48 49 50 51 52 53 52 53 54 55 56 57 56 57 58 59 22	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond
44 45 46 47 48 49 50 51 52 53 52 53 54 55 56 57 58 59 60	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 92	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 22	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 54	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Lead
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 55	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 2
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 52	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 2 Bark Pond Rare Earths No 1 Bard David Cove
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44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         59         60         61         62         63         64         65         66         67         68         69         70         71         72         73         74         75         76         77         78         79	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 2 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Copper Carroll's Hat Middle Ridge Beryl No 5 Middle Ridge Beryl No 4 Dead Wolf Brook North Ridge Dead Wolf Brook Dam Dead Wolf Pond Middle Ridge No 2 Middle Ridge No 3 Middle Ridge No 1 Riverhead Brook Clode Sound Clode Sound Rare-Metals
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44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         59         60         61         62         63         64         65         66         67         68         69         70         71         72         73         74         75         76         77         78         79         80         81	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Copper Carroll's Hat Middle Ridge Beryl No 5 Middle Ridge Beryl No 4 Dead Wolf Brook Dam Dead Wolf Pond Middle Ridge No 2 Middle Ridge No 3 Middle Ridge No 3 Middle Ridge No 1 Riverhead Brook Clode Sound Clode Sound Rare-Metals West Powder Hill Pond Southwest Powder Hill Pond
44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         59         60         61         62         63         64         65         66         67         68         69         70         71         72         73         74         75         76         77         78         79         80         81         82	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 4 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 2 Bark Pond Rare Earths No 1 Bark Pond Copper Carroll's Hat Middle Ridge Beryl No 5 Middle Ridge Beryl No 5 Middle Ridge Beryl No 4 Dead Wolf Brook North Ridge Dead Wolf Brook Dam Dead Wolf Pond Middle Ridge No 2 Middle Ridge No 3 Middle Ridge No 1 Riverhead Brook Clode Sound Clode Sound Rare-Metals Ken's Mountain Rare-Metals West Powder Hill Pond Northwest Southwest Pond Northwest Southwest Pond
44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         59         60         61         62         63         64         65         66         67         68         69         70         71         72         73         74         75         76         77         78         79         80         81         82         83          54	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 2 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Copper Carroll's Hat Middle Ridge Beryl No 5 Middle Ridge Beryl No 5 Middle Ridge Beryl No 4 Dead Wolf Brook Dam Dead Wolf Brook Dam Dead Wolf Pond Middle Ridge No 2 Middle Ridge No 3 Middle Ridge No 1 Riverhead Brook Clode Sound Clode Sound Rare-Metals Ken's Mountain Rare-Metals West Powder Hill Pond Northwest Powder Hill Pond North Southwest Pond
44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         59         60         61         62         63         64         65         66         67         68         69         70         71         72         73         74         75         76         77         78         79         80         81         82         83         84	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 2 Bark Pond Rare Earths No 1 Bark Pond Copper Carroll's Hat Middle Ridge Beryl No 5 Middle Ridge Beryl No 5 Middle Ridge Beryl No 4 Dead Wolf Brook North Ridge Dead Wolf Brook Dam Dead Wolf Pond Middle Ridge No 2 Middle Ridge No 3 Middle Ridge No 1 Riverhead Brook Clode Sound Clode Sound Rare-Metals Ken's Mountain Rare-Metals West Powder Hill Pond Northwest Southwest Pond North Southwest Pond East Powder Hill Pond
44         45         46         47         48         49         50         51         52         53         54         55         56         57         58         59         60         61         62         63         64         65         66         67         68         69         70         71         72         73         74         75         76         77         78         79         80         81         82         83         84	BB Shot Bingo Fox Island River Area Indian Head Lost Pond Grand Lake Fox Roost Pegmatite Western Head Cove Rapids Showing Northwest Cove No. 7 Northwest Cove No. 7 Northwest Cove No. 12 Northwest Cove No. 12 Northwest Cove No. 11 North Gull Pond Rattling Brook Pond Bay du Nord River Big Blue Hill Pond East Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 3 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Rare Earths No 1 Bark Pond Copper Carroll's Hat Middle Ridge Beryl No 5 Middle Ridge Beryl No 5 Middle Ridge Beryl No 4 Dead Wolf Brook North Ridge Dead Wolf Brook Dam Dead Wolf Pond Middle Ridge No 2 Middle Ridge No 3 Middle Ridge No 3 Middle Ridge No 1 Riverhead Brook Clode Sound Clode Sound Rare-Metals Ken's Mountain Rare-Metals West Powder Hill Pond Northwest Southwest Pond North Southwest Pond East Powder Hill Pond North Southwest Pond

	COMMODITIES	PROVINCIAL ID
	REE/Zr, Be, Nb, U, Th, F, Ti	024A/08/Y 001
	REE	013M/13/Ree00
	REE Toz/E Be Mca Amazonite Ti	013M/11/Ree001
	RFF/Zr	013N/11/Y 009
	Zr/Fl, Mo	013N/11/Zr 001
	REE/Zr	013N/11/Y 010
	FI/Zr, REE, Cu, Th, U	013N/11/FI 004
	REE/Zr, Nb	013N/11/Y 012
	REE/Zr, Nb	013N/11/Y 011
	REE/Zr	013N/11/Y 007
	REE/ZI	013N/11/Y 005
	FI/Zr. REE	013N/11/FI 005
	REE/Zr	013N/11/Y 006
	REE/Zr	013N/11/Y 004
	REE/Zn, Zr	013N/11/Y 003
	Zn/Pb, Zr	013N/11/Zn 003
	REE/Zn, Zr	013N/11/Y 002
	REE/F, ZF, ND REE/Th. Nb	013N/11/1001
	Nb REE/Th Be Zn	013L/01/Nb 002
	REE. Be/Nb. U. Zr	013L/01/Be 001
	REE	013L/01/REE001
	Zr/Be, Nb, REE	013L/02/Zr 001
	REE/Zr, Be	013L/02/Ree004
	REE/Zr, Be	013L/02/Ree005
	Zr/Be, Nb, REE	013L/02/Zr 002
	Zr/Be, ND, REE	013L/02/Zr 003
	ZI/DE, ND, REE REE/7r	013L/02/ZI 004
	RFF/Zr	013L/02/Ree002
	REE/Zr	013L/02/Ree001
	Cu/Zn, Nb	013E/03/Cu 001
	REE, Zr	013E/03/Ree001
	REE/Th, U, Zr, Nb, Tantalum	013F/04/Ree001
	REE/Th	013F/03/Ree001
		013F/03/Ree002
		013F/07/Ree001
ich	Ti/Grt Fe Ta	013I/03/Ti 001
	REE. Nb. Zr	013A/08/Ree002
	REE/Zr, Nb, Amazonite	003D/05/Ree001
	Zr/REE	003D/05/Zr 001
	U/Cu, Pb, Ni, REE	0012P/16/U 003
	U/Cu, Pb, Ni, Th, REE	002M/13/U 001
	Cr/Ti, Zr, Grt, Fe, Olivine	012B/10/Cr 001
		012B/09/Be 001
	REE	012B/09/Ree001
	Fsp/REE, Phosphate, Be	0110/11/Fel001
	Be	011O/09/Be 001
	Be/Mo, Cu, Tur	011P/13/Be 001
	Mo/Be	001M/13/Mo 014
	Mo/Zn, Be, W	001M/13/Mo 011
	Mo/Cu, Zn, W, Be, Phosphate	001M/13/MO 019
	Mo/Be	001M/13/Mo 004
	Mo/Be Mo/Bi, Be, Au	001M/13/Mo 002
	Be	001M/14/Be 001
	Ве	001M/14/Be 002
3	Zr/Nb, REE	001M/10/Zr 003
	Pb/Nb, Sr, Th, Zr	001M/10/Pb 001
2	Zr/Nb, U, Th, Sn, REE	001M/10/Zr 002
1	Zr/Nb, U, Th, Sn, REE	001M/10/Zr 001
	Cu/Zr, In, Sn, ND	001M/10/Cu 004
	Be	002D/06/Be 002
	Be	002D/06/Be 001
je	Ве	002D/10/Be 001
- -	Ве	002D/10/Be 002
	Ве	002D/10/Be 003
	Be	002D/10/Be 006
	Be	002D/10/Be 007
		002D/10/Be 005
	De Ph/7r Nh REE	002D/ 10/Be 004
	Zr/Nb REF	002C/05/7r 002
3	Zr/REE, Nb	002C/05/Zr 002
	Ве	002F/04/Be 003
t l	Ве	002F/04/Be 004
	Ве	002F/04/Be 005
	Be	002F/04/Be 002
	Be	002F/04/Be 006
	Be	002F/04/Be 001
		002F/04/Gem001

### Nova Scotia

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NUMBER			
1	Minudie I i sand placer		
2	Debert Lake REE prospect		
3	Lower Caledonia Beryl Pegmatite		
4	Forest Hill Be Occurrence		
5	McMillan Silica Prospects		
6	Sherbrooke Ta Occurrence		
7	Shubenacadie River Ti Sands - Bar 1		
8	Shubenacadie River Ti Sands - Bar 2		
9	Shubenacadie River Ti Sands - Bar 3		
10	Shubenacadie River Ti Sands - Bar 4		
11	Shubenacadie River Ti Sands - Bar 5		
12	Shubenacadie River Ti Sands - Bar 6		
13	Shubenacadie River Ti Sands - Bar 7		
14	Shubenacadie River Ti Sands - Bar 8		
15	Shubenacadie River Ti Sands - Bar 9		
16	Shubenacadie River Ti Sands - Bar 10		
17	Shubenacadie River Ti Sands - Bar 11		
18	Kennetcook River Ti sands - Bar 3		
19	Kennetcook River Ti sands - Bar 2		
20	Kennetcook River Ti sands - Bar 1		
21	Reeves Tin Pit		
22	Keddy Mo, Nb, Ta Pegmatite/granite		
23	Lake Darling Cu		
24	Mill Brook Pegmatite		
25	Seffernsville Pegmatite		
26	Long Lake Mo, W, Cu Prospect		
27	Port Hebert Harbour Be Occurrence		
28	Sandy Bay Be Occurrence		
29	Lesser Hope Rock Be Occurrence		
30	St. Catherines River Road Be Occurrence		
31	Cadden Bay Be Occurrence		
32	Summerville Centre Be Occurrence		
33	Newhouse Cove Be Occurrence		
34	Port Mouton Island Be Occurrence		
35	Hunts Point Be Occurrence		
36	Western Head Be Occurrence		
37	Clyde River Pegmatite Be Occurrence		
38	Roseway River Be Occurrence		
39	Jordan Falls Be, Mo Occurrence		
40	Brazil Lake Albite - Spodumene Pegmatite		

Pinkney Point Cu, Mo, W, Sn, As Occurrenc

	COMMODITIES	PROVINCIAL ID
	Ti/Fe, Zr	H16-029
	REE/Nb, Zr	E11-088
	Be	E08-039
	Ве	F05-013
	Qtz/Si, Silica, Be	F04-015
	Ta/Zn	F04-014
	Ti/Fe,Zr,Grt, REE	E05-068
	Ti/Fe,Zr,Grt, REE	E06-069
	Ti/Fe,Zr,Grt, REE	E06-070
	Ti/Fe,Zr,Grt, REE	E06-071
	Ti/Fe,Zr,Grt, REE	E06-072
	Ti/Fe,Zr,Grt, REE	E03-094
	Ti/Fe,Zr,Grt, REE	E03-095
	Ti/Fe,Zr,Grt, REE	E03-096
	Ti/Fe,Zr,Grt, REE	E03-097
	Ti/Fe,Zr,Grt, REE	E03-098
	Ti/Fe,Zr,Grt, REE	E03-099
	Ti/Fe, Zr, REE	H01-055
	Ti/Fe, Zr, REE	H01-055
	Ti/Fe, Zr, REE	H01-055
	Sn/F, W, Li, Nb, Ta	A10-004
	Mo/W, Ta, Nb	A09-013
	Cu/Be, Au	A09-001
	Li	A09-029
	Li	A09-008
	Mo/Cu, W, F, Be	A09-012
	Be	P15-004
	Be	P15-009
	Be	P15-007
	Be	P15-003
	Be	P15-006
	Be	P15-008
	Ве	P15-005
	Be	P15-001
	Be	P15-010
	Be	P15-002
	Be/Fsp, Grt	P13-006
	Ве	P14-003
	Be/Mo, Fe, Cu	P14-001
	Li/Ta, Nb, Sn, Fsp, Grt, Silica, Mca	P13-001
е	Cu/Mo, As, Sn, W, Be, F, Ag, Bi	009-002





