Natural Resources Canada | Ressources naturelles Canada

GEOLOGICAL SURVEY OF CANADA
OPEN FILE 7759

Mineralisation of fractured granites along the Cobequid Fault Zone: West Moose River Pluton, Cumberland County, Nova Scotia

G. Pe-Piper, J. Wisen, A. Papoutsa, and D. J.W. Piper

2015

Canada

GEOLOGICAL SURVEY OF CANADA
OPEN FILE 7759

Mineralisation of fractured granites along the Cobequid Fault Zone: West Moose River Pluton, Cumberland County, Nova Scotia

G. Pe-Piper[1], J. Wisen[1], A. Papoutsa[2], and D. J.W. Piper[3]
[1] Department of Geology, Saint Mary's University, Halifax, Nova Scotia
[2] Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia
[3] Geological Survey of Canada (Atlantic), Bedford Institute of Oceanography, Dartmouth, Nova Scotia

2015

doi:10.4095/296835

This publication is available for free download through GEOSCAN (http://geoscan.nrcan.gc.ca/).

Recommended citation
Pe-Piper, G., Wisen, J., Papoutsa, A. and Piper, D.J.W., 2015. Mineralisation of fractured granites along the Cobequid Fault Zone: West Moose River Pluton, Cumberland County, Nova Scotia; Geological Survey of Canada, Open File 7759, 258 p. doi:10.4095/296835

Publications in this series have not been edited; they are released as submitted by the author.

Preface

This Open File results from legacy samples originally collected during collaborative work between Saint Mary's University and the Geological Survey of Canada, funded by Mineral Development Agreements, NATMAP, and NSERC. This study examines the paragenesis of REE and related minerals along the Cobequid Fault Zone.

Acknowledgments

We thank Jenna Higgins for the Magnetic Susceptibility analyses, Xiang Yang for his help with the Scanning Electron Microscope and Dan MacDonald for his help with the Electron Microprobe. Manuscript reviewed by Peter Giles.

Authors' addresses:

Georgia Pe-Piper, Joshua Wisen
Department of Geology, Saint Mary's University, Halifax, Nova Scotia, B3H 3C3, Canada
gpiper@smu.ca

Angeliki Papoutsa
Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia, B3H 4R2 Canada
angeliki_papoutsa@hotmail.com

David J.W. Piper
Geological Survey of Canada (Atlantic), Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia, B2Y 4A2, Canada
dpiper@nrcan.gc.ca

Table of contents

List of Figures

Tables

Appendices

Abstract

The West Moose River Pluton in the Cobequid Highlands is a late Paleozoic A-type granitic intrusion, emplaced and highly deformed during the evolution of the Cobequid Shear Zone. Pervasive fractures in these granites provide record of several hydrothermal events characterized by distinct mineral assemblages that correlate with known dated fluid circulations throughout the shear zone. The types of hydrothermal alteration identified in this pluton include albitisation, biotisation, chloritisation, calcite-filled fractures, and Fe-rich alteration expressed as stringers in hand specimen. This study presents geochemical, and mineralogical data, as well as magnetic susceptibility measurements on selected fractured samples from the West Moose Pluton. Petrographic investigation of these granites revealed that they contain a large variety of exclusively hydrothermal REE-minerals that include thorite, xenotime, Fe-rich hingganite-(Y), cerianite, samarskite-(Y), nioboaeschynite-(Y), tantaeuxenite-(Y), allanite-(Ce), bastnäsite-(Ce) and synchysite-(Ce). Associated Fe-oxyhydroxides include magnetite, hematite, goethite, and limonite, while ilmenite and TiO_2 minerals are also present in varying amounts. The amounts of hydrothermal REE-minerals correlate positively with the volume of fractures measured in the samples, with the highest amounts measured in calcite-filled veins. Samples in the southwestern part of the pluton show high amounts of Fe-oxides, high magnetic susceptibility, and positive Ce anomalies, here interpreted as the result of Ce scavenging and oxidation during oxide precipitation. Therefore the mineral cerianite along with Fe-rich hingganite-(Y) are interpreted as synchronous with the Fe-oxides. The distribution of hydrothermal REE-phases suggests that REE-rich circulation and precipitation was initiated after biotisation (343 Ma) and was probably ongoing until 323 Ma, during the IOCG mineralizing event along the Cobequid-Chedubucto Fault Zone.

Introduction

The West Moose River Pluton (WMRP) consists principally of A-type granite with lesser amounts of gabbro and diabase (Pe-Piper et al., 1991). Pervasive fractures in the granite, related to Carboniferous deformation along the Cobequid Fault (Fig.1), host REE-bearing minerals, as well as Fe-oxyhydroxides, biotite, chlorite, ilmenite, TiO_2 mineral(s), and carbonates that have precipitated from hydrothermal fluids. The West Moose River Pluton is part of a series of granite and diorite-gabbro plutons of Late Devonian–Early Carboniferous age (Fig. 2) (Dunning et al., 2002; Pe-Piper et al., 2004), emplaced in the Cobequid Shear Zone of northwestern Nova Scotia (Pe-Piper and Piper, 2003). Emplacement of plutons took place during strike-slip motion at the margin of the Magdalen Basin (Hibbert and Waldron, 2009) following the oblique convergence of the Avalon and Meguma terranes in the mid Devonian.

Adjacent to the Cobequid Fault, the West Moose River Pluton consists of mylonitised granite with irregularly spaced brittle fractures that are occupied by riebeckite (sample 9833 in this study, Fig. 2). Elsewhere, the granite primarily shows brittle deformation and alteration that consists of extensive albitisation and biotitisation. In previous studies “ferromagnesian stringers" were shown to occupy many of these fractures, consisting of green biotite, chlorite, ilmenite, titaniferous magnetite, and pyrite (Pe-Piper et al., 1991, 2004). In this study we demonstrate that REE-bearing minerals are also hosted in fractures, in some cases together with “ferromagnesian stringers”.

The objectives of this project are as follows:

1. To establish the mineralogical assemblages in fractures in representative samples from the WMRP granites that both in outcrop and hand specimen scale appeared fractured. This will establish the different mineral assemblages that define different types of fractures.

2. To establish the relative ages of the minerals in each identified type of fracture. This information combined with cross-cutting textural relationships among fractures with different mineral assemblages will help to establish types and relative ages of hydrothermal events that have affected these granites.
3. To determine the magnetic susceptibility of samples from different types of fractures and see if there is a relationship between type of fracture and magnetic properties of the rock. This was an attempt to understand the strong magnetic anomalies that occur in and around the West Moose River Pluton (Fig. 3), and see if such information was of help in mineral prospecting.
4. To establish how the whole rock geochemistry, particularly in terms of total amount of REE elements, has been affected by the fractures and their hydrothermal mineral filling assemblages. Additionally, the West Moose River Pluton is unique compared to other A-type granites in the Cobequid Highlands in that REE-bearing minerals appear to be only of post-magmatic origin (i.e. precipitated from hydrothermal solutions). Hence, the hope is that this study may allow us to further differentiate between magmatic and post-magmatic REE-bearing phases in other A-type granites of the Cobequid Highlands such as the Wentworth Pluton (Papoutsa and Pe-Piper, 2013).

Methods and Procedures

Polished thin sections were prepared from each of 10 selected samples of fractured granite (Table 1), and examined by petrographic microscope. Carbon-coated polished thin sections were analyzed using Scanning Electron Microscope (SEM) located at the Regional Analytical Centre of the Saint Mary's University (Appendices 1 and 2), acquiring back-scattered electron (BSE) images and energy dispersive spectroscopy (EDS) chemical analyses of minerals. The SEM used is a LEO 1450 VP SEM with a maximum resolution up to 3.5 nm at 30kV. This SEM is also equipped with an INCA X-max 80 mm^2 silicon-drift detector (SDD) EDS system and with detection limit >0.1%. The SEM uses tungsten filament to supply electrons to produce a back-scattered electron (BSE) image of the grains on the polished thin section. Hydrous phases or those containing ferric iron (Fe^{3+}) were

identified by inspection of un-normalized EDS data, with low totals corresponding to mineral structures containing water and/or ferric iron. Minerals are identified on the basis of their elemental composition compared with mineral compositions reported in the literature. The term TiO_2 mineral(s) is used for minerals with >90% TiO_2, which are probably rutile, but could be brookite or anatase.

Virtually all Fe-oxide phases analysed appear opaque under petrographic microscope, thus preventing determination of the correspondence between EDS analysis and transmitted light properties. Reflected-light microscopy, however, reveals that grains appearing continuous under both transmitted light and even BSE imaging, may actually represent multiple Fe-oxides. BSE imaging relies only on bulk chemical composition, so that grains exhibiting two minerals together in the same crystal, like magnetite with ilmenite exsolution lamellae, are clearly visible under both reflected light and BSE imaging.

Most REE-bearing minerals are small, have a patchy brown colour, except synchysite-(Ce) which looks like calcite, when viewed with the petrographic microscope and show no diagnostic optical properties. Identification of the grain minerals required study by SEM. Most grains are typically composed of more than one mineral, likely representing some sort of solid solution or grain co-precipitation or incomplete alteration or replacement of pre-existing minerals.

Grains that were of a high priority interest, based on their REE contents determined by the SEM, were further analyzed using an electron microprobe at the Dalhousie Regional Electron Microprobe Centre. The microprobe is a JEOL-8200 electron microprobe with five wavelength spectrometers and a Noran 133 eV energy dispersive detector. The beam was operated at 15 kV and 20nA, with an average beam diameter of 5 microns. The analytical system used was the wavelength dispersive spectrometer (WDS). Selected polished thin sections and selected analysed locations from each of these polished thin sections were also re-analysed, especially for REE-bearing minerals (Table 2). The analysis time for each REE-bearing mineral spot was 11–14 min. This analysis time also includes background measurements.

Of the ten polished thin sections studied with the SEM, eight have been proven to host REE-bearing minerals. This project began a few years ago, at which time samples were scanned and analyzed for a variety of minerals and mineral textures such as riebeckite, hornblende, biotite, compositional zoning in zircon, and albitisation. Emphasis was placed on REE-bearing phases only after all other data were acquired. At this point, five thin sections were analysed using the electron microprobe: samples 9834, 9835, 9836A, 9839, and 9840 (Table 2, Appendix 1).

Specific fractured granitic samples were also selected, on the basis of high abundance of fractures or cross-cutting relationships among fractures, for modal mineralogical analysis of fractures, namely samples 9835, 9837, 9838, and 9840 (Tables 3 and 4). The modal percent of REE-bearing phases present in fractures was determined, with the broader objective of evaluating changes in the chemistry of the hydrothermal fluids with time, and possibly correlating them with specific mineral assemblages and hydrothermal alteration events. First, the total area covered by fractures was estimated for each slide, by high-resolution scanning of the polished-thin section. The scanned image was then imported in Corel Draw, where a high-density grid was superimposed on the image. The density of the grid was adjusted for each slide as to include no less than a total of 300 grid intersections within the surface of the rock. The total area of the fractures was estimated by point-counting all the intersections of the grid that plotted on a fracture in the scanned slide. Using these measurements and the total number of grid intersections in the entire slide, the modal percentages of fractures were finally calculated for each sample.

Selected fracture segments were then examined under the SEM in order to investigate textures and minerals present in the fracture fillings. The BSE images and EDS analyses obtained were then used to estimate the modal composition of the fracture fillings (excluding voids). The modal composition was estimated through image analysis with Image J software for Windows. This program processes BSE images and allows the measurement of the total surface covered by pixels of a specific brightness. Since the minerals present in the fractures are of different composition and density, they

appear with a different brightness. Therefore, the total area (in pixels) covered by each mineral phase was measured in Image J. These measurements were then imported in Excel, where they were recalculated in percentages. This method allows fast point-counting at a micron scale, and is useful in cases where the point-counting under the petrographic microscope cannot be performed, due to the small size and the optical properties of the minerals.

The magnetic susceptibility of all ten samples was measured from 1 cm thick slabs using a Bartington MS2E point sensor mounted on a Geotek multisensor track at the Geological Survey of Canada (Atlantic). For each sample, more than one measurement was taken from different parts of the sample to account for within-sample variability of magnetic minerals. The magnetic susceptibility for each sample and for each slab from the same sample is based on the average of five measurements (Table 5).

Whole-rock powders from all ten samples were also analysed for both major and trace elements by Activation Laboratories according to their Code 4Lithoresearch and Code 4B1 packages, which combine lithium metaborate/tetraborate fusion ICP rock analyses with a trace element ICP-MS package (Table 6)

Results

In this section of the report we will describe the mineral highlights for each studied sample.

Sample 9833

No REE-bearing minerals have been located in this sample, but it is a good example of the sodic alteration that has affected the granites of this pluton (Pe-Piper et al., 1991, 2004). The polished thin section shows that the sodic amphibole riebeckite has partially replaced the magmatic K-feldspars along fractures and cleavage planes (Fig. 1-1.2). Fractures and dissolution voids in the riebeckite itself are filled with hydrothermal zircon, magnetite, and ilmenite (Fig. 4a). In the same sample, fractures in K-feldspar are also filled with albite.

Summary: Sodic metasomatism (albite, riebeckite) predates the precipitation of hydrothermal zircon, magnetite and ilmenite.

Sample 9834

The fractures in this sample are filled predominantly with hydrothermal xenotime that penetrates fractured magnetite and zircon. A porous zircon grain, probably magmatic, is overgrown by small thorite grains (Fig. 4b, position A). Electron microprobe analysis of a large (about 500 microns in length) inhomogeneous REE-bearing crystal shows that it consists predominantly of nioboaeschynite-(Y) with patches (<5 μm) of tantaeuxenite and rare zircon. Neither analysis of the two REE-bearing minerals is an ideal match to published mineral compositions, probably because of the heterogeneous nature of the grain (Fig. 1-2.1a).

Summary: Fractures are filled with zircon and xenotime. Thorite replaces zircon. The REE-bearing minerals identified in addition to thorite include nioboaeschynite-(Y) that predates tantaeuxenite.

Sample 9835

The magmatic K-feldspars in this granite sample are highly albitised (Figs. 5a, b, c). This is the only granite sample in this study where the magmatic REE-bearing silicate mineral chevkinite-(Ce) has been tentatively identified. The chevkinite-(Ce) appears to have been partially replaced by ilmenite and several REE-bearing minerals including the carbonate bastnäsite-(Ce), the Nb-oxide samarskite-(Y) and the silicate thorite (Fig. 5d; Fig. 1-3.1). The ilmenite probably accommodates the Fe and Ti components of the chevkinite-(Ce), whereas its REE were taken up by hydrothermal REE-bearing minerals with enrichment in Nb and Y from circulating hydrothermal fluids. Samarskite-(Y) is chemically similar to fergusonite-(Y), with only crystallographic differences between the two. In this work we identify this Nb-Y oxide as samarskite-(Y), following the approach of Ercit (2005) who statistically discriminated between common Nb-Y oxides based on canonical variables from elemental analysis.

Fractures and dissolution voids in this sample are filled, in any combination, with magnetite, xenotime, zircon, TiO_2 mineral(s), quartz (Figs. 5b, c), and hingganite-(Y) which is usually associated with xenotime that contains up to 12% HREE (Fig. 1-3.2b). Both magnetite and TiO_2 mineral(s) must have been co-precipitating, because both are cut by a microfracture (Fig. 5b, position A). Generally it seems that magnetite predates zircon and zircon predates xenotime.

Also present in this sample is an Y-rich silicate phase that resembles hingganite-(Y), which however is more Fe-rich than most reported hingganite-(Y) analyses in the literature (FeO > 8 wt.%). Both SEM and electron microprobe analyses give almost identical results of this mineral for the two analysed grains, and in both instances it occurs along with xenotime and magnetite filling a fracture. Analytical totals range from 90-91% (85 % for EDS) indicating the presence of volatiles. With the exception of FeO, all measured oxides match the chemistry of hingganite-(Y) more than any other known Y-silicate, and therefore it is tentatively identified as hingganite-(Y) in this work. The presence of this mineral has also been reported in the Wentworth Pluton (Papoutsa and Pe-Piper, 2013), but with lower, in the range of standard hingganite-(Y), FeO contents.

Summary: 1) Fractures and dissolution voids are filled with magnetite, zircon, TiO_2 mineral(s), xenotime, and REE-bearing minerals, that also seem to have partly replaced the primary REE-bearing chevkinite. 2) The identified REE-bearing minerals in addition to xenotime include: hingganite-(Y), samarskite-(Y), bastnäsite-(Ce) and thorite.

Sample 9836A

In this sample there is no intense K-feldspar albitisation, and hydrothermal allanite-(Ce) appears to have partially replaced magmatic albite and is associated with thorite (Fig. 6a). Rutilisation has affected magmatic biotite that is largely altered to chlorite (Fig. 6a). Magmatic magnetite is also overgrown by thorite and fractures in this magnetite are filled with thorite (Fig. 6b). Samarskite- (Y) (Fig. 1-4.2) is also a late mineral, but the relative ages of thorite and samarskite-(Y) cannot be determined.

Summary: 1) Magmatic biotite alters to rutile and chlorite, and magmatic albite to allanite-(Ce). 2) REE-bearing minerals are the latest to form and include thorite and samarskite-(Y).

Sample 9836B

Primary minerals comprise quartz, K-feldspar, albite, magnetite and occasional rutile. The main alteration mineral is chlorite. Rare, small, late thorite grains are present. A Nb-rich mineral phase that also contains Ce and Pb occur as patches in chlorite (Fig. 1-5.2, analyses 2 and 3).

Sample 9837

This sample is from a hybrid rock formed from mixing of a gabbroic and granitic magma, and is completely albitised. This sample shows extensive precipitation of calcite along fractures. Other minerals filling fractures in this sample include magnetite, chlorite, hydrothermal biotite, synchysite-(Ce), and xenotime. The chlorite is of two types: chlorite I with FeO_T about 30 wt. % (Analysis 2 in Fig. 7a) and Fe-rich chlorite II with FeO_T>40 wt. % (analysis 1 in Fig. 7a). The latter often has euhedral crystal outlines (position A in Fig. 7a) and it rims voids, suggesting that it formed later. Where there are clear textural relationships between the hydrothermal minerals, it seems that chlorite I predates calcite and calcite predates chlorite II and synchysite-(Ce) postdates chlorite II (Fig. 7b). Synchysite-(Ce) is euhedral in places, suggesting a replacive texture (Fig. 7b). In other spots of the polished thin section (e.g. Fig. 7c) textures again suggest that chlorite predates calcite, and calcite predates a hydrothermal biotite (analysis 5). Biotite predates hydrothermal magnetite, which in turn predates Fe-rich chlorite II, since magnetite is rimmed by the Fe-rich chlorite II, which predates euhedral synchysite-(Ce). Although it seems that both hydrothermal zircon and xenotime are also late, we cannot precisely position them in precipitation order and the same is true for minor hydrothermal apatite and TiO_2 mineral(s) which only have been seen to postdate calcite. Thorite fills voids in synchysite-(Ce) (Fig. 7d) and this may suggest that is the latest to precipitate. Other REE-bearing hydrothermal minerals seen only rarely, in this sample, include samarskite-(Y), hingganite-(Y) and allanite-(Ce). The textural evidence for early precipitation of calcite suggests that earlier hydrothermal

fluids were carbonate-rich. There is no clear cut evidence for late calcite in this sample, although in other samples from the same area at large, more than one generation of calcite have been seen. Synchysite-(Ce) and allanite-(Ce) appear to be replacing earlier calcite, with synchysite-(Ce) commonly containing dissolution voids filled with thorite. Xenotime in this sample has been found with chlorite and calcite (Fig. 7e). Xenotime occurs as subhedral to anhedral crystals, the texture of which suggests they postdate both calcite and chlorite.

Summary: 1) Fractures and dissolution voids are filled with large variety of minerals with the following paragenetic sequence going from the oldest to the youngest: chlorite I, early calcite, biotite, magnetite, chlorite II, synchysite-(Ce), zircon, xenotime, TiO_2 mineral(s), apatite, thorite. 2) Other rare REE-bearing minerals include: samarskite-(Y), hingganite-(Y) and allanite-(Ce).

Sample 9838

This granite sample is completely albitised. The magmatic biotite is partly altered to chlorite and variously dissected by Fe-oxide reticulated veinlets and very small spherulites (Fig. 8a). As in sample 9837, two types of chlorite are present. Biotite seems to have been altered to chlorite (FeO_T ~27 wt. %) and later there was precipitation of magnetite along the cleavage planes of the altered biotite. Rims of Fe-chlorite (FeO_T >30 wt. %) (Fig. 7b) on early chlorite formed later. Fractures in this sample are filled with hydrothermal minerals that include early chlorite (Fig. 8c), later Fe-chlorite that may postdate magnetite and TiO_2 mineral(s), and zoned zircon (Figs. 8d, e). Of the zones of the zircon only the cores are Hf-rich. Acicular crystals of thorite and xenotime fill a pore probably derived from K-feldspar dissolution (Fig. 1-7.8). These same minerals seem to postdate Fe-chlorite. Only minor amounts of REE-bearing minerals are present such as samarskite-(Y) and an unidentified Nb-rich mineral (Fig. 8c).

Summary: 1) Fractures are filled with chlorite that predates Fe-chlorite, magnetite, TiO_2 mineral(s), zoned zircon, thorite and xenotime. 2) REE-bearing minerals in addition to thorite and xenotime include samarskite-(Y) and a Nb-rich mineral.

Sample 9839

This sample shows incipient albitisation of the magmatic K-feldspar grains. Voids in such crystals are filled with magnetite and hingganite-(Y). Magmatic biotite (analysis 3) has been partially altered to chlorite (analysis 5) and further replaced by nioboaeschynite-(Y) (analyses 1, 2) (Fig. 9a). A magmatic zircon grain (Fig. 1-8.4) contains abundant dissolution voids, some of which have developed along fractures and cleavage planes. A few of the dissolution voids are filled (in one case only partly) with a bright mineral. EDS analyses of such bright spots are imprecise due to the beam size being about an order of magnitude greater than the bright spots. Nevertheless values of UO_3 up to 7 wt. % and of Ag_2O up to 13 wt. % have been recorded. The fractures in this sample are filled with acicular crystals of thorite, magnetite, chlorite (Fig.1-8.3), and rare samarskite-(Y).

Summary: 1) Fractures are filled with thorite, magnetite, chlorite and zircon. 2) REE-bearing minerals, mostly filling dissolution voids, in addition to thorite include nioboaeschynite-(Y), samarskite-(Y), and hingganite-(Y).

Sample 9840

This sample shows minor albitisation of magmatic K-feldspar. Several hydrothermal minerals fill factures, dissolution voids, and other weakness paths such as cleavage planes of minerals or intergranular boundaries (Fig. 9b). This is also the only granite sample in this pluton in which the REE-bearing mineral cerianite has been definitely identified.

Cerianite commonly occurs along cleavage planes of magmatic biotite, accompanied by magnetite. In general, both cerianite and magnetite in these occurrences are in very small grains (5-15 microns). Some cerianite is associated with the clay mineral beidellite that fills voids and has expanded and deformed the biotite along its cleavage (Fig. 9c). Bedelleite is a type of smectite that often occurs as an alteration product in hydrothermal mineral deposits, where it is commonly associated with plagioclase, quartz, orthoclase, montmorillonite, kaolin, allophane and muscovite. In other instances in this sample, magmatic biotite with apatite and ilmenite inclusions has been partly

replaced by chlorite (analyses 3, 6) and possibly quartz (analysis 2) (Fig. 9b). Cerianite also occurs in the outer rim of a large cavity as the dominant phase in a grain that is 300 μm long (Fig. 9d) and includes TiO_2 mineral(s) and ilmenite, as well as thorite and xenotime, the latter two in solid solution with each other. The entire rim of the cavity shows evidence of intense fracturing and dissolution (Fig. 10). Cerianite together with other hydrothemal minerals also replace chlorite (Fig.1-9.6). X-Ray elemental maps show that the cerianite grain contains most of the Ce, Nd, and F, whereas ilmenite, indicated by high amounts of Fe and Ti in the corresponding map, also contains some La (Fig. 11). The chlorine, although present in minor amounts, is concentrated mostly in the cerianite.Other minerals aside, textural observations suggest that chlorite predates magnetite and magnetite predates thorite-xenotime. This sample also contains bastnäsite-(Ce) that seems to predate thorite-xenotime (Fig. 1-9.7a) and substantial amounts of limonite. Rare occurrences of samarskite-(Y) have also been seen.

Summary: Weakness paths in this sample are filled with chlorite, magnetite, cerianite, thorite-xenotime, TiO_2 mineral(s), beidellite, limonite, cerianite, bastnäsite-(Ce) and rarely by samarskite-(Y)

Sample 9841

This is one of the samples least affected by alteration. Initial albitisation of the magmatic K-feldspar grains show some alteration to albite and rare muscovite (Fig. 12a). Magmatic albite, K-feldspar, and biotite have been slightly altered to chlorite as well (Fig. 12b). Chlorite either postdates the hydrothermal albite, or was perhaps synchronous. Hydrothermal zircon may also be present.

Summary: Not much hydrothermal alteration is present.

Fracture analysis

Four out of the ten studied samples were selected for detailed mineralogical study of their fractures. The technical details of this fracture analysis have been given in the section of Methods. Several types of fractures have been identified based on which hydrothermal mineral(s) are present and in what abundance they occur in each fracture of the studied samples. The most common fracture-

filling minerals in these rocks are: Fe-oxide, chlorite, calcite, ilmenite, TiO_2 mineral(s) (rutile) and titanite. Fe-oxide is principally magnetite, and hematite, and may include hydroxides goethite and limonite. Fe-oxide is commonly fine grained and it is difficult to discriminate magnetite from hematite either by reflected light microscope or SEM and EDS. Names are assigned to each fracture according to the three most abundant minerals present provided that they make up at least 10% of the total minerals (Table 3). Table 4 summarizes the types of fractures identified in each studied sample and their relative abundance, together with the REE-bearing minerals for each type. The percentage of rock that consists of fractures is summarized in Table 5.

Each sample has characteristic mineral or mineral combinations in the fracture fillings. Thus, Fe-oxide is the most common fracture-filling minerals in sample 9835; chlorite +calcite +Fe-oxide in 9837; chlorite +rutile in 9838 and chlorite +Fe-oxide +rutile in 9840. This paragenesis also seems to have some influence on the occurrence of specific REE-bearing minerals in specific type of fracture (Table 4).

Magnetic susceptibility

Fe-oxides are very common minerals in all fractures studied. Generally, grains are too fine grained to confidently distinguish magnetite from hematite using either reflected light microscope, SEM, or electron microprobe. However, measurement of magnetic susceptibility (MS) of the rocks (Table 5) provides a method of estimating the amount of magnetite. Magnetite (and maghemite) has a mean magnetic susceptibility of 6000 x 10^{-3} SI units (Grant and West, 1965); the only other mineral present with significant magnetic susceptibility is ilmenite (~1800 x 10^{-3} Si units) and it is uncommon in the fractures. Comparison of measured magnetic susceptibility in samples 9835 and 9837 (13, 14 x 10^{-3} SI respectively) with the amount of Fe-oxide in fractures in the rock (2.3, 3.3 % of the total rock, respectively) suggests that magnetite makes up 10% and 7% of the Fe-oxides in the two samples.

The obtained magnetic susceptibility data (Table 5) also confirm large variability in the distribution of magnetite from sample to sample. Based thus on their MS, three groups of samples are

distinguished (Fig. 3): 1) samples with MS > 10 x 10^{-3} SI units (9835, 9837); 2) samples with MS between 10 and 1 x 10^{-3} SI (9834, 9836B); and 3) samples with MS <1 x 10^{-3} SI (9833, 9838, 9839, 9840, 9841).

Whole-rock geochemical data

Whole-rock geochemistry of the studied samples (Table 6, Fig. 13) confirms that all are granites, except for 9837 which at ~65 wt% SiO_2 (on a volatile-free basis) is a granodiorite. Except for strongly albitized granite 9838 with ~72 % SiO_2, the granites have 76–79 % SiO_2 probably suggesting some secondary silicification. The data show a strongly bimodal distribution of Na and K, with two high-Na strongly albitised samples (9837, 9838) and all other granites clustering around ~4 % each of Na_2O and K_2O, except for 9840 which has slightly higher K and lower Na (Fig. 13a). All of these granites show some albitisation.

Total iron content (expressed as FeO_T) is highest in the granodiorite 9837 but otherwise shows no systematic variation with SiO_2 content (Fig. 13b). A plot of FeO_T vs. TiO_2 shows three geographically bounded clusters of granite: 9833–9835 in the west, 9836–9839 along the West Moose River road, and 9840–9841 in the northeast. Similar clusters (with one exception, as 9838 and 9839 have very different Th content) are shown by a plot of Zr vs. Th (Fig. 13d).

The total abundance of REE (ΣREE) shows no systematic variation with SiO_2 content (Fig. 13e). However, high values of magnetic susceptibility appear to correlate with some of the lowest values of ΣREE (Fig. 13f). The lowest values of ΣREE correlate with lowest Th content, but Th is almost stable at ~22 ppm for ΣREE > 150 ppm (Fig. 13g). The lower Th contents mostly correspond to low LREE/HREE ratio (Fig. 13h) and reflects the thorite-synchysite relationship, but Th shows no systematic variation with either U or Nb (Fig. 13i, j). U shows a weak positive correlation with Rb (Fig. 13j). TiO_2 content progressively increases with ΣREE (although with considerable scatter; Fig. 13l). The two samples with the highest ΣREE have the highest Na enrichment (9837) and the highest K enrichment (9840: see Fig. 13a).

Chondrite-normalised REE abundance plots ("REE spectra") also show similarities within geographic clusters of samples (Fig. 14a and b). Granites 9833–9835 from the northwest of the pluton have a strong negative Eu anomaly (Eu/Eu* < 0.1), almost flat MREE–HREE patterns, rising slightly with increasing atomic number to Tm and thereafter flat. Except for 9833, which has LREE similar to MREE–HREE, the LREE normalised abundances are 3–5 times lower than the MREE–HREE, except for a strong positive Ce anomaly. Three out of four samples that show the positive Ce anomaly also have high magnetic susceptibility (Fig. 14c) suggesting that the analysed samples had gone through hydrothermal oxidizing conditions that were associated with the precipitation of Fe-oxides such as magnetite. Sample 9836, also from the northeast, has a unique REE spectrum, with a progressive decrease in LREE from Ce to Eu (thus resembling the previous samples in having a positive Ce and negative Eu anomaly), but then with a slow rise from Gd to Lu, with normalised MREE–HREE abundances all less than normalised LREE abundances.

Farther east in the pluton, granites 9840–9841 show strong enrichment in LREE, with a progressive decrease with increasing atomic number to Ho, except for a negative Eu anomaly with Eu/Eu* of 0.15. Granodiorite 9837 has a similar LREE pattern, but a higher MREE–HREE content, with a flat spectrum from Gd to Lu. Granites 9838–9839 have different absolute abundances of REE, but like the other eastern granites show LREE fractionation. The MREE–HREE spectrum is almost horizontal. Thus there appear to be two major geographic clusters of REE spectra revealed by this study: in the west and the east. Within each cluster, geographically closer samples show more similarities than more distant samples.

Discussion

Controls on REE abundance

Evaluation of the relationship between mineral abundance (Table 4) and REE determinations by whole-rock geochemistry (Table 6) requires consideration of the REE content of individual

minerals (Table 2). Of the hydrothermal REE-bearing minerals, thorite, zircon and xenotime all occur in all studied samples, in variable amounts. Samarskite-(Y) has been found in most samples, hingganite-(Y) and bastnäsite-(Ce) in some, whereas nioboaeschynite-(Y), tantaeuxentite, synchysite-(Ce) and cerianite have each been identified in only a single sample (Table 7). The REE-bearing minerals bastnäsite-(Ce), cerianite and synchysite-(Ce) contain 50–75 wt. % ΣREE, whereas allanite-(Ce), hingganite-(Y) and xenotime contain only 15–20 wt. %. Most of these minerals fractionate the LREE, but hingganite-(Y) fractionates the HREE and cerianite is enriched in Ce. The presence of widespread synchysite-(Ce) in sample 9837, and of cerianite and bastnäsite-(Ce) in sample 9840 is consistent with these two samples also having the greatest abundance of REE in whole-rock analyses. They are also the samples with the highest volume percentage of fractures. The presence of hingganite-(Y) in 50% of the fractures of sample 9835 is consistent with the high HREE content of this sample.

The two samples with the highest magnetic susceptibility (9835, 9837) are also the samples with the highest proportion of Fe-oxide-bearing fractures. One of these two samples (9837) also contains the highest concentration of total REE (ΣREE >500 ppm) and the highest volume % of fractures in the rock (7.7 %), whereas the other (9835) contains only ~85 ppm of ΣREE and has only 3 vol. % fractures. This suggests that the abundance of magnetite in general is not an indicator of high ΣREE.

The two samples with the highest ΣREE (9837, 9840) are also the two samples with the highest volume percentage of fractures (7.7% and 4.7% respectively, Table 4). Sample 9837 is the only sample with calcite and also has abundant Fe-oxides. Both samples, particularly 9840, have common chlorite (Table 4). The REE-bearing minerals identified in the fractures in these two samples are mostly LREE-enriched minerals and include synchysite-(Ce), cerianite, bastnäsite-(Ce), thorite-xenotime, and allanite-(Ce) (Appendix 1).

However, it is not possible in every case to relate observed REE minerals to the REE patterns seen in the sample. For example, the thin section from sample 9833 showed only zircon and xenotime as REE-bearing minerals, both of which strongly fractionate HREE (Fig. 15). To account for the bulk-rock REE pattern, an unidentified REE mineral with LREE (Ce in particular) enrichment is required. Similar observations can be made in several other samples. When REE minerals are sparse, a single thin section does not appear to be representative of the REE content of the bulk rock.

Inspection of the REE spectra of different REE-minerals found in the WMRP (Fig. 15) suggests that a mixture of cerianite and samarskite-(Y) and/or nioboaeschynite-(Y) would produce the REE spectra in the western cluster of samples (9833–9836, Fig. 14a). The eastern cluster of samples (9837–9841, Fig. 14b) require bastnäsite-(Ce) and/or chevkinite-(Ce) to create the fractionated LREE pattern with no detectable Ce anomaly, together with samarskite-(Y) and/or nioboaeschynite-(Y) and/or hingganite-(Y) contribute to the Eu anomaly and the details of the MREE and HREE.

The precipitation of REE and Ce in particular is strongly controlled by the timing of Fe-oxyhydroxides precipitation, in hydrothermal solutions. As demonstrated by Bau (1999), scavenging of REE, and predominantly Ce on Fe-oxyhydroxides is highest only at the earliest stages of Fe precipitation, while there are still active surface sites that can bind trivalent cations. His experimental work showed that the oxidation of Ce^{+3} to Ce^{+4} (and thus precipitation of cerianite) requires Fe oxyhydroxide surfaces in order to proceed and decreases with time. Therefore the oxidizing capacity of Ce is significantly higher during synchronous precipitation of Fe-oxyhydroxides, compared to a system where REE-bearing fluids interact with previously formed Fe-oxides (Bau, 1999). The positive Ce anomalies observed in the samples with the highest magnetic susceptibility in the West Moose River pluton may record such a scavenging mechanism during precipitation of Fe-oxyhydroxides. The variation, however, in total REE contents of the two samples with the highest magnetic susceptibility may indicate that the Fe-oxides hosted in the fractures of these two samples, precipitated at different stages of hydrothermal circulation. The oxides in sample 9837 (high REE) probably precipitated at

earlier hydrothermal stages, thus strongly affecting the behavior circulating REE, compared to the oxides in sample 9835, which may have formed later, after the main precipitation of REE.

Bender et al. (1971) and Rhulin and Owen (1986) have suggested that scavenging of Ce^{4+} by hydrothermal Fe and Mn oxides and oxyhydroxides produces positive Ce anomaly in modern seafloor hydrothermal systems. The correlation of the positive Ce anomaly with the magnetic susceptibility in the studied rocks (Fig. 14c) suggests that magnetite is one of the phases that can scavenge Ce^{4+}. Further evidence for this process is that hydrothermal Fe-oxides from the North River pluton granites, 8 km to the east of the West Moose River pluton (Fig. 1), have Ce, expressed as Ce_2O_3, in the range of 2.4-2.7 wt. %. No visible Ce-rich patches or inclusions are visible in the BSE images.

In summary, the following general relationships are seen between fracture type and ΣREE:

1. The total amount of REE in whole rock samples increases as the volume percentage of fractures increases in the rock.
2. The samples with fractures where calcite is an important fracture-filling mineral contain the highest amount of total REE.
3. The REE-mineral synchysite-(Ce) is associated with samples that have the highest amount of calcite-rich fractures.
4. The REE-bearing mineral hingganite-(Y) was found only in samples with high amounts of Fe-rich and Si-rich (albite) fractures.
5. There is no correlation between albitisation and the total amount of REE.

Paragenetic sequence of REE minerals

Of the studied samples, sample 9837 offers the best opportunity for establishing the paragenetic sequence of all hydrothermal minerals identified in all studied samples. BSE images and EDS analyses (Appendix 1-6) in this sample, with help from other samples for certain mineral cases, suggest that chlorite I (FeO_T <30%) was the first to precipitate after the hydrothermal albite (sample 9841). Calcite followed chlorite I, biotite followed chlorite I, magnetite followed biotite, chlorite II

followed magnetite, and the REE mineral synchysite-(Ce) followed, probably co-precipitating with late calcite. The precise relative ages of REE-bearing minerals zircon, and xenotime cannot be determined, although textural evidence in all samples suggests that these minerals are both late. Textures suggest that thorite was the latest hydrothermal mineral to form (Fig. 7d). The REE minerals bastnäsite-(Ce), samarskite-(Y) and hingganite-(Y) seem to predate thorite based on textural evidence in some samples (e.g. sample 9840).

The nature of the Fe- oxyhydroxides

The Fe-oxyhydroxides that are an important component of some fracture fills probably consist of several different minerals. For instance, it is not uncommon for grains directly adjacent to fractures to show some combination of magnetite, hematite, goethite, and limonite. The more hydrous phases (i.e. limonite and goethite) tend to be present closest to the margin of the fractures and are presumably an alteration product that may be indicative of multiple hydrothermal events.

Regional hydrothermal events

The data from this study combined with published data (e.g. Pe-Piper et al., 2004) suggest that this area has been affected by several fracturing and hydrothermal events during and since the intrusion of the West Moose River pluton (WMRP) granites and associated mafic rocks. Previous studied have established the following:

a) Four U-Pb dates on zircon and seven $^{40}Ar/^{39}Ar$ dates on amphibole constrain the main period of pluton intrusion in the Cobequid shear zone to between 365±4 Ma and 358 ±4 Ma (Dunning et al., 2002). A main phase of the West Moose River pluton, dated at 361±5 Ma, cross-cuts Horton Group strata. High temperature shear deformation continued along the Cobequid shear zone during the entire period of the pluton emplacement.

(b) A major Na metasomatic event took place after pluton emplacement, dated at about 353 ±4 Ma from riebeckite in the West Moose River pluton (Pe-Piper et al., 2004 with dates recalibrated following Kuiper et al., 2008). This event caused complete or partial albitisation of some of the

granites and precipitation of the sodic amphibole riebeckite, mostly in fractures. This event is best expressed in the West Moose River and Cape Chignecto plutons (Fig. 1).

c) The last evidence of major ductile deformation on the Cobequid shear zone with growth of new datable mineral phases, suggests a minimum age of 339 Ma. Hydrothermal biotite has yielded $^{40}Ar/^{39}Ar$ ages of 343±3 and 342±3 Ma along the continuation of the Kirkhill Fault in the Cape Chignecto pluton and 343±4 and 336±4 Ma in Neoproterozoic gneissose granodiorite along the Rockland Brook Fault south of the Wentworth pluton (Fig. 1). This deformation was accompanied by potassic alteration resulting in biotisation of the hornblende in gabbros and diorites.

d) Following the potassic alteration, small lamprophyric dykes and sills were emplaced in the general area of the West Moose River pluton. A dyke cutting the Jeffers Group in lower Jeffers Brook (sample L in Pe-Piper et al., 2004) gave an Ar/Ar whole-rock spectrum concordant over 95 % of the gas release at an age of 334±3 Ma. A dyke within the West Moose River pluton (sample M in Pe-Piper et al., 2004) yielded a discordant biotite spectrum with plateau age of 326±2 Ma.

e) A major metallogenic event took place along the Cobequid–Chedabucto fault zone that is constrained stratigraphically to around the Serpukhovian–Bashkirian boundary at 323 Ma (Kontak, 2006). East of the Cobequid Highlands, this event has been dated at Copper Lake at ~ 320 Ma (Kontak et al., 2008). The style of mineralisation is iron oxide-copper-gold or IOCG, and correlative deposits include the major iron deposits of Londonderry in the eastern Cobequid Highlands (Murphy et al., 2011). This was the first event that could have involved large amounts of Cl ions in circulating fluids, derived from the Windsor Group evaporates, that were uplifted about this time (Murphy et al., 2011). Some of these events can be correlated to the new observations in this study. Sodic metasomatism is recognised from secondary riebeckite (e.g. sample 9833) and albitisation (most samples, e.g. 9837, 9840). The potassic, alteration event, is recognized from hydrothermal biotite in sample 9837. Our general impression from all the studied samples is that the precipitation of the REE-bearing mineral

from circulating hydrothermal fluids started after the biotisation event and probably continued for a long period.

The presence of chlorine in late cerianite in samples of the present study suggests that late cerianite may date from the IOCG event. Migdisov et al. (2009), using experimental data, showed that F- and Cl- are almost equally capable of complexing with REE, and LREE complexes are more stable than HREE complexes up to 300 °C. Thus, Ce remained in solution until it precipitated under more oxidizing conditions. The mineralisation by U and Ag in dissolution voids in magmatic zircon in sample 9839 (Fig. 1-8.4) is also a sign to the approximately ~323 Ma IOCG event.

Comparison of Eu anomalies of the REE-bearing minerals between plutons

There are two groups of REE-bearing minerals: 1) chevkinite-(Ce) and bastnäsite-(Ce) with positive Eu anomalies suggesting lower hydrothermal temperature (for bastnäsite <250 °C) and 2) all other hydrothermal REE-bearing minerals (Fig. 15) that have negative Eu anomalies indicating higher hydrothermal temperatures (>250 °C) (Sverjensky, 1984). As found in the other plutons (Papoutsa and Pe-Piper, in press), the early REE-bearing hydrothermal fluids were reducing and of low temperature producing epidotisation and minor precipitation of hydroxylbastnäsite-(Ce) and thorite. In contrast, the later fluids were generally oxidizing and of higher temperature, also indicated by the presence of magnetite. In that respect, also indicated by textural mineral relationships, thorite precipitation was long-lived regionally. In the rest of the plutons, with the exception of the Cape Chignecto pluton, thorite texturally belongs to the early REE-bearing mineral assemblage associated with hydroxylbastnäsite-(Ce), and shows weak positive Eu anomaly, whereas in the West Moose River pluton, and perhaps the Cape Chignecto pluton, thorite seems to have precipitated later and under higher temperature and it shows negative Eu anomaly and higher M-HREE concentrations.

Regional magnetic anomaly

Magnetic susceptibility was measured to assess whether the Fe-oxide filled fractures might be strongly magnetic and the source of the regional magnetic anomaly along the Cobequid Fault in this

region (Fig. 3). The relatively low magnetic susceptibilities measured are insufficient to produce the regional long-wavelength anomaly, which Piper et al. (1993) interpreted to result from upper crustal gabbro-diorite.

Exploration guidelines

The geographic clusters of FeO_T vs TiO_2 and Zr/Th (Figs. 13c and d) show systematic variation with ΣREE (Fig. 13g) and chondrite-normalised REE spectra (Fig. 14). This suggests that areas in which different hydrothermal systems predominated might be identified by a limited geochemical survey. Whole-rock geochemistry appears more representative than a few thin sections. Thorite, potentially identifiable from ground or airborne gamma-ray spectroscopy, appears to be a pathfinder mineral for REE minerals.

A stronger understanding of the timing and distribution of the various fracture systems might allow for better prediction in the field of localities in which fractures and their hydrothermal fills might be particularly abundant.

Conclusions

1. The West Moose River granites have been affected by several hydrothermal events that correlated with known dated regional fluid circulations. These include, from oldest to youngest: a) sodic alteration manifested by the precipitation of hydrothermal riebeckite and albite, b) potassic alteration expressed by hydrothermal biotite and probably chlorite, c) Fe-rich alteration related to hydrothermal Fe-oxides and Fe-rich chlorite. Calcite veins are also present, and even though textural data suggest they postdate potassic alteration, their precise age cannot be determined at this stage.

2. The REE-rich minerals found in West Moose River pluton are almost exclusively of hydrothermal origin. Rare relics of magmatic chevkinite-(Ce) have been found only in one sample. The hydrothermal REE-minerals include a large variety of phases, the paragenetic sequence of which is hard to determine. However, a tentative order is as follows: zircon, xenotime, Fe-rich hingganite-(Y)

and cerianite, samarskite-(Y), nioboaeschynite-(Y), tantaeuxenite-(Y), thorite, allanite-(Ce), bastnäsite-(Ce) and finally synchysite-(Ce).

3. The amount of hydrothermal REE-rich minerals correlates positively with the volume of fractures in the samples. The highest amounts of REE-minerals are found in calcite-rich fractures. The degree of albitisation in the granites does not show any correlation with the amount of REE-minerals in the samples.

4. Magnetic susceptibility varies among the samples with the highest values measured in the southwestern part of the pluton. These samples are characterised by high amounts of Fe-oxides in the fractures and positive Ce anomalies in their chondrite-normalised REE spectra. Samples in the eastern part of the pluton show higher LREE-enrichment and lower magnetic susceptibility. The positive Ce anomalies that are observed are the result of scavenging during the precipitation of Fe-oxides.

5. The measured magnetic susceptibility of these samples cannot account for the high magnetic anomaly in the West Moose River area, which has been interpreted as the result of underlying gabbro.

6. The absence of hydrothermal REE-minerals in riebeckite-filled fractures suggests that the circulation of REE-rich fluids and consequently the formation of hydrothermal REE-rich minerals was initiated during potassic alteration and lasted for tens of millions of years, until the iron oxide-copper-gold (IOCG) mineralising event along the Cobequid-Chedubucto Fault Zone.

References

Bau, M., 1999. Scavenging of dissolved yttrium and rare earths by precipitating iron oxyhydroxide: Experimental evidence for Ce oxidation, Y-Ho fractionantion, and lanthanide tetrad effect. Geochimica et Cosmochimica Acta, 63, 67-77.

Bender, M., Broecker, W., Cornitz, V., Middle, U., Kay, R., Sun, S., and Biscaye, P., 1971. Geochemistry of three cores from East Pacific Rise. Earth and Planetary Science Letters, 12, 425-433.

Dunning, G.R., Barr, S.M., Giles, P.S., McGregor, D.C., Pe-Piper, G., and Piper D.J.W., 2002. Chronology of Devonian to early Carboniferous rifting and igneous activity in southern Magdalen Basin based on U-Pb (zircon) dating. Canadian Journal of Earth Sciences, 39, 1219-1237.

Ercit, T.S., 2005. Identification and alteration trends of granitic-pegmatite-hosted (Y,REE,U,Th)-(Nb,Ta,Ti) oxide minerals: a statistical approach. Canadian Mineralogist, 43, 1291-1303.

Grant, F.S. and West, G.F., 1965, Interpretation Theory in Applied Geophysics, McGraw-Hill Book Co.

Hibbard, J., and Waldron, J.W.F., 2009. Truncation and translation of Appalachian promontories: mid-Paleozoic strike-slip tectonics and basin initiation. Geology, 37, 487–490.

Kontak, D.J., 2006. Nature of iron oxide-copper gold mineralization along the Cobequid-Chedabucto Fault System: an update on studies at Mount Thom and Copper Lake. Report 2006-1. In: MacDonald, D.R. (Ed.), Mines and Minerals Branch Report of Activities 2005. Nova Scotia Department of Natural Resources, p. 67-98.

Kontak, D.J., Archibald, D.A., Creaser, R.A., and Heaman, L.M., 2008. Dating hydrothermal alteration and IOCG mineralization along a terrane-bounding fault zone: the Copper Lake deposit, Nova Scotia. Atlantic Geology 44, 146–166.

Kuiper, K.F., Deino, A., Hilgen, F.J., Krijgsman, W., Renne, P.R., Wijbrans, J.R., 2008. Synchronizing rock clocks of earth history. Science 320, 500-504.

Migdisov, A.A., William-Jones, A.E., and Wagner, T., 2009. An experimental study of the solubility and speciation of the Rare Earth Elements (III) in fluoride- and chloride-bearing aqueous solutions at temperatures up to 300 °C. Geochimica et Cosmochimica Acta, 73, 7087-7109.

Murphy J.B., Waldron J.W.F., Kontak D.J., Pe-Piper G., and Piper D.J.W., 2011. Minas Fault Zone: Late Paleozoic history of an intra-continental orogenic transform fault in the Canadian Appalachians. Journal of Structural Geology, 33, 312-328.

Papoutsa, A., and Pe-Piper, G., 2013. The relationship between REE-Y-Nb-Th minerals and the evolution of an A-type granite, Wentworth pluton, Nova Scotia: American Mineralogist, 98, 444-462.

Piper, D.J.W., Pe-Piper, G. and Loncarevic, B.D., 1993. Devonian - Carboniferous igneous intrusions and their deformation, Cobequid Highlands, Nova Scotia. Atlantic Geology, 29, 219-232.

Pe-Piper, G. and Piper, D.J.W., 2003. A synopsis of the geology of the Cobequid Highlands, Nova Scotia. Atlantic Geology, 38, 145-160.

Pe-Piper, G., Piper, D.J.W., and Clerk, S.R., 1991. The West Moose River pluton. Canadian Journal of Earth Sciences, 28, 1058-1072.

Pe-Piper, G., Reynolds, P.H., Nearing, J. and Piper, D.J.W., 2004. Evolution of a Late Paleozoic shear zone in the Cobequid Highlands, Nova Scotia: an $^{40}Ar/^{39}Ar$ geochronology study. Canadian Journal of Earth Sciences, 41, 1425-1436.

Ruhlin, D.E., and Owen, R.M., 1986. The rare earth element geochemistry of hydrothermal sediments from the East Pacific Rise: Examination of a seawater scavenging mechanism. Geochimica et Cosmochimica Acta, 50, 393-500.

Sverjensky, D.A., 1984. Europium redox equilibria in aqueous solution. Earth and Planetary Science Letters, 67, 70-78.

Figure captions

Figure 1: Location map of the West Moose Rive pluton and general geology.

Figure 2: Geological map of the West Moose River pluton, and location of the studied samples.

Figure 3: Aeromagnetic map of the West Moose Rive pluton, and of the general area.

Figure 4: Backscattered electron (BSE) images of (a) magnetite, zircon, and ilmenite filling dissolution voids in riebeckite, in sample 9833, and (b) a porous zircon crystal, overgrown by a zone of small thorite grains (position A), in sample 9834.

Figure 5: BSE images of hydrothermal minerals in sample 9835. Image (a) shows REE minerals filling a fracture, and albite streaks (analysis 10) in K-feldspar (analysis 11), that indicate the replacement of K-feldspar by albite. Image (b) shows advanced albitisation (analyses 7&8) and patches of magnetite, xenotime, zircon, quartz and rutile, filling a fracture. Both rutile and magnetite must have been co-precipitating because both are cut by microfracture (position A). Image (c) shows albitisation of K-feldspar (analyses 6&7). Euhedral to subhedral grains of xenotime, magnetite, zircon and rutile fill fractures. Image (d) shows a chevkinite-Ce (analyses 7&8) crystal that breaks down to ilmenite (Fe, Ti) (analysis 9). REEs from chevkinite-(Ce) have been removed and form bastnäsite-(Ce) (analyses 4-6) and samarskite-(Y) (analysis 1). The remaining Si goes to the thorite (analysis 2).

Figure 6: BSE images of secondary minerals from sample 9836A. Image (a) show exsolution of rutile (analysis 6) from biotite. Biotite later replaced by chlorite (analysis 5). Rutile (analysis 4) is also filling fractures and replacing magnetite. Image (b) shows albite altering to allanite-Ce (analysis 2).

Figure 7: BSE images of secondary minerals from sample 9837. Image (a) shows two types of chlorite. Order of crystallization: Fe-chlorite is later because often it has euhedral crystal outline (position A) and it rims voids (analysis 1). Image (b) shows chlorite (I, II), calcite (analysis 4), and synchysite-Ce (analyses 1 and 2) filling a fracture. Order of crystallization:

chlorite → calcite → synchysite. Synchysite-(Ce) is euhedral in places suggesting a replacive texture. Image (c) shows the following order of crystallization: chlorite I → calcite → secondary biotite (analysis 5) → magnetite (analysis 3) → Fe-chlorite (rims magnetite) → synchysite-(Ce) (analysis 6) (euhedral) →? zircon & xenotime. Apatite is also present (analysis 11) and postdates calcite. Image (d) shows thorite (analyses 1 and 2) filling voids in synchysite-(Ce) (analysis 3), and is the latest mineral to form. Image (e) suggests the following order of crystallization: chlorite → calcite → xenotime.

Figure 8: BSE images of replacement textures in sample 9838. Image (a) shows a biotite crystal (analyses 8&9) partly altered to chlorite (analysis 6) and variously dissected by Fe-oxide reticulate veinlets and very small spherulites. Image (b) shows crystallization of Fe-oxides (analyses 1, 2 &3) along altered biotite cleavage planes. Biotite has been altered to chlorite, and then to Fe-chlorite (analyses 4 &5). Image (c) shows the precipitation of Nb-rich phases (analyses 1-6) postdating a chlorite (analysis 10) in a fracture. Image (d) shows hydrothermal zircon (analyses 1, 2 &3) filling fractures and/or replacing biotite (analysis 4) that contains patches of Fe-chlorite (analyses 5&6). Image (e) shows chlorite, zoned zircon, and rutile in fractures. Both zircon and rutile are later than chlorite, because in places it seems that they have replaced chlorite.

Figure 9: BSE images of alteration textures from samples 9839 (a) and 9840 (b to d). Image (a) shows a biotite crystal (analysis 3) partly altered to chlorite (analysis 5) and further replaced by nioboaeschynite-(Y). Clots of hydrothermal zircon (multiple crystals) are also present, as well as in dissolution voids in the primary quartz (analysis 10). Image (b) shows a biotite partly replaced by chlorite (analyses 3&6) and possibly quartz (analysis 2). Biotite contains apatite and ilmenite inclusions. Image (c) shows cerianite and Fe-oxide precipitation along the biotite cleavages and associated with beidellite that fills voids. Beidellite seems to have expanded and

deformed the biotite cleavage planes. Image (d) shows an ilmenite crystal (analysis 4) replaced by cerianite and thorite-xenotime.

Figure 10: Microphotograph (a) and BSE image (b) of microcrystalline cerianite, ilmenite and magnetite, along the outer rim of a cavity in sample 9840.

Figure 11: BSE image (a) and EDS X-ray maps for La (b), Ce (c), Nd (d), Y (e), Th (f), Ti (g), Fe (h), Cl (i), and F (j), from a grain of cerianite, associated with ilmenite and magnetite crystals, found along the rim of a cavity, in sample 9840. Cerianite contains most of the Ce, Nd and F in these maps, whereas ilmenite, indicated by high amounts of Fe and Ti in the corresponding maps, also contains amounts of La. Chlorine, although present in minor amounts, is concentrated mostly in the cerianite.

Figure 12: BSE images of replacement textures in sample 9841. Image (a) shows initial albitization of K-feldspar crystals (position A). Muscovite (Ms) is replacing biotite (analysis 4). In image (b), chlorite (analysis 6) is replacing both albite (analysis 5) and K-feldspar (analysis 4).

Figure 13: Various biplots illustrating the whole rock geochemistry of the studied samples.

Figure 14: Chondrite-normalised whole-rock REE patterns of (a) granite samples from the northwestern part, and (b) from the eastern part of the West Moose River pluton. Figure (c) demonstrates the correlation between high magnetic susceptibility and strong positive Ce anomalies ($Ce/Ce^* = Ce_N/(La_N * Pr_N)^{0.5}$) in the studied samples. Figure (d) is a BSE image from a granite in the nearby North River pluton (sample 4824-26-2) where Ce-bearing magnetite (Ce-mag) precipitated along fractures.

Figure 15: Chondrite-normalised REE-patterns of (a) chevkinite-(Ce), (b) zircon, (c) thorite, (d) bastnäsite-(Ce), (e) hingganite-(Y), (f) nioboaeschynite-(Y), (g) tantaeuxenite, (h) samarskite-(Y), (i) cerianite and (j) xenotime, found in the West Moose River granites. Normalising values for chondrite from Sun and McDonough (1989). Mineral analyses are given in Table 2.

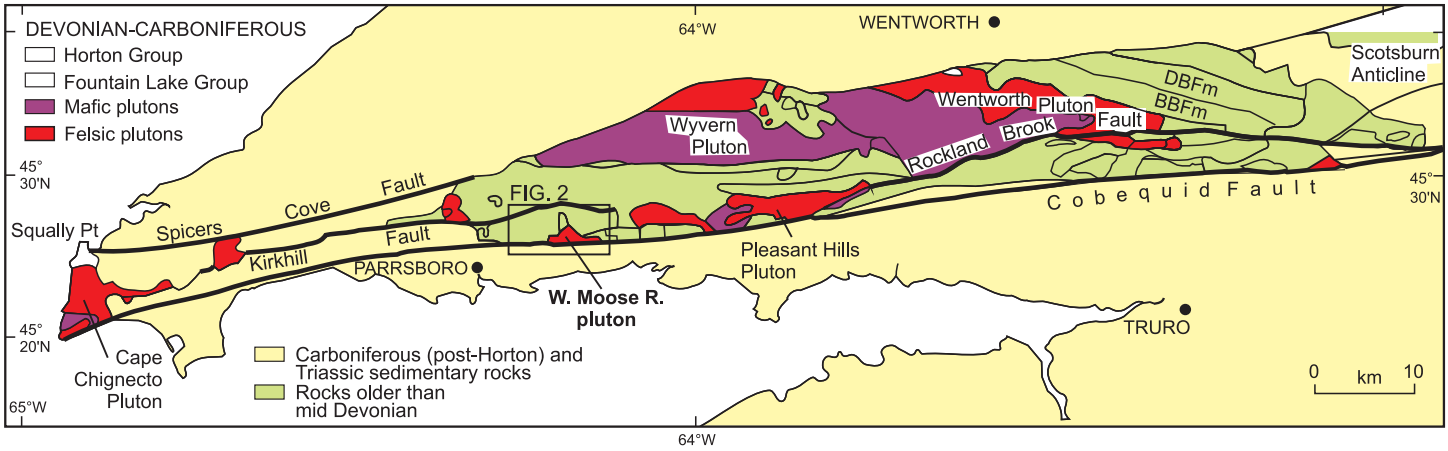


Figure 1: Location map of the West Moose Rive pluton and general geology.

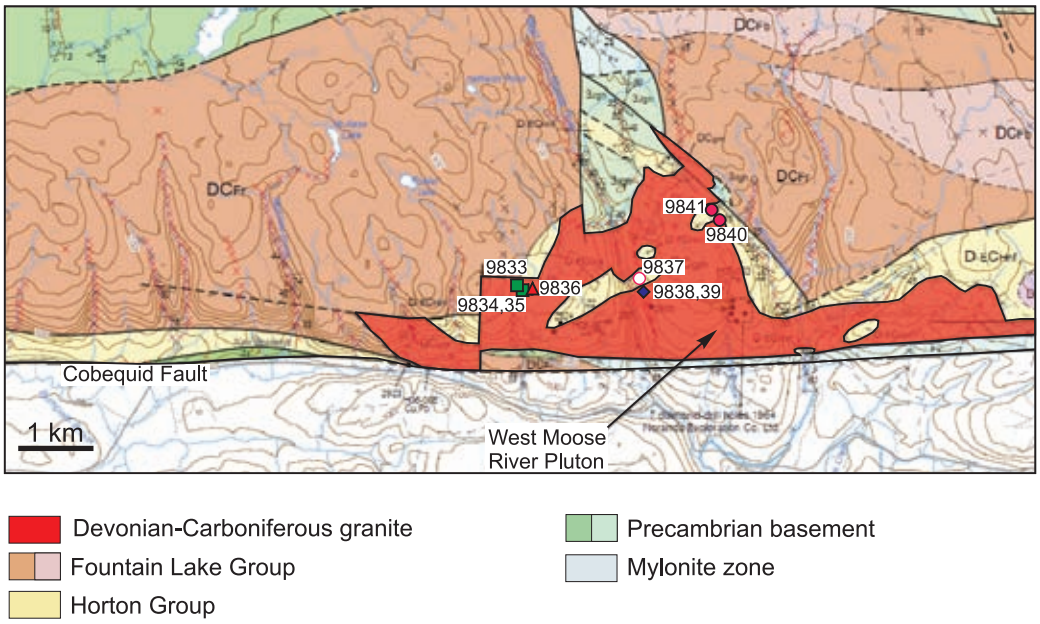


Figure 2: Geological map of the West Moose River pluton, and location of the studied samples.

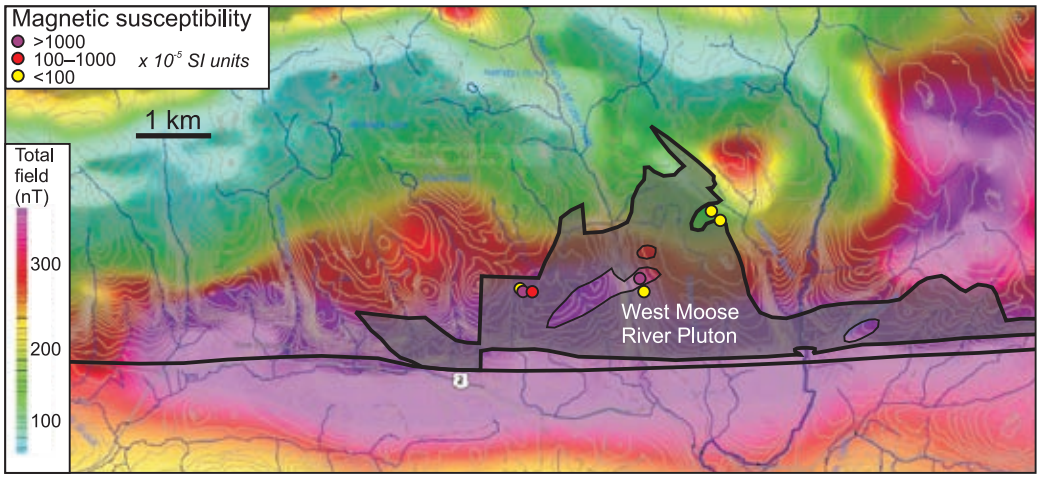


Figure 3: Aeromagnetic map of the West Moose Rive pluton, and of the general area.

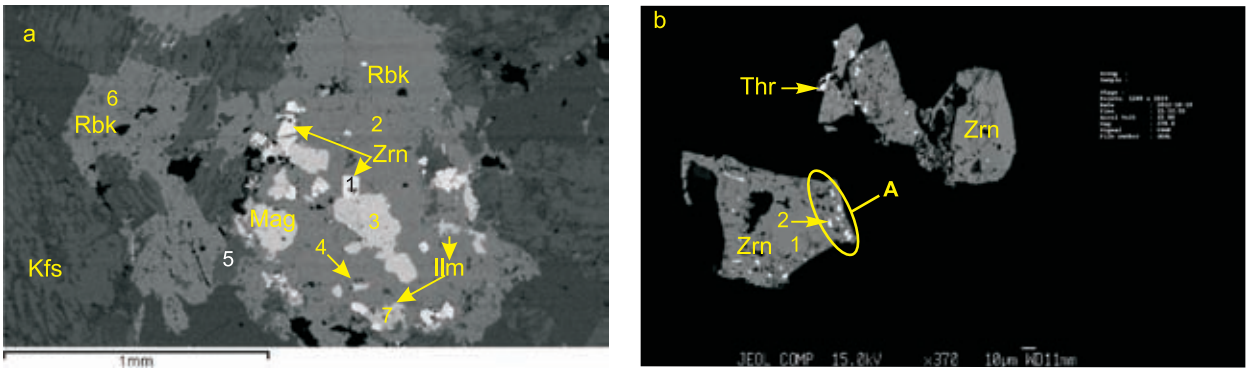


Figure 4: Backscattered electron (BSE) images of (a) magnetite, zircon, and ilmenite filling dissolution voids in riebeckite, in sample 9833, and (b) a porous zircon crystal, overgrown by a zone of small thorite grains (position A), in sample 9834.

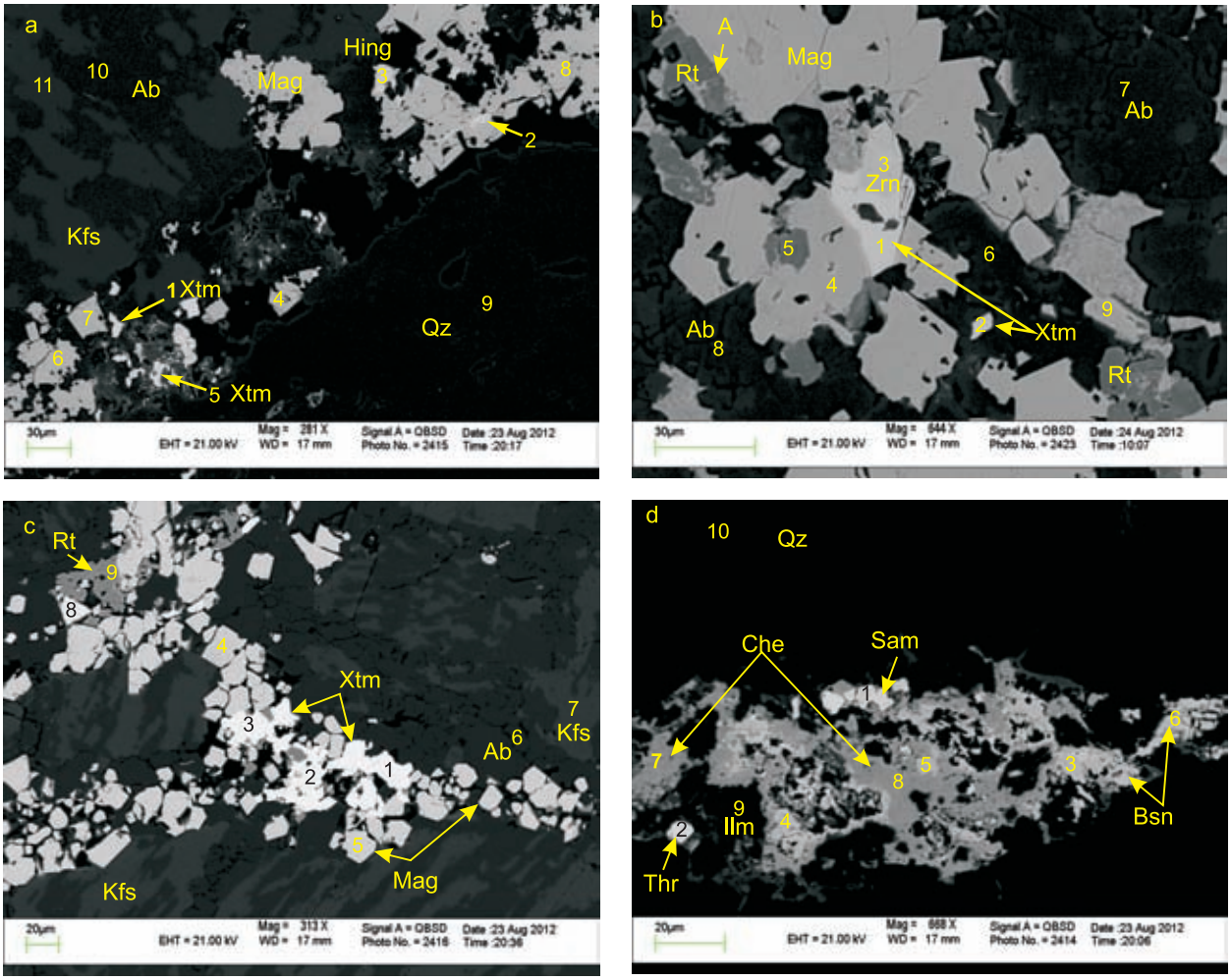


Figure 5: BSE images of hydrothermal minerals in sample 9835. Image (a) shows REE minerals filling a fracture, and albite streaks (analysis 10) in K-feldspar (analysis 11), that indicate the replacement of K-feldspar by albite. Image (b) shows advanced albitization (analyses 7&8) and patches of magnetite, xenotime, zircon, quartz and rutile, filling a fracture. Both rutile and magnetite must have been co-precipitating because both are cut by microfracture (position A). Image (c) shows albitization of K-feldspar (analyses 6&7). Euhedral to subhedral grains of xenotime, magnetite, zircon and rutile fill fractures. Image (d) shows a chevkinite-Ce (analyses 7&8) crystal that breaks down to ilmenite (Fe, Ti) (analysis 9). REEs from chevkinite-(Ce) have been removed and form bastnäsite-(Ce) (analyses 4-6) and samarskite-(Y) (analysis 1). The remaining Si goes to the thorite (analysis 2).

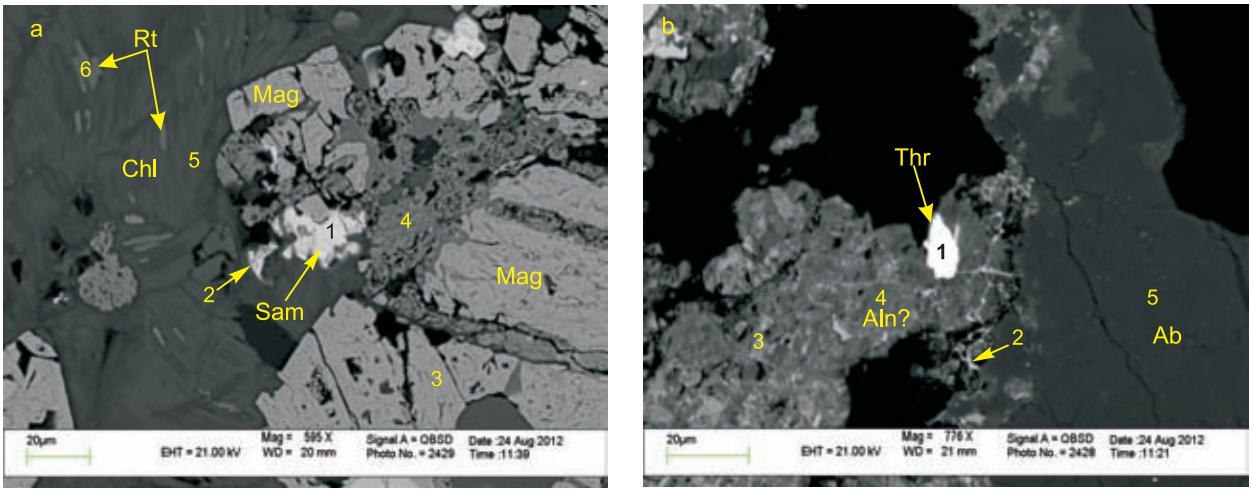


Figure 6: BSE images of secondary minerals from sample 9836A. Image (a) show exsolution of rutile (analysis 6) from biotite. Biotite later replaced by chlorite (analysis 5). Rutile (analysis 4) is also filling fractures and replacing magnetite. Image (b) shows albite altering to allanite-Ce (analysis 2).

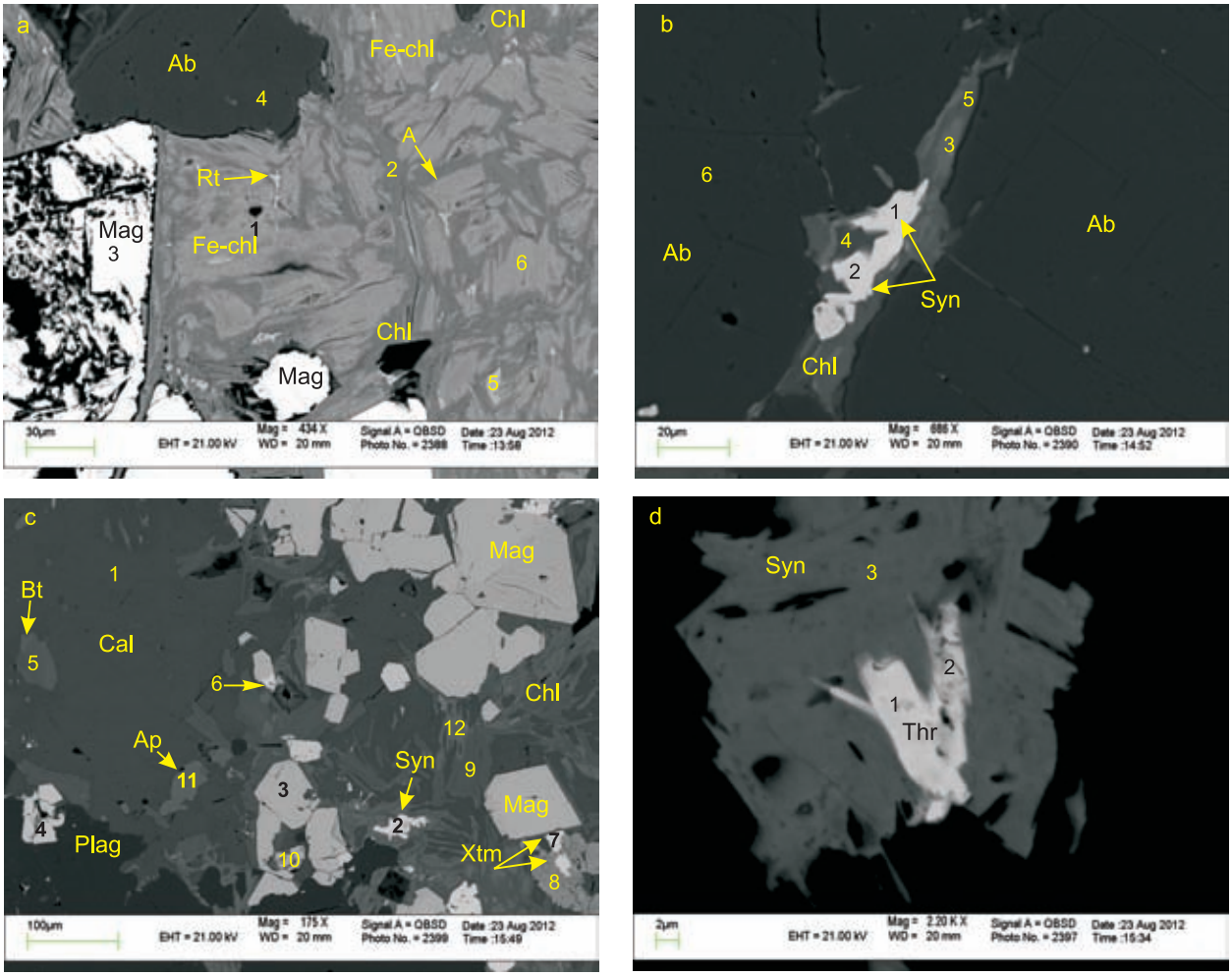
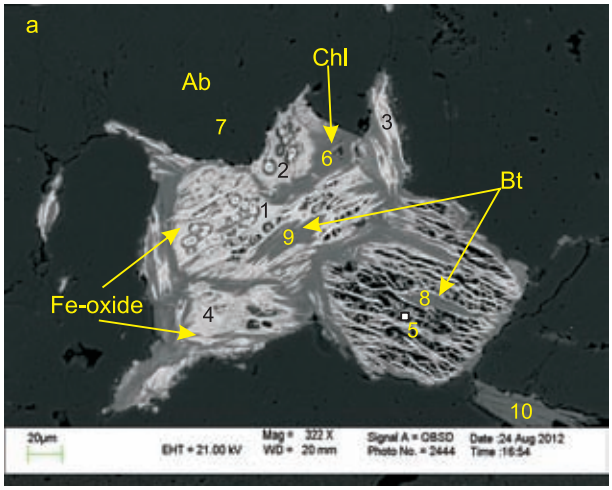
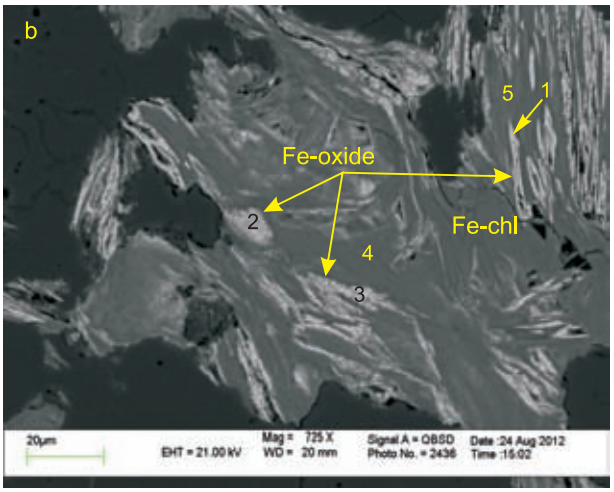
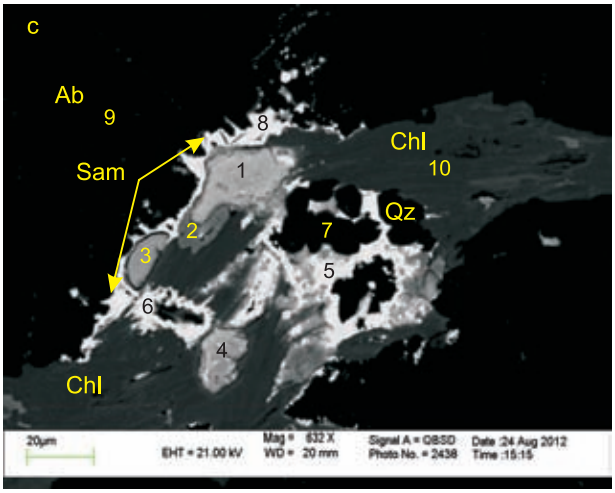
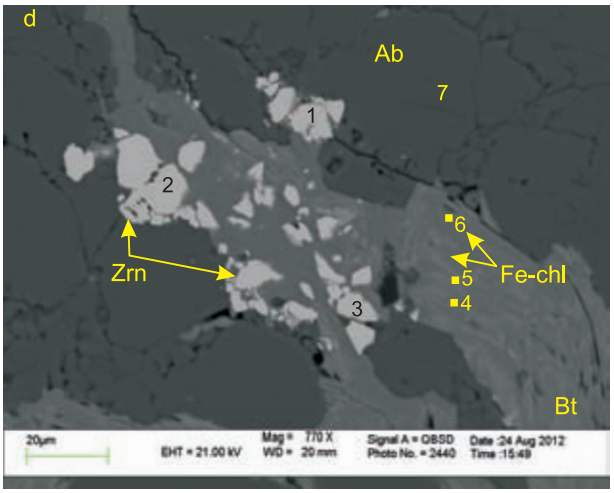


Figure 7: BSE images of secondary minerals from sample 9837. Image (a) shows two types of chlorite. Order of crystallization: Fe-chlorite is later because often it has euhedral crystal outline (position A) and it rims voids (analysis 1). Image (b) shows chlorite (I,II), calcite (analysis 4), and synchysite-Ce (analyses 1 and 2) filling a fracture. Order of crystallization: chlorite → calcite → synchysite. Synchysite-(Ce) is euhedral in places suggesting a replacive texture. Image (c) shows the following order of crystallization: chlorite I → calcite → secondary biotite (analysis 5) → magnetite (analysis 3) → Fe-chlorite (rims magnetite) → synchysite-(Ce) (analysis 6) (euhedral) →? zircon & xenotime. Apatite is also present (analysis 11) and postdates calcite. Image (d) shows thorite (analyses 1 and 2) filling voids in synchysite-(Ce) (analysis 3), and is the latest mineral to form. Image (e) suggests the following order of crystallization: chlorite → calcite → xenotime.









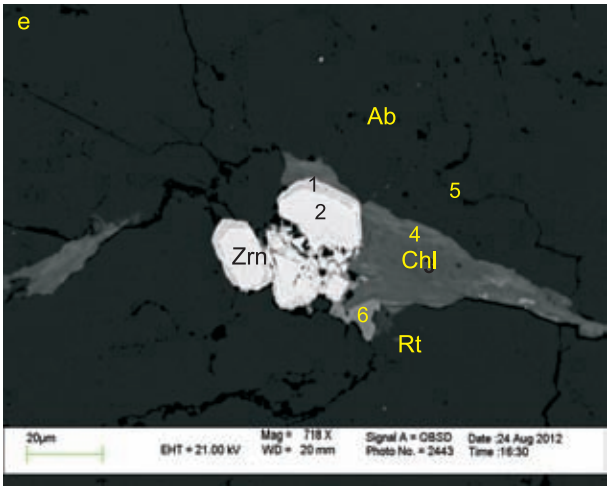


Figure 8: BSE images of replacement textures in sample 9838. Image (a) shows a biotite crystal (analyses 8&9) partly altered to chlorite (analysis 6) and variously dissected by Fe-oxide reticulate veinlets and very small spherulites. Image (b) shows crystallization of Fe-oxides (analyses 1,2,&3) along altered biotite cleavage planes. Biotite has been altered to chlorite, and then to Fe-chlorite (analyses 4,&5). Image (c) shows the precipitation of Nb-rich phases (analyses 1-6) postdating a chlorite (analysis 10), in a fracture. Image (d) shows hydrothermal zircon (analyses 1,2,&3) filling fractures and/or replacing biotite (analysis 4) that contains patches of Fe-chlorite (analyses 5&6). Image (e) shows chlorite, zoned zircon, and rutile inl fractures. Both zircon and rutile are later than chlorite, because in places it seems that they have replaced chlorite.

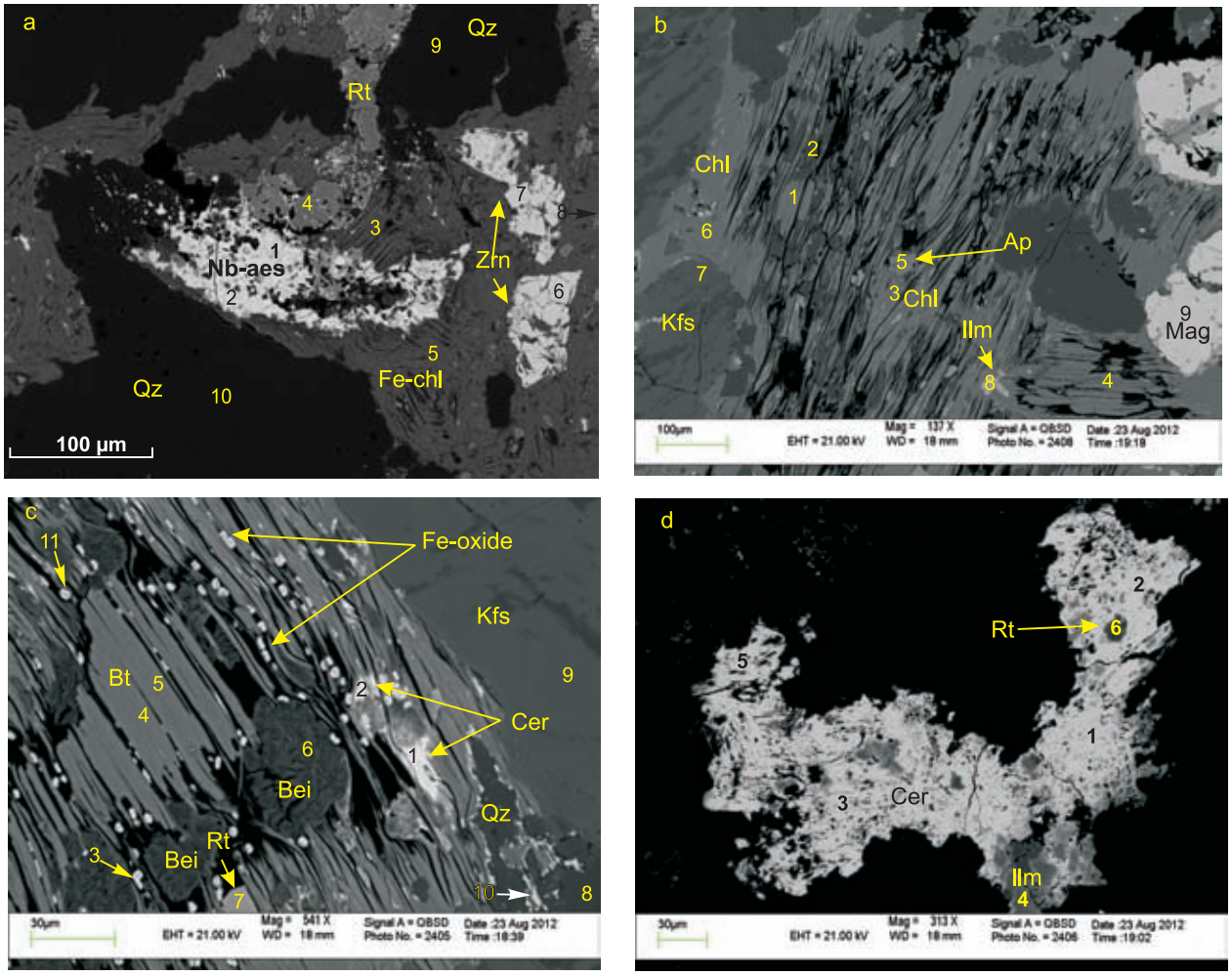


Figure 9: BSE images of alteration textures from samples 9839 (a) and 9840 (b to d). Image (a) shows a biotite crystal (analysis 3) partly altered to chlorite (analysis 5) and further replaced by nioboaeschynite-(Y). Clots of hydrothermal zircon (multiple crystals) are also present, as well as dissolution voids in the primary quartz (analysis 10). Image (b) shows a biotite partly replaced by chlorite (analyses 3&6) and possibly quartz (analysis 2). Biotite contains apatite and ilmenite inclusions. Image (c) shows cerianite and Fe-oxide precipitation along the biotite cleavages and associated with beidellite that fills voids. Beidellite seems to have expanded and deformed the biotite cleavage planes. Image (d) shows an ilmenite crystal (analysis 4) replaced by cerianite and thorite-xenotime.