### **New Brunswick**



COMMODITIE

Zn, REE/Pb, Ag

REE

REE/Zr, Th

U/REE. T

REE/Zr, Th

REE/Nb

REE Nb, Ta/Th, REE

Nb/REE, Zr, Th

REE, Nb, Ta

U. REE/Th. Pb

Zr, Nb, REE, F

U/Zr, Pb, Th

REE

### Quebec

NUMBER	
1	Zel Chukatat Quast
3	Lac Chukotat
4	Lataille Nord
6	Vernot-Quirion-4
7 8	Vernot-Larocque-4 Vernot-Larocque-18
9	Vernot-Dubé-1
11	Morrice-Carrier
12	1986025449
14 15	Erlandson No 1 (Eldor)
16	1990030902
18	1990030908
19 20	1984016964 Éch.295518
21	Éch.297574
23	1984021023
24 25	Lac Brisson (Strange Lake)
26 27	Ytterby 2 Lac Miserv
28	1986016233 4007042004
29 30	Route Fort-George (Km 34)
31 32	Zone 90 Zone 99
33	2003038627
35	Cancet
36 37	Major Fliszar
38 39	Cyr-Lithium
40	Kapiwak
41 42	Rose
43 44	Lac Pivert
45	Misf-02-08
46 47	Lac Marcaut
48 49	Lac Gertrude-Sud Lac Sirmac-Ouest
50	Sirmac
52	Moblan Ouest
53 54	Moléon-Lithium Moblan
55 56	Carbonatite De Montviel - Sud
57	1991002131
58 59	Carbonatite Du Lac Shortt Zone A-L'Espérance
60 61	Tr-90-6 (Projet Cameron)
62	Mercier
63 64	Lavandin-2
65 66	Aldous La Motte VI-2
67 68	Authier
69	Tantalum
70 71	Quebec Beryllium Boily-1
72	Bouvier
74	Dumoulon
75 76	La Motte Vii-47
77 78	Lac La Motte Gaitwin
79	Lacorne Lithium
81	New Athona-2
82 83	Buffalo Canadian-Abitibi Baillarge-Ouest
84 85	Lac Baillarge-Est
86	Baillarge-Nord
87 88	Massberyl (Morono)
89 90	Valor Lithium Canadian Lithium
91	Martin-Mcneely
93	Mine Québec Lithium
94 95	Vallee Lithium Wells-Lacourcière
96 97	Giroux Lac Simard
98	Île Du Refuge
100	Claims Legault
101 102	Dallaire Vézina
103 104	Snake Centre Snake Nord
105	Lac Sheffield-2
107	Eagle
108 109	Zones Pb & Ps Zone De La Riv. Kipawa
110	Rapides Turner
112	1994002918
113	Carbonatite De Cantley
115 116	Carbonatite De Templeton Carbonatite De Quinnville
117	Mine Leduc (Shirley)
119	1991001340 Rapida Tâta Das Oix
120	Acme Molybdénite
122 123	Lac Des Trente Et Un Milles Ragnar
124	Black Smoke Hill Baje Mercier
126	Rivière Petawawa
127	Me06-22-11
129 130	Me06-20-05 Me06-17-14
131 132	Me06-03-27 Me06-27-04
133	Roxane
135	St-Andre-2
136 137	Bouscadillac (Zone A) Advance
138 139	Zone Manny Zone Bond
140	Mine St-Lawrence Columbium (Main Oka
141 142	St-Lawrence Columbium (Bloc D) Oka Columbium
143 144	Manoka 1989022827
145	1989022809
140 147	1984091409
148 149	1986021286 Pegmatite/Granite I
150	Lac Baude Second Lac Roberge
152	Alleyn
153	Wares
155 156	Riv. Trenche Est
157 158	1995006987 Mine Niobec (Saint-Honore)
159	1994003354
160 161	Lac Fafard Lfa-2
162	Crevier





Nb/U, Th

Nb, REE/Mg

Nb, REE, Th

Nb/U, Th REE, Th/

REE, Zr

REE/U, Th U, Th/Nb, Zr Nb, Ta/Zr, U

Cu, \Fe, U, REE REE, Th, Zr

George J. Simandl<sup>1,2,3</sup>, Emrys A. Prussin<sup>1</sup> and Nicholas Brown<sup>1</sup> <sup>1</sup>British Columbia Geological Survey, Victoria, BC <sup>2</sup>TGI-4 co-leader on behalf of Natural Resources Canada, Ottawa, ON <sup>3</sup>University of Victoria, School of Earth and Ocean Sciences, Victoria, BC