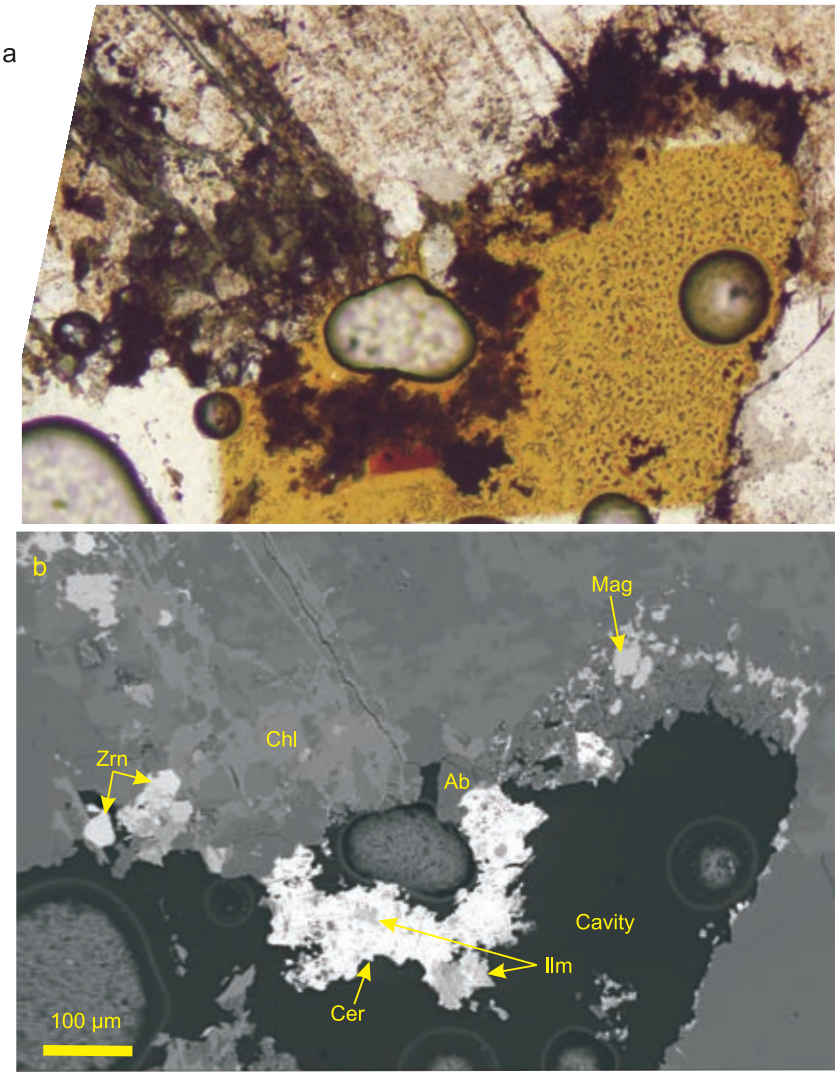


Figure 10: Microphotograph (a) and BSE image (b) of microcrystalline cerianite, ilmenite and magnetite, along the outer rim of a cavity in sample 9840.

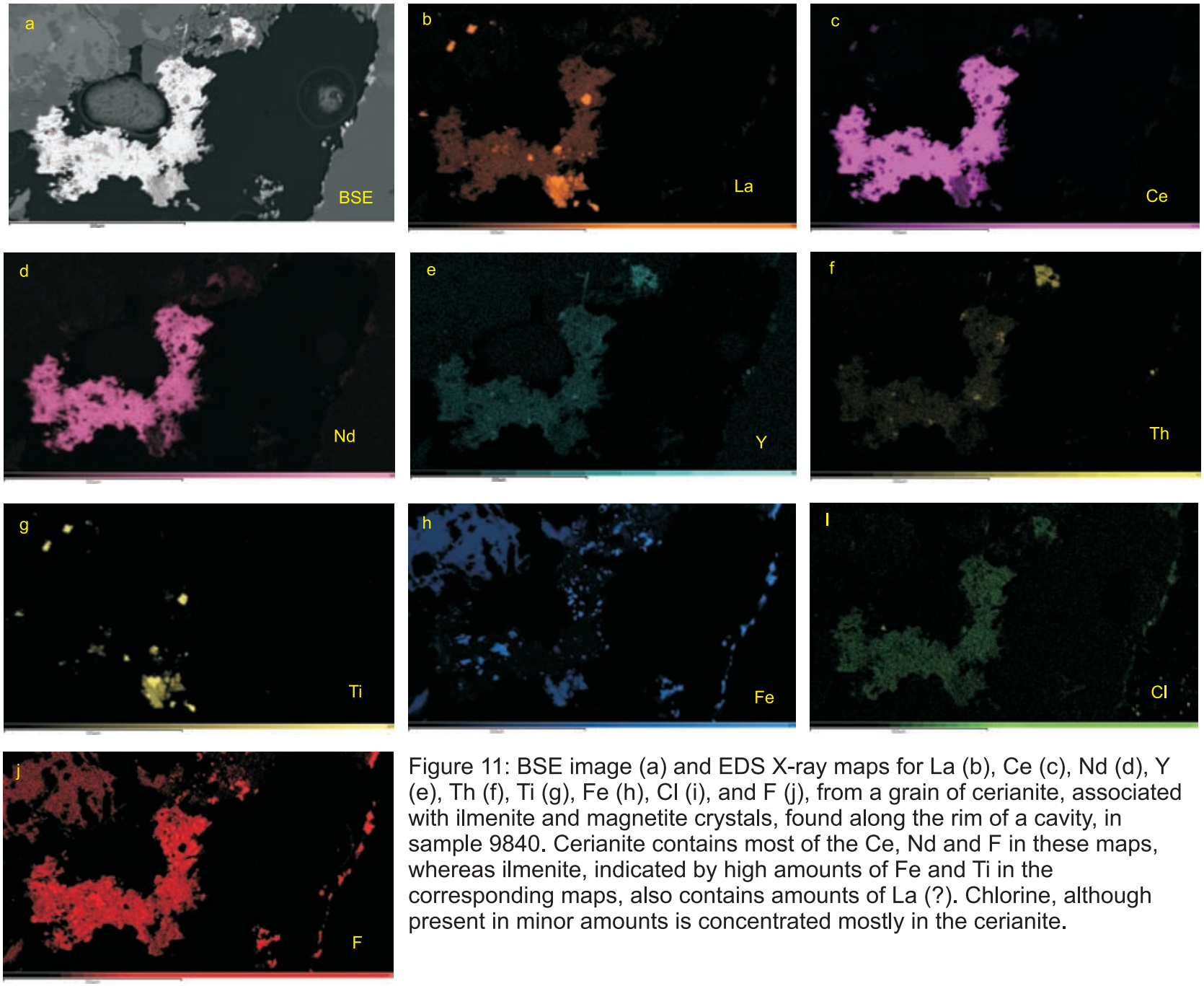


Figure 11: BSE image (a) and EDS X-ray maps for La (b), Ce (c), Nd (d), Y (e), Th (f), Ti (g), Fe (h), Cl (i), and F (j), from a grain of cerianite, associated with ilmenite and magnetite crystals, found along the rim of a cavity, in sample 9840. Cerianite contains most of the Ce, Nd and F in these maps, whereas ilmenite, indicated by high amounts of Fe and Ti in the corresponding maps, also contains amounts of La (?). Chlorine, although present in minor amounts is concentrated mostly in the cerianite.

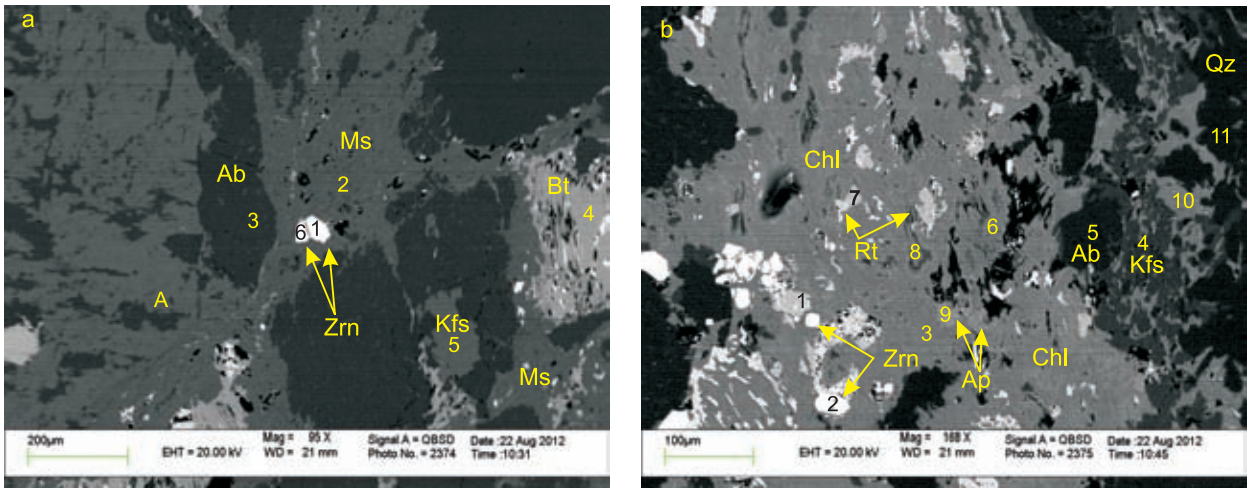


Figure 12: BSE images of replacement textures in sample 9841. Image (a) shows initial albitization of K-feldspar crystals (position A). Muscovite (Ms) is replacing biotite (analysis 4). In image (b), chlorite (analysis 6) is replacing both albite (analysis 5) and K-feldspar (analysis 4).

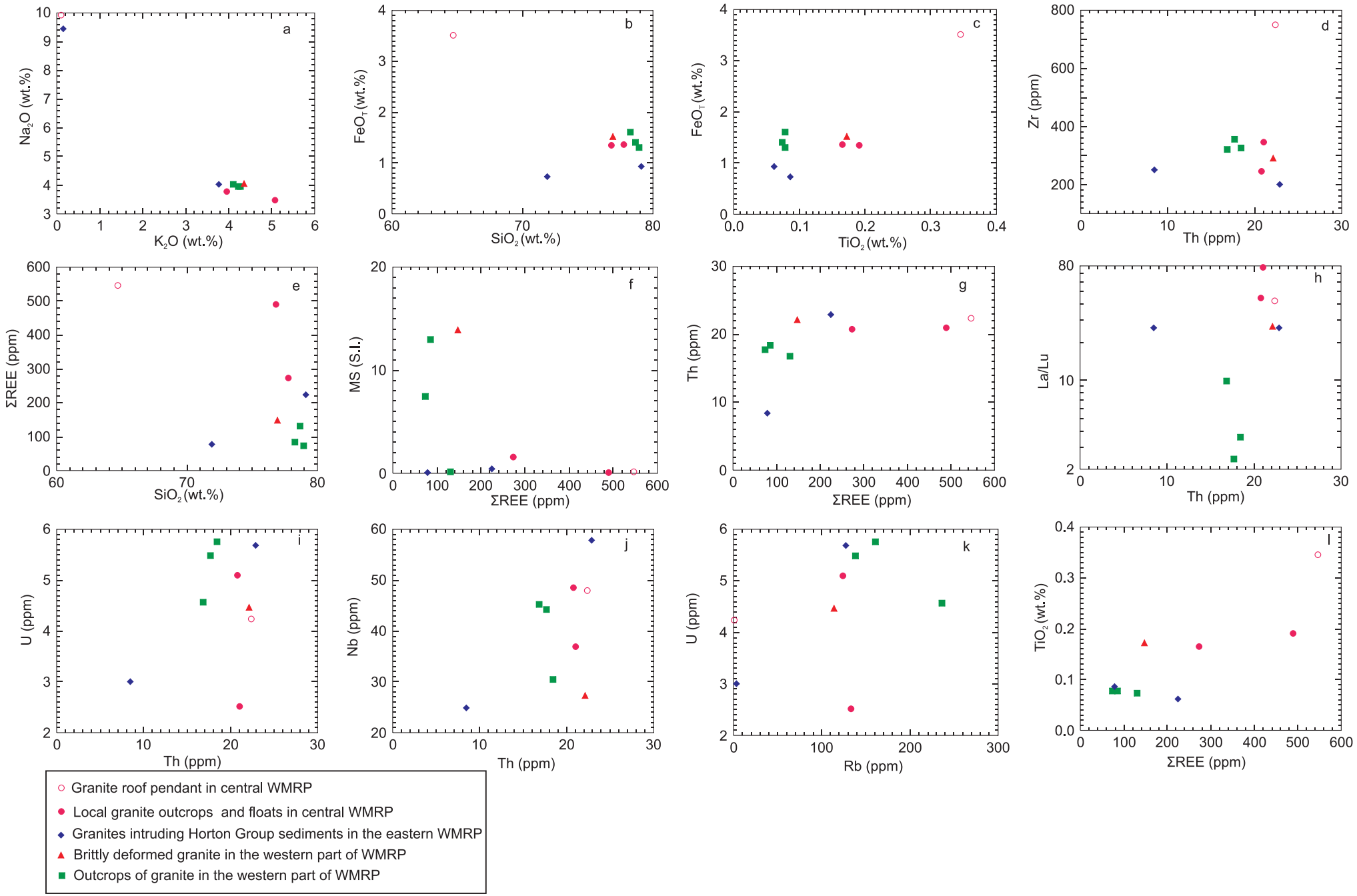


Figure 13: Various biplots illustrating the whole rock geochemistry of the studied samples.

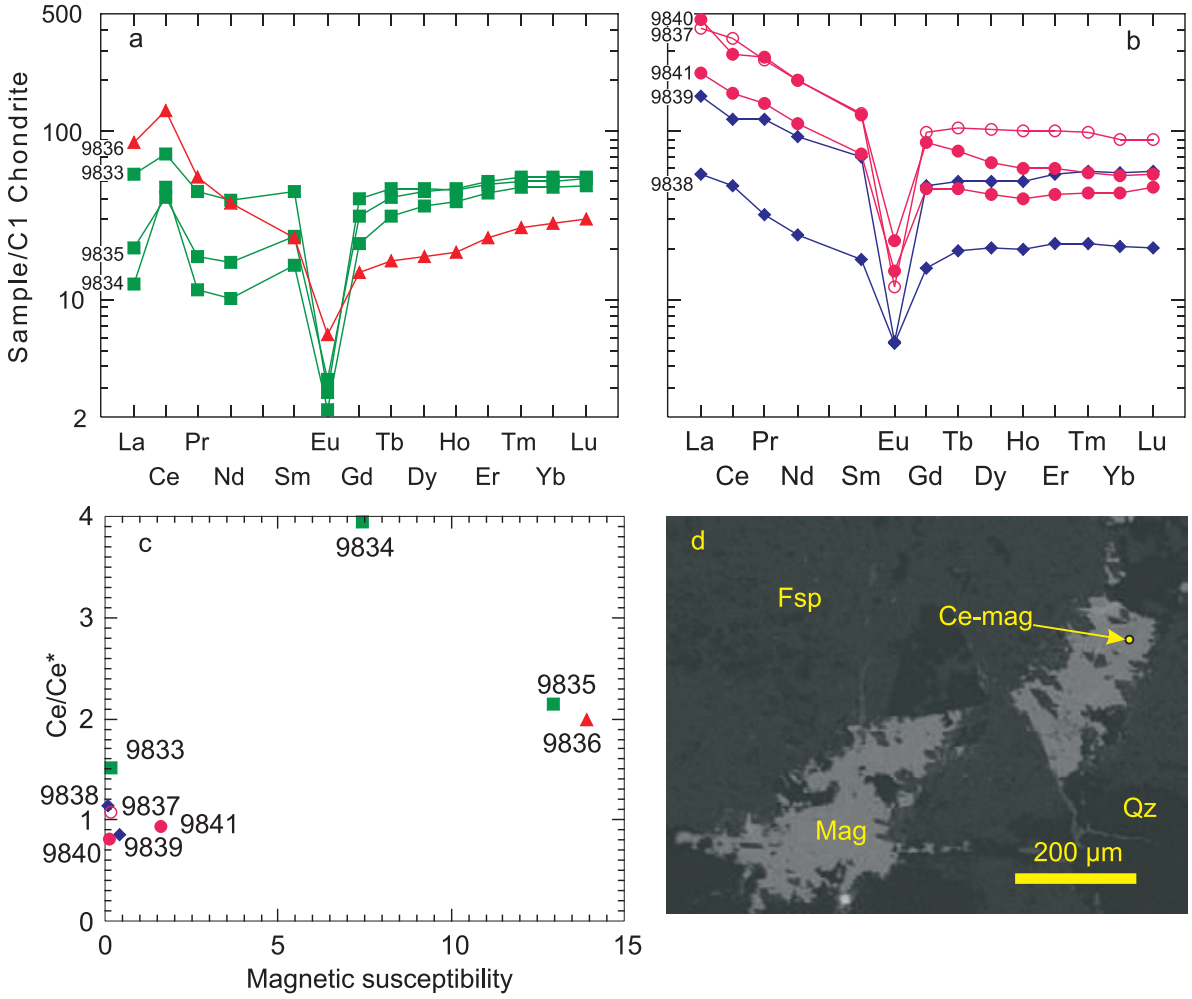


Figure 14: Chondrite-normalized whole-rock REE patterns of (a) granite samples from the northwestern part, and (b) from the eastern part of the West Moose River pluton. Figure (c) demonstrates the correlation between high magnetic susceptibility and strong positive Ce anomalies ($Ce/Ce^* = Ce_N/(La_N * Pr_N)^{0.5}$) in the studied samples. Figure (d) is a BSE image from a granite in the nearby North River pluton (sample 4824-26-2) where Ce-bearing magnetite (Ce-mag) precipitated along fractures.

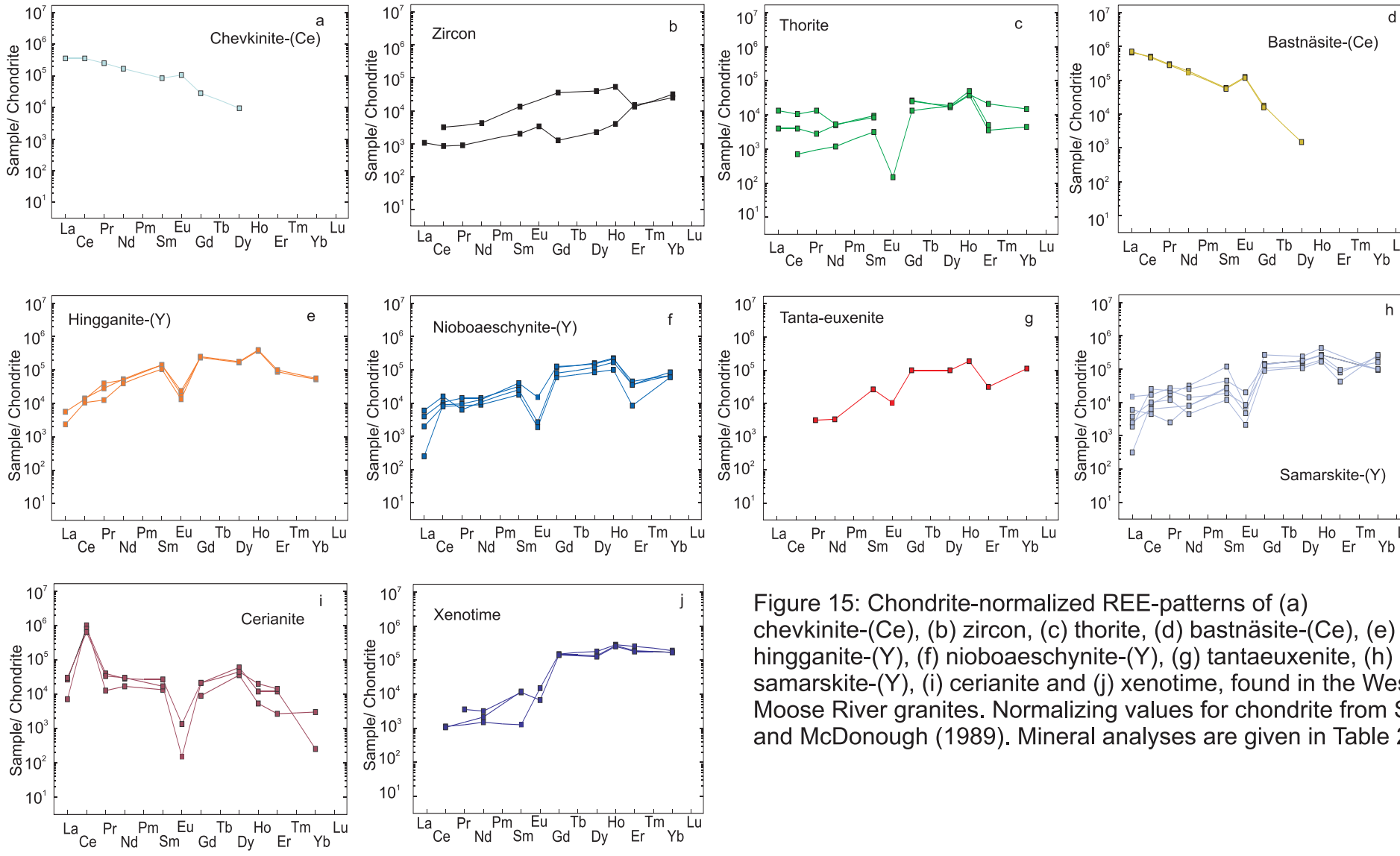


Figure 15: Chondrite-normalized REE-patterns of (a) chevkinite-(Ce), (b) zircon, (c) thorite, (d) bastnäsite-(Ce), (e) hingganite-(Y), (f) nioboaeschynite-(Y), (g) tantaeuxenite, (h) samarskite-(Y), (i) cerianite and (j) xenotime, found in the West Moose River granites. Normalizing values for chondrite from Sun and McDonough (1989). Mineral analyses are given in Table 2.

Table 1: Field and map observations of studied samples.

			UTM position		
Sample	**Colour**	**Lithology**	**Northing**	**Easting**	**Field notes**
9833	Whitish, stained brown	Rbk-bearing granite	5031883	404562	Outcrop with foliation of 025/50 SE.
9834	Whitish	Granite	5031940	404639	Large block of foliated granite, cut by quartz-filled tension gashes.
9835	Pinkish	Granite	5031940	404639	Outcrop of granite
9836A	Pinkish	Granite	5032083	404727	Brittly deformed granite.
9836B	Pink	Granite	5032083	404727	Brittly deformed granite.
9837	Pinkish	Albitized granodiorite	5032162	405963	Granite in middle of Horton Group roof pendant.
9838	Whitish	Albitized granite	5032095	405975	Granitic sample from float in contact with Horton Group.
9839	Whitish	Granite	5032095	405975	Local outcrop of granite
9840	Pinkish	Granite	5032850	406899	Small weathered outcrop of white granite with Horton Group xenoliths.
9841	Pink	Rapakivi Granite	5032952	406837	Coarse grained granite cutting Horton Group sediments.

Table 2: Representative electron microprobe analyses of hydrothermal REE-minerals found in the West Moose River granites.

Sample	9834	9834	9834	9835	9835	9835	9835	9835	9835	9835	9835	9837	9837	9837	9837	9837	9837	9837	9837	9840	9840
Mineral	Ta-eux	Nb-aes	Thr-Zrn	Thr	Che	Sam	Bsn	Bsn	Hing	Hing	Hing	Syn	Thr	Syn	Xtm	Thr	Syn	Aln	Thr	Cer	Xtm
SiO_2	5.21	8.95	19.69	17.39	19.09	0.48	0.23	0.15	26.48	27.21	26.42	0.08	18.99	0.09	0.60	19.11	b.d.	32.66	14.28	8.53	0.39
Al_2O_3	b.d.	0.55	0.06	b.d.	0.03	b.d.	b.d.	b.d.	0.07	0.27	0.69	b.d.	0.18	b.d.	b.d.	0.23	b.d.	15.58	0.79	2.64	b.d.
FeO	1.42	7.46	0.52	1.10	12.45	0.88	0.29	0.26	10.79	9.29	10.81	0.58	1.85	2.10	0.37	1.25	0.15	14.59	5.02	10.84	0.81
MnO	0.03	0.14	0.06	0.16	0.52	0.04	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.19	0.03	3.83	b.d.
MgO	b.d.	b.d.	0.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.13	b.d.	b.d.	0.11	b.d.	0.53	0.00	0.22	b.d.
CaO	0.88	1.26	1.35	0.16	0.25	0.11	0.13	0.09	1.85	1.88	1.51	15.71	1.26	14.38	0.08	1.13	18.53	10.59	2.76	0.54	0.13
Na_2O	b.d.	b.d.	0.01	0.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.07	b.d.	b.d.	b.d.	b.d.	b.d.	0.04	b.d.	b.d.
K_2O	0.02	0.04	b.d.	0.08	0.05	0.05	0.04	0.05	0.03	0.04	0.04	0.05	0.01	0.01	0.04	0.03	0.05	0.02	0.04	0.14	0.03
P_2O_5	b.d.	0.05	0.17	0.48	0.01	b.d.	0.01	0.01	0.02	0.02	b.d.	b.d.	1.36	0.05	35.98	0.46	0.04	b.d.	0.79	1.53	35.07
Nb_2O_5	14.88	20.81	0.27	b.d.	0.41	40.08	0.08	b.d.	b.d.	0.20	0.07	0.06	b.d.	b.d.	b.d.	0.27	0.03	b.d.	0.21	b.d.	b.d.
Ta_2O_5	27.32	9.30	b.d.	b.d.	0.29	3.09	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	16.55	16.26	0.03	0.76	15.10	1.83	0.26	b.d.	b.d.	0.06	b.d.	b.d.	0.01	b.d.	b.d.	0.03	b.d.	0.13	0.05	b.d.	0.09
ZrO_2	5.78	3.43	15.82	0.07	0.02	b.d.	0.05	b.d.	0.05	b.d.	b.d.	0.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.05	0.08	b.d.
HfO_2	0.66	0.31	0.41	b.d.	b.d.	0.07	b.d.	0.01	b.d.	b.d.	b.d.	b.d.	b.d.	0.02	b.d.	b.d.	b.d.	b.d.	0.59	b.d.	b.d.
Y_2O_3	16.70	10.45	2.18	0.91	0.72	23.73	0.28	0.21	28.61	28.28	29.04	2.68	8.09	2.45	48.45	8.13	3.62	0.08	4.47	0.86	47.83
La_2O_3	b.d.	0.01	0.03	0.11	9.95	0.01	18.83	20.20	0.16	0.16	0.07	10.35	b.d.	10.72	b.d.	0.08	9.18	5.23	0.19	0.74	0.03
Ce_2O_3	b.d.	0.63	0.03	0.28	24.75	0.63	35.19	34.73	1.03	0.96	0.78	23.06	0.46	25.32	0.09	0.46	22.94	12.49	0.38	56.64	b.d.
Pr_2O_3	0.04	0.10	b.d.	0.03	2.74	0.20	3.23	3.07	0.32	0.45	0.14	2.37	0.03	2.45	b.d.	b.d.	2.39	1.28	0.19	0.44	0.04
Nd_2O_3	0.19	0.68	b.d.	0.28	9.02	1.74	10.37	9.38	2.90	2.76	2.11	11.67	0.32	12.00	0.05	0.14	10.33	4.43	0.36	1.51	0.04
Sm_2O_3	0.46	0.69	b.d.	0.17	1.45	2.08	1.05	0.98	2.52	2.53	1.93	2.53	0.15	2.53	b.d.	0.26	2.00	0.65	0.09	0.48	b.d.
Eu_2O_3	0.07	0.10	b.d.	b.d.	0.72	0.05	0.83	0.80	0.13	0.16	0.09	0.79	b.d.	0.87	b.d.	0.03	0.68	0.33	0.06	0.01	b.d.
Gd_2O_3	2.35	2.94	0.16	0.64	0.68	6.17	0.41	0.39	5.72	5.70	5.95	2.19	1.41	2.07	2.72	1.69	1.64	0.23	0.55	0.52	2.42
Dy_2O_3	2.93	4.42	0.24	0.49	0.28	6.86	0.04	b.d.	4.89	4.76	5.21	0.62	2.00	0.76	4.22	2.13	0.81	0.32	0.76	1.70	3.39
Ho_2O_3	1.23	1.37	0.11	0.24	b.d.	2.70	b.d.	b.d.	2.41	2.41	2.52	0.33	0.75	0.12	1.65	0.89	0.07	b.d.	0.35	0.08	1.36
Er_2O_3	0.59	0.85	0.39	0.07	b.d.	b.d.	b.d.	b.d.	1.72	1.69	1.92	b.d.	0.82	0.03	4.29	0.69	0.11	0.22	0.70	0.22	5.08
Yb_2O_3	2.16	1.31	0.42	0.09	b.d.	1.80	b.d.	b.d.	1.00	1.02	1.09	b.d.	0.69	b.d.	3.92	0.36	b.d.	b.d.	0.57	0.01	4.80
ThO_2	0.46	3.22	44.74	74.41	0.11	2.94	0.14	b.d.	0.39	0.63	0.29	0.74	53.97	0.55	0.17	53.75	0.24	0.24	61.71	0.03	0.04
UO_2	0.20	0.78	7.35	1.73	0.04	0.52	b.d.	b.d.	0.00	0.09	b.d.	0.08	4.47	b.d.	0.04	3.15	0.08	0.05	1.12	0.04	0.04
F	0.08	0.08	0.71	0.11	b.d.	0.28	5.43	5.58	0.19	0.19	0.09	2.32	0.56	2.21	0.50	0.65	2.10	b.d.	0.59	0.21	0.53
Total	100.18	96.15	94.45	99.72	98.68	96.22	74.59	73.54	91.17	90.64	90.72	75.28	97.33	77.79	102.94	94.76	74.09	99.85	96.47	91.71	101.88

Notes: Abbreviations: Ta-eux: tantaeuxenite, Nb-Aes: nioboaeshynite, Thr: thorite, Zrn: zircon, Che: chevkinite-(Ce), Sam: samarskite-(Y), Bsn: bastnäsite-(Ce), Hing: hingganite-(Y), Syn: synchysite-(Ce), Aln: allanite-(Ce), Cer: cerianite, Xtm: xenotime, b.d.: below detection limit. Low analysis totals are generally attributed to volatiles.

Table 3: Estimated modal compositions of the studied fracture fillings.

Sample	Fig*	Chl	Fe-oxides	Ap	Tnt	Ilm	Rt	Zrn	Cal	REE	Modal Name
9835	2-1.1	13.89	77.78	0.00	0.00	0.00	0.00	8.33	0.00	0.00	**Fe-oxide-chl**
9835	2-1.2	15.79	84.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**Fe-oxide-chl**
9835	2-1.3	0.00	0.00	0.00	55.56	0.00	0.00	0.00	0.00	44.44	**Tnt-REE**
9835	2-1.4	0.00	83.33	0.00	0.00	0.00	16.67	0.00	0.00	0.00	**Fe-oxide-Rt**
9835	2-1.5	0.00	68.67	0.00	0.00	0.00	25.75	4.29	0.00	1.29	**Fe-oxide-Rt**
9835	2-1.6	0.00	78.04	0.00	0.00	0.00	18.24	1.35	0.00	2.36	**Fe-oxide-Rt**
9835	2-1.7	0.00	60.95	0.00	0.00	0.00	36.14	2.91	0.00	0.00	**Fe-oxide-Rt**
9835	2-1.8	0.00	78.93	0.00	0.00	0.00	21.07	0.00	0.00	0.00	**Fe-oxide-Rt**
9835	2-1.9	0.00	79.09	0.00	0.00	16.57	0.00	3.66	0.00	0.69	**Fe-oxide-ilm**
9835	2-1.10	0.00	65.40	0.00	0.00	0.00	32.13	2.47	0.00	0.00	**Fe-oxide-rt**
9835	2-1.11	0.00	68.35	0.00	0.00	0.00	27.40	4.25	0.00	0.00	**Fe-oxide-rt**
9835	2-1.12	0.00	99.29	0.00	0.00	0.00	0.00	0.00	0.00	0.71	**Fe-oxide**
9835	2-1.13	0.00	97.21	0.00	0.00	0.00	0.00	2.79	0.00	0.00	**Fe-oxide**
9835	2-1.14	0.00	99.90	0.00	0.00	0.00	0.00	0.10	0.00	0.00	**Fe-oxide**
9835	2-1.15	0.00	77.29	0.00	0.00	0.00	20.99	1.71	0.00	0.00	**Fe-oxide-rt**
9835	2-1.16	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**Fe-oxide**
9835	2-1.17	0.00	97.22	0.00	0.00	0.00	0.00	2.78	0.00	0.00	**Fe-oxide**
9835	2-1.18	0.00	79.66	0.00	0.00	0.00	16.62	2.87	0.00	0.86	**Fe-oxide-rt**
9837	2-2.2	68.57	24.06	0.00	0.00	0.00	7.37	0.00	0.00	0.00	**Chl-Fe-oxide**
9837	2-2.3	60.47	32.56	0.00	0.00	6.98	0.00	0.00	0.00	0.00	**Chl-Fe-oxide**
9837	2-2.4	24.23	49.37	0.00	0.00	0.00	8.38	0.00	18.03	0.00	**Fe-Oxide-Chl-Cal**
9837	2-2.5	48.65	18.15	0.00	0.00	0.00	5.41	0.00	27.80	0.00	**Chl-Cal-Fe-oxide**
9837	not shown	33.99	29.18	0.00	0.00	0.00	0.00	0.00	36.83	0.00	**Cal-chl-Fe-oxide**
9837	2-2.9	22.97	25.35	0.00	0.00	0.00	0.00	0.00	51.68	0.00	**Cal-Fe-oxide-chl**
9837	2-2.10	11.19	56.61	0.00	0.00	0.00	0.00	8.21	23.88	0.11	**Fe-oxide-cal-chl**
9837	2-2.11	12.31	24.53	0.00	0.00	0.00	0.00	9.85	52.84	0.47	**Cal-Fe-oxide-chl**
9837	2-2.12	9.72	60.40	0.00	0.00	0.00	0.00	8.25	21.63	0.00	**Fe-oxide-cal**
9837	2-2.13	31.81	49.96	0.00	0.00	0.00	0.00	4.18	14.01	0.04	**Fe-oxide-chl-cal**
9837	2-2.16	8.85	81.20	0.00	0.00	0.00	0.00	0.00	9.95	0.00	**Fe-oxide**
9837	2-2.17	13.89	33.55	0.00	0.00	0.00	12.39	7.32	32.38	0.47	**Fe-oxide-cal-chl**
9837	2-2.18	12.66	61.43	0.00	0.00	0.00	7.00	0.84	18.06	0.00	**Fe-oxide-cal-chl**
9837	2-2.19	55.64	23.03	0.00	0.00	0.00	0.00	0.00	21.24	0.09	**Chl-Fe-oxide-cal**
9837	2-2.20	48.77	51.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**Fe-oxide-chl**
9838	2-3.1	96.45	0.00	0.00	0.00	0.00	0.00	3.55	0.00	0.00	**Chl**
9838	2-3.2	81.43	0.00	0.00	0.00	0.00	11.82	6.75	0.00	0.00	**Chl-rt**
9838	2-3.3	73.84	0.00	12.84	0.00	0.00	7.54	5.78	0.00	0.00	**Chl-ap**
9838	2-3.4	83.09	0.00	0.00	0.00	0.00	9.07	7.84	0.00	0.00	**Chl**
9838	2-3.5	76.60	13.37	0.00	0.00	0.00	0.00	10.03	0.00	0.00	**Chl-Fe-oxide-zrn**
9838	2-3.6	77.80	0.00	2.97	0.00	0.00	17.39	1.83	0.00	0.00	**Chl-rt**
9838	2-3.7	76.46	0.00	0.00	0.00	2.57	20.97	0.00	0.00	0.00	**Chl-rt**
9838	2-3.8	60.46	0.00	0.00	0.00	2.40	37.15	0.00	0.00	0.00	**Chl-rt**
9838	2-3.9	68.10	0.00	0.00	0.00	0.00	22.79	9.12	0.00	0.00	**Chl-rt**
9838	2-3.10	47.91	0.00	0.00	0.00	0.00	52.09	0.00	0.00	0.00	**Rt-chl**
9838	2-3.11	82.51	0.00	0.00	0.00	0.00	9.90	7.26	0.00	0.33	**Chl**
9838	2-3.12	40.57	0.00	0.00	0.00	0.00	32.79	17.62	0.00	9.02	**Chl-rt-zrn**
9840	2-4.1	66.67	20.66	0.00	0.00	0.00	10.19	2.20	0.00	0.28	**Chl-Fe-oxide-rt**
9840	2-4.2	85.46	5.19	0.00	0.00	0.00	9.11	0.00	0.00	0.24	**Chl**
9840	2-4.3	78.06	0.00	0.00	0.00	0.00	13.04	8.66	0.00	0.24	**Chl-rt**
9840	2-4.4	62.39	0.00	0.00	0.00	0.00	34.23	3.07	0.00	0.31	**Chl-rt**
9840	2-4.5	91.93	0.00	0.00	0.00	0.00	5.94	2.12	0.00	0.00	**Chl**
9840	2-4.6	75.06	0.00	0.00	0.00	0.00	12.83	12.11	0.00	0.00	**Chl-rt-zrn**
9840	2-4.7	60.04	0.00	0.00	0.00	0.00	31.41	8.55	0.00	0.00	**Chl-rt**
9840	2-4.8	57.05	42.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**Chl-Fe-oxide**
9840	2-4.9	35.39	40.75	0.00	0.00	0.00	19.81	3.73	0.00	0.32	**Fe-oxide-chl-rt**
9840	2-4.10	22.76	44.59	0.00	0.00	0.00	20.06	11.66	0.00	0.92	**Fe-oxide-chl-rt**
9840	2-4.11	59.29	17.46	0.00	0.00	0.00	19.59	3.20	0.00	0.47	**Chl-rt-Fe-oxide**
9840	2-4.12	72.03	8.92	0.00	0.00	0.00	16.21	2.83	0.00	0.00	**Chl-rt**
9840	2-4.13	70.18	13.14	0.00	0.00	0.00	14.17	2.34	0.00	0.18	**Chl-rt-Fe-oxide**
9840	2-4.14	44.97	29.94	0.00	0.00	0.00	17.57	7.42	0.00	0.09	**Chl-Fe-oxide-rt**
9840	2-4.15	68.07	4.52	0.00	0.00	25.25	0.00	0.00	0.00	2.16	**Chl-ilm**
9840	2-4.16	39.96	25.10	0.00	0.00	11.09	7.53	0.00	0.00	16.32	**Chl-Fe-oxide-REE**
9840	2-4.17	34.06	37.49	0.00	0.00	0.00	18.55	9.42	0.00	0.48	**Fe-oxide-chl-rt**
9840	2-4.18	34.06	17.43	0.00	0.00	0.00	29.39	18.68	0.00	0.44	**Chl-rt-zrn**

Notes: Modal names are given on the basis of the three most dominant (>10 %) minerals present and in order of decreasing abundance. The amounts of minerals reported here are given in % of total covered surface. Fe-oxides include magnetite, hematite, and in some cases hydroxides such as goethite and limonite. *: refers to Appendix 2. MIneral abbreviations: chl: chlorite, Rt: rutile, Cal: calcite, Ap: apatite, Tnt: titanite, Ilm: ilmenite, Zrn: zircon.

Table 4. Average modal composition of mineralogically different types of fracture fillings and their associated REE-bearing minerals.

Sample	9835					9837											Summary: % of fracture minerals				
Mineralogical type of fracture	**Fe-oxide**	**Fe-oxide-chl**	**Fe-oxide-ilm**	**Fe-oxide-Rt**	**Tnt-REE**	**Cal-chl-Fe-oxide**	**Cal-Fe-oxide-chl**	**Chl-Cal-Fe-oxide**	**Chl-Fe-oxide**	**Chl-Fe-oxide-cal**	**Fe-oxide**	**Fe-oxide-cal**	**Fe-oxide-cal-chl**	**Fe-oxide-chl**	**Fe-Oxide-Chl-Cal**			**9835**	**9837**	**9838**	**9840**
Average modal composition of fracture filling (%)																	***Percentage in fractures***				
Chl	0.00	14.84	0.00	0.00	0.00	33.99	17.64	48.65	64.52	55.64	8.85	9.72	12.58	48.77	28.02		**Chl**	1.78	30.74	71.97	58.59
Fe-oxides	98.72	80.99	79.09	73.40	0.00	29.18	24.94	18.15	28.31	23.03	81.20	60.40	50.53	51.23	49.66		**Fe-oxides**	78.01	41.16	1.11	17.04
Ap	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**Ap**	0.00	0.00	1.31	0.00
Tnt	0.00	0.00	0.00	0.00	55.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**Tnt**	2.78	0.00	0.00	0.00
Ilm	0.00	0.00	16.57	0.00	0.00	0.00	0.00	0.00	3.49	0.00	0.00	0.00	0.00	0.00	0.00		**Ilm**	0.83	0.46	0.41	2.00
Rt	0.00	0.00	0.00	23.89	0.00	0.00	0.00	5.41	3.68	0.00	0.00	0.00	6.46	0.00	4.19		**Rt**	11.95	2.70	18.41	15.51
Zrn	1.13	4.17	3.66	2.21	0.00	0.00	4.92	0.00	0.00	0.00	0.00	8.25	5.46	0.00	2.09		**Zrn**	2.10	2.57	5.80	5.32
Cal	0.00	0.00	0.00	0.00	0.00	36.83	52.26	27.80	0.00	21.24	9.95	21.63	24.77	0.00	16.02		**Cal**	0.00	21.79	0.00	0.00
REE	0.14	0.00	0.69	0.50	44.44	0.00	0.24	0.00	0.00	0.09	0.00	0.00	0.19	0.00	0.02		**REE**	2.55	0.08	0.78	1.24
REE-bearing minerals present	Xtm		Xtm	Xtm, Hing-Y	Aln		Aln, Syn, Xtm	Sam (traces)		Syn			Syn		Syn, Thr						
% of total modal fracture surface in sample	28	12	5	50	5	6.6	13.3	6.6	13.3	6.6	6.6	6.6	20	6.6	13.3						

Sample	9838						9840														
Mineralogical type of fracture	**Chl**	**Chl-ap**	**Chl-Fe-oxide-zrn**	**Chl-Rt**	**Chl-rt-zrn**	**Rt-chl**	**Chl**	**Chl-Fe-oxide**	**Chl-Fe-oxide-REE**	**Chl-Fe-oxide-Rt**	**Chl-ilm**	**Chl-Rt**	**Chl-Rt-Fe-oxide**	**Chl-rt-zrn**	**Fe-oxide-chl-Rt**						
Average modal composition of fracture filling (%)																	***as a percentage in the whole rock***				
Chl	87.35	73.84	76.60	72.85	40.57	47.91	88.70	57.05	39.96	55.82	68.07	68.13	64.73	54.56	30.74		**Chl**	0.05	2.37	2.16	2.75
Fe-oxides	0.00	0.00	13.37	0.00	0.00	0.00	2.59	42.95	25.10	25.30	4.52	2.23	15.30	8.72	40.94		**Fe-oxides**	2.34	3.17	0.03	0.80
Ap	0.00	12.84	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**Ap**	0.00	0.00	0.04	0.00
Tnt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**Tnt**	0.08	0.00	0.00	0.00
Ilm	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	11.09	0.00	25.25	0.00	0.00	0.00	0.00		**Ilm**	0.02	0.04	0.01	0.09
Rt	6.32	7.54	0.00	22.02	32.79	52.09	7.53	0.00	7.53	13.88	0.00	23.72	16.88	21.11	19.47		**Rt**	0.36	0.21	0.55	0.73
Zrn	6.22	5.78	10.03	3.54	17.62	0.00	1.06	0.00	0.00	4.81	0.00	5.78	2.77	15.39	8.27		**Zrn**	0.06	0.20	0.17	0.25
Cal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		**Cal**	0.00	1.68	0.00	0.00
REE	0.11	0.00	0.00	0.00	9.02	0.00	0.12	0.00	16.32	0.18	2.16	0.14	0.32	0.22	0.58		**REE**	0.076	0.006	0.023	0.058
REE- bearing minerals present	Cer, Syn				Nb-aes?, Eux		Aes, Lan		Cer, Thr, Xtm	Cer, Xtm, Eux, Sam?, Nb-Aes, Thr	Bsn, Thr, Xtm	Xtm, Sam	Sam, Thr, Aes	Nb-Aes	Xtm						
% of total modal fracture surface in sample	25	8.3	8.3	41.6	8.3	8.3	11.1	5.5	5.5	11.1	5.5	22.2	11.1	11.1	16.6						

Notes: Modal names of fractures as in Table 3. Mineral abbreviations: Chl: chlorite, Ap: apatite, Tnt: titanite, Ilm: ilmenite, Rt: rutile, Zrn: zircon, Cal: calcite, Cer: cerianite, Syn: synchysite-(Ce), Aes: aeschynite, Nb-Aes: nioboaeschynite, Eux: euxenite, Lan: lanthanite, Thr: thorite, Bsn: bastnäsite-(Ce), Sam: samarskite-(Y), Xtm: xenotime.

Table 5: Average magnetic susceptibility of the studied samples.

					Fracture analysis		Whole-rock REE	
Sample	**Lithology**	**Slab thickness (mm)**	**No. of slabs measured**	**Average magnetic susceptibility (in 10^{-3} SI units)***	**Total modal fracture surface (%)**	**Fe-oxide bearing fractures (%)**	**LREE (ppm)**	**HREE (ppm)**
9833	Granite	11.38	1	0.15	3.5	n.a.	87.2	43.4
		11.38, 7.19	2	0.17	n.a.	n.a.		
9834	Granite	11.09	1	7.54	n.a.	n.a.	39.9	34.3
		10.1	1	9.97				
		7.44	1	4.77				
9835	Granite	12.7	1	12.97	3	95	42.9	41.8
9836B	Granite	7.73	1	1.43	n.a.	n.a.	128.3	19.3
		8.14	1	2.05				
		15.08	1	1.34				
9837	Granodiorite	4.73	1	13.9	7.7	100	454.2	92.6
9838	Granite	8.73, 6	2	0.15	3	8	59.7	18.4
9839	Granite	7.33, 3.49	2	0.09	n.a.	n.a.	175.6	49.0
		7.69, 3.37	2	0.09				
		7.50, 6.69	2	0.09				
9840	Granite	6.12, 6.72	2	0.43	4.7	49	427.4	62.4
9841	Granite	10.36	1	0.07	n.a.	n.a.	232.8	40.7
		10.24	1	0.13				
		8.88, 8.82	2	0.14				
*= Average susceptibility based on four measurements, n.a.= not available.								

Table 6: Whole-rock major and trace element composition of the studied samples.

Sample	9833	9834	9835	9836A	9837	9838	9839	9840	9841
Major oxides (wt. %)									
SiO_2	77.87	79.13	77.33	75.66	61.97	71.10	78.27	75.66	76.99
TiO_2	0.07	0.08	0.08	0.17	0.33	0.09	0.06	0.19	0.16
Al_2O_3	11.25	11.40	11.48	12.18	16.98	17.04	11.61	12.24	12.05
$Fe_2O_{3(T)}$	1.54	1.46	1.77	1.66	3.74	0.81	1.02	1.48	1.51
MnO	0.03	0.01	0.01	0.02	0.05	0.01	0.01	0.02	0.02
MgO	0.02	0.02	b.d.	0.11	0.15	0.12	0.08	0.17	0.23
CaO	0.04	0.02	0.02	0.24	2.96	0.18	0.11	0.22	0.36
Na_2O	3.92	4.03	3.92	3.98	9.51	9.33	4.00	3.43	3.74
K_2O	4.23	4.12	4.18	4.29	0.09	0.14	3.73	5.00	3.91
P_2O_5	0.02	b.d.	b.d.	0.02	0.02	0.06	0.02	0.03	0.03
F	b.d.	b.d.	0.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
LOI	0.40	0.36	0.30	0.55	2.80	0.44	0.50	0.57	0.58
Total	99.39	100.60	99.10	98.89	98.62	99.32	99.40	99.01	99.58
Trace elements (ppm)									
Ba	11	30	25	305	23	61	56	285	263
Rb	236	138	161	114	1	3	127	133	124
Sr	b.d.	4	3	34	42	38	12	30	22
Y	66.6	61.3	78.7	27	175	26.7	78.1	106	52.5
Zr	322	356	325	290	750	251	200	346	247
Nb	45.3	44.2	30.5	27.4	47.9	24.9	57.8	36.9	48.6
V	b.d.	b.d.	b.d.	7	38	b.d.	5	7	b.d.
Cr	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Co	b.d.	1	1	3	12	b.d.	1	3	3
Ni	3	3	4	5	7	5	5	5	5
Cu	2	2	2	10	6	12	4	17	11
Zn	98	4	5	10	15	11	17	15	18
S	b.d.	b.d.	b.d.	b.d.	0.16	b.d.	b.d.	0.01	b.d.
Ga	25	24	24	19	38	36	27	25	26
Ge	2.8	2	2.2	2.1	1.6	0.9	2.8	2.7	2.4
Ag	0.5	0.3	0.4	b.d.	0.3	b.d.	b.d.	b.d.	b.d.
Sn	11	3	4	2	2	4	4	2	4
Sb	0.7	0.2	0.2	0.3	b.d.	b.d.	0.3	0.5	0.4
Sc	b.d.	b.d.	b.d.	2	3	1	b.d.	3	2
Cs	1.9	0.5	0.6	1	b.d.	0.1	0.4	1.3	1.7
La	13.2	2.9	4.8	20.3	96.6	13.2	38.3	109.0	53.0
Ce	44.9	28.6	24.8	81.4	218.0	29.2	71.9	177.0	102.0
Pr	4.2	1.1	1.7	5.1	25.3	3.0	11.2	26.2	14.0
Nd	18.1	4.7	7.8	17.6	93.9	11.3	43.1	94.7	51.7
Sm	6.7	2.4	3.6	3.5	19.7	2.6	10.8	19.2	11.2
Eu	0.2	0.1	0.2	0.4	0.7	0.3	0.3	1.3	0.9
Gd	8.2	4.4	6.5	3.0	20.1	3.2	9.7	17.5	9.4
Tb	1.7	1.2	1.5	0.6	3.9	0.7	1.9	2.9	1.7
Dy	11.7	9.1	11.2	4.6	26.1	5.2	12.8	16.6	10.8
Ho	2.6	2.2	2.6	1.1	5.6	1.1	2.8	3.4	2.3
Er	7.9	7.1	8.4	3.8	16.8	3.6	9.1	9.9	7.0
Tm	1.3	1.2	1.4	0.7	2.5	0.6	1.5	1.5	1.1
Yb	8.6	7.9	9.0	4.8	15.2	3.5	9.7	9.3	7.3
Lu	1.3	1.2	1.4	0.8	2.3	0.5	1.5	1.4	1.2
Hf	12	13	12	9	21	8	10	10	10
Ta	3.6	3.4	2.6	2.5	3.5	2.2	5.1	2.6	4.2
W	1.1	1.7	1.8	1.1	1.8	0.7	2.1	1.8	1.6
Tl	0.84	0.34	0.43	0.23	b.d.	b.d.	0.22	0.32	0.5
Pb	b.d.	b.d.	b.d.	16	b.d.	b.d.	b.d.	13	16
Bi	0.7	0.1	0.1	b.d.	b.d.	b.d.	0.1	0.1	b.d.
Be	6	4	5	4	7	6	6	5	6
Th	16.8	17.7	18.4	22.1	22.4	8.45	22.9	21	20.8
U	4.57	5.49	5.75	4.47	4.24	3.01	5.68	2.52	5.1

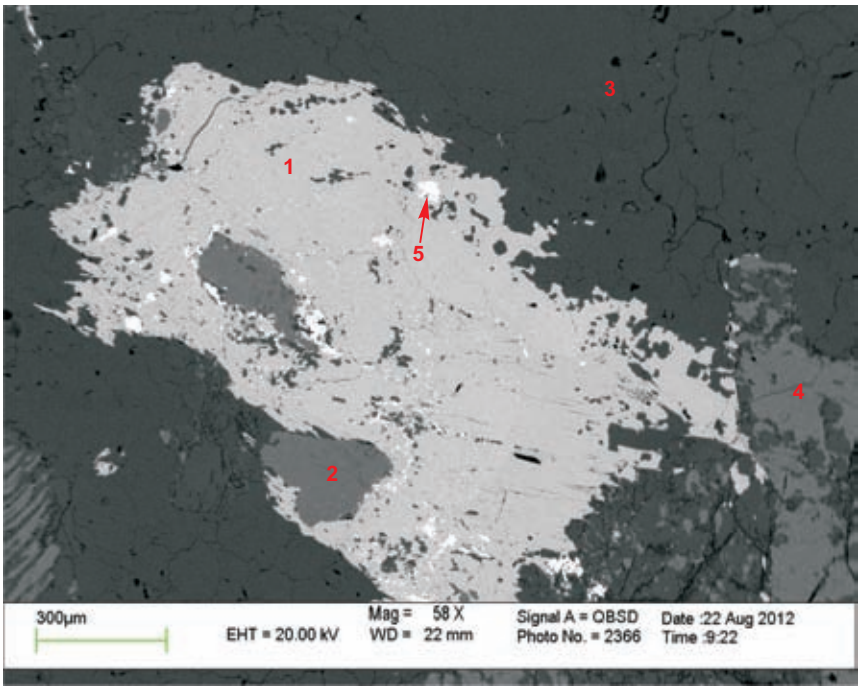
Notes: All major and trace elements were determined by fusion ICP-MS except for selected trace elements (Ni, Cu, S, Ag and Pb) that were determined by total digestion ICP-MS, b.d. : below detection limit.

Table 7: Identified REE-bearing minerals in each studied sample.

Sample	9833	9834	9835	9836 (A,B)	9837	9838	9839	9840	9841
Identified REE-bearing minerals	Zircon	Niobo-aeschynite-(Y), Tantaeuxenite, Thorite, Zircon, Xenotime	Chevkinite-(Ce), Bastnäsite-(Ce), Hingganite-(Y), Samarskite-(Y), Thorite, Zircon, Xenotime	Samarskite-(Y), Nb-rich Ce-Pb-bearing phase Thorite, Allanite-(Ce)	Synchysite-(Ce), Hingganite-(Y), Samarskite-(Y), Thorite, Xenotime, Zircon, Allanite-(Ce)	Samarskite-(Y), Nb-mineral, Chernovite-(Y)?, Thorite, Xenotime, Zircon	Niobo-aeschynite-(Y), Samarskite-(Y), Hingganite-(Y) , Thorite, Zircon	Cerianite, Bastnäsite-(Ce), Samarskite-(Y), Thorite, Xenotime, Zircon	Zircon
ΣREE (ppm, in whole-rock)	130.6	74.2	84.8	147.7	546.7	78	224.6	490	273.5

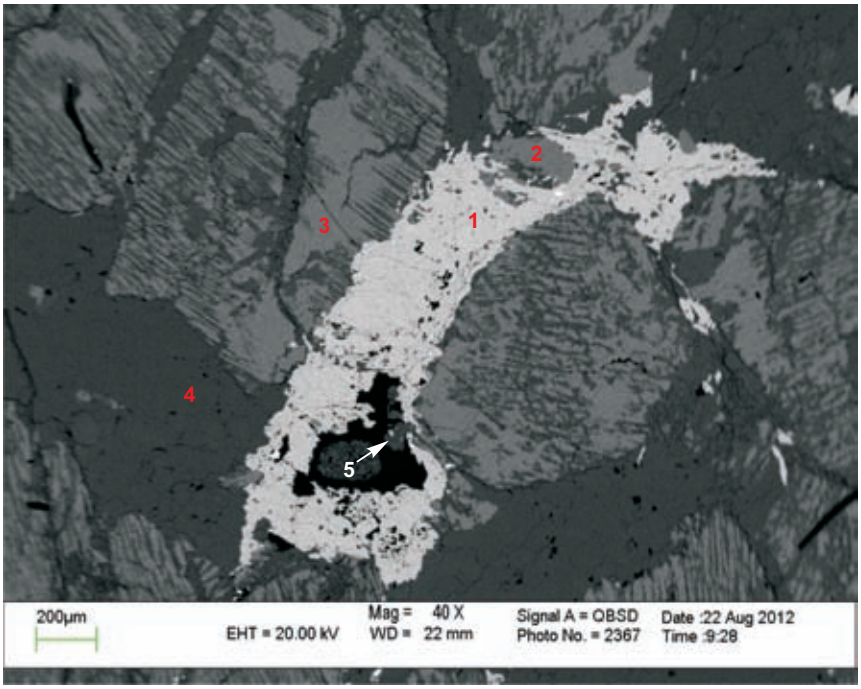
Appendix 1: Scanning Electron Microscope Backscattered Electron Images and chemical analyses of important major and accessory minerals from representative granitic rocks in the West Moose River pluton

Appendix 1-1: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9833



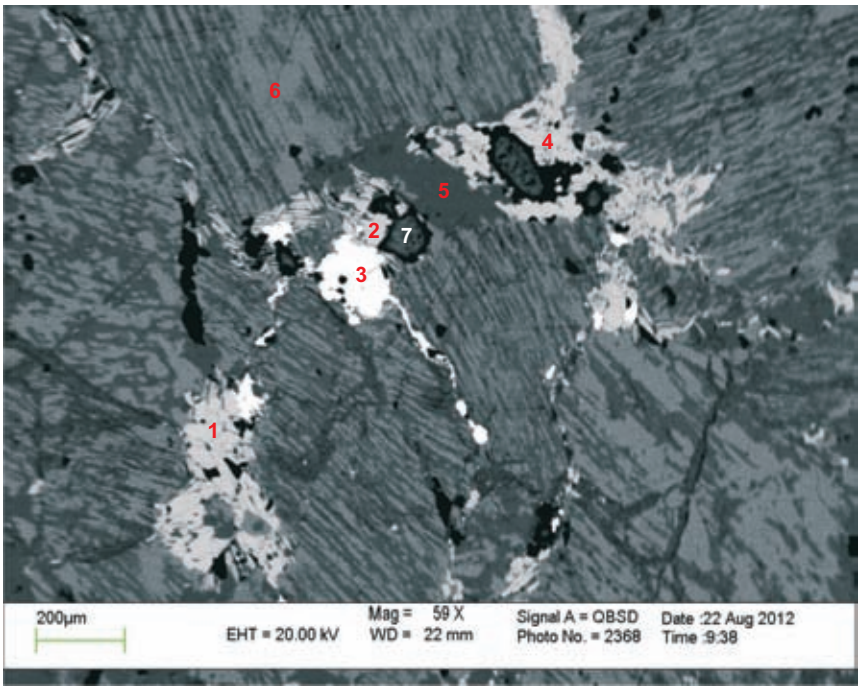
1. Riebeckite
2. K-feldspar
3. Quartz
4. K-feldspar
5. Ilmenite

Figure 1-1.1: West Moose River Pluton 9833; K-feldspar (analysis 2) replaced by riebeckite (analysis 1).



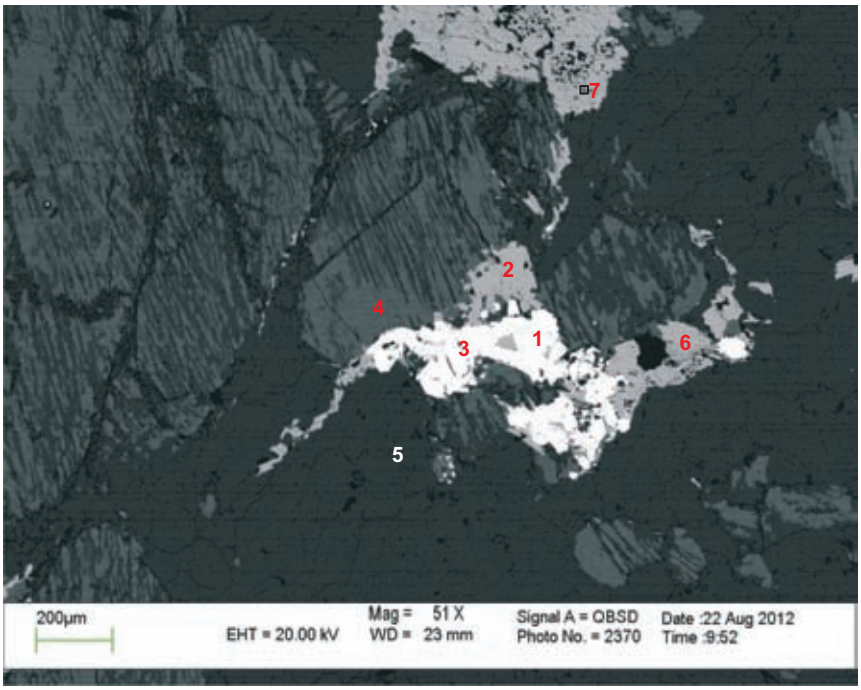
1. Riebeckite
2. K-feldspar
3. K-feldspar (with high Fe)
4. Quartz
5. Albite

Figure 1-1.2: West Moose River Pluton 9833; K-feldspar (analyses 2&3) with some albitization, partly replaced by riebeckite (analysis 1).



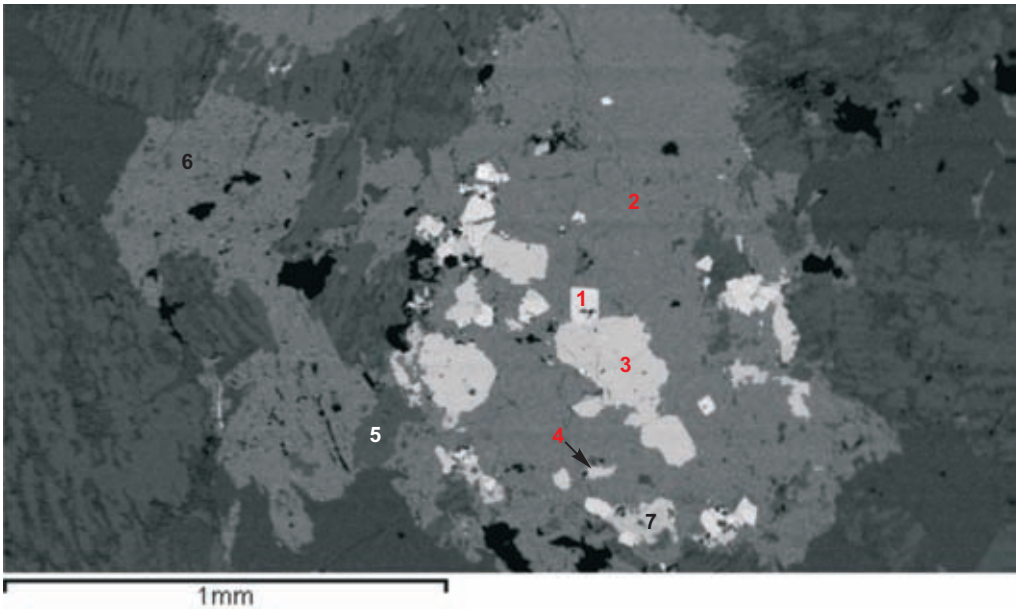
1. Riebeckite
2. Riebeckite
3. Ti-Magnetite
4. Riebeckite
5. Quartz
6. K-feldspar
7. Bad Spot

Figure 1-1.3: West Moose River Pluton 9833; stringers of riebeckite (analyses 1&4) interstitially of K-feldspar(analysis 6).



1. Ilmenite (contaminated with Si)
2. Riebeckite
3. Zircon
4. K-feldspar
5. Quartz
6. Riebeckite
7. K-feldspar inclusion in riebeckite

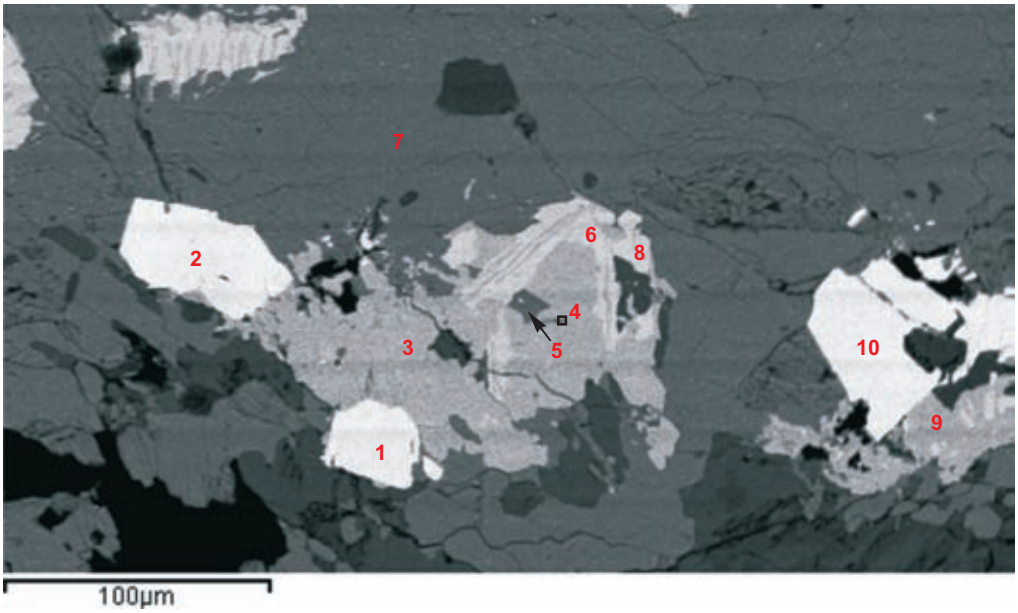
Figure 1-1.4:West Moose River Pluton 9833; riebeckite (analyses 2 & 6) and ilmenite (analysis 1 & 3) fill fractures and pores.



1. Zircon
2. Riebeckite
3. Magnetite
4. Ti-Magnetite
5. K-feldspar
6. Riebeckite*
7. Ilmenite

*Likely there is a problem with the location of the spot, as TiO_2 content is unusually high.

Figure 1-1.5: West Moose River Pluton 9833 BSE image; magnetite, zircon, and ilmenite fill dissolution voids in riebeckite.



1. Zircon
2. Zircon
3. Ilmenite
4. Ilmenite (with Si)
5. Riebeckite
6. Ti-Magnetite
7. Riebeckite
8. Magnetite +Ilmenite
9. Ilmenite
10. Zircon

Figure 1-1.6: West Moose River Pluton 9833 BSE image; magnification of figure 5 (analysis 4 & 7). Riebeckite relic (analysis 5) is in ilmenite (analysis 4).

Table 1-1A: EDS analyses of minerals from sample 9833.

Sample	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833
Fig	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3	3
Position	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7
Mineral	Rbk	Kfs	Qz	Kfs	Ilm	Rbk	Kfs	Kfs (+Fe)	Qz	Ab	Rbk	Rbk	Ti-Mag	Rbk	Qz	Kfs	Bad Spot
SiO_2	55.84	66.88	100.00	66.55	b.d.	56.77	66.95	65.72	100.00	68.99	58.89	58.57	b.d.	58.80	100.00	69.21	73.54
Al_2O_3	1.02	17.74	b.d.	17.64	b.d.	1.88	17.77	18.87	b.d.	18.16	b.d.	b.d.	b.d.	1.38	b.d.	17.70	1.06
FeO	32.04	b.d.	b.d.	b.d.	36.50	31.53	b.d.	2.30	b.d.	b.d.	32.63	32.25	88.49	31.07	b.d.	b.d.	b.d.
MnO	1.17	b.d.	b.d.	b.d.	9.84	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.99	1.36	0.68	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.19
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	1.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.78
Na_2O	8.07	0.87	b.d.	0.77	b.d.	8.48	0.87	b.d.	b.d.	12.85	8.48	8.19	b.d.	8.08	b.d.	8.67	12.75
K_2O	b.d.	14.51	b.d.	15.04	b.d.	b.d.	14.40	13.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.42	0.67
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	1.87	b.d.	b.d.	b.d.	53.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.15	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Notes: All EDS analyses are normalised to a 100.0 % total. Abbreviations: Ab: albite, Ilm: ilmenite, Kfs: K-feldspar, Mag: magnetite, Rbk: riebeckite, Qz: quartz, Zrn: zircon, b.d.: below detection limit.																

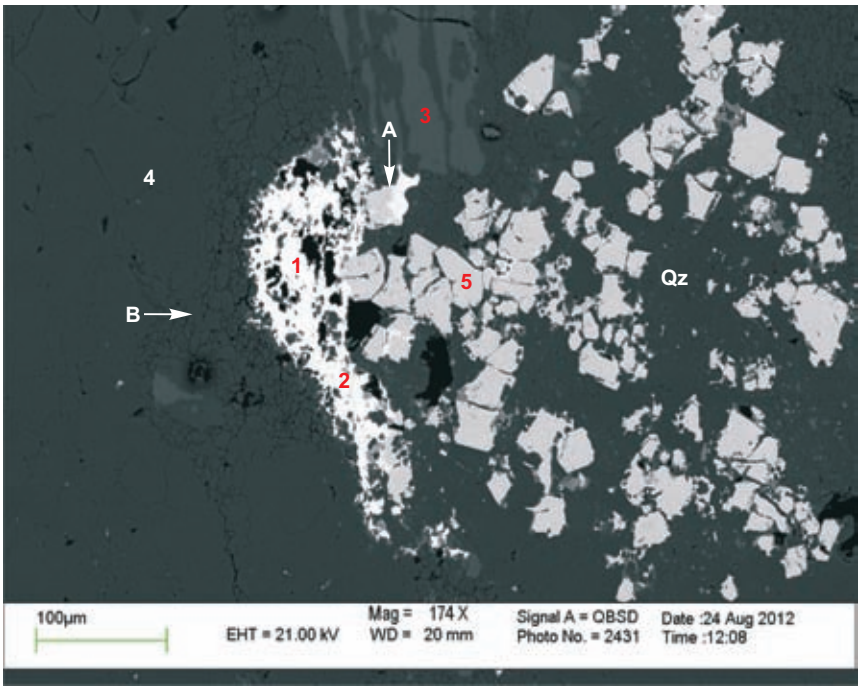
Table 1-1A: EDS analyses of minerals from sample 9833.

Sample	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833	9833
Fig	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6
Position	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3
Mineral	Ilm(+Si)	Rbk	Zrn	Kfs	Qz	Rbk	Kfs in Rbk	Zrn	Rbk	Ti-Mag	Ti-Mag	Kfs	Rbk (+TiO_2)	Ilm	Zrn	Zrn	Ilm
SiO_2	2.63	58.52	32.57	66.79	100.00	59.17	66.05	33.34	58.24	b.d.	b.d.	67.51	51.40	b.d.	31.31	33.13	b.d.
Al_2O_3	b.d.	1.16	b.d.	18.54	b.d.	b.d.	16.51	b.d.	0.90	b.d.	b.d.	18.06	1.18	b.d.	b.d.	b.d.	b.d.
FeO	36.53	32.48	1.20	b.d.	b.d.	32.80	4.57	b.d.	31.30	93.13	75.89	b.d.	31.88	34.14	b.d.	b.d.	36.71
MnO	8.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.85	1.00	3.73	b.d.	2.02	12.19	b.d.	b.d.	9.51
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	7.84	b.d.	b.d.	b.d.	8.03	1.99	b.d.	7.88	b.d.	b.d.	7.70	7.94	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	14.67	b.d.	b.d.	10.87	b.d.	b.d.	b.d.	b.d.	6.73	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	52.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.86	20.37	b.d.	5.58	53.66	b.d.	b.d.	53.78
ZrO_2	b.d.	b.d.	66.23	b.d.	b.d.	b.d.	b.d.	66.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	68.69	66.87	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 1-1A: EDS analyses of minerals from sample 9833.

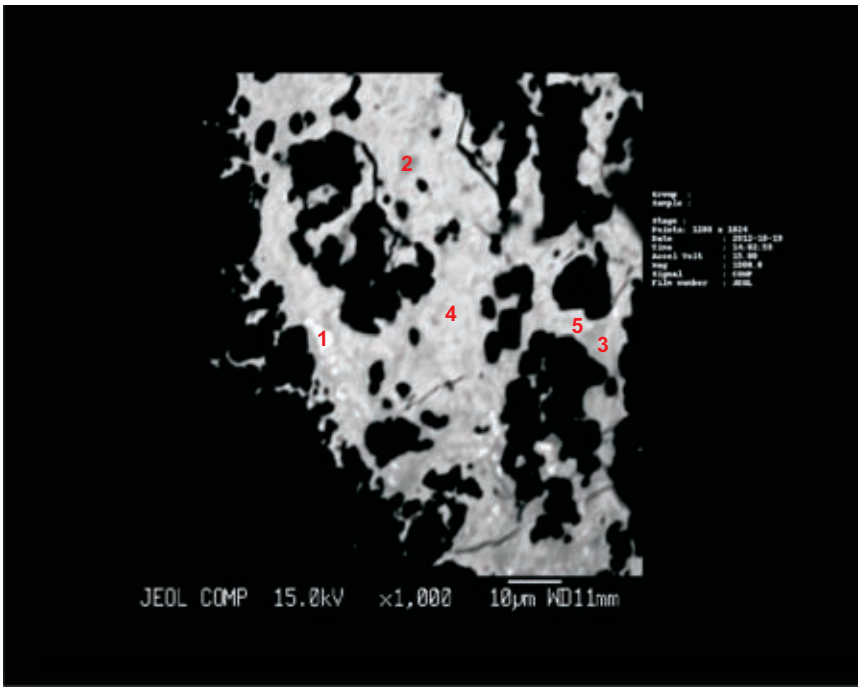
Sample	9833	9833	9833	9833	9833	9833	9833
Fig	6	6	6	6	6	6	6
Position	4	5	6	7	8	9	10
Mineral	Ilm (+ Si)	Rbk	Ti-Mag	Rbk	Mag (+Ilm)	Ilm	Zrn
SiO_2	4.79	51.96	b.d.	58.96	b.d.	b.d.	31.9
Al_2O_3	b.d.	1.24	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	39.03	36.89	91.69	32.04	61.74	35.94	b.d.
MnO	8.04	0.8	1.27	b.d.	6.22	9.44	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	7.46	b.d.	8.44	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	0.55	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	48.14	1.65	7.04	b.d.	32.04	54.62	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	68.1
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Appendix 1-2: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9834



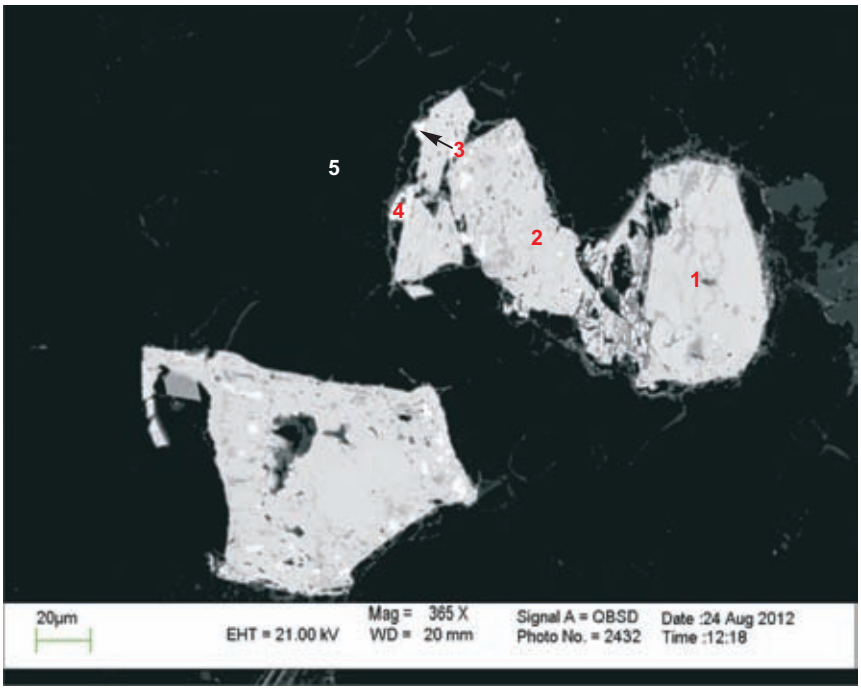
1. Nioboaeschynite-(Y)
2. Nioboaeschynite-(Y)
3. K-feldspar
4. Quartz
5. Magnetite

Figure 1-2.1a: West Moose River Pluton 9834 EDS analyses; patches of nioboaeschynite-Y and magnetite (Position A). The nioboaeschynite-(Y) seems to overgrow magnetite. Fracturing (position B) possibly due to volume reduction of precursor mineral by alteration close to nioboaeschynite-(Y) (analyses 1&2). Fine-grained quartz (Qz) forms between magnetite and is likely of secondary origin.



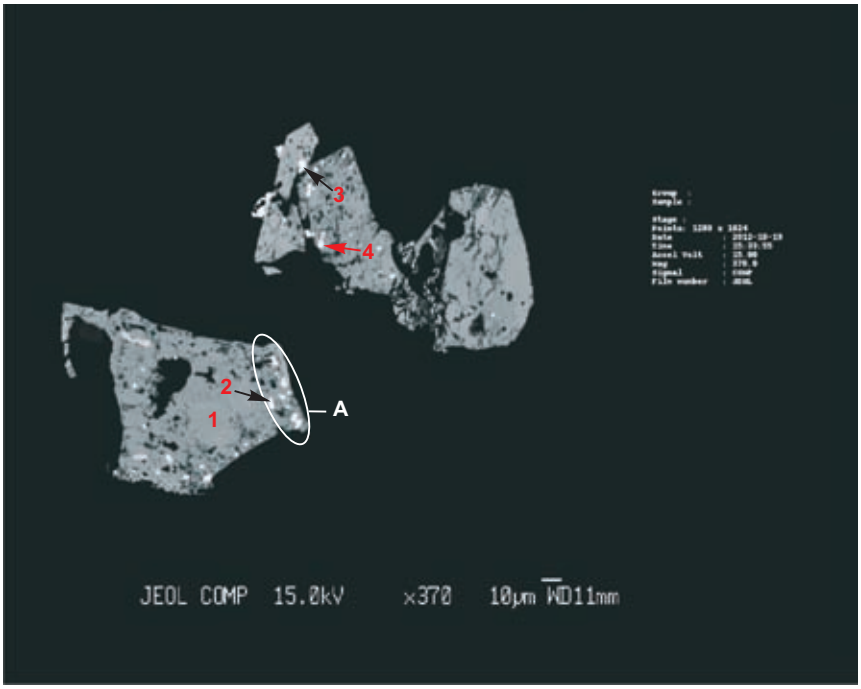
1. Tantaeuxenite
2. Zircon
3. Bad spot
4. Nioboaeschynite-(Y)
5. Nioboaeschynite-(Y)

Figure 1-2.1b: West Moose River Pluton 9834 WDS analyses; magnification of figure 1a (analyses 1-2). Co-occurrence of nioboaeschynite-(Y), zircon, and tanteuxenite. Tanteuxenite is possibly later than nioboaeschynite-(Y).



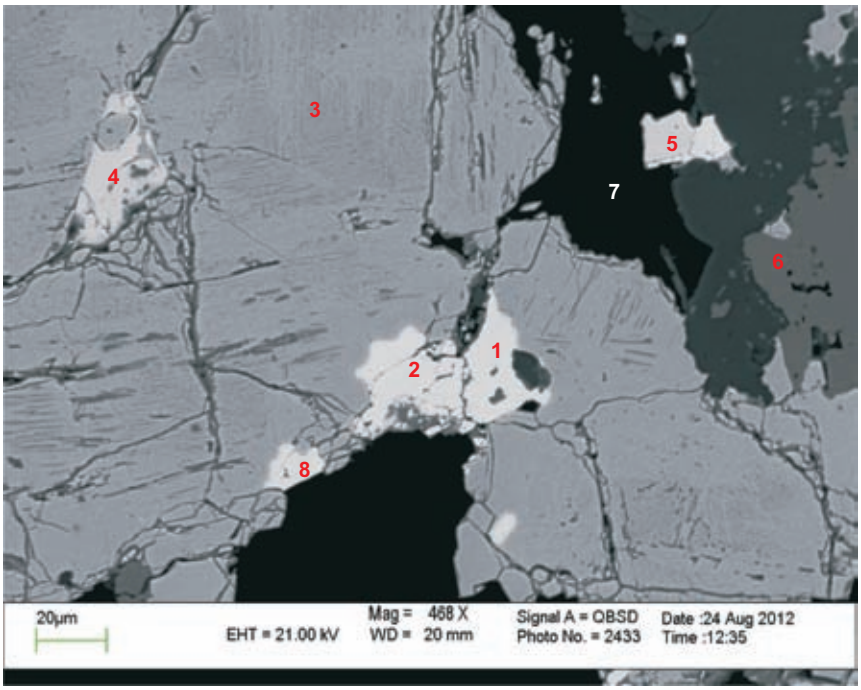
1. Zircon
2. Zircon
3. Thorite
4. Thorite
5. Quartz

Figure 1-2.2a: West Moose River Pluton 9834 EDS analyses; zircon grains, rimmed in places by later thorite crystals (analyses 3&4)



1. Zircon
2. Thorite-Zircon
3. Thorite
4. Thorite-Zircon

Figure 1-2.2b: West Moose River Pluton 9834 WDS analyses; porous zircon crystal is overgrown by a zone of small thorite grains (position A).



1. Xenotime
2. Xenotime
3. Magnetite
4. Zircon
5. Zircon
6. Rutile
7. Pore
8. Xenotime

Figure 1-2.3: West Moose River Pluton 9834; secondary xenotime (analyses 1, 2,&8) fill fractures and penetrate fractured magnetite (analysis 3). Hydrothermal zircon (analysis 4) is also filling fractures.

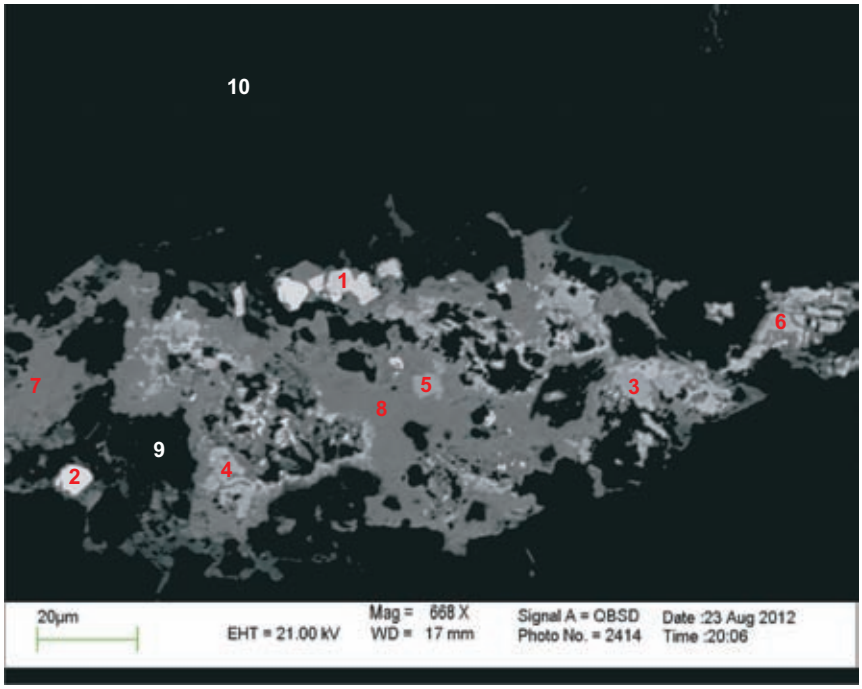
Table 1-2A: EDS analyses of minerals from sample 9834.

Sample	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834	9834
Fig	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	3	3	3
Position	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8
Mineral	Nb-aes	Nb-aes	Kfs	Qz	Mag	Zrn	Zrn	Thr	Thr	Qz	Xtm(?)	Xtm	Ti-Mag	Zrn	Zrn	Rt	Pore	Xtm
SiO_2	5.62	b.d.	66.89	100.00	b.d.	32.65	32.42	14.87	16.80	100.00	b.d.	1.85	b.d.	32.53	32.70	0.85	b.d.	b.d.
Al_2O_3	b.d.	b.d.	17.49	b.d.	b.d.	b.d.	b.d.	b.d.	2.51	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	4.45	8.73	b.d.	b.d.	100.00	b.d.	b.d.	7.18	4.31	b.d.	0.58	b.d.	88.90	1.12	b.d.	2.16	b.d.	1.04
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	0.63	1.45	b.d.	b.d.	b.d.	b.d.	b.d.	1.01	3.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	0.61	b.d.	b.d.	b.d.	b.d.	b.d.	1.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	15.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.30	2.94	b.d.	17.66	40.09	b.d.	b.d.	b.d.	b.d.	b.d.	39.27
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	17.28	29.78	b.d.	b.d.	b.d.	b.d.	b.d.	7.06	8.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.57	b.d.	b.d.
Ta_2O_5	6.70	12.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	12.83	22.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.10	b.d.	b.d.	92.41	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	67.35	67.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.35	67.30	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	7.12	12.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	22.57	50.50	b.d.	b.d.	b.d.	b.d.	b.d.	52.43
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce2O3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd2O3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.70	2.96	b.d.	b.d.	b.d.	b.d.	b.d.	3.13
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.80	3.23	b.d.	b.d.	b.d.	b.d.	b.d.	4.13
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.58	59.40	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.
Ag_2O	b.d.	3.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	45.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	55.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00
Notes: All analyses normalised to a 100.0% total. Abbreviations: Nb-aes: nioboaeschynite-(Y), Thr: thorite, Xtm: xenotime, Rt: rutile.																		

Table 1-2B: Electron microprobe analyses of REE-minerals from sample 9834.