i, Nb, Ta/Beryl , Mo	MDI32E04SW00018
Nb, Ta/Beryl	MDI32E04SW00016 MDI32E04SW00020
Au, REE/Cu J/Nb, P, Vrm	MDI42A05NE00003 MDI41O14NE00005
Nb/REE, P, Th, U, Zr Nb/REE, P, Th, U, Zi	MDI42B03SE00005 MDI42B03SE00004
Nb/Th, U	MDI41014NE00004
Fe, Nb, P, Ti, U/Th	MDI41014SE00010
Nb, P Mag, Nb, P	MDI41014SE00025 MDI41014SE00024
Nb/Fe, P REF Nb Sr Rb Tb/Zrn	MDI41014SE00015
Nb	MDI41014SE00017
Nb/Fe, P Nb/Fe	MDI41014SE00013 MDI41014SE00016
Nb Fo Nb P	MDI41014SE00014
Beryl, Sn/Mo, Nb, Ta	MDI41014SE00012 MDI41P13SW00003
Nb/Beryl , Ta Nb/Ta. Ti	MDI41P13SW00002 MDI41J14NW00006
Nb/Ti	MDI41J14NW00014
J/REE, Th	MDI41J05SE00018 MDI41J10SE00007
J/REE, Th	MDI41J07NE00018
J/Th, REE	MDI41J07NE00025 MDI41J07NE00009
J, REE [h. U/Nb	MDI00000000961 MDI41J01NE00068
rh, U/Nb	MDI41J01NE00020
D/REE, Th Cu, Ni/Au, Pd, Pt, REE, Rh, V	MDI41105SW00081 MDI41105SW00076
J, Th/REE Zn/Nb	MDI41I05NE00009 MDI41I06SW00051
Nb	MDI41I06SW00056
REE/Nb, Sr, REE Dolomite-Dolostone /REE	MDI31M04SW00079 MDI30L13NE00002
Fsp/Mca, Nb, U	MDI41I07NW00020
-sp, Mca/U, P, Zrn , Grt , Nb	MDI41107NW000007
REE Fsp, U/REE, Silica-Qtz	MDI41I07SW00004 MDI41I07SE00017
Nb	MDI41I07NE00028
REE	MDI41H15NE00002
Fsp, REE Nb. REE/Th	MDI41H15NW00002 MDI41H15SE00013
Fsp, U, Nb/Silica-Qtz	MDI41H15SE00007
Th/REE	MDI31L05NW00002 MDI31L05NW00030
Ni, Nb, U/Brt, Fl, Fe, Sn Nb, U/P	MDI31L05SW00004 MDI000000000676
Nb, U	MDI00000000669
Nb, U	MDI000000000677
Nb Nb, Cu, Aa/U	MDI31L03NW00004 MDI00000000667
	MDI31L07SW00066
Sp, NS, NEE, O	MDI31L07SW00006
אס, U	MDI31L02NW00023 MDI31L07SW00013
Zrn Nb U/RFF	MDI31L02SW00002 MDI31E11NW000021
Fsp, U/REE	MDI31E12NE00003
-sp/REE	MDI31E12NE00008 MDI41H08NW00006
J/Nb	MDI41H08SE00058
REE, U/Mo	MDI31E05SW00010 MDI31E04NW00040
<sup>-</sup> sp/Nb Silica-Qtz, Fsp/REE	MDI31E04NW00020 MDI31E04NW00008
J/Th, REE	MDI31E04NW00044
Beryl, Fsp	MDI31E114SE00004
Nb, U/REE REE	MDI31E11NE00070 MDI31E11NE00019
REE/Silica	MDI31E11NE00018
REE, Fsp, Mca, Silica REE, Fsp , Mca	MDI31E11NE00012 MDI31E11NE00011
REE, Th REE, Th	MDI31E11NE00010 MDI31E11NE00009
REE, Mca	MDI31E11NE00017
REE	MDI31E11NE00016
Гі, REE, Ta/Nb, V Nb/Fsp	MDI31E11SE00007 MDI31E06SE00076
Nb, REE	MDI31E07NE00006 MDI31E07NE00004
Mo, U/Nb	MDI31D15SW00056
Cu, REE, Sr, Zrn	MDI31D15SE00155
	MDI31D15SE00151 MDI31D15NE00085
REE, Sr, Zrn	
J/REE J/REE Th, U/REE	MDI31D10NE00047 MDI31D09NW00079
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00236
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00236 MDI31D16NW00240
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00236 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00204
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00240 MDI31D16NW00204 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NE00143
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00236 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NE00143 MDI31D16NE00258 MDI31D16NW00195
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NE00143 MDI31D16NE00143 MDI31D16NE00258 MDI31D16NW00195 MDI31D16NW00282 MDI31D16NW00282
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE J/REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00204 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NW00195 MDI31D16NW00282 MDI31D16NW00094
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00093 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00240 MDI31D16NW00204 MDI31D16NW00204 MDI31D16NE00143 MDI31D16NE00143 MDI31D16NW00095 MDI31D16NW00094 MDI31D16NE00144
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00073 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00240 MDI31D16NW00240 MDI31D16NW00204 MDI31D16NW00204 MDI31D16NE00143 MDI31D16NE00143 MDI31D16NW00095 MDI31D16NW00095 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE, U Zrn Th, U/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00073 MDI31D09NW00076 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00236 MDI31D16NW00240 MDI31D16NW00204 MDI31D16NW00204 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NE00143 MDI31D16NE00258 MDI31D16NW00095 MDI31D16NW00095 MDI31D16NE00145 MDI31D16NE00145 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00198 MDI31E01SE00198 MDI31E01SE00366
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00073 MDI31D09NW00076 MDI31D09NW00073 MDI31D109NW00073 MDI31D16NW00237 MDI31D16NW00236 MDI31D16NW00240 MDI31D16NW00240 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NW00229 MDI31D16NW00195 MDI31D16NW00195 MDI31D16NW00094 MDI31D16NW00094 MDI31D16NE00145 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00222 MDI31E01SE00221 MDI31E01SE00220
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00073 MDI31D09NW00076 MDI31D09NW00073 MDI31D109NW00073 MDI31D16NW00234 MDI31D16NW00236 MDI31D16NW00240 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00229 MDI31D16NE00143 MDI31D16NE00143 MDI31D16NW00095 MDI31D16NW00095 MDI31D16NW00094 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00143 MDI31E01SE00221 MDI31E01SE00221 MDI31E01SE00237 MDI31E01SE00237 MDI31D16NE00113
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00073 MDI31D09NW00076 MDI31D09NW00073 MDI31D109NW00073 MDI31D16NW00234 MDI31D16NW00236 MDI31D16NW00240 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00204 MDI31D16NW00229 MDI31D16NW00282 MDI31D16NW00195 MDI31D16NW00095 MDI31D16NW00094 MDI31D16NW00094 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31E01SE00221 MDI31E01SE00221 MDI31E01SE00237 MDI31E01SE00237 MDI31E01SE00064
REE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REE/U         Th, U/Zrn         Th, U, Zrn         Th, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         REE         REE, Th, U         J/Nb, Th         TI, REE         V/DET	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NW00195         MDI31D16NW00094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00222         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE002237         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00148
REE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REE         REE/U         Th, U, Zrn         Th, U, Zrn         Th, U, Zrn         Th, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         REE         REE, U         REE         REE, Th, U         J/Nb, Th         Fl, REE         J/REE         Nb	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NW00195         MDI31D16NW00094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00222         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00331         MDI31E01SE00331         MDI31E01SE00331
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047 MDI31D09NW00079 MDI31D09NW00073 MDI31D09NW00073 MDI31D09NW00073 MDI31D16NW00234 MDI31D16NW00237 MDI31D16NW00240 MDI31D16NW00240 MDI31D16NW00203 MDI31D16NW00229 MDI31D16NW00229 MDI31D16NE00143 MDI31D16NE00258 MDI31D16NW00095 MDI31D16NW00095 MDI31D16NW00094 MDI31D16NE00145 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00144 MDI31D16NE00222 MDI31E01SE00237 MDI31E01SE00237 MDI31E01SE00241 MDI31E01SE00219 MDI31E01SE00219 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00148 MDI31E01SE00331 MDI31E01SE00331
REE, Sr, Zrn J/REE Th, U/REE Th, U/REE Th, U/Nb Ne-syenite/Sdl, Zrn Ne-syenite/Zrn Ne-syenite/Zrn Th, U/REE REE, Th, U J/REE Ne-syenite/P, Sdl, Zrn REE, U Zrn Th, U/REE J/REE REE REE REE REE REE REE REE	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D109NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW00204         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00204         MDI31D16NW00203         MDI31D16NW00204         MDI31D16NW00204         MDI31D16NW00204         MDI31D16NW00203         MDI31D16NW00204         MDI31D16NW00205         MDI31D16NW00195         MDI31D16NW00094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00237         MDI31E01SE00237         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00148         MDI31E01SE00231         MDI31E01SE00331         MDI31E01SE00241         MDI31D16NE00176         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241
REE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/REE         REE/U         Th, U/Zrn         Th, U, Zrn         Th, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         REE, Th, U         J/Nb, Th         Fl, REE         J/REE         Nb         Nb         Nb         Nb         Nb         Nb         Nb         Nb         Nb <tr td=""></tr>	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00204         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NW00195         MDI31D16NW00094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00237         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00331         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00054         MDI31E01SE00054
REE, Sr, Zrn         J/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         NC         Th, U/Zrn         Th, U, Zrn         Th, U, Zrn         Zrn         J/REE, Mo, Th, Zr         REE, Th, U         J/Nb, Th         FI, REE         J/REE         Nb         Nb         Nb         Nb         Nb </th <td>MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW0044         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00145         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00331         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00054&lt;</td>	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW0044         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00145         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00331         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00054<
REE, Sr, Zrn         J/REE         Fh, U/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE, U         Zrn         Fh, U/ZRE         REE         REE/U         Fh, U/Zrn         Fh, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, Th, U         J/REE         Nb         Nb         Nb         Nb         Nb         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         REE         Nb <td>MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NW0094         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00145         MDI31D16NE00144         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00331         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00023&lt;</td>	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NW0094         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00145         MDI31D16NE00144         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00331         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00023<
REE, Sr, Zrn         J/REE         Fh, U/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         NCEE         REE         ND         Zrn         Th, U/REE         REE         REE/U         Th, U/Zrn         Th, U, Zrn         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, Th, U         J/REE         Nb         Nb         Nb         Nb         Nb         Nb         Nb         Nb <td>MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00204         MDI31D16NW00203         MDI31D16NW00204         MDI31D16NW00282         MDI31D16NW00282         MDI31D16NW00282         MDI31D16NW00094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00222         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00054         MDI31E01SE00023         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033</td>	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00204         MDI31D16NW00203         MDI31D16NW00204         MDI31D16NW00282         MDI31D16NW00282         MDI31D16NW00282         MDI31D16NW00094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00222         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE00054         MDI31E01SE00023         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033
REE, Sr, Zrn         J/REE         Fh, U/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE         REE/U         Th, U/Zrn         Th, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         REE, Th, U         J/REE         Nb         Nb         Nb         Nb         Nb         Nb         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NW0094         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00145         MDI31D16NE00145         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00044         MDI31E01SE000454         MDI31E01SE00033         MDI31E01SE00033
REE, Sr, Zrn         J/REE         Th, U/REE         Fh, U/REE         Fh, U/Nb         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE, U         Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U, Zrn         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         ZREE, U         REE, U         REE         J/REE         Vb         Nb         Nb         Nb         Nb         REE         Nb         REE         Nb         REE         Nb         REE         Nb         REE <t< th=""><td>MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00229         MDI31D16NW00229         MDI31D16NW00229         MDI31D16NW00282         MDI31D16NW00282         MDI31D16NW0094         MDI31D16NW0095         MDI31D16NW0094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00222         MDI31D16NE00145         MDI31D16NE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00044         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00033         MDI31E03SE00003         MDI31E04SE00022         MDI31E08SE00003         MDI31E08SE0003</td></t<>	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00229         MDI31D16NW00229         MDI31D16NW00229         MDI31D16NW00282         MDI31D16NW00282         MDI31D16NW0094         MDI31D16NW0095         MDI31D16NW0094         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00222         MDI31D16NE00145         MDI31D16NE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00044         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00033         MDI31E03SE00003         MDI31E04SE00022         MDI31E08SE00003         MDI31E08SE0003
REE, Sr, Zm         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/P, Sdl, Zm         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zm         REE, U         Zrn         Th, U/REE         J/REE         REE         REE         REE         REE         REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, No, Th, Zr         REE, U         Nb         REE, U	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D109NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00145         MDI31E01SE00221         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE0004         MDI31E01SE00033         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE00033         MDI31E01SE0004         MDI31E01SE00033         MDI31E03SE00003         MDI31E04SE00003         MDI31E09SE00011
REE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE, U         Zrn         J/REE         REE         REE/U         Th, U/Zrn         Th, U/Zrn         Th, U, Zrn         Zrn         J/REE, Mo, Th, Zr         Zra         J/REE, Mo, Th, Zr         ZRE, U         REE, Th, U         J/REE, Mo, Th, Zr         REE, No, Th, Zr         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         Nb         Nb         Nb         REE         Nb         REE         Nb         REE         Nb         REE         Sp,	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D09NW00073MDI31D109NW00073MDI31D16NW00234MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00203MDI31D16NW00203MDI31D16NW00204MDI31D16NW00203MDI31D16NW00204MDI31D16NW00204MDI31D16NW00204MDI31D16NE00258MDI31D16NW00282MDI31D16NW00095MDI31D16NW00094MDI31D16NE00145MDI31D16NE00145MDI31D16NE00145MDI31D16NE00221MDI31D16NE00221MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00054MDI31E01SE00033MDI31E01SE00033MDI31E01SE00003MDI31E03SE00003MDI31E03SE00003MDI31E03SE00003MDI31E09SE00004MDI31E09SE00003MDI31E09SE00004MDI31E09SE00005MDI31E09SE00004MDI31E12SW00006
REE, Sr, Zm         J/REE         J/REE         Fh, U/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/P, Sdl, Zm         REE, U         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REE         REE         V/Mo, REE, Th         Zm         Th, U/Zm         Th, U, Zm         Zm         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         Nb         Nb         Nb         Nb         Nb         Nb         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         REE, Nb, Ti         REE, Nb, Ti         REE, Nb, REE	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW0044         MDI31D16NW0044         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00054         MDI31E01SE0004         MDI31E08SE00003         MDI31E08SE00003         MDI31E09SE00011         MDI31E09SE00004         MDI31E09SE00004
REE, Sr, Zm         J/REE         I'h, U/REE         Fh, U/REE         Fh, U/Nb         Notopic State         Fh, U/Nb         Ve-syenite/Sdl, Zrn         Ne-syenite/Zrn         Fh, U/REE         Respenite/Zrn         Fh, U/REE         Ne-syenite/Zrn         Fh, U/REE         Ne-syenite/P, Sdl, Zrn         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE         REE         REE         J/REE         REE         REE         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         J/REE         Vb         Nb         REE, U	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00076         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00482         MDI31D16NW0094         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00221         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE0004         MDI31E08SE00003         MDI31E08SE00003         MDI31E08SE00004         MDI31E09SE00011         MDI31E09SE00004         MDI31E0SE00004
KEE, Sr, Zrn         J/REE         Fh, U/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         Ne-syenite/P, Sdl, Zrn         REE         REE, U         Zrn         Fh, U/Zrn         Fh, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         RE         RE         RE         Vb         J/Nb, Th         Fl, REE         J/REE, No, Nb, Th, Ti         REE         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         REE, Nb, Ni         Sp, REE, Nb, Nb,	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00240MDI31D16NW00240MDI31D16NW00203MDI31D16NW00204MDI31D16NW00204MDI31D16NW00204MDI31D16NW00204MDI31D16NW00204MDI31D16NW00205MDI31D16NW00229MDI31D16NE00143MDI31D16NW00282MDI31D16NW00095MDI31D16NW00094MDI31D16NE00145MDI31D16NE00145MDI31D16NE00144MDI31D16NE00222MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00044MDI31E01SE00033MDI31E08SE00003MDI31E08SE00003MDI31E09SE00011MDI31E09SE00004MDI31E09SE00004MDI31F12SW0006MDI31F12SW0006MDI31F12SW0006MDI31F12SW00046MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003MDI31F13SE00003
REE, Sr, Zrn         J/REE         Fh, U/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         Ve-syenite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         J/REE         REE         REE/U         Fh, U/Zrn         Fh, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Vb         Nb         REE         Vb         REE         Vb         REE         Vb         REE         Vb         REE         Vb         Sep, REE, U <t< th=""><td>MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW0044         MDI31D16NW0045         MDI31D16NE00145         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00221         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0003         MDI31E08SE00003         MDI31E09SE00011</td></t<>	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00203         MDI31D16NW00240         MDI31D16NW0044         MDI31D16NW0045         MDI31D16NE00145         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00221         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0004         MDI31E01SE0003         MDI31E08SE00003         MDI31E09SE00011
REE, Sr, Zrn         J/REE         J/REE         Fh, U/REE         Fh, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE         REE         REE         REE         REE         REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE         Vb         Nb         Nb         Nb         Nb         Nb         Nb         Nb         REE         Nb         REE         Nb         REE         Nb         REE         Nb	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW0095         MDI31D16NW0094         MDI31D16NW0094         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00044         MDI31E01SE00241         MDI31E01SE00044         MDI31E01SE00045         MDI31E08SE00003         MDI31E08SE00003         MDI31E08SE00004         MDI31E09SE00011         MDI31E09SE00014         MDI31F12SW00033
KEE, Sr, Zrn         J/REE         J/REF         Fh, U/REF         Fh, U/Nb         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         RE, U         Zrn         Fh, U/REE         J/REE         REE, U         Zrn         Fh, U/Zrn         Fh, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Tr         REE, U         J/REE         Nb         Nb         Nb         Nb         Vb         REE         J/REE, Nb, Th, Ti         REE, U         J/REE, Nb, Ti         REE, Nb, Ti         REE, Th/U         Fsp/RE         Sp/Nb, REE	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NE00144         MDI31D16NE00144         MDI31D16NE00144         MDI31E01SE00220         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00219         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00033         MDI31E08SE00003         MDI31E08SE00003         MDI31E08SE00003         MDI31E08SE00004         MDI31E09SE00011         MDI31E09SE00004         MDI31F12SW00016
KEE, Sr, Zrn         J/REE         J/REE         Fh, U/REE         Th, U/Nb         Fh, U/Nb         Ke-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE, U         Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U/Zrn         Fh, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         J/Mo, REE, Th         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, No, Th, Zr         J/REE         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         REE         Nb         REE         Nb         REE, Nb, Ti         REP, Nb, Ti         REP, Fsp , Nb, U         Tsp/REE <td< th=""><td>MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00145MDI31D16NW00941MDI31D16NE00145MDI31D16NE00222MDI31E01SE00241MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE0004MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E03SE00003MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31F12SW00033MDI31E03SE00004MDI31F12SW00033MDI31F14SW00012MDI31F11SW00006MDI31F11SW00064MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046</td></td<>	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00145MDI31D16NW00941MDI31D16NE00145MDI31D16NE00222MDI31E01SE00241MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE0004MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E03SE00003MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31F12SW00033MDI31E03SE00004MDI31F12SW00033MDI31F14SW00012MDI31F11SW00006MDI31F11SW00064MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046
KEE, Sr, Zrn         J/REE         J/REE         Fh, U/REE         Th, U/Nb         Fh, U/Nb         Fh, U/Nb         Ke-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Re-syenite/P, Sdl, Zrn         Respenite/P, Sdl, Zrn         Respenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         Respenite/P, Sdl, Zrn         J/Respenite/P, Sdl, Zrn         J/Respenite/P, Sdl, Zrn         J/Respenite/P, Sdl, Zrn         J/Respenite/P, Sdl, Zrn         Respenite/P, Sdl, Tr         Sp, REspenite/P, Sdl, Tr         Sp, Respenite/P, Sdl, Tr	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NE00143MDI31D16NW0094MDI31D16NE00145MDI31D16NE00145MDI31D16NE00144MDI31D16NE00145MDI31D16NE00144MDI31E01SE00220MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00044MDI31E01SE00033MDI31E01SE00041MDI31E01SE00044MDI31E01SE00033MDI31E01SE00044MDI31E01SE00044MDI31E01SE00045MDI31E03SE00003MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31F14SW00012MDI31F13SE00003MDI31F14SW00012MDI31F14SW00012MDI31F106NW00044MDI31F06NW00044MDI31F06NW00044MDI31F06NW00044 </td
KEE, Sr, Zm         J/REE         Ih, U/REE         Th, U/Nb         Th, U/Nb         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/Zm         Ne-syenite/P, Sdl, Zm         REE, U         Zm         Norkes         Ne-syenite/P, Sdl, Zm         REE, U         Zrn         Th, U/REE         REE         REE/U         Th, U/Zm         Th, UZm         Th, UZm         Th, UZm         Th, UZm         Zm         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE         Vb         Nb         REE, U         J/REE, N	MDI31D10NE00047         MDI31D09NW00079         MDI31D09NW00073         MDI31D09NW00073         MDI31D16NW00234         MDI31D16NW00237         MDI31D16NW00236         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00240         MDI31D16NW00241         MDI31D16NW00242         MDI31D16NW00243         MDI31D16NW00244         MDI31D16NW00245         MDI31D16NW00242         MDI31D16NW00095         MDI31D16NE00145         MDI31D16NE00144         MDI31D16NE00144         MDI31E01SE00220         MDI31E01SE00237         MDI31E01SE00237         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00241         MDI31E01SE00033         MDI31E01SE00044         MDI31E01SE00043         MDI31E01SE00044         MDI31E01SE00045         MDI31E01SE00041         MDI31E01SE00041         MDI31E01SE00041         MDI31E00SE00003         MDI31E00SE00004         MDI31E00SE00004
KEE, Sr. Zm         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         J/REE         REE         REE         REE         REE         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, No, Th, Zr         J/REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         Nb         Nb         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         REE, Nb, Ti         REE, Nb, Ti         REE, Nb, Ti         REE, Nb	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW00243MDI31D16NW00243MDI31D16NW00243MDI31D16NW00243MDI31D16NW00244MDI31D16NW00245MDI31D16NW00245MDI31D16NW00242MDI31D16NW0094MDI31D16NW0094MDI31D16NE001445MDI31D16NE001444MDI31D16NE00222MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00044MDI31E01SE00041MDI31E01SE00033MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31E03SE00003MDI31E03SE00004MDI31F06NW00046MDI31F13SW0006MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046
KEE, Sr, Zm         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zm         Ne-syenite/Zm         Ne-syenite/Zm         Th, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zm         REE, U         Zm         Th, U/REE         J/REE         REE, U         Zm         J/REE         REE         REE/U         Th, U/Zm         Th, UZrn         Th, UZrn         Th, UZRE         REE         REE, No, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE, Th, U         J/Nb, Th         T, REE         J/REE         Vb         Nb         REE, Th, U         J/REE         Vb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         REE, U         J/REE, Nb, Ti         REE, Nb, U         Sp/REE <td>MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D109NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00203MDI31D16NW00203MDI31D16NW00204MDI31D16NW00204MDI31D16NW00205MDI31D16NW00258MDI31D16NW00282MDI31D16NW00282MDI31D16NW00955MDI31D16NW00944MDI31D16NE00143MDI31D16NE00145MDI31D16NE00144MDI31D16NE00145MDI31D16NE00221MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00044MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E03SE00003MDI31E03SE00004MDI31E03SE00005MDI31E03SE00004MDI31F12SW00066MDI31F12SW00061MDI31F13SE00033MDI31F13SE00033MDI31F13SE00033MDI31F06NW00241MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00045MDI31F06NW00045MDI31F06NW00046MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00046&lt;</td>	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D109NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00203MDI31D16NW00203MDI31D16NW00204MDI31D16NW00204MDI31D16NW00205MDI31D16NW00258MDI31D16NW00282MDI31D16NW00282MDI31D16NW00955MDI31D16NW00944MDI31D16NE00143MDI31D16NE00145MDI31D16NE00144MDI31D16NE00145MDI31D16NE00221MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00044MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E03SE00003MDI31E03SE00004MDI31E03SE00005MDI31E03SE00004MDI31F12SW00066MDI31F12SW00061MDI31F13SE00033MDI31F13SE00033MDI31F13SE00033MDI31F06NW00241MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00045MDI31F06NW00045MDI31F06NW00046MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00046<
KEE, Sr. Zrm         J/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Th, U/REE         REE, Th, U         J/REE         Respenite/P, Sdl, Zrn         REE, U         Ne-syenite/P, Sdl, Zrn         REE, U         Nerspenite/P, Sdl, Zrn         REE, U         Trn, U/REE         J/REE         REE         Zrn         Th, U/REE         J/REE         REE         Zrn         Th, U/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         REE         REE         Vb         Nb	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D109NW00073MDI31D109NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW00242MDI31D16NE00145MDI31D16NE00144MDI31D16NE00222MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00033MDI31E01SE00033MDI31E01SE00044MDI31E01SE00033MDI31E01SE00041MDI31E01SE00041MDI31E01SE00033MDI31E03SE00003MDI31E03SE00003MDI31E03SE00003MDI31E03SE00003MDI31E03SE00004MDI31E03SE00003MDI31E03SE00003MDI31E03SE00003MDI31E03SE00033MDI31E00SE00044MDI31F06NW0046MDI31F06NW0046MDI31F06NW0044MDI31F06NW0044MDI31F06NE00035MDI31F06NE00035MDI31F06NE00043MDI31F06NE00044MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045
KEE, Sr, Zrm         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, U         Zrn         Fh, U/REE         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/Zrn         Th, U,Zrn         Zrn         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, No, Th, Zr         J/REE, No, Th, Zr         J/REE, No, Th, Ti         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         Sp, ND, REE, Ta         Tsp, REE, U         J/REE, Nb, Ti         REE, Nb, Ti         REE, Th, U         J/REE, Nb, REE         Tsp, Ne, REE         Tsp, Nb, REE         Tsp/REE	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D109NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW0044MDI31D16NE00143MDI31D16NE00144MDI31D16NE00222MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00044MDI31E01SE00033MDI31E01SE00045MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E03SE00003MDI31E03SE00003MDI31E03SE00004MDI31F06NW00046MDI31F12SW00016MDI31F12SW00016MDI31F13SE00033MDI31F13SE00033MDI31F06NW00044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045 <t< td=""></t<>
KEE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Ztn         Ne-syenite/Ztn         Ne-syenite/Ztn         Responite/Ztn         Responite/Ztn         Responite/P, Sdl, Zrn         REE, U         Zrn         Th, U/REE         J/REE         REE, U         Zrn         Th, U/REE         J/REE         REF, U         Zrn         Th, U/REE         J/REE, Mo, Th, Zr         J/REE, Wo         REE, U         Mb         Nb         Nb         Nb         Nb         Nb         Nb         REE         J/REE         Sp, REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Nb         Sp, REE, U         J/REE         Sp, REE, Nb, U         Sp/REE         Sp/REE	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW00242MDI31D16NW00258MDI31D16NW0095MDI31D16NW0094MDI31D16NW0094MDI31D16NW0095MDI31D16NE00145MDI31D16NE00144MDI31D16NE00145MDI31D16NE00221MDI31E01SE00201MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00031MDI31E01SE00044MDI31E01SE00033MDI31E08SE00003MDI31E08SE00004MDI31E08SE00003MDI31E08SE00004MDI31E08SE00004MDI31F12SW00033MDI31F06NW00021MDI31F12SW00033MDI31F06NW00046MDI31F06NW00046MDI31F06NW00045MDI31F06NW00046MDI31F06NW00044MDI31F06NW00045MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00045MDI31F06NW00046MDI31F06NW00046<
KEE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zrn         Ne-syenite/Zrn         REE, Th, U         J/REE         Responte/Zrn         Responte/Zrn         Responte/Zrn         Responte/Zrn         Responte/Zrn         Responte/Zrn         Responte/Zrn         Responte/Zrn         J/REE         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         Responte/Zrn         Vb         Nb         Nb <tr tr=""></tr>	MDI31D10NE00047MDI31D09NW00079MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW002429MDI31D16NW00258MDI31D16NW00282MDI31D16NW00282MDI31D16NW00941MDI31D16NW00941MDI31D16NE00145MDI31D16NE00144MDI31D16NE00144MDI31E01SE00220MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00044MDI31E01SE00045MDI31E01SE00045MDI31E01SE00045MDI31E01SE00045MDI31E03SE00003MDI31E03SE00003MDI31E03SE00004MDI31E03SE00004MDI31F12SW00066MDI31F12SW00061MDI31F06NW0046MDI31F13SE00033MDI31F06NW0046MDI31F06NW0046MDI31F06NW0046MDI31F06NW0046MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0045MDI31F06NW0046MDI31F06NW0046MDI31F06NW0046MDI31F06NW0046MDI31F06NW0046MDI31F06NW0045MDI31F06NW0045M