Sample	9834	9834	9834	9834	9834	9834	9834	9834	9834
Fig	1	1	1	1	1	2	2	2	2
Pos.	1	2	3	4	5	1	2	3	4
Mineral	Ta-eux	Zrn	?	Nb-aes	Nb-aes	Zrn	Thr-Zrn	Thr	Thr-Zrn
SiO_2	5.21	29.06	12.79	8.30	8.95	33.69	19.69	16.00	22.76
Al_2O_3	b.d.	0.17	0.90	0.44	0.55	b.d.	0.06	0.12	0.07
FeO	1.42	1.20	7.36	6.75	7.46	0.11	0.52	3.06	2.45
MnO	0.03	0.05	0.16	0.16	0.14	b.d.	0.06	0.02	0.05
MgO	b.d.	0.02	0.08	0.01	b.d.	0.02	0.03	b.d.	b.d.
CaO	0.88	0.30	1.14	1.23	1.26	0.01	1.35	1.06	0.71
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	0.01	0.01	b.d.	0.04
K_2O	0.02	0.05	0.07	0.02	0.04	0.03	b.d.	0.04	b.d.
P_2O_5	b.d.	0.15	0.18	0.04	0.05	0.32	0.17	0.21	0.12
Nb_2O_5	14.88	4.04	15.69	22.19	20.81	b.d.	0.27	0.40	b.d.
Ta_2O_5	27.32	2.08	6.07	9.22	9.30	b.d.	b.d.	b.d.	0.04
TiO_2	16.55	2.72	12.32	15.40	16.26	b.d.	0.03	b.d.	b.d.
ZrO_2	5.78	43.59	7.46	3.11	3.43	62.14	15.82	9.90	32.05
HfO_2	0.66	7.98	0.84	0.29	0.31	1.60	0.41	0.31	0.83
Y_2O_3	16.70	4.74	10.23	10.60	10.45	0.86	2.18	3.07	1.39
La_2O_3	b.d.	b.d.	b.d.	0.11	0.01	0.03	0.03	b.d.	b.d.
Ce_2O_3	b.d.	0.23	0.57	0.75	0.63	0.06	0.03	0.05	0.03
Pr_2O_3	0.04	b.d.	0.18	0.16	0.10	0.01	b.d.	b.d.	b.d.
Nd_2O_3	0.19	0.23	0.58	0.78	0.68	b.d.	b.d.	0.07	0.05
Sm_2O3	0.46	0.24	0.41	0.56	0.69	0.04	b.d.	0.06	b.d.
Eu_2O_3	0.07	b.d.	0.02	b.d.	0.10	0.02	b.d.	b.d.	b.d.
Gd_2O_3	2.35	0.83	2.07	2.87	2.94	0.03	0.16	0.32	0.21
Dy_2O_3	2.93	1.13	3.43	4.53	4.42	0.06	0.24	0.53	0.20
Ho_2O_3	1.23	0.34	1.12	1.42	1.37	0.03	0.11	0.26	0.02
Er_2O_3	0.59	0.25	1.07	0.69	0.85	0.28	0.39	0.40	0.23
Yb_2O_3	2.16	0.61	1.50	1.27	1.31	0.48	0.42	0.29	0.20
ThO_2	0.46	0.22	2.76	3.18	3.22	0.07	44.74	51.13	21.12
UO_2	0.20	0.36	0.86	0.63	0.78	1.19	7.35	4.83	10.69
F	0.08	0.14	0.09	0.04	0.08	0.03	0.71	0.33	0.24
Total	100.18	100.66	89.89	94.72	96.15	101.09	94.45	92.31	93.38
Abbreviations: Ta-eux: tantaeuxenite.									

Appendix 1-3: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9835



1. Samarskite-(Y)
2. Thorite
3. Bastnäsite-(Ce)
4. Bastnäsite-(Ce)
5. Bastnäsite-(Ce)
6. Bastnäsite-(Ce)
7. Chevkinite-(Ce)
8. Chevkinite-(Ce)
9. Ilmenite
10. Quartz

Figure 1-3.1a: West Moose River Pluton 9835; low-brightness BSE image.

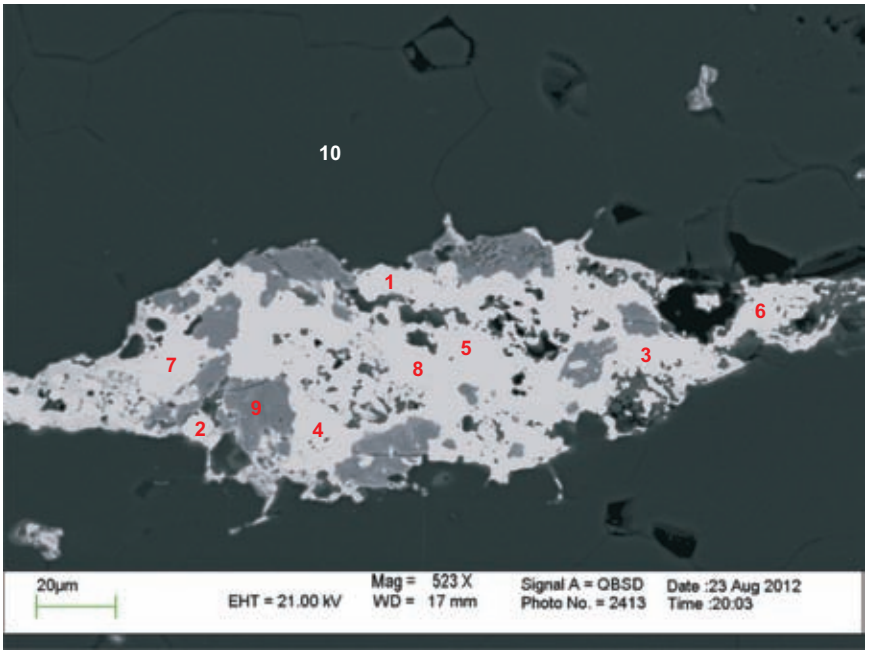
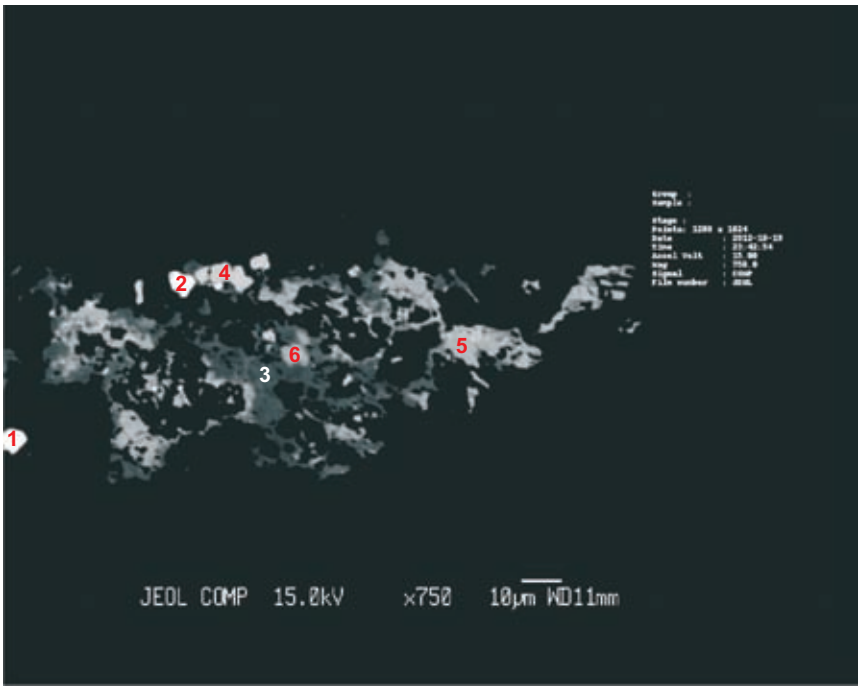
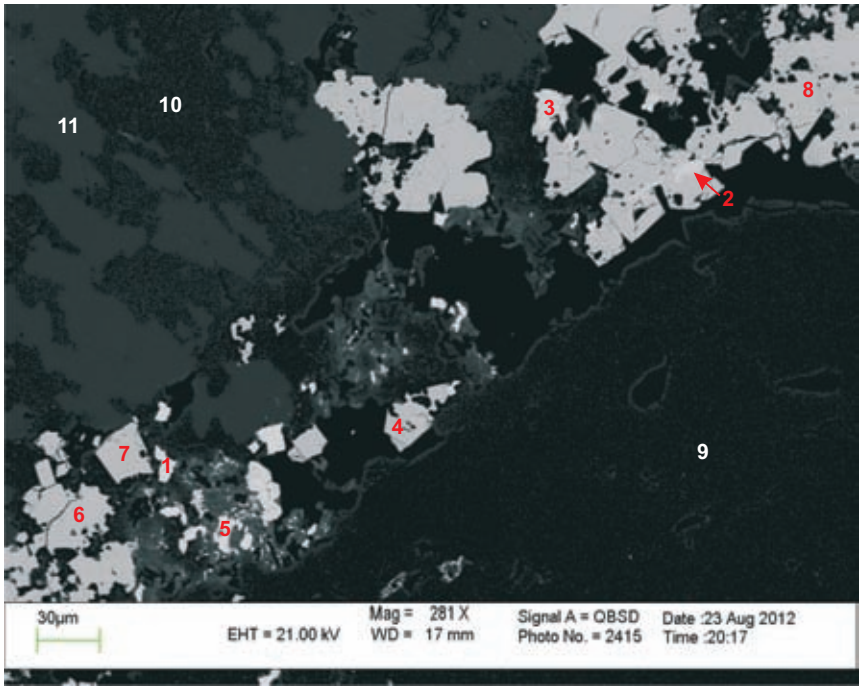


Figure 1-3.1b: West Moose River Pluton 9835; high-brightness BSE image; chevkinite-Ce (analyses 7&8) crystal breaks down to ilmenite (Fe, Ti) (analysis 9), bastnäsite-(Ce) (analyses 3 and 6) and thorite, with co-precipitating samarskite-(Y) (analysis 1). The remaining Si goes to the thorite (analysis 2).



1. Thorite
2. Thorite
3. Chevkinite-(Ce)
4. Samarskite-(Y)
5. Bastnäsite-(Ce)
6. Bastnäsite-(Ce)

Figure 1-3.1c: West Moose River Pluton 9835 WDS analyses.

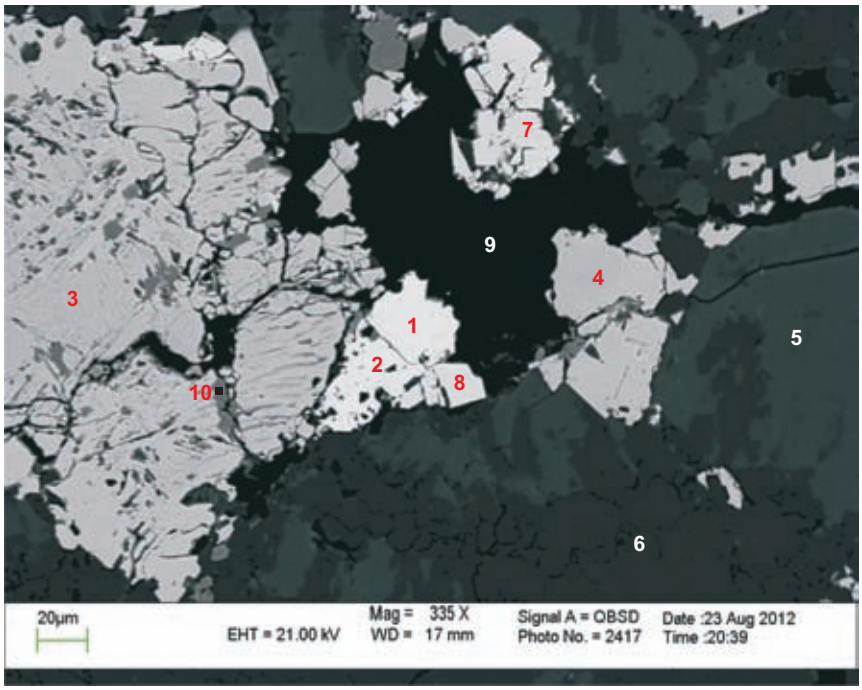


1. Xenotime
2. Mixture (Fe-oxide + REE-phase)
3. Hingganite-(Y)
4. Magnetite + quartz
5. Xenotime + others
6. Magnetite
7. Magnetite
8. Magnetite
9. Quartz
10. Albite
11. K-feldspar

Figure 1-3.2a: West Moose River Pluton 9835 EDS analyses; REE minerals are filling a fracture. Albite streaks (analysis 10) in K-feldspar (analysis 11) indicate the replacement of K-feldspar by albite.

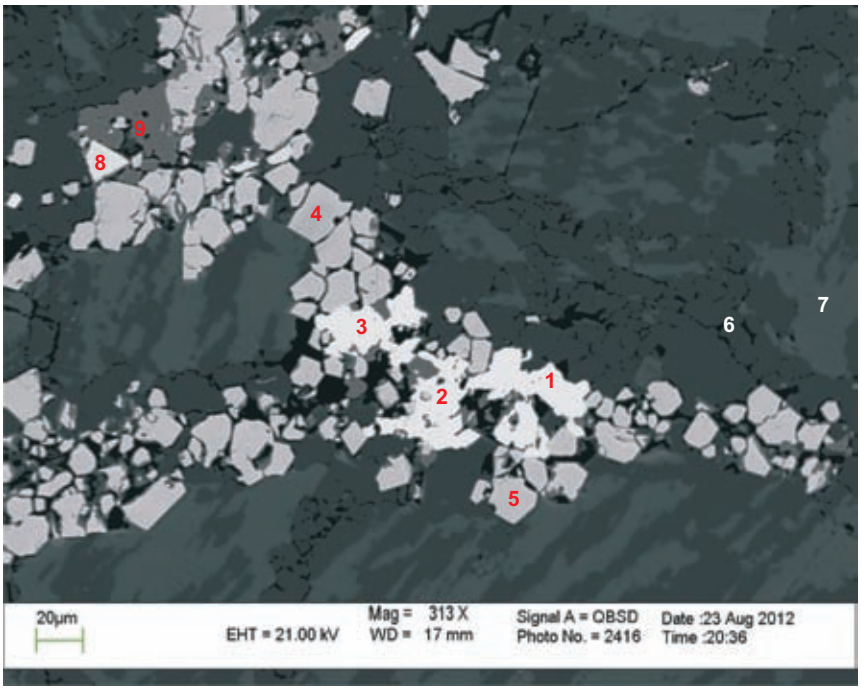
1. Hingganite-(Y)
2. Hingganite-(Y)
3. Xenotime
4. Hingganite-(Y)

Figure 1-3.2b: West Moose River Pluton 9835 WDS analyses; hingganite (analysis 4) is associated with xenotime (analysis 3) in a fracture.



1. Xenotime
2. Xenotime
3. Magnetite
4. Magnetite
5. K-feldspar
6. Albite
7. Zircon
8. Zircon
9. Pore
10. Rutile

Figure 1-3.3: West Moose River Pluton 9835; rutile (analysis 10) is filling interstitial fractures between magnetite crystals.

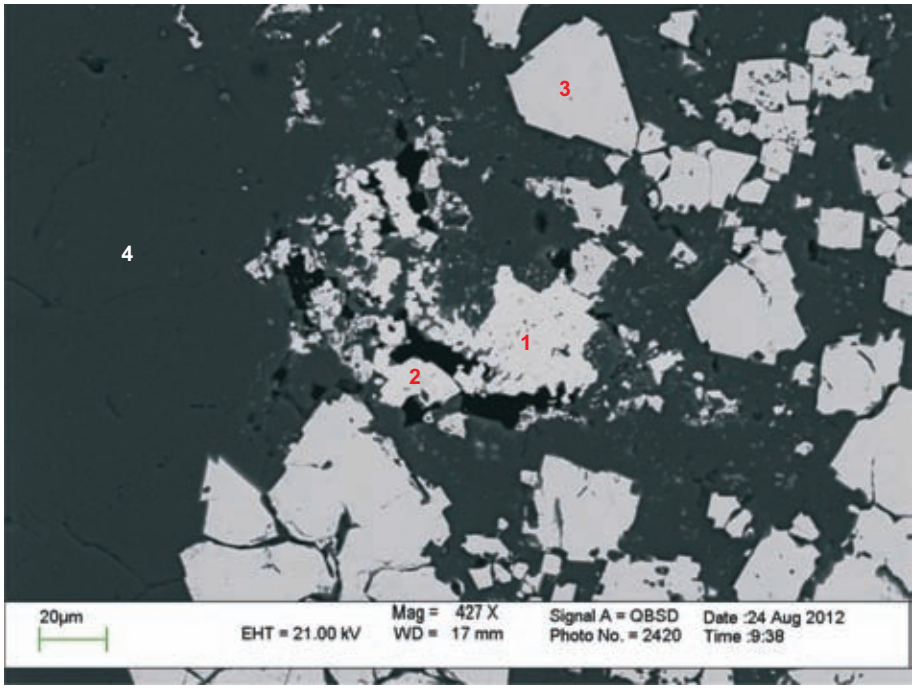


1. Xenotime
2. Xenotime
3. Xenotime
4. Magnetite
5. Magnetite
6. Albite
7. K-feldspar
8. Zircon
9. Rutile

Figure 1-3.4a: West Moose River Pluton 9835 EDS analyses; albitization of K-feldspar (analyses 6&7). Euhedral to subhedral grains of xenotime, magnetite, zircon and rutile fill fractures.

1. Xenotime
2. Xenotime

Figure 1-3.4b: West Moose River Pluton 9835 WDS analyses; precipitation of xenotime (analyses 1&2) postdates that of fe-oxides (darker phase) in fracture. Xenotime contains over 15 wt.% REE.



1. Hingganite-(Y)
2. Xenotime
3. Magnetite
4. Quartz

Figure 1-3.5a: West Moose River Pluton 9835; normal-brightness BSE image; Hingganite (analysis 1) and xenotime (analysis 2) occur along fracture

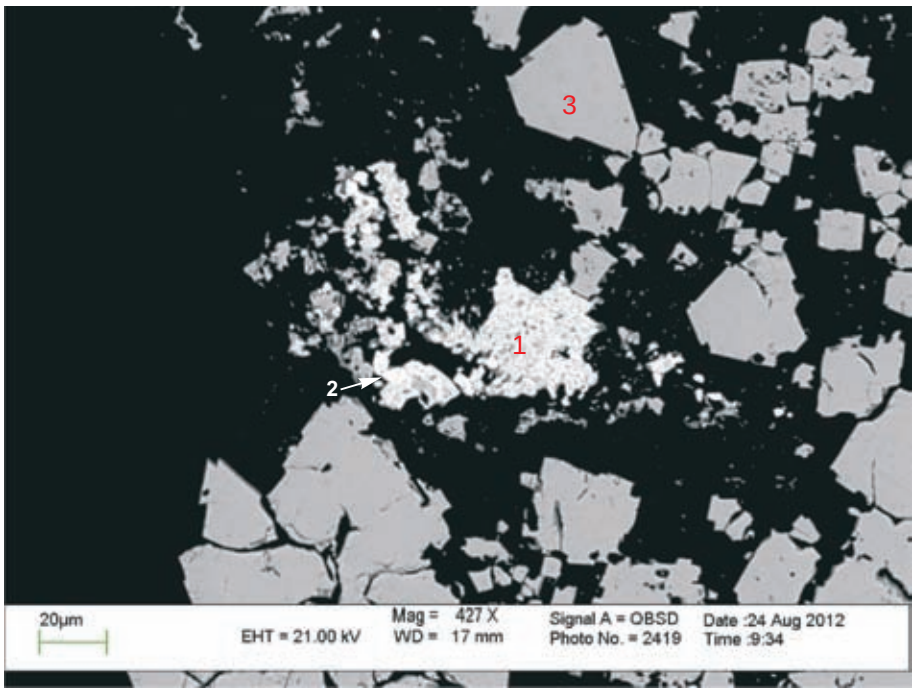
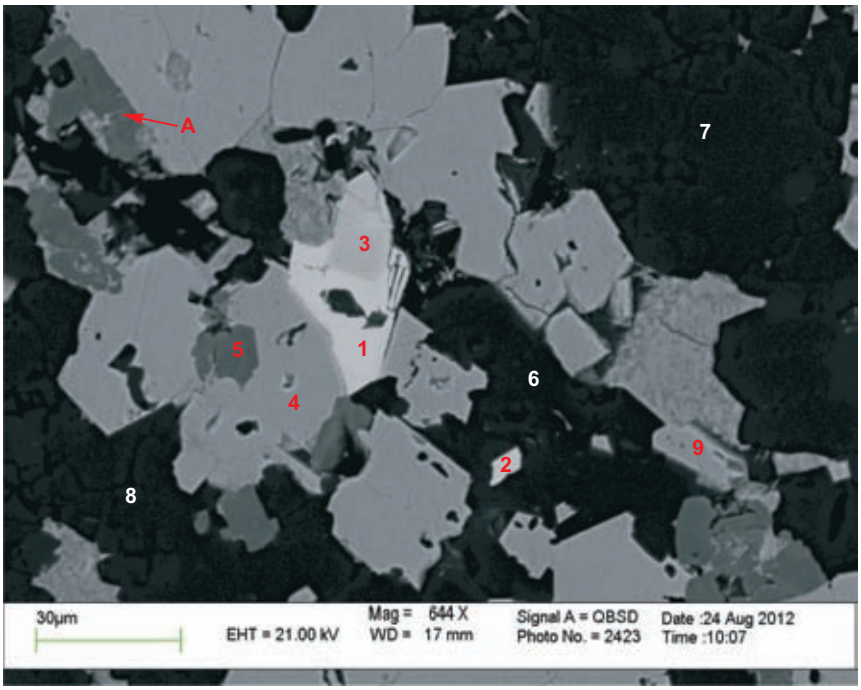
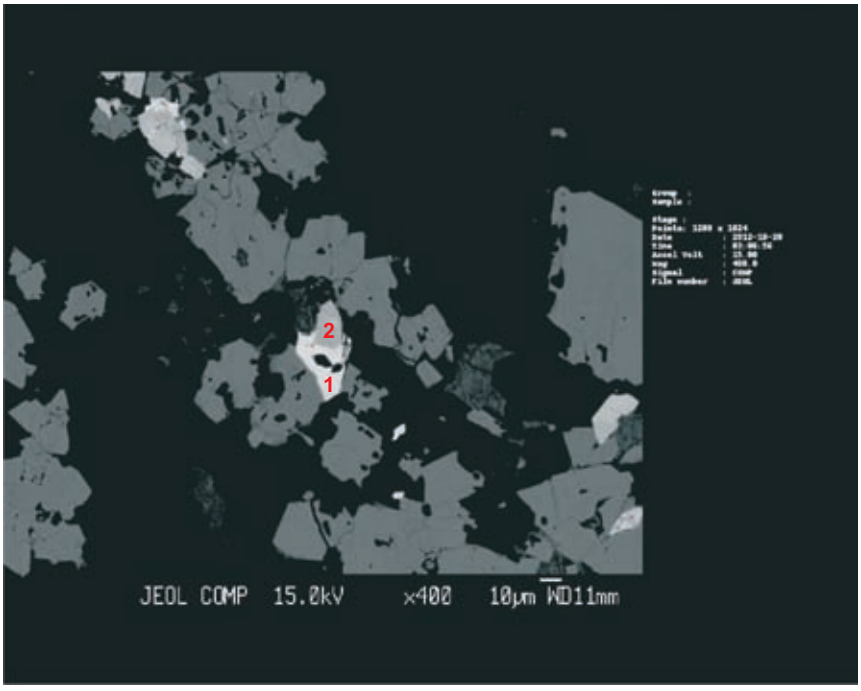


Figure 1-3.5b: West Moose River Pluton 9835; low-brightness BSE image.



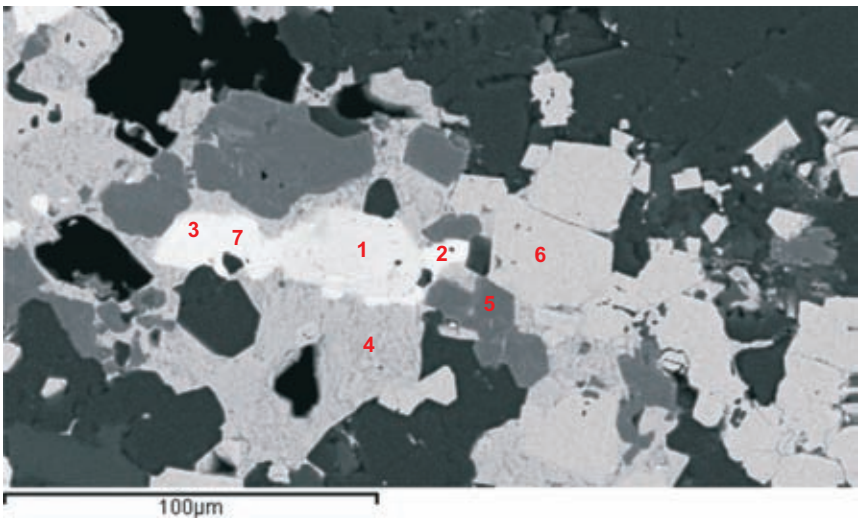
1. Xenotime
2. Xenotime + others
3. Zircon
4. Magnetite
5. Rutile
6. Quartz
7. Albite
8. Albite
9. Magnetite

Figure 1-3.6a: West Moose River Pluton 9835 EDS analysis spots; advanced albitization (analyses 7&8). Patch of magnetite, xenotime, zircon, quartz and rutile fill a fracture. Both rutile and magnetite must have been co-precipitating because both are cut by microfracture (position A).



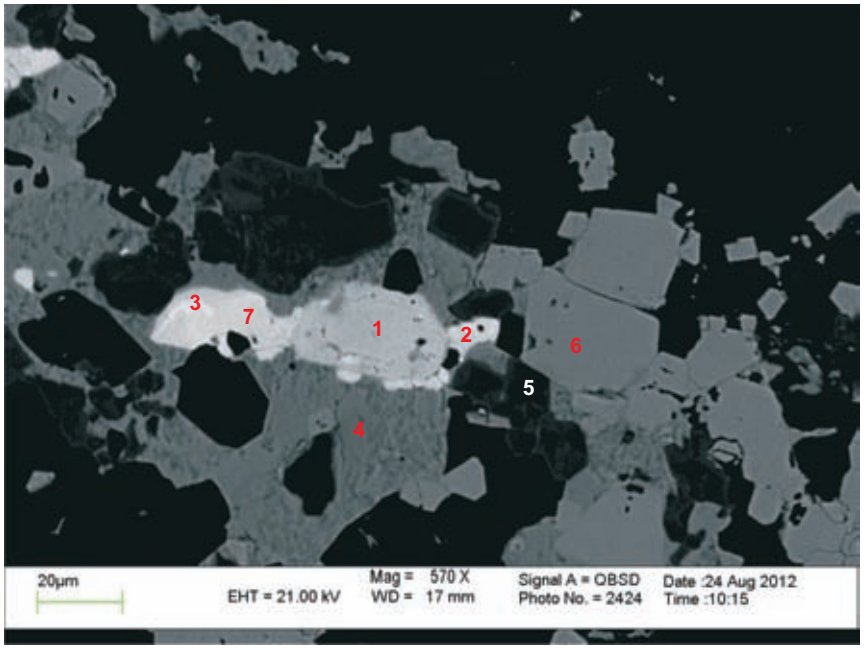
1. Xenotime
2. Zircon

Figure 1-3.6b: West Moose River Pluton 9835 WDS analysis spots; precipitation of xenotime (analysis 1) postdates that of Fe-oxides (dark phase) and zircon (analysis 2). Xenotime contains over 15 wt.% HREE.



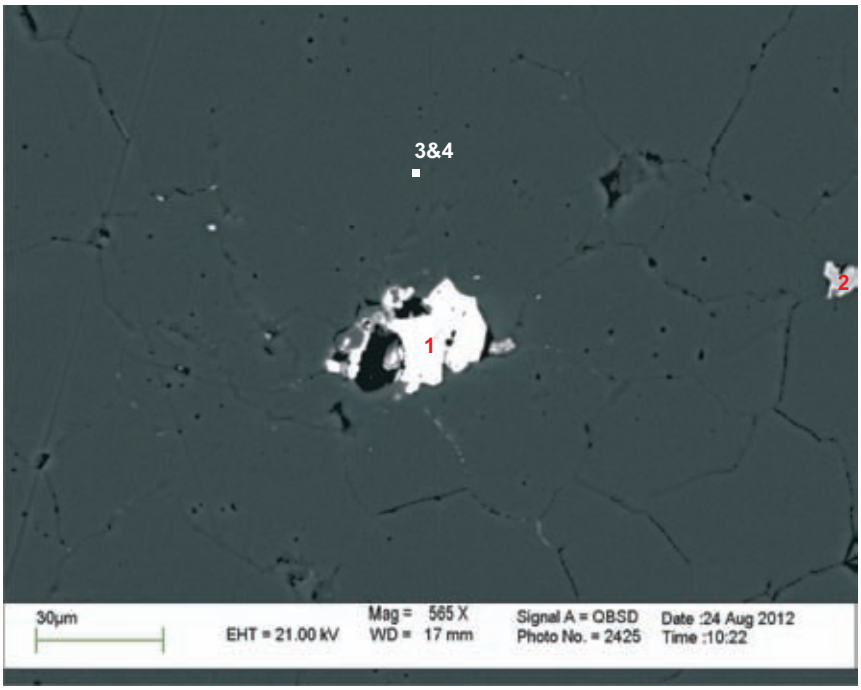
1. Zircon
2. Xenotime
3. Xenotime
4. Magnetite
5. Rutile
6. Magnetite
7. Xenotime

Figure 1-3.7a: West Moose River Pluton 9835 normal-brightness BSE image; magnetite, zircon, rutile, and xenotime fill a fracture. Order of crystallization: magnetite → zircon → xenotime.



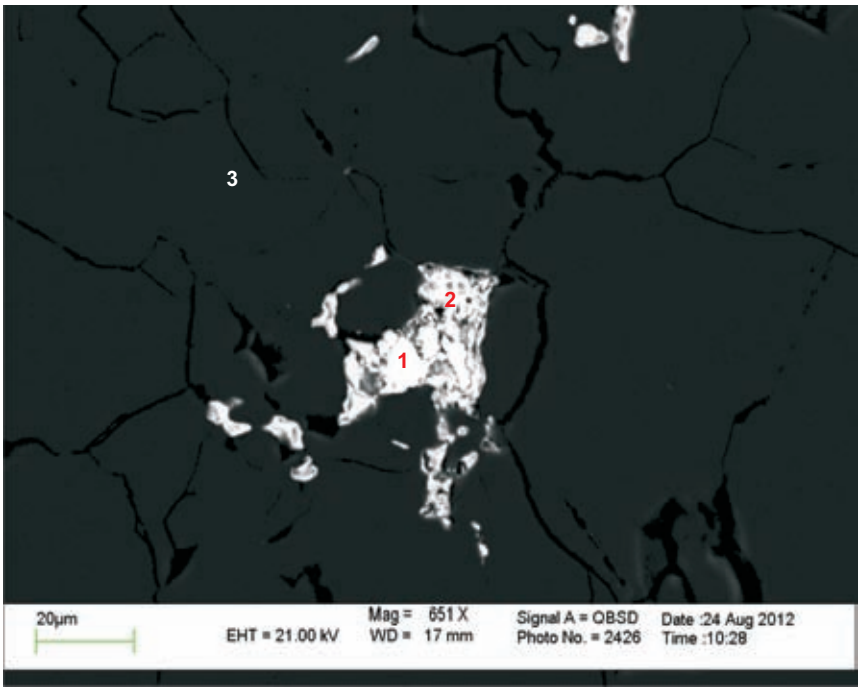
1. Zircon
2. Xenotime
3. Xenotime
4. Magnetite
5. Rutile
6. Magnetite
7. Xenotime

Figure 1-3.7b: West Moose River Pluton 9835 low-brightness BSE image; magnetite, zircon, rutile, and xenotime fill a fracture. Order of crystallization: magnetite → zircon → xenotime.



1. Bastnäsite-(Ce)
2. Magnetite
3. Quartz
4. Quartz

Figure 1-3.8: West Moose River Pluton 9835; bastnasite-Ce and magnetite fill pores.



1. Bastnäsite-(Ce)
2. Bastnäsite-(Ce)
3. Quartz

Figure 1-3.9: West Moose River Pluton 9835

Table 1-3A: Normalised EDS analyses of minerals from sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
Position	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8
Mineral	Sam	Thr	Bsn	Bsn	Bsn	Bsn	Che	Che	Ilm	Qz	Xtm	(Fe-oxide+ REE)	Hing	Mag + SiO_2	Xtm (+ others)	Mag	Mag	Mag
SiO_2	2.82	20.84	b.d.	b.d.	b.d.	b.d.	27.62	28.59	b.d.	100.00	2.87	16.61	33.13	48.16	5.62	1.03	b.d.	b.d.
Al_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	b.d.	1.15	b.d.	b.d.	b.d.	b.d.	16.76	15.84	36.54	b.d.	0.97	64.58	11.15	51.84	1.59	98.97	100.00	100.00
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.69	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.22	2.05	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	38.08	b.d.	b.d.	b.d.	36.02	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	48.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	3.70	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	2.54	b.d.	b.d.	b.d.	b.d.	b.d.	17.07	17.10	53.76	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	26.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	49.91	17.58	38.34	b.d.	46.34	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	23.19	27.01	25.45	16.95	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	47.69	47.61	47.53	46.05	31.31	30.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	4.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	2.03	b.d.	12.45	10.15	10.44	15.78	7.24	8.19	b.d.	b.d.	b.d.	b.d.	3.85	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	2.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.54	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	4.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.51	b.d.	5.07	b.d.	2.01	b.d.	b.d.	b.d.
Dy_2O_3	5.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.04	b.d.	3.88	b.d.	3.26	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.61	b.d.	b.d.	b.d.	2.90	b.d.	b.d.	b.d.
ThO_2	b.d.	78.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	0.00	0.00	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	2.11	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.23	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	0.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.01	b.d.	b.d.	b.d.	1.02	b.d.	b.d.	b.d.
SnO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	83.33	84.77	83.42	83.52	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Notes: Abbreviations: Sam: Samarskite-(Y), Bsn: bastnäsite-(Ce), Che: chevkinite-(Ce), Hing: hingganite-(Y).																	

Table 1-3A: Normalised EDS analyses of minerals from sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4
Position	9	10	11	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6
Mineral	Qz	Ab	Kfs	Xtm?	Xtm?	Mag	Mag	Kfs	Ab	Zrn	Zrn	Pore	Rt	Xtm	Xtm	Xtm	Mag	Mag	Ab
SiO_2	100.00	69.22	66.82	b.d.	b.d.	b.d.	0.84	66.27	70.81	30.98	31.89	b.d.	1.23	b.d.	b.d.	b.d.	b.d.	0.81	69.17
Al_2O_3	b.d.	18.31	17.53	b.d.	b.d.	b.d.	b.d.	17.68	17.56	b.d.	b.d.	b.d.	0.67	b.d.	b.d.	b.d.	b.d.	b.d.	18.93
FeO	b.d.	0.32	b.d.	b.d.	b.d.	88.99	97.37	b.d.	b.d.	0.42	0.45	36.27	3.58	b.d.	b.d.	1.01	95.78	99.19	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	12.14	0.62	b.d.	b.d.	b.d.	b.d.	0.85	11.63	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.69	b.d.	11.63
K_2O	b.d.	b.d.	15.04	b.d.	b.d.	b.d.	b.d.	15.20	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.27
P_2O_5	b.d.	b.d.	b.d.	20.47	20.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	40.54	39.08	38.80	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	11.01	1.79	b.d.	b.d.	b.d.	b.d.	b.d.	94.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	68.60	67.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	25.28	26.30	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	50.55	48.25	49.55	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	1.11	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.52	2.29	1.37	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	2.25	1.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.93	3.94	3.38	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.42	2.71	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	1.80	1.51	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.50	3.03	3.17	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	48.48	49.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	0.61	0.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.96	b.d.	b.d.	b.d.	b.d.	b.d.
SnO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	36.27	100.00	100.00	100.00	100.00	99.48	100.00	100.00

Table 1-3A: Normalised EDS analyses of minerals from sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	4	4	4	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7
Position	7	8	9	1	2	3	4	1	2	3	4	5	6	7	8	9	1	2
Mineral	Kfs	Zrn	Rt	Hing	Xtm (+others)	Mag	Qz	Xtm	Xtm (+others)	Zrn	Mag	Rt	Qz	Ab	Ab	Mag	Zrn	Xtm?
SiO_2	66.54	31.43	1.49	33.64	10.50	0.90	100.00	b.d.	5.14	31.68	b.d.	b.d.	99.13	69.49	68.86	b.d.	31.46	b.d.
Al_2O_3	17.50	b.d.	0.74	1.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	18.73	18.79	b.d.	b.d.	b.d.
FeO	b.d.	0.77	1.72	12.27	3.80	99.10	b.d.	1.92	1.53	1.26	99.42	2.81	0.58	b.d.	0.53	99.30	0.88	5.19
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	1.63	0.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	1.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.78	11.82	b.d.	b.d.	b.d.
K_2O	14.75	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	27.69	b.d.	b.d.	39.67	37.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	38.68
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.88
TiO_2	b.d.	b.d.	96.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.58	95.38	0.28	b.d.	b.d.	0.70	b.d.	b.d.
ZrO_2	b.d.	67.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.06	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.66	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	42.78	46.13	b.d.	b.d.	48.90	46.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	46.43
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	3.71	2.39	b.d.	b.d.	1.25	1.63	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	4.71	4.58	b.d.	b.d.	3.88	2.63	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.10
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	3.48	b.d.	b.d.	3.04	3.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.68
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.06
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	1.07	b.d.	b.d.	1.34	1.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.97
SnO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

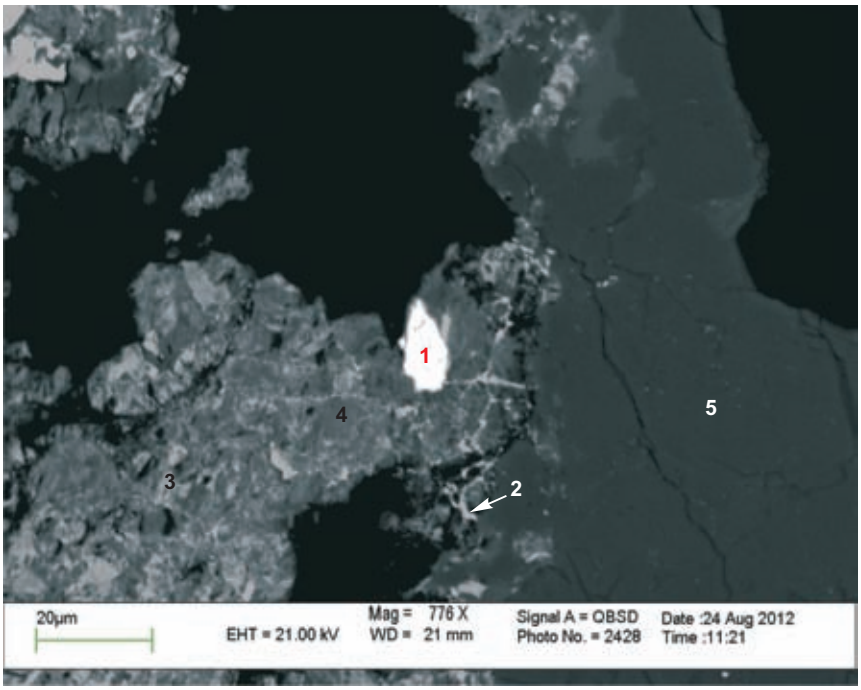
Table 1-3A: Normalised EDS analyses of minerals from sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	7	7	7	7	7	8	8	8	8	9	9	9
Position	3	4	5	6	7	1	2	3	4	1	2	3
Mineral	Xtm?	Mag	Rt	Mag	Xtm?	Bsn	Mag	Qz	Qz	Bsn	Bsn (+others)	Qz
SiO_2	1.80	5.12	b.d.	b.d.	b.d.	1.22	10.35	100.00	99.29	b.d.	6.71	100.00
Al_2O_3	b.d.	1.43	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.41	b.d.
FeO	1.43	93.45	3.34	100.00	0.67	b.d.	89.65	b.d.	0.44	b.d.	2.13	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.01	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	37.14	b.d.	b.d.	b.d.	21.46	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	0.66	b.d.	96.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	44.64	b.d.	b.d.	b.d.	26.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	24.67	b.d.	b.d.	b.d.	24.76	24.05	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	43.80	b.d.	b.d.	b.d.	45.82	39.95	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	13.97	b.d.	b.d.	b.d.	13.78	11.79	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	1.45	b.d.	b.d.	b.d.	0.77	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	4.62	b.d.	b.d.	b.d.	1.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	2.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	4.32	b.d.	b.d.	b.d.	2.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	0.00	0.00	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	46.13	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	1.79	b.d.	b.d.	b.d.	0.51	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SnO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.27	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	83.67	100.00	100.00	100.00	84.37	87.06	100.00

Table 1-3B: Electron Microprobe analyses of REE-minerals from sample 9835.

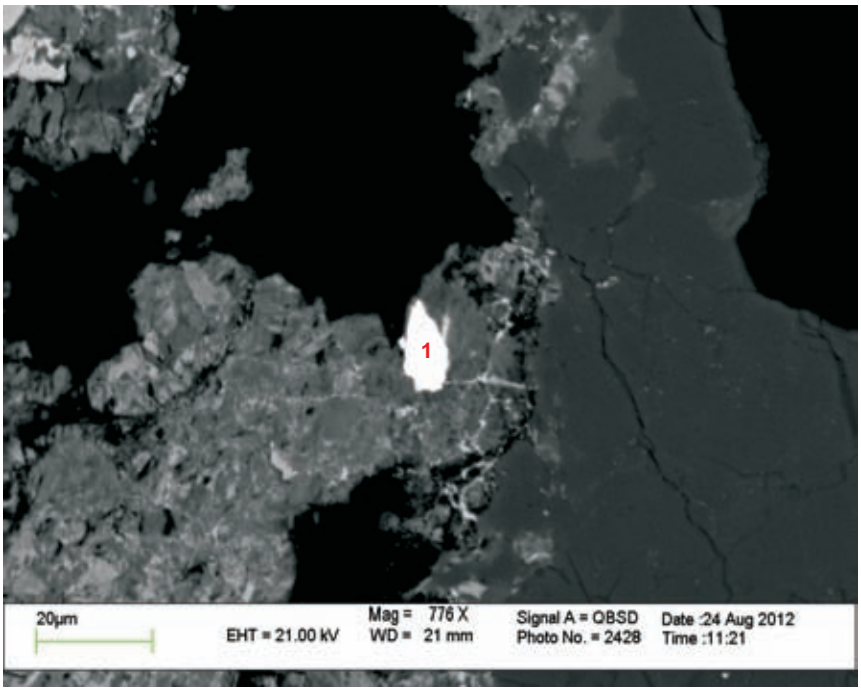
Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	1	1	1	1	1	1	2	2	2	2	4	4	6	6
Pos.	1	2	3	4	5	6	1	2	3	4	1	2	1	2
Mineral	Thr	Thr	Che	Sam	Bsn	Bsn	Hing	Hing	Xtm	Hing	Xtm	Xtm	Xtm	Zrn
SiO_2	17.39	18.02	19.09	0.48	0.23	0.15	26.48	27.21	0.66	26.42	0.12	0.91	0.32	32.14
Al_2O_3	b.d.	0.03	0.03	b.d.	b.d.	b.d.	0.07	0.27	b.d.	0.69	b.d.	0.11	b.d.	b.d.
FeO	1.10	1.39	12.45	0.88	0.29	0.26	10.79	9.29	0.89	10.81	0.84	0.75	2.14	1.42
MnO	0.16	0.28	0.52	0.04	b.d.	b.d.	b.d.	b.d.	0.01	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
CaO	0.16	0.56	0.25	0.11	0.13	0.09	1.85	1.88	0.07	1.51	0.07	0.07	0.01	0.02
Na_2O	0.02	0.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
K_2O	0.08	0.03	0.05	0.05	0.04	0.05	0.03	0.04	0.07	0.04	0.03	0.05	0.04	0.05
P_2O_5	0.48	0.60	0.01	b.d.	0.01	0.01	0.02	0.02	37.75	b.d.	38.06	38.41	38.32	0.10
Nb_2O_5	b.d.	b.d.	0.41	40.08	0.08	b.d.	b.d.	0.20	b.d.	0.07	0.13	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	0.29	3.09	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.02
TiO_2	0.76	0.51	15.10	1.83	0.26	b.d.	b.d.	0.06	b.d.	b.d.	0.06	b.d.	0.12	0.03
ZrO_2	0.07	0.11	0.02	b.d.	0.05	b.d.	0.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	60.94
HfO_2	b.d.	b.d.	b.d.	0.07	b.d.	0.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.04
Y_2O_3	0.91	0.95	0.72	23.73	0.28	0.21	28.61	28.28	49.04	29.04	49.08	48.06	45.94	0.53
La_2O_3	0.11	0.36	9.95	0.01	18.83	20.20	0.16	0.16	b.d.	0.07	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	0.28	0.75	24.75	0.63	35.19	34.73	1.03	0.96	0.08	0.78	0.04	b.d.	0.08	b.d.
Pr_2O_3	0.03	0.15	2.74	0.20	3.23	3.07	0.32	0.45	b.d.	0.14	0.01	0.04	b.d.	b.d.
Nd_2O_3	0.28	0.29	9.02	1.74	10.37	9.38	2.90	2.76	0.11	2.11	0.06	0.18	0.08	b.d.
Sm_2O3	0.17	0.15	1.45	2.08	1.05	0.98	2.52	2.53	0.21	1.93	b.d.	0.20	0.02	b.d.
Eu_2O_3	b.d.	b.d.	0.72	0.05	0.83	0.80	0.13	0.16	b.d.	0.09	0.00	0.05	0.10	b.d.
Gd_2O_3	0.64	0.60	0.68	6.17	0.41	0.39	5.72	5.70	3.29	5.95	2.66	3.41	3.62	b.d.
Dy_2O_3	0.49	0.55	0.28	6.86	0.04	b.d.	4.89	4.76	3.61	5.21	3.64	3.96	5.10	b.d.
Ho_2O_3	0.24	0.33	b.d.	2.70	b.d.	b.d.	2.41	2.41	1.59	2.52	1.44	1.71	1.83	0.00
Er_2O_3	0.07	0.09	b.d.	b.d.	b.d.	b.d.	1.72	1.69	3.44	1.92	4.10	3.63	4.80	0.16
Yb_2O_3	0.09	b.d.	b.d.	1.80	b.d.	b.d.	1.00	1.02	3.32	1.09	3.65	3.21	3.67	0.22
ThO_2	74.41	75.02	0.11	2.94	0.14	b.d.	0.39	0.63	0.35	0.29	0.19	0.33	0.37	0.33
UO_2	1.73	1.49	0.04	0.52	b.d.	b.d.	0.00	0.09	0.12	b.d.	0.03	b.d.	0.18	b.d.
F	0.11	0.23	b.d.	0.28	5.43	5.58	0.19	0.19	0.45	0.09	0.37	0.42	0.35	0.06
Total	99.72	102.57	98.68	96.22	74.59	73.54	91.17	90.64	104.88	90.72	104.41	105.32	106.93	97.03

Appendix 1-4: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9836A



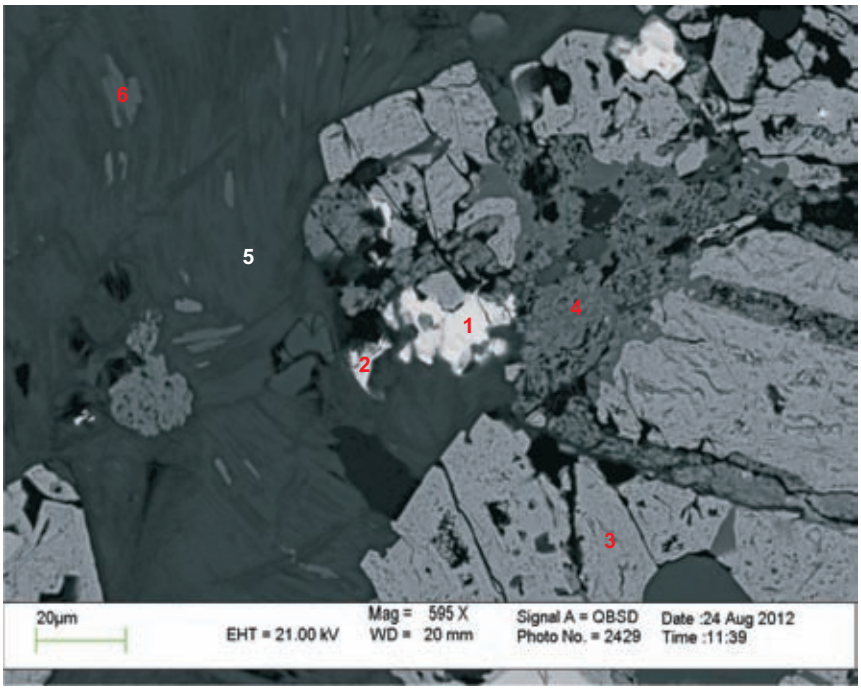
1. Thorite
2. Allanite-(Ce)
3. Allanite-(Ce)
4. Allanite-(Ce)
5. Albite

Figure 1-4.1a: West Moose River Pluton 9836A EDS analysis spots; albite altering to allanite-Ce (analysis 2).



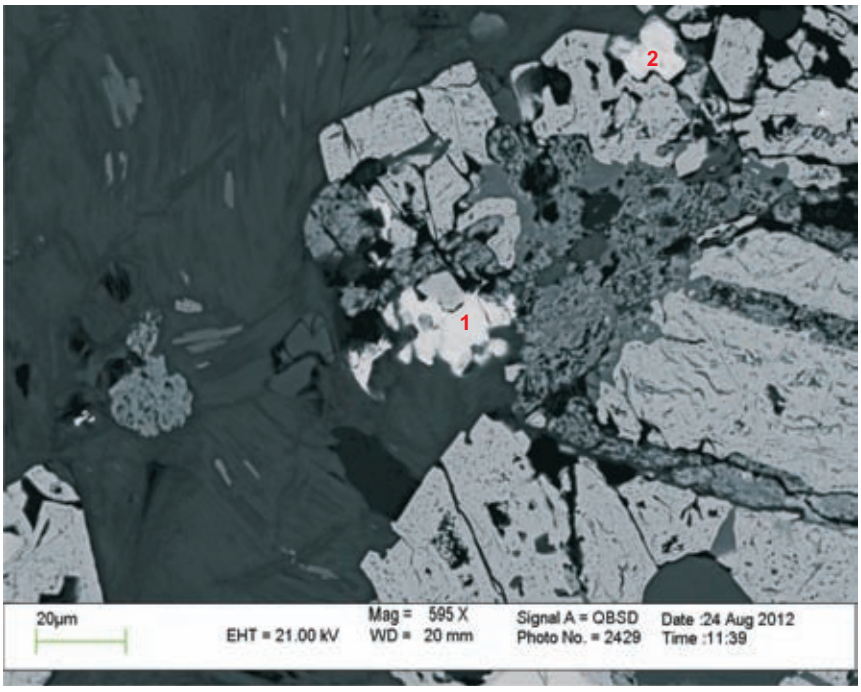
1. Thorite

Figure 1-4.1b: West Moose River Pluton 9836A WDS analysis superimposed on SEM-BSE image.



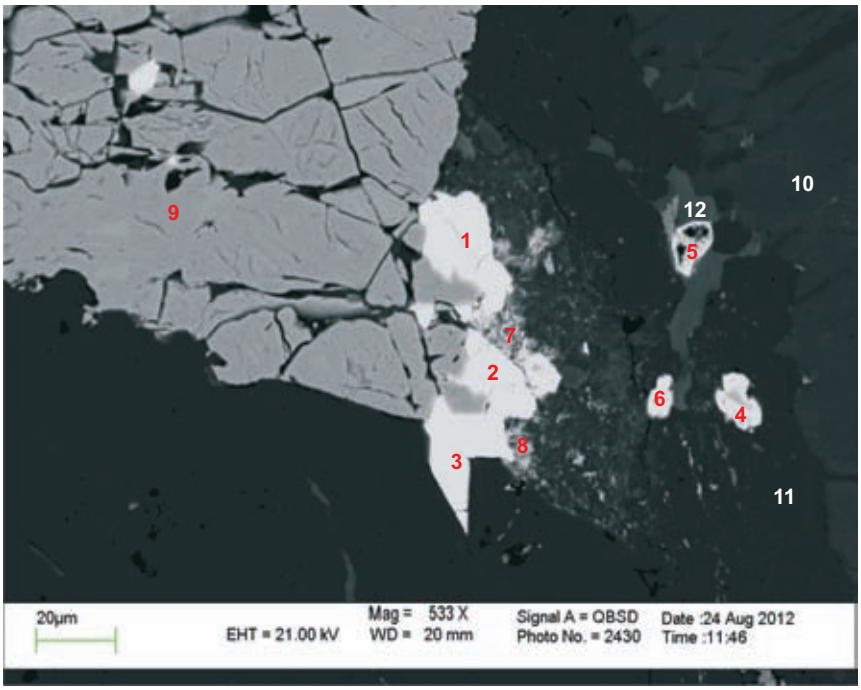
1. Samarkite-(Y)
2. Bad spot
3. Magnetite
4. Rutile
5. Chlorite
6. Rutile

Figure 1-4.2a: West Moose River Pluton 9836A EDS analyses; exsolution of rutile (analysis 6) from biotite. Biotite later replaced by chlorite(analysis 5). Rutile (analysis 4) is also filling fractures and replacing magnetite.



1. Samarskite-(Y)
2. Samarskite-(Y)

Figure 1-4.2b: West Moose River Pluton 9836A WDS analyses superimposed on SEM-BSE image.



1. Thorite
2. Thorite
3. Thorite
4. Bad spot
5. Bad spot
6. Bad spot
7. Bad spot
8. Bad spot
9. Magnetite
10. K-feldspar
11. Albite
12. Chlorite

Figure 1-4.3: West Moose River Pluton 9836A; large grain of magnetite is overgrown by thorite that fills fractures dissecting the magnetite; albitization of K-feldspar(analyses 10&11).

Table1-4A: Normalised EDS analyses of minerals from sample 9836A

Sample	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A
Fig	1	1	1	1	1	2	2	2	2	2	2	3	3	3
Position	1	2	3	4	5	1	2	3	4	5	6	1	2	3
Mineral	Thr	Aln	Aln	Aln?	Ab	Sam	?	Mag	Alt. Ilm	Chl	Rt	Thr	Thr	Thr
SiO_2	20.63	42.50	43.29	52.87	67.96	2.28	13.04	b.d.	b.d.	32.58	1.55	28.15	21.14	25.16
Al_2O_3	b.d.	18.62	18.63	20.86	19.08	b.d.	3.67	b.d.	b.d.	22.87	b.d.	b.d.	2.49	2.22
FeO	2.53	12.11	14.68	18.57	b.d.	1.13	11.23	100.00	19.40	37.65	2.06	7.20	7.95	9.55
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.52	b.d.	b.d.	6.90	b.d.	b.d.	b.d.	b.d.
CaO	1.88	9.50	11.11	4.99	1.15	b.d.	1.79	b.d.	b.d.	b.d.	b.d.	1.07	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	11.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	6.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	20.93	24.20	b.d.	b.d.	b.d.	b.d.	b.d.	9.37	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.18	29.97	b.d.	80.60	b.d.	96.40	b.d.	2.11	1.67
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.66	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	13.79	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	3.78	2.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	10.72	9.32	2.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	2.77	b.d.	b.d.	b.d.	b.d.	2.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	1.94	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	2.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	56.63	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	63.58	51.26	61.40
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	1.08	2.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	55.45	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	9.76	b.d.	b.d.	b.d.	b.d.	b.d.	9.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	97.48	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Abbreviations: Aln: allanite-(Ce), Chl: chlorite, Alt.ilm: altered ilmenite.													

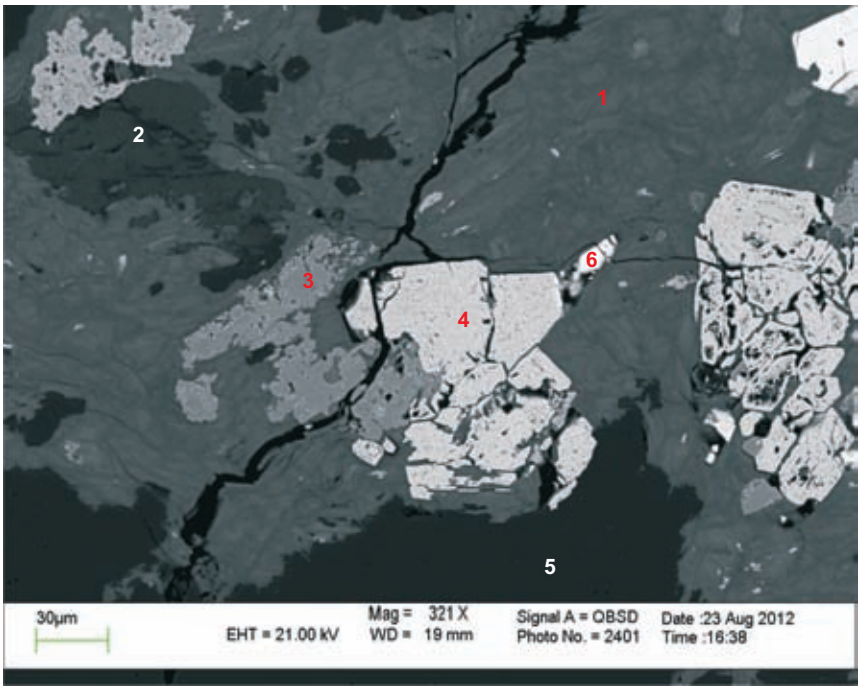
Table1-4A: Normalised EDS analyses of minerals from sample 9836A

Sample	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A	3836A
Fig	3	3	3	3	3	3	3	3	3
Position	4	5	6	7	8	9	10	11	12
Mineral	?	?	?	?	?	Mag	Kfs	Ab	Chl
SiO_2	16.26	11.48	17.32	16.67	29.11	b.d.	66.50	69.17	32.73
Al_2O_3	3.29	2.43	3.06	6.02	9.65	b.d.	17.81	18.80	22.85
FeO	5.57	9.84	5.02	21.66	16.56	100.00	b.d.	b.d.	31.73
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.69
CaO	b.d.	b.d.	b.d.	3.30	2.82	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.78	12.03	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	14.90	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	17.88	19.71	15.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	15.58	29.83	11.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	5.01	4.09	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	9.22	6.84	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	3.56	2.81	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	41.41	26.72	48.33	34.58	28.12	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 1-4B: Electron microprobe analyses of REE-minerals from sample 9836A.

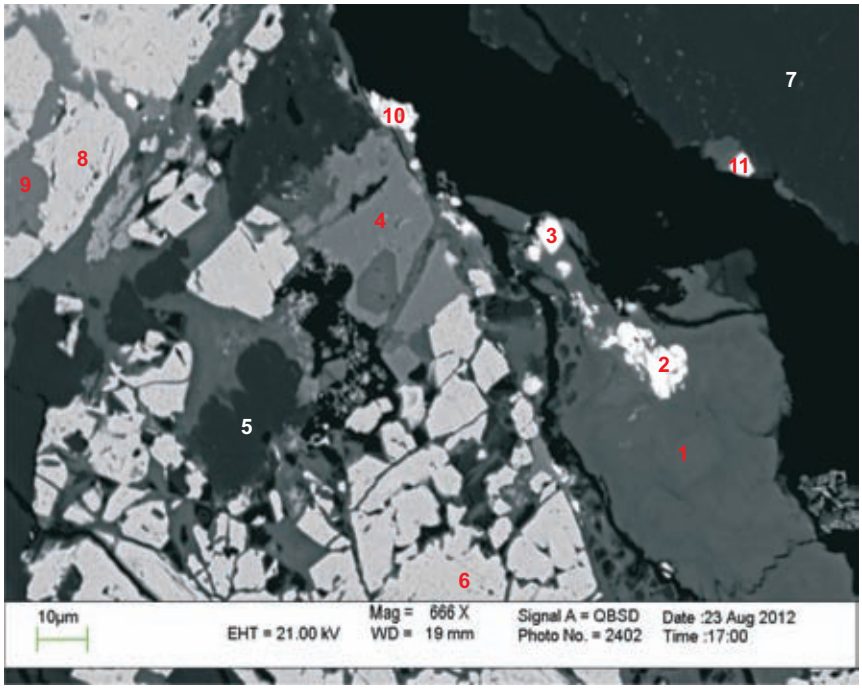
Sample	9836A	9836A	9836A
Fig	1	2	2
Pos.	1	1	2
Mineral	Thr-Xtm	Sam	Sam
SiO_2	15.20	3.63	1.27
Al_2O_3	1.63	1.19	0.35
FeO	2.53	3.18	2.90
MnO	b.d.	0.09	0.01
MgO	0.09	b.d.	b.d.
CaO	1.34	0.46	0.24
Na_2O	b.d.	b.d.	b.d.
K_2O	0.08	0.05	0.05
P_2O_5	2.59	0.72	0.17
Nb_2O_5	1.41	37.00	42.42
Ta_2O_5	0.15	0.84	0.68
TiO_2	0.58	2.70	1.07
ZrO_2	2.77	1.83	0.47
HfO_2	b.d.	b.d.	b.d.
Y_2O_3	7.46	21.11	29.98
La_2O_3	0.14	0.05	0.10
Ce_2O_3	0.81	1.83	0.71
Pr_2O_3	0.08	0.26	0.13
Nd_2O_3	0.58	0.76	0.24
Sm_2O3	0.15	0.33	0.21
Eu_2O_3	0.03	0.06	0.01
Gd_2O_3	1.04	2.55	2.12
Dy_2O_3	1.64	3.60	3.18
Ho_2O_3	0.51	1.24	1.11
Er_2O_3	1.21	1.48	0.81
Yb_2O_3	1.25	4.66	5.05
ThO_2	45.56	3.50	1.22
UO_2	0.91	0.55	0.39
F	0.42	0.19	0.05
Total	89.95	93.78	94.91

Appendix 1-5: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9836B



1. Chlorite
2. K-feldspar
3. Rutile
4. Magnetite
5. Quartz
6. Zircon

Figure 1-5.1: West Moose River Pluton 9836B.



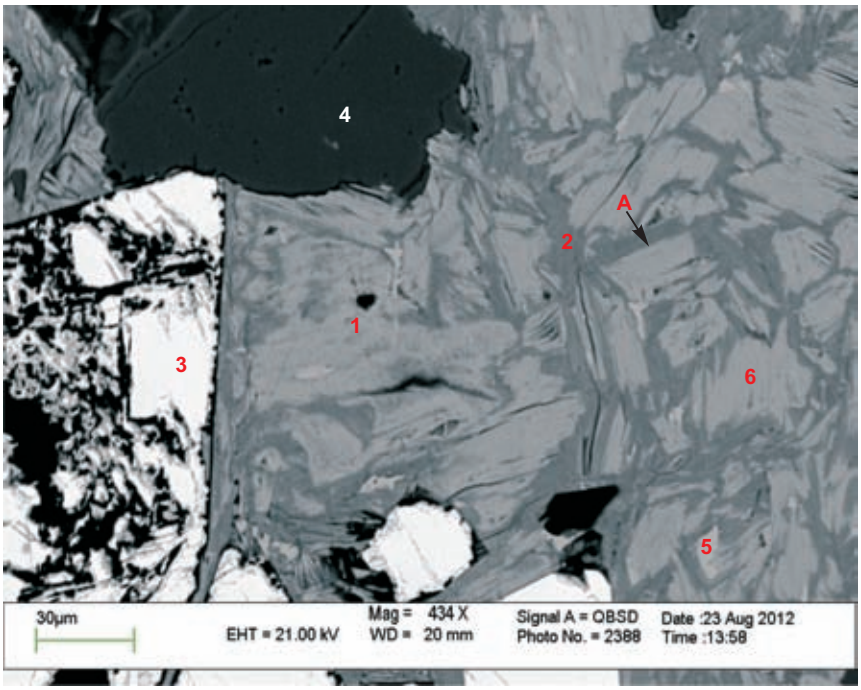
1. Chlorite
2. Bad spot
3. Bad spot
4. Rutile
5. Albite
6. Rutile
7. Albite
8. Magnetite
9. Rutile
10. Bad spot
11. Thorite

Figure 1-5.2: West Moose River Pluton 9836B.

Table 1-5A: Normalised EDS analyses of minerals from sample 9836B.

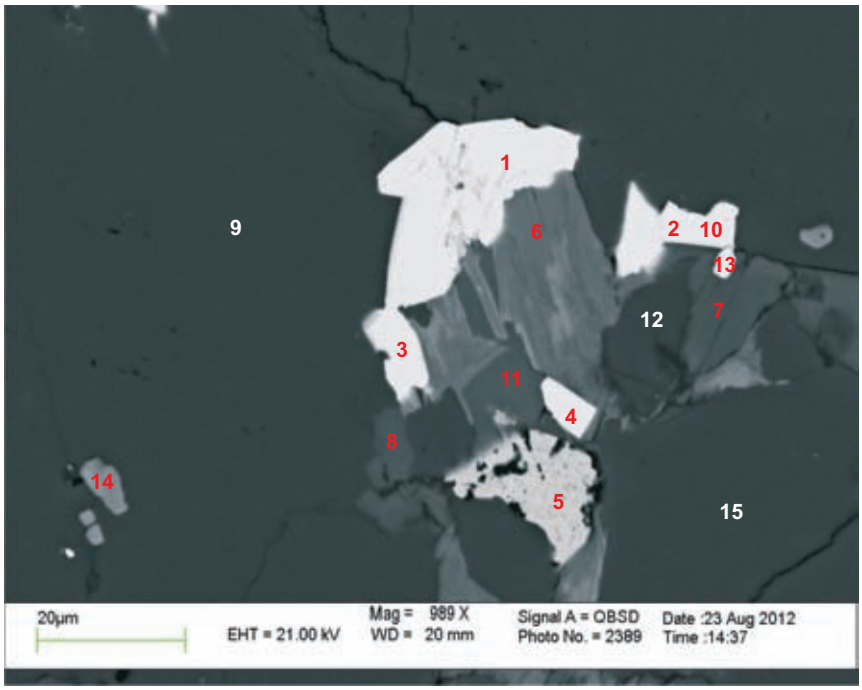
Sample	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B	3836B
Fig	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
Position	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11
Mineral	Chl	Kfs	Rt	Mag	Qz	Zrn	Chl	?	?	Rt	Ab	Mag	Ab	Mag	Rt	?	Thr
SiO_2	33.77	66.59	0.73	b.d	100.00	31.98	33.44	12.55	11.09	0.67	67.56	1.61	69.18	b.d	b.d	15.11	30.46
Al_2O_3	21.47	17.81	b.d	b.d	b.d	0.62	21.52	4.60	3.92	b.d	19.09	b.d	18.93	b.d	b.d	6.15	6.25
FeO	31.68	0.72	1.44	99.22	b.d	1.48	32.14	10.77	7.11	2.36	1.18	98.39	b.d	98.58	2.10	9.51	3.46
MnO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
MgO	13.08	b.d	b.d	b.d	b.d	b.d	12.89	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.15	b.d
CaO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.38	2.61	0.49	0.85	b.d	0.68	b.d	b.d	1.91	1.22
Na_2O	b.d	2.44	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	11.32	b.d	11.21	b.d	b.d	b.d	1.84
K_2O	b.d	12.44	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
P_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.74
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	45.96	42.13	b.d	b.d	b.d	b.d	b.d	b.d	35.21	8.72
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	97.83	0.78	b.d	b.d	b.d	2.30	1.31	96.03	b.d	b.d	b.d	1.42	97.90	1.69	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d	62.03	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	3.89	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	0.46	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y2O3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.53	3.70	b.d	b.d	b.d	b.d	b.d	b.d	3.90	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd2O3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	41.19
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.28	5.34	b.d	b.d	b.d	b.d	b.d	b.d	4.17	b.d
F	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	0.00
F	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.65	5.40	b.d	b.d	b.d	b.d	b.d	b.d	3.66	b.d
As_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.07	b.d
PbO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	10.99	17.39	b.d	b.d	b.d	b.d	b.d	b.d	15.48	b.d
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	95.88

Appendix 1-6: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9837



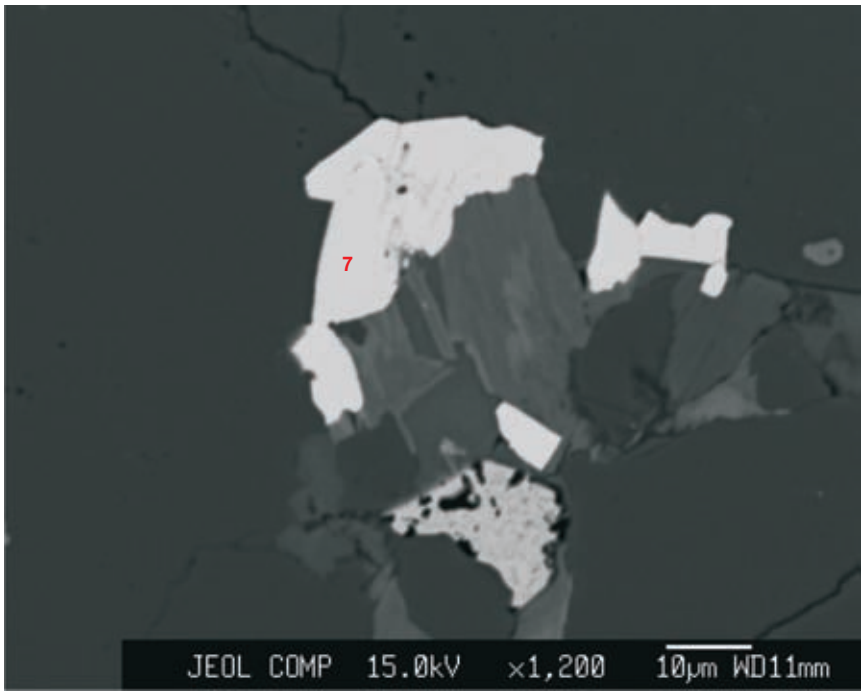
1. Fe-Chlorite
2. Chlorite
3. Magnetite
4. Albite
5. Rutile
6. Fe-Chlorite

Figure 1-6.1: West Moose River Pluton 9837; two types of chlorite are present. Order of crystallization: Fe-chlorite is later because: a) often it has euhedral crystal outline (position A) and b) it rims voids.



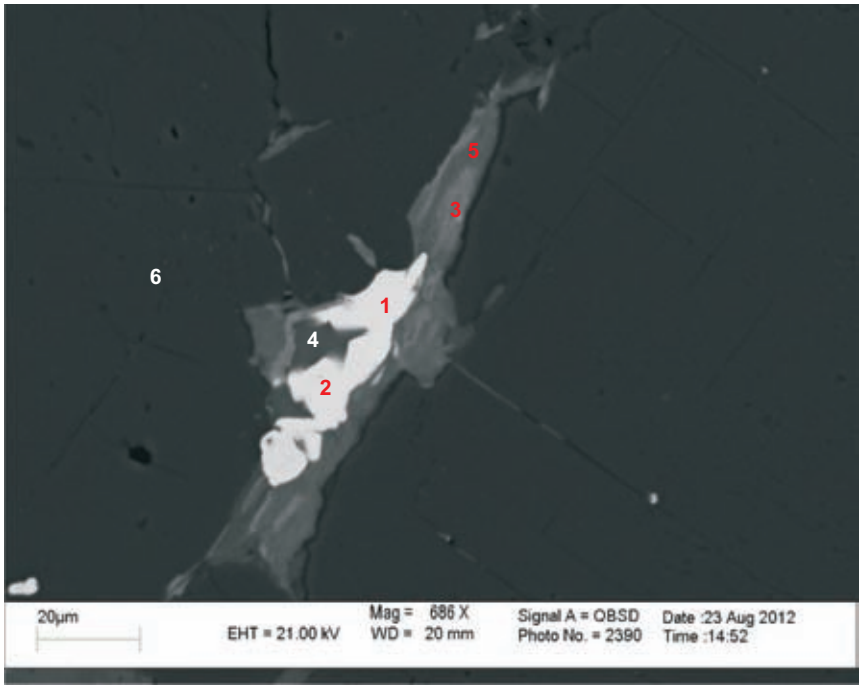
1. Xenotime
2. Xenotime
3. Xenotime
4. Xenotime
5. Magnetite
6. Chlorite
7. K-feldspar (with high Fe)
8. Calcite + others
9. Quartz
10. Xenotime
11. Calcite
12. Albite
13. Xenotime
14. Titanite inclusion in quartz
15. Albite

Figure 1-6.2a: West Moose River Pluton 9837 EDS analyses; order of crystallization: chlorite → calcite → xenotime.



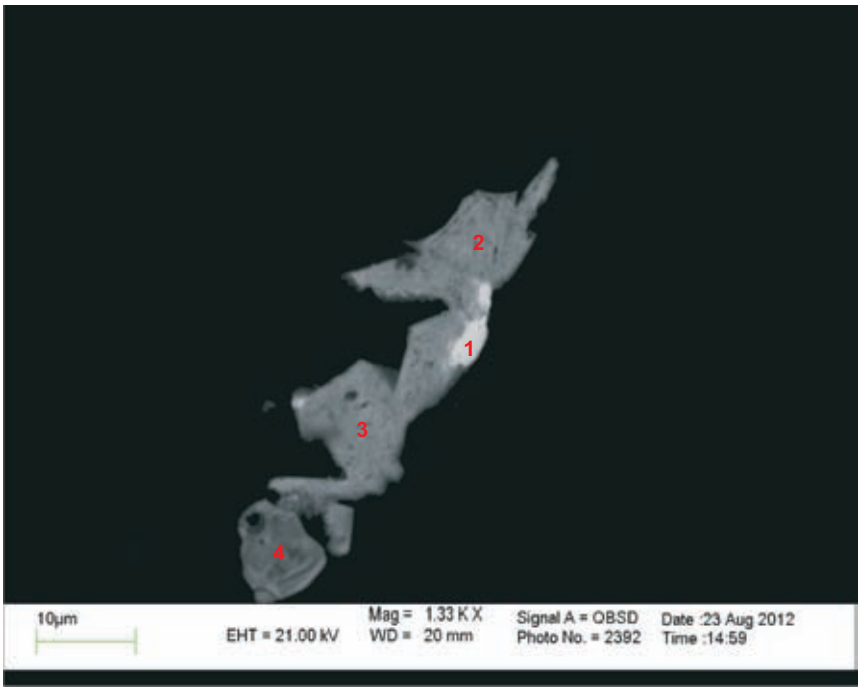
7. Xenotime

Figure 1-6.2b: West Moose River Pluton 9837 WDS analysis.



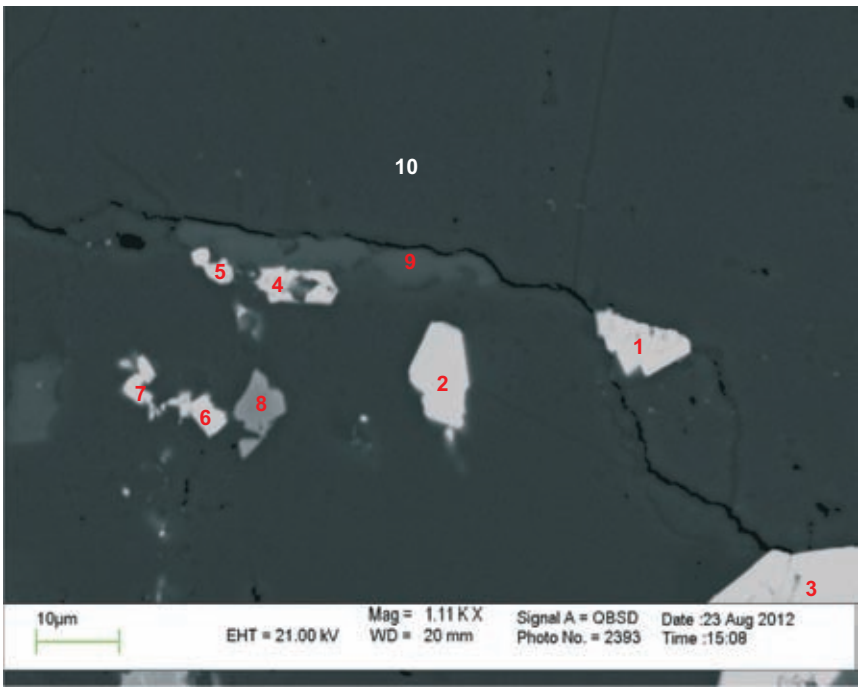
1. Synchysite-(Ce) + others
2. Synchysite-(Ce)
3. Chlorite
4. Calcite
5. Chlorite
6. Albite

Figure 1-6.3: West Moose River Pluton 9837 EDS analyses; chlorite, calcite, and synchysite-(Ce) fill a fracture. Order of crystallization: chlorite → calcite → synchysite. Synchysite is euhedral in places suggesting a replacement texture.



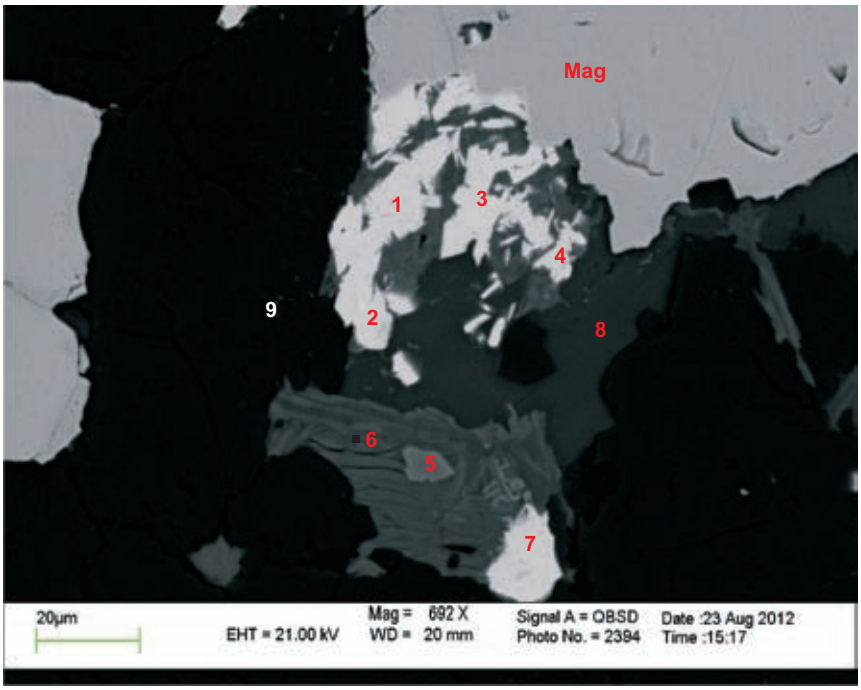
1. Thorite
2. Synchysite-(Ce)
3. Synchysite-(Ce)
4. Hingganite-(Y)

Figure 1-6.4: West Moose River Pluton 9837; low-brightness BSE image of figure 3; precipitation of thorite (analysis 1) postdates that of synchysite-(Ce) (analyses 2&3) in fracture.



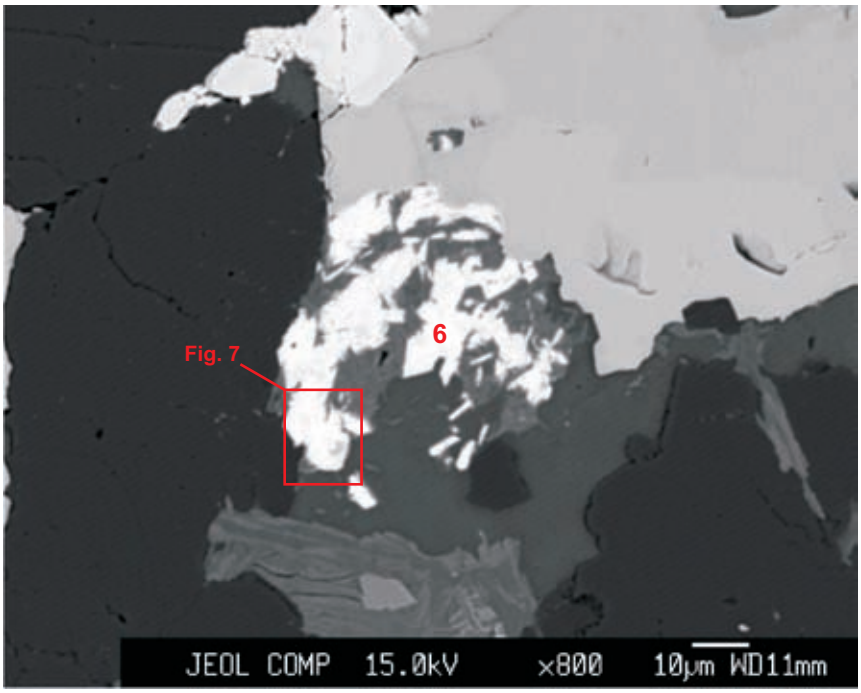
1. Xenotime + quartz
2. Xenotime + quartz
3. Xenotime + quartz
4. Xenotime + quartz
5. Xenotime + quartz
6. Xenotime + quartz
7. Xenotime + quartz
8. Rutile
9. Calcite + quartz
10. Albite

Figure 1-6.5: West Moose River Pluton 9837; xenotime and calcite fill fractures and pores.



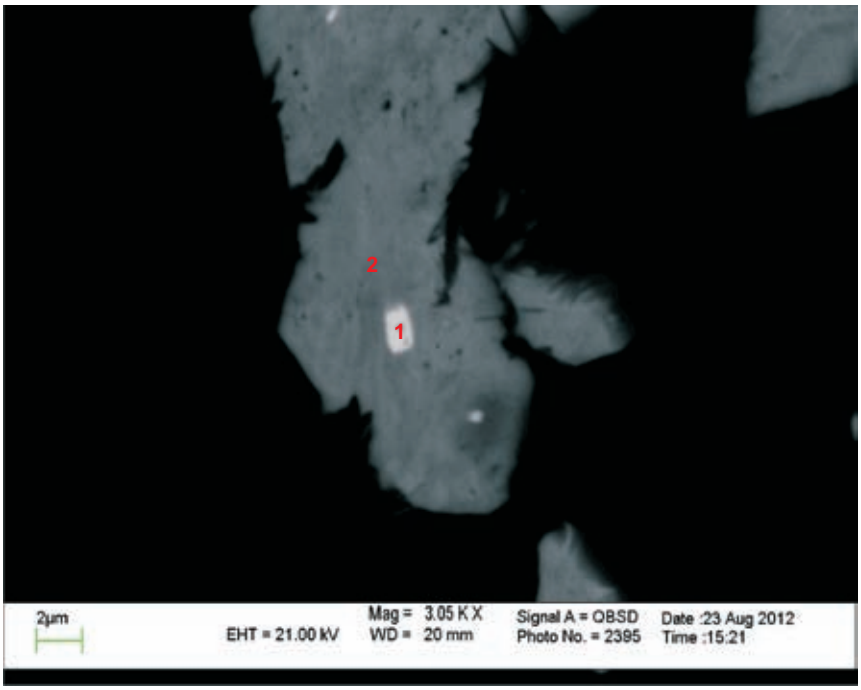
1. Synchysite-(Ce)
2. Synchysite-(Ce)
3. Synchysite-(Ce)
4. Synchysite-(Ce)
5. Rutile
6. Chlorite
7. Synchysite-(Ce) + others
8. Calcite
9. Albite
10. Chlorite

Figure 1-6.6a: West Moose River Pluton 9837 EDS analyses; Order of crystallization: albite → magnetite → chlorite → calcite → rutile → synchysite-(Ce).



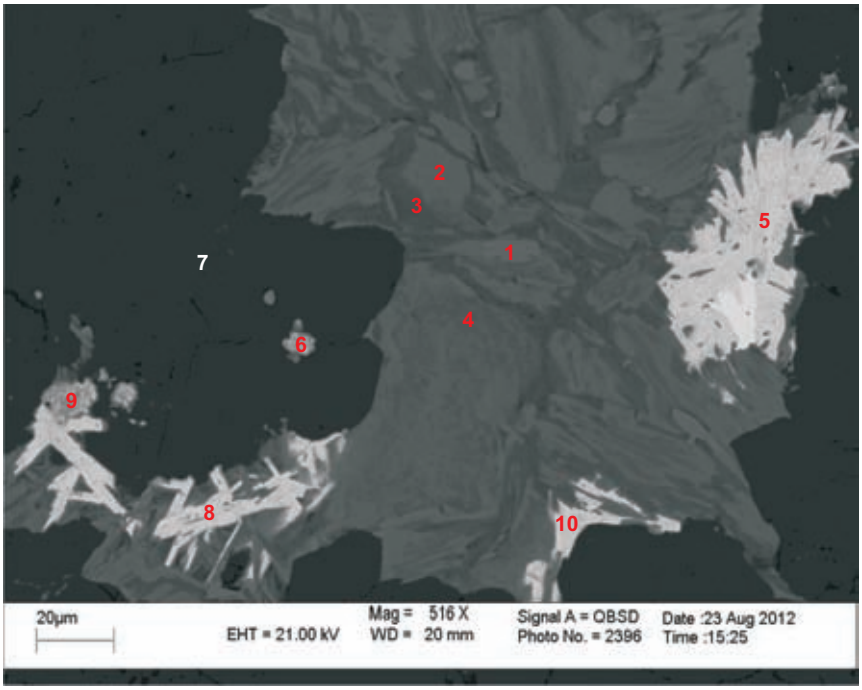
6. Synchysite-(Ce)

Figure 1-6.6b: West Moose River Pluton 9837 WDS analyses.



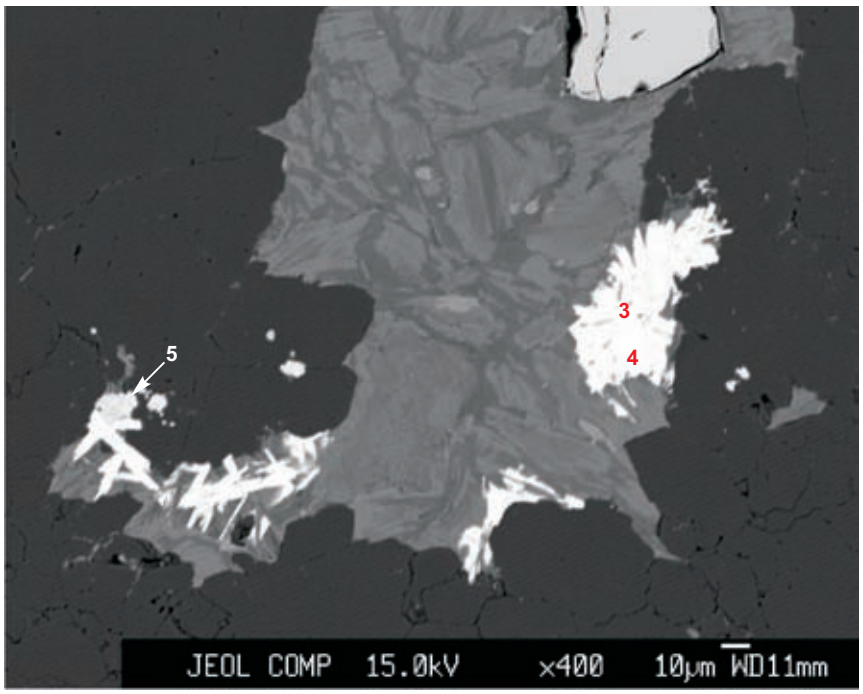
1. Thorite + Synchysite-(Ce)
2. Synchysite-(Ce)

Figure 1-6.7: West Moose River Pluton 9837; magnification of figure 6. Thorite inclusion in synchysite-(Ce).



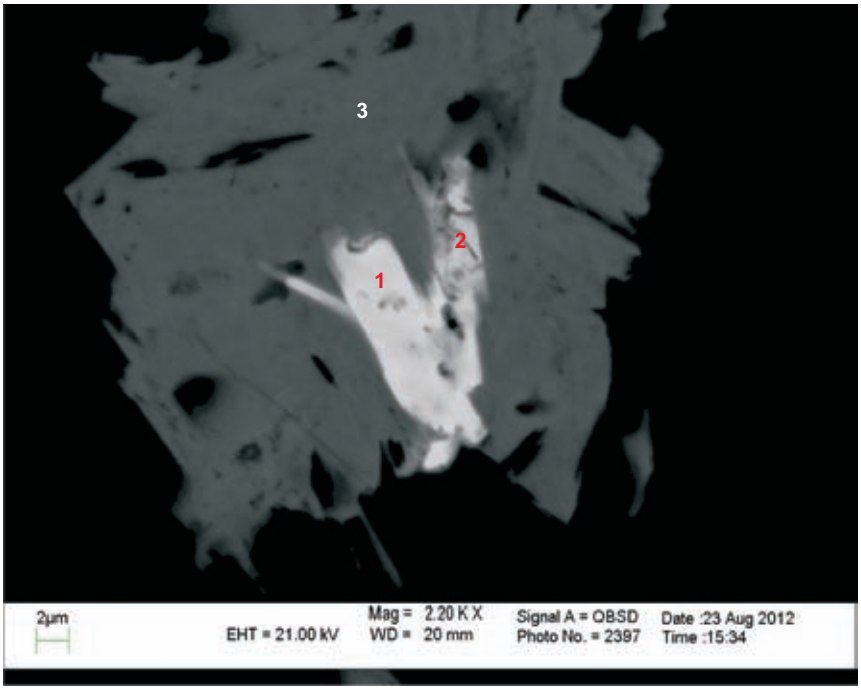
1. Rutile
2. Fe-Chlorite
3. Chlorite
4. Fe-Chlorite
5. Synchysite-(Ce)
6. Hingganite-(Y)
7. Albite
8. Synchysite-(Ce)
9. Hingganite-(Y)
10. Synchysite-(Y)

Figure 1-6.8a: West Moose River Pluton 9837 EDS analyses; two types of chlorite are present. Synchysite-(Ce) seems to be the last mineral to crystallize (acicular crystals, replacive texture, in some places rims chlorite). Hingganite-(Y) inclusions in albite.



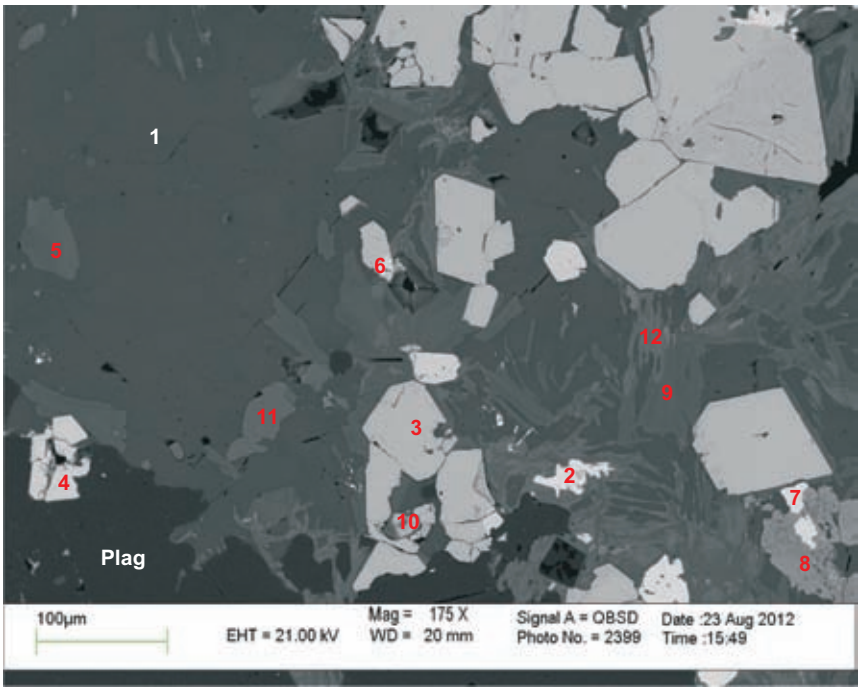
3. Synchysite-(Ce)
4. Thorite
5. Allanite-(Ce)

Figure 1-6.8b: West Moose River Pluton 9837 WDS analyses.



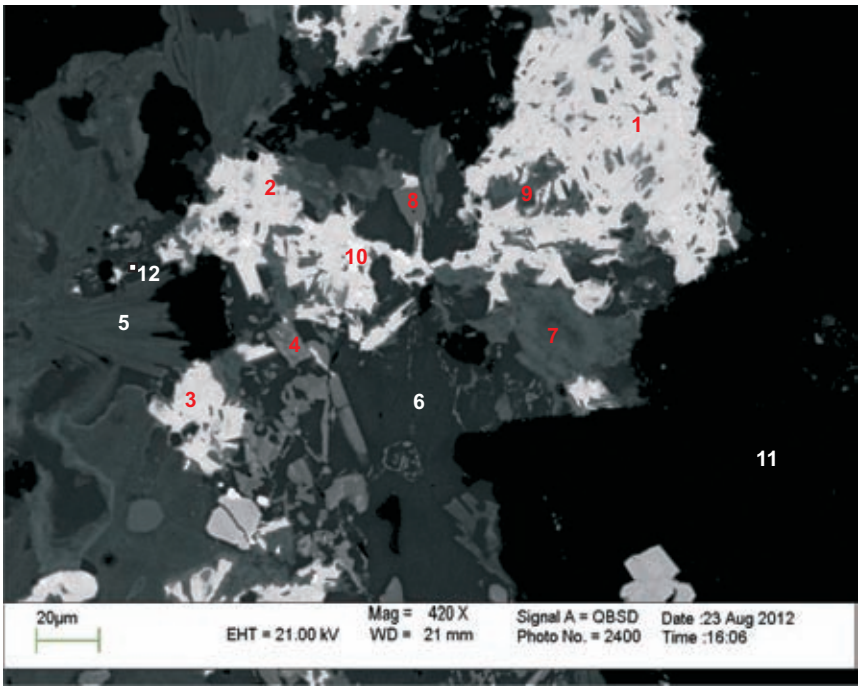
1. Thorite
2. Thorite + Synchysite-(Ce)
3. Synchysite-(Ce)

Figure 1-6.9: West Moose River Pluton 9837; magnification of Figure 8 (analysis 5); thorite fills voids in synchysite-(Ce) and is the latest mineral to form.



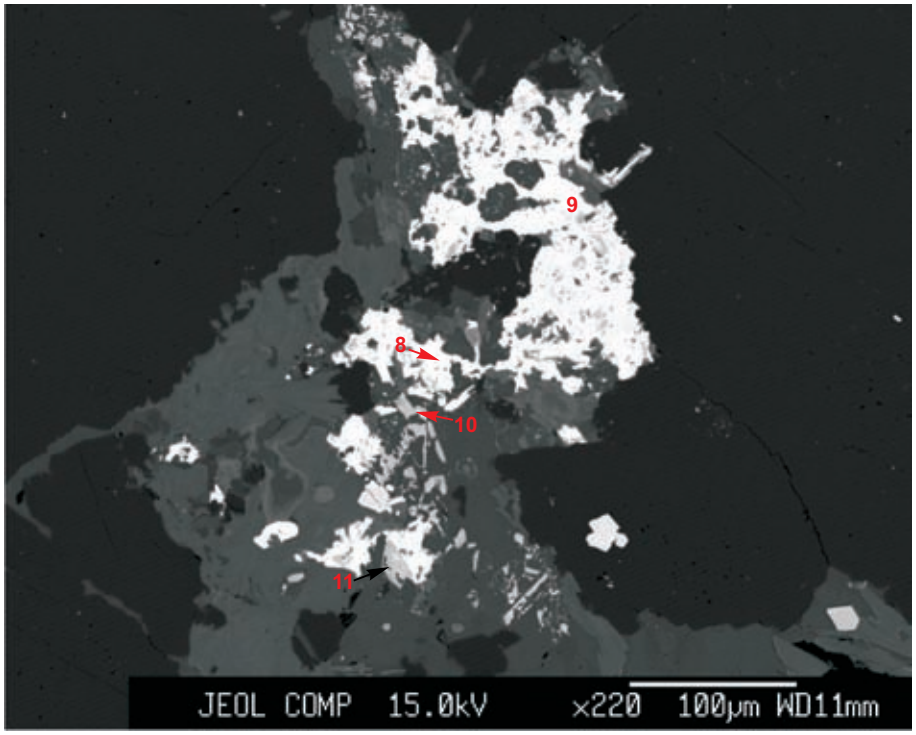
1. Calcite
2. Synchysite-(Ce)
3. Magnetite
4. Zircon
5. Biotite
6. Synchysite-(Ce)
7. Xenotime
8. Ilmenite
9. Chlorite
10. Magnetite
11. Apatite
12. Fe-Chlorite

Figure 1-6.10: West Moose River Pluton 9837; order of crystallization: chlorite → calcite → secondary biotite (analysis 5) → magnetite → Fe-chlorite (rims magnetite) → synchysite-(Ce) (euhedral) →? zircon and xenotime. Apatite is also present (analysis 11) and postdates calcite.



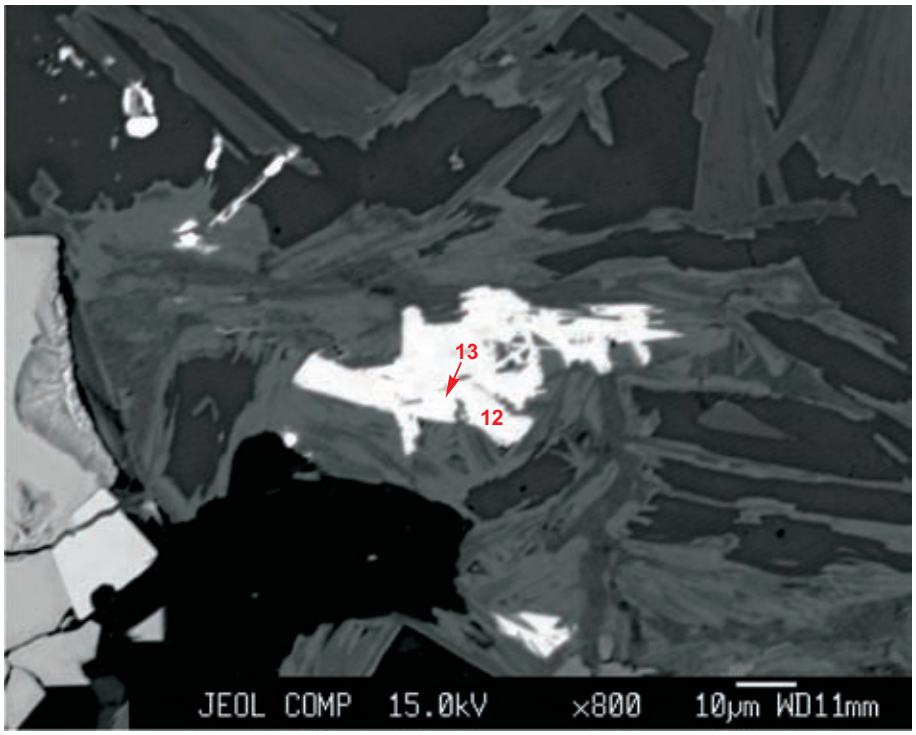
1. Synchysite-(Ce) + others
2. Synchysite-(Ce)
3. Synchysite-(Ce)
4. Allanite-(Ce)
5. Chlorite
6. Calcite + others
7. Fe-Chlorite
8. Rutile
9. Fe-Chlorite
10. Thorite
11. Albite
12. Mixture

Figure 1-6.11a: West Moose River Pluton 9837 EDS analyses; order of crystallization: chlorite (analysis 5) → calcite → Fe-chlorite (analysis 7) and allanite-(Ce). All dark spots are albite.



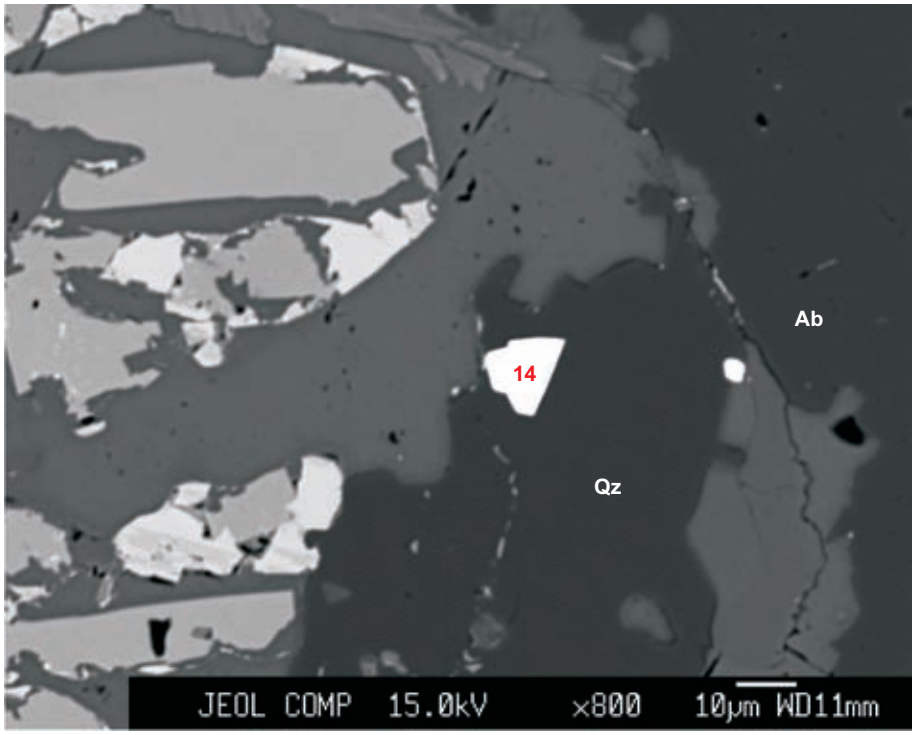
8. Thorite
9. Synchysite-(Ce)
10. Allanite-(Ce)
11. Allanite-(Ce) + calcite

Figure 1-6.11b: West Moose River Pluton 9837 WDS analyses.



12. Synchysite-(Ce) + chlorite
13. Thorite

Figure 1-6.12: West Moose River Pluton 9837 WDS analyses.



14. Samarskite-(Y)

Figure 1-6.13: West Moose River Pluton 9837 WDS analysis.

Table 1-6A: Normalised EDS analyses of minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Fig	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
Position	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10	11
Mineral	Fe-Chl	Chl	Mag	Ab	Rt	Fe-Chl	Xtm	Xtm	Xtm	Xtm	Mag	Chl	Kfs (+Fe)?	Cal (+others)	Qz	Xtm	Cal
SiO_2	31.30	31.38	b.d	68.25	2.75	32.03	5.14	3.08	2.13	b.d	b.d	33.17	52.97	5.89	100.00	3.46	b.d
Al_2O_3	22.62	23.85	b.d	19.31	1.66	22.52	b.d	b.d	b.d	b.d	b.d	22.63	28.91	1.95	b.d	b.d	b.d
FeO	42.01	30.53	100.00	b.d	8.18	42.30	1.32	b.d	b.d	1.30	100.00	29.89	4.43	b.d	b.d	b.d	1.06
MnO	0.51	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
MgO	3.57	14.24	b.d	b.d	b.d	3.16	b.d	b.d	b.d	b.d	b.d	14.31	2.73	b.d	b.d	b.d	b.d
CaO	b.d	b.d	b.d	0.50	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	92.16	b.d	b.d	98.94
Na_2O	b.d	b.d	b.d	11.94	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
K_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	10.96	b.d	b.d	b.d	b.d
P_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	42.04	38.61	40.09	39.54	b.d	b.d	b.d	b.d	b.d	38.24	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.12	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	b.d	b.d	87.41	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	50.26	48.79	50.06	50.73	b.d	b.d	b.d	b.d	b.d	49.53	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.37	3.84	3.55	b.d	b.d	b.d	b.d	b.d	3.39	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.52	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.62	3.88	2.53	b.d	b.d	b.d	b.d	b.d	4.37	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CoO	b.d	b.d	b.d	b.d	b.d	b.d	1.24	b.d	b.d	1.23	b.d	b.d	b.d	b.d	b.d	1.01	b.d
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Notes: Fe-Chl: Fe-rich chlorite, Bt: biotite, Cal: calcite, Tnt: titanite, Syn: synchysite-(Ce), Mix: mixture.																

Table 1-6A: Normalised EDS analyses of minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Fig	2	2	2	2	3	3	3	3	3	3	4	4	4	4	5	5	5
Position	12	13	14	15	1	2	3	4	5	6	1	2	3	4	1	2	3
Mineral	Ab	Xtm (+others)	Ttn in Qz	Ab	Syn (+others)	Syn	Chl	Cal	Chl	Ab	Thr	Syn	Syn	Hing	Xtm (+SiO_2)	Xtm (+SiO_2)	Xtm (+SiO_2)
SiO_2	68.62	11.96	40.10	69.14	3.56	b.d	34.22	b.d	34.26	69.50	25.70	1.38	b.d	35.68	12.03	3.88	4.54
Al_2O_3	19.34	5.67	3.20	18.44	b.d	b.d	22.22	b.d	22.52	18.52	5.01	b.d	b.d	b.d	b.d	b.d	b.d
FeO	b.d	1.54	0.74	b.d	3.92	b.d	37.73	1.77	29.71	b.d	9.84	1.63	b.d	7.95	b.d	b.d	b.d
MnO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.25	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
MgO	b.d	b.d	b.d	b.d	b.d	b.d	5.09	b.d	13.52	b.d	2.23	b.d	b.d	b.d	b.d	b.d	b.d
CaO	0.76	2.98	24.74	b.d	20.73	24.84	b.d	95.98	b.d	b.d	2.78	23.31	25.17	3.65	b.d	b.d	b.d
Na_2O	11.27	b.d	b.d	12.42	b.d	b.d	b.d	b.d	b.d	11.98	b.d	b.d	b.d	b.d	b.d	b.d	b.d
K_2O	b.d	2.10	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
P_2O_5	b.d	31.87	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	40.02	39.26	38.51
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	31.22	b.d	b.d	b.d	0.75	b.d	b.d	b.d	2.24	b.d	b.d	b.d	b.d	b.d	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	40.43	b.d	b.d	5.12	4.41	b.d	b.d	b.d	b.d	6.32	5.12	4.28	34.27	44.71	49.62	47.57
La_2O_3	b.d	b.d	b.d	b.d	10.51	14.78	b.d	b.d	b.d	b.d	b.d	14.55	15.02	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	b.d	23.19	29.39	b.d	b.d	b.d	b.d	b.d	29.08	30.00	b.d	b.d	b.d	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	8.93	12.76	b.d	b.d	b.d	b.d	b.d	12.54	12.60	2.32	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.33	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	6.28	b.d	b.d	b.d
Dy_2O_3	b.d	2.28	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	6.52	b.d	2.61	3.63
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.72
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.25	3.58	3.03
ThO_2	b.d	b.d	b.d	b.d	11.89	b.d	b.d	b.d	b.d	b.d	45.88	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	b.d	0.00	0.00	b.d	b.d	b.d	b.d	b.d	0.00	0.00	b.d	b.d	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CoO	b.d	1.16	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.05	b.d
Total	100.00	100.00	100.00	100.00	87.85	86.17	100.00	100.00	100.00	100.00	100.00	87.61	87.06	100.00	100.00	100.00	100.00

Table 1-6A: Normalised EDS analyses of minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Fig	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6
Position	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Mineral	Xtm (+SiO_2)	Xtm (+SiO_2)	Xtm (+SiO_2)	Xtm (+SiO_2)	Rt	Cal (+SiO_2)	Ab	Syn	Syn	Syn	Syn	Rt	Chl	Syn (+others)	Cal	Ab	Chl
SiO_2	16.14	17.16	13.37	13.53	1.76	21.20	69.21	b.d	b.d	b.d	7.02	0.76	34.67	11.28	b.d	69.19	33.31
Al_2O_3	b.d	b.d	b.d	b.d	b.d	1.49	18.87	b.d	b.d	b.d	4.54	b.d	19.50	5.88	b.d	18.75	19.32
FeO	b.d	b.d	b.d	b.d	3.64	b.d	b.d	b.d	1.13	b.d	8.73	0.78	37.28	14.73	b.d	b.d	39.71
MnO	b.d	b.d	b.d	b.d	b.d	2.89	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.04	b.d	b.d
MgO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.04	b.d	8.55	2.07	b.d	b.d	6.37
CaO	1.58	1.54	b.d	b.d	b.d	73.41	b.d	24.93	23.15	23.48	19.38	0.43	b.d	15.82	98.96	b.d	1.29
Na_2O	b.d	b.d	b.d	b.d	b.d	1.02	11.92	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	12.06	b.d
K_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
P_2O_5	37.05	32.65	35.62	34.26	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.64	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	b.d	b.d	94.60	b.d	b.d	b.d	b.d	b.d	b.d	95.39	b.d	b.d	b.d	b.d	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	38.55	40.72	45.42	43.97	b.d	b.d	b.d	5.70	5.23	5.08	3.88	b.d	b.d	b.d	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	13.89	14.60	15.20	11.12	b.d	b.d	9.72	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	29.13	28.96	30.57	23.43	b.d	b.d	19.21	b.d	b.d	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	11.29	12.80	11.19	10.15	b.d	b.d	8.65	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	1.43	b.d	1.58	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	2.99	2.32	1.87	2.21	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	3.69	3.10	2.69	3.27	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	b.d	b.d	b.d	b.d	0.00	0.00	0.00	0.00	b.d	b.d	0.00	b.d	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CoO	b.d	1.09	1.02	1.19	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	84.94	85.88	85.53	90.28	100.00	100.00	87.37	100.00	100.00	100.00

Table 1-6A: Normalised EDS analyses of minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Fig	7	7	8	8	8	8	8	8	8	8	8	8	9	9	9	10	10
Position	1	2	1	2	3	4	5	6	7	8	9	10	1	2	3	1	2
Mineral	Thr(+Syn)	Syn	Rt	Fe-Chl	Chl	Fe-Chl	Syn	Hing	Ab	Syn	Hing	Syn	Thr	Thr +others	Syn	Cal	Syn
SiO_2	16.02	b.d	0.67	32.15	33.71	34.11	b.d	36.98	68.51	b.d	37.27	b.d	22.95	4.97	b.d	b.d	b.d
Al_2O_3	1.73	b.d	b.d	21.81	22.68	19.35	b.d	b.d	19.42	b.d	b.d	1.28	b.d	b.d	b.d	b.d	b.d
FeO	3.84	b.d	1.68	41.39	28.45	36.29	b.d	5.26	b.d	b.d	8.29	1.90	1.93	4.30	b.d	b.d	2.46
MnO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.46	b.d
MgO	b.d	b.d	b.d	4.66	15.16	10.24	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CaO	9.29	24.25	b.d	b.d	b.d	b.d	24.16	4.49	b.d	24.46	4.98	23.24	1.60	11.96	25.60	97.54	23.38
Na_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	12.08	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
K_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
P_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	97.65	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	7.20	4.91	b.d	b.d	b.d	b.d	4.77	39.95	b.d	5.10	38.03	5.52	10.59	b.d	6.03	b.d	4.15
La_2O_3	4.72	14.62	b.d	b.d	b.d	b.d	15.87	b.d	b.d	15.08	b.d	14.30	b.d	b.d	14.78	b.d	14.52
Ce_2O_3	10.13	31.35	b.d	b.d	b.d	b.d	30.31	b.d	b.d	29.40	b.d	29.78	b.d	3.44	30.46	b.d	30.08
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	4.21	11.27	b.d	b.d	b.d	b.d	11.93	b.d	b.d	12.11	b.d	11.77	b.d	b.d	11.08	b.d	11.56
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.98	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	5.26	b.d	b.d	3.96	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	4.76	b.d	b.d	6.05	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	37.97	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	62.94	67.45	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	0.00	0.00	b.d	b.d	b.d	b.d	0.00	b.d	b.d	0.00	b.d	0.00	b.d	0.00	0.00	b.d	0.00
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.44	b.d	b.d	b.d	b.d	b.d	b.d
CoO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.31	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Total	95.10	86.41	100.00	100.00	100.00	100.00	87.04	100.00	100.00	86.16	100.00	87.79	100.00	92.11	87.96	100.00	86.16

Table 1-6A: Normalised EDS analyses of minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Fig	10	10	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11
Position	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
Mineral	Mag	Zrn	Bt	Syn	Xtm	Ilm	Chl	Mag	Ap	Fe-Chl	Syn (+others)	Syn	Syn	Aln	Chl	Cal (+others)	Fe-Chl
SiO_2	0.95	32.10	40.05	1.88	2.63	b.d	32.29	4.38	b.d	32.14	4.97	1.30	b.d	37.09	31.61	12.72	34.31
Al_2O_3	b.d	b.d	14.21	b.d	b.d	b.d	23.60	3.72	b.d	21.90	1.82	b.d	b.d	16.78	24.13	5.47	21.12
FeO	99.05	b.d	17.81	1.75	b.d	32.43	29.98	89.84	b.d	41.06	2.46	b.d	b.d	14.02	31.42	2.18	35.88
MnO	b.d	b.d	b.d	b.d	b.d	2.36	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
MgO	b.d	b.d	12.68	b.d	b.d	b.d	14.13	2.06	b.d	4.91	b.d	b.d	b.d	b.d	12.84	1.05	8.28
CaO	b.d	b.d	b.d	24.76	b.d	b.d	b.d	b.d	48.20	b.d	22.15	23.78	25.00	11.35	b.d	75.90	0.41
Na_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
K_2O	b.d	b.d	8.98	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.68	b.d
P_2O_5	b.d	b.d	b.d	b.d	39.24	b.d	b.d	b.d	44.12	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	1.03	b.d	b.d	65.21	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ZrO_2	b.d	67.90	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	b.d	3.15	50.26	b.d	b.d	b.d	b.d	b.d	5.83	5.39	5.74	b.d	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	15.35	b.d	b.d	b.d	b.d	b.d	b.d	10.60	14.56	13.26	4.21	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	31.23	b.d	b.d	b.d	b.d	b.d	b.d	26.58	30.21	29.14	14.02	b.d	b.d	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	12.80	b.d	b.d	b.d	b.d	b.d	b.d	10.41	10.46	11.82	2.53	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	3.14	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	3.83	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	0.00	0.00	b.d	b.d	b.d	b.d	0.00	b.d	0.00	0.00	0.00	b.d	b.d	b.d	b.d
Cl	b.d	b.d	0.00	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CoO	b.d	b.d	b.d	b.d	0.91	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Total	100.00	100.00	94.76	90.93	100.00	100.00	100.00	100.00	92.31	100.00	84.82	85.70	84.97	100.00	100.00	100.00	100.00

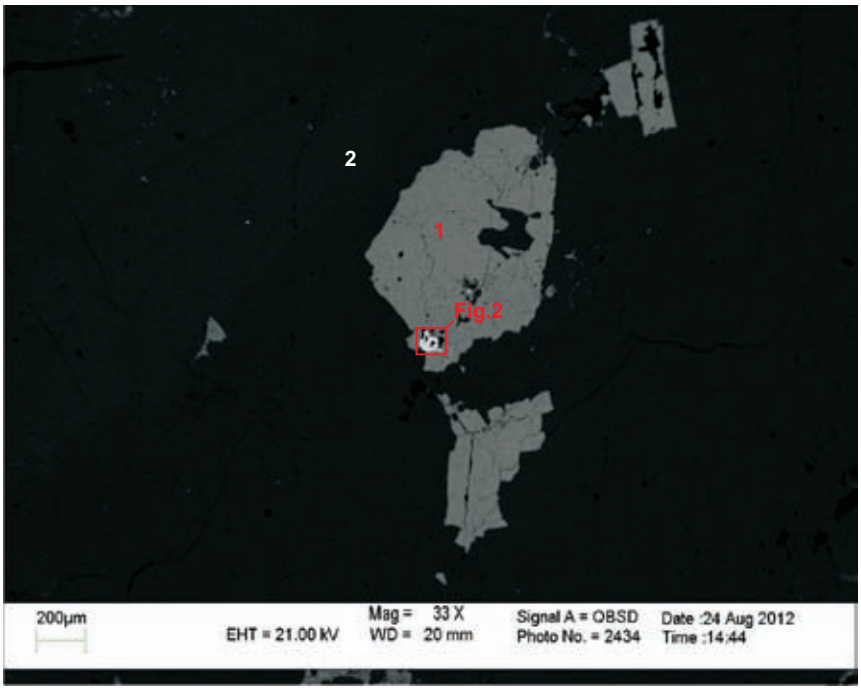
Table 1-6A: Normalised EDS analyses of minerals from sample 9837.

Sample	9837	9837	9837	9837	9837
Fig	11	11	11	11	11
Position	8	9	10	11	12
Mineral	Rt	Fe-Chl	Thr	Ab	Mix
SiO_2	1.13	32.32	22.59	68.98	16.38
Al_2O_3	b.d	18.74	b.d	19.02	6.12
FeO	0.89	34.26	1.39	b.d	6.91
MnO	b.d	b.d	b.d	b.d	1.26
MgO	b.d	11.45	b.d	b.d	2.39
CaO	1.06	1.55	1.62	b.d	61.96
Na_2O	b.d	b.d	b.d	12.00	2.19
K_2O	b.d	b.d	b.d	b.d	b.d
P_2O_5	b.d	b.d	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	2.41	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d
TiO_2	94.51	b.d	b.d	b.d	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	10.44	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	1.69	b.d	b.d	2.80
Pr_2O_3	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	59.79	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	0.00	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d
CoO	b.d	b.d	b.d	b.d	b.d
Total	100.00	100.00	95.82	100.00	100.00

Table 1-6B: Electron microprobe analyses of REE-minerals from sample 9837.

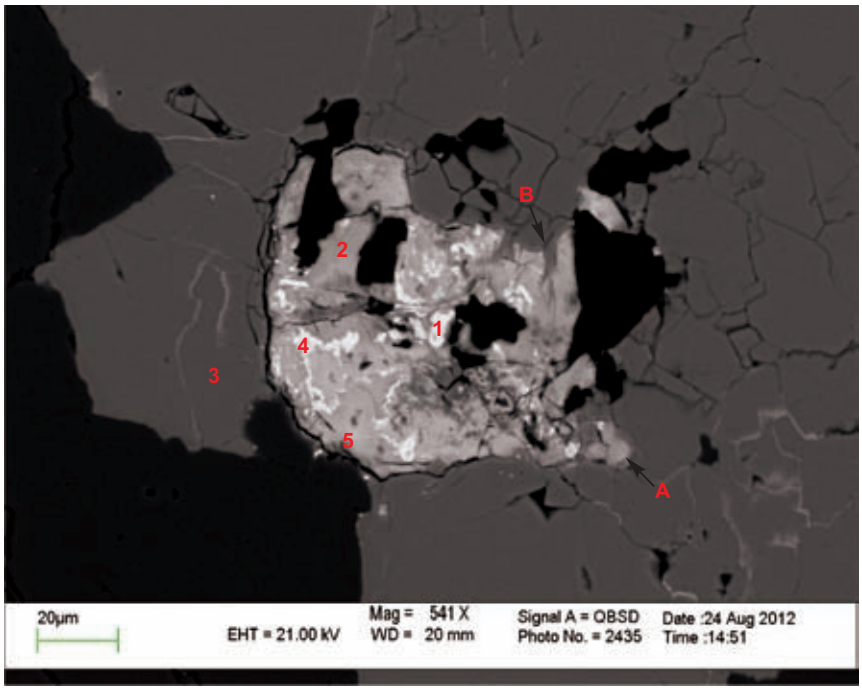
Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Figure	8	8	8	6	2	11	11	11	11	12	12	13
No.	3	4	5	6	7	8	9	10	11	12	13	14
Mineral	Syn	Thr	Hing	Syn	Xtm	Thr	Syn	Aln	Aln +Cal	Syn +Chl	Thr	Sam
SiO_2	0.08	18.99	26.28	0.09	0.60	19.11	b.d.	32.66	12.08	20.79	14.28	0.55
Al_2O_3	b.d.	0.18	0.11	b.d.	b.d.	0.23	b.d.	15.58	7.36	11.83	0.79	b.d.
FeO	0.58	1.85	9.17	2.10	0.37	1.25	0.15	14.59	11.40	21.38	5.02	0.11
MgO	b.d.	b.d.	0.01	b.d.	b.d.	b.d.	b.d.	0.19	4.14	4.13	0.03	b.d.
MnO	b.d.	0.13	0.08	b.d.	b.d.	0.11	b.d.	0.53	0.30	0.23	0.00	0.04
CaO	15.71	1.26	2.62	14.38	0.08	1.13	18.53	10.59	21.79	8.00	2.76	0.67
Na_2O	b.d.	0.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.60	2.79	0.04	b.d.
K_2O	0.05	0.01	0.03	0.01	0.04	0.03	0.05	0.02	0.07	0.19	0.04	0.02
P_2O_5	b.d.	1.36	b.d.	0.05	35.98	0.46	0.04	b.d.	0.09	0.03	0.79	b.d.
ZrO_2	0.06	b.d.	b.d.	b.d.	b.d.	0.27	0.03	b.d.	0.62	1.33	0.21	0.29
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.04	b.d.	b.d.	b.d.
TiO_2	b.d.	0.01	b.d.	b.d.	b.d.	0.03	b.d.	0.13	0.01	0.26	0.05	1.64
Ta_2O_5	0.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	0.05	b.d.
Nb_2O_5	b.d.	b.d.	0.13	0.02	b.d.	b.d.	b.d.	b.d.	b.d.	0.06	0.59	42.84
Y_2O_3	2.68	8.09	30.78	2.45	48.45	8.13	3.62	0.08	0.36	0.19	4.47	29.27
La_2O_3	10.35	b.d.	b.d.	10.72	b.d.	0.08	9.18	5.23	3.02	0.82	0.19	b.d.
Ce_2O_3	23.06	0.46	0.20	25.32	0.09	0.46	22.94	12.49	3.49	1.64	0.38	0.05
Pr_2O_3	2.37	0.03	0.07	2.45	b.d.	b.d.	2.39	1.28	1.00	0.10	0.19	b.d.
Nd_2O_3	11.67	0.32	0.55	12.00	0.05	0.14	10.33	4.43	1.41	0.82	0.36	0.07
Sm_2O_3	2.53	0.15	0.68	2.53	b.d.	0.26	2.00	0.65	0.29	0.22	0.09	0.17
Eu_2O_3	0.79	b.d.	0.10	0.87	b.d.	0.03	0.68	0.33	0.12	b.d.	0.06	0.08
Gd_2O_3	2.19	1.41	3.84	2.07	2.72	1.69	1.64	0.23	0.20	0.10	0.55	3.16
Dy_2O_3	0.62	2.00	4.53	0.76	4.22	2.13	0.81	0.32	0.35	0.17	0.76	4.95
Ho_2O_3	0.33	0.75	2.22	0.12	1.65	0.89	0.07	b.d.	b.d.	b.d.	0.35	1.88
Er_2O_3	b.d.	0.82	3.27	0.03	4.29	0.69	0.11	0.22	0.04	0.08	0.70	1.34
Yb_2O_3	b.d.	0.69	2.13	b.d.	3.92	0.36	b.d.	b.d.	b.d.	b.d.	0.57	3.92
ThO_2	0.74	53.97	0.43	0.55	0.17	53.75	0.24	0.24	0.20	0.31	61.71	1.20
UO_2	0.08	4.47	0.20	b.d.	0.04	3.15	0.08	0.05	0.01	0.13	1.12	2.33
F	2.32	0.56	0.15	2.21	0.50	0.65	2.10	b.d.	0.64	0.44	0.59	0.18
Total	75.28	97.33	87.51	77.79	102.94	94.76	74.09	99.85	69.35	75.84	96.47	94.68

Appendix 1-7: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9838



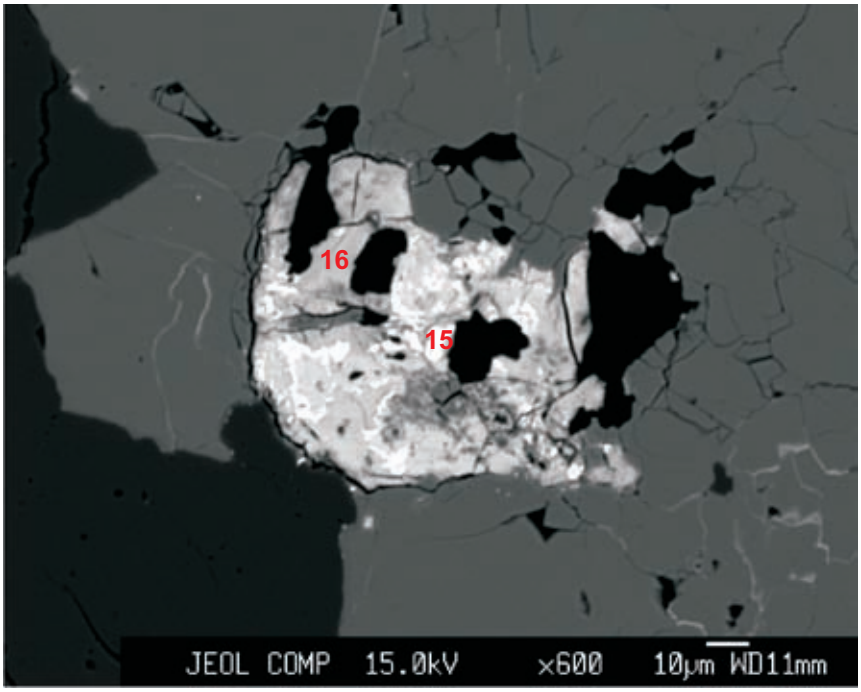
1. Apatite
2. Albite

Figure 1-7.1: West Moose River Pluton 9838.



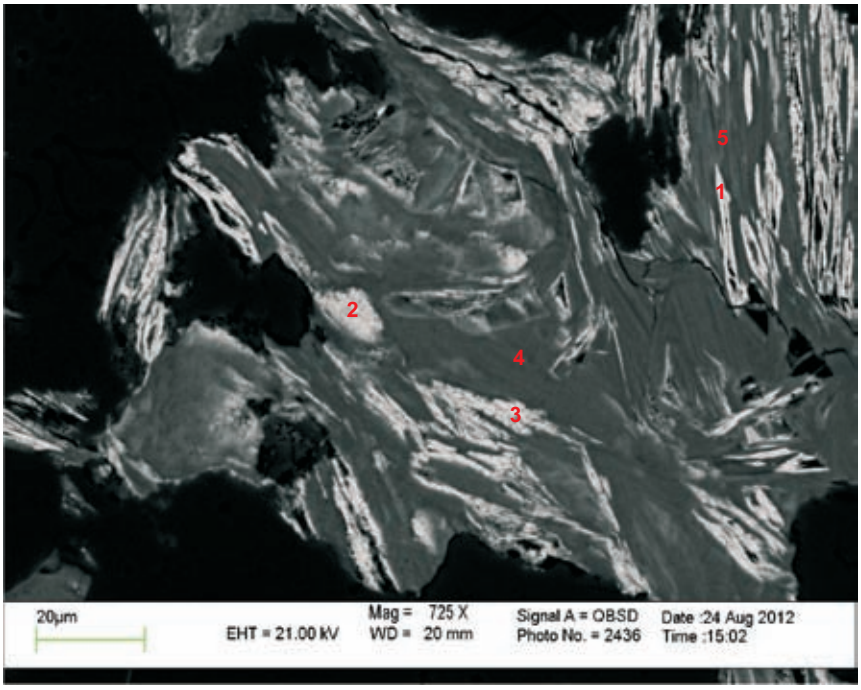
1. Nb-mineral
2. Nb-mineral
3. Apatite
4. Nb-mineral
5. Nb-mineral

Figure 1-7.2a: West Moose River Pluton 9838 EDS analyses; Nb-rich phases (analyses 1,2,4,&5) are replacing apatite (analysis 3) or, alternatively, are filling pores



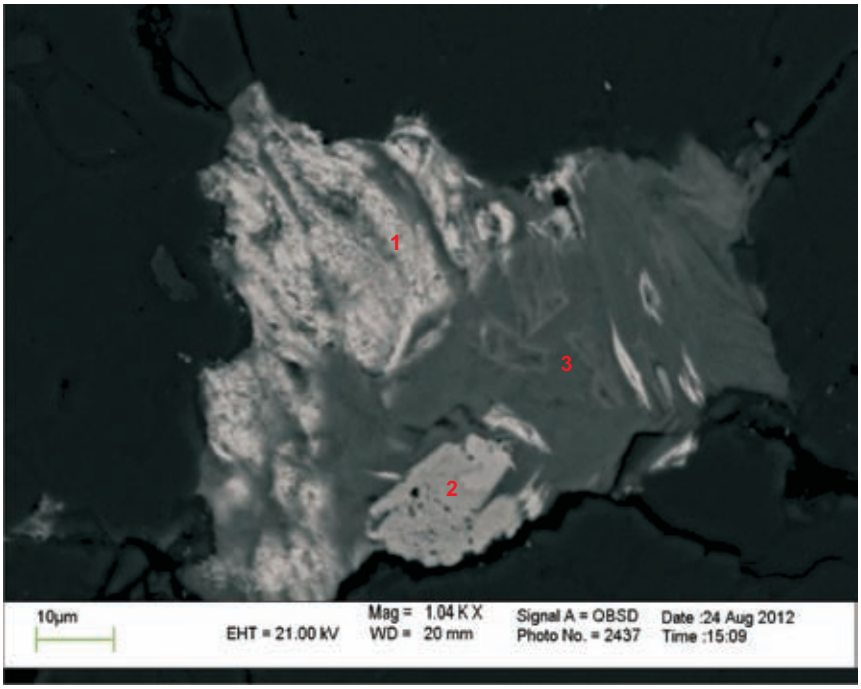
15:?
16:?

Figure 1-7.2b: West Moose River Pluton 9838 EMP analyses; brighter phase (analysis 15) is more Nb-rich than darker phase (analysis 16).



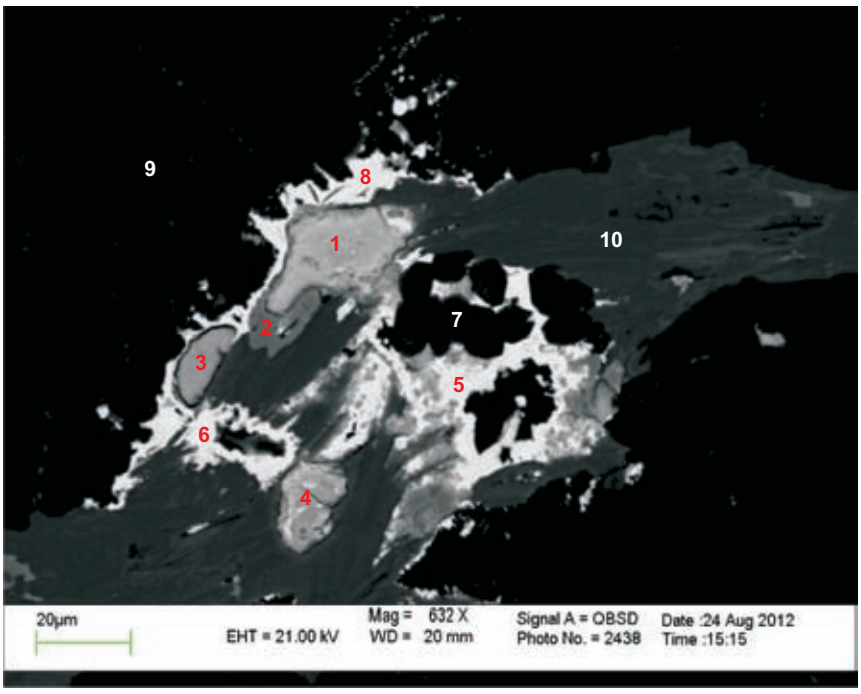
1. Fe-Oxide + Chlorite
2. Fe-Oxide + Chlorite
3. Fe-Oxide + Chlorite
4. Fe-Chlorite
5. Fe-Chlorite

Figure 1-7.3: West Moose River Pluton 9838; crystallization of Fe-oxides (analyses 1,2,&3) along altered biotite cleavage planes. Biotite has been altered to chlorite, and then to Fe-chlorite (analyses 4,&5)



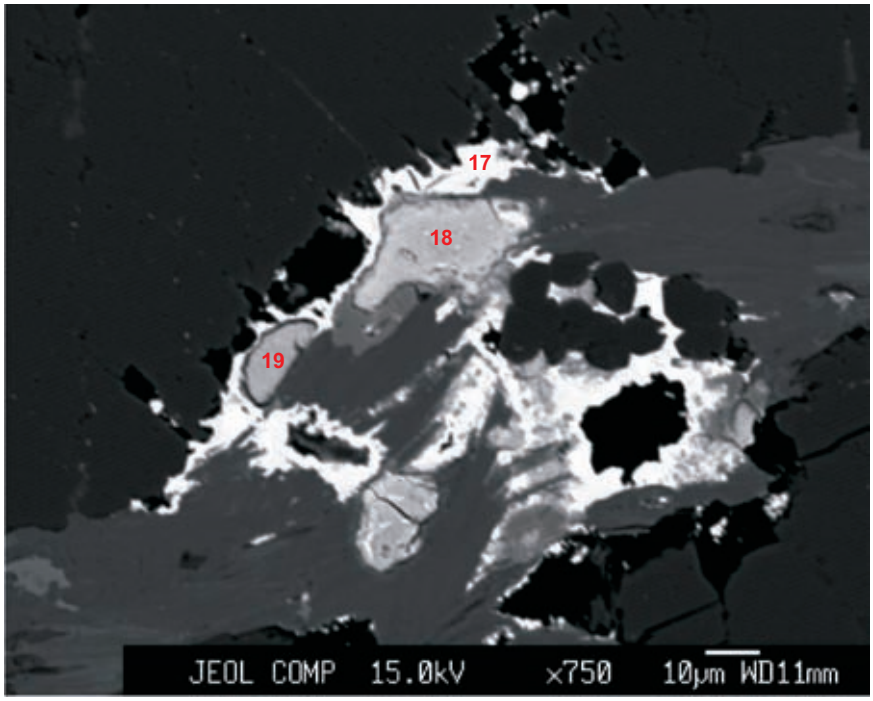
1. Magnetite
2. Rutile
3. Fe-Chlorite

Figure 1-7.4: West Moose River Pluton 9838; crystallization of rutile (analysis 2) and Fe-oxides (analysis 1) from biotite. Biotite had been altered to chlorite and then to Fe-chlorite (analysis 3).



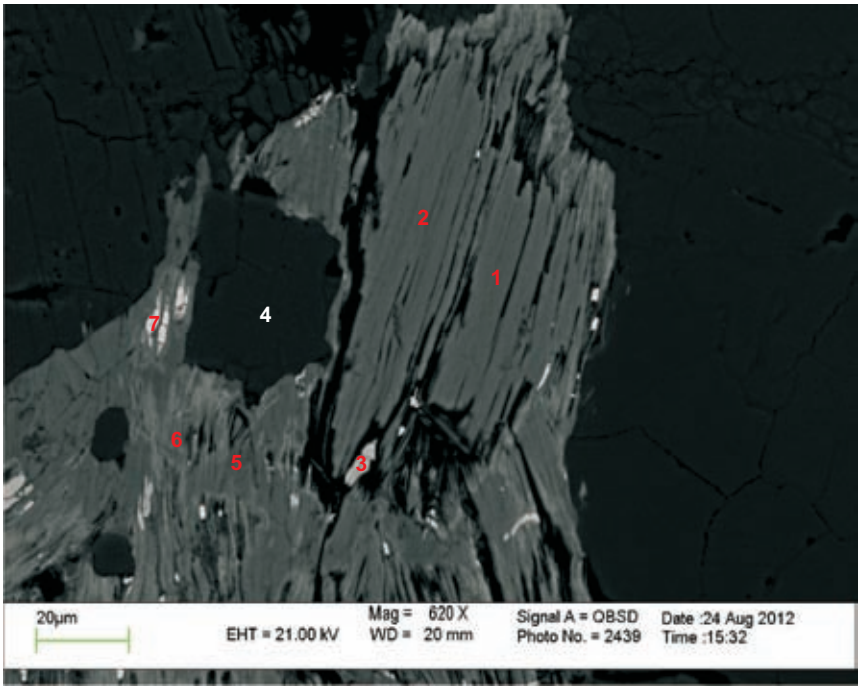
1. Nb-mineral
2. Rutile
3. Nb-mineral
4. Nb-mineral
5. Samarskite-(Y)
6. Samarskite-(Y)
7. Quartz
8. Samarskite-(Y)
9. Albite
10. Chlorite

Figure 1-7.5a: West Moose River Pluton 9838 EDS analyses; precipitation of Nb-rich phases (analyses 1-6) postdates chlorite (analysis 10) in fracture.



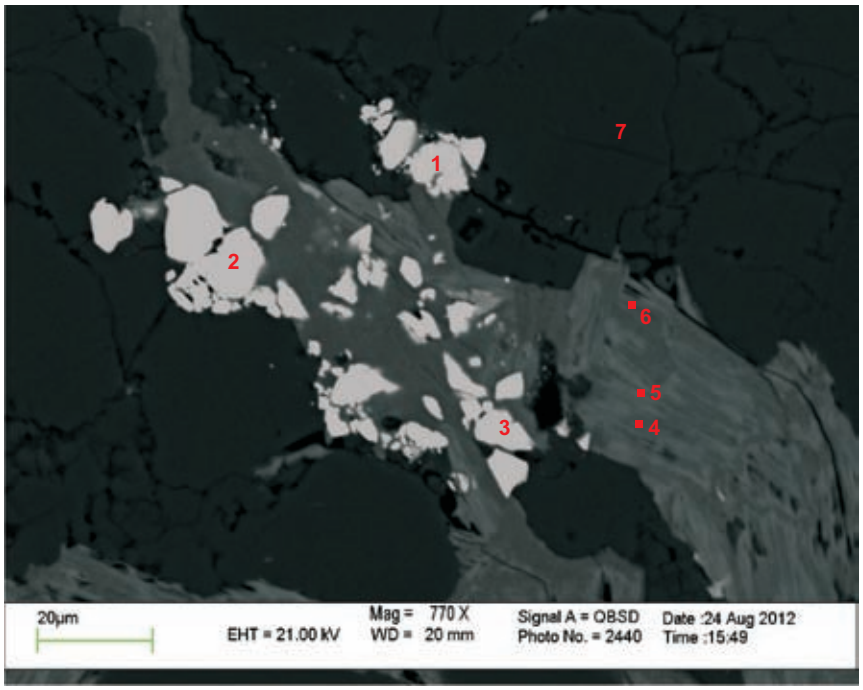
17. Nb-mineral
18. Nb-mineral
19. Nb-mineral

Figure 1-7.5b: West Moose River Pluton 9838 WDS analyses



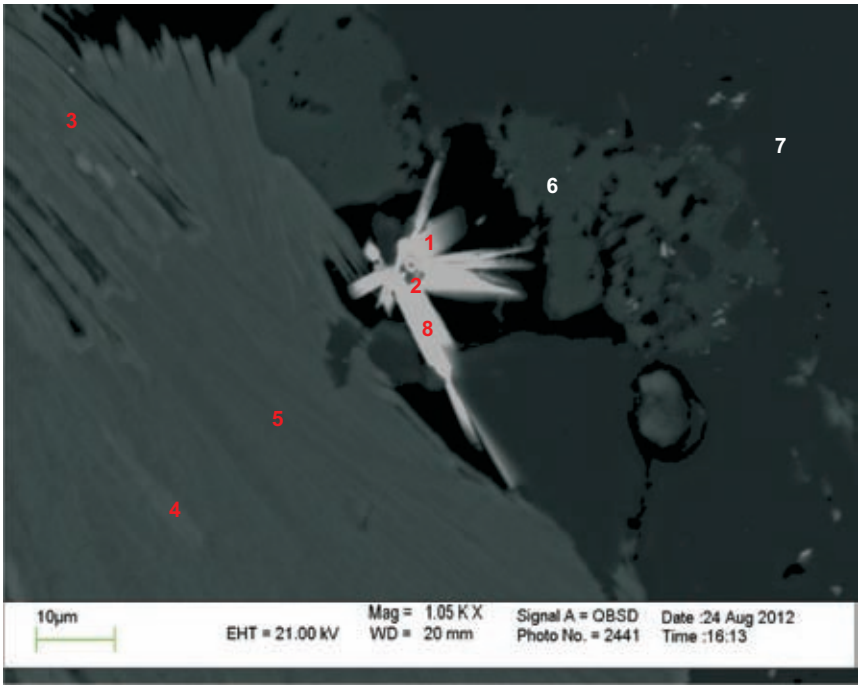
1. Biotite
2. Biotite
3. Bad Spot
4. Albite
5. Fe-Chlorite
6. Albite?
7. Albite?

Figure 1-7.6: West Moose River Pluton 9838



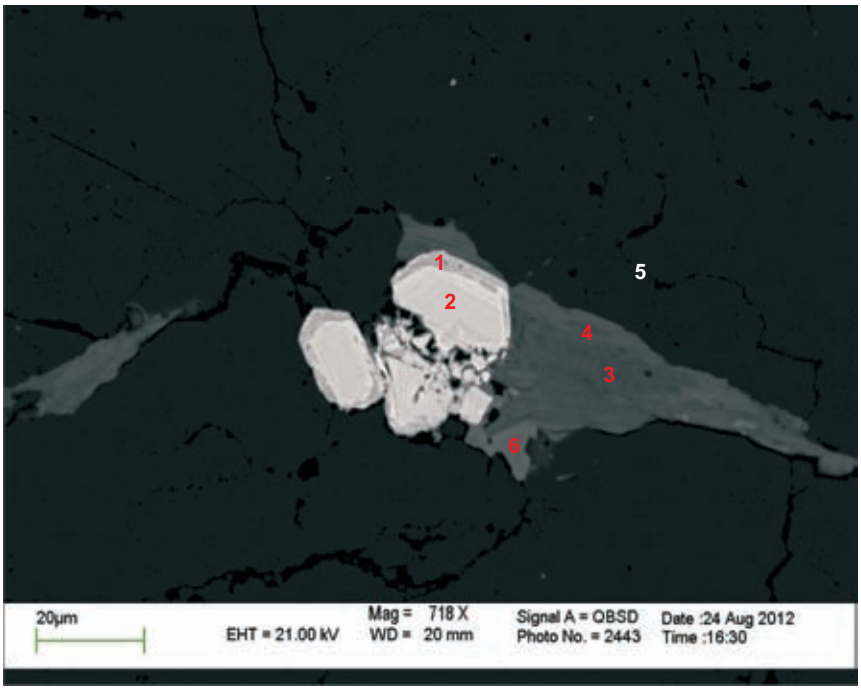
1. Zircon
2. Zircon
3. Zircon
4. Biotite
5. Fe-Chlorite
6. Fe-Chlorite
7. Albite

Figure 1-7.7: West Moose River Pluton 9838; hydrothermal zircon (analyses 1,2,&3) fills fractures and/or replaces biotite (analysis 4) that contains patches of Fe-chlorite (analyses 5&6).



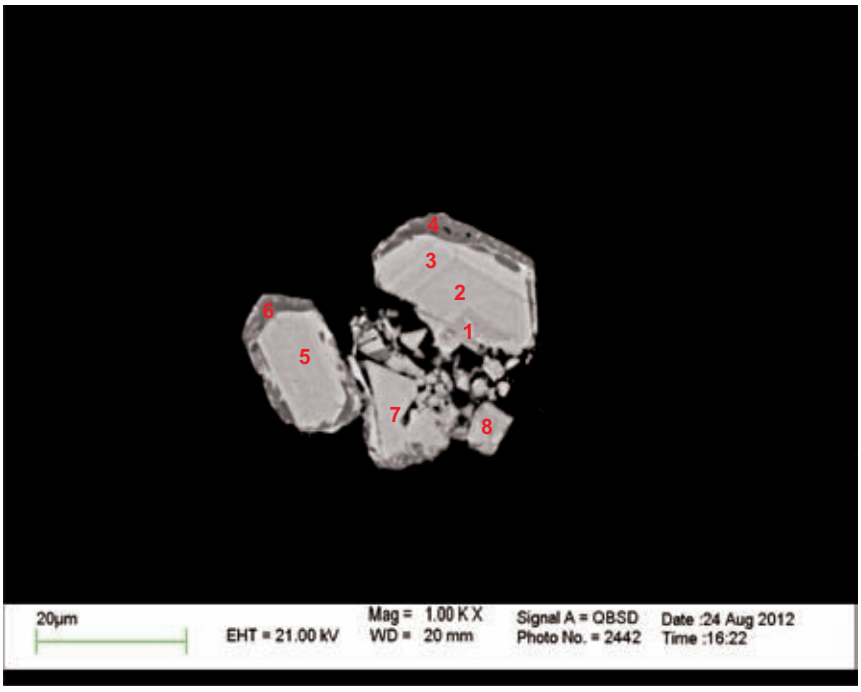
1. Chernovite-(Y)?
2. Chernovite-(Y) + others?
3. Fe-Chlorite
4. Fe-Chlorite
5. Fe-Chlorite
6. K-feldspar
7. Albite
8. Thorite-xenotime (too small for good analysis)

Figure 1-7.8: West Moose River Pluton 9838; acicular crystals of thorite-xenotime, and possibly chernovite-Y (analyses 1&2) fill a cavity that probably is associated with K-feldspar dissolution. These crystals postdate the Fe-chlorite.



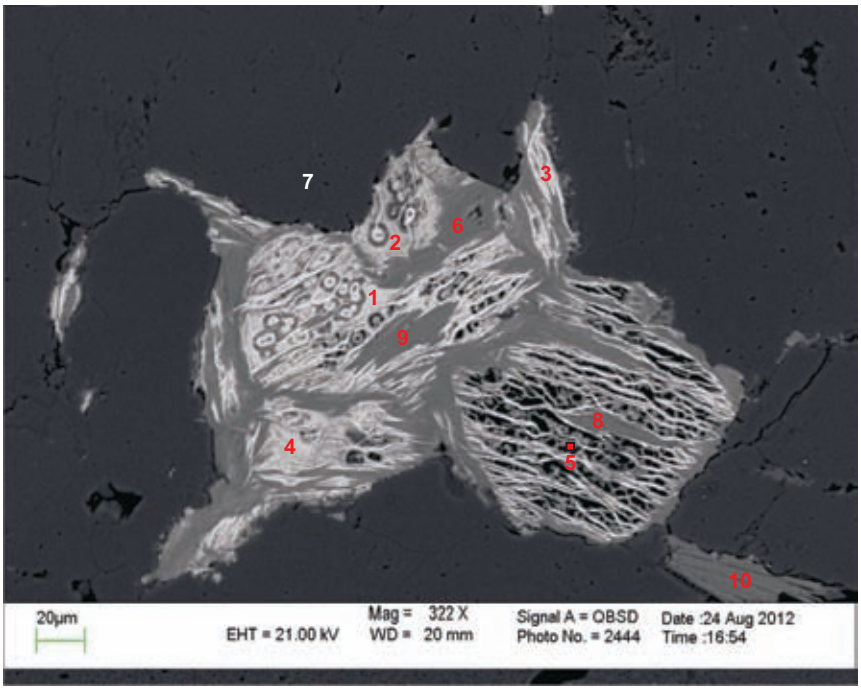
1. Zircon
2. Zircon
3. Chlorite
4. Chlorite
5. Albite
6. Rutile

Figure 1-7.9: West Moose River Pluton 9838; chlorite, zoned zircon, and rutile fill fractures. Both zircon and rutile are later than chlorite, because in places it seems that they replace chlorite.



1. Zircon
2. Zircon
3. Hf-Zircon
4. Zircon
5. Hf-Zircon
6. Zircon
7. Hf-Zircon
8. Hf-Zircon

Figure 1-7.10: West Moose River Pluton 9838; low-brightness BSE image of figure 9; fractured zircon crystal(s) displaying zoning. It seems that only the cores are Hf-rich zircon.



1. Fe-Oxide
2. Fe-Oxide
3. Fe-Oxide + Chlorite
4. Fe-Oxide
5. Fe-Oxide
6. Chlorite
7. Albite
8. Biotite
9. Biotite
10. Bad Spot

Figure 1-7.11: West Moose River Pluton 9838; biotite crystal (analyses 8&9) partly altered to chlorite (analysis 6) and variously dissected by Fe-oxide reticulate veinlets and very small spherulites.

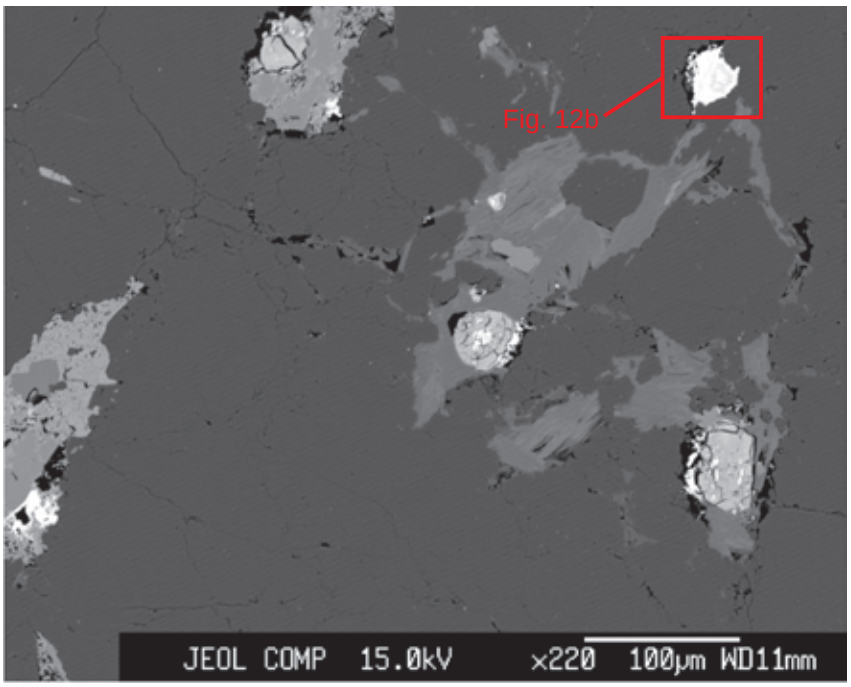
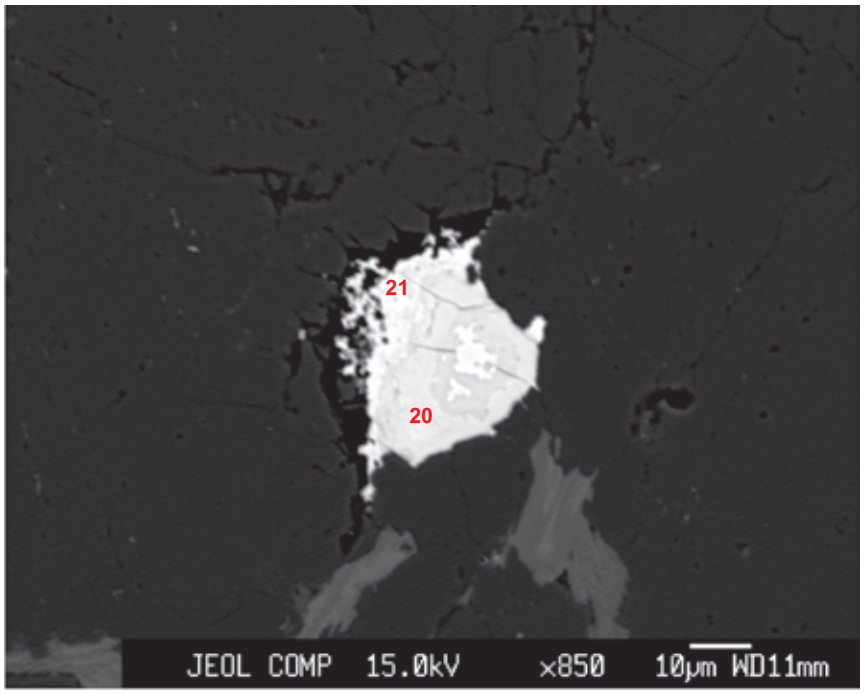


Figure 1-7.12a: West Moose River Pluton 9838 EMP image.



20. Samarskite-(Y)
21. Samarskite-(Y)

Figure 1-7.12b: West Moose River Pluton 9838 WDS analyses; samarskite-(Y) (analyses 20 & 21) replacing rutile.

Table 1-7A: Normalised EDS analyses of minerals from sample 9838

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Fig	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	5	5	5
Position	1	2	1	2	3	4	5	1	2	3	4	5	1	2	3	1	2	3
Mineral	Ap	Ab	?	?	Ap	?	?	Fe-Oxide +Chl	Fe-Oxide +Chl	Fe-Oxide +Chl	Fe-Chl	Fe-Chl	Mag	Ilm	Fe-Chl	?	Rt	?
SiO_2	b.d.	68.86	10.18	9.17	b.d.	10.27	10.15	18.21	13.14	13.86	32.52	39.25	6.97	b.d.	34.74	9.63	2.52	10.85
Al_2O_3	b.d.	18.59	2.99	2.96	b.d.	2.43	3.86	8.37	6.59	7.12	21.54	18.02	3.70	b.d.	20.66	3.55	0.79	3.22
FeO	b.d.	b.d.	10.52	8.17	b.d.	9.78	10.13	64.08	77.36	73.70	31.99	27.40	86.43	24.41	29.47	8.32	2.18	6.66
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.53	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.61	2.91	3.58	13.96	11.39	1.75	b.d.	15.13	b.d.	b.d.	b.d.
CaO	47.03	b.d.	2.54	4.06	46.25	3.32	2.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.02	b.d.	1.13
Na_2O	b.d.	12.55	b.d.	3.55	b.d.	2.09	3.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.12	b.d.	2.16
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.18	b.d.	0.85	b.d.	3.08	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	44.51	b.d.	b.d.	9.68	43.94	b.d.	5.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.00	b.d.	4.91
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	47.80	41.38	b.d.	49.28	35.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	39.95	7.48	49.89
Ta_2O_5	b.d.	b.d.	b.d.	4.71	b.d.	b.d.	5.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	6.78	1.87	b.d.	6.35	3.02	1.55	b.d.	0.89	b.d.	0.87	1.16	62.06	b.d.	1.51	87.03	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.11	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	4.10	3.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	20.28	b.d.	8.67
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	3.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	10.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	5.45	12.27	b.d.	6.20	11.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.63	b.d.	12.52
F	0.00	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	2.18	b.d.	6.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	91.54	100.00	100.00	100.00	90.20	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Notes: Ap: apatite, Cher-Y: chernovite-(Y).																	

Table 1-7A: Normalised EDS analyses of minerals from sample 9838

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Fig	5	5	5	5	5	5	5	6	6	6	6	6	6	6	7	7	7	7	7
Position	4	5	6	7	8	9	10	1	2	3	4	5	6	7	1	2	3	4	5
Mineral	?	Sam?	Sam?	Qz	Sam?	Ab	Chl	Bt	Bt	Bad Spot	Ab	Fe-Chl	Ab?	Ab?	Zrn	Zrn	Zrn	Bt	Fe-Chl
SiO_2	9.22	2.42	2.12	100.00	1.53	69.34	33.23	40.35	42.20	81.33	68.36	35.29	68.66	66.32	30.22	31.67	31.52	40.30	34.19
Al_2O_3	2.46	b.d.	b.d.	b.d.	b.d.	18.46	22.48	19.32	16.79	4.18	18.90	20.41	18.34	19.39	2.06	b.d.	b.d.	16.98	20.38
FeO	10.37	3.74	3.57	b.d.	2.41	b.d.	29.64	21.55	16.75	6.85	b.d.	31.33	0.57	1.94	2.01	b.d.	b.d.	22.82	35.85
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	14.64	12.22	13.18	1.26	b.d.	11.66	b.d.	0.99	1.72	b.d.	b.d.	11.63	8.90
CaO	1.58	1.20	1.15	b.d.	0.96	b.d.	b.d.	b.d.	b.d.	b.d.	0.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	1.72	b.d.	b.d.	b.d.	b.d.	12.19	b.d.	b.d.	b.d.	b.d.	12.26	b.d.	12.44	11.35	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.46	9.57	b.d.	b.d.	1.32	b.d.	b.d.	b.d.	b.d.	b.d.	6.26	0.68
P_2O_5	5.04	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	43.96	26.16	26.73	b.d.	21.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	3.90	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	1.99	3.35	3.12	b.d.	2.57	b.d.	b.d.	1.10	1.52	6.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.62	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	64.00	68.33	68.48	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	9.16	7.88	b.d.	7.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	10.29	1.41	1.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	1.10	b.d.	1.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	3.18	2.04	b.d.	2.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	9.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	49.38	50.98	b.d.	60.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	0.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.61	100.00

Table 1-7A: Normalised EDS analyses of minerals from sample 9838

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Fig	7	7	8	8	8	8	8	8	8	8	9	9	9	9	9	9	10	10
Position	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2
Mineral	Fe-Chl	Ab	Cher-Y?	Cher-Y +others?	Fe-Chl	Fe-Chl	Fe-Chl	Kfs	Ab	Thr-Xtm	Hf-Zrn	Hf-Zrn	Chl	Chl	Ab	Rt	Zrn	Zrn
SiO_2	33.39	68.70	14.44	37.65	36.04	34.01	32.29	66.25	68.93	19.92	32.37	30.97	33.80	34.45	69.00	3.44	34.54	30.98
Al_2O_3	21.83	19.04	b.d.	7.19	21.35	20.13	23.43	18.48	18.91	b.d.	1.13	b.d.	21.70	21.54	18.89	1.30	b.d.	b.d.
FeO	31.13	b.d.	1.52	1.23	33.04	36.29	29.28	b.d.	b.d.	b.d.	1.62	b.d.	29.37	35.83	b.d.	2.52	0.81	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	0.50	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	13.65	b.d.	b.d.	b.d.	9.57	9.06	15.01	b.d.	b.d.	b.d.	b.d.	b.d.	15.13	8.18	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.43	0.96	0.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	12.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.73	b.d.	b.d.	b.d.	b.d.	b.d.	12.11	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	4.51	b.d.	b.d.	b.d.	15.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	6.50	b.d.	b.d.	b.d.	b.d.	b.d.	7.18	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	1.39	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	92.74	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	61.44	66.58	b.d.	b.d.	b.d.	b.d.	62.45	69.02
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.45	2.46	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	42.72	22.50	b.d.	b.d.	b.d.	b.d.	b.d.	25.04	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	4.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.09	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	3.93	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.20	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	32.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	6.36	13.64	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	23.42	6.77	b.d.	b.d.	b.d.	b.d.	b.d.	5.40	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	1.87	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	94.15	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

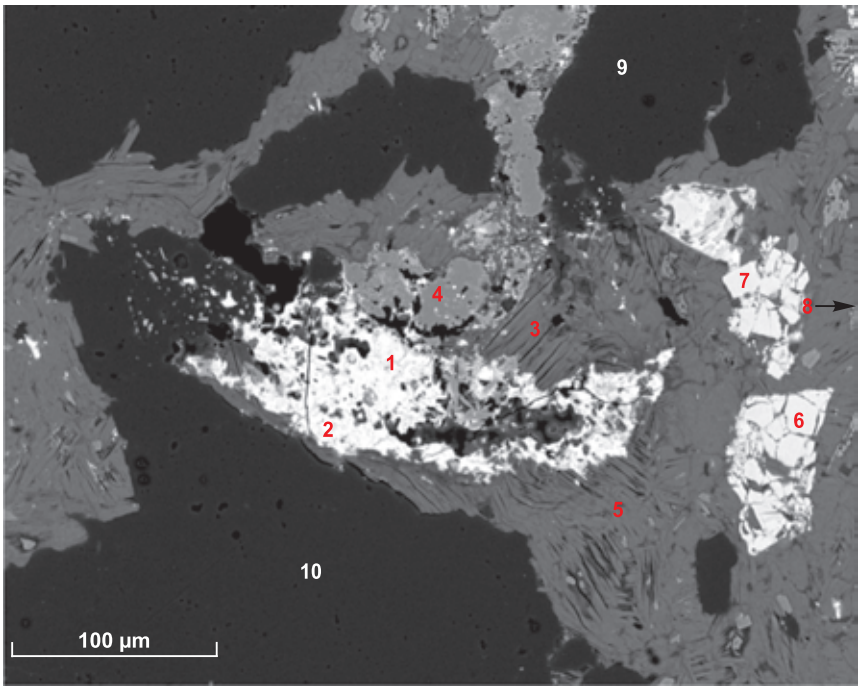
Table 1-7A: Normalised EDS analyses of minerals from sample 9838

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Fig	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11
Position	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10
Mineral	Hf-Zrn	Zrn	Hf-Zrn	Zrn	Hf-Zrn	Hf-Zrn	Fe-Oxide	Fe-Oxide	Mag +Chl	Fe-Oxide	Fe-Oxide	Chl	Ab	Bt	Bt	Bad Spot
SiO_2	31.14	31.45	31.68	33.01	31.45	30.68	8.09	10.38	13.34	9.21	5.69	32.95	69.14	40.99	40.99	29.55
Al_2O_3	b.d.	b.d.	b.d.	1.55	b.d.	b.d.	2.10	2.10	7.22	2.29	3.23	22.43	18.31	16.28	16.83	b.d.
FeO	b.d.	1.40	b.d.	1.48	b.d.	b.d.	88.28	86.56	74.16	87.29	89.22	29.92	b.d.	18.51	18.30	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.83	b.d.	b.d.	14.70	b.d.	12.92	12.93	b.d.
CaO	b.d.	1.17	b.d.	1.22	b.d.	b.d.	0.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.55	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.55	9.18	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.00	0.97	0.97	1.21	1.86	b.d.	b.d.	1.74	1.77	b.d.
ZrO_2	66.01	65.98	66.20	62.73	66.19	67.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	2.85	b.d.	2.13	b.d.	2.36	2.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.52	100.00	100.00	100.00	100.00	100.00	100.00	29.55

Table 1-7B: Electron microprobe analyses of REE-minerals from sample 9838.

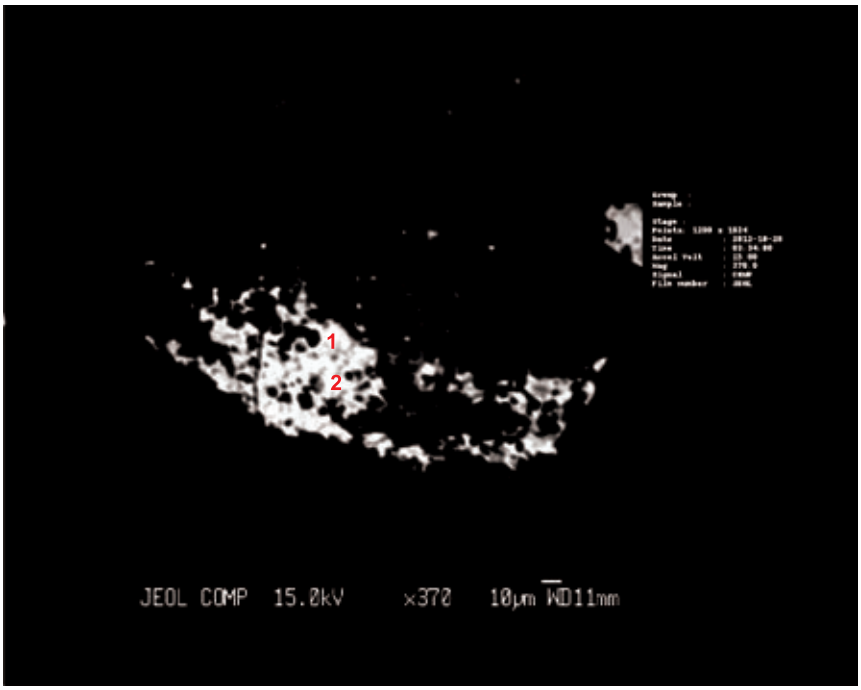
Sample	9838	9838	9838	9838	9838	9838	9838
Figure	2	2	5	5	5	12	12
No.	15	16	17	18	19	20	21
Mineral	?	?	Sam?	?	?	Sam	Sam
SiO_2	5.26	4.54	1.74	5.28	4.48	7.44	4.57
Al_2O_3	1.54	1.70	b.d.	1.66	1.29	0.75	0.16
FeO	9.62	5.70	5.95	8.27	5.98	3.41	5.42
MgO	0.04	0.21	b.d.	0.04	0.07	b.d.	b.d.
MnO	0.06	0.04	0.13	0.21	0.07	0.13	0.19
CaO	1.82	2.32	2.42	0.78	0.65	1.41	1.61
Na_2O	b.d.	0.99	b.d.	0.13	0.20	b.d.	b.d.
K_2O	0.24	0.20	0.06	0.27	0.33	0.03	0.05
P_2O_5	1.69	3.32	0.05	2.26	2.53	0.23	0.10
ZrO_2	1.95	2.02	b.d.	1.92	1.54	0.05	0.32
HfO_2	0.00	0.25	0.17	b.d.	0.07	b.d.	b.d.
TiO_2	5.54	1.91	6.10	2.12	1.73	22.93	12.17
Ta_2O_5	1.86	3.38	0.14	2.00	2.62	2.39	0.55
Nb_2O_5	30.48	19.91	43.49	22.61	18.66	20.58	33.87
Y_2O_3	5.44	0.94	12.84	1.69	1.13	8.85	12.41
La_2O_3	1.34	3.17	0.13	1.92	3.37	0.48	0.14
Ce_2O_3	2.13	2.06	0.82	15.98	6.22	1.91	1.10
Pr_2O_3	0.43	0.54	0.08	0.44	0.68	0.39	0.13
Nd_2O_3	2.47	1.73	1.45	1.71	2.04	2.17	1.27
Sm_2O_3	1.03	0.40	1.22	0.49	0.35	1.06	1.31
Eu_2O_3	0.24	0.23	0.23	0.14	0.16	0.25	0.16
Gd_2O_3	2.52	0.34	4.21	0.81	0.65	3.42	4.44
Dy_2O_3	3.44	0.29	6.12	1.07	0.71	5.00	6.92
Ho_2O_3	1.18	0.07	2.20	0.27	0.22	1.81	2.37
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	1.44	1.11
Yb_2O_3	0.77	0.14	1.42	0.25	0.37	1.77	1.91
ThO_2	8.14	1.14	0.16	1.13	0.70	3.10	0.57
UO_2	2.67	7.21	0.15	6.07	7.08	0.84	0.12
F	0.09	0.12	0.01	b.d.	0.04	0.15	0.13
Total	91.92	64.77	91.29	79.50	63.91	91.92	93.02

Appendix 1-8: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9839



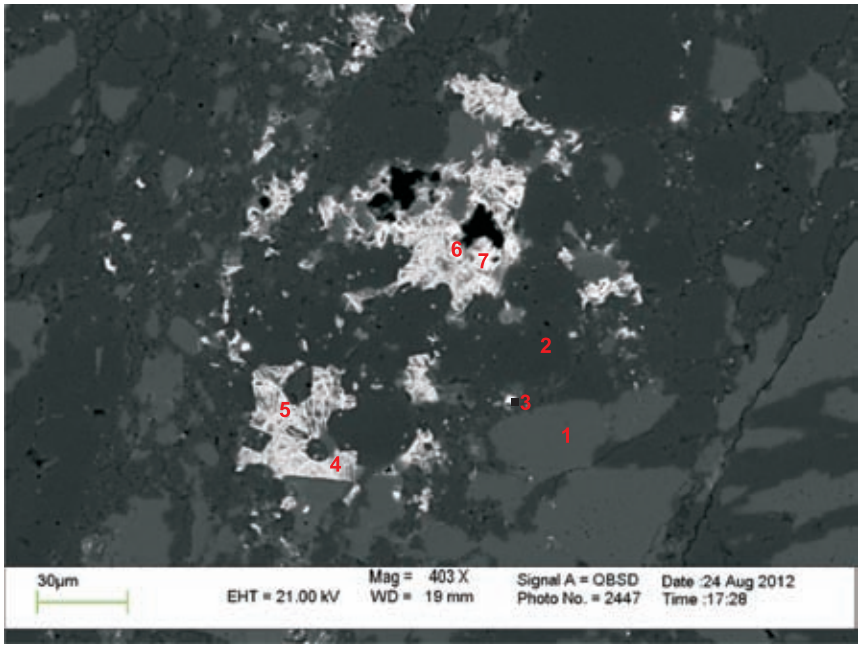
1. Nioboaeschynite-(Y)
2. Nioboaeschynite-(Y)
3. Biotite altering to Chlorite
4. Rutile
5. Fe-Chlorite
6. Zircon
7. Zircon
8. Rutile
9. Quartz

Figure 1-8.1a: West Moose River Pluton 9839 EDS analyses; biotite crystal (analysis 3) partly altered to chlorite (analysis 5) and further replaced by nioboaeschynite-(Y). Clots of hydrothermal zircon (multiple crystals) also are present. Dissolution voids in the primary quartz (analysis



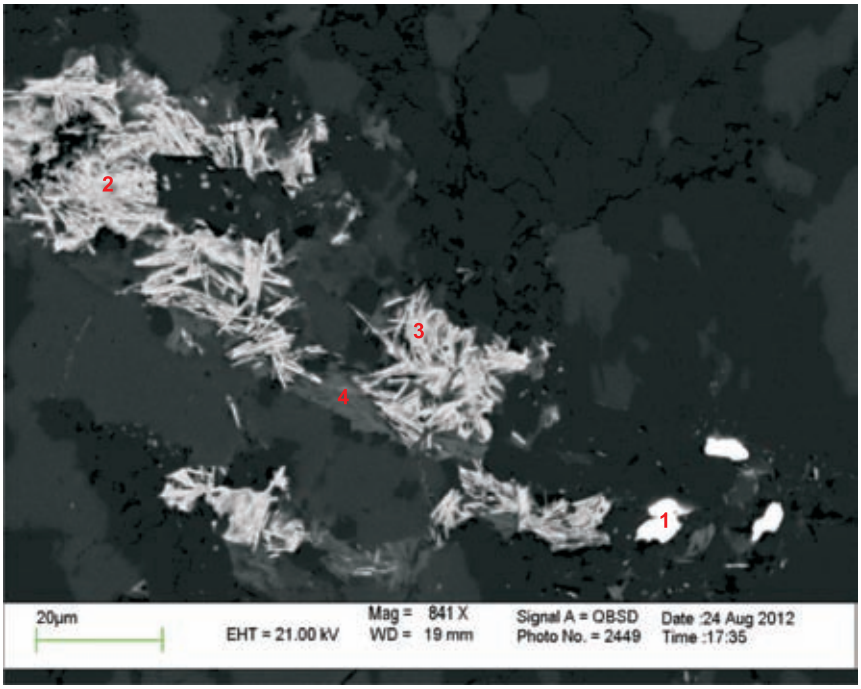
1. Nioboaeschynite-(Y)
2. Nioboaeschynite-(Y)

Figure 1-8.1b: West Moose River Pluton 9839 WDS analyses.