REE, Sr, Zm           J/REE           Th, U/REE           Th, U/REE           Th, U/Nb           Ne-syenite/Zm           Ne           J/REE           Ne           No           Ster.U           J/REE, Mo, Th, Zr           Ne           Nb           Nb           Nb           REE, U           Mca, U/Mo, Nb, Th, Ti           REE           Nb           REE           Nb           REE           Nb           REE, Nb, U           Sp,REE, U           J/R	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW00242MDI31D16NW00242MDI31D16NW00258MDI31D16NW00254MDI31D16NW00941MDI31D16NW00941MDI31D16NW00941MDI31D16NW00941MDI31D16NW00941MDI31D16NE00144MDI31D16NE00145MDI31D16NE00144MDI31D16NE00144MDI31D16NE00145MDI31E01SE00201MDI31E01SE00211MDI31E01SE00219MDI31E01SE00219MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00031MDI31E01SE00031MDI31E01SE00031MDI31E01SE00031MDI31E01SE00031MDI31E01SE00031MDI31E0SE00003MDI31E0SE00003MDI31E0SE00031MDI31E0SE00031MDI31E0SE00031MDI31E0SE00031MDI31E0SE00031MDI31F06NW0046MDI31F06NW0046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00045MDI31F06NW00046MDI31F06NW00046MDI31F06NW00046MDI31F06NW00047<
KEE, Sr, Zm         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Sdl, Zm         Ne-syenite/Zm         Ne         YREE         V/REE         J/REE         V/REE         J/REE, Mo, Th, Zr         REE         Value         REE         Value         <	MDI31D10NE00047         MDI31D09NW00073         MDI31D09NW00073         MDI31D09NW00234         MDI31D16NW00237         MDI31D16NW00233         MDI31D16NW00234         MDI31D16NW00233         MDI31D16NW00240         MDI31D16NE00143         MDI31D16NE00145         MDI31D16NE00145         MDI31D16NE00145         MDI31E01SE00220         MDI31E01SE00211         MDI31E01SE00211         MDI31E01SE00211         MDI31E01SE00211         MDI31E01SE00231         MDI31E01SE00241         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033         MDI31E01SE00033         MDI31E0SE00011         MDI31E0SE00003         MDI31E0SE00033         MDI31E0SE00033         MDI31E0SE00033         MDI31E0SE00034         MDI31E0SE00035         MDI31F12SW00014
KEE, Sr, Zm         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Zm         Varee         Name         Nat	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00242MDI31D16NE00241MDI31D16NE00241MDI31D16NE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00031MDI31E0NSE0004MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31F10SW00044MDI31F10SW00044MDI31F06NE00043MDI31F06NE00043MDI31F06NE00044MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI31F06NE00045MDI3
KEE, Sr, Zm           J/REE           Th, U/REE           Th, U/REE           Th, U/Nb           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zn           Ne-syenite/Zn           Ne-syenite/Zn           Ne-syenite/Zn           Ne-syenite/Zn           REE, Th, U           J/REE           REE           REF, U           Tm           J/REE, Mo, Th, Zr           J/REE, Mo, Th, Zr           J/REE, Mo, Th, Zr           J/REE, Mo, Th, Zr           REE           REE           Vb           Nb           Nb           Nb           REE	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00241MDI31D16NW0044MDI31D16NW0094MDI31D16NE00144MDI31D16NE00144MDI31E01SE00220MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00441MDI31E01SE00441MDI31E01SE00441MDI31E01SE00044MDI31E01SE00045MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E0NSE00003MDI31E0NSE00041MDI31E0NSE00041MDI31F12SW00046MDI31F12SW00046MDI31F10NW0054MDI31F10NW00054MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06NW0044MDI31F06SW00013MDI31F06SW00014MDI31F06SW00014MDI31F06SW00014MDI31F06SW00015MDI31F06SW00016MDI31F06SW000170
KEE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         Ne-syenite/P, Sdl, Zrn         REE, Th, U         J/REE         REE, U         Tm         Fh, U/REE         Verspenite/R, Sdl, Zrn         REE, U         Tm         J/REE         REE         REE/U         Th, U/Zrn         Th, U, Zrn         Zrn         J/Mo, REE, Th         Zrn         Th, U/Jrn, Th, Tr, TREE         J/REE, No, Th, Zr         REE, U         J/REE, No, Th, Tr         REE, U         J/REE, Nb, TI         REE         Nb         REE         Vb         Sep, REE, U         J/REE, Nb, Ti         REE, Nb, Ti         REE, Th/U         Sep/REE         Sep/Nb         Th, U/Mb, REE         Sep/REE         Sep/REE <td< th=""><td>MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00242MDI31D16NW00242MDI31D16NW0044MDI31D16NW0044MDI31D16NW0044MDI31D16NW0044MDI31D16NE00143MDI31D16NE00144MDI31E01SE00220MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00033MDI31E01SE00044MDI31E01SE00045MDI31E01SE00033MDI31E01SE00041MDI31E01SE00033MDI31E03SE00003MDI31E03SE00033MDI31E03SE00044MDI31E09SE00045MDI31F12SW00011MDI31F12SW000146MDI31F12SW000141MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F06NE00092MDI31F06NE00093MDI31F06NE00093MDI31F06NE00093MDI31F06NE00046MDI31F06NW00414MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0046MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045<t< td=""></t<></td></td<>	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00242MDI31D16NW00242MDI31D16NW0044MDI31D16NW0044MDI31D16NW0044MDI31D16NW0044MDI31D16NE00143MDI31D16NE00144MDI31E01SE00220MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00033MDI31E01SE00044MDI31E01SE00045MDI31E01SE00033MDI31E01SE00041MDI31E01SE00033MDI31E03SE00003MDI31E03SE00033MDI31E03SE00044MDI31E09SE00045MDI31F12SW00011MDI31F12SW000146MDI31F12SW000141MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F06NE00092MDI31F06NE00093MDI31F06NE00093MDI31F06NE00093MDI31F06NE00046MDI31F06NW00414MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0046MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045 <t< td=""></t<>
KEE, Sr, Zrn         J/REE         Th, U/REE         Th, U/REE         Th, U/Nb         Ne-syenite/Zrn         Ne-syenite/Zrn         Ne-syenite/Zrn         Fh, U/REE         REE, Th, U         J/REE         REE, N, U         J/REE         REF, U         Trn         Th, U/REE         ZFC         J/REE         REE, U         Trn         J/REE, Mo, Th, Zr         ZFE, U         Th, U/Zrn         Th, U, Zrn         Zrn         Th, U/REE         VB         ZEE, U         J/REE, Mo, Th, Zr         J/REE, Mo, Th, Zr         ZEE, Th, U         J/REE         Vb         Nb         REE, U         Mca, U/Mo, Nb, Th, Ti         REE         Vb         REE         VB         REE, U         J/REE, Nb, Ti         REE, Nb, Cr      <	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D09NW00234MDI31D16NW00237MDI31D16NW00236MDI31D16NW00203MDI31D16NW00203MDI31D16NW00204MDI31D16NW00203MDI31D16NW00203MDI31D16NW00204MDI31D16NW00203MDI31D16NW00203MDI31D16NW00203MDI31D16NW00282MDI31D16NW00282MDI31D16NW00094MDI31D16NW00095MDI31D16NW00094MDI31D16NE00144MDI31D16NE00145MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE00211MDI31E01SE0023MDI31E01SE0023MDI31E01SE0003MDI31E01SE00031MDI31E01SE00031MDI31E01SE00033MDI31E01SE00033MDI31E01SE00033MDI31E01SE00033MDI31E01SE00033MDI31E00SE00004MDI31E00SE00003MDI31E00SE0003MDI31E00SE00041MDI31F06NW0021MDI31F06NW00021MDI31F12SW00036MDI31F06NW00046MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041MDI31F06NW00041 </td
KEE, SF, ZM           J/REE           Th, U/REE           Th, U/REE           Th, U/Nb           Ve-syenite/Sdl, Zm           Ve-syenite/Zm           Ve-syenite/Zm           Ve-syenite/Zm           Ve-syenite/Zm           Ve-syenite/Zm           Ve-syenite/P, Sdl, Zm           REE, U           REE, U           Zm           Th, U/REE           J/REE           REE, U           Zm           Th, U, KEE, Mo, Th, Zr           REE, U           Mca, U/Mo, Nb, Th, Ti           REE           J/REE, Nb, U           Sp, Sand/Mo, Nb, Th, Ti           REE           Nb           REE           Nb           REE, Th, U           J/REE, Nb, Ti           Sp/REE           Sp, Nb, REE           Sp, Zm	MDI31D10NE00047MDI31D09NW00073MDI31D09NW0073MDI31D16NW0234MDI31D16NW0236MDI31D16NW00236MDI31D16NW00237MDI31D16NW00233MDI31D16NW00233MDI31D16NW00234MDI31D16NW00234MDI31D16NW00235MDI31D16NW00232MDI31D16NW00232MDI31D16NW00232MDI31D16NW00232MDI31D16NW0034MDI31D16NW0034MDI31D16NW0034MDI31D16NW0034MDI31D16NW0034MDI31D16NE00144MDI31E01SE00221MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00041MDI31E01SE00033MDI31E01SE00041MDI31E01SE00041MDI31E01SE00041MDI31E0NSE00033MDI31E0NSE00033MDI31E0NSE00033MDI31E0NSE00033MDI31E0NSE00041MDI31E0NSE00041MDI31E0NSE00041MDI31E0NSE00041MDI31F10NW0036MDI31F10NW0036MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0044MDI31F00NW0045MDI31F00NW0045MDI31F00NW0046MDI31F00NW
KEE, SF, Z/m           J/REE           Th, U/REE           Th, U/REE           Th, U/Nb           Ve-syenite/Sdl, Zrn           Ve-syenite/Zrn           Ve-syenite/Zrn           Ve-syenite/Zrn           Ve-syenite/P, Sdl, Zrn           REE, Th, U           J/REE           REE, U           REE, U           Zrn           Th, U/REE           REE           J/REE, Mo, Th, Zr           J/REE, Mo, Th, Ti           REE           Vb           REE, U           Mca, U/Mo, Nb, Th, Ti           REE           Vb           REE, Nb, Ti           REE           Vb           REE           Vb           REE, Nb, Ti           REE, Nb, Ti	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00233MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW0045MDI31D16NE00145MDI31D16NE00144MDI31D16NE00222MDI31E01SE00237MDI31E01SE00237MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E01SE00033MDI31E01SE00033MDI31E03SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31F12SW00014MDI31F06NW00024MDI31F108W00012MDI31F06NW00023MDI31F06NW00044MDI31F06NW00044MDI31F06NW00045MDI31F06NW00046MDI31F06NW00047MDI31F06NW00046MDI31F06NW00047MDI31F06NW00047MDI31F06NW00047MDI31F06NW00048MDI31F06NW00046MDI31F06NW00046
YEE, SF, ZM           J/REE           Th, U/RE           Th, U/RE           Th, U/Nb           Ne-syenite/Sdl, Zm           Ne-syenite/Zm           Ne-syenite/Zm           Th, U/REE           REE, Th, U           J/REE           Ne-syenite/P, Sdl, Zm           REE, U           Zm           Th, U/REE           Vacesyenite/P, Sdl, Zm           REE, U           Zm           Th, U/REE           Vacesyenite/P, Sdl, Zm           REE           Vacesyenite/Re           REE           Vacesyenite/Re           REE           Vacesyenite/Re           Vacesyenite/Re           REE           Vacesyenite/Re           REE           Vacesyenite/Re           Vacesyenite/Re           Vacesyenite/Re           Vacesyenite/Re           Vacesyenite/Re           Vacesyenite/Re           Vacesyenite/Re           Vacesyenite/Re           Vacesyen/Re           Vacesyen/Re           Vacesyen/Re           Vacesyen/Re           Vacesyen/Re	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00235MDI31D16NW00233MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW0044MDI31D16NW00240MDI31D16NE00145MDI31D16NE00145MDI31E01SE00211MDI31E01SE00219MDI31E01SE00219MDI31E01SE00219MDI31E01SE00219MDI31E01SE00214MDI31E01SE00214MDI31E01SE00214MDI31E01SE0003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE00003MDI31E0NSE0003MDI31E0NSE0003MDI31F06NW0044MDI31F06NW0045MDI31F06NW0044MDI31F06NW0044MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31F06NW0045MDI31
YEE, Sr, Zrn           J/REE           Th, U/REE           Th, U/REE           Th, U/Nb           Ne-syenite/Zrn           Ne-syenite/Zrn           Th, U/REE           REE, Th, U           J/REE           Ve-syenite/P, Sdl, Zrn           REE, U           Zrn           Th, U/REE           J/REE           Ve-syenite/Zrn           Th, U/REE           J/REE, No, Th, Zrn           Th, U/Zrn           Th, U/Zrn           Th, UZrn           Th, UZrn           Th, UZrn           Th, UZrn           Th, UZR           YMo, REE, Th           Zrn           Tran           J/REE, Mo, Th, Zr           ZEE, U           V/No           Sep, Sand/No, Nb, Th, Ti           REE           Vb           Vb      <	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00236MDI31D16NW00233MDI31D16NW00234MDI31D16NW00234MDI31D16NW00235MDI31D16NW00236MDI31D16NW00236MDI31D16NW00237MDI31D16NW00238MDI31D16NW00238MDI31D16NW00238MDI31D16NE00143MDI31D16NW00944MDI31D16NW00954MDI31D16NE001445MDI31D16NE00145MDI31D16NE00144MDI31D16NE00144MDI31E01SE00220MDI31E01SE00237MDI31D16NE00131MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE0023MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0003MDI31E0NSE0004MDI31E0NSE0004MDI31E0NSE0004MDI31E0NSE0004MDI31E0NSE0004MDI31F12SW00036MDI31F10NW0054MDI31F10NW00054MDI31F06NE00042MDI31F06NE00043MDI31F06NE00044MDI31F06NE00044MDI31F06NE00045MDI31F06NE00045MDI31F06NE00046MDI31F06NE00047MDI31F06NE00048MDI31F06NE00048MDI31F06NE00047MDI31F06NE00048MDI31F06NE00047MDI31F06NE00048MDI31F06NE00045MDI31F06NE00046
YEE, Sr, Zrn           J/REE           Fh, U/REE           Fh, U/REE           Fh, U/Nb           No. Verspenite/Ztn           Ne-syenite/Zrn           Ne-syenite/Zrn           Ne-syenite/Zrn           Ne-syenite/Zrn           Ne-syenite/Zrn           Ne-syenite/Zrn           Ne-syenite/Zrn           Ne-syenite/Zrn           REE, Th, U           J/REE           Ve-syenite/Zrn           REE, U           Trn           J/REE           REE, U           Trn           J/REE           REE, U           Trn           J/REE, Mo, Th, Zr           J/REE, Mo, Th, Zr           J/REE, Mo, Th, Zr           REE, U           Ve           Set, Stand/No, Nb, Th, Ti           REE           J/REE           Vb           Vb           Set, Set, U           J/REE, Nb, Ti           Set, Set, U           J/REE, Nb, Ti           Set, Set, Nb, Ti           Set, Set, Nb, Ti           Set, Set, Nb, REE           Set, Nb, Ti      S	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00076MDI31D16NW00234MDI31D16NW00237MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00229MDI31D16NW00222MDI31D16NW00242MDI31D16NW00095MDI31D16NW00095MDI31D16NW00094MDI31D16NE00145MDI31D16NE00145MDI31D16NE00221MDI31E01SE00219MDI31E01SE00219MDI31E01SE00219MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE0003MDI31E01SE00044MDI31E01SE0003MDI31E01SE00041MDI31E08SE00003MDI31E08SE00003MDI31E08SE00003MDI31E09SE00011MDI31E09SE00014MDI31F12SW00016MDI31F12SW00017MDI31F10NW00054MDI31F10NW00054MDI31F10NW00054MDI31F06NW0044MDI31F06NW00044MDI31F06NW00044MDI31F06NW00044MDI31F06NW00044MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045MDI31F06NW00045
YEE, Sr, Zm           J/REE           Th, U/REE           Th, U/REE           Th, U/Nb           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           Ne-syenite/Zm           REE, Th, U           J/REE           Ne-syenite/P, Sdl, Zm           REE, U           Tm           Th, U/REE           J/REE           REE, U           Tm           J/REE, Mo, Th, Zr           J/REE           Mo           Se, Sand/Mo, Nb, Th, Ti           REE           J/REE           J/REE           Vb           Sep, Sand/Nb, REE, Ta           "sp, REE, U           J/REE, Nb, Ti           REE, Th, U           Sep/Nb, REE           Sep/Nb, REE           Sep/Nb, REE           Sep/REE           Sep/REE      <	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00237MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00044MDI31D16NE00145MDI31E01SE00220MDI31E01SE00219MDI31E01SE00219MDI31E01SE00211MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00033MDI31E03SE00003MDI31E03SE00033MDI31E03SE00033MDI31E03SE00034MDI31E03SE00035MDI31E03SE00034MDI31E03SE00034MDI31E03SE00034MDI31E03SE00034MDI31E03SE00035MDI31F12SW00016MDI31F12SW00016MDI31F13SW00026MDI31F06NW00241MDI31F06NW00241MDI31F06NW00241MDI31F06NW00241MDI31F06NW00241MDI31F06NW00241MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140MDI31F06NW00140 </td
YEE, Sr, Zm           JREE           Th, U/REE           Th, U/REE           Th, U/Nb           No. V/Nb           Ne-syenite/Zm           Ne-syenite/Zm           Th, U/REE           Ve-syenite/Zm           Th, U/REE           Ve-syenite/Zm           Th, U/REE           Ve-syenite/P, Sdl, Zm           REE, U           Zrn           Th, U/REE           J/REE           Ve-syenite/Ro, Th, Zm           ZER, U           Zrn           Th, U/Zm           Th, U/Zm           Th, U/Zm           Th, U, Zm           Tm           J/REE, Mo, Th, Zr           ZEE, Th, U           J/REE, Mo, Th, Zr           ZEE, Th, U           J/REE           Se, Value           Value           Set, U           J/REE           Value           Set, U           J/REE, No, Th           Set, Value           Value           Set, Value           Value           Set, Value           Value           Set,	MDI31D10NE00047MDI31D09NW00073MDI31D09NW00073MDI31D16NW00234MDI31D16NW00237MDI31D16NW00230MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00240MDI31D16NW00242MDI31D16NW00242MDI31D16NW00044MDI31D16NE00143MDI31D16NE00221MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00241MDI31E01SE00041MDI31E01SE00041MDI31E01SE00033MDI31E03SE00003MDI31E03SE0003MDI31E03SE0003MDI31E03SE0003MDI31E03SE0003MDI31E03SE0004MDI31E03SE0004MDI31E03SE0004MDI31E03SE0003MDI31E03SE0004MDI31F12SW00016MDI31F06NW0044MDI31F06NW0044MDI31F06NW00023MDI31F06NE0003MDI31F06NE0003MDI31F06NW00023MDI31F06NW0014MDI31F06NW00024MDI31F06NW00025MDI31F06NW00026MDI31F06NW00126MDI31F06NW00126MDI31F06NW00126MDI31F06NW00126MDI31F06NW00127MDI31F06NW00126MDI31F06NW00126MDI31F06NW00126 <t< td=""></t<>