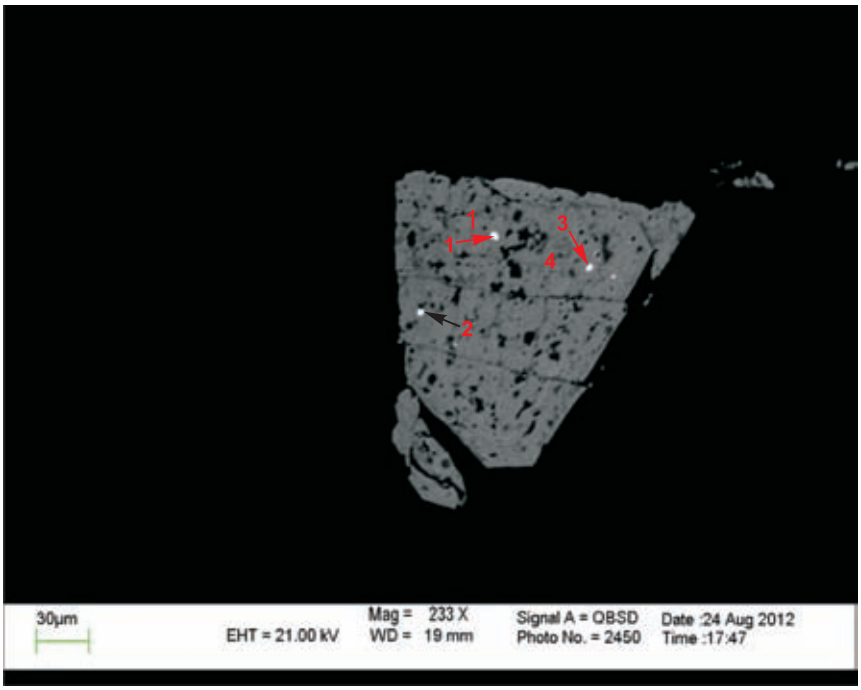
1. K-feldspar
2. Quartz
3. Albite + others
4. Magnetite + Chlorite
5. Magnetite
6. Hingganite-(Y)
7. ?

Figure 1-8.2: West Moose River Pluton 9839; incipient K-feldspar albitization (analysis 3) and patches of magnetite and hingganite.



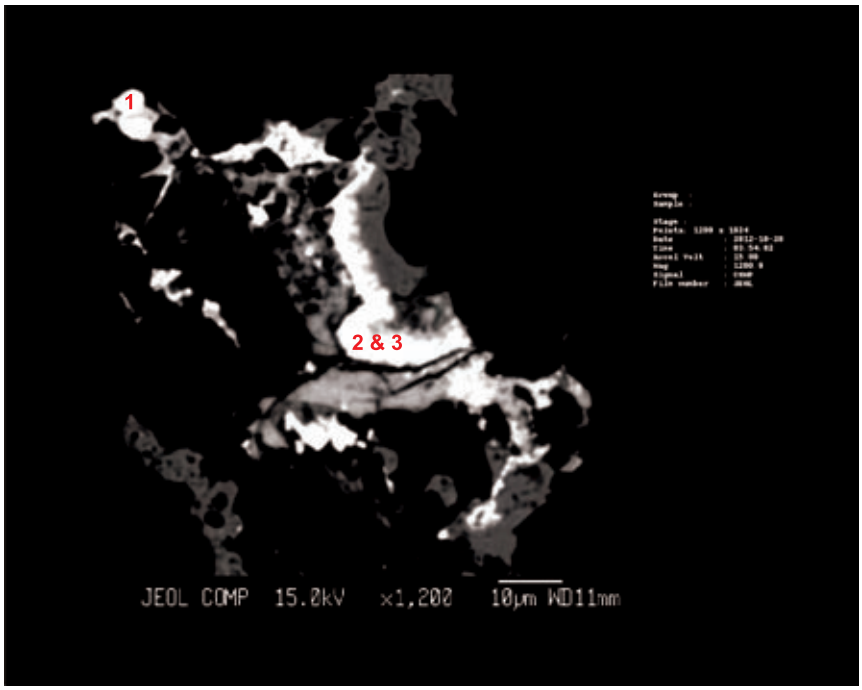
1. Thorite + others
2. Fe-Oxide + chlorite
3. Fe-Oxide + chlorite
4. Chlorite

Figure 1-8.3: West Moose River Pluton 9838; Fe-oxide acicular crystals, thorite (analysis 1), and chlorite (analysis 2) fill a fracture.



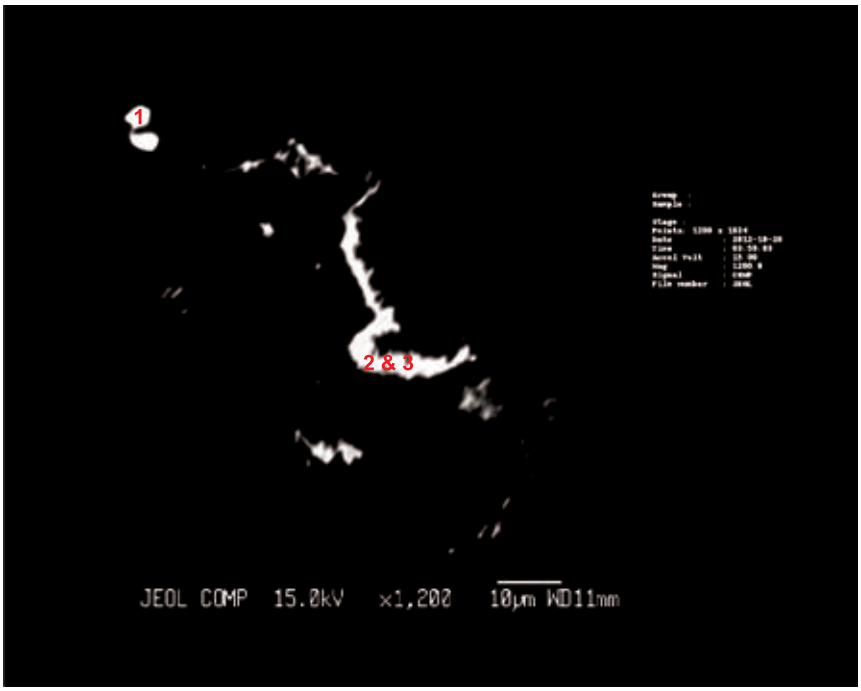
1. Zircon+U+Ag
2. Zircon+U+Ag
3. Zircon+U+Ag
4. Zircon

Figure 1-8.4:West Moose River Pluton 9839; zircon with U and Ag filling dissolution voids (analyses 1,2,&3).



1. Bad spot
2. Samarskite-(Y)
3. Samarskite-(Y)

Figure 1-8.5a: West Moose River Pluton 9839 WDS analyses; bright BSE image.



1. Bad spot
2. Samarskite-(Y)
3. Samarskite-(Y)

Figure 1-8.5b: West Moose River Pluton 9839 WDS analyses; low-brightness BSE image of figure 5a.

Table 1-8A: Normalised EDS analyses of minerals from sample 9839.

Sample	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839	9839
Site	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Position	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7
Mineral	Nb-aes?	Nb-aes?	Bt altering to Chl	Rt	Fe-Chl	Zrn	Zrn	Rt	Qz	Qz	Kfs	Qz	Ab (+others)	Mag (+Chl)	Mag	Hing	?
SiO_2	10.88	12.29	46.55	b.d.	32.86	30.56	30.56	b.d.	100.00	100.00	66.62	100.00	65.85	10.12	3.84	33.37	9.09
Al_2O_3	1.77	2.09	18.96	b.d.	22.84	b.d.	b.d.	b.d.	b.d.	b.d.	17.56	b.d.	19.17	8.15	3.42	b.d.	2.68
FeO	10.77	11.76	29.68	1.83	37.17	0.53	0.68	2.01	b.d.	b.d.	b.d.	b.d.	1.51	81.72	91.15	15.79	29.21
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	2.72	b.d.	7.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.75
CaO	1.28	1.74	0.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.04	b.d.	b.d.	1.96	13.63
Na2O	b.d.	b.d.	0.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.69	b.d.	10.58	b.d.	b.d.	b.d.	b.d.
K2O	b.d.	b.d.	0.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	15.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	32.08	31.53	b.d.	2.73	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	28.56	20.10	b.d.	95.43	b.d.	b.d.	b.d.	97.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.59	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	68.91	68.76	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	8.56	10.64	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	43.15	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.81
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.67
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.94
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.48	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	4.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	6.10	5.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.86	b.d.	b.d.	b.d.	2.66
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	96.76	92.46

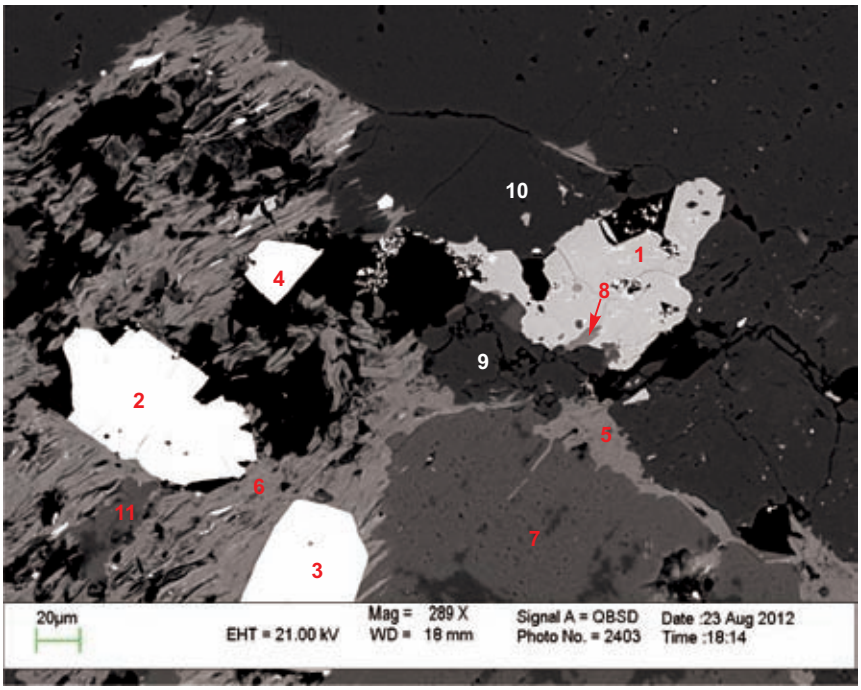
Table 1-8A: Normalised EDS analyses of minerals from sample 9839.

Sample	9839	9839	9839	9839	9839	9839	9839	9839
Site	3	3	3	3	4	4	4	4
Position	1	2	3	4	1	2	3	4
Mineral	Thr (+others?)	Fe-Oxide (+Chl)	Fe-Oxide (+Chl)	Chl	Zrn	Zrn	Zrn	Zrn
SiO_2	30.31	5.36	14.54	38.60	28.38	25.84	27.66	31.04
Al_2O_3	7.66	3.26	8.69	22.63	b.d.	b.d.	b.d.	b.d.
FeO	3.49	89.49	76.77	32.82	0.63	13.70	b.d.	1.61
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	5.31	b.d.	b.d.	b.d.	b.d.
CaO	1.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K2O	b.d.	b.d.	b.d.	0.64	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	1.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	53.07	50.74	49.66	63.82
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	3.61	3.12	3.52
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	6.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	50.54	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	7.31	2.62	6.40	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	10.60	3.50	13.17	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 1-8B: Electron Microprobe analyses of REE minerals from sample 9839.

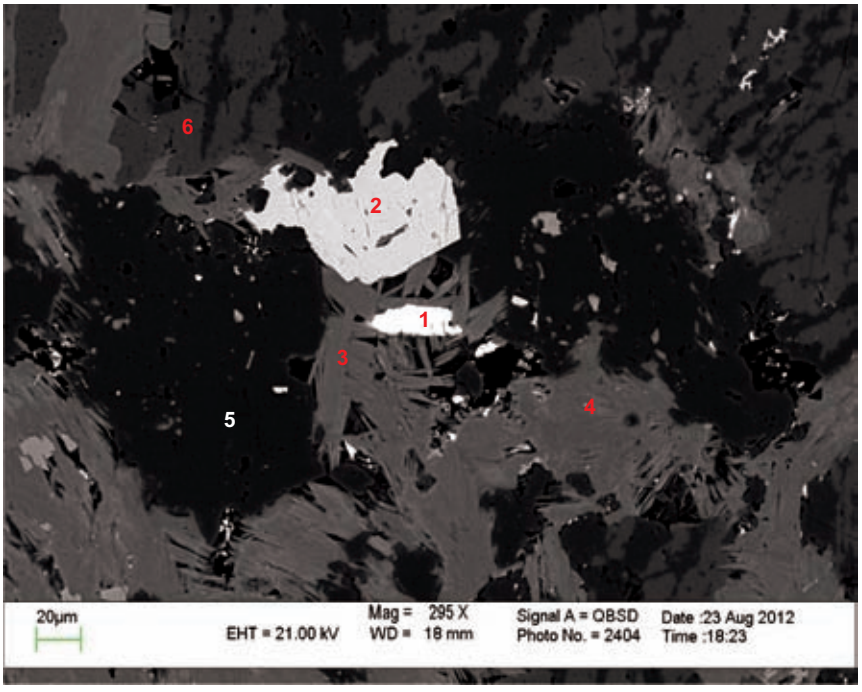
Sample	9839	9839	9839	9839	9839
Fig	1	1	5	5	5
Pos.	1	2	1	2	3
Mineral	Nb-aes	Nb-aes	Mix	Sam	Sam
SiO_2	8.07	7.40	18.44	2.05	2.09
Al_2O_3	1.40	1.32	7.07	0.54	0.56
FeO	12.17	7.30	6.04	7.68	7.81
MnO	0.12	0.10	0.03	0.16	0.16
MgO	0.00	b.d.	0.21	b.d.	b.d.
CaO	1.03	1.28	1.20	1.97	2.01
Na_2O	b.d.	b.d.	0.96	b.d.	b.d.
K_2O	0.00	0.01	0.25	0.09	0.09
P_2O_5	0.02	0.03	0.29	0.06	b.d.
Nb_2O_5	20.57	22.08	15.41	48.21	48.35
Ta_2O_5	2.26	2.62	0.81	0.19	b.d.
TiO_2	18.54	15.60	0.53	0.33	0.31
ZrO_2	3.68	2.62	2.09	b.d.	b.d.
HfO_2	0.28	0.03	b.d.	0.21	0.08
Y_2O_3	6.31	8.85	2.77	17.08	17.14
La_2O_3	0.06	0.16	0.72	0.17	0.07
Ce_2O_3	0.57	1.12	1.36	0.32	0.44
Pr_2O_3	b.d.	0.07	0.11	0.03	b.d.
Nd_2O_3	0.49	0.57	0.33	0.43	0.42
Sm_2O3	0.31	0.45	0.12	0.51	0.46
Eu_2O_3	0.01	0.02	0.09	b.d.	0.03
Gd_2O_3	1.43	1.85	0.16	3.38	3.30
Dy_2O_3	2.42	3.45	0.35	5.00	5.11
Ho_2O_3	0.64	1.09	0.07	1.69	1.71
Er_2O_3	0.16	0.66	b.d.	b.d.	b.d.
Yb_2O_3	1.18	1.67	0.34	1.79	1.89
ThO_2	5.63	7.73	8.69	0.38	0.38
UO_2	2.77	3.04	4.24	0.11	0.20
F	0.81	0.09	0.43	0.16	0.19
Total	90.59	91.16	72.91	92.47	92.73

Appendix 1-9: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9840



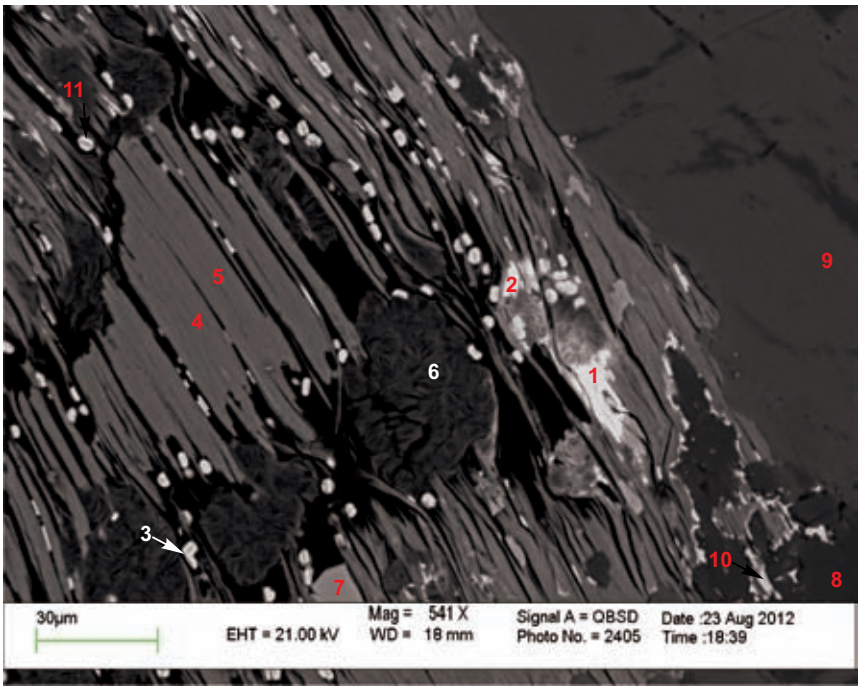
1. Rutile
2. Zircon
3. Zircon
4. Hf-Zircon
5. Chlorite + TiO_2
6. Chlorite
7. K-feldspar
8. Chlorite + some TiO_2
9. Albite
10. Quartz
11. K-feldspar

Figure 1-9.1: West Moose River Pluton 9840; incipient K-felspar albitization.



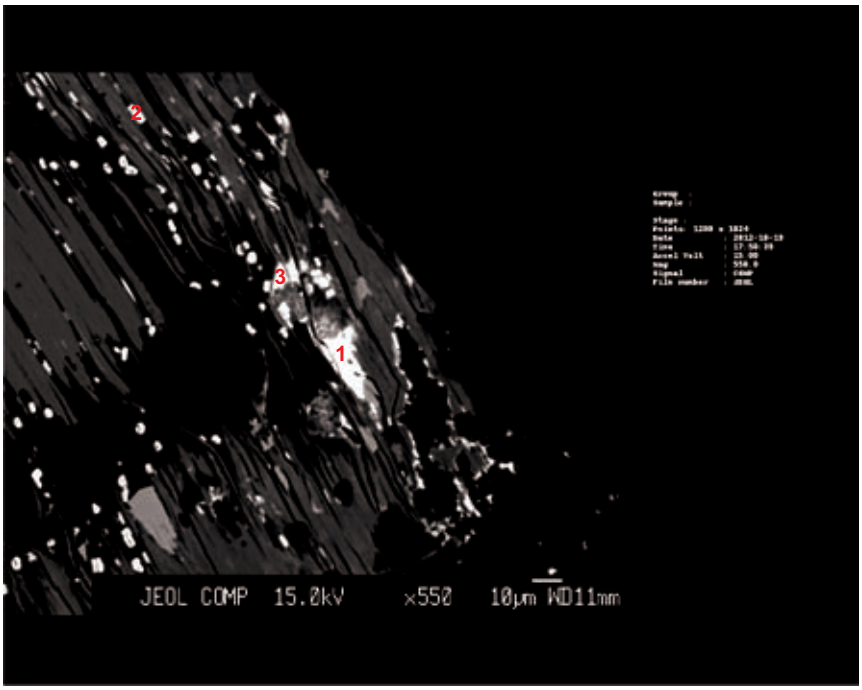
1. Thorite - xenotime
2. Magnetite
3. Chlorite
4. Chlorite
5. Quartz
6. K-feldspar

Figure 1-9.2: West Moose River Pluton 9840; thorite-xenotime and magnetite are associated with chlorite. Order of crystallization: chlorite → magnetite → thorite-xenotime.



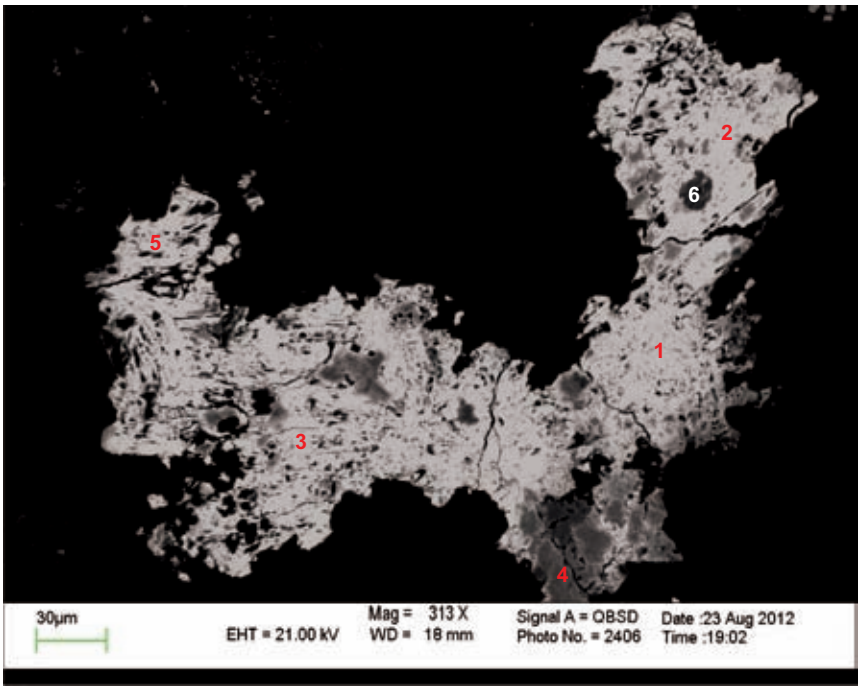
1. Cerianite + others
2. Cerianite + others
3. Fe-Oxide
4. Biotite
5. Biotite
6. Beidellite
7. Rutile
8. Quartz
9. K-feldspar
10. Fe-Oxide + Albite
11. Fe-Oxide + Chlorite

Figure 1-9.3a:West Moose River Pluton 9840 EDS analyses; cerianite precipiates along the biotite cleavage and is associated with beidellite that fills voids. Beidellite seems to have expanded and deformed the biotite cleavage



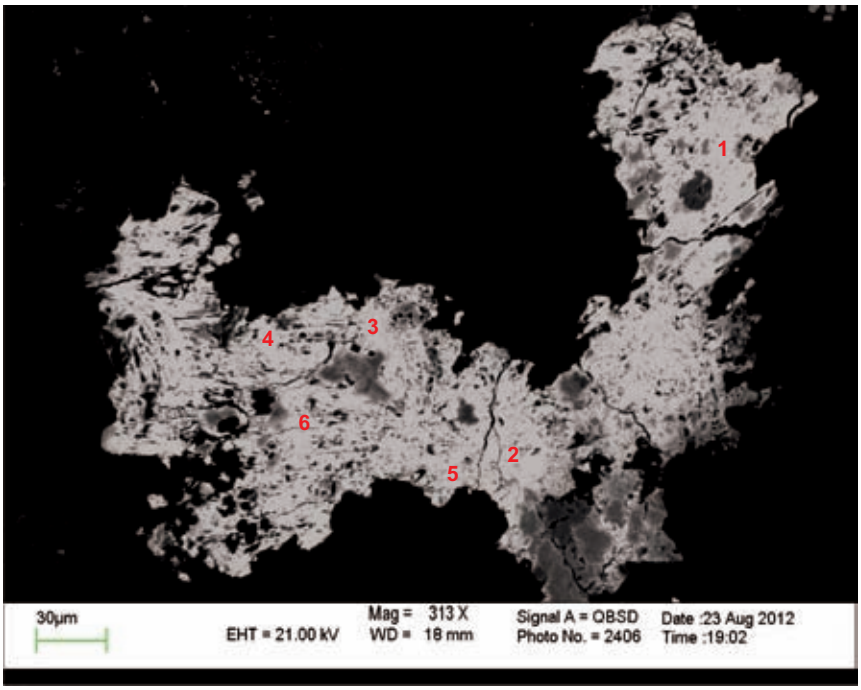
1. Cerianite + Biotite
2. Fe-Oxide
3. Cerianite + Biotite

Figure 1-9.3b: West Moose River Pluton 9840 WDS analyses.



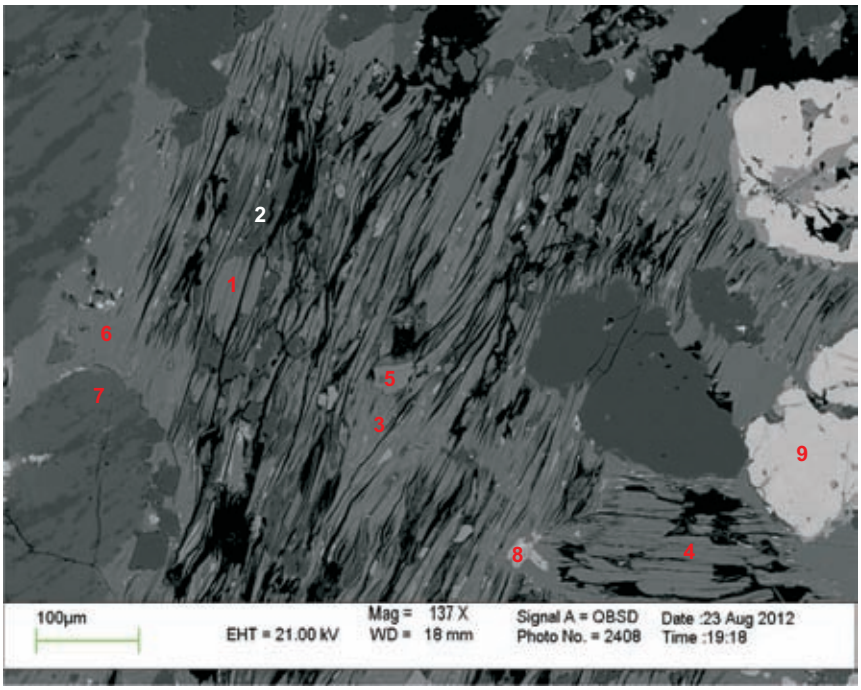
1. Cerianite + others
2. Cerianite + others
3. Cerianite + others
4. Ilmenite
5. Cerianite + others
6. Rutile + others

Figure 1-9.4a: West Moose River Pluton 9840 EDS analyses; ilmenite crystal (analysis 4) is replaced by cerianite and thorite-xenotime.



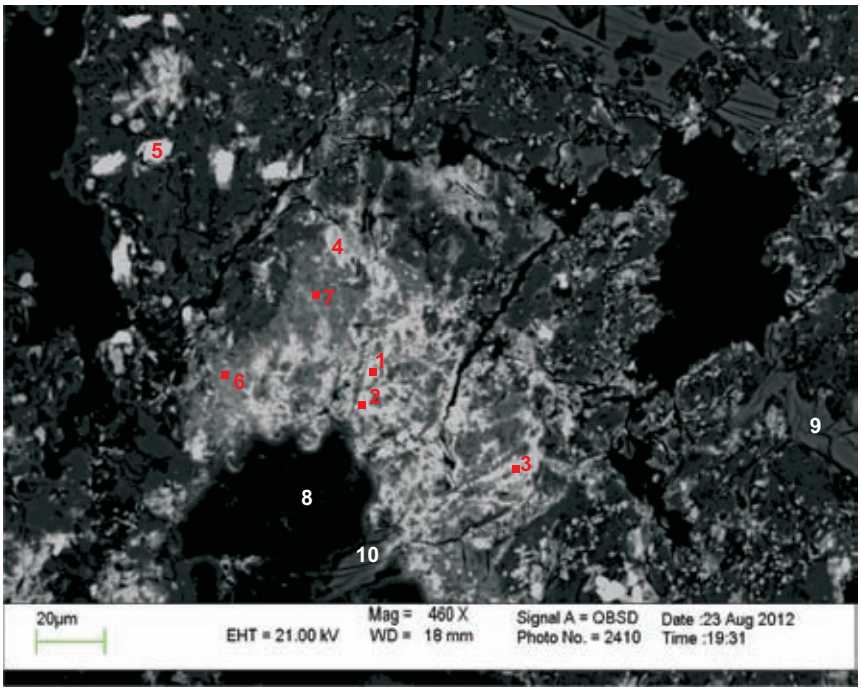
1. Bad Spot
2. Thorite - xenotime
3. Cerianite
4. Thorite - xenotime
5. Cerianite
6. Thorite - xenotime

Figure 1-9.4b: West Moose River Pluton 9840 WDS analyses superimposed on SEM image.



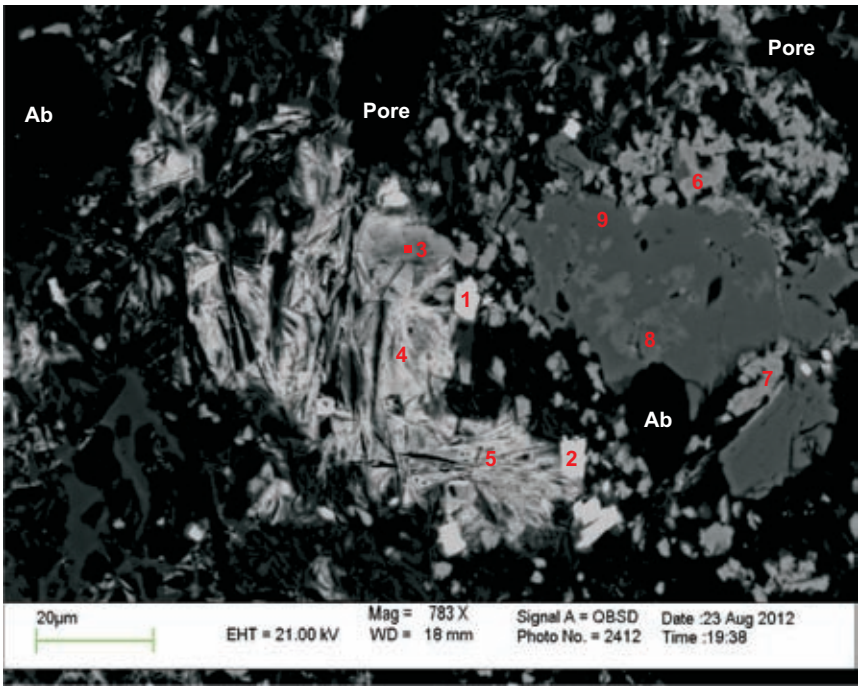
1. Biotite
2. Quartz
3. Chlorite
4. Biotite
5. Apatite
6. Chlorite
7. K-feldspar
8. Ilmenite + Chlorite
9. Magnetite

Figure 1-9.5: West Moose River Pluton 9840; biotite partly replaced by chlorite (analyses 3&6) and possibly quartz (analysis 2). Biotite contains apatite and ilmenite inclusions.



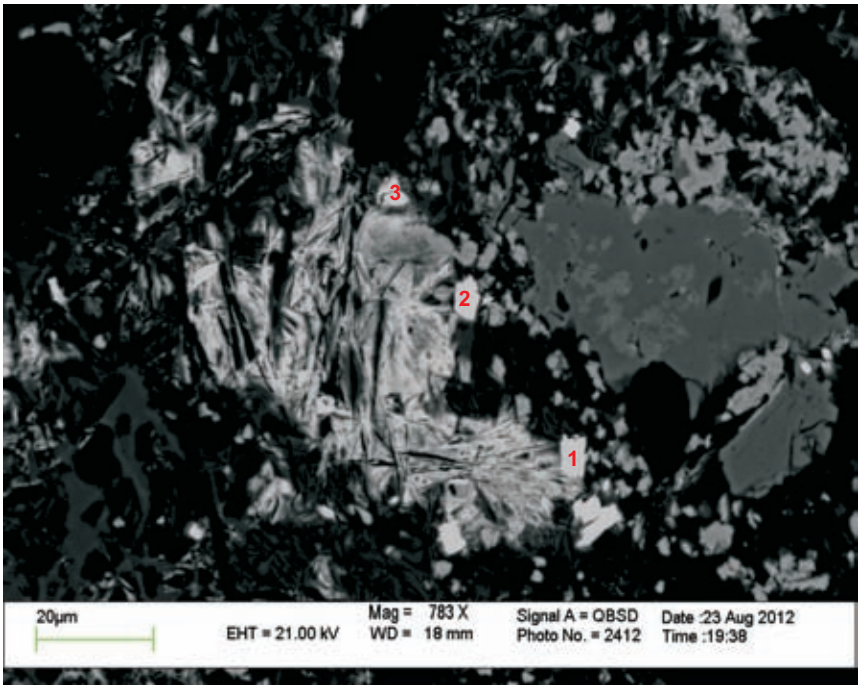
1. Cerianite + others?
2. Cerianite + others?
3. Cerianite + others?
4. Cerianite + others?
5. Thorite - xenotime
6. ?
7. ?
8. Albite
9. Chlorite
10. Chlorite + Cerianite

Figure 1-9.6: West Moose River Pluton 9840; a patch of very fine grained cerianite and other unidentified minerals, probably replacing chlorite (analysis 10).



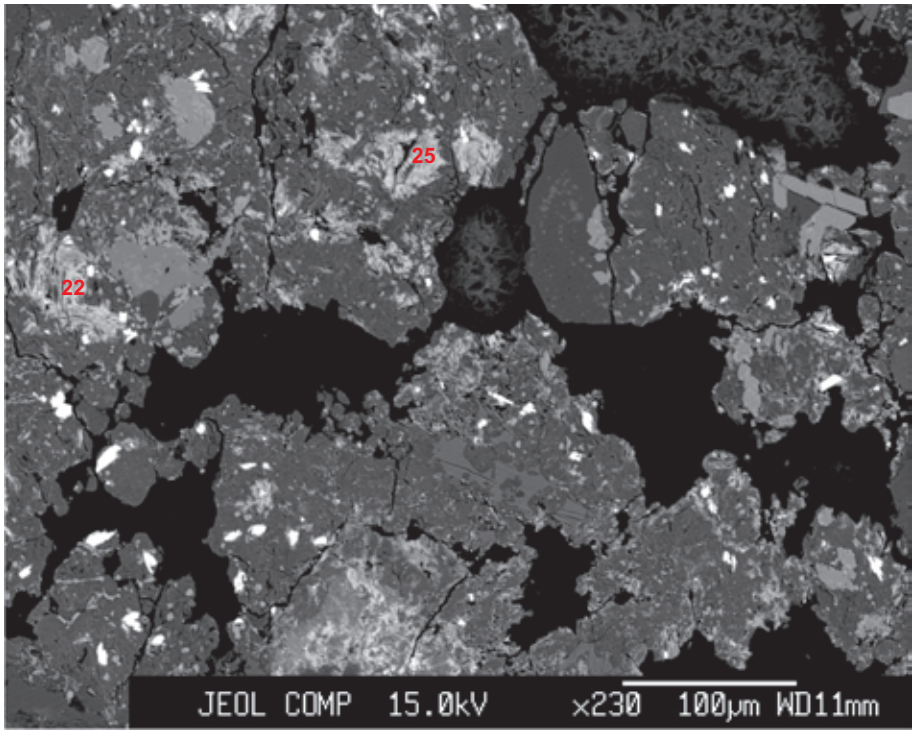
1. Thorite - xenotime
2. Thorite - xenotime
3. Ilmenite + Chlorite
4. Bastnäsite-(Ce)?
5. Bastnäsite-(Ce)?
6. Fe-Oxide
7. Fe-Oxide
8. Altered Ilmenite
9. Rutile

Figure 1-9.7a: West Moose River Pluton 9840 EDS analyses; patches of various minerals such as thorite-xenotime and unidentified mineral (bastnasite?)(analyses 4&5) or Fe-oxide (analysis 6) or rutile (analyses 8&9). Order of crystallization: Unidentified mineral (bastnäsite-(Ce)?) → Thorite-xenotime (euhedral). Ilmenite altering to rutile.



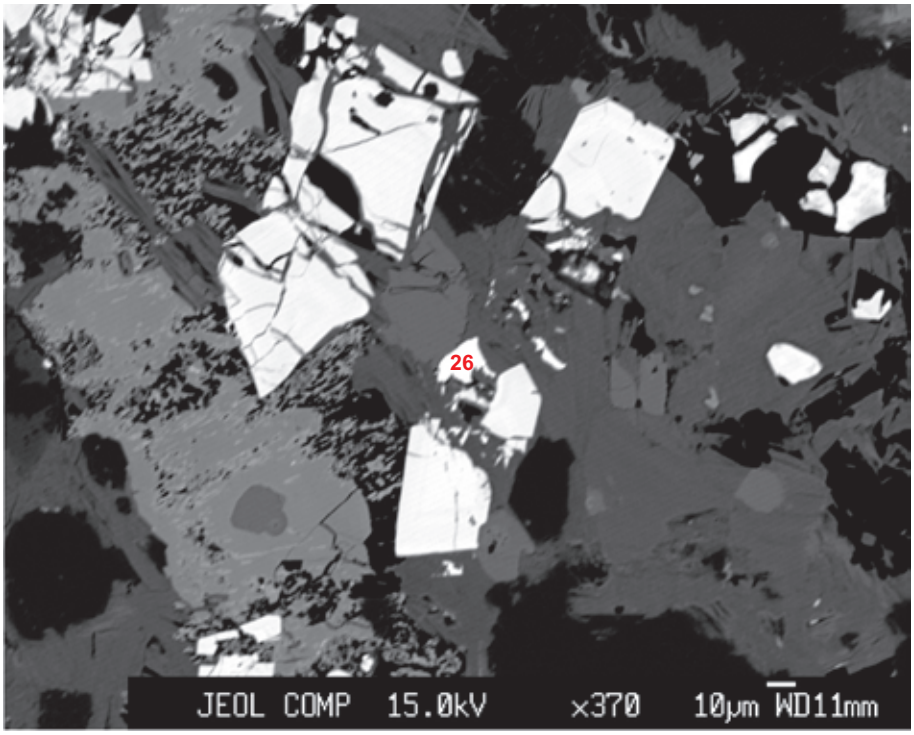
1. Thorite - xenotime
2. Thorite - xenotime
3. Thorite - xenotime

Figure 1-9.7b: West Moose River Pluton 9840; WDS analyses superimposed on SEM image.



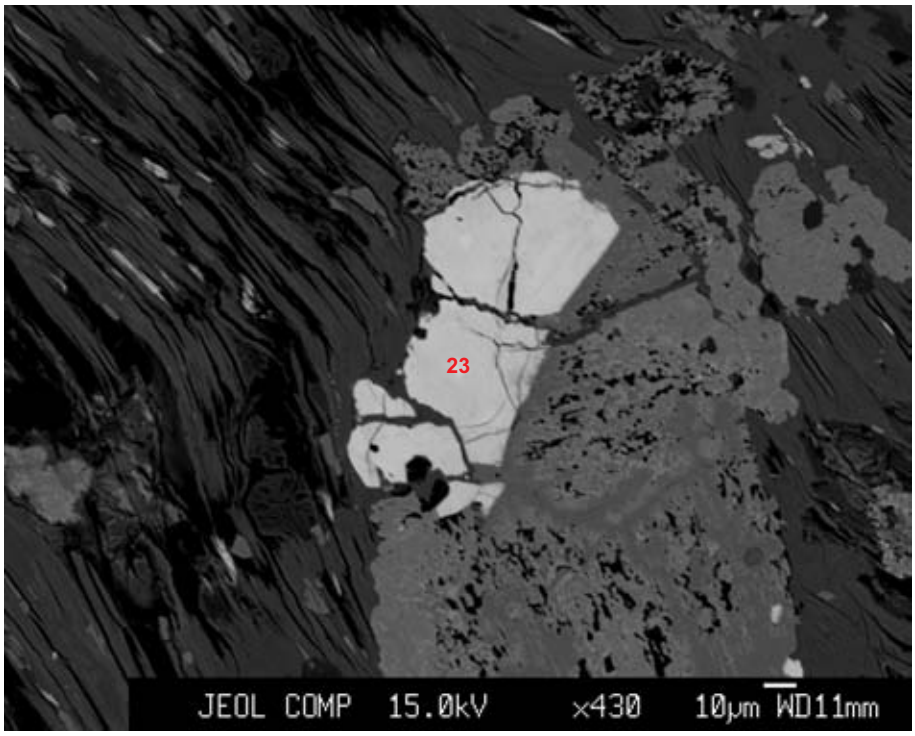
22. Ce-mineral
25. Ce-mineral

Figure 1-9.7c: West Moose River Pluton 9840 WDS analyses.



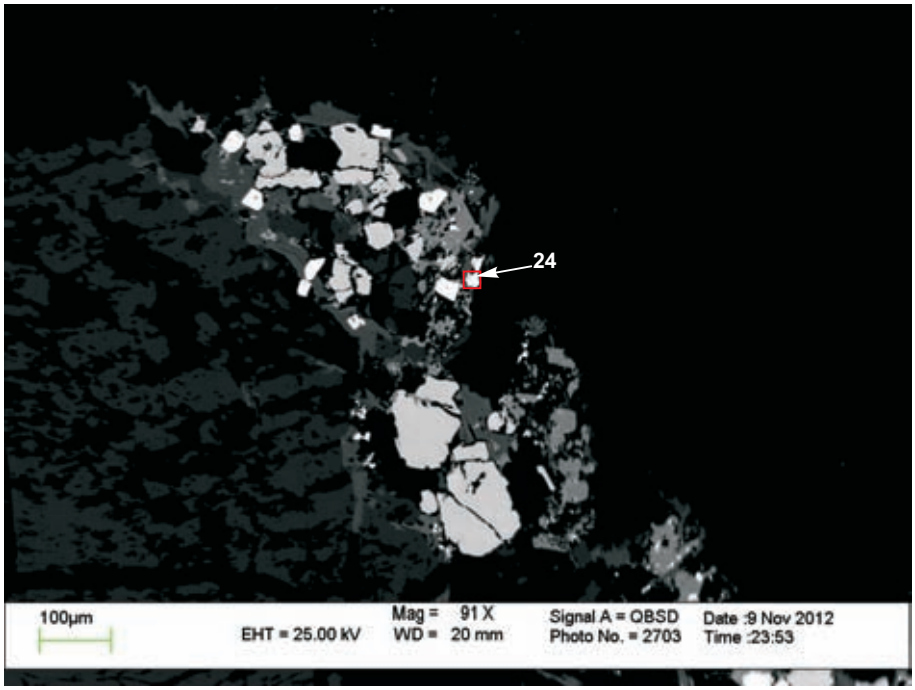
26. Xenotime

Figure 1-9.8: West Moose River Pluton 9840 EMP analyses; xenotime contains over 10 wt. % HREE's.



23. Samarskite-(Y)

Figure 1-9.9: West Moose River Pluton 9840 WDS analysis.



24. Samarskite-(Y)

Figure 1-9.10: West Moose River Pluton WDS analysis.

Table 1-9A: Normalised EDS analyses of minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Fig	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3
Position	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	1
Mineral	Rt	Zrn	Zrn	Hf-Zrn	Chl+ TiO_2	Chl	Kfs	Chl $+TiO_2$	Ab	Qtz	Kfs	Thr - Xtm	Mag	Chl	Chl	Qtz	Kfs	Cer (+others)
SiO_2	b.d	32.06	31.85	31.11	33.11	36.00	66.34	30.11	68.88	100.00	67.09	16.35	b.d	30.99	32.52	100.00	66.31	14.90
Al_2O_3	b.d	b.d	b.d	b.d	21.68	21.85	17.93	19.54	18.83	b.d	17.98	b.d	b.d	22.46	22.00	b.d	18.01	3.39
FeO	1.10	b.d	b.d	b.d	29.72	27.52	b.d	28.10	b.d	b.d	b.d	16.53	100.00	34.58	31.56	b.d	b.d	9.89
MnO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.08
MgO	b.d	b.d	b.d	b.d	13.43	14.64	b.d	11.22	b.d	b.d	b.d	b.d	b.d	11.98	13.92	b.d	b.d	b.d
CaO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	0.39	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Na_2O	b.d	b.d	b.d	b.d	b.d	b.d	0.55	b.d	11.90	b.d	7.72	b.d	b.d	b.d	b.d	b.d	0.42	b.d
K_2O	b.d	b.d	b.d	b.d	b.d	b.d	15.18	0.30	b.d	b.d	7.21	b.d	b.d	b.d	b.d	b.d	15.26	b.d
P_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	4.29	b.d	b.d	b.d	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.77	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	98.90	b.d	b.d	b.d	2.07	b.d	b.d	10.73	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ZrO_2	b.d	67.94	68.15	67.36	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	1.53	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	10.14	b.d	b.d	b.d	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	68.17
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	50.91	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	0.00
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.43
	Notes: Bei: beidellite, Cer: cerianite.																	

Table 1-9A: Normalised EDS analyses of minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Fig	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4
Position	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6
Mineral	Cer (+others)	Fe-Oxide	Bt	Bt	Bei	Rt	Qtz	Kfs	Fe-Oxide (+ Ab)	Fe-Oxide (+Chl)	Cer (+others)	Cer (+others)	Cer (+others)	Ilm	Cer (+others)	Rt +others
SiO_2	16.14	7.90	42.43	42.33	63.23	0.65	100.00	66.74	28.07	10.94	11.85	8.48	8.68	1.91	8.09	1.70
Al_2O_3	6.04	2.49	14.54	14.42	26.54	b.d	b.d	17.77	7.48	4.66	2.38	1.82	1.97	0.68	2.76	b.d
FeO	14.12	88.03	19.75	19.51	5.78	1.05	b.d	b.d	59.10	82.97	7.87	1.85	1.73	39.73	2.07	0.68
MnO	4.64	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.51	2.70	3.02	0.56	3.87	b.d
MgO	b.d	b.d	11.06	10.96	2.37	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CaO	0.52	b.d	b.d	b.d	1.46	b.d	b.d	b.d	b.d	b.d	0.77	b.d	b.d	b.d	0.75	b.d
Na_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.94	4.39	b.d	b.d	b.d	b.d	b.d	b.d	b.d
K_2O	b.d	b.d	9.56	9.78	0.35	b.d	b.d	13.55	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
P_2O_5	2.07	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.98	1.75	1.60	b.d	1.46	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.87
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	1.59	2.66	2.75	b.d	98.30	b.d	b.d	0.97	1.43	b.d	b.d	b.d	54.09	b.d	82.51
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ce_2O_3	56.47	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	62.80	83.40	83.00	3.02	81.00	12.24
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Cl	b.d	b.d	b.d	0.00	0.00	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	8.84	b.d	b.d	b.d	b.d	b.d
Total	100.00	100.00	100.00	99.74	99.74	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 1-9A: Normalised EDS analyses of minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Fig	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6
Position	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8
Mineral	Bt	Qtz	Chl	Bt	Ap	Chl	Kfs	Ilm +Chl	Mag	Cer (+others)?	Cer (+others)?	Cer (+others)?	Cer (+others)?	Thr-Xtm	?	?	Ab
SiO_2	42.12	98.72	33.46	42.71	b.d	31.89	66.17	6.08	b.d	20.40	23.07	19.12	12.46	16.62	39.97	49.22	69.35
Al_2O_3	14.53	b.d	21.51	15.23	b.d	22.66	17.52	2.66	b.d	5.61	6.93	4.80	3.02	b.d	12.67	17.02	18.71
FeO	19.68	1.28	31.40	20.00	0.36	31.74	b.d	28.75	100.00	9.98	11.86	32.18	30.44	13.62	16.78	12.21	b.d
MnO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.21	b.d	b.d	b.d	b.d	b.d	b.d	1.77	0.82	b.d
MgO	10.35	b.d	13.63	10.20	b.d	13.71	b.d	1.05	b.d	b.d	b.d	b.d	b.d	b.d	1.63	2.62	b.d
CaO	b.d	b.d	b.d	b.d	47.74	b.d	b.d	b.d	b.d	1.33	1.70	0.87	1.84	0.71	1.64	1.34	b.d
Na_2O	b.d	b.d	b.d	b.d	b.d	b.d	0.83	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	11.94
K_2O	9.76	b.d	b.d	9.12	b.d	b.d	15.47	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.99	b.d
P_2O_5	b.d	b.d	b.d	b.d	43.97	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	4.22	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	1.21	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	3.30	b.d	b.d	2.41	b.d	b.d	b.d	59.25	b.d	0.94	b.d	1.95	b.d	b.d	0.67	b.d	b.d
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	4.42	11.90	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	4.75	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	59.16	53.70	38.85	30.29	b.d	23.88	14.79	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	3.55	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	51.72	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	b.d	0.00	b.d	b.d	b.d	b.d	b.d	b.d	b.d	0.00	b.d	b.d	b.d	b.d
Cl	0.00	b.d	b.d	0.00	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	2.58	2.74	2.23	3.35	b.d	0.99	b.d	b.d
Total	99.75	100.00	100.00	99.67	92.07	100.00	100.00	100.00	100.00	100.00	100.00	100.00	94.11	100.00	100.00	100.00	100.00

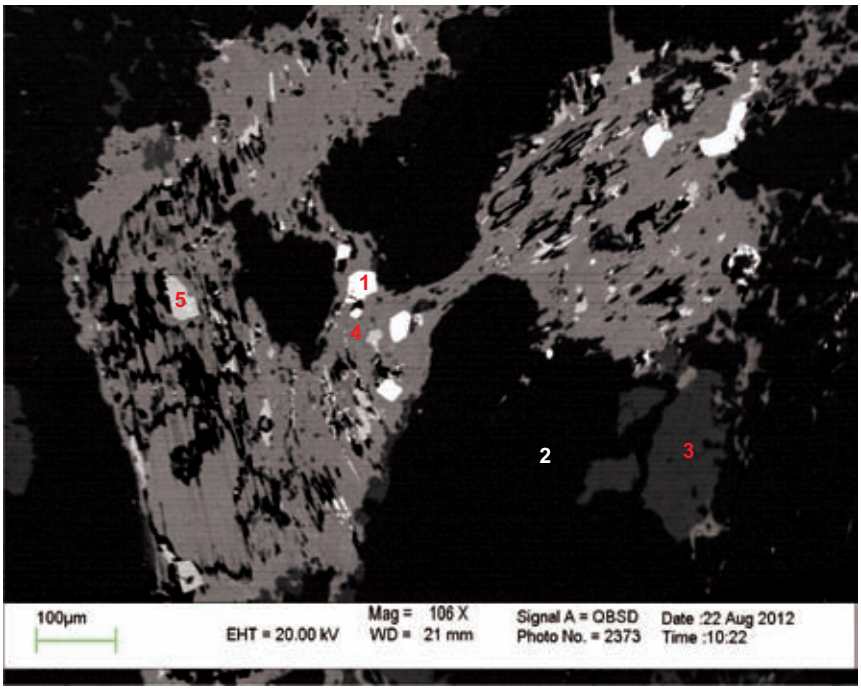
Table 1-9A: Normalised EDS analyses of minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Fig	6	6	7	7	7	7	7	7	7	7	7
Position	9	10	1	2	3	4	5	6	7	8	9
Mineral	Chl	Chl (+Ce)	Thr-Xtm	Thr-Xtm	Ilm (+Chl)	Bsn?	Bsn?	Fe-Oxide	Fe-Oxide	Alt. Ilm	Rt
SiO_2	34.22	37.12	22.32	17.67	3.02	5.56	3.38	7.03	9.17	1.09	b.d
Al_2O_3	21.29	17.32	b.d	1.44	0.94	1.58	b.d	2.13	3.52	b.d	b.d
FeO	32.12	29.65	10.07	9.37	39.14	5.02	11.02	86.37	81.52	12.27	0.70
MnO	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
MgO	12.38	9.42	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
CaO	b.d	1.37	b.d	1.05	b.d	3.82	3.21	b.d	b.d	b.d	b.d
Na_2O	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
K_2O	b.d	1.55	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
P_2O_5	b.d	b.d	3.82	4.65	b.d	b.d	b.d	b.d	b.d	b.d	b.d
V_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nb_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ta_2O_5	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
TiO_2	b.d	b.d	1.10	b.d	56.90	b.d	b.d	4.46	5.79	86.64	99.30
ZrO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
HfO_2	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sc_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Y_2O_3	b.d	b.d	9.20	9.28	b.d	6.92	6.09	b.d	b.d	b.d	b.d
La_2O_3	b.d	b.d	b.d	b.d	b.d	18.57	18.08	b.d	b.d	b.d	b.d
Ce_2O_3	b.d	3.56	b.d	b.d	b.d	32.65	29.39	b.d	b.d	b.d	b.d
Pr_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	12.29	13.15	b.d	b.d	b.d	b.d
Nd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Sm_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Gd_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Dy_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ho_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Er_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Yb_2O_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
ThO_2	b.d	b.d	51.21	52.79	b.d	b.d	b.d	b.d	b.d	b.d	b.d
UO_3	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
F	b.d	b.d	b.d	0.00	b.d	0.00	0.00	b.d	b.d	b.d	b.d
Cl	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d	b.d
Ag_2O	b.d	b.d	b.d	b.d	b.d	1.91	3.65	b.d	b.d	b.d	b.d
Total	100.00	100.00	97.72	96.25	100.00	88.32	87.97	100.00	100.00	100.00	100.00

Table 1-9B: Electron Microprobe analyses of REE-minerals from sample 9840.

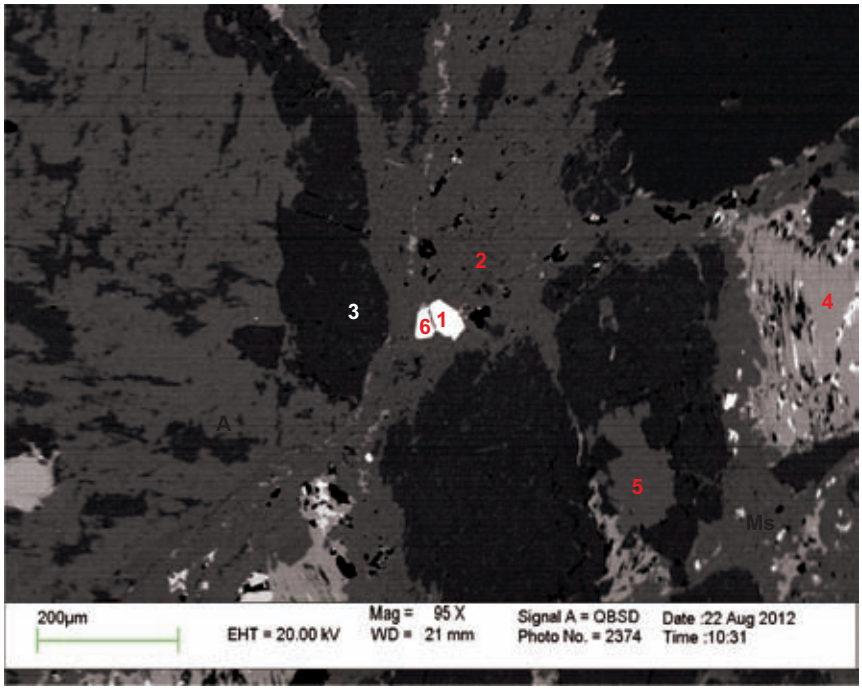
Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Fig	3	3	3	4	4	4	4	4	4	7	7	7	7	7c	8	8	9	10
Pos.	1	2	3	1	2	3	4	5	6	1	2	3	22	25	1	26	23	24
Mineral	Cer	Fe-oxide + others	Cer	?	Thr-Xtm	Cer	Thr-Xtm	Cer	Thr-Xtm	Thr-Xtm	Thr-Xtm	Thr-Xtm	?	?	Sam	Xtm	Sam	Sam
SiO_2	15.33	4.45	8.53	5.11	14.49	5.28	12.51	4.43	13.56	12.95	17.16	17.27	4.53	3.42	5.89	0.39	5.48	6.20
Al_2O_3	4.84	1.27	2.64	0.94	0.90	1.13	0.85	1.25	0.71	0.92	1.49	1.81	1.51	1.47	0.30	b.d.	0.32	0.40
FeO	12.77	77.19	10.84	10.55	1.54	2.09	6.99	0.94	3.26	9.31	5.76	5.52	34.15	35.66	3.53	0.81	3.49	2.37
MnO	2.85	0.14	3.83	1.76	0.75	2.08	0.78	2.78	0.42	0.06	0.03	b.d.	0.20	0.24	0.17	b.d.	b.d.	b.d.
MgO	0.87	0.19	0.22	0.02	0.04	0.05	b.d.	0.07	0.00	0.15	0.13	0.13	b.d.	0.07	b.d.	b.d.	0.12	0.15
CaO	0.42	0.14	0.54	0.39	0.68	0.65	0.74	0.64	0.82	0.70	0.82	0.89	1.95	1.96	1.16	0.13	0.93	0.69
Na_2O	0.04	0.03	b.d.	b.d.	0.02	b.d.	b.d.	b.d.	b.d.	0.01	0.01	0.01	0.07	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	0.21	0.15	0.14	0.06	0.08	0.05	0.07	0.05	0.06	0.10	0.19	0.25	0.17	0.19	0.03	0.03	0.03	0.09
P_2O_5	0.15	0.00	1.53	1.11	3.80	0.92	3.64	1.03	3.61	3.22	2.59	2.36	0.01	0.02	0.57	35.07	0.49	0.16
Nb_2O_5	0.07	0.49	b.d.	b.d.	0.43	0.06	0.61	b.d.	0.40	0.73	0.80	0.64	0.07	b.d.	30.96	b.d.	2.32	0.71
Ta_2O_5	0.06	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.15	b.d.	b.d.	0.05
TiO_2	b.d.	1.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.73	0.47	0.50	0.73	b.d.	3.94	0.09	3.65	6.11
ZrO_2	0.01	0.12	0.08	0.81	4.94	0.08	3.75	b.d.	3.32	0.60	3.09	2.93	b.d.	b.d.	2.17	b.d.	0.46	4.31
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.18	0.35	b.d.	b.d.	31.99	37.86
Y_2O_3	1.06	0.11	0.86	3.51	12.52	0.29	12.00	0.22	12.72	6.76	10.46	9.79	2.56	2.66	18.11	47.83	17.62	10.54
La_2O_3	0.82	0.10	0.74	0.10	0.10	0.35	0.09	0.20	0.17	0.90	0.61	0.95	7.67	6.46	0.41	0.03	0.51	1.20
Ce_2O_3	44.29	0.05	56.64	25.71	9.53	69.84	17.43	72.46	7.42	0.82	1.41	1.88	12.72	12.31	1.18	b.d.	1.26	2.27
Pr_2O_3	0.38	0.02	0.44	0.30	0.10	0.20	b.d.	0.14	0.00	0.29	0.20	0.24	1.86	1.35	0.29	0.04	0.16	0.53
Nd_2O_3	1.58	0.03	1.51	0.39	0.55	0.81	0.53	0.92	0.61	1.11	0.82	1.09	6.87	5.80	1.36	0.04	1.15	1.86
Sm_2O3	0.29	0.14	0.48	0.08	0.22	0.27	0.24	0.23	0.34	0.36	0.21	0.30	1.19	1.25	0.78	b.d.	0.53	0.80
Eu_2O_3	0.00	0.08	0.01	b.d.	b.d.	b.d.	0.07	b.d.	0.01	0.08	0.10	0.11	0.62	0.49	0.14	b.d.	0.15	0.16
Gd_2O_3	0.49	0.03	0.52	0.32	1.31	0.33	1.18	0.22	1.35	0.86	0.92	1.04	0.96	0.95	3.14	2.42	3.03	2.37
Dy_2O_3	1.28	0.24	1.70	1.33	2.21	0.83	2.22	1.04	2.17	1.19	1.64	1.61	0.69	0.72	5.23	3.39	5.25	3.59
Ho_2O_3	0.13	b.d.	0.08	0.15	0.62	b.d.	0.62	0.04	0.62	0.38	0.50	0.40	b.d.	0.02	1.60	1.36	1.73	1.29
Er_2O_3	0.27	0.31	0.22	0.70	1.79	0.12	1.77	0.05	1.76	1.15	1.41	1.23	0.31	0.41	1.83	5.08	1.69	b.d.
Yb_2O_3	b.d.	b.d.	0.01	0.50	1.88	0.05	1.67	0.06	1.97	1.04	1.56	1.47	b.d.	b.d.	3.09	4.80	3.07	2.02
ThO_2	b.d.	b.d.	0.03	7.09	34.30	0.92	27.84	0.12	39.18	49.08	43.57	41.15	1.62	1.90	3.12	0.04	3.04	1.80
UO_2	0.05	0.02	0.04	0.11	0.73	0.11	0.67	0.16	0.76	0.75	0.64	0.78	0.22	0.10	0.91	0.04	0.71	0.90
F	0.08	0.19	0.21	b.d.	1.57	b.d.	0.83	0.11	1.05	0.89	0.83	0.88	2.59	2.85	2.00	0.53	1.42	0.21
Total	88.28	86.69	91.71	61.03	94.42	86.50	96.74	87.10	95.83	94.74	97.07	94.85	82.34	79.44	91.20	101.88	90.00	88.55

Appendix 1-10: Scanning Electron Microscope Backscattered Electron images and mineral analyses for sample 9841



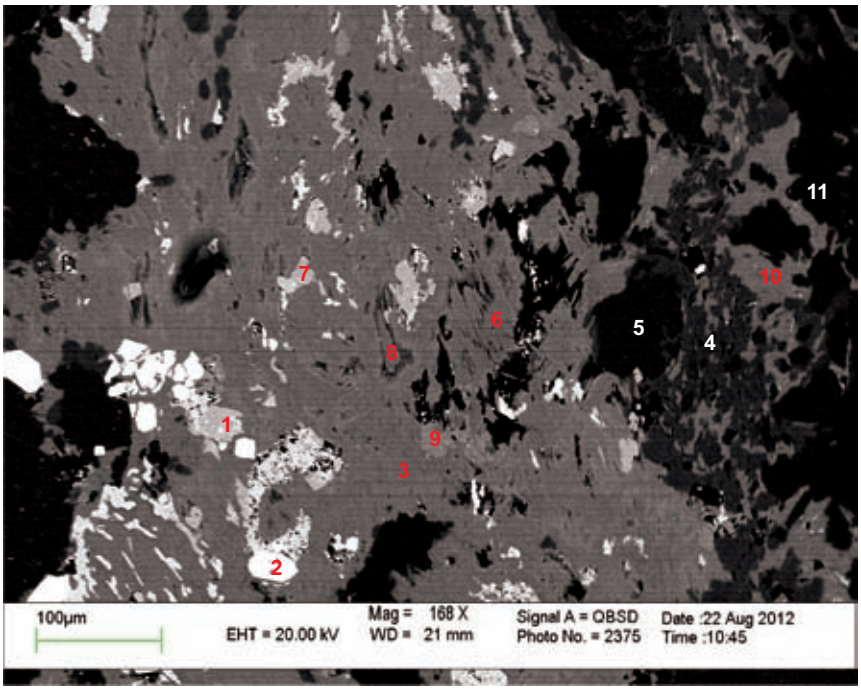
1. Zircon
2. Quartz
3. K-feldspar
4. Chlorite
5. Rutile

Figure 1-10.1: West Moose River Pluton 9841;chlorite crystal with zircon and rutile inclusions.



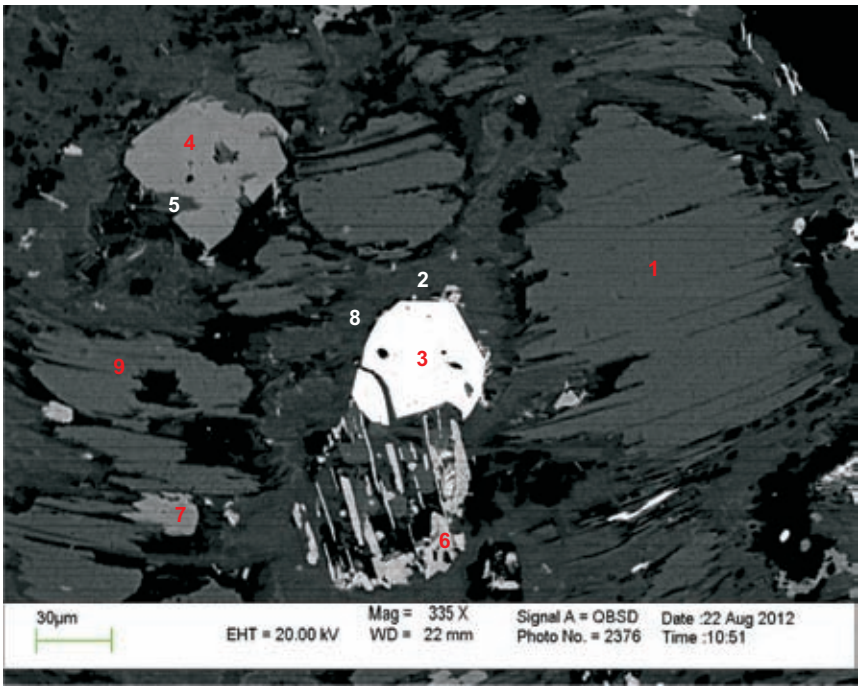
1. Zircon
2. Muscovite?
3. Albite
4. Biotite
5. K-feldspar
6. Zircon

Figure 1-10.2: West Moose River Pluton 9841; initial albitization of K-feldspar crystals (position A). Muscovite (Ms) is replacing K-feldspar (analysis 5).



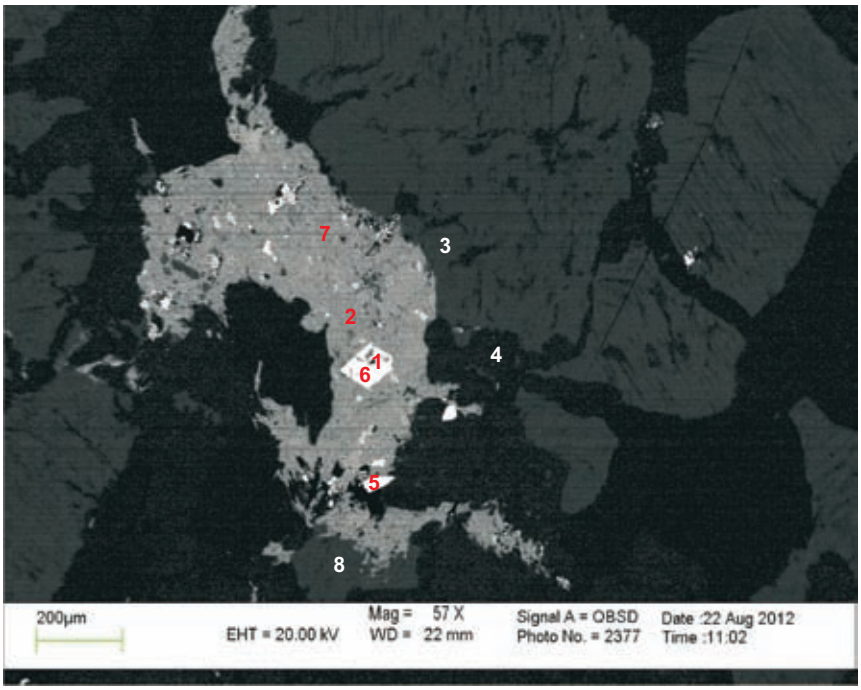
1. Rutile
2. Zircon
3. Chlorite
4. K-feldspar
5. Albite
6. Chlorite
7. Rutile
8. Biotite
9. Apatite
10. Chlorite
11. Quartz

Figure 1-10.3: West Moose River Pluton 9841; chlorite (analysis 6) is replacing both albite (analysis 5) and K-



1. Biotite
2. Chlorite
3. Zircon
4. Rutile (magmatic)
5. Chlorite
6. Ilmenite
7. Rutile
8. Chlorite
9. Biotite

Figure 1-10.4: West Moose River Pluton 9841; chlorite (analyses 2&8) replacing biotite (analyses 1&9).



1. Magnetite + others
2. Chlorite
3. K-feldspar
4. Albite
5. Zircon
6. Magnetite
7. Chlorite
8. K-feldspar

Figure 1-10.5: West Moose River Pluton 9841; chlorite (analyses 2&7) is replacing K-feldspar (analysis 8) after initial albitization of K-feldspar (analyses 3&4).

Table 1-10A: Normalised EDS analyses of minerals from sample 9841.

Sample	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841
Site	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3	3
Position	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5	6	7
Mineral	Zrn	Qtz	Kfs	Chl	Rt	Zrn	Ms	Ab	Bt	Kfs	Zrn	Rt	Zrn	Chl	Kfs	Ab	Chl	Rt
SiO_2	32.30	100.00	66.58	32.84	b.d.	31.74	52.83	67.77	42.13	65.97	31.43	b.d.	31.32	33.86	60.63	67.92	33.17	0.94
Al_2O_3	b.d.	b.d.	17.75	22.57	b.d.	b.d.	31.22	18.46	16.70	18.00	b.d.	b.d.	b.d.	22.42	25.09	19.49	21.76	b.d.
FeO	b.d.	b.d.	b.d.	32.76	3.08	b.d.	3.75	1.88	19.69	b.d.	b.d.	19.12	b.d.	32.35	2.31	b.d.	33.73	1.39
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	11.84	b.d.	b.d.	1.44	b.d.	9.41	b.d.	b.d.	b.d.	b.d.	11.37	b.d.	b.d.	11.34	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	0.99	b.d.	b.d.	b.d.	b.d.	11.89	b.d.	0.87	b.d.	b.d.	b.d.	b.d.	7.07	11.92	b.d.	b.d.
K_2O	b.d.	b.d.	14.67	b.d.	b.d.	b.d.	10.75	b.d.	9.07	15.16	b.d.	b.d.	b.d.	b.d.	4.90	0.67	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	4.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	92.36	b.d.	b.d.	b.d.	2.59	b.d.	b.d.	80.88	b.d.	b.d.	b.d.	b.d.	b.d.	97.67
ZrO_2	67.70	b.d.	b.d.	b.d.	b.d.	68.26	b.d.	b.d.	b.d.	b.d.	68.57	b.d.	68.68	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.58	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Abbreviations: Ms: muscovite.																	

Table 1-10A: Normalised EDS analyses of minerals from sample 9841.

Sample	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841	9841
Site	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	5
Position	8	9	10	11	1	2	3	4	5	6	7	8	9	1	2	3	4
Mineral	Bt	Ap	Chl	Qtz	Bt	Chl	Zrn	Rt	Chl	Ilm	Rt	Chl	Bt	Mag (+others)	Chl	Kfs	Ab
SiO_2	42.41	b.d.	32.78	100.00	41.61	33.95	31.52	b.d.	32.61	b.d.	b.d.	31.20	40.17	7.28	32.73	66.49	68.04
Al_2O_3	18.56	b.d.	22.16	b.d.	16.77	22.37	b.d.	b.d.	21.68	b.d.	b.d.	23.75	17.48	4.88	22.74	17.70	19.40
FeO	19.01	1.94	32.95	b.d.	23.99	33.47	b.d.	1.78	35.10	32.73	1.51	34.55	25.01	86.40	34.83	b.d.	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	8.95	b.d.	12.12	b.d.	4.93	10.21	b.d.	b.d.	7.28	b.d.	b.d.	10.50	4.09	b.d.	9.70	b.d.	b.d.
CaO	b.d.	45.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.60
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.76	11.97
K_2O	9.29	b.d.	b.d.	b.d.	9.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.49	1.45	b.d.	15.05	b.d.
P_2O_5	b.d.	44.18	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	1.78	b.d.	b.d.	b.d.	3.20	b.d.	b.d.	98.22	3.33	64.44	98.49	b.d.	3.16	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	68.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Total	100.00	91.19	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.40	100.00	100.00	100.00	100.00

Table 1-10A: Normalised EDS analyses of minerals from sample 9841.

Sample	9841	9841	9841	9841
Site	5	5	5	5
Position	5	6	7	8
Mineral	Zrn	Mag	Chl	Kfs
SiO_2	32.59	b.d.	30.10	66.38
Al_2O_3	b.d.	b.d.	22.70	18.60
FeO	b.d.	100.00	37.90	b.d.
MnO	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	9.30	b.d.
CaO	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	1.50
K_2O	b.d.	b.d.	b.d.	13.52
P_2O_5	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.
ZrO_2	67.41	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00

Appendix 2: Detailed petrographic analysis of fracture-filling minerals in selected granitic rocks from the West Moose River pluton

Table 2A: Mineral abbreviations used for analyzed minerals in this work.

Abbreviation	Mineral Name	Notes
Ab	Albite	
Aln	Allanite	
Alt.	altered mineral	
Alt. Ilmenite	altered Ilmenite	TiO_2 = 60-90%
Ap	Apatite	
Brt	Barite	
Bei	Beidellite	
Bt	Biotite	
Cal	Calcite	
Cer	Cerianite	
Cher-Y	Chernovite-Y	
Che	Chevkinite-Ce	
Chl	Chlorite	
Chl/Bt	Chlorite replacing biotite	
Ep	Epidote	
Eux	Euxenite	
Fe-Chl	Fe-rich chlorite	FeO > 30% when total is recalculated to 85%
Gt	Goethite	FeO = 78%-84%
HREE	Heavy rare earth elements	
Hem	Hematite	FeO = 84%-90%
Hing	Hingganite-Y (Fe)	
Ilm	Ilmenite	
Kfs	K-feldspar	
LREE	Light rare earth elements	
Lm	Limonite	FeO < 78%
Mag	Magnetite	FeO > 90%
Mn-Ilm	Manganoan ilmenite	
Ms	Muscovite	
Nb-aes	Nioboaeschynite-Y	
Plag	Plagioclase	
Py	Pyrite	
Pph	Pyrophanite	
Qz	Quartz	
REE	Rare earth elements	
Rbk	Riebeckite	
Rt	Rutile*	TiO_2 > 90%
Sam	Samarskite-Y	
Syn	Synchysite-Ce	
Ta-eux	Tanteuxenite-Y	
Thr	Thorite	
Thr-Xtm	Thorite-Xenotime	
Thr-Zrn	Thorite-Zircon	
Ti-mag	Titaniferous magnetite	
Tnt	Titanite	
Xtm	Xenotime	
Zrn	Zircon	

* Where rutile is used as a general name for all TiO_2 minerals. In some cases it may actually be anatase or brookite. The grain size of the crystal is often too small for precise optical identification.

Appendix 2-1: Scanning Electron Microscope Backscattered images and analyses of hydrothermal minerals from sample 9835

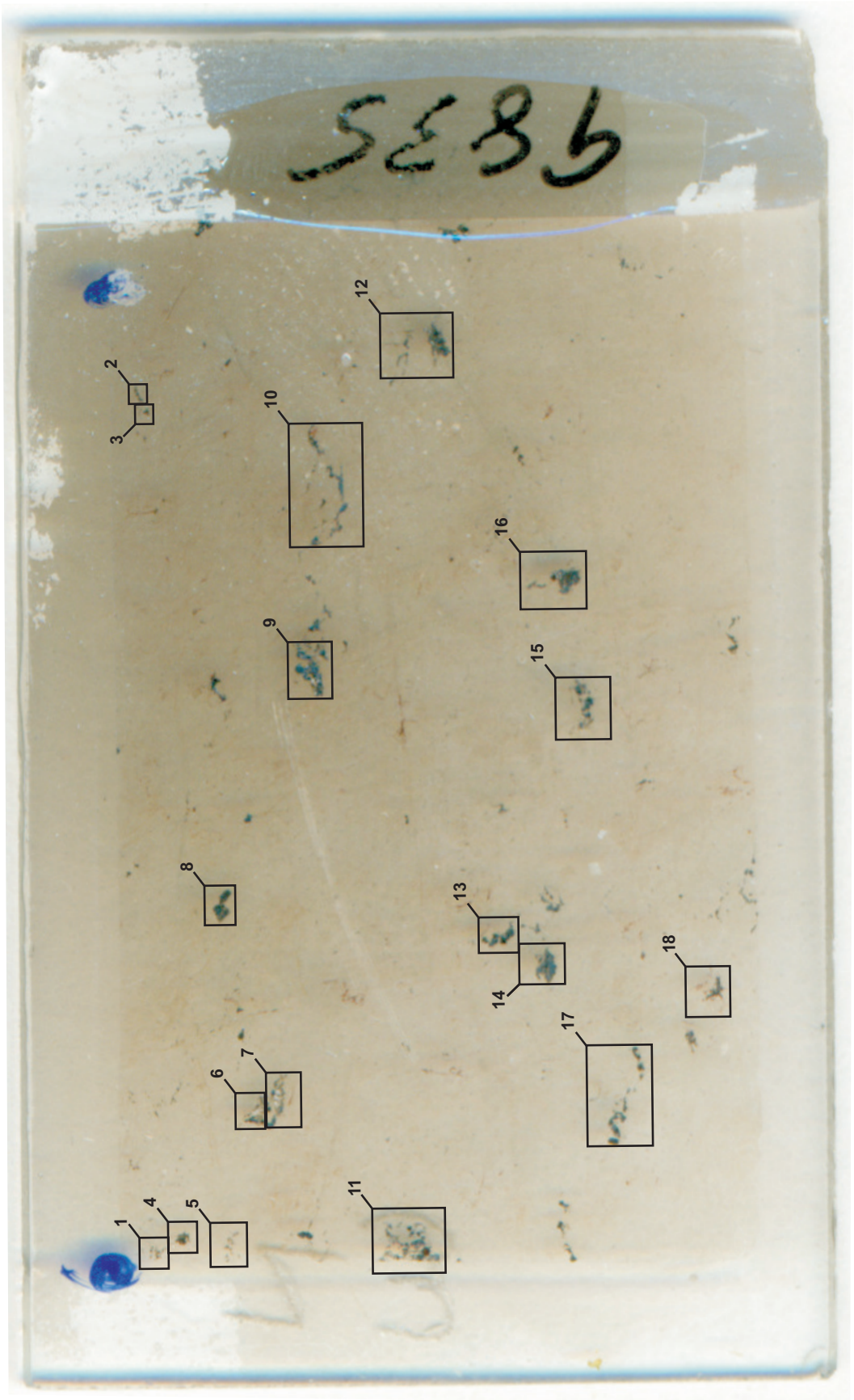
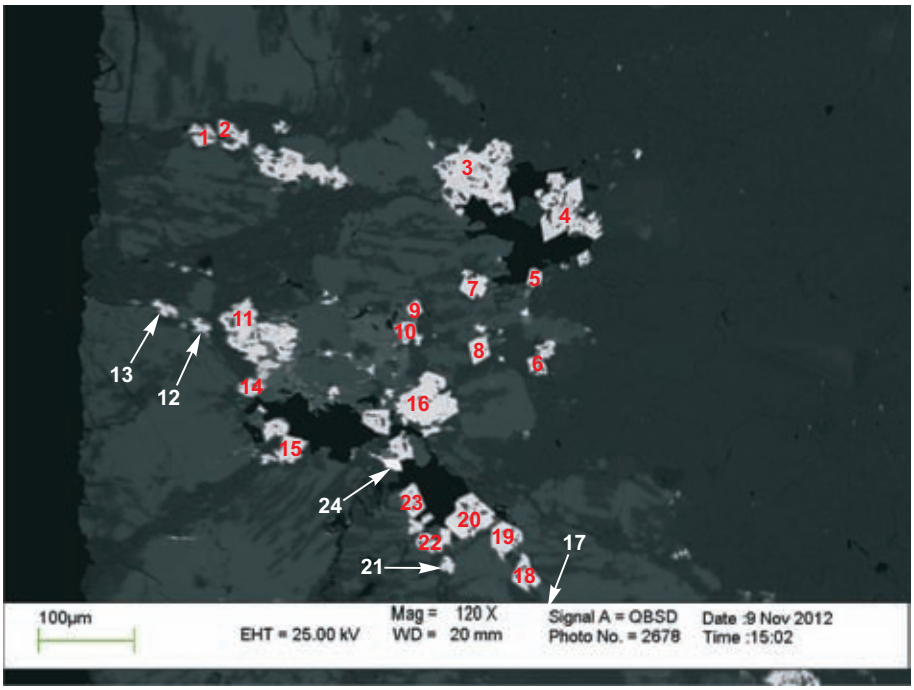
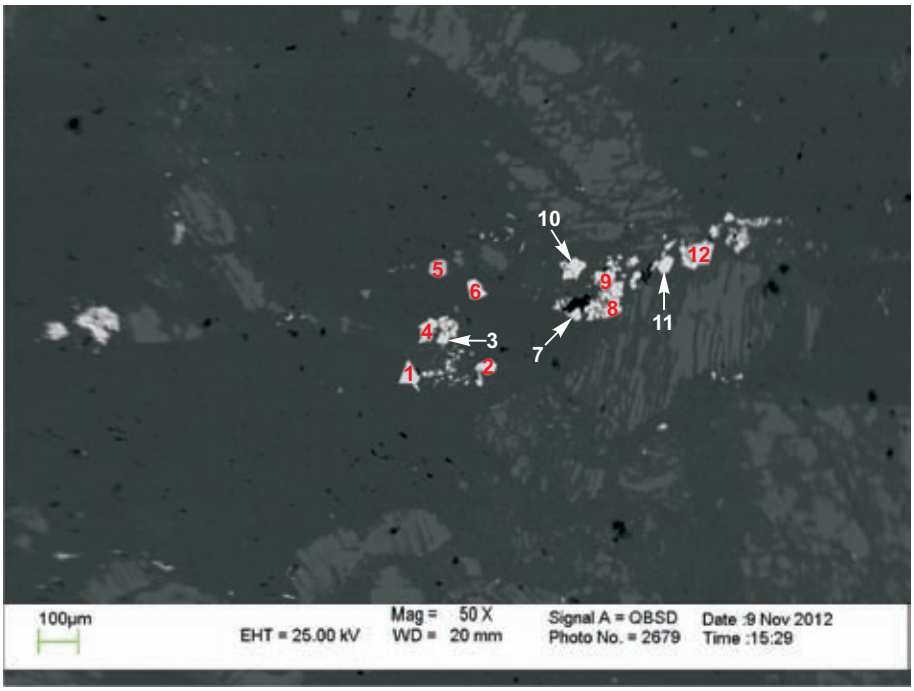


Figure 2-1A: Scanned polished thin section of sample 9835 with the locations of the studied fractures.



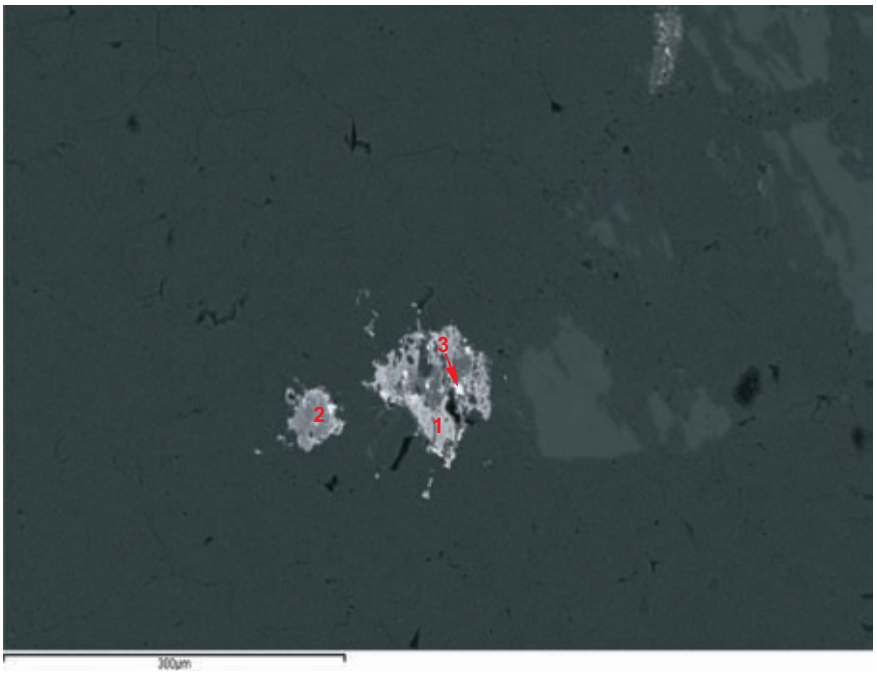
1. Mix(Kfs+Fe-oxide)
2. Kfs
3. Qz
4. Hem
5. Hem
6. Fe-oxide(+others)
7. Mix(Kfs+Fe-oxide)
8. Hem
9. Mix(Fe-oxide+Kfs)
10. Mix(Fe-oxide+Kfs)
11. Mix(Fe-oxide+Kfs)
12. Mix(Fe-oxide+Kfs)
13. Mix(Fe-oxide+Kfs)
14. Mix(Fe-oxide+Kfs)
15. Mix(Fe-oxide+Kfs)
16. Hem
17. Mix(Fe-oxide+Qz)
18. Mix(Fe-oxide+Kfs)
19. Mix(Fe-oxide+Kfs)
20. Bad Spot
21. Mix(Fe-oxide+Kfs)
22. Mix(Fe-oxide+Kfs)
23. Kfs
24. Zrn

Figure 2-1.1: West Moose River Pluton 9835.



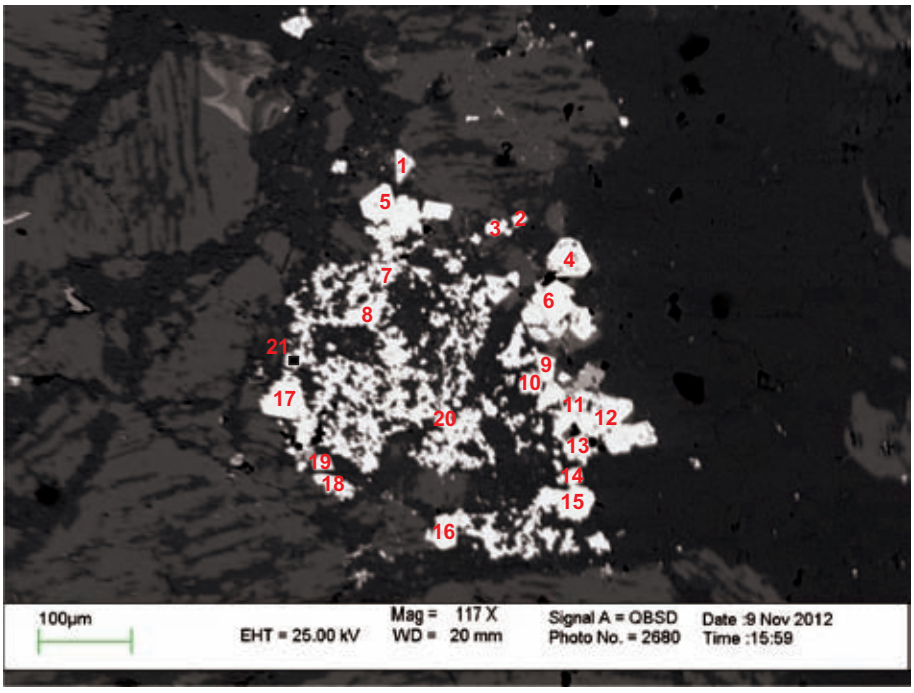
1. Lm
2. Lm
3. Lm
4. Lm
5. Bad Spot
6. Gt
7. Gt
8. Gt
9. Gt
10. Mix(Fe-oxide+Ab)
11. Hem
12. Hem

Figure 2-1.2: West Moose River Pluton 9835.



1. Allanite-(Ce)
2. Mixture
3. Allanite-(Ce)

Figure 2-1.3: West Moose River Pluton 9835; BSE image.



1. Mix(Fe-oxide+Kfs)
2. Albite
3. Albite
4. Mix(Fe-oxide+Ab)
5. Gt
6. Gt
7. Qz
8. Mix(Fe-oxide+Chl)
9. Gt
10. Gt
11. Lm
12. Mix(Fe-oxide+Chl)
13. Mix(Fe-oxide+Chl)
14. Mix(Fe-oxide+Qz)
15. Lm
16. Mix(Ab+Fe-oxide)
17. Kfs
18. Mix(Fe-oxide+Kfs)
19. Mix(Kfs+TiO2)
20. Mix(Fe-oxide+Qz)
21. Mix(Qz+Fe-oxide)

Figure 2-1.4: West Moose River Pluton 9835.

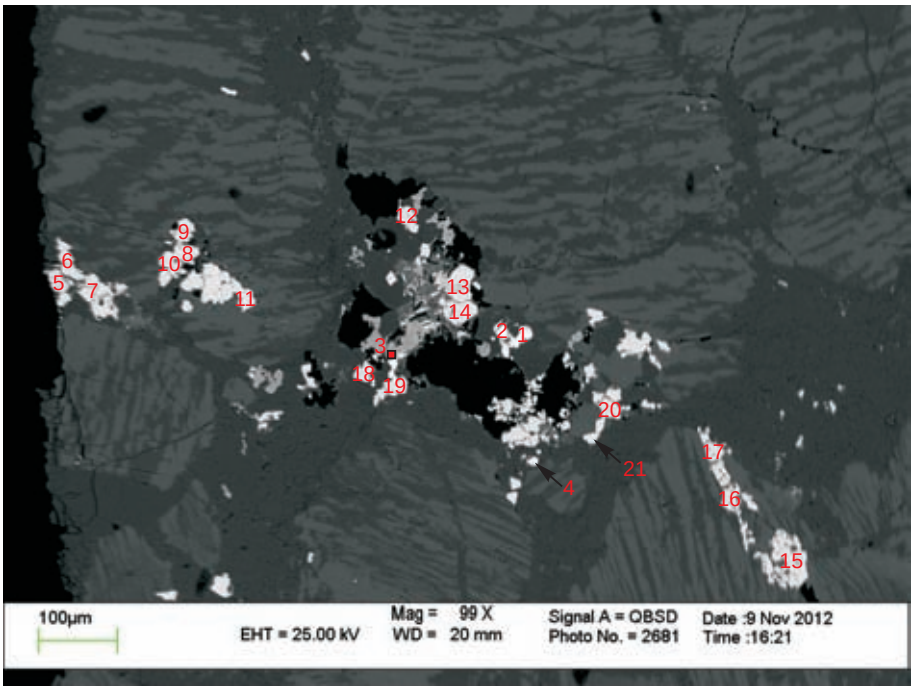


Figure 2-1.5: West Moose River Pluton 9835.

1. Mix(Ab+Xtm)
2. Kfs
3. Rt
4. Ab
5. Bad spot
6. Bas spot
7. Mix(Ab+Fe-oxide)
8. Mix(Fe-oxide+Afs)
9. Ab
10. Kfs
11. Lm
12. Bad spot
13. Bad spot
14. Hem
15. Mix(Fe-oxide+Kfs)
16. Mix(Ilm+Ab)
17. Mix(Fe-oxide+Kfs)
18. Mix(Ab+Fe-oxide)
19. Mix(Ab+Fe-oxide)
20. Mix(Fe-oxide+Kfs)
21. Kfs
22. Kfs

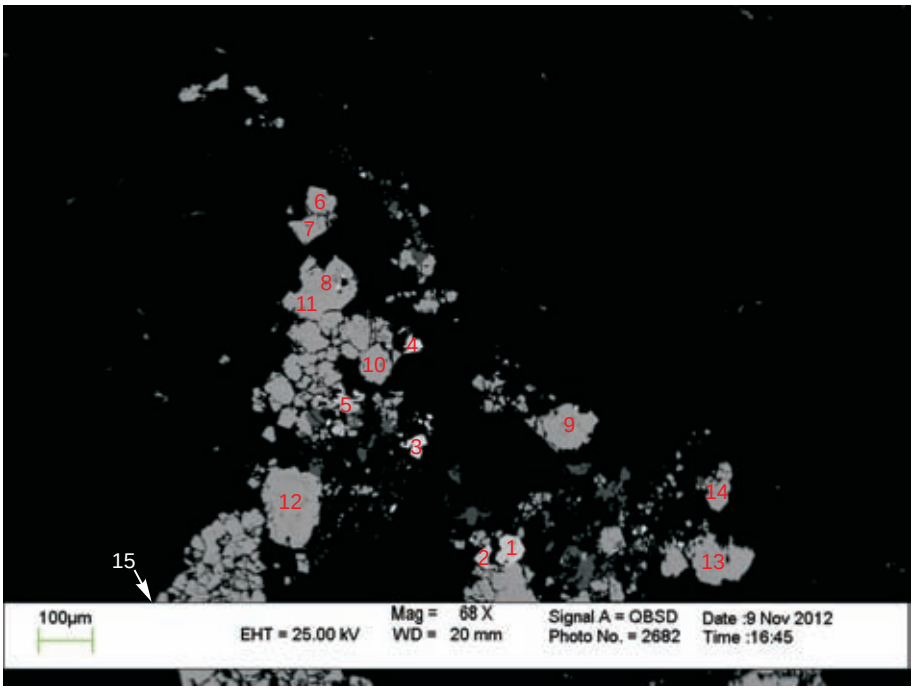
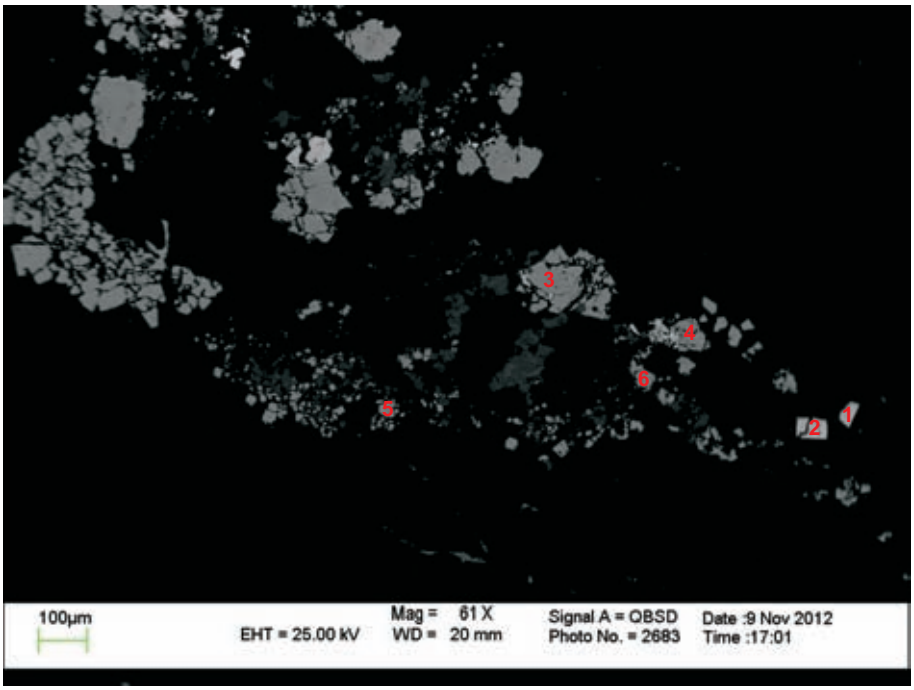


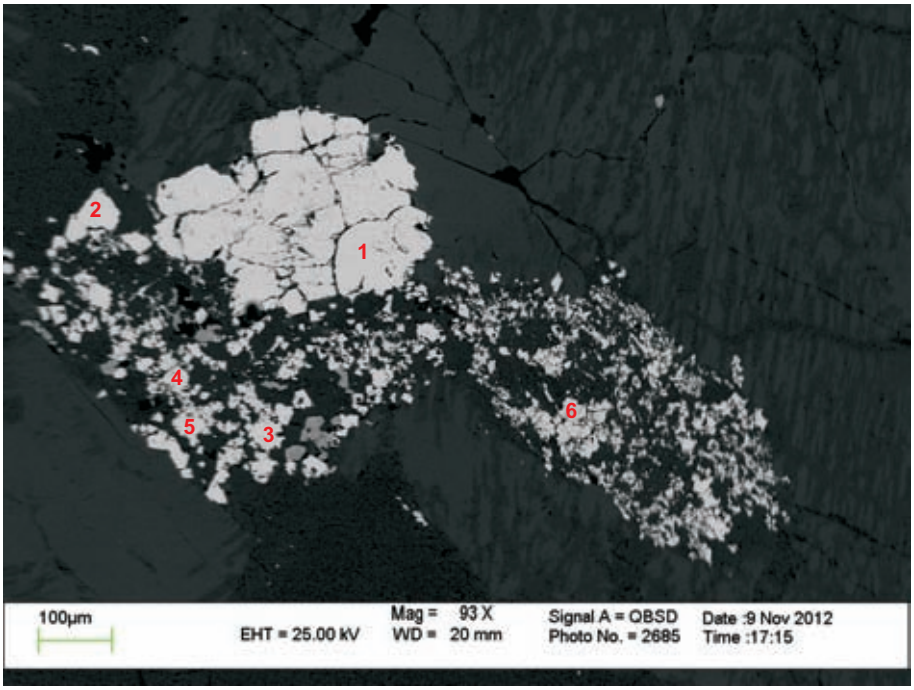
Figure 2-1.6: West Moose River Pluton 9835.

1. Zrn
2. Zrn
3. Xtm
4. Zrn-Xtm
5. Hing
6. Lm
7. Gt
8. Ti-mag
9. Mag
10. Hem
11. Hem
12. Ti-mag
13. Ti-mag
14. Mag
15. Gt



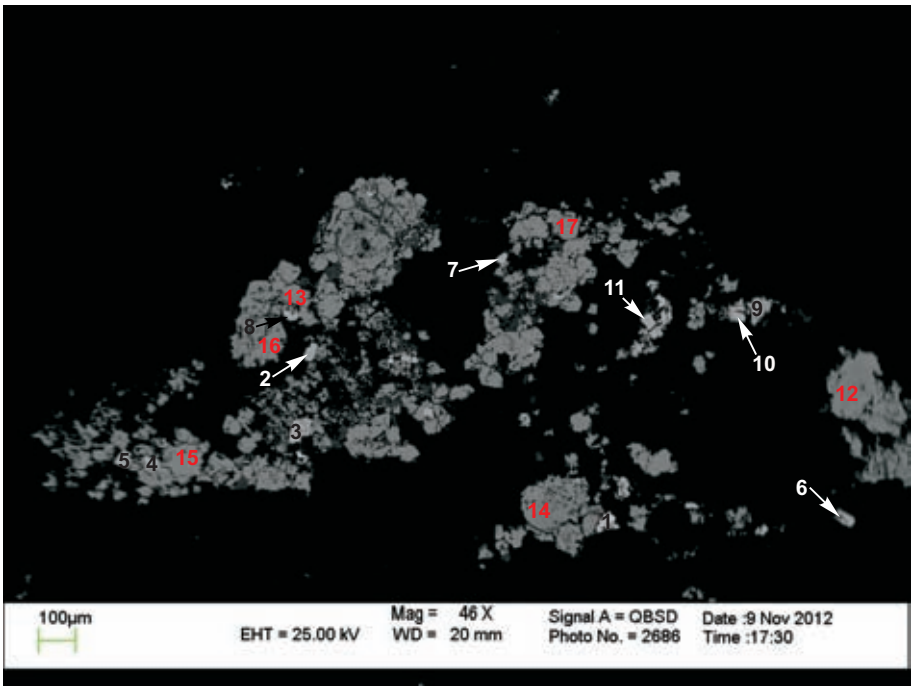
1. Zrn
2. Zrn
3. Hem
4. Mix(Fe-oxide+Kfs)
5. Gt
6. Hem

Figure 2-1.7: West Moose River Pluton 9835.



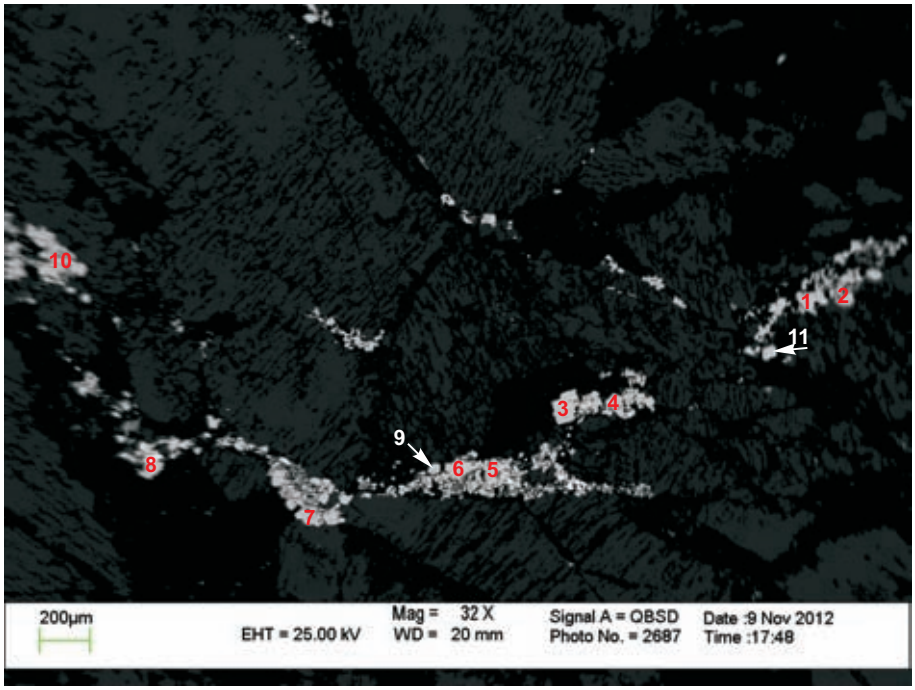
1. Ti-mag
2. Gt
3. Gt
4. Gt
5. Gt
6. Fe-oxide(+others)

Figure 2-1.8: West Moose River Pluton 9835.



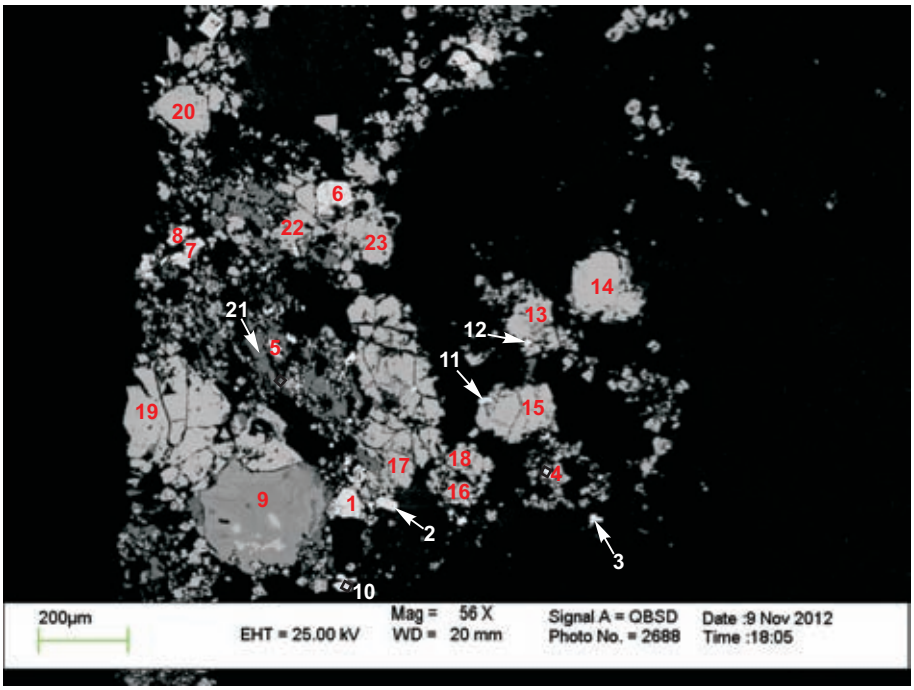
1. Xtm
2. Zrn
3. Zrn
4. Zrn
5. Zrn
6. Zrn
7. Zrn
8. Zrn
9. Zrn
10. Zrn
11. Zrn
12. Ti-mag
13. Gt
14. Ti-mag
15. Fe-oxide(+others)
16. Lm
17. Gt

Figure 2-1.9: West Moose River Pluton 9835.



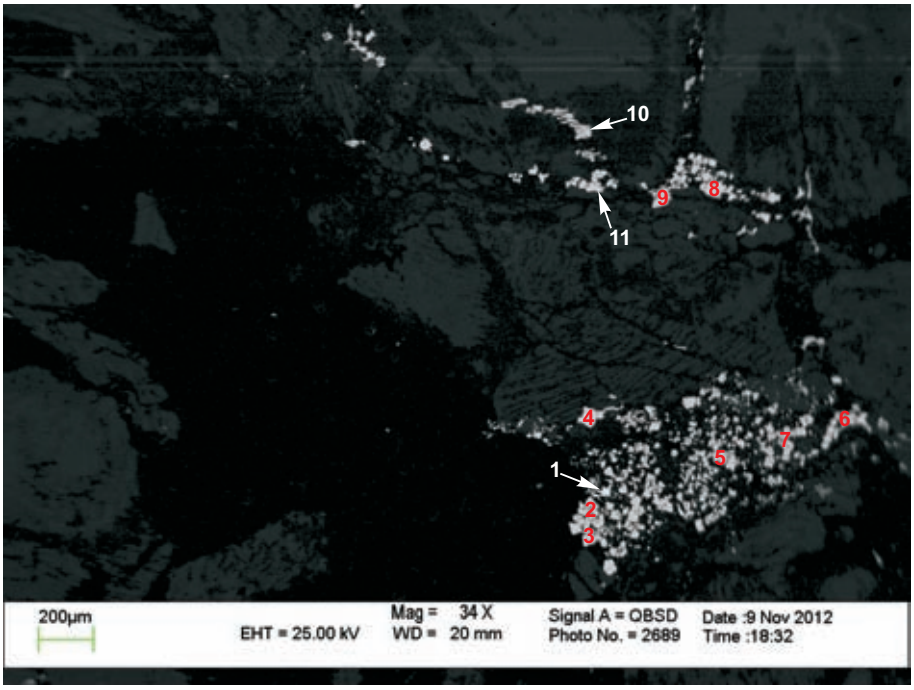
1. Mag
2. Mag
3. Gt
4. Fe-oxide(+others)
5. Hem
6. Gt
7. Ti-mag
8. Mix(Fe-oxide+Zrn)
9. Lm
10. Bad Spot
11. Hem

Figure 2-1.10: West Moose River Pluton 9835.



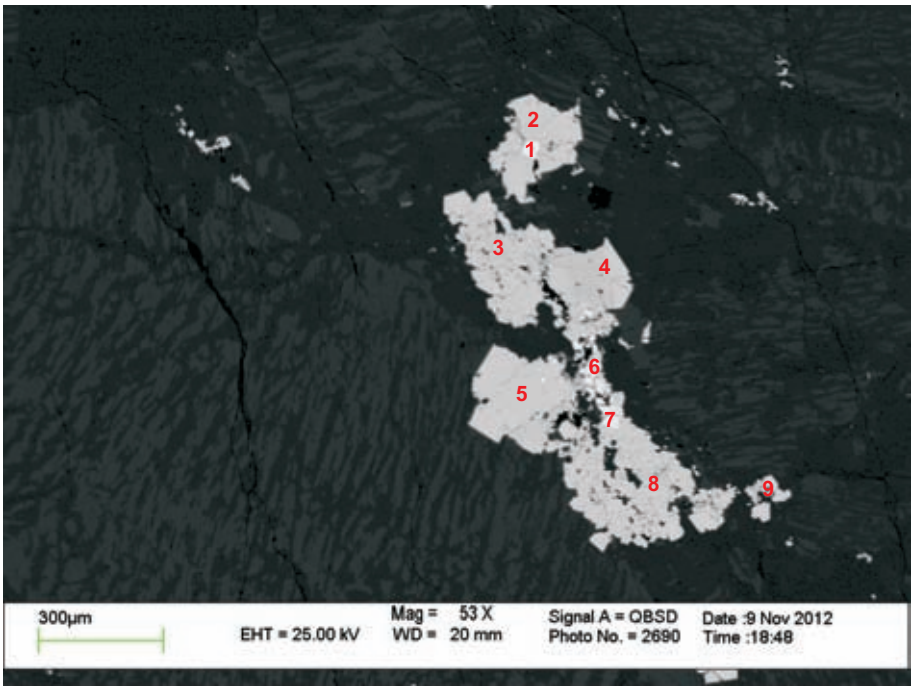
1. Zrn
2. Zrn
3. Qz
4. Mix (Fe-oxide+Qz)
5. Bad spot
6. Zrn
7. Bad spot
8. Zrn
9. Mix (Fe-oxide+Kfs)
10. Zrn
11. Zrn
12. Fe-oxide (+others)
13. Ti-mag
14. Ti-mag
15. Mag
16. Hem
17. Fe-oxide (+others)
18. Gt
19. Ti-mag
20. Lm
21. Rt
22. Lm
23. Gt

Figure 2-1.11: West Moose River Pluton 9835.



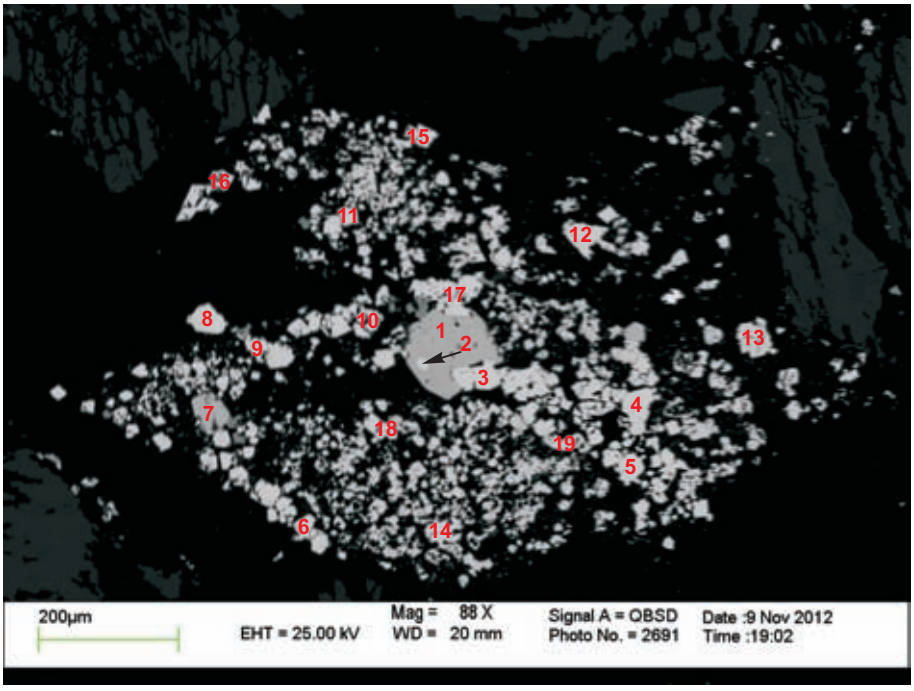
1. Xtm (+others)
2. Hem
3. Hem
4. Hem
5. Fe-oxide(+others)
6. Mix (Fe-oxide+Qz)
7. Gt
8. Hem
9. Mix (Fe-oxide+Afs)
10. Gt
11. Mix (Fe-oxide+Ab)

Figure 2-1.12: West Moose River Pluton 9835.



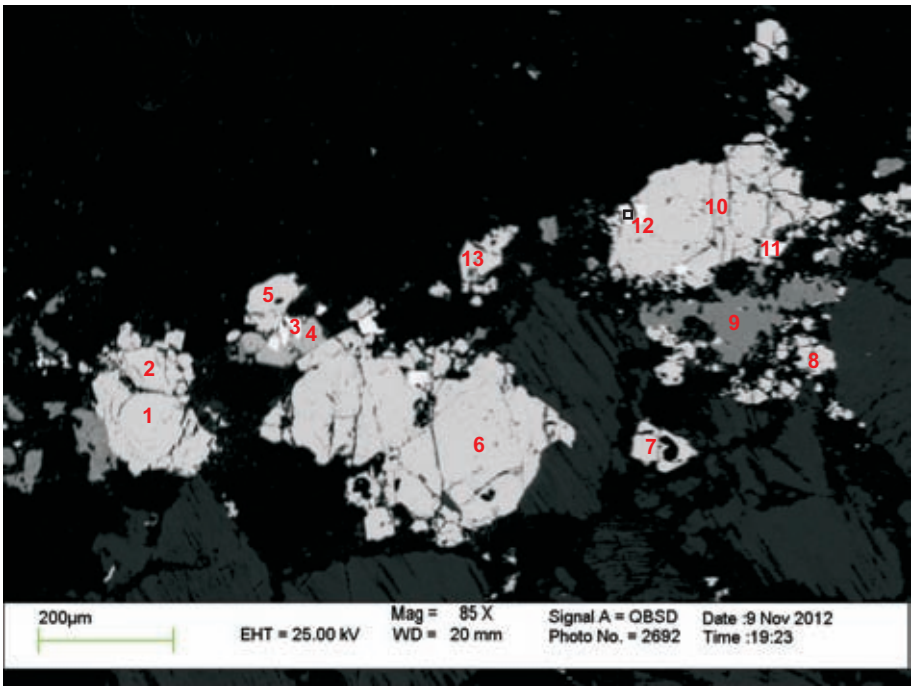
1. Zrn
2. Ti-mag
3. Mix (Fe-oxide+Qz)
4. Hem
5. Ti-mag
6. Zrn
7. Zrn
8. Hem
9. Hem

Figure 2-1.13: West Moose River Pluton 9835;
order of crystallization: titaniferous magnetite & hematite → zircon.



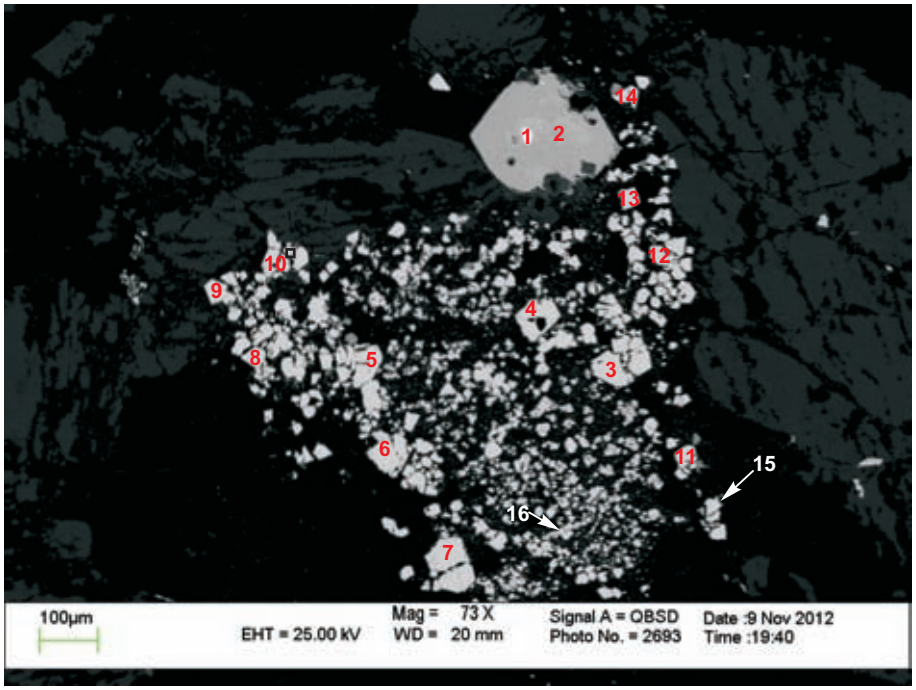
1. Lm
2. Hem
3. Gt
4. Hem
5. Hem
6. Fe-oxide (+others)
7. Lm
8. Gt
9. Lm
10. Fe-oxide (+others)
11. Gt
12. Hem
13. Mix (Fe-oxide+Qz)
14. Gt
15. Gt
16. Mix (Fe-oxide+Qz)
17. Gt
18. Lm
19. Gt

Figure 2-1.14: West Moose River Pluton 9835.



1. Gt
2. Gt
3. Mix (Zrn+Fe-oxide)
4. Lm
5. Gt
6. Gt
7. Hem
8. Hem
9. Rt
10. Gt
11. Zrn
12. Zrn
13. Gt

Figure 2-1.15:West Moose River Pluton 9835;
order of crystallization: Fe-oxides → Zircon (analyses 3,11, & 12).



1. Brt
2. Lm?
3. Hem
4. Gt
5. Gt
6. Lm
7. Gt
8. Gt
9. Lm
10. Lm
11. Hem
12. Lm
13. Gt
14. Ab (+Fe)
15. Mix (Ab+Fe-oxide)
16. Gt

Figure 2-1.16: West Moose River Pluton 9835; inclusion of barite (analysis 1) in grain of Fe-oxide (analysis 2) that has been hydrothermally altered.

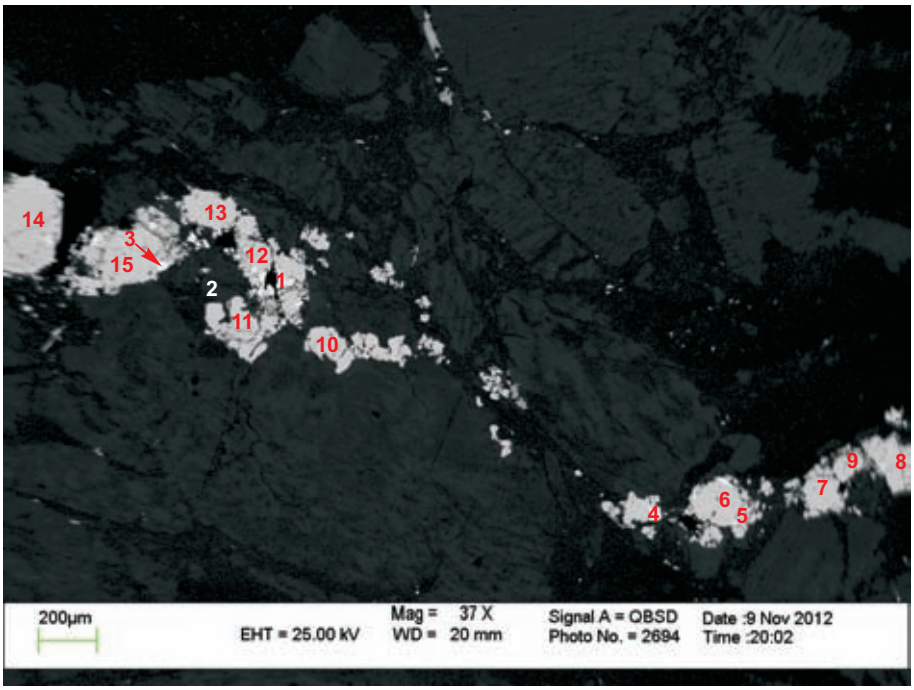


Figure 2-1.17: West Moose River Pluton 9835;
order of crystallization: Fe-oxides → zircon (analyses 1&4).

1. Zrn (+Fe)
2. Lm (+others)
3. Ti-mag?
4. Zrn
5. Mag (+SiO_2)
6. Mag
7. Mag
8. Mag
9. Mag
10. Ti-mag?
11. Lm
12. Fe-oxide (+others)
13. Ti-mag?
14. Ti-mag?
15. Fe-oxide (+others)
16. Kfs (analysis spot out of field of view)

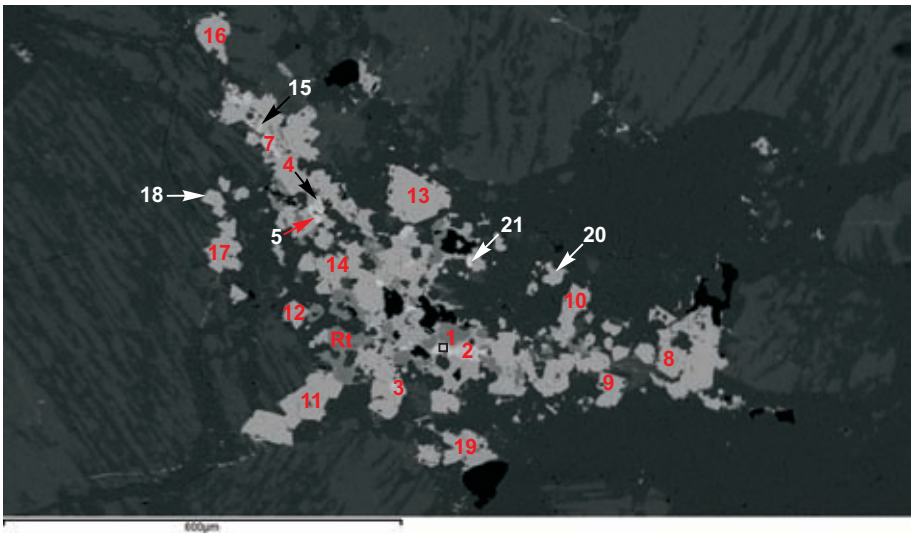
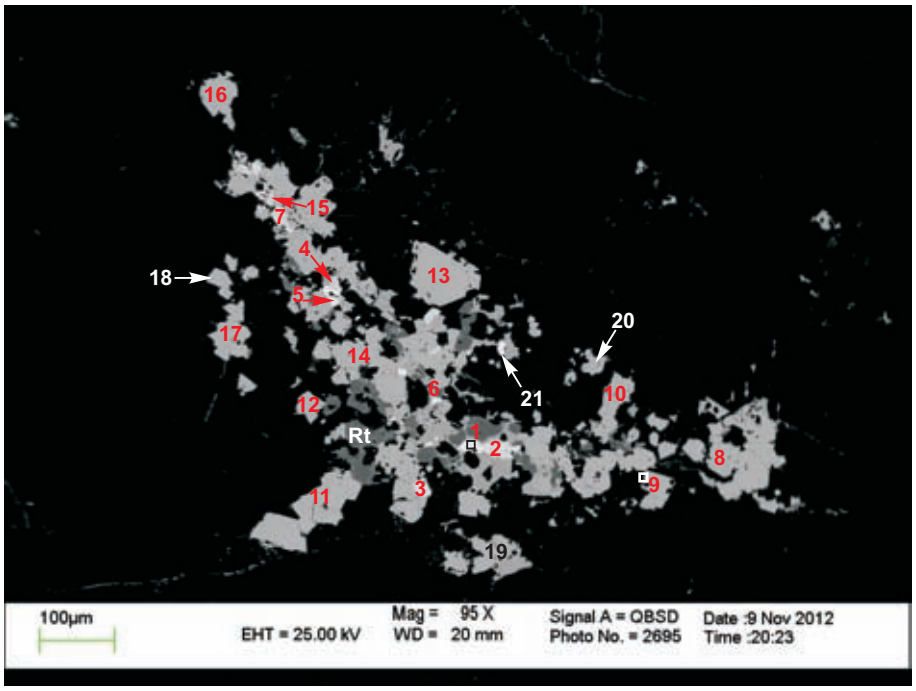


Figure 2-1.18a: West Moose River Pluton 9835 bright BSE image.

1. Xtm
2. Zrn
3. Mix (Zrn+Fe-oxide)
4. Fe-oxide (+others)
5. Xtm
6. Fe-oxide (+others)
7. Zrn
8. Gt
9. Mix (Ab+Fe-oxide)
10. Gt
11. Lm
12. Lm
13. Gt
14. Gt
15. Zrn
16. Kfs (+Fe)
17. Mix (Fe-oxide+Kfs)
18. Lm
19. Hem
20. Hem
21. Xtm



1. Xtm
2. Zrn
3. Mix (Zrn+Fe-oxide)
4. Fe-oxide (+others)
5. Xtm
6. Fe-oxide (+others)
7. Zrn
8. Gt
9. Mix (Ab+Fe-oxide)
10. Gt
11. Lm
12. Lm
13. Gt
14. Gt
15. Zrn
16. Kfs (+Fe)
17. Mix (Fe-oxide+Kfs)
18. Lm
19. Hem
20. Hem
21. Xtm

Figure 2-1.18b: West Moose River Pluton 9835 dark BSE image; order of crystallization: rutile (darkest phase) → Fe-oxides → Zircon (analyses 2,4,7&15)→ Xenotime (analyses 1,5,&21).

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	1	1	1	1	1	1	1	1	1	1	1	1	1
Pos.	1	2	3	4	5	6	7	8	9	10	11	12	13
Mineral	Mix(Kfs+ Fe-Oxide)	Kfs	Qtz	Hem	Hem	Fe-Oxide (+others)	Mix(Kfs+ Fe-Oxide)	Hem	Mix(Fe-oxide+Kfs)	Mix (Fe-oxide+Kfs)	Mix (Fe-oxide+Kfs)	Mix (Fe-oxide+Kfs)	Mix (Fe-oxide+Kfs)
SiO_2	46.62	67.53	83.63	0.96	3.52	15.69	39.68	0.97	9.40	27.10	14.86	9.94	26.82
Al_2O_3	15.98	18.22	1.75	b.d.	b.d.	1.12	12.68	b.d.	4.69	15.33	1.13	3.27	8.50
FeO	23.41	0.57	13.23	99.04	96.48	82.08	38.57	99.03	83.35	50.11	82.70	84.43	57.58
MnO	0.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.94	4.57	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	5.09	6.23	0.35	b.d.	b.d.	1.12	6.45	b.d.	1.09	1.76	0.80	0.76	6.88
K_2O	5.02	7.45	1.04	b.d.	b.d.	b.d.	2.61	b.d.	0.53	0.62	b.d.	1.23	0.22
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	2.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.51	0.36	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	98.69	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.49	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	1	1	1	1	1	1	1	1	1	1	1	2	2
Pos.	14	15	16	17	18	19	20	21	22	23	24	1	2
Mineral	Mix (Fe-oxide+Kfs)	Mix (Fe-oxide+Kfs)	Hem	Mix (Fe-oxide+Qz)	Mix(Fe-oxide+Kfs)	Mix(Fe-oxide+Kfs)	Bad Spot	Mix(Fe-oxide+Kfs)	Mix(Fe-oxide+Kfs)	Kfs	Zrn	Lm	Lm
SiO_2	10.40	19.74	b.d.	31.64	30.36	9.21	10.56	3.11	33.56	66.01	35.85	1.09	1.14
Al_2O_3	3.68	b.d.	b.d.	b.d.	10.19	2.56	b.d.	0.54	11.44	17.75	3.09	b.d.	b.d.
FeO	83.40	80.26	100.00	68.36	52.32	87.43	86.70	96.00	49.13	1.11	3.52	98.91	98.86
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	1.34	b.d.	b.d.	b.d.	5.76	b.d.	b.d.	b.d.	0.73	0.45	1.95	b.d.	b.d.
K_2O	1.19	b.d.	b.d.	b.d.	1.37	0.80	b.d.	0.35	5.14	14.68	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	54.56	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.03	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	97.26	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	2	2	2	2	2	2	2	2	2	2	3	3	3	4	4	4
Pos.	3	4	5	6	7	8	9	10	11	12	1	2	3	1	2	3
Mineral	Lm	Lm	Bad Spot	Gt	Gt	Gt	Gt	Mix(Fe-Oxide+Ab)	Hem	Hem	Aln	Mix	Aln	Mix(Fe-oxide+Kfs)	Ab	Ab
SiO_2	4.56	11.59	3.65	1.27	b.d.	b.d.	b.d.	47.30	1.10	1.21	38.63	51.76	36.66	2.95	68.32	68.19
Al_2O_3	2.19	2.79	b.d.	b.d.	b.d.	b.d.	b.d.	14.32	b.d.	b.d.	13.54	b.d.	14.44	1.09	18.28	18.76
FeO	93.25	84.80	81.56	98.73	100.00	100.00	100.00	27.13	98.90	98.79	17.37	17.52	16.60	95.60	0.56	0.69
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.49	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.49	b.d.	10.36	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	0.82	b.d.	b.d.	b.d.	b.d.	b.d.	11.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.26	11.93
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	0.58	0.42
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	3.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	8.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.05	29.23	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.84	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.72	b.d.	12.57	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.20	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.99	b.d.	4.53	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	2.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	99.77	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Pos.	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mineral	Mix(Fe-Oxide+Ab)	Gt	Gt	Qtz	Mix (Fe-Oxide+Qtz)	Gt	Gt	Gt	Mix(Fe-oxide+Chl)	Mix(Fe-oxide+Chl)	Mix(Fe-oxide+Qtz)	Lm	Mix(Ab+Fe-oxide)	Afs
SiO_2	67.08	1.52	3.48	93.94	23.96	0.90	0.72	1.14	32.07	24.69	55.70	0.66	60.64	68.14
Al_2O_3	8.26	0.65	b.d.	0.87	b.d.	b.d.	b.d.	b.d.	16.24	12.71	0.69	b.d.	17.01	18.46
FeO	21.51	97.83	96.52	3.50	76.04	99.10	99.28	98.86	46.99	59.18	43.61	99.34	9.59	0.46
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	1.65	b.d.	b.d.	0.79	b.d.	b.d.	b.d.	b.d.	3.03	2.49	b.d.	b.d.	b.d.	b.d.
CaO	0.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.30	0.34	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	0.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.88	0.58	b.d.	b.d.	12.76	4.79
K_2O	0.36	b.d.	b.d.	0.49	b.d.	b.d.	b.d.	b.d.	0.27	b.d.	b.d.	b.d.	b.d.	8.16
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	0.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	0.00	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	99.79	100.00	100.00	99.81	100.00	100.00	100.00	100.00	99.79	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	4	4	4	4	5	5	5	5	5	5	5	5	5	5
Pos.	18	19	20	21	1	2	3	4	5	6	7	8	9	10
Mineral	Mix(Fe-oxide+Kfs)	Mix(Kfs+TiO_2)	Mix(Fe-Oxide+Qtz)	Mix(Qtz+Fe-oxide)	Mix(Ab+Xtm)	Kfs	Rt	Ab	Bad Spot	Bad Spot	Mix(Ab+Fe-Oxide)	Mix(Fe-Oxide+Kfs)	Ab	Kfs
SiO_2	29.72	47.38	21.24	60.24	48.41	68.76	3.48	68.60	29.99	64.05	41.10	35.26	68.57	67.62
Al_2O_3	9.59	5.20	b.d.	0.65	13.41	18.62	b.d.	18.54	b.d.	17.94	13.30	11.33	18.48	18.25
FeO	54.50	1.43	78.76	39.11	0.33	b.d.	1.98	0.24	b.d.	1.15	32.20	45.37	0.32	0.25
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.22	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	3.60	3.71	b.d.	b.d.	9.04	12.32	b.d.	12.62	b.d.	13.63	12.75	4.27	12.50	7.74
K_2O	2.58	0.24	b.d.	b.d.	b.d.	0.31	b.d.	b.d.	b.d.	b.d.	b.d.	3.77	0.13	6.14
P_2O_5	b.d.	b.d.	b.d.	b.d.	12.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	42.04	b.d.	b.d.	b.d.	b.d.	92.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	15.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	0.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	0.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	0.00	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	29.99	96.77	99.57	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	5	5	5	5	5	5	5	5	5	5	5	5	6	6
Pos.	11	12	13	14	15	16	17	18	19	20	21	22	1	2
Mineral	Lm	Bad Spot	Bad Spot	Hem	Mix(Fe-Oxide+Kfs)	Ilm(+Ab)	Mix(Fe-Oxide+Kfs)	Mix(Ab+Fe-oxide)	Mix(Ab+Fe-oxide)	Mix(Fe-Oxide+Kfs)	Kfs	Kfs	Zrn	Zrn
SiO_2	4.03	41.75	15.60	1.43	14.87	5.37	14.93	67.27	54.66	15.06	66.65	65.35	31.36	32.89
Al_2O_3	1.38	b.d.	7.46	0.66	5.22	2.17	6.85	18.78	16.29	7.57	17.81	17.84	b.d.	b.d.
FeO	94.59	b.d.	67.71	97.57	77.97	59.19	77.74	2.13	16.78	76.90	0.66	2.52	1.09	1.01
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	1.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	1.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	0.82	b.d.	11.83	12.26	b.d.	0.50	1.26	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	1.94	b.d.	0.48	b.d.	b.d.	0.47	14.39	13.04	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	7.37	0.34	b.d.	31.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	63.27	66.10
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.07	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.21	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	41.75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7
Pos.	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4
Mineral	Xtm	Zr-Xtm	Hing	Lm	Lm	Ti-Mag	Mag	Hem	Hem	Ti-Mag	Ti-Mag	Mag	Gt	Zrn	Zrn	Hem	Mix(Fe-oxide+Kfs)
SiO_2	b.d.	20.63	32.67	1.10	1.01	0.99	b.d.	b.d.	1.08	b.d.	b.d.	1.21	1.06	31.50	31.97	0.74	23.58
Al_2O_3	b.d.	b.d.	b.d.	b.d.	0.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.88
FeO	b.d.	b.d.	9.47	98.90	98.38	96.62	98.74	100.00	98.92	95.66	95.07	98.79	98.94	4.63	0.56	98.93	66.26
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.86
CaO	b.d.	b.d.	1.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.43
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	19.82	16.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	2.39	1.26	b.d.	b.d.	4.34	4.93	b.d.	b.d.	b.d.	b.d.	0.33	b.d.
ZrO_2	b.d.	37.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	63.87	66.39	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.09	b.d.	b.d.
Y_2O_3	23.67	21.33	38.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	2.69	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	2.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	0.92	b.d.	5.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	2.09	1.39	5.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	1.80	b.d.	2.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	1.72	1.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	0.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	49.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	0.40	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	7	7	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9
Pos.	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10
Mineral	Gt	Hem	Ti-Mag	Gt	Gt	Gt	Gt	Fe-Oxide (+others)	Xtm	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn
SiO_2	0.70	1.48	1.20	1.03	b.d.	1.14	b.d.	3.95	b.d.	31.44	31.38	32.01	31.54	32.33	31.76	31.42	32.57	31.72
Al_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.22	b.d.	b.d.	0.40	b.d.	b.d.	0.37	b.d.	b.d.	1.27	b.d.
FeO	98.92	98.52	94.17	98.97	100.00	97.86	100.00	89.38	b.d.	0.54	3.28	0.98	0.84	b.d.	0.51	1.23	1.06	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.40	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.39	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	19.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	0.38	b.d.	4.63	b.d.	b.d.	1.01	b.d.	5.06	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.14	64.09	65.87	66.69	66.30	67.74	67.34	60.80	67.41
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.88	b.d.	1.14	0.93	1.00	b.d.	b.d.	1.33	0.88
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	23.35	b.d.	0.86	b.d.	b.d.	b.d.	b.d.	b.d.	2.59	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.75	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	51.77	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10
Pos.	11	12	13	14	15	16	17	1	2	3	4	5	6	7	8	9
Mineral	Zrn	Ti-Mag	Gt	Ti-Mag	Fe-Oxide (+others)	Lm	Gt	Mag	Mag	Gt	Fe-Oxide (+others)	Hem	Gt	Ti-Mag	Mix(Fe-Oxide+Zrn)	Lim
SiO_2	31.49	b.d.	0.68	0.90	20.50	3.35	b.d.	0.71	2.26	1.30	4.56	2.13	b.d.	1.01	23.18	0.91
Al_2O_3	b.d.	b.d.	b.d.	b.d.	6.58	1.07	b.d.	b.d.	b.d.	b.d.	1.76	0.98	b.d.	b.d.	b.d.	b.d.
FeO	0.33	87.88	99.32	88.57	70.65	95.58	100.00	99.29	96.89	98.70	92.84	96.89	100.00	85.86	39.97	99.09
MnO	b.d.	0.58	b.d.	0.76	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.32	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	0.90	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	0.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.85	b.d.	0.84	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	11.54	b.d.	9.76	1.06	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.81	b.d.	b.d.
ZrO_2	67.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	36.85	b.d.
HfO_2	1.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	10	10	11	11	11	11	11	11	11	11	11	11	11	11	11
Pos.	10	11	1	2	3	4	5	6	7	8	9	10	11	12	13
Mineral	Bad Spot	Mag	Zrn	Zrn	Qtz	Mix(Fe-Oxide+Qtz)	Bad Spot	Zrn	Bad Spot	Zrn	Mix(Fe-oxide+Kfs)	Zrn	Zrn	Fe-Oxide (+Others)	Ti-Mag
SiO_2	4.09	1.58	32.56	32.06	97.89	62.19	3.55	32.18	49.67	58.55	23.93	32.54	32.22	14.45	b.d.
Al_2O_3	2.38	b.d.	0.44	b.d.	b.d.	b.d.	1.75	b.d.	b.d.	b.d.	7.51	b.d.	b.d.	4.97	b.d.
FeO	93.07	97.50	0.48	0.35	0.30	37.81	3.53	b.d.	b.d.	5.49	60.68	0.29	0.58	80.58	96.68
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.29	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.69	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	0.69	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	0.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.16	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	1.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	0.46	b.d.	b.d.	b.d.	b.d.	b.d.	84.86	b.d.	b.d.	b.d.	1.54	b.d.	b.d.	b.d.	3.32
ZrO_2	b.d.	b.d.	65.03	67.59	b.d.	b.d.	b.d.	66.61	b.d.	35.28	b.d.	66.20	66.30	b.d.	b.d.
HfO_2	b.d.	b.d.	1.48	b.d.	b.d.	b.d.	b.d.	1.21	b.d.	0.69	b.d.	0.98	0.91	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	49.67	100.00	99.79	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	11	11	11	11	11	11	11	11	11	11	12	12	12	12	12	12
Pos.	14	15	16	17	18	19	20	21	22	23	1	2	3	4	5	6
Mineral	Ti-Mag	Mag	Hem	Fe-Oxide (+others)	Hem	Ti-Mag	Lm	Rt	Lm	Gt	Xtm (+others)	Hem	Hem	Hem	Fe-Oxide (+others)	Mix(Fe-Oxide+Qtz)
SiO_2	b.d.	0.86	0.78	18.99	1.01	b.d.	0.74	1.11	2.61	b.d.	25.36	b.d.	0.83	0.97	27.63	41.41
Al_2O_3	b.d.	b.d.	b.d.	9.70	b.d.	b.d.	b.d.	0.81	0.80	b.d.	b.d.	b.d.	b.d.	b.d.	3.92	0.47
FeO	98.71	99.14	99.22	66.24	98.99	96.32	99.26	1.92	96.60	100.00	8.61	100.00	99.17	99.03	67.27	57.49
MnO	b.d.	b.d.	b.d.	0.46	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	0.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.65	b.d.
CaO	b.d.	b.d.	b.d.	0.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.18	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.53	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.91	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	1.29	b.d.	b.d.	3.63	b.d.	3.68	b.d.	92.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.64
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	45.71	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.27	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.19	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.39	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.38	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	12	12	12	12	12	13	13	13	13	13	13	13	13	13	14	14
Pos.	7	8	9	10	11	1	2	3	4	5	6	7	8	9	1	2
Mineral	Gt	Hem	Mix(Fe-oxide+Kfs)	Gt	Mix (Fe-oxide+Ab)	Zrn	Ti-Mag	Mix(Fe-Oxide+Qtz)	Hem	Ti-Mag	Zrn	Zrn	Hem	Hem	Lm	Hem
SiO_2	6.15	1.46	33.03	2.65	6.67	30.70	1.42	3.49	1.30	b.d.	33.66	31.89	2.27	1.11	6.37	b.d.
Al_2O_3	1.32	b.d.	9.99	b.d.	2.51	1.06	b.d.	1.05	b.d.	b.d.	2.51	b.d.	0.69	b.d.	b.d.	b.d.
FeO	92.53	98.54	49.67	97.35	88.98	2.36	96.89	95.46	98.70	92.57	2.47	0.45	97.04	98.89	91.85	100.00
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	0.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	4.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	4.87	b.d.	1.84	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	2.43	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.78	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.69	b.d.	b.d.	7.43	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	58.98	b.d.	b.d.	b.d.	b.d.	61.37	66.76	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	0.99	b.d.	b.d.	b.d.	b.d.	b.d.	0.90	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	1.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Pos.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Mineral	Gt	Hem	Hem	Fe-Oxide (+others)	Lm	Gt	Lm	Fe-Oxide (+others)	Gt	Hem	Mix(Fe-Oxide+Qtz)	Gt	Gt	Mix(Fe-Oxide+Qtz)	Lm-Gt	Lm-Gt
SiO_2	2.22	b.d.	b.d.	7.75	6.97	b.d.	2.51	17.78	b.d.	0.92	5.31	b.d.	0.78	57.62	3.40	12.74
Al_2O_3	1.14	b.d.	b.d.	4.35	b.d.	b.d.	0.64	7.84	b.d.	b.d.	0.92	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	96.64	100.00	100.00	87.90	90.65	100.00	96.39	73.62	100.00	99.08	93.77	100.00	99.22	42.38	96.60	86.93
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.76	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	1.46	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	0.93	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.33
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	14	15	15	15	15	15	15	15	15	15	15	15	15	15	16	16	16	16
Pos.	19	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4
Mineral	Lm-Gt	Gt	Gt	Mix(Zrn+ Fe-Oxide)	Lm	Gt	Gt	Hem	Hem	Rt	Gt	Zrn	Zrn	Gt	Brt	Lm?	Hem	Gt
SiO_2	4.23	b.d.	b.d.	27.15	7.50	7.41	b.d.	1.07	0.65	b.d.	3.81	31.77	30.70	1.15	1.71	5.80	1.16	0.84
Al_2O_3	b.d.	b.d.	b.d.	b.d.	0.85	b.d.	b.d.	b.d.	b.d.	b.d.	1.15	b.d.	0.55	b.d.	b.d.	0.69	b.d.	b.d.
FeO	95.77	100.00	100.00	20.72	90.76	92.59	100.00	98.93	99.35	0.73	95.04	0.80	1.59	98.85	8.71	89.72	98.84	99.16
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.39	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.33	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	52.02	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	0.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	33.50	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	99.27	b.d.	b.d.	b.d.	b.d.	b.d.	3.78	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	52.13	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.43	61.97	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.03	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.16	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.35	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17
Pos.	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5
Mineral	Gt	Lm	Gt	Gt	Lm	Lm	Hem	Lm	Gt	Ab(+Fe)	Mix(Ab+ Fe-oxide)	Gt	Zr(+Fe)	Lm (+others)	Ti-Mag?	Zrn	Mag (+SiO_2)
SiO_2	1.58	2.71	1.45	b.d.	1.36	7.25	1.00	5.27	5.03	67.76	37.90	2.54	29.59	4.83	b.d.	32.10	5.47
Al_2O_3	b.d.	0.89	b.d.	b.d.	b.d.	4.24	b.d.	0.84	b.d.	18.32	5.08	0.77	0.50	2.39	b.d.	b.d.	2.91
FeO	98.42	96.41	98.55	100.00	98.64	88.52	98.65	89.88	94.97	1.26	51.65	96.69	11.82	90.72	95.33	0.34	90.86
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.66	5.37	b.d.	b.d.	b.d.	b.d.	b.d.	0.76
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.70	4.67	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.01	b.d.	b.d.	b.d.	b.d.	58.10	1.36	b.d.	67.13	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.43	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	17	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18
Pos.	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5
Mineral	Mag	Mag	Mag	Mag	Ti-Mag?	Lm	Fe-Oxide (+others)	Ti-Mag?	Ti-Mag?	Fe-Oxide (+others)	Kfs	Xtm	Zrn	Mix(Zrn+ Fe-oxide)	Fe-oxide (+others)	Xtm
SiO_2	b.d.	b.d.	b.d.	1.51	b.d.	2.72	26.55	1.36	b.d.	4.05	67.56	1.70	31.88	26.03	12.44	3.30
Al_2O_3	b.d.	b.d.	b.d.	0.87	b.d.	0.80	12.19	0.72	b.d.	1.49	17.60	b.d.	b.d.	0.75	4.73	b.d.
FeO	99.10	93.97	99.53	97.25	98.30	96.01	58.70	86.55	88.14	91.17	b.d.	1.22	0.86	28.43	76.19	1.91
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.30	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.34	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.61	b.d.	b.d.	b.d.	3.66	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.18	b.d.	b.d.	b.d.	0.25	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	38.66	b.d.	b.d.	b.d.	37.73
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	0.90	6.03	0.47	0.37	1.70	0.47	b.d.	10.07	11.86	3.29	b.d.	0.63	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.26	44.79	5.04	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	46.76	b.d.	b.d.	b.d.	46.86
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.33	b.d.	b.d.	b.d.	1.44
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.64	b.d.	b.d.	b.d.	3.40
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.84	b.d.	b.d.	b.d.	2.50
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.22	b.d.	b.d.	b.d.	2.86
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-1A: EDS analyses of hydrothermal minerals in sample 9835.

Sample	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835	9835
Fig	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Pos.	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Mineral	Fe-oxide (+others)	Zrn	Gt	Mix(Ab+ Fe-oxide)	Gt	Lm	Lm	Gt	Gt	Zrn	Kfs (+Fe)	Mix(Fe-oxide+Kfs)	Lm	Hem	Hem	Xtm
SiO_2	8.05	31.80	b.d.	55.64	b.d.	b.d.	1.08	0.89	b.d.	31.37	63.71	36.08	1.26	4.17	b.d.	b.d.
Al_2O_3	3.73	b.d.	b.d.	16.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	17.53	11.62	b.d.	b.d.	b.d.	b.d.
FeO	84.72	1.13	100.00	15.31	100.00	100.00	98.58	99.11	100.00	0.74	5.06	45.71	98.74	95.83	100.00	0.50
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	0.70	b.d.	b.d.	12.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.24	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	0.46	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.46	6.59	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	19.18
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	2.80	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	66.04	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.93	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	1.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.96	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	23.48
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.84
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.05
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.47
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.32
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	51.16
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Appendix 2-2: Scanning Electron Microscope Backscattered images and analyses of hydrothermal minerals from sample 9837

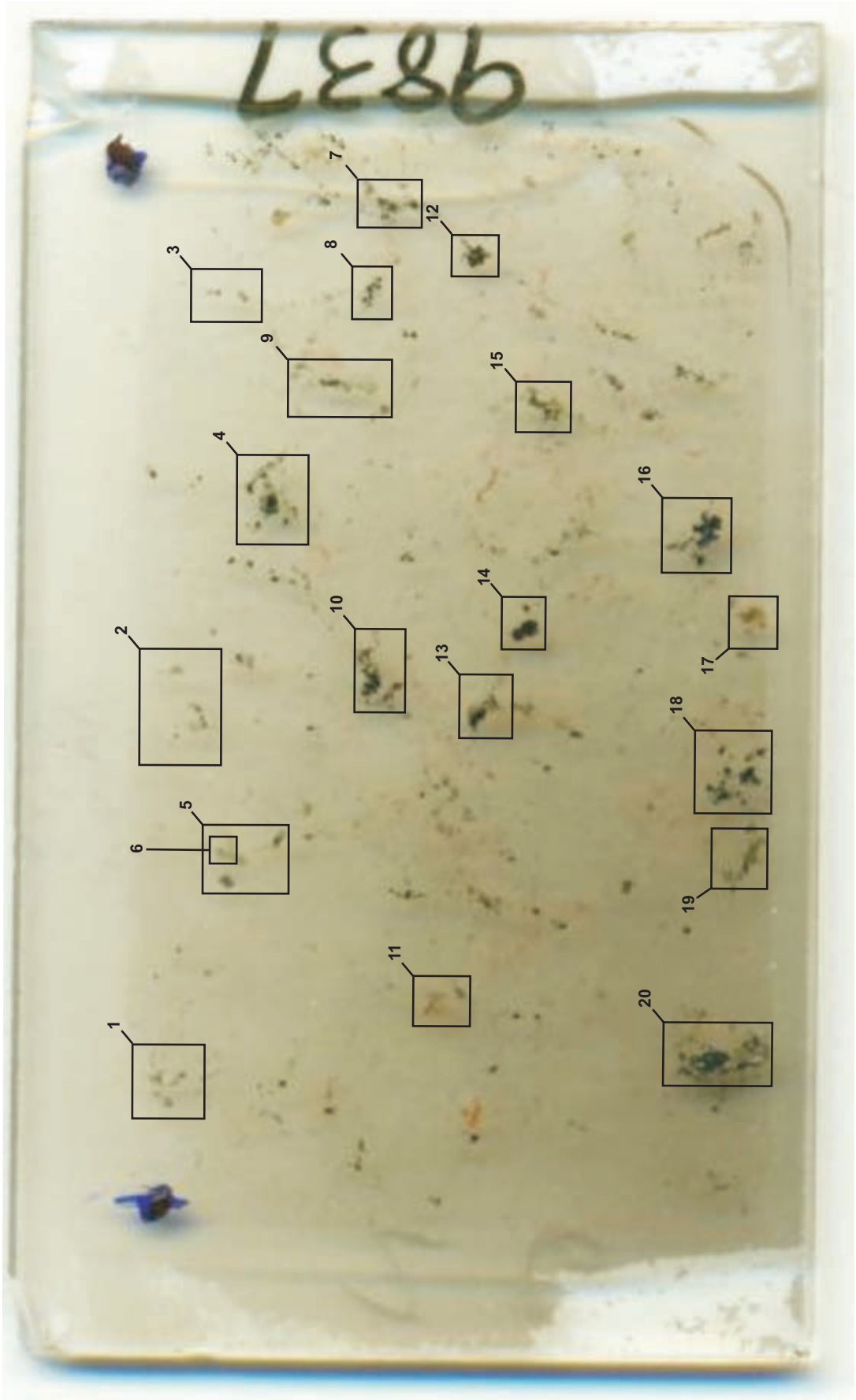
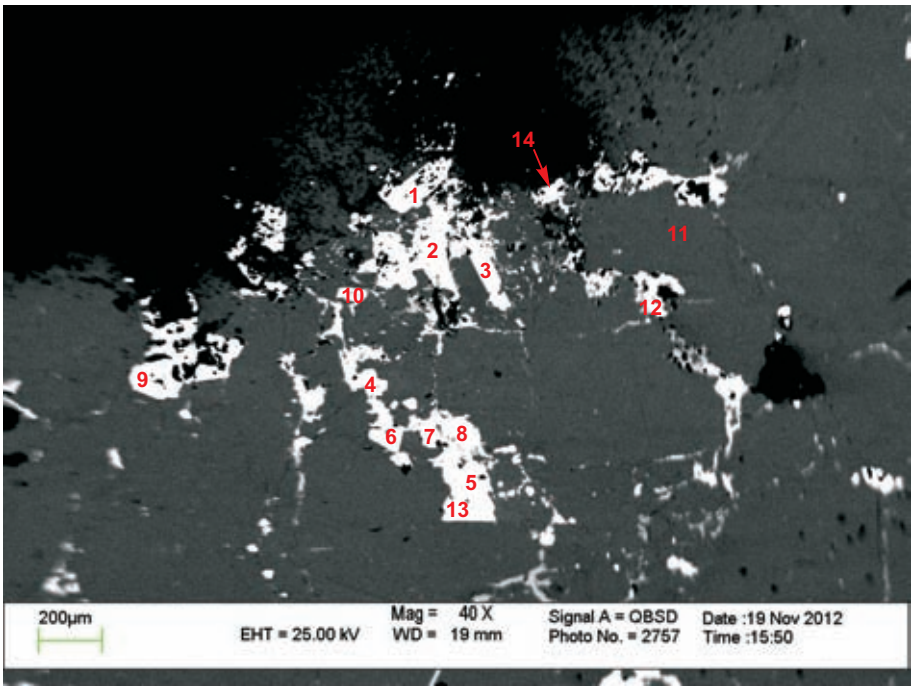
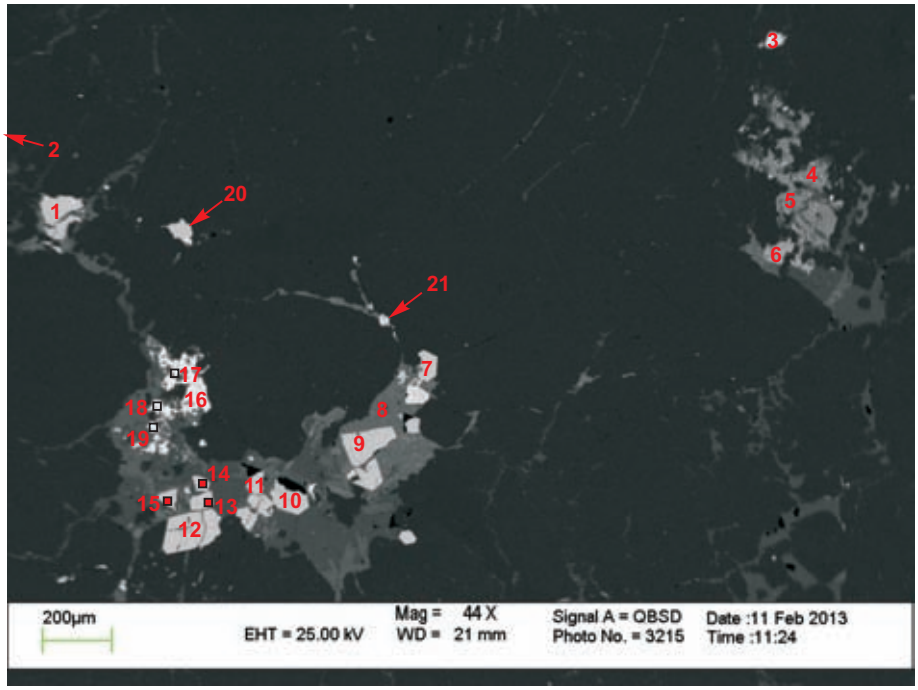


Figure 2-2A: Scanned polished thin section of sample 9837 with the locations of the studied fractures.



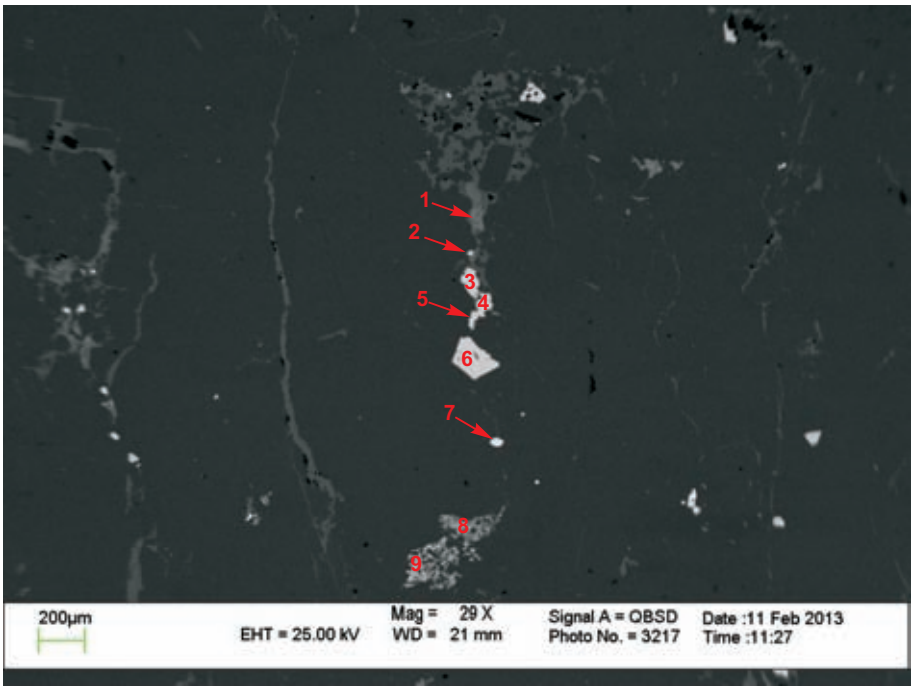
1. Alt. Ilm (+others)
2. Alt. Ilm
3. Alt. Ilm
4. Mag
5. Mag
6. Mag
7. Mag
8. Fe-Chl
9. Mag
10. Mag
11. Mag
12. Mag
13. Mag
14. Mag

Figure 2-2.1: West Moose River Pluton 9837.



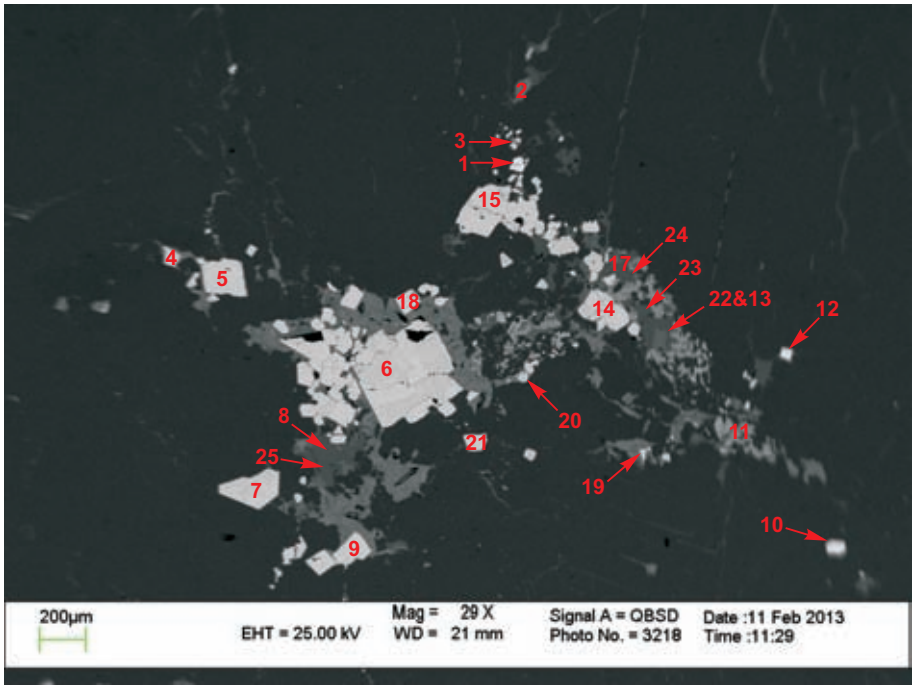
1. Mag
2. Mag
3. Zrn
4. Rt (+others)
5. Rt
6. Ilm
7. Mag
8. Fe-Chl
9. Mag
10. Mag
11. Mag
12. Mag
13. Mag
14. Mag
15. Mag
16. Syn
17. Syn
18. Aln
19. Aln

Figure 2-2.2: West Moose River Pluton 9837; Order or crystallization: calcite → oxides (magnetite, ilmenite, and rutile) → chlorite → allanite-(Ce) → synchysite-(Ce).



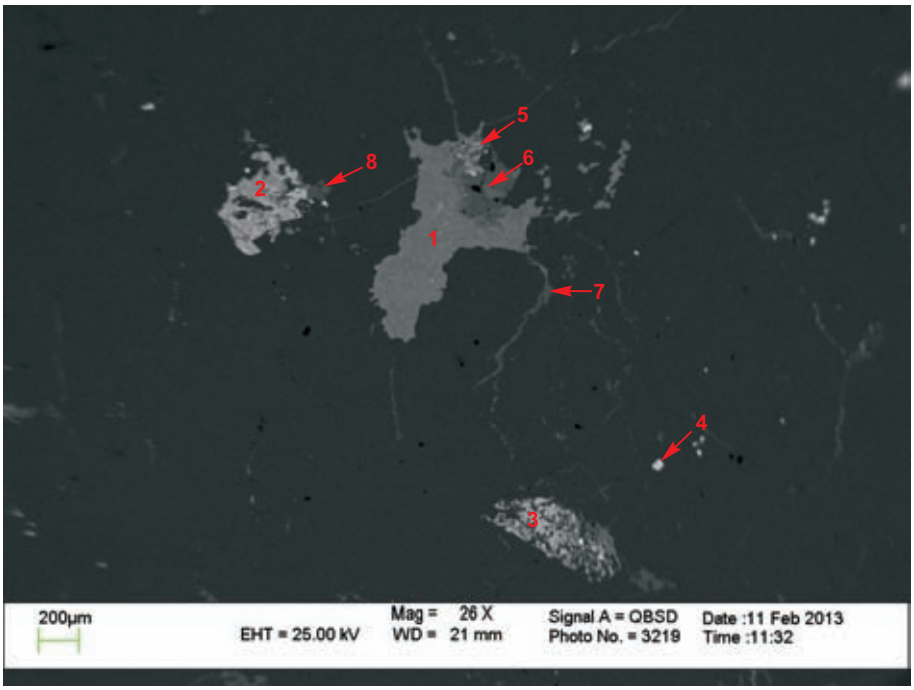
1. Mix (Ep+Chl)
2. Mag (+others)
3. Mag
4. Mag
5. Mag
6. Mag
7. Zrn
8. Alt. Ilm
9. Mag

Figure 2-2.3: West Moose River Pluton 9837.



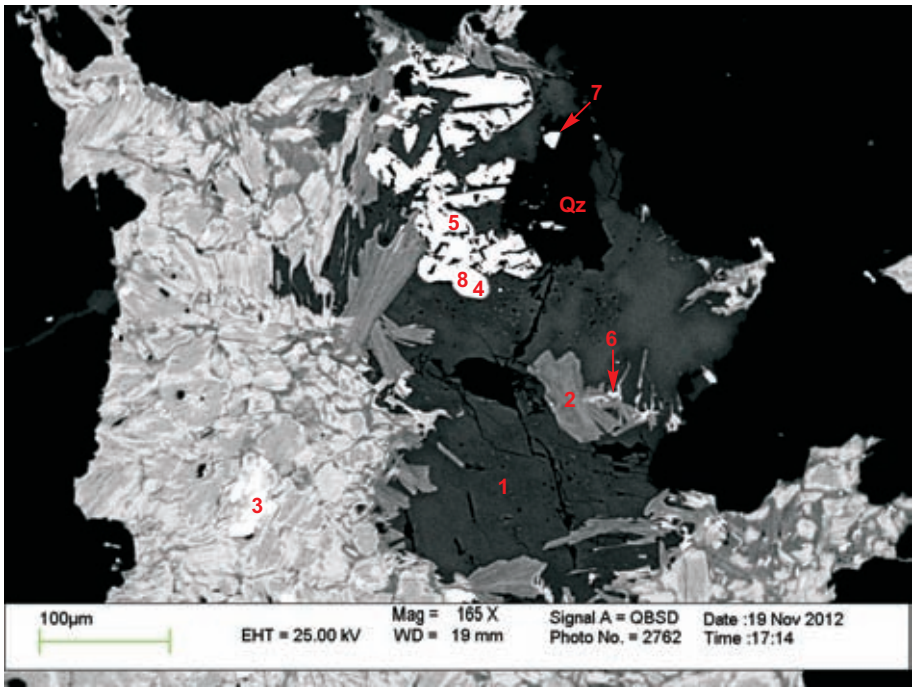
1. Zrn
2. Fe-Chl
3. Mag
4. Mag
5. Mag
6. Mag
7. Mag
8. Cal
9. Mag
10. Zrn
11. Rt (+others)
12. Zrn
13. Fe-Chl
14. Mag
15. Cal
16. Mag
17. Mag
18. Mag
19. Mag
20. Mag
23. Cal
24. Cal
25. Cal

Figure 2-2.4: West Moose River Pluton 9837.



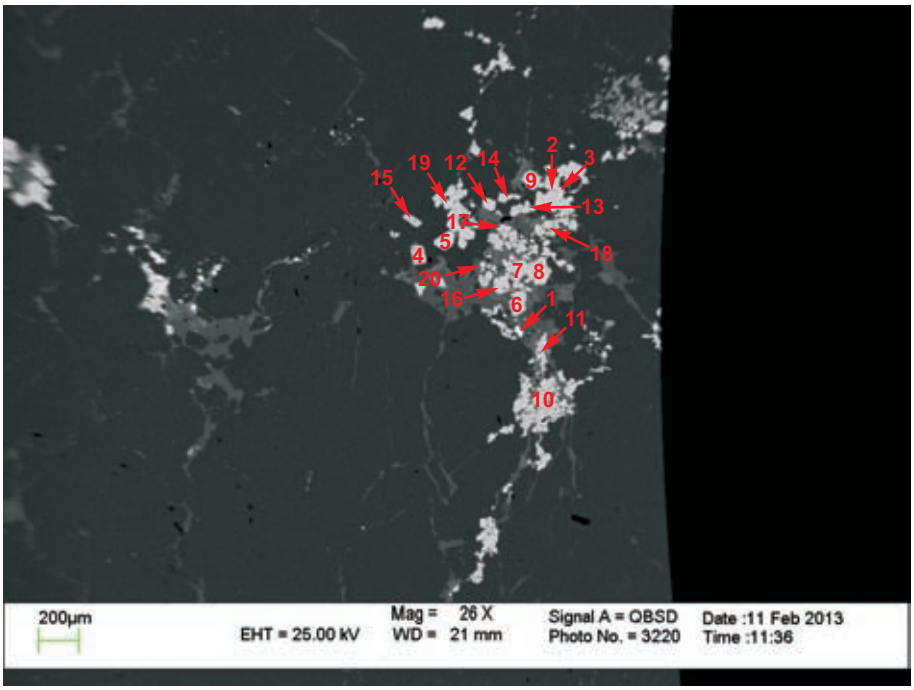
1. Fe-Chl
2. Rt (+others)
3. Mix (Qz+Ilm)
4. Mix (Mag+Ab)
5. Mix (Cal+Rt)
6. Cal
7. Cal
8. Cal

Figure 2-2.5: West Moose River Pluton 9837.



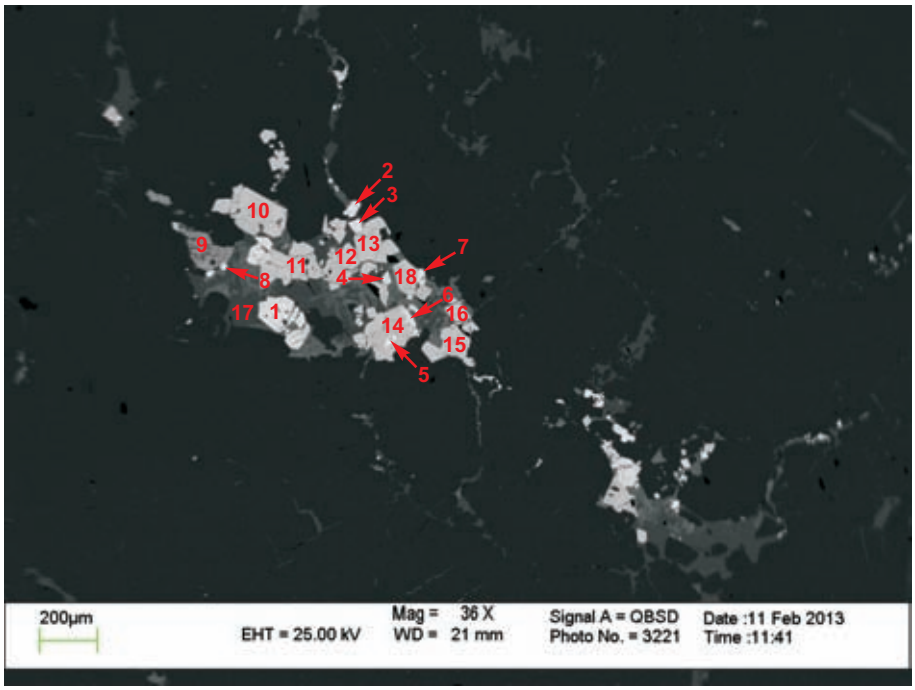
1. Fe-Cal
2. Chl
3. Rt
4. Mn-Ilm
5. Rt
6. Mix (Ilm+Chl)
7. Sam
8. Mn-Ilm

Figure 2-2.6: West Moose River Pluton 9837; magnification of figure 5; Order of Crystallization: Fe-rich calcite (analysis 1) → Fe-rich chlorite → Mn-rich ilmenite (analyses 4&6) and rutile (analyses 3&5).



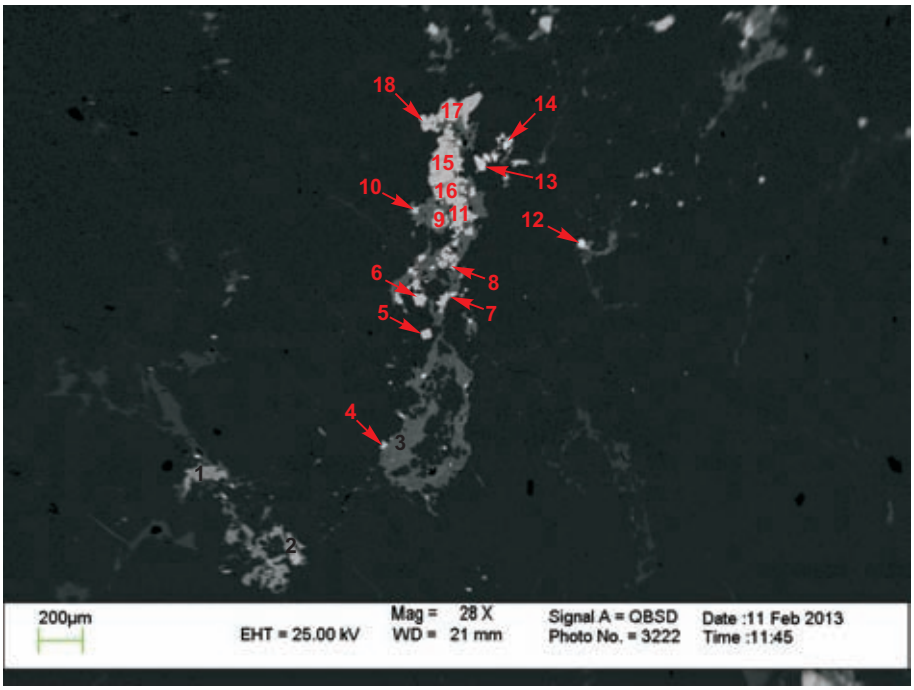
1. REE-Xtm
2. Mag
3. Mix (Fe-oxide+REE's)
4. Mag
5. Mag
6. Mag
7. Mag
8. Mag
9. Mag
10. Mag
11. Mag (+Chl)
12. Mag
13. Mag(+Cal+Chl)
14. Mix(Mag+Ab)
15. Mag(+others)
16. Mag
17. Mag
18. Mag
19. Mag
20. Zrn

Figure 2-2.7: West Moose River Pluton 9837



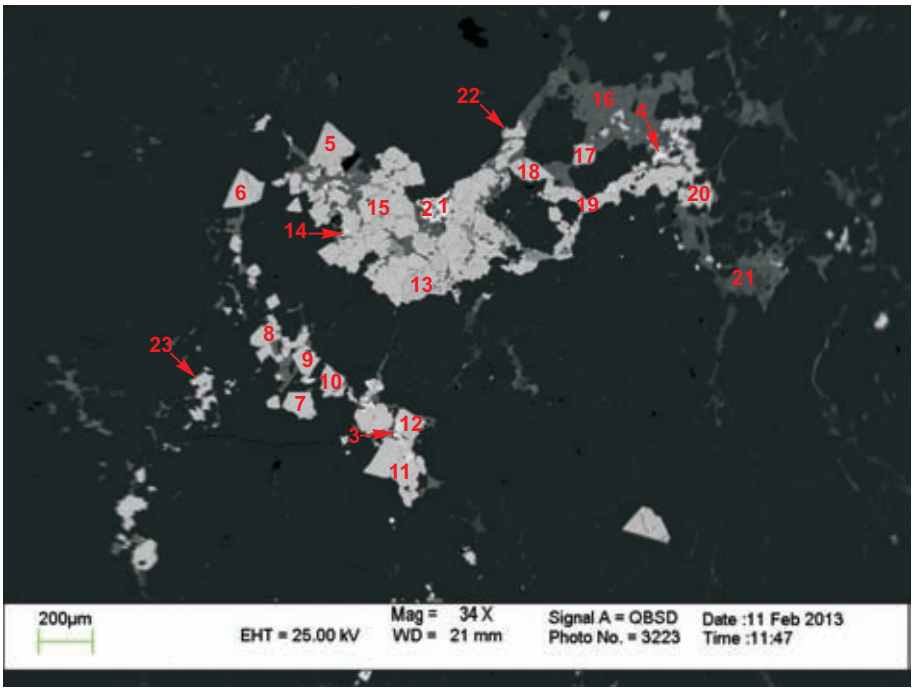
1. Zrn (+Cal)
2. Zrn
3. Zrn
4. Zrn
5. Mix (Fe-oxide+Syn)
6. Zrn
7. Mix (Zrn+Cal+others)
8. Zrn
9. Alt. Ilm
10. Mag
11. Mag
12. Mag
13. Mag
14. Mag
15. Mag
16. Mag
17. Cal
18. Mag

Figure 2-2.8: West Moose River Pluton 9837; Order of crystallization: calcite → chlorite → oxides (magnetite & ilmenite), → zircon & synchysite-Ce (analysis 5).