### Manitoba

NUMBER	DEPOSIT NAME	COMMODITIES	PROVINCIAL ID
1	Eden Lake	REE/Th, P	Not Available
2	Granville Lake	Be/Li, Sn	Not Available
3	Burntwood Lake	REE, Th, P	Not Available
4	Red Cross Lake Pegmatite	Li/Be, Rb	M53N/02-002
5	Red Cross Lake Ta-Li-Cs-Rb Occurance	Cs/Rb, Li, Rb, Ta, P	M53N/02-001
6	Paint Lake	REE/P	Not Available
7	Missisew River	Li/Sn	Not Available
3	Axe Spodumene (Saw Lake)	Li/Cu	Not Available
9	Sherritt Gordon	Li/Be, P	M63J/13-109
10	Green Bay Pegmatite Group	Li/Ta, Nb, Be	M63J/13-110
1	Violet-Thompson	Li	M63J/13-108
2	Wekusko Lake	REE/P	Not Available
3	Red Sucker Lithium	Li/Rb, Cs, Sn, Be	M53K/04-002
4	Tin Bar 6 and 7	Sn, Rb/Li, Ta, Cs, Be	M53K/04-001
5	Liz Lithium	Li, Be/P, B	Not Available
6	Lake J Lithium	Li/F, B	Not Available
7	Cinder Lake	REE/P	Not Available
8	Godslith (Gods Lake)	Li/F, P, Be	M53L
9	Bill Group (Johnson Bay Pegmatite)	Li, Rb, Cs, Ba, REE/Be, Nb, Ta, Sn	Not Available
20	Central Claim Pegmatite Group	Li/Be	Not Available
!1	Irgon Shaft	Li/Be	Not Available
2	Eagle No. 1	Li	Not Available
23	Lithium Corp. Mine (Cat Lake)	Li	Not Available
4	Tappy & Top of the World pegmatites	Li, Rb, Cs, Ta-Nb/Be	Not Available
25	Pegli, Buck, Coe	Li, Rb, Cs, Be, Sn, Ta-Nb, B, P, F	Not Available
26	Tanco Mine (Bernic Lake Group)	Ta, Cs, Li/Rb	Not Available
27	Osis Lake granite	Li, Rb, Cs, Be, Sn, Ta, Nb, B, P, F/Rb	Not Available
28	Rush Claim	Li, Rb, Cs, Be, Sn, Ta-Nb, B, P, F	Not Available
29	Shatford Lake: Huron, Jack Nutt, Dyke No.5	Be, Sn, Nb-Ta, Zr, REE, U, Th	Not Available
0	Tin Island (Mark M.C.)	Sn/Li	Not Available
31	Lac du Bonnet Granite/Shatford Lake	Be, Nb, Ta, REE, Zr, U, Th, Sn/Li, Rb	Not Available
32	Spot Group	Li, Rb, Cs, Ta-Nb/Be	Not Available
33	Greer Lake Granite	Be, Nb, Ta/Li, Rb, Cs	Not Available
34	Axial Granite and Pegmatite Group	Li	Not Available
35	Tin Lake granite	Be, Ta, Nb, Mo/Li, Rb, Cs, P	Not Available
36	Birse Lake Group	B/Be	Not Available
37	Ben Group	Li, Be	Not Available
38	Eaglenest Lake Granite	Be	Not Available
39	Deer (Don)	Li/B, Sn, Ta	Not Available
40	Bear Lake	Li, Be	Not Available
41	Lucy no.1	Li/Be	Not Available

COMMODITIES

COMMODITIES

### Saskatchewan

JMBER	DEPOSIT NAME
	Hazelton Lake REE Occurence
	Area 11 Yttrium Showing
	Area 10 Yttrium Showing
	Area 2S Yttrium Showing
	Alces Lake Trenched REE Showing
	Nisikkatch Lake Allanite Occurence
	Hoidas Lake South Allanite Showing
	Hoidas Lake North Allanite Showing
	Hoidas Lake Allanite Showing
)	Trans Canada Ree-U Zone No. 2
	Sunlite Oil REE Showings No. 306/401
	Kulyk Lake
}	Courtenay Lake Beryliferous Pegmatite
ŀ	Pyett Lake Berylliferous Pegmatite
5	Nordbye Lake REE Showing
5	Lacey Lake Allanite Showing
,	Santoy Lake Beryl Pegmatite Swarm
3	Iskwatam Lake Allanite Showing
)	Bear Beryliferous Pegmatites
)	Winehikun Bay Beryliferous Pegmatite
	Cornell Lake Beryliferous Pegmatite
-	Onikup Lake Berylliferous Pegmatite
}	Birch Portage Beryliferous Pegmatite
	Wyllie Lake Beryliferous Pegmatite
5	Jackpine Beryllium Showing
5	Unser Lake Berylliferous Pegmatite

REE/Nb, Ta	1531
REE/Phosphate, Hem, Lm	2142
REE/Phosphate, Sr, Hem, Lm	2141
REE/Phosphate, Sr, Hem, Lm	2143
REE/Th, Nb	1283
REE/ Ap, Ti	1610
REE/Th, Ap	1611
REE	1613
REE/Ga, Ap	1612
REE/U, Th, Ti	1552
Nb, Ta/U, REE	1618
REE	985
Be/FI	542
Be/FI, REE, Th	543
REE/U	653
REE	686
Be/REE, Zr, Ta	2638
REE	375
Be/FI	348
Ве	326
Be/REE	283
Ве	285
Be/Nb, Ta	282
Ве	284
Be/Nb, Tur, Ti, Fl	181

PROVINCIAL ID

PROV ID

128853

Not Available

### Alberta

NUMBER	DEPOSIT NAME	COMMODITI
1	00/11-25-116-06W6-0	Li
2	Muddy River	P/U, REE
3	South Potts Lake	REE, Th
1	Northeast Charles Lake	REE, Th
5	Andrew Lake Location 6	REE, Th
3	Sedgwick Lake	REE
7	Swinnerton Lake	REE, Th
3	Buckton	Mo, Ni, U, V/Z
9	Marguerite River	REE, Th
10	Syncrude Mine Tailings	Ti, Zr
11	Suncor Mine Tailings	Ti, Zr
12	00/07-21-087-05W6-0	Li
13	00/04-08-087-03W6-0	Li
14	00/07-30-080-11W6-0	Li
15	00/11-08-083-06W6-0	Li
16	00/11-29-082-05W6-0	Li
17	00/07-35-078-24W5-0	Li
18	00/07-35-078-24W5-0	Li
19	00/11-09-079-22W5-0	Li
20	00/01-16-079-22W5-0	Li
21	00/04-28-074-02W6-0	Li
22	00/02-24-081-10W5-0	Li
23	F1/03-32-079-08W5-0	Li
24	00/08-27-076-08W5-0	Li
25	00/13-27-068-22W5-0	Li
26	00/07-27-067-22W5-0	Li
27	00/14-24-067-19W5-0	Li
28	00/12-05-063-25W5-0	Li
29	00/07-11-062-23W5-0	Li
30	00/10-18-063-21W5-0	Li
31	00/07-31-061-21W5-0	Li
32	02/11-36-059-21W5-0	Li
33	00/10-23-057-19W5-0	Li
34	00/02-10-058-19W5-0	Li
35	00/16-22-058-19W5-0	Li
36	00/07-36-061-18W5-0	Li
37	00/10-13-062-18W5-0	Li
38	00/14-14-060-17W5-0	Li
39	00/15-25-060-16W5-0	Li
40	00/15-17-061-15W5-0	Li
11	00/15-17-061-15W5-0	Li
12	00/10-33-064-12W5-0	Li
13	00/10-32-067-11W5-0	Li
14	00/15-36-053-26W4-0	Li
45	00/10-36-045-05W5-0	Li
16	00/07-08-045-04W5-0	Li
47	00/05-21-047-27W4-0	Li
48	00/11-14-042-02W5-0	Li
49	00/10-08-038-03W5-0	Li
50	00/04-24-042-23W4-0	Li
51	00/13-21-040-24W4-0	Li
52	00/03-21-040-24W4-0	Li
53	00/07-07-040-23W4-0	Li
54	00/02-22-039-21W4-0	Li
55	00/13-24-033-26W4-0	Li
56	00/11-14-028-25W4-0	Li
57	00/16-33-029-21W4-0	Li
58	02/06-01-019-07W4-0	Li
		1

	REE, IN	Not Available
	REE, Th	Not Available
	REE, Th	Not Available
	REE	Not Available
	REE, Th	Not Available
_	Mo, Ni, U, V/Zn, Cu, Co, Li	Not Available
	REE. Th	Not Available
	Ti. Zr	Not Available
	Ti Zr	Not Available
_	1 i	117051
	1	117024
		112933
		114668
_		114166
		111331
_		111331
		112055
_		112065
		100007
_		113503
_		16/320
		110084
_		104407
_		103550
_		103513
		07250
_		96055
_		90000
_		97200
_		93000
		90822
-		92004
_		92004
_		94938
		95839
_		93742
		03720
_		94864
		94864
_		98349
		103416
_		83576
		62971
_		62920
		66141
_		57948
_		50334
_		57756
	 Li	53964
		53949
		53804
		51416
		/2113
		36913
		37717
		23731
		20101

### **British Columbia**

MBER	DEPOSIT NAME	COMMODITIES	PROVINCIAL ID
	Mount Foster	Be	Not Available
	East Of Atlin	Be	Not Available
	Daybreak	Sn/F, Be, W	104N 134
	Northeast	Zn, Pb/Fe, Be	104N 074
	Candy	Mo/W, Pb, Be, Fl, Cu	104N 066
	Logtung Beryl	Mo, W	104O 016
	Jennings River	FI/Be, Mo, W	104O 028
	Blue Light	W/Sn, Be	104O 005
	Gazoo - Southwest Stock	Mo/Be	104O 045
	Gazoo Nw	Mo/Be	104O 045
	Near Ash Mountain	Be	Not Available
	Ash Mountain	W/Sn, Be	104O 021
	Storie	Mo/Be	104P 069
	Low Grade	Be/Sn	104P 026
	Haskins Mountain	Ag/Zn, Pb, Sn, Cu, Be	104P 020
	Cassiar Beryl	Be	104P 024





### Yukon

Biahor

Ram A

107Cabin East108Peg

Cabin G

Cabin Creek (Cs)

Storm Creek

NUMBER	DEPOSIT NAME
1	Track
2	Carswell
3	Teta
4	Tombstone
5	Trix
6	Subtract
7	Kalzas
8	Matt
9	Hid
10	True Blue/Camp Skarn
11	Guano
12	Nokluit
13	Riley
14	Zielinski
15	Sanders
16	Tsa Da Glisza
17	Pac
18	Myda
19	Electricity
20	Cusp
21	Logtung
22	Ting Creek Alkaline Comple
23	Dunn

### Northwest Territories

NUMBER DEPOSIT NAME

	Cali
	Little Nahanni 3
	Little Nahanni 2
	Little Nahanni 1
	Lica 4
	Lica 5
	Lica 2
	Lica 3
	Lica 1
)	Lened Bervl
1	Mountain River Bervl
2	lacknot
2	Duke
1	Big Spruco
+	Stage Diver
2	
5	
/	
8	Prosperous Be
9	Prosperous Ta
0	Vega Fault Ta
1	Li Dyke 15
2	Nite Pegmatite
3	NITE 3
4	Hill
5	Li
6	Limo
7	Egg Lake
8	Big Hill West
3 3	Bighill Be
9 1	Big Hill East
1	Dig North
1	
2	
3	Prelude West Be 2
4	Prelude West Be 3
5	Prelude West Be 4
6	Prelude West Be 1
7	FRAN 2
8	FRAN 1
9	Riber Pegmatite
C	Li
1	Sparrow Lake
2	GEO 5
3	Pancho
4	Raquette Lake Bervl
5	Paint
5 6	Jake
7	
8	El Southwest Dyko
<u>,</u>	FI Main Dyke
9	
J	Shorty
1	Ben
2	Ed
3	Jim-Lit Dyke 1
4	Jim-Lit Dyke 12
5	Jim-Lit Dyke 6
6	KI Dyke
7	Waco Pegmatite
8	Freda
9	Fly
)	Тасо
-	2-F Dyke
2	Van Dyke
2	
1	
+	

**Government of** Saskatchewan

65

VO #5







### British Columbia Geological Survey **Open File 2012-07**

Produced with the financial support of the Targeted Geoscience Initiative 4, a program of Natural Resources Canada.

66 VO #4 67 VO #3



085INW0230 085INW0229

	094L 009
Be	Not Available
Au Ag/Zn Ph Cu Be	103P 086
	1001 000
Au/Pl, Fe, TI, Zr	103F 020
Au/Fe, Tí, Zr	103G 002
Au/Mag, Fe, Ti, Zr	103G 001
Au/Fe. Ti. Zr	103J 035
	Not Available
3e	094D 114
/Ica/Be	094C 034
REE	094B 028
Jb	094B 027
	002N 474
ND, 21/11, U, REE	0931174
r/Nb, REE, Ti, U, Th	093N 012
REE/Th	093N 201
REE/Th	0930 041
REE/Th	0930 021
	003K 006
	0931 000
3e	Not Available
In/Pb, Ag, Cu, Nb, U	093J 001
REE	093J 014
REF/Phosphate, Nb	093J 014
Phosphate	0031 008
/ica/Ky, Be	083D 019
vb/Ta, Phosphate	083D 034
Nb, Ta/REE	083D 005
b/REE. Phosphate U	083D 028
Jh/Ta Phosphate	0830 006
Ne-syenite/Sal, REE, U	083D 022
Be	083D 029
Sr/Phosphate, Ta, REE. Nb	083D 043
Je-svenite/Nb Ta	083D 023
lh To/Dhoonhoto	0000 020
ND, Ta/Phosphate	083D 035
Nb, Ta/Phosphate	083D 035
Nb/REE, Phosphate, U	083D 036
/rm/REE	Not Available
lh/REE Phosphate Sr 11 7r	0830 037
	0000 007
3e	082IVI 168
(y/Mca, Be	083D 007
Nb/U, Th	082M 077
J/Th FL REE Pb Zn Mo Cu W	082M 021
	Not Available
3e	082M 181
Be	082M 162
3e REE, Nb	082M 162 082M 252
Be REE, Nb REE, Nb/Mo, Cu, Zn	082M 162 082M 252 082M 199
Be REE, Nb REE, Nb/Mo, Cu, Zn	082M 162 082M 252 082M 199 082M 253
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb	082M 162 082M 252 082M 199 082M 253
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE	082M 162 082M 252 082M 199 082M 253 092INE096
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th REE_Silica	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038 082LNE038
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038 082LNE037
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Fur/Be Th, REE, Silica REE/Th Be	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038 082LNE037 082N 078
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038 082LNE037 082N 078 082N 079
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE037 082LNE037 082N 078 082N 079 082N 027
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th W/Sn, Be, Pb	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 027 082KNF071
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 027 082KNE071 082KNE071
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE038 082LNE037 082N 078 082N 079 082N 027 082KNE071 082KNE006
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE008
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Fh, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE026 082LNE038 082LNE037 082N 078 082N 079 082N 027 082KNE071 082KNE006 082KNE008 082KNE007
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Tur/Be Tur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE008 082KNE007 082KNE023
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Tur/Be Tur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE J/Nb, Ti, Ta, Th, FI, Zrn. REE	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE008 082KNE007 082KNE023 082KNE075
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Tur/Be Tur/Be Th, REE, Silica REE/Th Be Be Be Be Jb/Ti, REE, Th W/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE J/Nb, Ti, Ta, Th, FI, Zrn, REE Nb/U, Th, REE, V/ Mo	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE007 082KNE023 082KNE055 082KNE066
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE J/Nb, Ti, Ta, Th, Fl, Zrn, REE Nb/U, Th, REE, V, Mo	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE023 082KNE075 082KNE066 082KNE066
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Tur/Be Th, REE, Silica REE/Th Be Be REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be J/Nb, Th, REE, Th Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE Nb/U, Th, REE, V, Mo J/Nb, REE, Th Tare/U, Th, DEE	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082KNE071 082KNE006 082KNE007 082KNE003 082KNE075 082KNE05 082KNE005
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Fh, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE Nb/U, Th, REE, Th, Fe, Ti, Me Sp/U, Th, REE, Th Fsp/U, Th, REE	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE023 082KNE075 082KNE05 082LNE05 082LSE015
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Se Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Ti, Ta, Th, FI, Zrn, REE Nb/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE075 082KNE05 082LNE05 082LNE05 082ENW071
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Sp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE005 082KNE05 082LNE05
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Sp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE005 082KNE05 082LNE05
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE J/Nb, Ti, Ta, Th, Fl, Zrn, REE Nb/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE005 082KNE075 082KNE075 082KNE066 082KNE005 082LNE05 082L
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Sp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE075 082KNE075 082KNE075 082KNE05 082KNE05 082LSE015 082ENW071 082FNW250 Not Available 104N 074
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Fsp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Bemstones/Be	082M 162 082M 252 082M 199 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE005 082KNE05 082LNE0
Be REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/U, Th, EE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Sp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE005 082KNE075 082KNE075 082KNE05 082KNE05 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074
Be REE, Nb REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Be Be Nb/Ti, REE, Th N/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE Nb/U, Th, REE Nb/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Be Semstones/Be Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE005 082LSE015 082ENW071 082ENW074 082ENW074 082ENW072 082ENW072 082ENW074 082ENW074 082ENW072 082ENW074 082ENW0
Be REE, Nb REE, Nb REE, Nb Te, Cu, Au/REE REE/Gr REE Tur/Be Th, REE, Silica REE/Th Be Be Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE Nb/U, REE, Th, Fe, Ti, Mn, V J/Nb, Th, REE Nb/U, Th, REE, V, Mo J/Nb, REE, Th Tsp/U, Th, REE, V, Mo J/Nb, REE, Th Tsp/U, Th, REE REE/F, Sr, Ba Be Be Be Be Be Nb, Ta/REE, U, Th Ag, Pb, Zn/Au, Cu, Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE05 082KNE05 082LSE015 082ENW071 082ENW071 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082ENW155
Be REE, Nb REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Th Se Be Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Fsp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Semstones/Be Be Nb, Ta/REE, U, Th Ag, Pb, Zn/Au, Cu, Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE05 082KNE05 082KNE05 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available
Be REE, Nb REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Th N/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Fsp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Be Semstones/Be Be Nb, Ta/REE, U, Th Ag, Pb, Zn/Au, Cu, Be Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE005 082KNE05 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW255 Not Available
Be REE, Nb REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/U, Th, EE, Th N/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th Fsp/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Semstones/Be Be Be Be Be Be Be Be Be Be Be Be Be B	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE005 082KNE005 082KNE005 082LSE015 082ENW071 082ENW071 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW255 Not Available 082FNW155 Not Available 082FSW272 082FSW272
Be REE, Nb REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Tur/Be Th, REE, Silica REE/Th Be Be Nb/Ti, REE, Silica REE/Th Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th, Fe, Ti, Mn, V J/Nb, Ti, Ta, Th, FI, Zrn, REE Nb/U, Th, REE, N, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Nb, Ta/REE, U, Th Ag, Pb, Zn/Au, Cu, Be Be Be Be Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE005 082KNE005 082KNE005 082KNE005 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW255 Not Available 082FNW155 Not Available 082FSE091 Not Available
Be REE, Nb REE, Nb REE, Nb/Mo, Cu, Zn REE, Nb Fe, Cu, Au/REE REE/Gr REE Fur/Be Th, REE, Silica REE/Th Be Be Be Nb/Ti, REE, Th V/Sn, Be, Pb J/Nb Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, Zr, REE Nb/U, Th, REE, Th, Fe, Ti, Mn, V J/Nb, Ti, Ta, Th, FI, Zrn, REE Nb/U, Th, REE, V, Mo J/Nb, REE, Th Fsp/U, Th, REE REE/F, Sr, Ba Be Be Be Semstones/Be Be Be Be Be Be Be Be Be Be Be Be Be B	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE005 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW255 Not Available 082FNW155 Not Available 082FSE091 Not Available 082FSE091 Not Available 082FSE091 Not Available 082FSE091 Not Available
Be         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         Be         Be         Jb/Ti, REE, Th         V/Sn, Be, Pb         J/Nb         Nb/U, Th, Zr, REE         Nb/U, REE, Th, Fe, Ti, Mn, V         J/Nb, Th, REE, V, MO         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, MO         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE005 082KNE005 082KNE005 082KNE005 082LSE015 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW250 Not Available 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082ENE110
Be         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         Be         Be         Jb/Ti, REE, Th         V/Sn, Be, Pb         J/Nb         Nb/U, Th, Zr, REE         Nb/U, REE, Th, Fe, Ti, Mn, V         J/Nb, Th, REE, V, MO         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, MO         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE005 082KNE005 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available
Be         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         Be         ABE         Nb/Ti, REE, Silica         REE/Th         Be         ABE         Nb/Ti, REE, Silica         REE/Th         Be         ABE         Nb/Ti, REE, Th         V/Sn, Be, Pb         J/Nb         Nb/U, Th, Zr, REE         Nb/U, Th, Zr, REE         Nb/U, Th, REE, Th, Fe, Ti, Mn, V         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, Mo         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be         Be <td>082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE005 082KNE005 082KNE005 082KNE005 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available</td>	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE005 082KNE005 082KNE005 082KNE005 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available
Be         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         Be         Ab/Ti, REE, Th         V/Sn, Be, Pb         J/Nb         Nb/U, Th, Zr, REE         Nb/U, Th, Zr, REE         Nb/U, Th, REE, Th, Fe, Ti, Mn, V         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, Mo         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be         Be <tr< td=""><td>082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE003 082KNE003 082KNE075 082KNE066 082KNE005 082LSE015 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available</td></tr<>	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE003 082KNE003 082KNE075 082KNE066 082KNE005 082LSE015 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available
BeREE, NbREE, NbREE, NbFe, Cu, Au/REEREE/GrREETur/BeTh, REE, SilicaREE/ThBeBeBeBeBeBeBeJ/NbV/Sn, Be, PbJ/NbV/Sn, Be, PbJ/Nb, Th, REE, ThV/Sn, Be, PbJ/Nb, Th, REE, Th, Fe, Ti, Mn, VJ/Nb, Th, REE, Nb/U, Th, REE, V, MoJ/Nb, Ti, Ta, Th, FI, Zrn, REENb/U, Th, REE, V, MoJ/Nb, REE, ThFsp/U, Th, REEREE/F, Sr, BaBe <td>082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE003 082KNE007 082KNE075 082KNE075 082KNE066 082KNE005 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE159</td>	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE003 082KNE007 082KNE075 082KNE075 082KNE066 082KNE005 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE159
Be         REE, Nb         REE, Nb         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         Be         J/Nb, Th, REE, Th         V/V, Th, REE, Th         Sep/U, Th, REE, V, Mo         J/Nb, REE, Th         Sep/U, Th, REE         REE/F, Sr, Ba         Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE007 082KNE023 082KNE075 082KNE066 082KNE05 082LSE015 082LSE015 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE159 082FNE159 082FNE112
Base         REE, Nb         REE, Nb         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         Be         Nb/U, Th, Zr, REE         Nb/U, Th, Zr, REE         Nb/U, Th, REE, Th, Fe, Ti, Mn, V         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be         Be <td>082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE075 082KNE066 082KNE005 082LSE015 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE159 082FNE112 Not Available</td>	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE075 082KNE066 082KNE005 082LSE015 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE159 082FNE112 Not Available
Back       Back         REE, Nb       REE, Nb         REE, Nb       Fe, Cu, Au/REE         REE/Gr       REE         Fur/Be       Fe, Cu, Au/REE         REE/Gr       REE         Fur/Be       Fe, REE, Silica         REE/Th       Back         Back	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE007 082KNE005 082KNE075 082KNE066 082KNE05 082LSE015 082LSE015 082LSE015 082LSE015 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE112 Not Available
Base         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Fur/Be         Th, REE, Silica         REE/Th         Be         Mb/U, Th, Zr, REE         Mb/U, Th, REE, Th, Fe, Ti, Mn, V         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, Mo         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE005 082KNE05 082KNE05 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FNW259 104N 074 082FSW272 082FNW155 Not Available 082FSE091 Not Available 082FSE091 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE159 082FNE159 082FNE159 082FNE112 Not Available 082FNE112 Not Available 082FNE112 Not Available 082FNE112 Not Available 082FNE112 Not Available
Base         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Fur/Be         Th, REE, Silica         REE/Th         Be         Mb/U, Th, Zr, REE         Mb/U, Th, Zr, REE         Mb/U, Th, REE, Th, Fe, Ti, Mn, V         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, Mo         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         Be	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 079 082N 079 082N 079 082N 027 082KNE071 082KNE006 082KNE007 082KNE003 082KNE005 082KNE005 082KNE05 082KNE05 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW155 Not Available 082FNE112 Not Available 082FNE112 Not Available 082FNE112 Not Available 082FNE112 Not Available 082FNE112 Not Available 082SN018 082GSE060
3e         REE, Nb         REE, Nb/Mo, Cu, Zn         REE, Nb         Fe, Cu, Au/REE         REE/Gr         REE         Tur/Be         Th, REE, Silica         REE/Th         3e         Nb/Ti, REE, Th         V/Sn, Be, Pb         J/Nb         Mb/U, Th, Zr, REE         Nb/U, REE, Th, Fe, Ti, Mn, V         J/Nb, Ti, Ta, Th, FI, Zrn, REE         Nb/U, Th, REE, V, Mo         J/Nb, REE, Th         Fsp/U, Th, REE         REE/F, Sr, Ba         3e	082M 162 082M 252 082M 253 092INE096 082LNE018 082LNE018 082LNE015 082LNE038 082LNE037 082N 078 082N 079 082N 079 082N 027 082KNE071 082KNE071 082KNE006 082KNE007 082KNE003 082KNE075 082KNE075 082KNE066 082KNE066 082KNE05 082LSE015 082LSE015 082LSE015 082LSE015 082ENW071 082FNW250 Not Available 104N 074 082FNW259 104N 074 082FNW155 Not Available 082FNE110 Not Available 082FNE110 Not Available 082FNE112 Not Available 082FNE112 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE12 Not Available 082FNE13 082GSE060 082GSE063