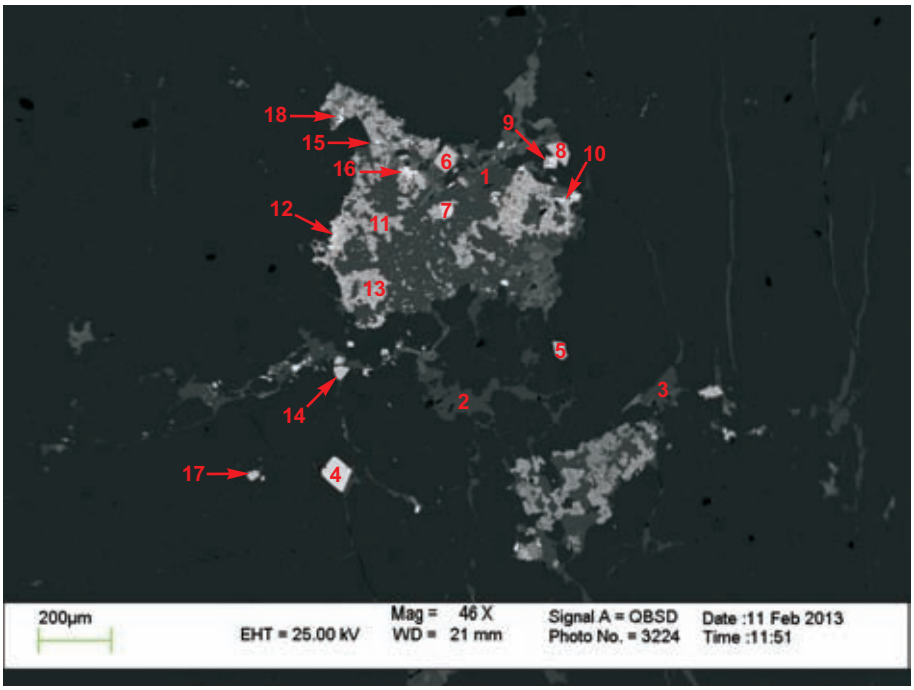
1. Ilm
2. Mix (Ilm+Xtm+others)
3. Fe-Chl
4. Fe-Chl
5. Mag
6. Mag
7. Mag
8. Mix (Mag+Chl)
9. Mag
10. Mag
11. Mag
12. Zrn
13. Zrn
14. Zrn
15. Mag
16. Mix (Mag+Qtz+others)
17. Mix (Chl+Fe-oxide)
18. Hem

Figure 2-2.9: West Moose River Pluton 9837.



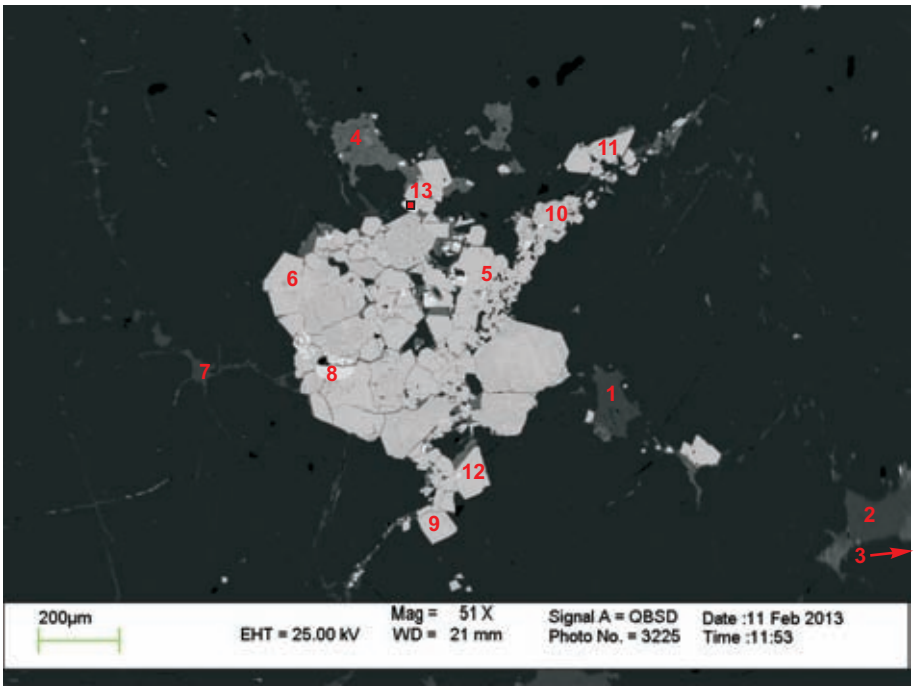
1. Syn
2. Mix (Cal+Aln?)
3. Zrn
4. Syn
5. Mag
7. Mag
6. Mag
8. Fe-oxide (+Ab)
9. Mag
10. Mag
11. Mix (Mag+Zrn)
12. Mag
13. Mag
14. Mag(+Zrn)
15. Mag
16. Fe-Chl
17. Mag
18. Mag
19. Mag
20. Mix (Mag+Ab)
21. Fe-Chl
23. Mag

Figure 2-2.10: West Moose River Pluton 9837; order of crystallization: Fe-rich chlorite (analyses 16&21) → magnetite → zircon (analysis 3) and synchysite-Ce (analyses 1&2).



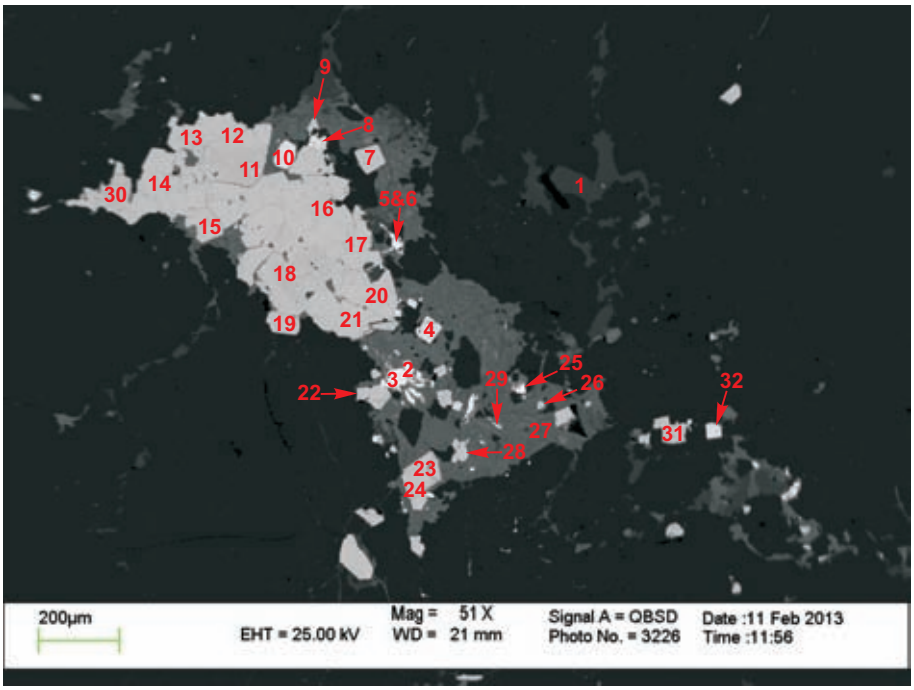
1. Cal
2. Cal
3. Cal
4. Zrn
5. Mag
6. Mag
7. Zrn
8. Mag
9. Zrn (+Cal+others)
10. Aln
11. Aln
12. Aln
13. Cal+Syn
14. Mag
15. Aln
16. Aln
17. Mag
18. Syn (+Chl)

Figure 2-2.11: West Moose River Pluton 9837; Order of crystallization: calcite → magnetite → zircon, allanite-Ce and synchysite-Ce (analysis 18).



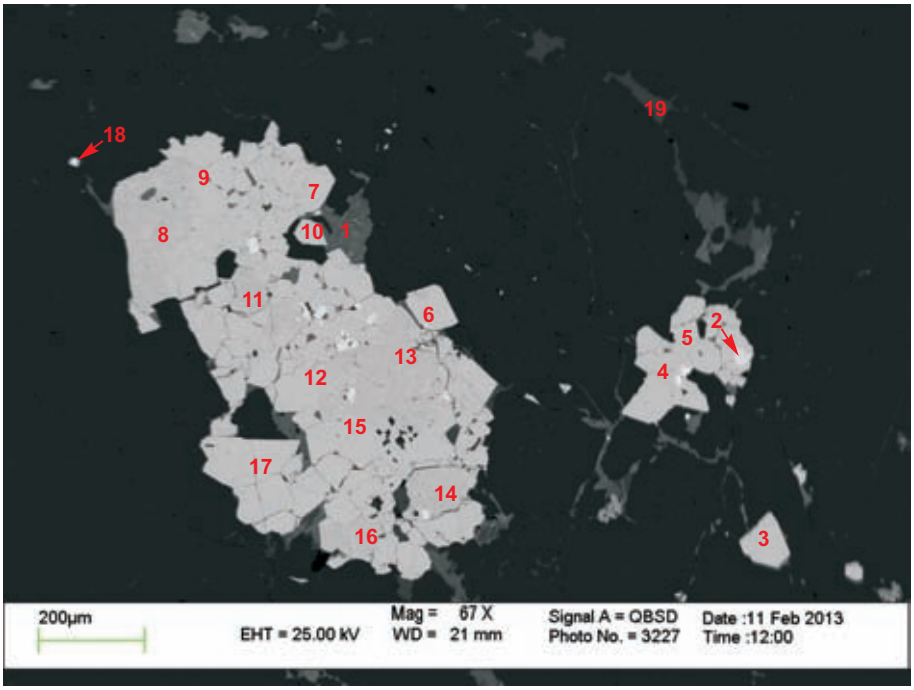
1. Cal
2. Cal
3. Qz
4. Fe-Chl
5. Mag
6. Mag
7. Cal
8. Zrn
9. Mag
10. Mag
11. Mix (Mag+Ab)
12. Mag
13. Zrn

Figure 2-2.12: West Moose River Pluton 9837; Order of crystallization: Fe-rich chlorite (analysis 4) → magnetite → zircon (analyses 8&13).



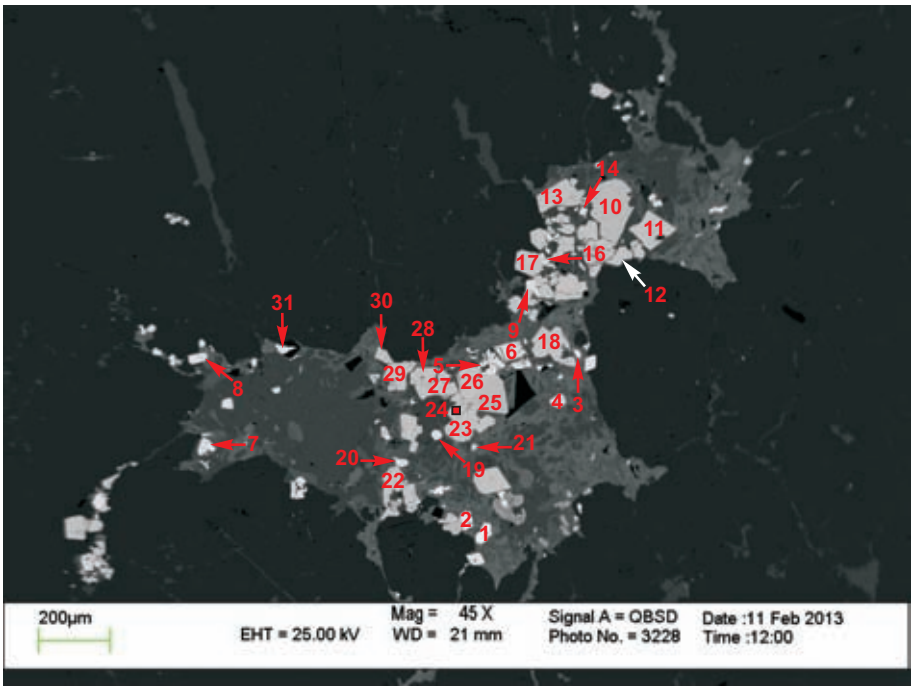
1. Cal
2. Syn
3. Syn
4. Zrn
5. Syn (+Chl)
6. Syn (+Chl)
7. Mag
8. Zrn
9. Mag
10. Zrn
11. Mag
12. Mag
13. Mag
14. Mag
15. Mag
16. Mag
17. Mag
18. Mag
19. Mag
20. Mag
23. Mag
24. Mag
25. Syn(+Thr+Fe-oxide)
26. Mag
27. Fe-Chl
28. Mag
29. Aln?
30. Mag
31. Mag
32. Zrn

Figure 2-2.13: West Moose River Pluton 9837; Order or crystallization: Fe-chlorite (analysis 27) → magnetite → zircon (analysis 8) and synchysite-Ce (analyses 2&3).



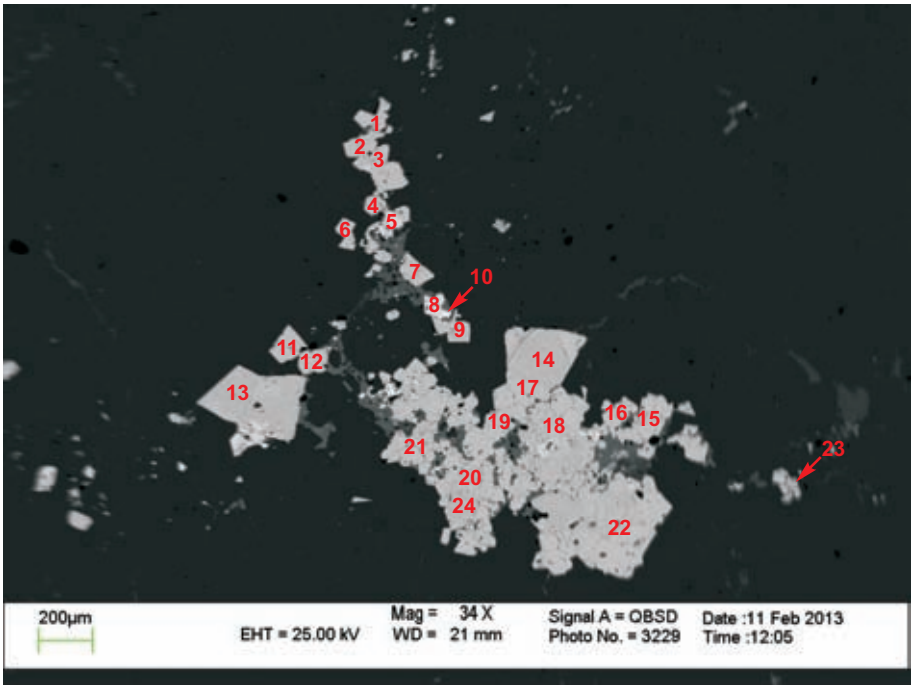
1. Mag
2. Mag
3. Mag
4. Mag
5. Mag
6. Mag
7. Mag
8. Mag
9. Mag
10. Mag
11. Mag
12. Mag
13. Mag
14. Mag
15. Mag
16. Mag
17. Mag
18. Mix (Qtz+Ab+Zrn)
19. Cal (+Ab)

Figure 2-2.14: West Moose River Pluton 9837.



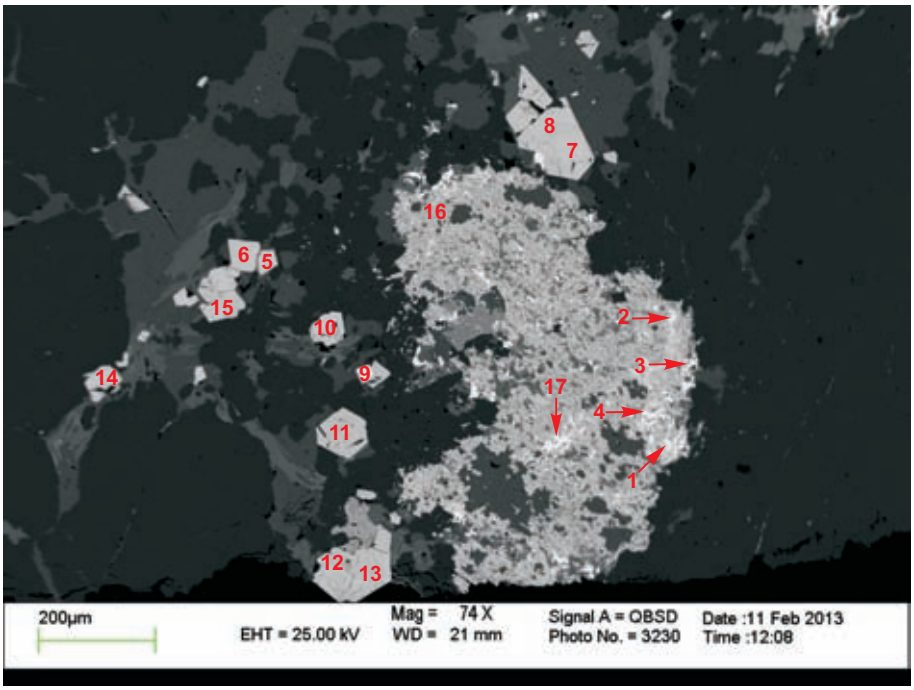
1. REE-Xtm?
2. REE-Xtm?
3. Zrn
4. Zrn
5. Mix (Zrn+Syn)
6. Zrn
7. Zrn (+Cal+Chl)
8. Zrn
9. Zrn
10. Mag
11. Mag
12. Mag
13. Mag
14. Mix (Zrn+Cal)
15. Mag
16. Mix (Zrn+Cal)
17. Mag
18. Mag
19. Zrn
20. Zrn
21. Mix(Xtm+Rt)
22. Mag
23. Mag
24. Mag
25. Mag
26. Mag
27. Mag
28. Mag
29. Mag
30. Mag
31. Bad Spot

Figure 2-2.15: West Moose River Pluton 9837; Order of crystallization: calcite → magnetite → chlorite → zircon → xenotime (analyses 1&2) and synchysite-Ce (analysis 5).



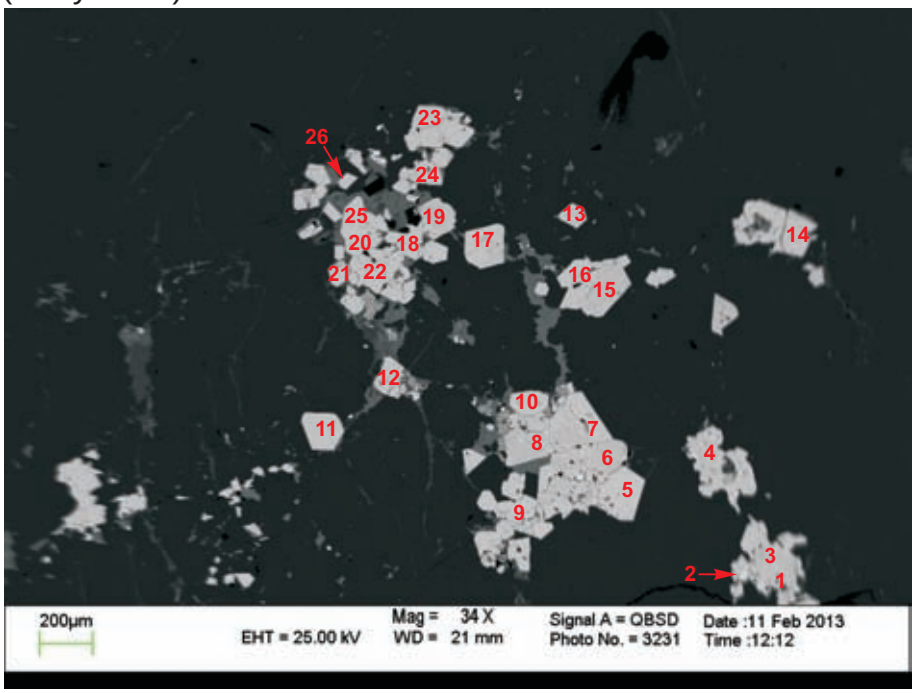
1. Mag
2. Mag
3. Mag
4. Mag
5. Zrn
6. Mag
7. Mag
8. Mix (Chl+Zrn)
9. Mag
10. LREE-Ap (+Chl)
11. Mag
12. Mag
13. Hem
14. Mag
15. Mag
16. Mag
17. Mag
18. Mag
19. Mag
20. Mag
21. Mag
22. Mag
23. Mag (+Ab)
24. Mag

Figure 2-2.16: West Moose River Pluton 9837.



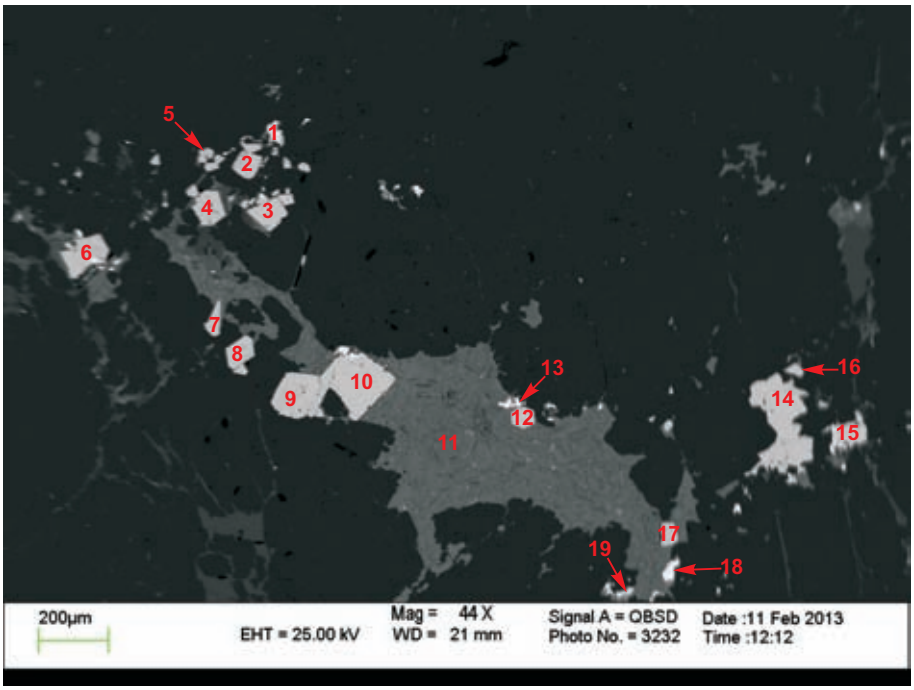
1. Mix (Syn+Chl)
2. Mix (Syn+Chl)
3. Mix (Syn+Chl)
4. Mix (Syn+Chl)
5. Mag
6. Mag
7. Mag
8. Mag
9. Zrn
10. Mag
11. Mag
12. Mag
13. Mag
14. Mag
15. Mag
16. Mix (Syn+Chl)
17. Syn

Figure 2-2.17: West Moose River Pluton 9837; precipitation of synchysite-Ce (analyses 1,2,3,4,&17) postdates that of chlorite (analysis 16).



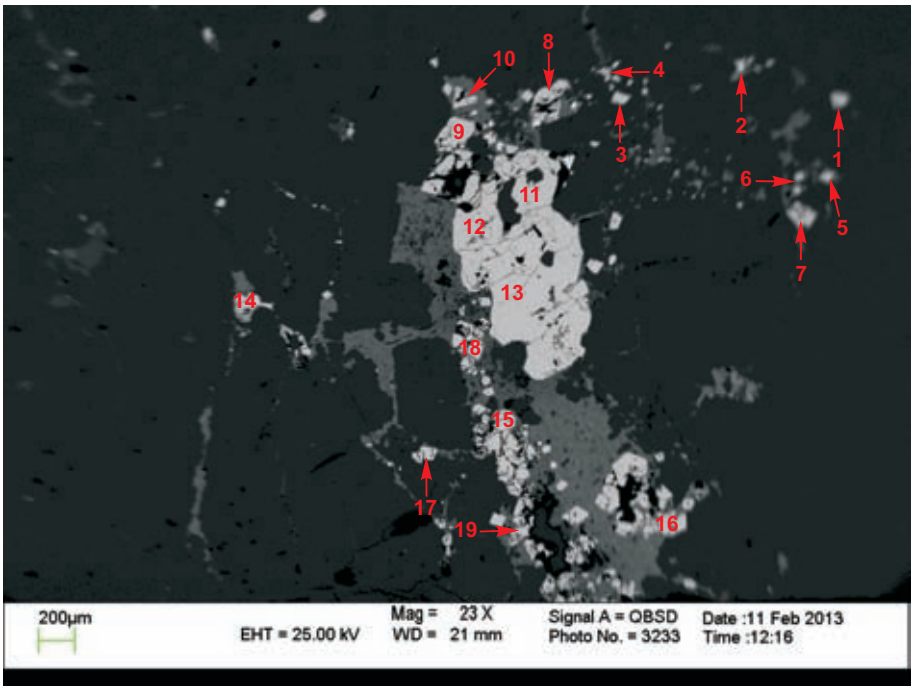
1. Zrn (+Mag)
2. Zrn (+Cal)
3. Mag
4. Mag
5. Mag
6. Mag
7. Mag
8. Mag
9. Mag
10. Mag
11. Mag
12. Mag
13. Mag
14. Mag
15. Mag
16. Mag
17. Mag
18. Mag
19. Mag
20. Mag
21. Mag
22. Mag
23. Mag
24. Mag
25. Mag
26. Mag

Figure 2-2.18: West Moose River Pluton 9837.



1. Syn
2. Mag
3. Mag
4. Mag
5. Mag
6. Mag
7. Mag
8. Mag
9. Mag
10. Mag
11. Chl/Bt
12. Mag
13. Mag
14. Mag
15. Mag
16. Mag
17. Mag
18. Syn
19. Mix (Syn+Chl)

Figure 2-2.19: West Moose River Pluton 9837; order of crystallization: chlorite → Magnetite → synchysite-Ce (analyses 1&13).



1. Mag
2. Mix?
3. Mag
4. Ab (+Mag)
5. Mag (+others)
6. Mix
7. Mix
8. Lm?
9. Mag
10. Mag
11. Mix (Py+Ab)
12. Py
13. Py
14. Lm
15. Mag
16. Mag
17. Mag
18. Mag
19. Mag

Figure 2-2.20: West Moose River Pluton 9837.

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2
Pos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8
Mineral	Alt. Ilm (+others)	Alt. Ilm	Alt. Ilm	Mag	Mag	Mag	Mag	Fe-Chl	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Zrn	Rt (+others)	Rt	Ilm	Mag	Fe-Chl
SiO_2	2.82	0.96	0.44	b.d.	b.d.	b.d.	2.96	33.58	b.d.	4.74	1.02	0.64	b.d.	0.61	b.d.	1.15	31.15	1.00	0.60	1.20	0.60	33.18
Al_2O_3	0.80	b.d.	b.d.	b.d.	b.d.	b.d.	1.25	20.37	b.d.	3.42	b.d.	b.d.	b.d.	b.d.	b.d.	0.56	b.d.	b.d.	b.d.	b.d.	b.d.	19.18
FeO	26.50	27.86	32.84	100.00	100.00	100.00	95.79	35.27	100.00	90.54	95.20	99.07	100.00	99.39	100.00	98.30	3.28	20.97	10.38	33.88	99.40	35.70
MnO	3.58	4.51	4.10	b.d.	b.d.	b.d.	b.d.	0.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.59	0.25	4.67	b.d.	0.57
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.84	b.d.	11.38
CaO	0.53	0.43	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.30	0.54	0.29	b.d.	b.d.	b.d.	b.d.	b.d.	7.14	0.58	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.50	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	65.55	66.24	62.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	70.30	88.19	59.41	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	61.79	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.78	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	99.78	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
Pos.	9	10	11	12	13	14	15	16	17	18	19	20	21	1	2	3	4	5	6	7	8	9
Mineral	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Syn	Syn	Aln	Aln	Mag	Zrn	Mix (Ep+Chl)	Mag (+others)	Mag	Mag	Mag	Mag	Zrn	Alt. Ilm	Mag
SiO_2	b.d.	b.d.	b.d.	1.48	0.70	b.d.	b.d.	2.66	3.69	18.77	22.31	0.61	32.31	25.84	10.09	b.d.	b.d.	b.d.	b.d.	31.53	b.d.	0.87
Al_2O_3	b.d.	b.d.	b.d.	0.76	b.d.	b.d.	b.d.	1.81	2.38	11.78	10.21	b.d.	3.25	16.25	7.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	100.00	100.00	100.00	97.44	99.30	98.88	100.00	2.07	4.31	19.12	8.89	99.39	5.66	31.77	75.92	100.00	100.00	99.66	100.00	b.d.	12.50	22.52
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.10	b.d.	b.d.	0.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.54
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.95	7.20	b.d.	b.d.	1.84	5.56	4.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	1.12	b.d.	24.09	21.62	35.57	44.82	b.d.	0.33	19.89	1.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	0.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.65
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	87.50	73.43
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	55.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.41	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.06	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.87	4.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.03	12.75	1.78	2.88	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	27.39	26.54	4.28	8.06	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.01	10.18	1.50	1.73	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	87.93	87.86	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Pos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Mineral	Zrn	Fe-Chl	Mag	Mag	Mag	Mag	Mag	Cal	Mag	Zrn	Rt (+others)	Zrn	Fe-Chl	Mag	Cal	Mag	Mag	Mag	Mag	Mag	Mag	Fe-Chl
SiO_2	31.97	32.50	4.78	1.70	b.d.	b.d.	b.d.	b.d.	b.d.	32.73	8.64	30.59	30.64	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.82	b.d.	30.99
Al_2O_3	b.d.	20.77	3.87	0.90	b.d.	b.d.	b.d.	b.d.	b.d.	1.09	b.d.	b.d.	24.20	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	23.74
FeO	0.35	37.59	90.84	97.05	100.00	100.00	100.00	1.14	100.00	1.89	5.51	b.d.	32.85	100.00	100.00	100.00	1.29	100.00	100.00	99.18	100.00	32.24
MnO	b.d.	0.48	b.d.	b.d.	b.d.	b.d.	b.d.	2.76	b.d.	b.d.	0.36	b.d.	b.d.	b.d.	b.d.	b.d.	1.17	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	8.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.03
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	96.10	b.d.	b.d.	11.40	3.65	b.d.	b.d.	b.d.	b.d.	97.54	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.73	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	0.51	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	0.41	b.d.	0.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	74.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	66.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	62.39	b.d.	64.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	1.41	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.16	b.d.	1.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	4	4	4	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7
Pos.	23	24	25	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2
Mineral	Cal	Cal	Cal	Fe-Chl	Rt (+others)	Mix (Qtz+Ilm)	Mag +Ab	Mix (Cal+Rt)	Cal	Cal	Cal	Fe-Cal	Chl	Rt	Mn-Ilm	Rt	Mix (Ilm+Chl)	Sam	Mn-Ilm	REE-Xtm?	Mag
SiO_2	b.d.	b.d.	b.d.	33.52	0.52	56.12	46.70	b.d.	b.d.	b.d.	b.d.	b.d.	31.59	2.08	b.d.	b.d.	25.19	1.94	b.d.	b.d.	b.d.
Al_2O_3	b.d.	b.d.	b.d.	20.64	b.d.	b.d.	14.68	b.d.	b.d.	b.d.	b.d.	b.d.	24.05	1.45	b.d.	b.d.	15.66	b.d.	b.d.	b.d.	b.d.
FeO	2.01	1.05	1.17	35.40	10.81	9.22	27.94	4.12	2.76	b.d.	0.69	2.79	31.65	3.93	26.47	0.32	35.18	b.d.	27.60	b.d.	100.00
MnO	0.83	1.26	2.24	0.28	0.63	4.55	b.d.	0.57	0.43	0.42	0.45	0.46	b.d.	b.d.	21.47	b.d.	0.33	b.d.	20.66	b.d.	b.d.
MgO	0.67	b.d.	b.d.	9.62	b.d.	b.d.	b.d.	b.d.	0.96	b.d.	b.d.	1.34	12.49	b.d.	b.d.	b.d.	4.40	b.d.	b.d.	b.d.	b.d.
CaO	96.49	97.69	96.59	b.d.	21.72	b.d.	b.d.	65.92	95.85	99.58	98.85	95.41	0.23	b.d.	0.62	2.04	1.32	0.46	0.51	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.20	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	0.54	b.d.	b.d.	0.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	19.24	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	49.00	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	66.32	30.11	b.d.	29.38	b.d.	b.d.	b.d.	b.d.	b.d.	92.54	51.44	97.64	17.92	1.40	51.23	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	32.90	b.d.	24.16	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.14	b.d.	0.59	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.04	b.d.	1.92	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.91	b.d.	1.93	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.47	b.d.	1.86	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.66	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.08	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	50.30	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	8	8	8
Pos.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	1	2	3
Mineral	Fe-oxide +REE	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag (+Chl)	Mag	Mag (+Cal+ Chl)	Mix (Mag+ Ab)	Mag (+others)	Mag	Mag	Mag	Mag	Zrn	Zrn (+Cal)	Zrn	Zrn
SiO_2	2.24	1.29	b.d.	b.d.	1.06	0.56	1.02	b.d.	8.58	0.67	2.30	20.83	6.21	b.d.	2.12	b.d.	b.d.	31.50	28.48	31.75	31.66
Al_2O_3	1.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	7.07	b.d.	1.59	7.02	2.32	b.d.	1.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	84.56	98.71	99.64	98.89	98.94	99.44	97.59	99.63	78.48	99.01	90.71	65.17	89.34	100.00	95.68	99.68	100.00	1.01	0.35	b.d.	0.37
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.94	b.d.	b.d.	b.d.	b.d.	b.d.	0.82	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	4.02	b.d.	b.d.	1.11	b.d.	b.d.	1.39	b.d.	0.93	b.d.	5.41	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.40	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.97	2.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	0.36	b.d.	b.d.	b.d.	b.d.	0.37	b.d.	0.32	b.d.	b.d.	b.d.	b.d.	b.d.	0.32	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.41	58.84	66.90	66.95
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.08	0.94	1.35	1.02
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	2.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	4.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	1.70	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9
Pos.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	1	2	3	4	5	6	7
Mineral	Zrn	Fe-oxide +Syn	Zrn	Zrn+Cal +others	Zrn	Alt. Ilm	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Cal	Mag	Alt. Ilm	Ilm+Xtm +others	Fe-Chl	Fe-Chl	Mag	Mag	Mag
SiO_2	31.69	1.39	31.52	26.67	31.53	1.02	0.83	b.d.	b.d.	b.d.	0.82	0.67	b.d.	b.d.	b.d.	0.71	12.26	33.26	31.61	0.55	b.d.	b.d.
Al_2O_3	b.d.	b.d.	b.d.	2.37	b.d.	0.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	21.14	21.16	b.d.	b.d.	b.d.
FeO	0.99	52.96	0.81	4.50	0.88	25.99	99.17	100.00	100.00	99.63	99.18	99.33	99.68	1.42	100.00	28.19	23.38	35.72	39.32	99.45	100.00	100.00
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	2.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.07	b.d.	4.54	2.42	0.36	0.28	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	1.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.95	7.28	b.d.	b.d.	b.d.
CaO	b.d.	11.58	b.d.	17.88	0.26	3.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	97.51	b.d.	b.d.	2.77	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.57	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.40	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.37	b.d.	b.d.	0.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	66.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.56	53.40	b.d.	0.35	b.d.	b.d.	b.d.
ZrO_2	66.24	b.d.	67.67	47.26	66.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	1.08	b.d.	b.d.	b.d.	1.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	2.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.36	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	6.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	13.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	5.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	93.90	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10
Pos.	8	9	10	11	12	13	14	15	16	17	18	1	2	3	4	5	6	7	8	9	10
Mineral	Mix(Mag +Chl)	Mag	Mag	Mag	Zrn	Zrn	Zrn	Mag	Mag+Qz+ others	Chl +Fe-oxide	Hem	Syn	Mix(Cal + Aln?)	Zrn	Syn	Mag	Mag	Mag	Fe-oxide (+Ab)	Mag	Mag
SiO_2	10.00	b.d.	b.d.	b.d.	31.41	36.37	41.08	b.d.	52.17	28.48	2.82	1.45	13.10	31.27	0.82	b.d.	b.d.	b.d.	12.11	b.d.	b.d.
Al_2O_3	8.14	b.d.	b.d.	b.d.	b.d.	3.62	b.d.	b.d.	5.04	20.24	1.46	0.99	9.64	b.d.	b.d.	b.d.	b.d.	b.d.	4.81	b.d.	b.d.
FeO	75.51	100.00	100.00	100.00	b.d.	5.98	0.97	100.00	39.45	45.66	95.72	1.55	19.78	0.72	13.22	100.00	100.00	100.00	78.29	100.00	99.64
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	6.35	b.d.	b.d.	b.d.	b.d.	1.96	b.d.	b.d.	3.34	5.09	b.d.	b.d.	2.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	0.74	0.75	b.d.	b.d.	b.d.	b.d.	24.47	41.03	b.d.	20.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.80	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.36
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	67.70	51.33	57.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	0.90	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.46	b.d.	b.d.	4.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.62	2.54	b.d.	12.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	28.70	5.11	b.d.	26.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.53	2.42	b.d.	9.93	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	86.77	97.07	100.00	88.36	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	10	10	10	10	10	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11
Pos.	11	12	13	14	15	16	17	18	19	20	21	22	23	1	2	3	4	5	6	7	8	9
Mineral	Mix(Mag +Zrn)	Mag	Mag	Mag(+ Zrn)	Mag	Fe-Chl	Mag	Mag	Mag	Mix (Mag+Ab)	Fe-Chl	Mag	Mag	Cal	Cal	Cal	Zrn	Mag	Mag	Zrn	Mag	Zrn (+Cal +others)
SiO_2	7.41	0.67	0.69	5.56	1.95	32.43	b.d.	0.80	2.52	26.22	31.66	b.d.	b.d.	b.d.	b.d.	1.64	31.69	b.d.	b.d.	31.43	b.d.	27.63
Al_2O_3	b.d.	b.d.	b.d.	2.28	1.08	21.28	b.d.	0.56	1.15	8.70	22.95	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.44
FeO	80.85	99.33	99.31	90.12	96.96	35.16	100.00	98.63	95.31	57.77	31.40	100.00	100.00	1.88	1.30	1.40	b.d.	99.69	100.00	0.28	100.00	11.44
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	0.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.48	1.74	1.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	10.82	b.d.	b.d.	b.d.	b.d.	13.99	b.d.	b.d.	0.64	b.d.	0.66	b.d.	b.d.	b.d.	b.d.	b.d.	1.95
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	96.01	96.96	95.11	b.d.	b.d.	b.d.	b.d.	b.d.	5.18
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.03	7.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.31	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.86
ZrO_2	11.75	b.d.	b.d.	2.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.20	b.d.	b.d.	67.35	b.d.	46.27
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.11	b.d.	b.d.	0.94	b.d.	1.22
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	11	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	13
Pos.	10	11	12	13	14	15	16	17	18	1	2	3	4	5	6	7	8	9	10	11	12	13	1
Mineral	Aln	Aln	Aln	Cal+ Syn	Mag	Aln	Aln	Mag	Syn (+Chl)	Cal	Cal	Qtz	Fe-Chl	Mag	Mag	Cal	Zrn	Mag	Mag	Mix (Mag+Ab)	Mag	Zrn	Cal
SiO_2	36.72	37.33	33.67	14.32	0.57	36.74	35.25	0.83	12.14	b.d.	b.d.	89.23	33.43	b.d.	0.60	b.d.	30.92	b.d.	0.80	38.87	0.80	31.55	b.d.
Al_2O_3	17.32	17.04	16.07	6.63	b.d.	17.70	16.48	b.d.	5.95	b.d.	b.d.	2.56	20.79	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.45	b.d.	b.d.	b.d.
FeO	14.09	14.25	10.62	7.57	99.43	16.36	18.59	98.90	6.05	1.60	1.02	7.30	34.39	99.63	99.40	0.98	1.97	100.00	92.39	39.63	98.82	1.60	1.11
MnO	0.79	b.d.	b.d.	0.72	b.d.	b.d.	b.d.	b.d.	b.d.	0.42	1.99	b.d.	0.34	b.d.	b.d.	2.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.87
MgO	0.92	0.96	b.d.	0.87	b.d.	1.95	11.10	b.d.	3.86	b.d.	b.d.	0.91	9.21	b.d.	b.d.	0.78	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.66
CaO	11.24	11.05	13.06	59.80	b.d.	10.64	7.24	0.27	19.03	97.98	96.98	b.d.	b.d.	b.d.	b.d.	96.10	1.84	b.d.	2.25	b.d.	b.d.	b.d.	96.37
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.05	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	1.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.38	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	63.87	b.d.	b.d.	b.d.	b.d.	65.46	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.39	b.d.	b.d.	b.d.	b.d.	1.39	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	4.67	4.30	6.62	1.43	b.d.	3.79	3.33	b.d.	9.88	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.18	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	10.30	9.80	14.88	4.13	b.d.	8.47	6.13	b.d.	21.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.33	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	3.94	3.54	5.08	b.d.	b.d.	3.14	1.89	b.d.	8.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.06	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	0.00	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	98.27	100.00	95.47	100.00	100.00	100.00	100.00	92.10	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Pos.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mineral	Syn	Syn	Zrn	Mix (Syn+Chl)	Syn (+Chl)	Mag	Zrn	Mag	Zrn	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag
SiO_2	3.72	4.32	31.76	21.03	4.86	0.64	29.14	4.93	31.56	0.66	b.d.	b.d.	b.d.	b.d.	b.d.	0.72	b.d.	b.d.	0.66	0.67	b.d.	0.68	0.82
Al_2O_3	2.00	2.79	b.d.	12.83	0.95	b.d.	b.d.	3.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	4.36	4.52	b.d.	20.12	1.33	99.01	1.36	86.19	0.47	99.34	100.00	99.67	100.00	99.61	99.67	99.28	100.00	100.00	99.34	99.33	100.00	99.32	99.18
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	1.00	b.d.	7.08	b.d.	b.d.	b.d.	3.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	23.05	22.03	b.d.	11.21	22.54	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.	b.d.	b.d.	b.d.	0.33	b.d.	0.39	0.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	68.24	b.d.	b.d.	b.d.	59.12	b.d.	66.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	4.59	4.71	b.d.	b.d.	5.15	b.d.	0.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	12.92	12.82	b.d.	5.73	12.69	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	26.58	26.89	b.d.	12.74	26.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	10.75	10.20	b.d.	4.80	10.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	0.00	0.00	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	1.77	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	87.97	89.28	100.00	95.55	86.56	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Pos.	25	26	27	28	29	30	31	32	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mineral	Syn+Thr +Mag	Mag	Fe-Chl	Mag	Aln?	Mag	Mag	Zrn	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag
SiO_2	8.52	2.22	30.64	b.d.	29.67	b.d.	b.d.	32.05	32.68	12.42	0.60	b.d.	1.15	b.d.	b.d.	0.64	1.21	b.d.	3.40	1.05	0.63	1.23	0.55
Al_2O_3	b.d.	1.70	19.28	b.d.	18.57	b.d.	b.d.	0.72	21.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.88	b.d.	b.d.	0.71	b.d.
FeO	18.27	94.90	30.47	99.69	35.39	99.62	100.00	1.13	36.13	67.66	99.40	100.00	98.51	100.00	100.00	99.36	98.44	100.00	94.72	98.95	99.37	93.07	99.45
MnO	b.d.	b.d.	0.28	b.d.	0.44	b.d.	b.d.	b.d.	0.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	1.18	10.13	b.d.	7.68	b.d.	b.d.	b.d.	9.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	16.87	b.d.	0.24	b.d.	2.63	b.d.	b.d.	0.39	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.00	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	0.68	b.d.	b.d.	b.d.	b.d.	b.d.	0.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	0.31	b.d.	0.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.33	b.d.	b.d.	b.d.	0.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	8.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	64.62	b.d.	19.91	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.08	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	6.78	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	6.20	b.d.	b.d.	b.d.	1.41	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	12.92	b.d.	b.d.	b.d.	3.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	5.23	b.d.	b.d.	b.d.	1.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	17.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	91.86	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Pos.	16	17	18	19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mineral	Mag	Mag	Mix (Qz +Ab+Zrn)	Cal (+Ab)	REE-Xtm?	REE-Xtm?	Zrn	Zrn	Mix (Zrn+Syn)	Zrn	Zrn (+Cal+Chl)	Zrn	Zrn	Mag	Mag	Mag	Mag	Mix (Zrn+Cal)	Mag	Mix (Zrn+Cal)	Mag
SiO_2	b.d.	b.d.	62.19	22.90	3.33	b.d.	31.40	31.38	24.38	31.47	30.41	31.69	31.16	b.d.	0.69	b.d.	b.d.	21.40	b.d.	21.41	b.d.
Al_2O_3	b.d.	b.d.	3.03	6.38	b.d.	b.d.	0.35	b.d.	b.d.	b.d.	2.82	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	99.68	100.00	0.59	0.89	1.59	0.57	3.08	0.57	1.77	0.29	4.38	b.d.	0.90	100.00	99.31	100.00	100.00	1.56	100.00	7.18	100.00
MnO	b.d.	b.d.	b.d.	0.90	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	0.51	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	2.38	64.95	0.14	b.d.	b.d.	b.d.	11.40	b.d.	2.48	0.54	b.d.	b.d.	b.d.	b.d.	b.d.	33.34	b.d.	29.90	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	2.06	3.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	16.87	18.96	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	0.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	0.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	29.02	b.d.	b.d.	b.d.	64.12	66.98	43.72	68.24	56.89	66.66	66.64	b.d.	b.d.	b.d.	b.d.	43.70	b.d.	41.50	b.d.
HfO_2	b.d.	b.d.	0.74	b.d.	b.d.	b.d.	1.06	1.07	b.d.	b.d.	1.05	1.11	1.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	23.53	23.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.32	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	0.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	1.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	1.50	1.73	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	52.38	51.79	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	0.66	0.65	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	96.22	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	15	15	15	15	15	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16
Pos.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8
Mineral	Mag	Zrn	Zrn	Mix (Xtm+Rt)	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Bad Spot	Mag	Mag	Mag	Mag	Zrn	Mag	Mag	Mix (Chl+Zrn)
SiO_2	b.d.	31.16	31.45	1.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	32.01	2.44	0.72	b.d.	b.d.	31.59	b.d.	b.d.	39.90
Al_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.74	b.d.	b.d.	b.d.	b.d.	b.d.	0.60	14.19
FeO	100.00	0.80	0.86	10.57	100.00	99.65	99.51	100.00	100.00	100.00	100.00	100.00	100.00	b.d.	95.45	99.28	100.00	100.00	0.36	100.00	99.40	23.46
MnO	b.d.	b.d.	b.d.	0.70	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.44
CaO	b.d.	0.72	0.70	1.05	b.d.	b.d.	0.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.32
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.71
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	19.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	38.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	66.13	65.97	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.99	b.d.	b.d.	b.d.	b.d.	66.95	b.d.	b.d.	7.94
HfO_2	b.d.	1.18	1.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.09	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	25.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	1.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	0.76	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	95.96

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17
Pos.	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5
Mineral	Mag	LREE-Ap (+Chl)	Mag	Mag	Hem	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag (+Ab)	Mag	Mix (Syn+Chl)	Mix (Syn+Chl)	Mix (Syn+Chl)	Mix (Syn+Chl)	Mag
SiO_2	b.d.	2.87	b.d.	b.d.	0.85	b.d.	b.d.	2.00	b.d.	b.d.	b.d.	b.d.	0.99	b.d.	13.48	b.d.	17.00	16.03	28.53	36.30	b.d.
Al_2O_3	b.d.	1.92	b.d.	b.d.	b.d.	b.d.	b.d.	1.02	b.d.	b.d.	b.d.	b.d.	0.79	b.d.	4.96	b.d.	8.59	7.21	13.20	17.55	b.d.
FeO	100.00	1.86	100.00	100.00	99.15	100.00	100.00	96.99	100.00	100.00	100.00	100.00	98.22	100.00	77.31	100.00	7.51	6.72	11.18	12.80	100.00
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.47	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	43.96	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	19.15	18.16	13.82	11.82	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	39.64	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.13	4.81	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.09	9.29	6.59	4.43	b.d.
Ce_2O_3	b.d.	1.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	20.47	21.16	16.00	11.17	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.61	b.d.
Nd_2O_3	b.d.	0.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.91	7.74	5.27	4.31	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	0.00	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	91.98	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	93.33	91.12	94.60	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	17	17	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18	18	18	18	18	18
Pos.	6	7	8	9	10	11	12	13	14	15	16	17	1	2	3	4	5	6	7	8	9	10
Mineral	Mag	Mag	Mag	Zrn	Mag	Mag	Mag	Mag	Mag	Mag	Mix (Syn+Chl)	Syn	Zrn (+Mag)	Zrn (+Cal)	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag
SiO_2	b.d.	b.d.	b.d.	31.95	b.d.	b.d.	0.70	0.61	0.62	b.d.	36.57	5.15	27.85	21.53	b.d.	1.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Al_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	18.13	2.06	b.d.	b.d.	b.d.	0.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	99.67	100.00	100.00	0.58	100.00	100.00	99.30	99.39	99.38	99.71	12.43	3.50	15.38	0.54	99.67	98.17	100.00	100.00	100.00	100.00	100.00	100.00
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.29	12.51	22.11	b.d.	19.79	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	0.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	66.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	55.47	54.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	1.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.16	12.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.58	28.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.02	9.57	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	88.27	100.00	96.57	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	19	19	19	19	19	19	19
Pos.	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	1	2	3	4	5	6	7
Mineral	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Mag	Syn	Mag	Mag	Mag	Mag	Mag	Mag
SiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.27	b.d.	b.d.	b.d.	0.65	1.45	b.d.
Al_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	0.60	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	100.00	100.00	100.00	100.00	100.00	99.40	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.93	100.00	99.66	100.00	99.35	98.55	100.00
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	24.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.91	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	28.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.64	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	87.28	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

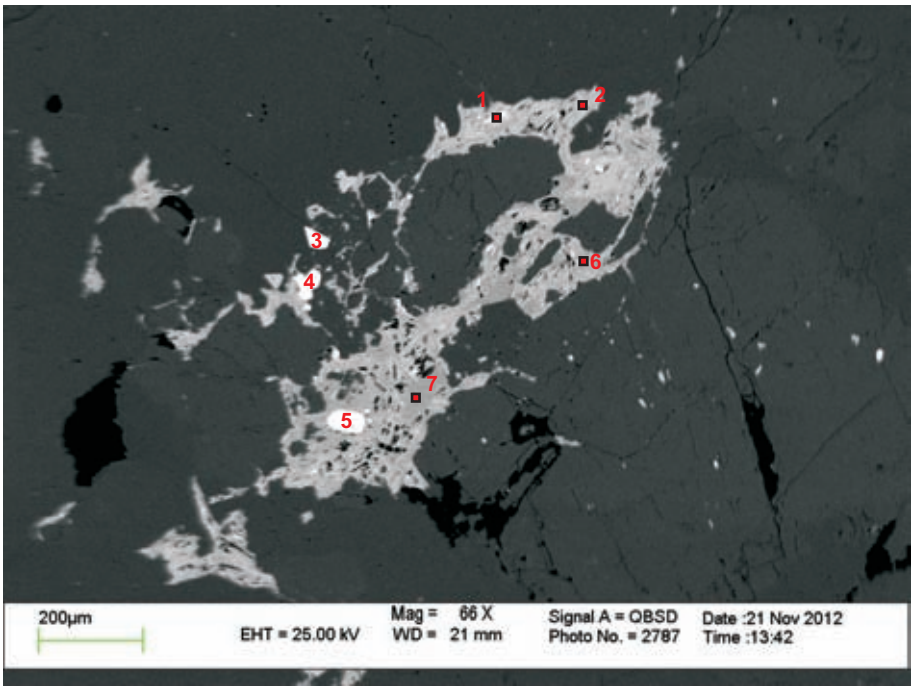
Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	19	19	19	19	19	19	19	19	19	19	19	19	20	20	20	20	20	20	20	20	20	20
Pos.	8	9	10	11	12	13	14	15	16	17	18	19	1	2	3	4	5	6	7	8	9	10
Mineral	Mag	Mag	Mag	Chl/Bt	Mag	Mag	Mag	Mag	Mag	Mag	Syn	Mix (Syn+Chl)	Mag	Mix?	Mag	Ab (+Mag)	Mag (+others)	Mix?	Mix	Lm?	Mag	Mag
SiO_2	1.50	b.d.	b.d.	39.32	b.d.	13.18	0.69	b.d.	b.d.	b.d.	b.d.	14.30	b.d.	47.34	b.d.	61.79	6.11	43.52	22.99	15.38	b.d.	b.d.
Al_2O_3	b.d.	b.d.	b.d.	15.74	b.d.	6.01	b.d.	b.d.	b.d.	b.d.	b.d.	9.08	b.d.	17.02	b.d.	18.49	2.47	19.82	7.37	4.85	b.d.	b.d.
FeO	97.23	100.00	100.00	33.37	100.00	9.91	99.31	100.00	100.00	100.00	0.82	13.94	100.00	14.14	100.00	8.34	90.96	21.63	24.66	79.00	100.00	99.64
MnO	b.d.	b.d.	b.d.	0.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.30	b.d.	b.d.	b.d.	b.d.	1.32	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	7.58	b.d.	2.19	b.d.	b.d.	b.d.	b.d.	b.d.	3.12	b.d.	3.17	b.d.	1.12	b.d.	8.88	b.d.	b.d.	b.d.	b.d.
CaO	0.54	b.d.	b.d.	0.94	b.d.	17.57	b.d.	b.d.	b.d.	b.d.	24.84	15.32	b.d.	9.25	b.d.	0.29	0.46	0.94	36.80	0.78	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	0.70	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.04	b.d.	9.98	b.d.	4.65	5.96	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	2.09	b.d.	0.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	0.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.36
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	0.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	5.01	b.d.	b.d.	b.d.	b.d.	4.29	4.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	9.84	b.d.	b.d.	b.d.	b.d.	14.54	8.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	20.37	b.d.	b.d.	b.d.	b.d.	30.01	18.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.91	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	7.50	b.d.	b.d.	b.d.	b.d.	12.43	6.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	92.00	100.00	100.00	100.00	100.00	86.92	93.04	100.00	100.00	100.00	100.00	100.00	99.78	100.00	100.00	100.00	100.00

Table 2-2A: EDS analyses of hydrothermal minerals from sample 9837.

Sample	9837	9837	9837	9837	9837	9837	9837	9837	9837
Site	20	20	20	20	20	20	20	20	20
Pos.	11	12	13	14	15	16	17	18	19
Mineral	Mix (Py+Ab)	Py	Py	Lm	Mag	Mag	Mag	Mag	Mag
SiO_2	23.18	0.19	b.d.	2.54	b.d.	b.d.	b.d.	b.d.	b.d.
Al_2O_3	6.99	b.d.	b.d.	1.37	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	22.59	29.34	27.95	95.32	100.00	99.64	100.00	100.00	99.64
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	0.77	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	5.26	2.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	41.98	68.34	72.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	0.36	b.d.	b.d.	0.35
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
IrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
OsO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

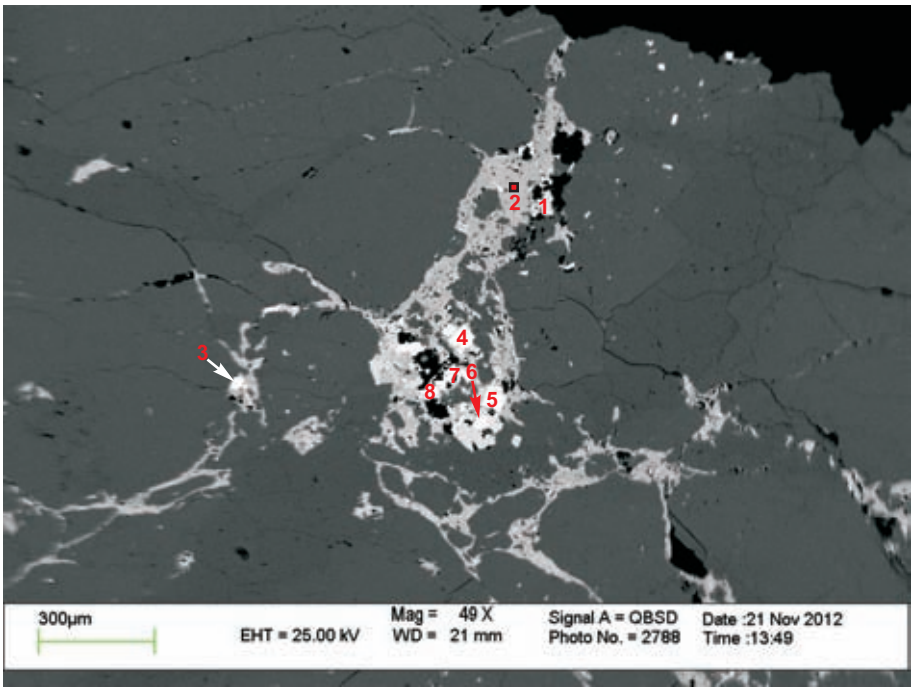
Appendix 2-3: Scanning Electron Microscope Backscattered images and analyses of hydrothermal minerals from sample 9838

Figure 2-3A: Scanned polished thin section of sample 9838 with the locations of the studied fractures.



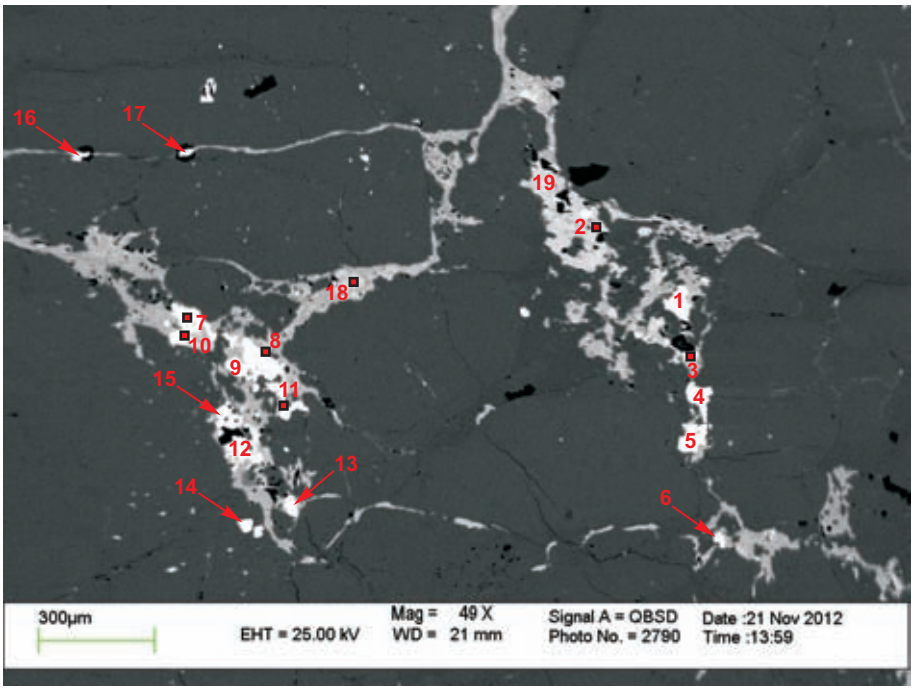
1. Chl/Bt (+Cer)
2. Chl/Bt
3. Zrn
4. Zrn (+TiO_2)
5. Zrn
6. Chl
7. Chl

Figure 2-3.1: West Moose River Pluton 9838.



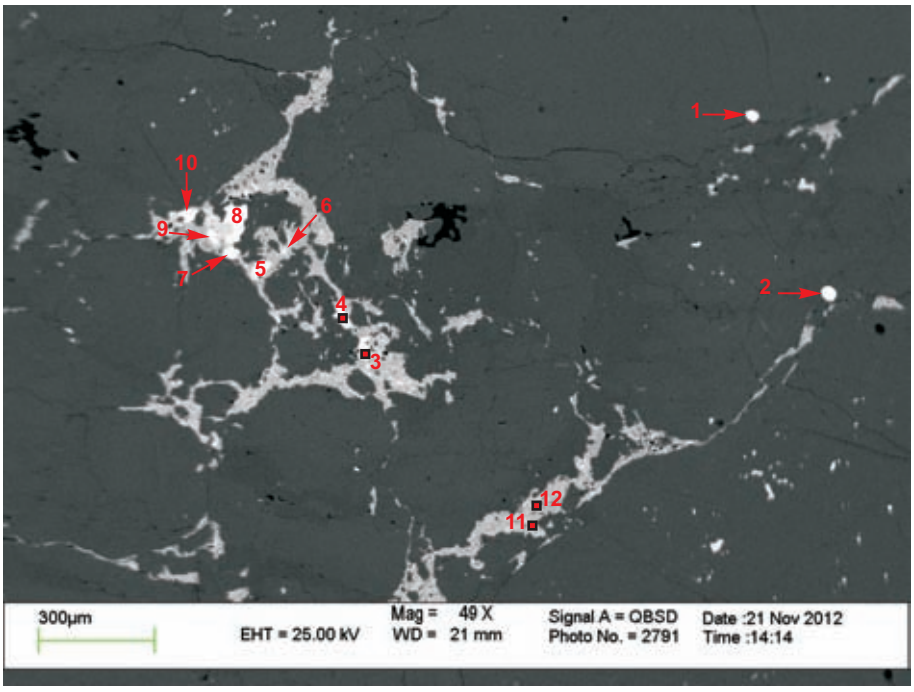
1. Ap
2. Chl
3. Zrn
4. Zrn
5. Zrn
6. Zrn
7. Zrn
8. Zrn
9. Rt
10. Mix (TiO_2+Ab)
11. Zrn

Figure 2-3.2: West Moose River Pluton 9838.



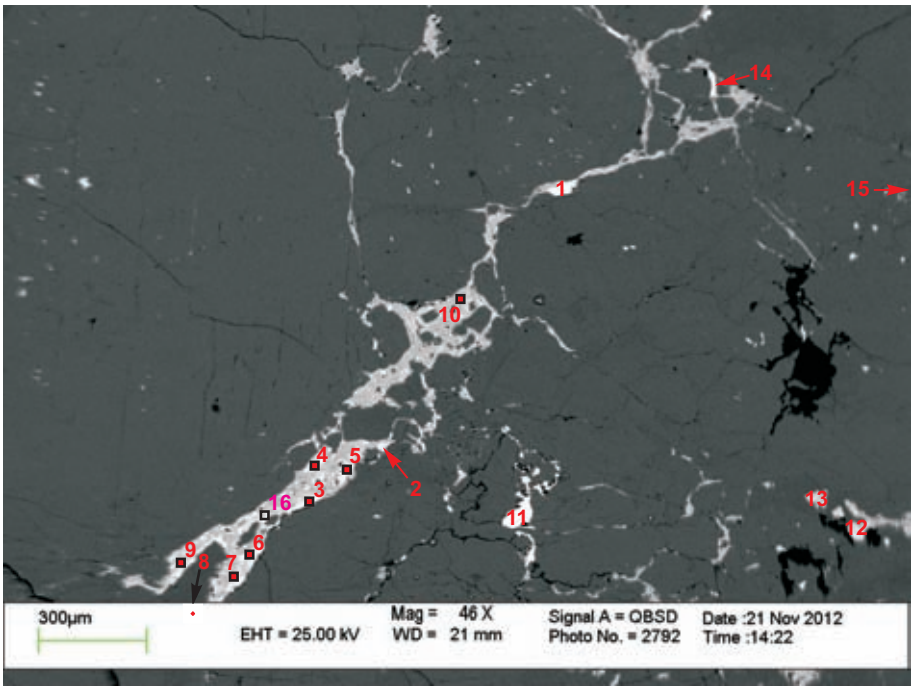
1. Rt
2. Ap
3. Mix (TiO_2+Chl)
4. Zrn
5. Zrn (+Chl)
6. Zrn (+Chl)
7. Mix (Chl+TiO_2+Cer)
8. Mix (TiO_2+Chl)
9. Zrn
10. Mix (Chl+TiO_2+Cer?)
11. Mix (Ab+Mag)
12. Rt
13. Zrn
14. Zrn
15. Rt
16. Mix (TiO_2+Chl)
17. Mix?
18. Ap
19. Ap

Figure 2-3.3: West Moose River Pluton 9838.



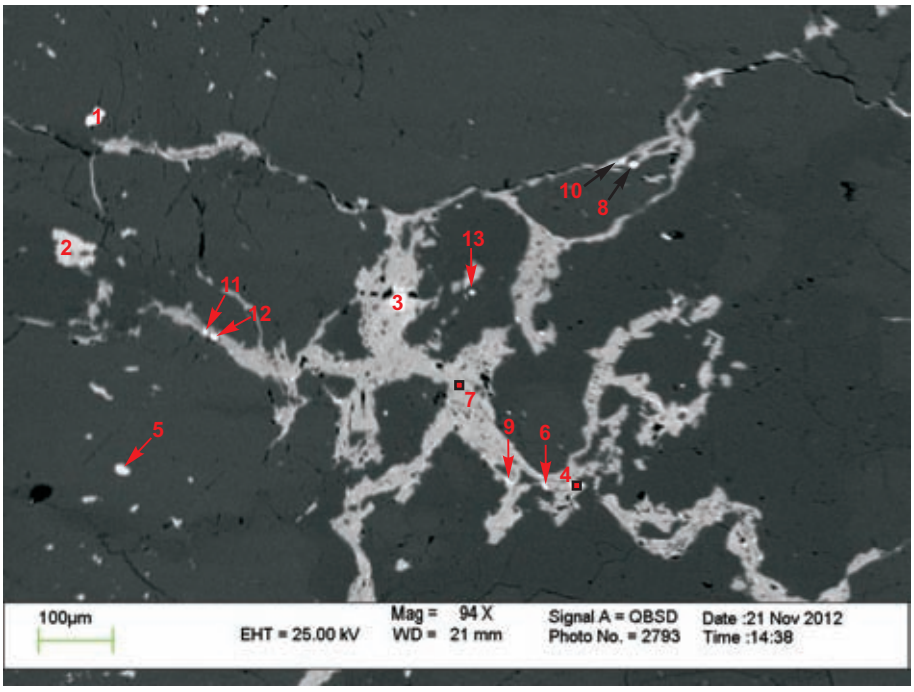
1. Zrn
2. Zrn
3. Rt
4. Alt. Ilm
5. Rt
6. Rt
7. Alt. Ilm
8. Pph
9. Rt
10. Zrn
11. Qz
12. Chl

Figure 2-3.4: West Moose River Pluton 9838.



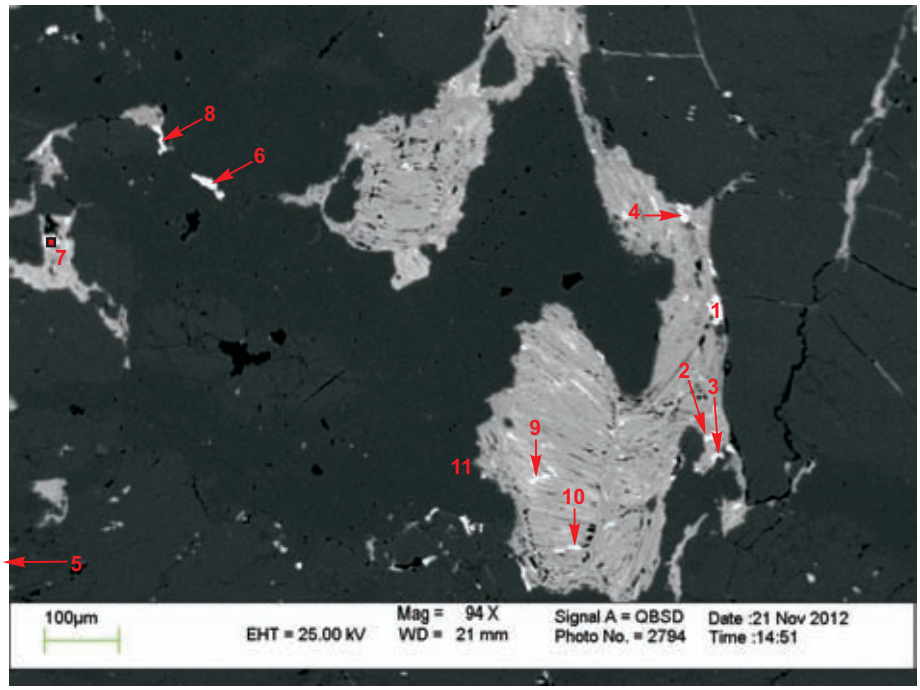
1. Zrn
2. Fe-Chl
3. Mag
4. Mag (+Chl)
5. Fe-Chl
6. Mag+Chl
7. Mag+Chl
8. Chl
9. Fe-Chl
10. Fe-Chl
11. Zrn
12. Ap
13. Ap (+Chl)
14. Pph (+Ab)
15. Mix (Chl+Ilm?)
16. Mix (Fe-oxide+Chl)

Figure 2-3.5: West Moose River Pluton 9838.



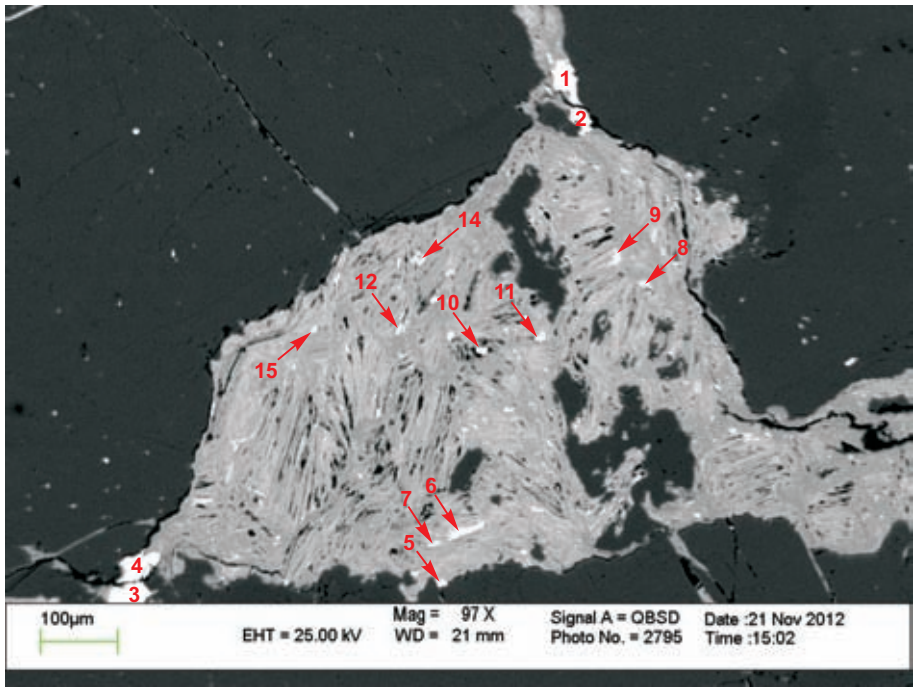
1. Mix (Ilm+Ab)
2. Ap (+others)
3. Zrn
4. Ilm (+others)
5. Tnt
6. Mix (Ilm+Chl)
7. Chl
8. Mix
9. Rt
10. Rt
11. Mix (Ilm+Chl)
12. Mix (Ilm+Chl)
13. Mix (Qz+Mag)

Figure 2-3.6: West Moose River Pluton 9838.



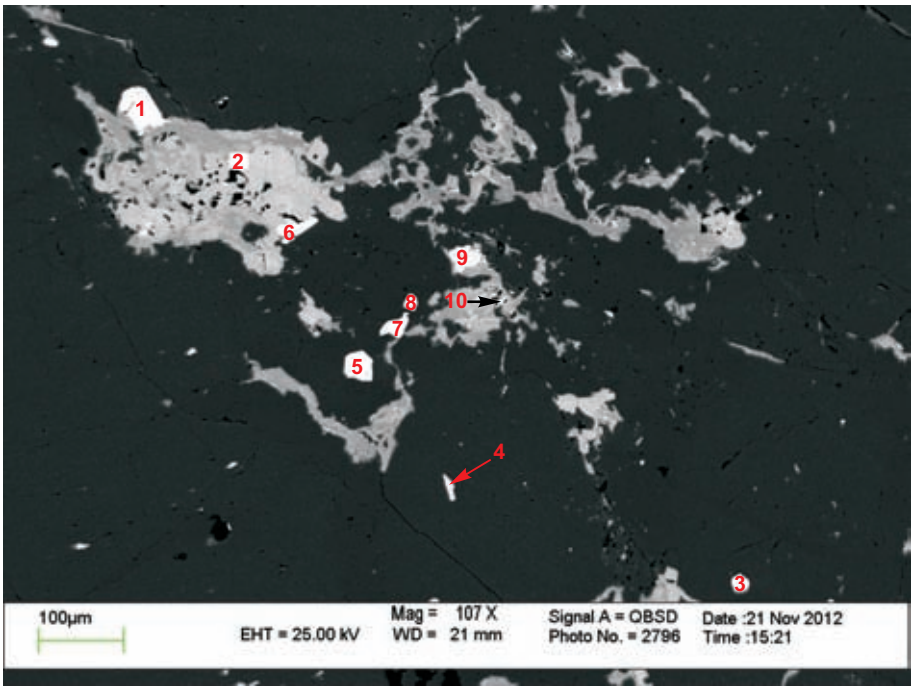
1:Alt. Ilm
2:Alt. Mn-Ilm
3:Alt. Ilm(+others)
4:Rt
5:Zrn
6:Ilm
7:Rt
8:Ilm
9:Rt(+Chl)
10:Rt(+others)
11:Mix(Ilm+Qz)

Figure 2-3.7: West Moose River Pluton 9838; precipitation of rutile (analyses 4,9&10) and altered ilmenite (analyses 1-3) postdates that of chlorite. Altered ilmenite tends to form on the rim of chlorite, whereas rutile precipitates along cleavage planes.



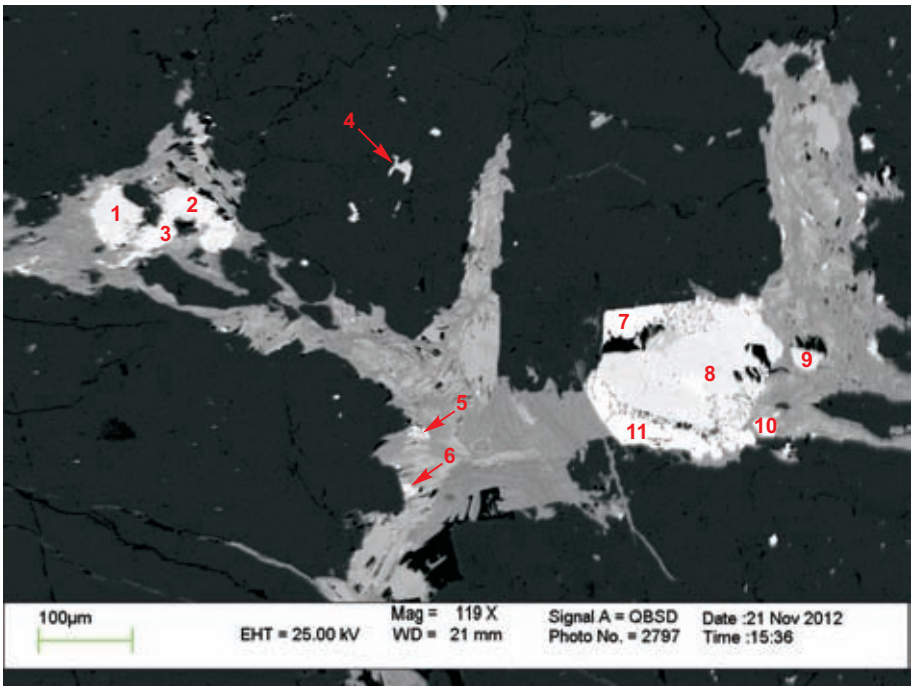
1:Alt. Ilm
2:Alt. Ilm
3:Alt. Ilm
4:Alt. Ilm
5:Mix(Ilm+Chl)
6:Rt
7:Alt. Ilm (+others)
8:Rt
9:Rt
10:Brt
11:Rt
12:Mix(Ilm+Chl)
13:Rt(+Chl)
14:Rt(+Bt)
15:Mix(Rt+Bt)

Figure 2-3.8: West Moose River Pluton 9838; precipitation of rutile and altered ilmenite postdates that of chlorite. Altered ilmenite tends to form on the rim of chlorite (analyses 1,2,3&4), whereas rutile precipitates along cleavage planes (analyses 6,8,9,&11).



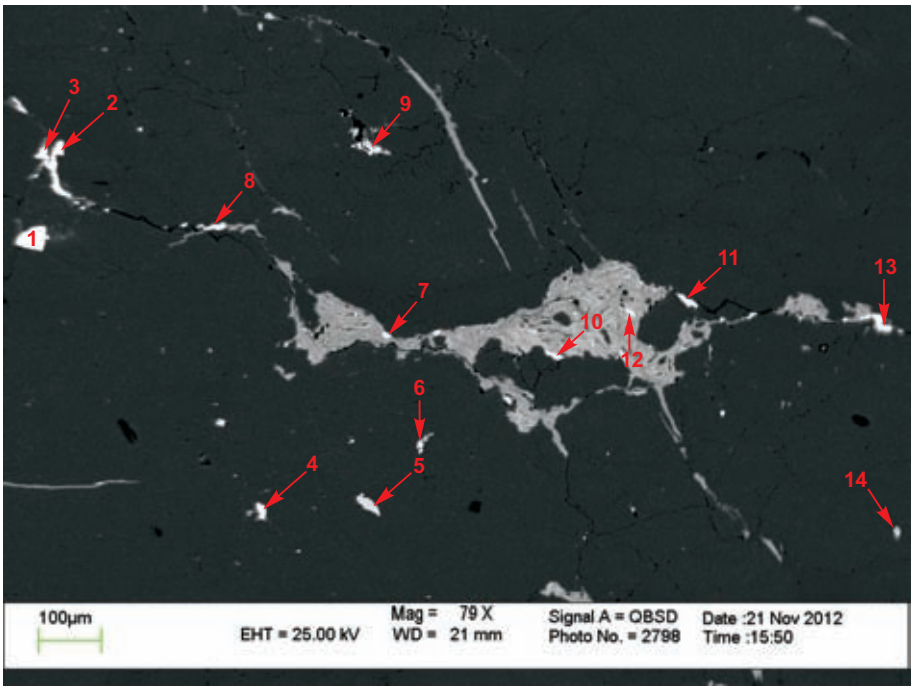
1. Zrn
2. Zrn
3. Zrn
4. Tnt
5. Zrn
6. Zrn
7. Zrn
8. Zrn
9. Rt
10. Chl

Figure 2-3.9: West Moose River Pluton 9838.



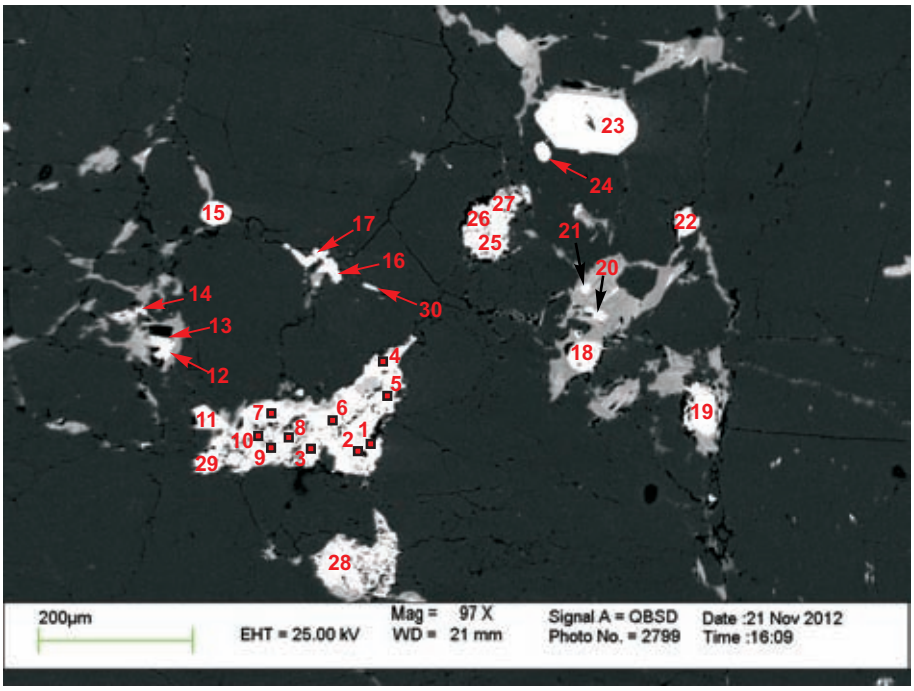
1. Rt
2. Rt
3. Rt
4:Tnt
5. Rt (+Chl)
6. Rt
7. Alt. Ilm
8. Rt
9. Rt
10. Alt. Ilm
11. Alt. Ilm

Figure 2-3.10: West Moose River Pluton 9838; ilmenite (analyses 7,10&11) precipitated after chlorite and was then subsequently altered to rutile (analyses 8&9).



1. Zrn
2. Mix (Zrn+Ab)
3. Mix (Zrn+Ab)
4. Rt
5. Tnt
6. Mix (Ab+Syn)
7. Ilm
8. Ilm (+Chl)
9. Mix (Ab+Mag+REE)
10. Rt
11. Alt. Ilm
12. Rt
13. Mix (Kfs+Ilm)
14. Mix (Ilm+Ab)

Figure 2-3.11: West Moose River Pluton 9838.



1. Nb-aes?
2. Nb-aes
3. Alt. Ilm
4. Alt. Ilm
5. Alt. Ilm
6. Alt. Ilm
7. Alt. Ilm
8. Rt
9. Rt
10. Alt. Ilm
11. Zrn
12. Pph
13. Rt
14. Rt (+Chl)
15. Zrn
16. Zrn
17. Zrn
18. Eux (+others?)
19. Eux (+others?)
20. Rt (+others)
21. Eux (+others?)
23. Zrn
24. Zrn
25. Alt. Ilm
26. Eux (+others?)
27. Alt. Ilm
28. Ilm (+others)
29. Ilm (+others)
30. Ilm (+others)

Figure 2-3.12: West Moose River Pluton 9838.