	COMMODITIES	<b>PROVINCIAL ID</b>
	Au, W, Zn/Pb, Ag, Be, Bi	116C 137
	F/U, PSMH	116O 057
	U/PSMH	116B 152
	U/PSMH	116B 151
	U/PSMH	116B 056
	Th, U/PSMH	116B 058
	W/Be, Mo	105M 066
	U, REE	105D 169
	W/Be, V	105F 129
	Be, Nb, REE	105F 130
	U, REE, Nb	105F 081
	U, REE, Nb/Ag, Au, Zn	105F 080
	W/Be	105G 020
	Cu, Pb, Zn/Be	105G 021
	W/Be	105G 104
	Ве	105G 147
	Cu, Pb, Zn/Fl, Ag, Be, As	105G 032
	W/Au, Be, Sn	105G 071
	U/REE	105B 126
	Sn/Be, W, Zn	105B 086
_	W/Mo, Be	105B 039
	Ph Ag/PSMH	095 <u>C 053</u>

082GSE055

082GSE061

082GSE025 092B 111

095C 051

**PROVINCIAL ID** 

105ISE0025

105ISE0051

Phosphate, REE Phosphate/REE

Phosphate/REE

REE, Ni/Th, U, Cu

COMMODITIES

Li/Be, Ni, Ta, Sn

Li	105ISE0050
Li/Be	105ISE0015
Li/Nb, Ta	105ISE0055
 Li	105ISE0056
Li	105ISE0053
Li	105ISE0054
Li	105ISE0052
Be	105ISE0070
Be	106ASW0020
U, Th/REE	086FNE0024
Co,Ni/Au, Bi, REE	085NSE0051
	Not Available
U/REE	085JNW0053
Li	085JNE0033
Li	085JNE0032
Be	085JNE0025
Та	085JNE0022
Nb, Ta	085JNE0023
Li	085JNE0018
Li/Ta	085JNE0003
Li	085JNE0004
Li	085JNE0036
Li	085JNE0034
Li	085JNE0035
	085JSE0066
	085JNE0051
Be	085.INE0030
	08515W0007
	0851NW/0074
	085 INE0038
Be	085 INE0027
	085 INE0028
	085 INE0020
Be	085 INE0026
Be	0851010020
Be	0851NW0008
	0851NW0066
	085 INE0037
	0851010057
	0851NW0080
	0851970000
	0851500008
	08511110242
	0851500010
	0051500009
	08515990011
	00011100079
1.3	00510100000
	085INW0033
Li Li/Be, Ta, Sn	085INW0033 085INW0029
Li Li/Be, Ta, Sn Li/Be, Ni, Ta	085INW0033 085INW0029 085INW0055
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li	085INW0033 085INW0029 085INW0055 085INW0041
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0238
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0238 085INW028
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li Li Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0042 085INW0238 085INW0028 085INW0036
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0042 085INW0042 085INW0038 085INW0036
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn Ta, Nb/Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0042 085INW0028 085INW0028 085INW0036 085INW0034 085INW0043
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn Ta, Nb/Li Ta, Sn, Nb/Be, Li	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0042 085INW0028 085INW0028 085INW0034 085INW0034 085INW0043 085INW0044
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn Ta, Nb/Li Ta, Sn, Nb/Be, Li Be/Nb, Ta	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0238 085INW0028 085INW0028 085INW0034 085INW0043 085INW0044 085INW0044
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn Ta, Nb/Li Ta, Sn, Nb/Be, Li Be/Nb, Ta Be/Nb, Ta	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0042 085INW0028 085INW0028 085INW0036 085INW0034 085INW0043 085INW0044 085INW0233 085INW0232
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn Ta, Nb/Li Ta, Sn, Nb/Be, Li Be/Nb, Ta Be/Nb, Ta	085INW0033 085INW0029 085INW0055 085INW0041 085INW0239 085INW0042 085INW0042 085INW0028 085INW0028 085INW0036 085INW0034 085INW0043 085INW0044 085INW0233 085INW0232 085INW0232
Li Li/Be, Ta, Sn Li/Be, Ni, Ta Li Li Li Li Li Li/Be, Nb, Ta Ta/Nb, Sn Ta, Nb/Li Ta, Sn, Nb/Be, Li Be/Nb, Ta Be/Nb, Ta Li	085INW0033           085INW0029           085INW0055           085INW0041           085INW0239           085INW0239           085INW0238           085INW028           085INW0028           085INW0036           085INW0034           085INW0043           085INW0043           085INW0043           085INW0233           085INW0233           085INW0232           085INW0158           085INW0231

68	VO #2	Li	085INW0084
69	VO #1	Li/Be	085INW0228
70	TCB dyke	Ta, Be/Li	085PSW0039
71	Leith Lake	REE	085PSW0092
72	Leith Lake North	REE	085PSW0100
73	Ross Lake Beryl	Ве	085INW0241
74	Peg Tantalum	Be/Nb, Ta, Sn	085INW0049
75	Burl	Be/Ta, Nb	085INW0050
76	Northern Buckham Lake	Li	085ISE0163
77	HID	Li	085ISE0012
78	MAC	Li/Ta	085ISE0013
79	Bin	Li	085ISE0005
80	Mut	Li	085ISE0004
81	Lens	Li	085ISE0003
82	Nechalacho (Lake Zone)	Ta, Nb, REE, Zr/U	085ISE0191
83	Thor Lake T-Zone	Be, Nb, REE/Zr, Ga, Ta, U	085ISE0006
84	S Zone	Nb, REE/Be, U	085ISE0110
85	R Zone	REE, Nb/Th	085ISE0109
86	Thorne Zone	Nb/Ta, U	085ISE0192
87	LL Zone (Nechalacho Project)	Nb, Ta, REE/Zr, Ga, Be	085ISE0193
88	F Zone	Nb, REE/U, Ta	085ISE0194
89	BF #1	REE, Cu/Zr, Ta, Nb	085ISE0188
90	Hook Point	REE/Nb	085ISE0149
91	Grace A	REE/Nb, Ta	085ISE0189
92	Grace L3	REE/Nb, Ta	085ISE0190
93	Big Hill #2	Nb, Ta/Sn	085ISE0106
94	Moose 1 Dyke	Li/Ta, Be	085ISE0108
95	Moose 2 Dyke	Li, Nb/Ta, Be, Sn	085ISE0002
96	Blatchford Lake	Li/Ta, Nb, Sn, Be	085ISE0107
97	Best Bet	Li/Ta, Nb, Be, Sn	085ISE0001
98	Tanco Lake Thor Four	Li/Nb, Ta, Be	085ISE0146
99	Echo Thor	Li/Nb, Ta, Be	085ISE0021
100	Squalus Lake		Not Available
101	REO	REE/Th	075ESW0044
102	Welch	U, Th/REE	075ESE0003
103	Maurice 12	Au/Sn, REE, Nb	075ESE0076
104	Maurice 14	Ta/Sn	075ESE0077
105	Moffat	Sn, U/Nb, Ta, REE, Au, Pb, Ag	075ESE0025
106	Maurice 2	Th/U, Sn, Ta	075ESE0060
107	Maurice 3	U/Nb, Ta, Th, Sn	075ESE0059
108	Maurice 6	U/Th, Ta, Sn	075ESE0061
109	Susu Lake East	Be/Nb, Ta	075MSE0044
110	Reid Lake Be	Be/Nb, Ta	075NNW0006
111	Margaret Lake	Li	075NNW0005
112	Big Bird	Li, Nb	Not Available
113	Curlew	Li, Nb	Not Available
114	Aylmer Lake	Be/Nb, Ta	075NNE0007
115	KAMI	U/Th, REE	065ENE0002

### Nunavut

MBER	DEPOSIT NAME	COMMODITIES	PROV ID
	Torp Lake	Li	127
	Nueltin Lake	REE/Th	065BSW0001
	Nutaaq	REE/U, Zr, Nb, Ta	99
	Plex Claim	Ta, Nb	027CNW0004
	Barnes Ice Sheet	Nb, U, Ta	027CSW0001
	Mike & Fox Claims	U, REE/Th	025NNE0001

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### **Element Abbreviations**

Abbreviation	Element
Be	Beryllium
Bi	Bismuth
Cs	Cesium
Cu	Copper
F	Fluorine
Ga	Gallium
Au	Gold
Fe	Iron
Pb	Lead
Li	Lithium
Мо	Molybdenum
Ni	Nickel
Nb	Niobium
Р	Phosphorus
REE	Rare Earth Elements
Rb	Rubidium
PSMH	Prospective Specialty Metal Host
Si	Silicon
Ag	Silver
Та	Tantalum
Th	Thorium
Sn	Tin
Ti	Titanium
W	Tungsten
U	Uranium
Zn	Zinc
Zr	Zirconium

### Mineral Abbreviation

Abbreviation	Mineral
Ab	Albite
Ар	Apatite
Brt	Barite
Cal	Calcite
Crn	Corundum
Fsp	Feldspar
FI	Fluorite
Grt	Garnet
Gr	Graphite
Hem	Hematite
Ку	Kyanite
Lm	Limonite
Mag	Magnetite
Мса	Mica
Ne	Nepheline
Qtz	Quartz silica amethyst
Sdl	Sodalite
Toz	Topaz
Tur	Tourmaline
Vrm	Vermiculite
Zrn	Zircon

### Table 2:

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