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3
Pos.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	9	10	11	1	2
Mineral	Chl/Bt + Cer	Chl/Bt	Zrn	Zrn (+TiO_2)	Zrn	Chl	Chl	Ap	Chl	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Rt	Mix (TiO_2+Ab)	Zrn	Rt	Ap
SiO_2	28.15	36.49	32.52	27.98	31.94	33.99	32.94	b.d.	32.87	31.63	31.82	32.12	31.30	31.94	31.77	1.94	24.34	66.58	b.d.	0.52
Al_2O_3	15.16	17.84	b.d.	0.82	b.d.	21.11	23.57	b.d.	22.64	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	7.74	0.63	b.d.	b.d.
FeO	16.80	31.50	b.d.	1.42	b.d.	34.31	28.83	b.d.	30.33	0.42	b.d.	b.d.	b.d.	b.d.	b.d.	3.02	11.63	3.71	2.19	b.d.
MnO	10.50	0.94	b.d.	b.d.	b.d.	0.45	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	4.46	8.48	b.d.	b.d.	b.d.	10.14	14.66	b.d.	14.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	0.44	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	47.12	b.d.	b.d.	b.d.	b.d.	0.55	b.d.	b.d.	1.08	b.d.	b.d.	b.d.	47.30
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.32	0.47	b.d.	b.d.
K_2O	2.93	3.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	44.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	44.35
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.86	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.61	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	0.67	b.d.	14.13	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	85.47	49.97	b.d.	97.81	b.d.
ZrO_2	b.d.	b.d.	66.04	54.48	68.06	b.d.	b.d.	b.d.	b.d.	66.76	66.89	67.88	66.74	66.91	67.00	b.d.	b.d.	28.61	b.d.	b.d.
HfO_2	b.d.	b.d.	1.44	1.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.29	b.d.	1.42	1.15	1.24	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.19	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	20.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
Cl	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.77	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	99.32	99.30	100.00	100.00	100.00	100.00	100.00	91.26	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.75	100.00	100.00	100.00	92.17

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4
Pos.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	1
Mineral	Mix (TiO_2+Chl)	Zrn	Zrn (+Chl)	Zrn (+Chl)	TiO_2 +Chl+ Cer	Mix (TiO_2+Chl)	Zrn	TiO_2 +Chl+ Cer	Mix(Ab+ Mag)	Rt	Zrn	Zrn	Rt	Mix (TiO_2+Chl)	Mix?	Ap	Ap	Zrn
SiO_2	10.03	31.82	31.91	32.19	1.46	16.21	31.51	19.28	37.70	1.05	31.00	32.85	6.88	14.60	16.36	b.d.	b.d.	31.90
Al_2O_3	6.89	b.d.	5.19	2.51	3.05	10.66	b.d.	11.29	21.01	b.d.	b.d.	b.d.	4.72	0.75	5.75	b.d.	b.d.	b.d.
FeO	22.66	b.d.	7.90	4.00	15.64	16.75	b.d.	18.34	25.24	1.21	0.51	b.d.	7.93	22.15	13.36	b.d.	b.d.	b.d.
MnO	19.83	b.d.	0.43	b.d.	7.46	b.d.	b.d.	6.04	0.55	b.d.	b.d.	b.d.	1.76	2.43	b.d.	b.d.	b.d.	b.d.
MgO	4.63	b.d.	3.39	1.54	b.d.	7.77	b.d.	5.20	12.55	b.d.	b.d.	b.d.	1.63	b.d.	2.96	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.47	b.d.	0.66	b.d.	b.d.	b.d.	b.d.	1.74	47.29	47.80	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	44.16	44.57	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.82	26.92	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	35.96	b.d.	b.d.	b.d.	59.62	48.62	b.d.	30.56	0.37	97.07	0.53	b.d.	77.08	57.26	16.70	b.d.	b.d.	b.d.
ZrO_2	b.d.	67.06	51.18	58.22	b.d.	b.d.	67.13	b.d.	b.d.	b.d.	66.63	65.95	b.d.	b.d.	b.d.	b.d.	b.d.	68.10
HfO_2	b.d.	1.12	b.d.	1.53	b.d.	b.d.	1.36	b.d.	b.d.	b.d.	1.33	1.20	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.80	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	6.91	b.d.	b.d.	8.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.57	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.72	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.13	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	94.14	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	91.44	92.37	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5
Pos.	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Mineral	Zrn	Rt	Alt. Ilm	Rt	Rt	Alt. Ilm	Pph	Rt	Zrn	Qz	Chl	Zrn	Fe-Chl	Mag	Mag (+Chl)	Fe-Chl	Mag+ Chl	Mag+ Chl	Chl	Fe-Chl	Fe-Chl
SiO_2	31.60	b.d.	0.81	b.d.	2.72	1.19	b.d.	0.61	31.74	92.66	36.27	31.46	30.48	9.09	11.92	19.12	24.31	24.99	34.80	30.26	32.97
Al_2O_3	b.d.	b.d.	b.d.	b.d.	1.90	0.88	b.d.	b.d.	0.92	1.38	22.13	b.d.	17.99	5.31	7.31	11.77	14.57	16.48	20.47	19.69	22.15
FeO	b.d.	7.70	11.68	1.02	4.09	36.04	9.74	1.74	0.44	3.40	27.01	b.d.	40.52	82.25	74.46	63.90	54.31	42.18	32.83	37.44	30.35
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	0.47	33.61	b.d.	b.d.	b.d.	0.28	b.d.	0.42	b.d.	b.d.	b.d.	b.d.	0.41	b.d.	0.42	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	0.93	b.d.	b.d.	b.d.	b.d.	0.81	14.30	b.d.	10.20	2.34	3.99	4.48	6.56	10.25	10.99	12.18	14.52
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.43	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.35	b.d.	b.d.	b.d.	b.d.	0.77	b.d.	0.24	b.d.	0.40	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	92.30	87.51	98.98	90.36	61.42	53.56	97.22	b.d.	0.39	b.d.	b.d.	0.39	1.01	1.55	0.74	b.d.	5.69	0.51	b.d.	b.d.
ZrO_2	66.91	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.90	b.d.	b.d.	68.54	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	1.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	96.90	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6
Pos.	11	12	13	14	15	16	1	2	3	4	5	6	7	8	9	10	11	12
Mineral	Zrn	Ap	Ap (+Chl)	Pph (+Ab)	Mix(Chl +Ilm?)	Fe-oxide +Chl	Mix (Ilm+Ab)	Ap (+others)	Zrn	Ilm (+others)	Ttn	Mix(Ilm +Chl)	Chl	Mix	Rt (+others)	Rt (+others)	Mix (Ilm+Chl)	Mix (Ilm+Chl)
SiO_2	31.66	2.73	6.77	4.92	31.71	22.39	7.64	6.75	31.16	18.34	34.29	18.28	35.33	46.19	8.33	7.78	8.20	18.91
Al_2O_3	b.d.	0.94	4.51	1.77	19.54	14.43	2.38	4.51	b.d.	1.19	0.75	9.31	20.22	16.46	4.81	3.79	5.58	10.59
FeO	b.d.	b.d.	8.37	12.90	30.76	53.83	25.03	9.64	1.03	25.74	3.47	31.20	30.10	14.09	7.86	6.70	28.50	26.67
MnO	b.d.	b.d.	b.d.	25.27	0.62	b.d.	7.48	b.d.	b.d.	3.22	b.d.	2.91	0.37	b.d.	b.d.	b.d.	2.80	3.05
MgO	b.d.	b.d.	2.51	b.d.	10.55	8.19	b.d.	2.26	b.d.	0.79	b.d.	5.11	12.70	5.33	3.46	1.68	4.05	6.14
CaO	b.d.	45.24	39.24	b.d.	b.d.	b.d.	b.d.	35.62	0.45	b.d.	25.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	0.69	b.d.	1.49	b.d.	b.d.	1.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.75	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	0.41	b.d.	b.d.	b.d.	b.d.	b.d.	1.01	0.95	0.56	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	43.37	38.60	b.d.	b.d.	b.d.	b.d.	36.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	53.65	6.82	0.75	55.58	b.d.	b.d.	50.74	33.74	32.18	0.33	b.d.	75.54	80.05	50.88	34.65
ZrO_2	67.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	61.22	b.d.	b.d.	b.d.	b.d.	12.62	b.d.	b.d.	b.d.	b.d.
HfO_2	1.24	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.69	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	92.99	100.00	100.00	100.00	100.00	100.00	95.50	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	6	7	7	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8
Pos.	13	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7
Mineral	Mix (Qz+Mag)	Alt. Ilm	Alt. Mn-Ilm	Alt. Ilm (+others)	Rt	Zrn	Ilm	Rt	Ilm	Rt (+Chl)	Rt(+others)	Mix(Ilm +Qz)	Alt. Ilm	Alt. Ilm	Alt. Ilm	Alt. Ilm	Mix(Ilm +Chl)	Rt	Alt. Ilm (+others)
SiO_2	61.95	0.89	0.95	5.47	0.60	29.22	9.74	10.39	10.19	11.27	4.81	29.25	0.63	1.20	1.37	0.99	20.43	0.67	7.09
Al_2O_3	b.d.	b.d.	0.67	1.08	b.d.	b.d.	b.d.	5.97	0.96	5.90	2.74	b.d.	b.d.	0.61	b.d.	0.55	12.30	0.61	5.02
FeO	38.05	28.08	23.34	28.17	1.83	8.51	23.96	11.11	27.10	12.65	5.28	19.52	33.20	27.22	31.50	32.16	19.29	1.52	8.46
MnO	b.d.	5.57	12.89	3.53	b.d.	b.d.	2.48	b.d.	3.24	b.d.	b.d.	3.89	2.22	4.44	4.73	2.46	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	0.59	b.d.	b.d.	b.d.	2.98	b.d.	2.30	1.49	0.56	b.d.	b.d.	b.d.	b.d.	6.18	b.d.	2.68
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.79	0.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	65.45	62.15	61.16	97.57	b.d.	63.82	69.55	58.52	67.10	85.35	46.78	63.95	66.52	62.41	63.84	41.80	97.20	76.74
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	60.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	10	10	10
Pos.	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9	10	1	2	3
Mineral	Rt	Rt	Brt	Rt	Mix (Ilm+Chl)	Rt (+Chl)	Rt (+Bt)	Mix (Rt+Bt)	Zrn	Zrn	Zrn	Ttn	Zrn	Zrn	Zrn	Zrn	Rt	Chl	Rt	Rt	Rt
SiO_2	3.50	0.75	9.38	2.64	15.28	7.79	11.40	21.56	31.44	32.06	32.06	35.83	31.40	30.87	31.74	31.81	0.77	34.50	b.d.	1.03	4.25
Al_2O_3	1.61	b.d.	5.94	1.24	8.71	4.15	4.73	9.84	b.d.	b.d.	1.11	1.19	b.d.	b.d.	b.d.	b.d.	b.d.	16.63	b.d.	0.49	2.44
FeO	2.69	1.32	4.20	3.94	19.07	9.45	7.79	18.13	b.d.	0.32	0.60	2.38	b.d.	b.d.	b.d.	b.d.	0.74	33.26	1.19	7.44	6.66
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	0.74	b.d.	1.79	b.d.	3.63	2.04	2.79	4.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.73	b.d.	b.d.	1.25
CaO	b.d.	b.d.	0.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	25.00	b.d.	b.d.	b.d.	b.d.	b.d.	0.37	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	46.93	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	0.69	b.d.	0.63	b.d.	b.d.	b.d.	1.82	3.04	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	30.61	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.75	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	90.77	97.93	b.d.	92.18	53.30	76.57	71.47	43.08	b.d.	b.d.	b.d.	31.81	b.d.	2.25	b.d.	b.d.	98.49	b.d.	98.47	91.04	85.41
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.44	66.21	63.65	b.d.	67.32	65.34	67.00	67.14	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.12	1.40	2.21	b.d.	1.27	1.54	1.26	1.05	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.57	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.06	100.00	100.00	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	10	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11	11
Pos.	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11
Mineral	Ttn	Rt(+Chl)	Rt	Alt. Ilm	Rt	Rt	Alt. Ilm	Alt. Ilm	Zrn	Mix (Zrn+Ab)	Mix (Zrn+Ab)	Rt	Ttn	Mix (Ab+Syn)	Ilm	Ilm(+Chl)	Ab+Mag +REE	Rt	Alt. Ilm
SiO_2	35.19	10.06	2.05	b.d.	b.d.	b.d.	1.33	b.d.	31.41	38.09	34.80	5.41	34.22	55.36	4.38	4.63	14.38	2.95	5.97
Al_2O_3	1.23	7.15	1.23	b.d.	b.d.	b.d.	0.88	b.d.	b.d.	4.14	4.16	1.49	0.55	16.50	1.53	2.69	10.12	1.29	1.44
FeO	1.77	10.49	3.47	33.86	0.79	1.15	28.51	36.23	b.d.	0.45	5.28	5.66	2.11	8.43	29.39	28.25	39.35	1.79	24.01
MnO	b.d.	b.d.	b.d.	4.66	b.d.	b.d.	6.06	2.13	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.35	5.08	6.64	b.d.	2.34
MgO	b.d.	2.82	0.57	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.30	b.d.	1.13	b.d.
CaO	25.32	b.d.	b.d.	b.d.	0.75	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	25.84	6.69	b.d.	b.d.	1.28	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	0.94	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.89	3.67	1.12	0.67	8.19	1.12	b.d.	3.52	b.d.	1.26
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.26	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.32	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	1.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	1.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	33.93	69.22	92.67	61.47	97.10	98.85	63.22	61.63	b.d.	b.d.	b.d.	86.33	34.22	b.d.	60.23	58.04	1.26	92.58	64.98
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.08	51.68	43.50	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.52	1.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	0.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.60	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.48	b.d.	b.d.	19.71	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.76	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.58	100.00	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

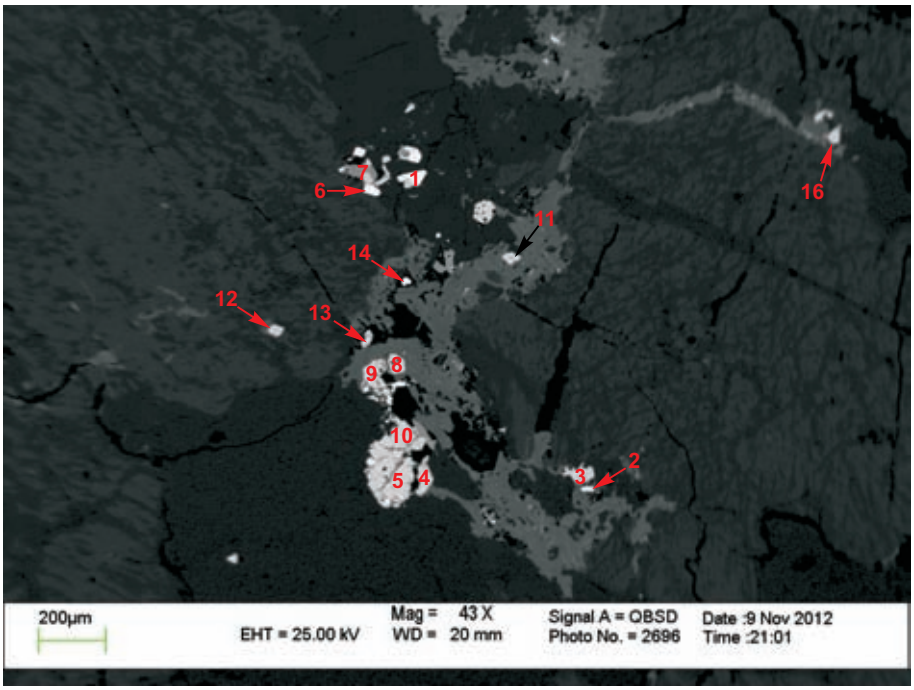
Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Pos.	12	13	14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mineral	Rt	Mix(Afs +Ilm)	Mix(Ilm +Ab)	Nb-aes?	Nb-aes	Alt. Ilm	Alt. Ilm	Alt. Ilm	Alt. Ilm	Alt. Ilm	Rt	Rt	Alt. Ilm	Zrn	Pph	Rt	Rt(+Chl)	Zrn	Zrn	Zrn
SiO_2	4.21	35.23	15.68	1.41	5.24	0.70	b.d.	b.d.	b.d.	b.d.	b.d.	0.80	0.91	31.44	0.88	b.d.	19.77	31.64	32.56	33.08
Al_2O_3	2.85	11.29	5.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.95	b.d.	0.68	0.59
FeO	6.19	16.26	25.21	2.49	11.08	24.01	27.90	27.84	26.88	26.97	17.47	11.90	26.13	b.d.	8.07	1.29	1.32	b.d.	b.d.	b.d.
MnO	b.d.	2.05	7.61	b.d.	b.d.	3.44	2.48	3.61	2.74	2.03	b.d.	b.d.	1.29	b.d.	36.55	0.39	b.d.	b.d.	b.d.	b.d.
MgO	1.44	0.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	0.62	1.40	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	1.92	4.73	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.00	b.d.	b.d.	b.d.
K_2O	b.d.	4.65	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	14.00	33.50	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	1.85	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	85.32	27.62	41.18	13.68	33.86	71.85	69.62	68.55	70.38	71.00	82.53	87.30	71.66	b.d.	54.50	98.33	68.95	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.13	b.d.	b.d.	b.d.	67.16	64.34	65.28
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.44	b.d.	b.d.	b.d.	1.20	1.76	1.05
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	7.29	11.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	1.55	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	0.96	1.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	0.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	1.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.66	b.d.
B_2O_3	b.d.	b.d.	b.d.	55.87	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-3A: EDS analyses of hydrothermal minerals from sample 9838.

Sample	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838	9838
Site	12	12	12	12	12	12	12	12	12	12	12	12	12
Pos.	18	19	20	21	22	23	24	25	26	27	28	29	30
Mineral	Eux (+others?)	Eux (+others?)	Rt (+others)	Eux (+others?)	Eux (+others?)	Zrn	Zrn	Alt. Ilm	Eux (+others?)	Alt. Ilm	Ilm (+others)	Ilm (+others)	Ilm (+others)
SiO_2	8.33	10.26	2.44	22.02	13.04	31.70	31.69	b.d.	9.43	0.58	14.79	1.24	5.38
Al_2O_3	b.d.	3.18	1.89	10.73	b.d.	b.d.	b.d.	b.d.	3.19	b.d.	1.52	b.d.	1.90
FeO	8.66	7.29	4.39	18.47	3.13	b.d.	b.d.	19.93	6.74	20.36	16.81	28.49	23.14
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	0.34	0.84	4.51	1.37
MgO	b.d.	b.d.	1.11	7.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	2.77	2.48	b.d.	1.05	1.54	b.d.	b.d.	b.d.	2.79	b.d.	10.77	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	2.48	2.51	b.d.	1.71	1.57	b.d.	b.d.	b.d.	3.00	b.d.	b.d.	b.d.	1.64
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	5.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.83	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V2O5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	42.86	34.75	b.d.	22.53	22.98	b.d.	b.d.	b.d.	38.64	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	3.90	4.53	b.d.	3.00	4.33	b.d.	b.d.	b.d.	5.26	b.d.	b.d.	b.d.	b.d.
TiO_2	4.87	3.73	90.17	2.50	27.76	b.d.	b.d.	79.73	4.50	78.72	55.27	65.76	66.56
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	67.23	67.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.07	1.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	6.28	3.48	b.d.	b.d.	7.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	9.59	11.16	b.d.	2.67	3.80	b.d.	b.d.	b.d.	8.58	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	2.11	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	6.03	7.95	b.d.	5.42	3.52	b.d.	b.d.	b.d.	10.39	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	0.00	0.00	b.d.	0.00	0.00	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Ag_2O	2.90	1.93	b.d.	1.19	4.97	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	98.67	98.85	100.00	98.44	96.28	100.00	100.00	100.00	98.36	100.00	100.00	100.00	100.00

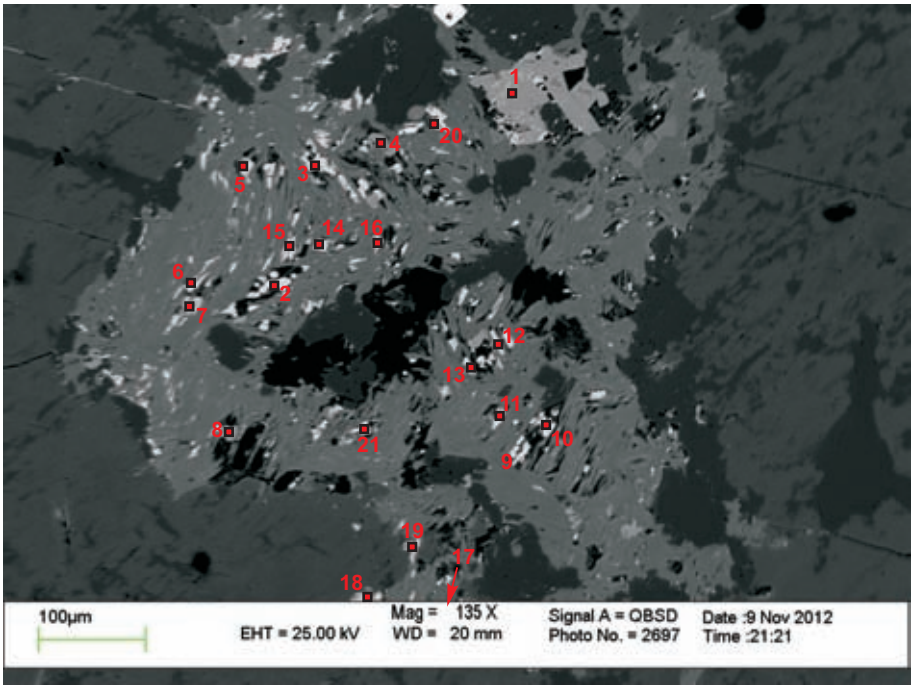
Appendix 2-4: Scanning Electron Microscope Backscattered images and analyses of hydrothermal minerals from sample 9840

Figure 2-4A: Scanned polished thin section of sample 9840 with the locations of the studied fractures.



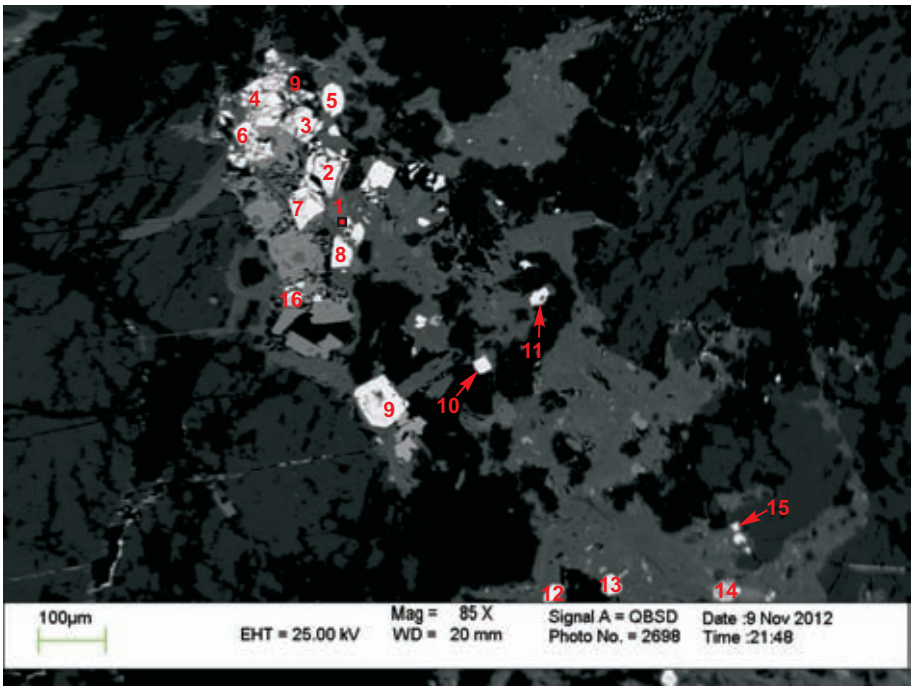
1. Zrn
2. Thr-Xtm (+others)
3. Gt
4. Lm
5. Zrn
6. Zrn (+Chl)
7. Alt. Ilm?
8. Ti-Mag
9. Lm
10. Lm
11. Lm
12. Lm
13. Lm
14. Sam?
15. Zrn
16. Mix (Kfs+Mag)

Figure 2-4.1: West Moose River Pluton 9840.



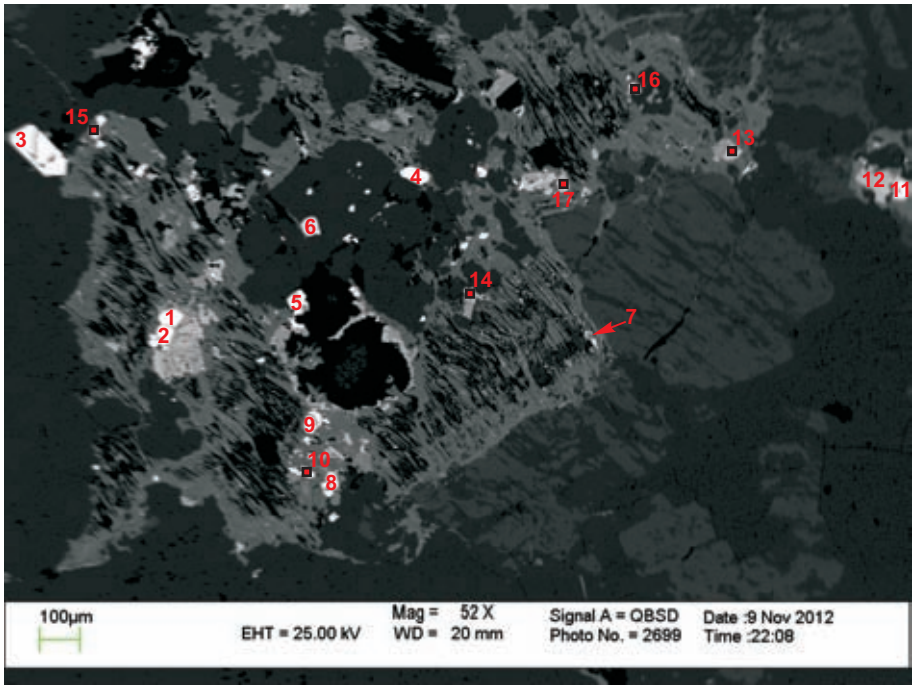
1. Rt
2. Lm?
3. Mix (Fe-oxide+Chl)
4. Mix (Rt+Chl)
5. Mix (Fe-oxide+Chl)
6. Mix (Fe-oxide+Chl)
7. Fe-chl
8. Rt
9. Lm?
10. Lm?
11. Mix (Chl+Fe-oxide)
12. Fe-oxide (+others)
13. Fe-oxide (+others)
14. Fe-oxide (+others)
15. Fe-chl
16. Fe-oxide (+others)
17. Aes
18. Mix (Chl+Fe-oxide)
19. Mix (Chl+Fe-oxide)
20. Mix (Chl+Fe-oxide)
21. Lanthanite?

Figure 2-4.2:West Moose River Pluton 9840.



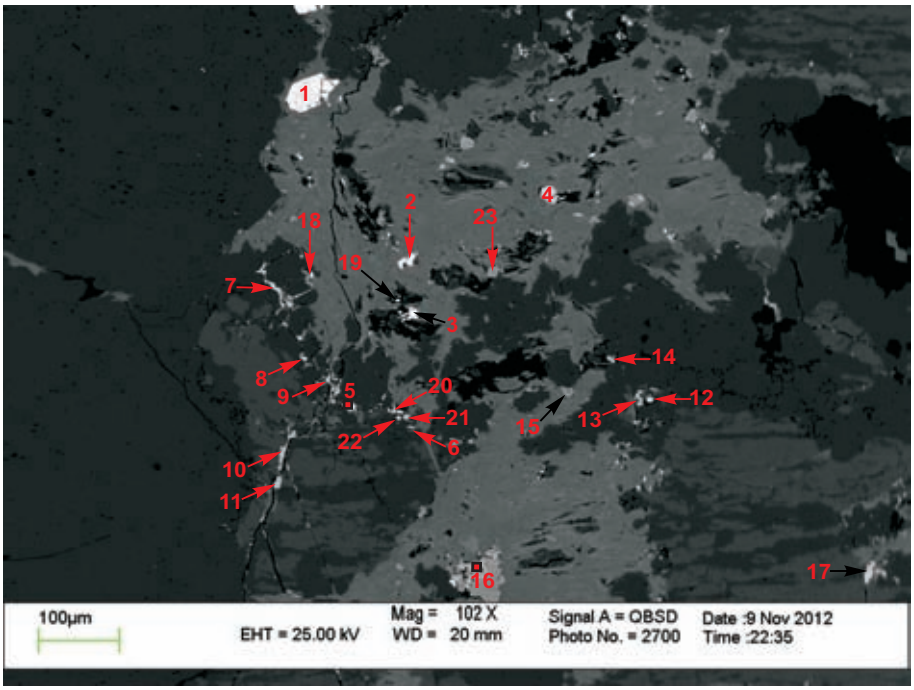
1. REE-Xtm
2. Zrn
3. Zrn
4. Zrn
5. Mix (Zrn+Chl)
6. Zrn
7. Zrn
8. Zrn
9. Zrn
10. Zrn
11. Zrn
12. Zrn
13. Zrn
14. Mix (Kfs+REE)
15. Mix (Kfs+Mag)
16. Zrn

Figure 2-4.3: West Moose River Pluton 9840.



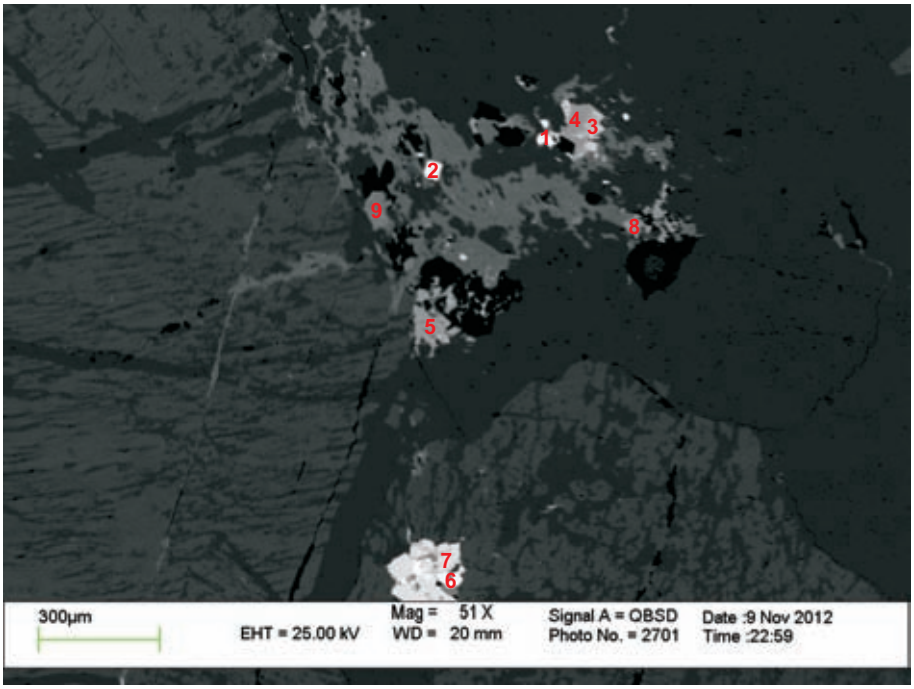
1. Sam
2. Sam
3. Zrn
4. Zrn
5. Zrn
6. Ti-Mag
7. Mix (Chl+Ce)
8. Zrn
9. Zrn
10. Zrn
11. Zrn
12. Ilm
13. Mix (Ilm+Chl+Zrn)
14. Mix (Ilm+Chl?)
15. Zrn
16. Zrn
17. Mix (Zrn+Ilm)

Figure 2-4.4: West Moose River Pluton 9840.



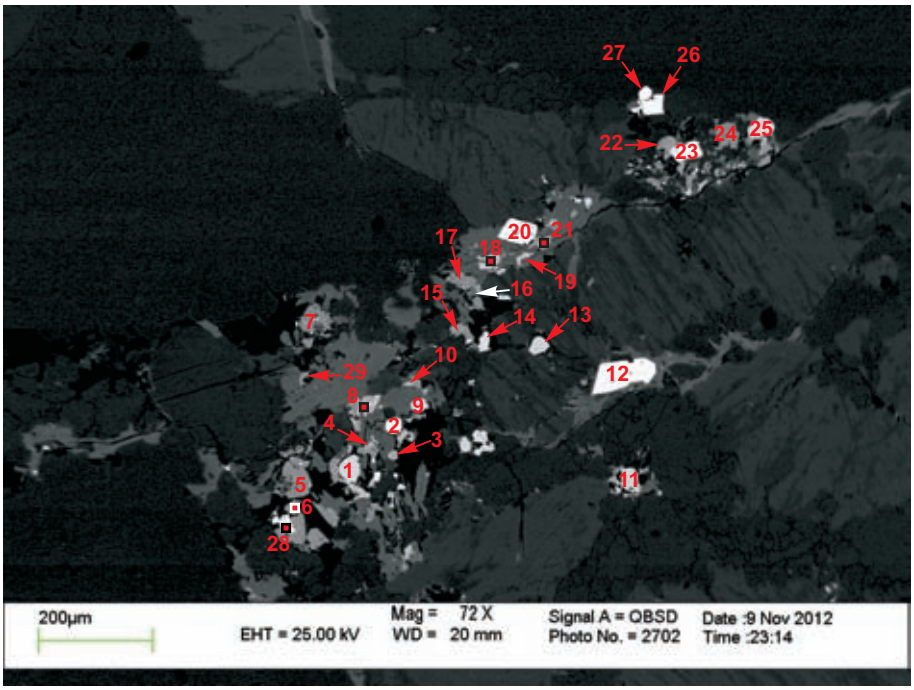
1. Zrn
2. Mix (Chl+Rt?)
3. Chl
4. Bad spot
5. Ab
6. Mix (Ab+Chl)
7. Ab (+Fe-oxide)
8. Ab
9. Ab
10. Mix (Fe-oxide+Ab)
11. Kfs
12. Qz (+Kfs)
13. Kfs
14. Qz
15. Qz
16. Rt
17. Ab
18. Chl
19. Chl
20. Mix(Ab+Chl+Fe-oxide?)
21. Mix(Ab+Fe-oxide)
22. Chl
23. Chl/Bt

Figure 2-4.5: West Moose River Pluton 9840.



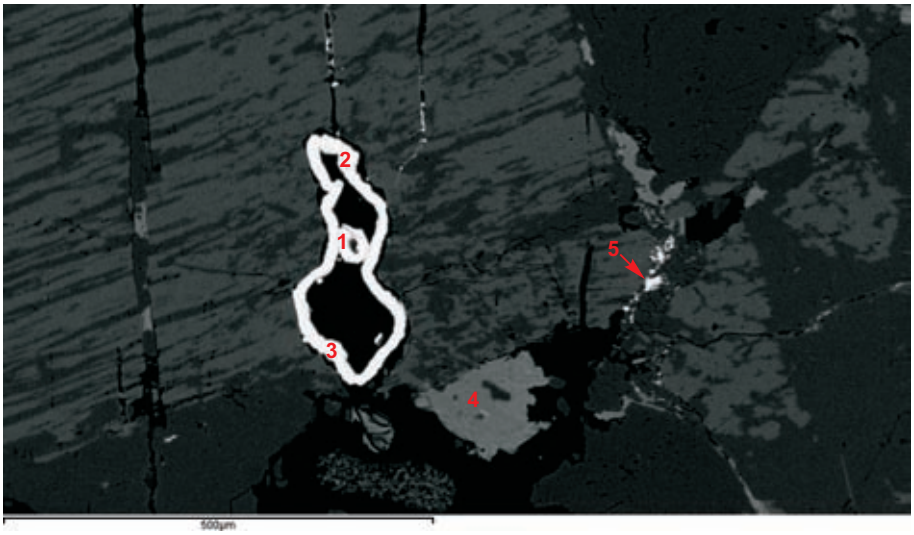
1. Zrn (+others)
2. Zrn
3. Alt. Fe-oxide?
4. Rt
5. Rt
6. Zrn
7. Gt
8. Rt
9. Ap

Figure 2-4.6: West Moose River Pluton 9840.



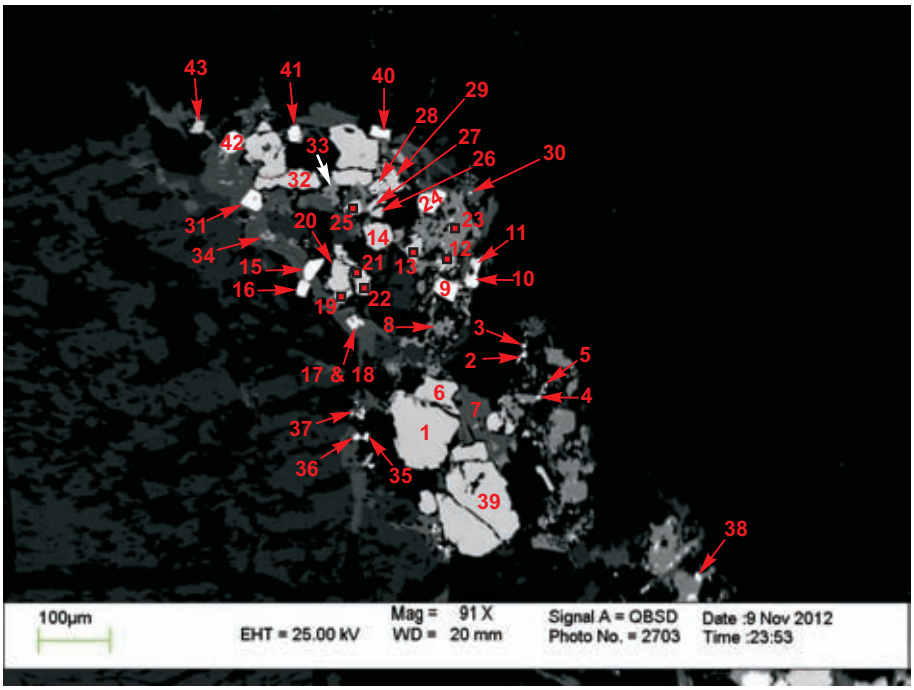
1. Ti-mag
2. Chl?
3. Bad spot
4. Chl
5. Mix (Rt+Xtm)
6. Bad spot
7. Rt
8. Mix (Ilm+Chl)
9. Mix
10. Chl
11. bad spot
12. Zrn
13. bad spot
14. Ab
15. bad spot
16. bad spot
17. Ap (+others)
18. Chl/Bt
19. Chl?
20. Rt
21. Chl
22. Mix (Qz+Ap)
23. Chl
24. Mag
25. Qz
26. Ab
27. Qz
28. Chl
29. Chl

Figure 2-4.7: West Moose River Pluton 9840.



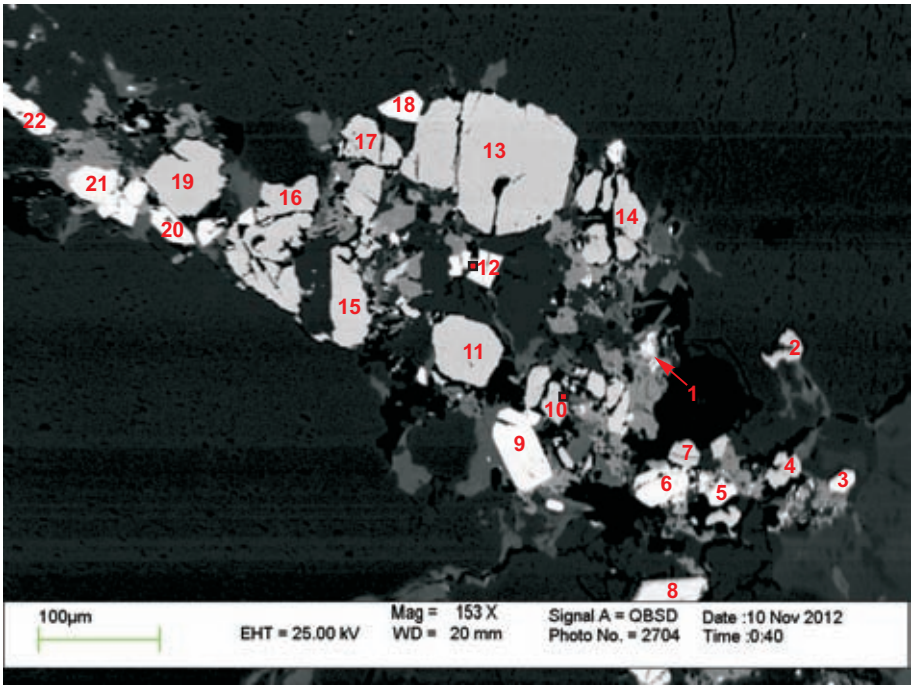
1. Lm
2. Lm
3. Lm
4. Chl
5. Fe-oxide (+others)

Figure 2-4.8: West Moose River Pluton 9840; BSE image: limonite (analyses 1,2,&3) rims fracture.



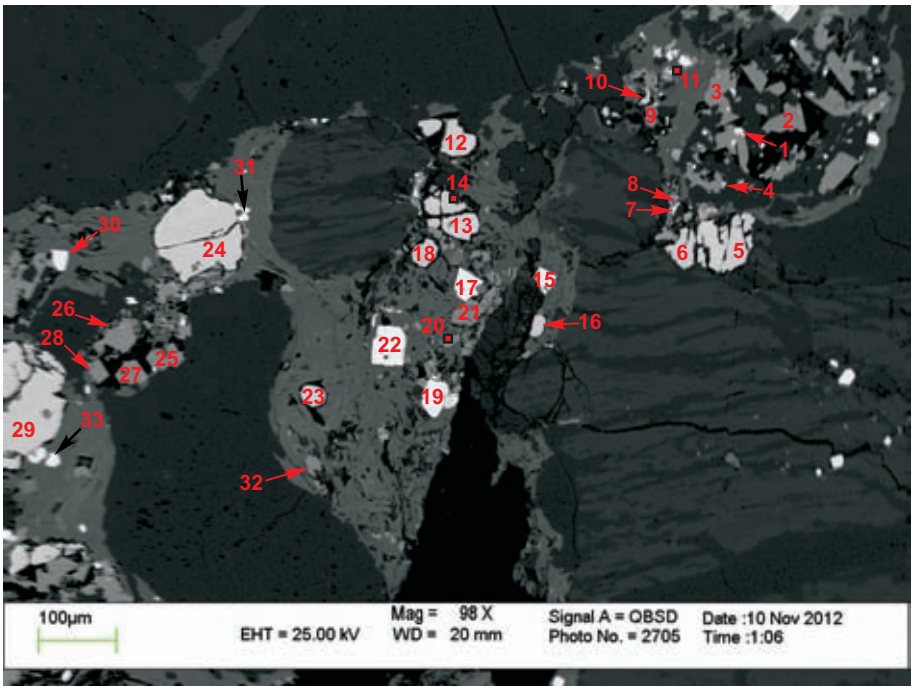
1. Hem
2. Bad spot
3. Bad spot
4. Qz
5. Mix (Qz+Ilm)
6. Gt
7. Chl
8. Rt
9. Zrn
10. REE-Xtm
11. Zrn
12. Mag
13. Mag
14. Mag
15. Zrn
16. Zrn
17. Zrn
18. Xtm
19. Gt (+others)
20. Mag
21. Mag
23. REE-Xtm
24. Zrn
25. Mag
26. Bad spot
27. Lm
28. Ti-mag
29. Ti-mag
30. Chl
31. Zrn
32. Ti-mag
33. Bad spot
34. Mix
35. Bad spot
36. Chl?
37. Bad spot
38. Qz
39. Ti-mag
40. Zrn
41. Zrn
42. Zrn
43. Mag

Figure 2-4.9: West Moose River Pluton 9840.



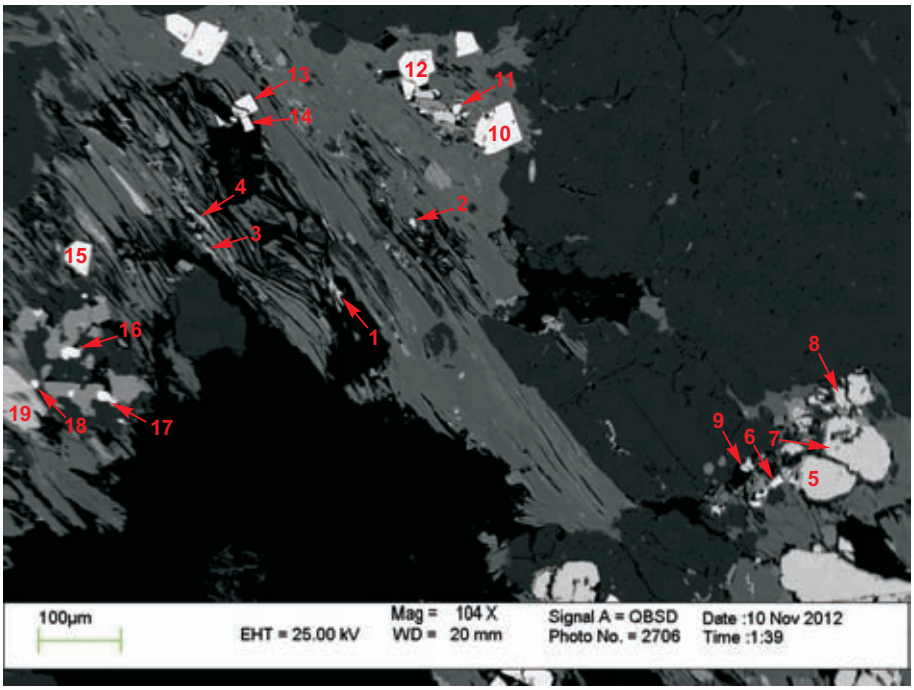
1. Zrn
2. Hem
3. Kfs?
4. Bad spot
5. Mix (Zrn+Rt)
6. Mix (Zrn+Qz)
7. Mix (Qz+Rt)
8. Zrn
9. Mix
10. Mix (Ilm+REE)
11. Ti-mag
12. Zrn
13. Ti-mag
14. Bad spot
15. Ti-mag
16. Ti-mag
17. Ti-mag
18. Zrn
19. Ti-mag
20. Zrn

Figure 2-4.10: West Moose River Pluton 9840.



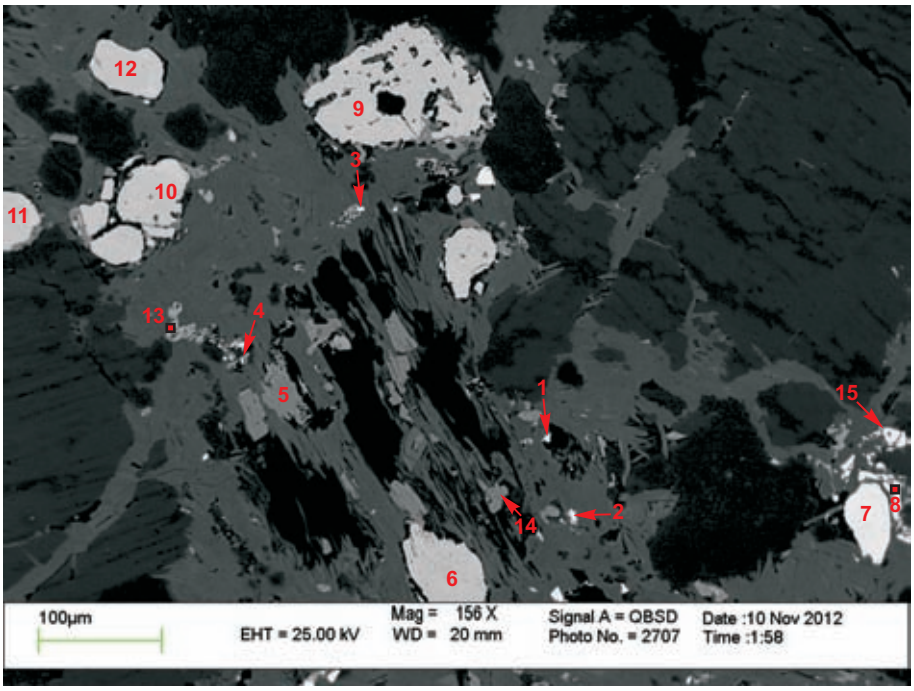
1. Sam (+Qz)
2. Rt
3. Rt
4. Qz
5. Gt
6. Mix
7. Bad spot
8. Mix (Chl+Ilm)
9. Mix (Ab+Rt)
10. Mix(Fe-oxide+Chl)
11. Zrn
12. Gt
13. Ti-mag
14. Ti-mag
15. Zrn
16. Mix (Ilm+Chl)
17. Zrn
18. Ti-mag
19. Zrn
20. Rt
21. Rt (+Ap)
22. Zrn
23. Lm
24. Ti-mag
25. Rt (+Chl/Bt)
26. Rt
27. Rt
28. Chl
29. Ti-mag
30. Zrn
31. ?
32. Rt
33. Zrn

Figure 2-4.11: West Moose River Pluton 9840.



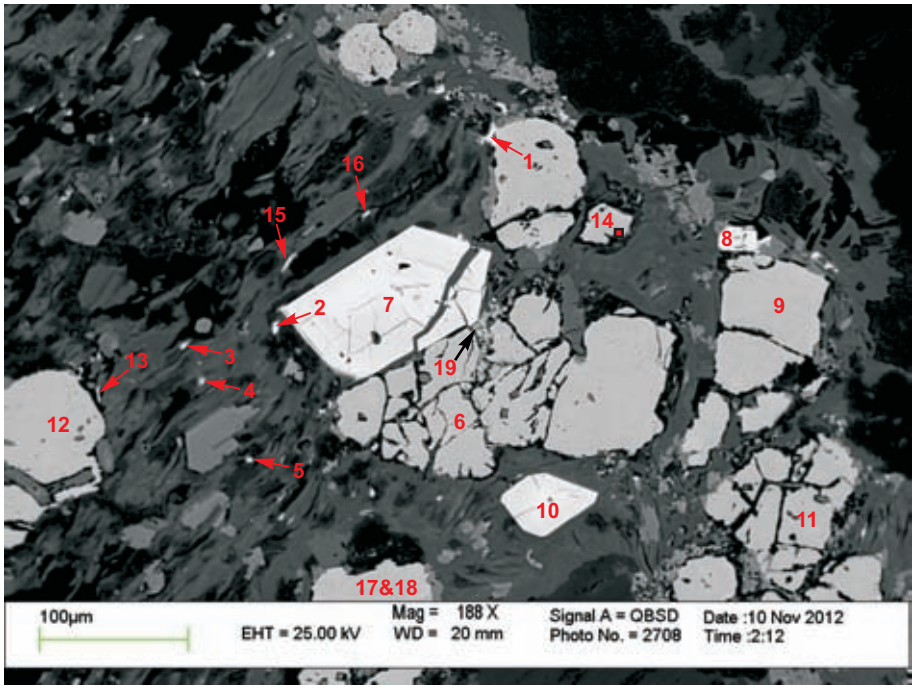
1. Mix (Chl+Ce)
2. ?
3. Bad spot
4. ?
5. Ti-mag
6. Mix
7. Ti-mag
8. Fe-oxide (+Chl)
9. Bad spot
10. Zrn
11. Zrn
12. Zrn
13. Zrn
14. Zrn
15. Zrn
16. Zrn
17. Zrn
18. Ti-mag
19. Chl/Bt

Figure 2-4.12: West Moose River Pluton 9840.



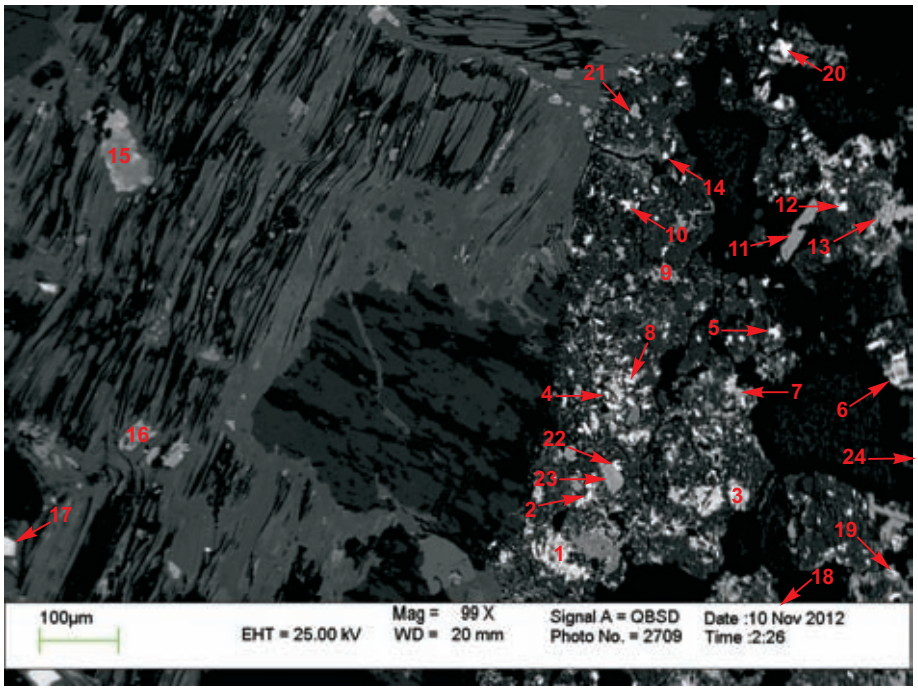
1. Thr
2. Chl (+Aes?)
3. Chl (+Nb)
4. ?
5. Rt
6. Ti-mag
7. Zrn
8. Zrn
9. Ti-mag
10. Ti-mag
11. Ti-mag
12. Lm
13. Mix (Chl+Rt)
14. Chl/Bt
15. Mix (Kfs+Zrn)

Figure 2-4.13: West Moose River Pluton 9840



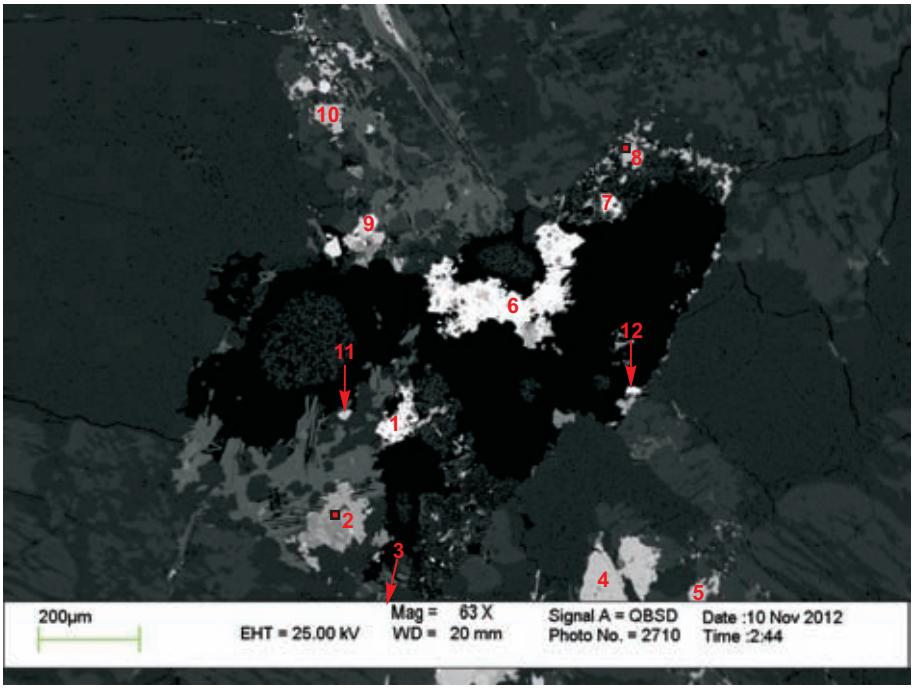
1. Nb-aes (+others)
2. Bad spot
3. Chl (+Nb)
4. Chl (+Nb)
5. Qz (+others)
6. Ti-mag
7. Zrn
8. Zrn
9. Ti-mag
10. Zrn
11. Mix
12. Ti-mag
13. Mix (Zrn-Thr+others)
14. Mix (Ti-mag+Chl)
15. Mix (Nb-aes+Chl)
16. Mix (Nb-aes+Chl)
17. Ti-mag
18. Ti-mag
19. Mix (Ce+others)

Figure 2-4.14: West Moose River Pluton 9840.



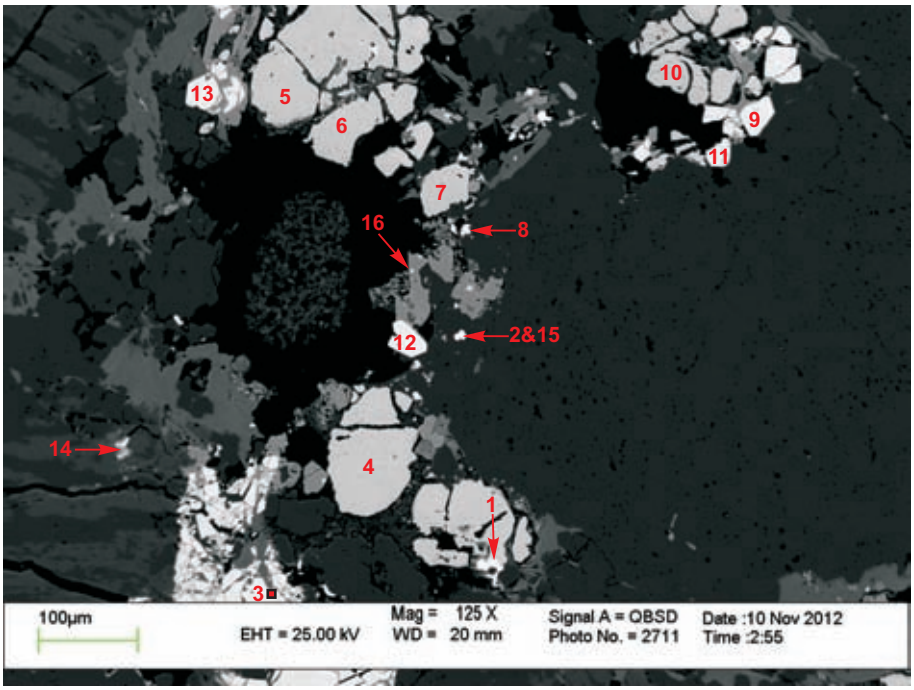
1. Mix (Bsn+Chl)?
2. Thr-Xtm
3. Mix (Bsn+Chl)?
4. Mix (Bsn+Chl)?
5. Thr-Xtm
6. Mix (Bsn+Chl)?
7. Ilm
8. Chl/Bt
9. Chl/Bt
10. Thr-Xtm (+others)
11. Ilm
12. Thr-Xtm
13. Mag (+REE+others)
14. Chl/Bt
15. Rt
16. Ilm
17. Zrn
18. Thr-Xtm
19. Alteration?
20. Thr-Xtm
21. Ilm
22. Thr-Xtm (+Chl/Bt)
23. Ilm
24. Ilm(+others)

Figure 2-4.15: West Moose River Pluton 9840.



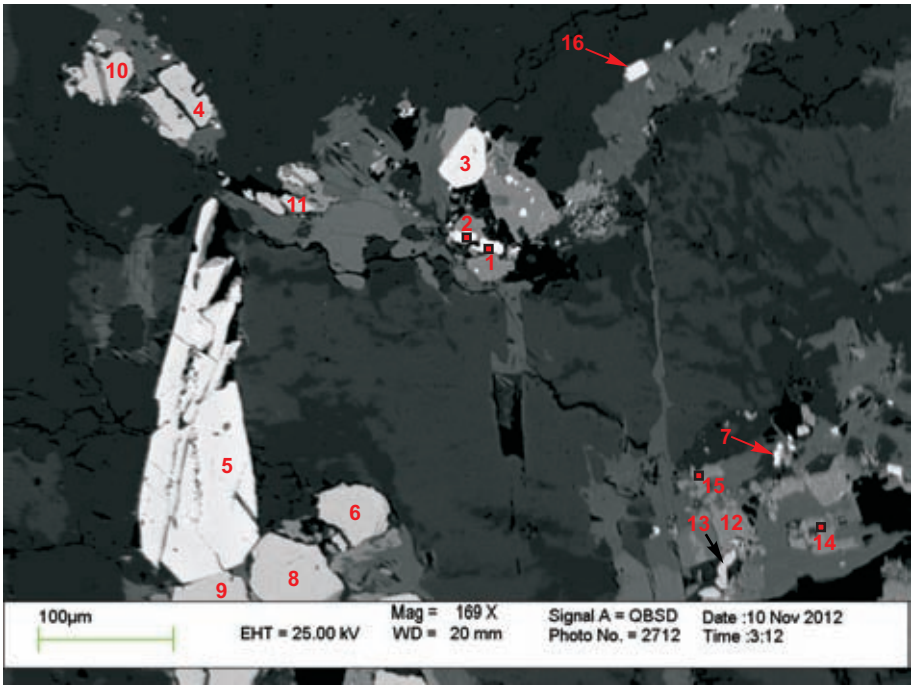
1. Cer (+others)
2. Ilm
3. Zrn
4. Ti-mag
5. Ab
6. Cer (+others)
7. Thr-Xtm
8. Mix (Fe-oxide+others)
9. Zrn
10. Lm?
11. Gt
12. Bad spot

Figure 2-4.16: West Moose River Pluton 9840; cerianite (analyses 1&6) and thorite-xenotime (analysis 7) rim fracture.



1. Mix (Ce+others)
2. Qz
3. Zrn
4. Ti-mag
5. Gt
6. Ti-mag
7. Ti-mag (+Ap)
8. Xtm (+Qz)
9. Zrn
10. Gt
11. Mix (Zrn+Qz)
12. Zrn
13. Zrn
14. Mix (Kfs+Cer)
15. Eux (+Qz)
16. Rt (+Sam?)

Figure 2-4.17: West Moose River Pluton 9840.



1. Nb-aes?
2. Rt (+others)
3. Zrn
4. Ti-mag
5. Zrn
6. Ti-mag
7. Chl (+Rt)
8. Ti-mag
9. Ti-mag
10. Ti-mag
11. Ti-mag
12. Rt
13. Ab
14. Mix (Rt+Ap)
15. Rt (+Chl)
16. Zrn

Figure 2-4.18: West Moose River Pluton 9840.

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Pos	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5
Mineral	Zrn	Thr-Xtm (+others)	Gt	Lm	Zrn	Zrn (+Chl)	Alt. Ilm?	Ti-Mag	Lm	Lm	Lm	Lm	Lm	Sam?	Zrn	Mix (Kfs+Mag)	Rt	Lm?	Mix(Fe-oxide+Chl)	Mix (Rt+Chl)	Mix(Fe-oxide+Chl)
SiO_2	31.42	23.07	b.d.	0.67	30.69	33.05	0.77	b.d.	6.75	0.90	b.d.	1.60	4.62	8.58	31.42	49.26	0.45	5.04	10.81	9.29	23.50
Al_2O_3	b.d.	b.d.	b.d.	b.d.	0.95	2.14	b.d.	b.d.	2.98	b.d.	b.d.	0.89	1.55	b.d.	b.d.	15.79	b.d.	1.54	4.55	6.39	10.43
FeO	b.d.	10.53	100.00	99.33	7.67	0.82	16.01	97.43	90.27	99.10	100.00	97.50	91.60	4.82	b.d.	22.98	5.52	89.57	81.62	8.98	59.56
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	1.40	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.62	b.d.	b.d.	1.39	4.62	5.06
CaO	b.d.	0.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.37
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.23	b.d.	b.d.	8.39	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.97	b.d.	b.d.	b.d.	b.d.	0.36
P_2O_5	b.d.	4.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	1.20	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	43.44	b.d.	b.d.	b.d.	2.41	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	83.22	2.57	b.d.	b.d.	b.d.	b.d.	b.d.	3.57	b.d.	b.d.	94.04	1.43	1.63	70.72	0.72
ZrO_2	67.41	b.d.	b.d.	b.d.	59.72	62.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	1.17	b.d.	b.d.	b.d.	0.98	1.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	11.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	19.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.55	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.30	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	47.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3
Pos	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	1	2	3
Mineral	Mix(Fe-oxide+Chl)	Fe-Chl	Rt	Lm?	Lm?	Mix (Chl+ Fe-oxide)	Fe-oxide (+others)	Fe-oxide (+others)	Fe-oxide (+others)	Fe-Chl	Fe-oxide (+others)	Aes	Mix(Chl+ Fe-oxide)	Mix(Chl+ Fe-oxide)	Mix(Chl+ Fe-oxide)	Lanthanite ?	Lm?	REE-Xtm	Zrn	Zrn
SiO_2	18.82	32.34	0.44	7.62	11.81	26.48	7.08	19.90	9.24	25.95	8.43	8.87	17.75	21.90	5.35	15.62	8.51	b.d.	29.54	31.96
Al_2O_3	9.57	17.87	b.d.	2.75	4.58	12.93	2.73	6.13	4.25	18.06	2.94	b.d.	7.86	9.96	1.48	8.57	4.21	b.d.	0.85	b.d.
FeO	64.78	40.23	0.81	88.33	80.87	52.82	85.84	71.01	80.43	43.40	84.11	12.13	68.36	60.00	88.76	9.73	84.36	0.38	0.67	b.d.
MnO	0.33	0.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.32	b.d.	0.45	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	6.01	9.00	b.d.	b.d.	1.04	5.86	b.d.	1.41	2.19	12.18	b.d.	b.d.	4.31	6.40	b.d.	1.33	1.81	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	0.39	0.42	0.30	0.46	0.26	b.d.	b.d.	1.81	0.32	b.d.	0.30	1.56	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	0.29	b.d.	b.d.	b.d.	0.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.31	1.04	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	19.45	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.00	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.79	b.d.	2.29	b.d.	2.43	26.86	b.d.	b.d.	2.70	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.
TiO_2	0.49	b.d.	98.75	1.30	1.31	0.61	1.26	1.10	1.02	0.42	1.64	27.05	0.49	0.70	1.41	b.d.	1.11	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	58.71	67.07
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.97
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	15.30	b.d.	b.d.	b.d.	6.10	b.d.	24.26	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	21.82	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.83	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.72	b.d.	b.d.	b.d.	19.37	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.66	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.30	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.84	b.d.	b.d.	b.d.	b.d.	b.d.	1.74	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.23	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.75	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	50.29	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	88.92	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4
Pos	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5	6	7	8	9	10
Mineral	Zrn	Mix (Zrn+Chl)	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Mix (Kfs+REE)	Mix (Kfs+Mag)	Zrn	Sam	Sam	Zrn	Zrn	Zrn	Ti-Mag	Mix (Chl+Ce)	Zrn	Zrn	Zrn
SiO_2	31.42	31.93	32.87	31.66	29.71	31.43	32.64	31.88	31.72	31.35	22.06	51.19	31.52	2.55	3.24	31.46	31.71	31.76	b.d.	36.37	31.38	31.48	31.48
Al_2O_3	b.d.	b.d.	13.63	b.d.	b.d.	b.d.	b.d.	0.36	b.d.	b.d.	7.22	16.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	15.44	5.17	b.d.	b.d.
FeO	b.d.	0.26	17.80	b.d.	0.34	1.46	0.41	0.46	0.48	0.49	1.57	19.90	0.54	1.05	1.51	b.d.	b.d.	b.d.	97.65	29.77	5.71	0.32	0.55
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.91	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	8.60	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.60	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.72	3.57	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	0.53	b.d.	b.d.	b.d.	b.d.	1.01	b.d.	b.d.	0.31	0.48	b.d.	b.d.	b.d.	b.d.	0.49	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.07	3.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.84	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.65	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	11.19	16.41	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.37	1.30	1.58	1.74	b.d.	b.d.	b.d.	2.35	0.57	b.d.	b.d.	b.d.
ZrO_2	67.61	66.45	27.10	67.15	61.03	61.44	66.95	66.20	66.82	67.10	b.d.	b.d.	65.56	b.d.	b.d.	68.54	67.35	67.23	b.d.	b.d.	53.19	68.20	67.03
HfO_2	0.97	1.36	b.d.	1.19	1.01	1.44	b.d.	1.10	0.98	1.07	b.d.	b.d.	1.07	b.d.	b.d.	b.d.	0.94	1.00	b.d.	b.d.	0.97	b.d.	0.94
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	3.71	b.d.	b.d.	b.d.	b.d.	4.70	b.d.	b.d.	6.86	9.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	18.54	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.23	b.d.	b.d.	b.d.	0.83	b.d.	b.d.	b.d.	b.d.	5.88	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	15.70	b.d.	b.d.	0.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.26	1.53	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.92	1.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.73	0.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.24	0.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.54	60.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	87.56	100.00	100.00	94.74	97.99	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Pos	11	12	13	14	15	16	17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Mineral	Zrn	Ilm	Mix(Ilm +Chl+Zrn)	Mix (Ilm+Chl?)	Zrn	Zrn	Mix (Zrn+Ilm)	Zrn	Mix (Chl+Rt?)	Chl	Bad Spot	Ab	Mix (Ab+Chl)	Ab (+Fe-oxide)	Ab	Ab	Mix(Fe-oxide+Ab)	Kfs	Qz (+Kfs)	Kfs	Qz	Qz	
SiO_2	31.41	1.75	9.96	7.55	31.53	31.77	23.48	28.17	36.26	35.04	32.94	67.05	60.17	64.10	68.13	67.69	38.64	66.69	92.38	71.70	100.00	99.35	
Al_2O_3	b.d.	0.61	3.34	2.66	b.d.	b.d.	b.d.	0.86	22.40	22.84	16.32	18.67	20.33	18.53	18.98	19.22	20.20	17.97	4.20	16.47	b.d.	b.d.	
FeO	0.36	45.14	63.49	56.25	0.63	0.57	12.89	10.99	27.87	31.19	36.13	1.82	11.11	4.76	0.38	0.20	28.33	0.18	0.17	0.57	b.d.	0.65	
MnO	b.d.	0.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.23	0.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
MgO	b.d.	b.d.	2.77	1.36	b.d.	b.d.	b.d.	b.d.	10.82	10.71	7.82	b.d.	2.93	b.d.	b.d.	b.d.	8.63	b.d.	b.d.	b.d.	b.d.	b.d.	
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.32	b.d.	b.d.	b.d.	0.29	0.40	0.48	0.29	0.75	0.20	b.d.	b.d.	b.d.	b.d.	b.d.	
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.03	4.89	12.13	12.22	12.14	3.74	0.60	1.15	5.26	b.d.	b.d.	
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.44	b.d.	b.d.	b.d.	0.13	0.17	b.d.	b.d.	b.d.	b.d.	14.56	2.09	6.00	b.d.	b.d.	
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
TiO_2	b.d.	51.65	17.40	32.19	b.d.	b.d.	17.86	b.d.	2.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.27	b.d.	b.d.	b.d.	b.d.	b.d.	
ZrO_2	66.99	b.d.	3.02	b.d.	66.50	66.63	45.76	50.91	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
HfO_2	1.24	b.d.	b.d.	b.d.	1.34	1.03	b.d.	2.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.76	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.78	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.88	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7
Pos	16	17	18	19	20	21	22	23	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6
Mineral	Rt	Ab	Chl	Chl	Ab+Chl +Fe-oxide	Mix (Ab+ Fe-oxide)	Chl	Chl/Bt	Zrn (+others)	Zrn	Alt Fe-oxide?	Rt	Rt	Zrn	Gt	Rt	Ap	Ti-mag	Chl?	Bad spot	Chl	Mix (Rt+Xtm)	Bad spot
SiO_2	0.55	66.72	33.97	45.76	65.11	54.22	39.92	45.77	38.36	31.27	3.42	b.d.	0.72	31.64	1.29	0.62	b.d.	0.97	34.91	b.d.	33.58	2.46	16.76
Al_2O_3	b.d.	18.41	24.13	20.99	12.10	19.80	20.90	23.88	8.09	b.d.	1.14	b.d.	b.d.	b.d.	0.92	b.d.	b.d.	b.d.	19.38	b.d.	23.96	b.d.	b.d.
FeO	2.61	1.69	27.92	22.90	17.44	12.18	27.50	20.86	6.44	0.27	58.82	0.87	1.01	1.70	93.42	1.85	b.d.	95.28	34.92	27.83	27.41	0.98	b.d.
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.40	0.24	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	13.98	9.85	5.07	3.31	11.68	8.40	1.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.33	b.d.	14.52	b.d.	b.d.
CaO	b.d.	0.20	b.d.	0.51	b.d.	b.d.	b.d.	0.31	0.19	b.d.	b.d.	b.d.	b.d.	b.d.	1.56	b.d.	46.86	b.d.	0.28	b.d.	b.d.	26.56	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	12.20	b.d.	b.d.	0.29	10.50	b.d.	b.d.	2.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	0.24	b.d.	b.d.	b.d.	b.d.	b.d.	0.38	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.27	b.d.	45.31	b.d.	b.d.	b.d.	b.d.	24.90	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.44	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.67	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	96.84	0.54	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	36.62	99.13	95.83	b.d.	0.54	97.53	b.d.	3.75	0.83	b.d.	0.54	30.34	62.94
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	41.41	68.46	b.d.	b.d.	b.d.	65.54	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.89	b.d.	b.d.	b.d.	b.d.	1.12	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.75	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	0.00	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	0.00
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.94	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	92.17	100.00	100.00	27.83	100.00	93.60	79.70

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	8	8
Pos	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	1	2
Mineral	**Rt**	**Mix (Ilm+Chl)**	**Mix**	**Chl**	**bad spot**	**Zrn**	**bad spot**	**Ab**	**bad spot**	**bad spot**	**Ap (+others)**	**Chl/Bt**	**Chl?**	**Rt**	**Chl**	**Mix (Qz+Ap)**	**Chl**	**Mag**	**Qz**	**Ab**	**Qz**	**Chl**	**Chl**	**Lm**	**Lm**
SiO_2	b.d.	15.17	6.46	36.86	71.48	31.23	43.99	67.75	3.89	72.27	6.98	38.28	41.61	0.86	34.64	78.05	44.35	1.12	98.48	68.35	100.00	b.d.	34.03	9.50	7.75
Al_2O_3	b.d.	11.74	2.07	22.83	17.77	b.d.	12.49	19.32	b.d.	b.d.	4.39	21.73	23.10	b.d.	24.27	b.d.	18.31	b.d.	b.d.	18.84	b.d.	b.d.	23.98	2.64	1.70
FeO	2.50	37.92	87.03	25.84	1.09	b.d.	31.32	0.21	4.73	7.05	7.08	25.42	27.20	5.01	26.95	1.04	24.67	96.12	0.15	0.30	b.d.	1.42	28.35	87.87	90.55
MnO	b.d.	0.23	b.d.	0.23	0.22	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.23	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	7.50	b.d.	13.07	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.48	12.32	5.79	b.d.	13.87	b.d.	7.57	b.d.	b.d.	b.d.	b.d.	b.d.	13.64	b.d.	b.d.
CaO	b.d.	b.d.	0.30	b.d.	0.41	b.d.	b.d.	0.68	b.d.	b.d.	34.48	b.d.	0.31	b.d.	b.d.	b.d.	0.94	b.d.	b.d.	0.43	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	0.87	0.40	8.26	b.d.	1.81	12.05	b.d.	b.d.	b.d.	b.d.	0.70	b.d.	b.d.	b.d.	1.39	b.d.	0.24	12.08	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	9.81	b.d.	b.d.	b.d.	b.d.	0.75	0.38	b.d.	b.d.	0.33	0.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	37.68	b.d.	b.d.	b.d.	b.d.	8.67	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.16	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	97.50	27.43	1.82	0.77	0.46	b.d.	b.d.	b.d.	88.40	b.d.	1.46	0.75	0.51	94.13	0.26	0.83	1.62	2.75	b.d.	b.d.	b.d.	95.42	b.d.	b.d.	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	67.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.95	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	1.44	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	0.00	b.d.	0.00	0.00	b.d.	0.00	0.00	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	99.68	100.00	99.41	100.00	97.02	79.32	94.57	99.47	99.60	100.00	100.00	100.00	99.61	100.00	98.87	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Pos	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Mineral	Lm	Chl	Fe-oxide (+others)	Hem	bad spot	bad spot	Qz	Mix (Qz+Ilm)	Gt	Chl	Rt	Zrn	REE-Xtm	Zrn	Mag	Mag	Mag	Zrn	Zrn	Zrn	Xtm	Gt (+others)	Mag	Mag
SiO_2	7.47	32.92	31.84	b.d.	96.90	92.53	99.83	78.18	1.11	32.75	0.99	32.06	b.d.	29.59	0.61	b.d.	0.72	31.59	31.88	31.73	7.06	1.91	0.68	b.d.
Al_2O_3	1.68	24.96	9.92	b.d.	b.d.	b.d.	b.d.	b.d.	0.70	24.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.85	1.02	b.d.	b.d.
FeO	90.53	27.56	52.12	91.39	1.59	1.76	b.d.	5.42	97.23	28.07	3.80	0.53	b.d.	0.84	95.32	98.11	95.20	0.52	0.34	0.62	5.59	94.37	99.02	98.60
MnO	0.32	b.d.	b.d.	0.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.46	b.d.	0.54	b.d.	b.d.	b.d.	b.d.	0.52	b.d.	b.d.
MgO	b.d.	14.56	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	14.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.70	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.41	b.d.	b.d.	b.d.	b.d.	0.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	0.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	4.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	15.14	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	34.80	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	b.d.	1.19	7.90	0.71	b.d.	0.17	16.40	0.56	0.22	95.20	b.d.	0.12	b.d.	3.61	1.89	3.55	b.d.	b.d.	b.d.	b.d.	2.18	0.30	1.40
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.04	0.00	60.33	b.d.	b.d.	b.d.	66.64	66.65	66.64	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.37	b.d.	2.33	b.d.	b.d.	b.d.	1.25	1.13	1.01	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	17.82	4.44	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	42.52	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.82	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.93	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.41	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.94	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.55	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	61.35	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	99.20	94.29	100.00	100.00	100.00	100.00	100.00	100.00	100.00	97.80	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10
Pos	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	1	2	3	4
Mineral	Mag	REE-Xtm	Zrn	Mag	bad Spot	Lm	Ti-Mag	Ti-Mag	Chl	Zrn	Ti-mag	bad spot	mix	bad spot	Chl?	bad spot	Qz	Ti-mag	Zrn	Zrn	Zrn	Mag	Zrn	Hem	Kfs?	bad spot
SiO_2	b.d.	3.52	31.83	0.61	14.69	1.09	b.d.	b.d.	33.18	31.61	b.d.	7.88	17.60	b.d.	56.44	37.53	88.98	b.d.	31.32	31.43	31.49	b.d.	29.23	1.55	67.01	27.87
Al_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	24.50	b.d.	b.d.	2.17	8.92	b.d.	19.35	18.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	17.76	16.88
FeO	92.59	0.40	0.34	98.13	75.96	97.62	95.00	95.76	29.87	0.58	94.23	11.48	24.51	40.30	10.56	16.20	0.71	91.83	0.43	0.80	0.60	100.00	0.81	98.45	b.d.	40.53
MnO	0.89	b.d.	b.d.	b.d.	b.d.	0.34	0.59	0.41	b.d.	b.d.	0.33	2.35	2.50	b.d.	0.46	b.d.	b.d.	0.63	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.59
MgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	12.18	b.d.	b.d.	b.d.	3.89	b.d.	4.77	10.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	7.74
CaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.53	b.d.	b.d.	0.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.35	b.d.	b.d.	0.38
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.87	b.d.	5.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.38	1.87
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.85	0.40
P_2O_5	b.d.	36.06	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.50	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	6.52	3.08	b.d.	1.26	b.d.	0.94	4.41	3.82	0.27	b.d.	5.44	71.72	40.71	b.d.	b.d.	b.d.	10.32	7.54	b.d.	1.20	b.d.	b.d.	3.81	b.d.	b.d.	2.07
ZrO_2	b.d.	b.d.	66.47	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	67.81	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.88	65.30	66.85	b.d.	57.48	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	1.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.37	1.27	1.06	b.d.	2.48	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	44.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	5.84	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.01
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	1.39	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	3.02	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	2.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	3.52	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	0.00	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.51	b.d.	b.d.	b.d.	4.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	98.43	100.00	100.00	90.65	100.00	100.00	100.00	100.00	100.00	100.00	96.65	100.00	40.30	99.71	87.38	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.35

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	11	11	11	11	11
Pos	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	1	2	3	4	5
Mineral	Mix (Zrn+Rt)	Mix (Zrn+Qz)	Mix (Qz+Rt)	Zrn	mix	Mix (Ilm+REE)	Ti-mag	Zrn	Ti-mag	bad spot	Ti-mag	Ti-mag	Ti-mag	Zrn	Ti-mag	Zrn	Zrn	Xtm (+others)	Sam (+Qz)	Rt	Rt	Qz	Gt
SiO_2	26.72	77.79	68.64	31.40	84.70	8.19	1.32	32.10	b.d.	70.39	2.57	b.d.	1.16	32.04	b.d.	31.45	31.75	32.66	0.23	0.39	0.39	99.63	0.74
Al_2O_3	1.09	b.d.	b.d.	b.d.	0.90	b.d.	b.d.	b.d.	b.d.	9.29	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.76	b.d.	b.d.	b.d.	b.d.	b.d.
FeO	1.29	0.30	2.92	b.d.	3.91	10.99	95.71	0.25	95.12	13.64	89.56	99.00	95.26	0.67	94.78	0.28	b.d.	5.24	0.03	0.85	1.77	0.15	99.26
MnO	b.d.	b.d.	b.d.	b.d.	0.62	b.d.	b.d.	b.d.	0.92	b.d.	b.d.	b.d.	0.90	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	b.d.	0.31	b.d.	b.d.	b.d.	b.d.	5.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.31	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	b.d.	b.d.	0.17	0.80	b.d.	b.d.	b.d.	0.16	b.d.	b.d.	0.57	b.d.	b.d.	b.d.	b.d.	b.d.	0.01	b.d.	b.d.	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	0.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	0.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	24.24	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	15.59	b.d.	b.d.	b.d.	b.d.	2.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.23	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	2.09	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	45.63	b.d.	28.26	b.d.	3.12	53.57	2.97	b.d.	3.96	1.31	5.05	1.00	2.11	b.d.	5.22	b.d.	b.d.	0.34	0.05	98.77	97.84	0.22	b.d.
ZrO_2	24.58	21.90	b.d.	67.54	4.80	b.d.	b.d.	66.50	b.d.	b.d.	b.d.	b.d.	b.d.	65.96	b.d.	67.31	66.95	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	1.06	b.d.	b.d.	b.d.	1.14	b.d.	b.d.	b.d.	b.d.	b.d.	1.34	b.d.	0.96	1.30	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	6.74	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	29.31	0.16	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	0.86	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.03	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.37	0.02	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	0.00	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	1.62	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.03	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.01	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	99.20	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.77	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	99.81	100.00	99.66	99.60	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Pos	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Mineral	mix	bad spot	Mix (Chl+Ilm)	Mix (Ab+Rt)	Mix(Fe-oxide+Chl)	Zr	Gt	Ti-mag	Ti-mag	Zrn	Mix (Ilm+Chl)	Zrn	Ti-mag	Zrn	Rt	Rt (+Ap)	Zrn	Lm	Ti-mag	Rt (+Chl/Bt)	Rt	Rt	Chl
SiO_2	34.55	82.03	54.70	52.24	12.55	31.16	b.d.	b.d.	0.87	31.75	13.82	29.43	1.01	31.73	b.d.	0.74	28.43	b.d.	b.d.	11.96	b.d.	b.d.	30.10
Al_2O_3	13.25	b.d.	19.39	14.58	8.36	5.31	b.d.	b.d.	b.d.	b.d.	5.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.32	b.d.	b.d.	21.67
FeO	47.97	2.10	16.87	1.44	77.68	7.99	100.00	99.59	97.63	0.37	63.69	0.35	98.45	0.33	1.47	1.02	1.70	100.00	99.52	2.57	3.22	1.00	26.19
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	2.45	b.d.	6.28	b.d.	b.d.	3.50	b.d.	b.d.	b.d.	b.d.	1.05	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.77	b.d.	b.d.	13.06
CaO	1.06	b.d.	0.37	0.24	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.42	b.d.	b.d.	b.d.	b.d.	1.37	1.73	b.d.	b.d.	b.d.	b.d.	b.d.	0.21
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	0.40	10.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.57	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	0.36	b.d.	0.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.48	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.60	2.60	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	15.64	1.50	20.79	1.11	0.31	b.d.	0.41	1.50	b.d.	15.09	b.d.	0.55	b.d.	98.53	94.30	b.d.	b.d.	0.48	82.89	94.18	96.41	8.77
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	50.06	b.d.	b.d.	b.d.	67.88	b.d.	61.23	b.d.	66.61	b.d.	b.d.	58.42	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.66	b.d.	b.d.	b.d.	b.d.	b.d.	1.24	b.d.	1.33	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	7.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	0.00	0.00	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	99.65	99.77	100.00	100.00	99.70	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.02	97.56	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	11	11	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13
Pos	29	30	31	32	33	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	1	
Mineral	Ti-mag	Zrn	?	Rt	Zrn	Mix (Chl+Ce)	?	bad spot	?	Ti-mag	Mix	Ti-mag	Fe-oxide (+Chl)	bad spot	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Zrn	Ti-mag	Chl/Bt	Thr	
SiO_2	b.d.	31.08	10.08	1.01	31.45	26.45	8.90	38.91	24.77	2.48	45.89	2.41	11.27	45.99	31.45	31.26	31.73	31.50	31.69	32.10	31.46	36.21	20.94	35.41	22.72	
Al_2O_3	b.d.	b.d.	b.d.	b.d.	0.73	10.82	2.21	18.13	9.89	0.95	19.95	0.72	4.43	14.36	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.28	18.40	2.94	
FeO	96.55	0.32	10.30	1.22	1.69	20.31	10.20	21.77	13.73	93.73	17.25	94.17	81.85	17.68	0.28	0.69	0.71	0.67	0.34	0.27	b.d.	0.30	55.66	32.81	7.09	
MnO	0.48	b.d.	b.d.	b.d.	b.d.	2.49	b.d.	1.59	2.39	b.d.	b.d.	b.d.	0.38	1.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.39	b.d.	
MgO	b.d.	b.d.	b.d.	b.d.	0.42	4.74	1.22	9.58	3.78	b.d.	7.37	b.d.	0.86	1.94	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.47	11.52	b.d.	
CaO	b.d.	b.d.	1.34	b.d.	b.d.	0.78	0.88	0.66	0.82	b.d.	0.18	b.d.	0.24	3.50	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.25	1.45	
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.59	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	0.82	b.d.	0.71	2.00	b.d.	0.19	b.d.	b.d.	0.79	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.75	0.57	b.d.	
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	2.29	b.d.	b.d.	1.45	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.57	b.d.	b.d.	
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Nb_2O_5	b.d.	b.d.	26.50	b.d.	b.d.	b.d.	19.84	b.d.	5.77	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.16	b.d.	b.d.	
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
TiO_2	2.96	0.39	32.65	97.56	b.d.	b.d.	46.86	3.84	9.58	1.59	3.11	1.44	0.97	11.25	b.d.	0.31	b.d.	b.d.	b.d.	b.d.	0.52	0.37	1.18	0.65	b.d.	
ZrO_2	b.d.	67.29	b.d.	b.d.	64.76	b.d.	b.d.	b.d.	b.d.	b.d.	2.16	b.d.	b.d.	2.42	67.19	67.74	66.19	66.73	67.04	66.67	66.82	61.83	b.d.	b.d.	17.70	
HfO_2	b.d.	0.91	b.d.	b.d.	0.96	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.09	b.d.	1.38	1.11	0.93	0.97	1.20	1.30	b.d.	b.d.	b.d.	
Sc_2O_3	b.d.	b.d.	b.d.	0.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Y_2O_3	b.d.	b.d.	12.43	b.d.	b.d.	b.d.	7.49	b.d.	6.30	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	10.57	
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	31.31	b.d.	4.49	19.25	1.26	b.d.	1.26	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Nd_2O_3	b.d.	b.d.	1.27	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Er_2O_3	b.d.	b.d.	2.58	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	34.89	
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Ag_2O	b.d.	b.d.	2.84	b.d.	b.d.	b.d.	2.39	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.31	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.69	99.73	100.00	100.00	100.00	100.00	99.20	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	97.36	

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14
Pos	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2	3	4	5	6	7	8	9
Mineral	Chl (+Aes?)	Chl (+Nb)	?	Rt	Ti-mag	Zrn	Zrn	Ti-mag	Ti-mag	Ti-mag	Lm	Mix (Chl+Rt)	Chl/Bt	Mix (Kfs+Zrn)	Nb-aes (+others)	Bad spot	Chl (+Nb)	Chl (+Nb)	Qz (+others)	Ti-mag	Zrn	Zrn	Ti-mag
SiO_2	23.70	31.39	12.24	0.90	b.d.	31.53	34.88	b.d.	b.d.	b.d.	b.d.	14.21	40.55	49.37	13.10	84.52	45.43	42.33	92.57	0.76	32.54	34.09	b.d.
Al_2O_3	13.47	19.45	b.d.	b.d.	b.d.	b.d.	11.85	b.d.	b.d.	b.d.	b.d.	11.42	19.65	11.51	b.d.	b.d.	20.61	19.07	3.71	b.d.	b.d.	b.d.	b.d.
FeO	25.74	27.85	8.52	0.78	87.48	0.29	11.20	92.84	94.59	93.05	100.00	27.40	22.93	1.74	8.82	2.64	14.19	18.30	2.28	88.71	b.d.	3.63	90.53
MnO	0.41	b.d.	b.d.	b.d.	1.07	b.d.	b.d.	b.d.	b.d.	1.32	b.d.	2.67	b.d.	b.d.	0.77	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	8.43	11.72	b.d.	b.d.	b.d.	b.d.	6.87	b.d.	b.d.	b.d.	b.d.	7.08	7.40	0.96	b.d.	b.d.	2.55	9.43	0.37	b.d.	b.d.	b.d.	b.d.
CaO	0.34	b.d.	1.10	0.25	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.45	b.d.	2.27	0.38	0.94	0.73	b.d.	b.d.	b.d.	0.78	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.83	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.88	b.d.	b.d.	b.d.	b.d.	b.d.	0.52	8.92	b.d.	b.d.	0.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	7.22	4.20	17.97	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	16.73	5.86	3.92	2.53	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	10.33	4.55	37.90	98.08	11.45	b.d.	b.d.	7.16	5.41	5.64	b.d.	37.22	8.20	b.d.	31.34	5.80	6.58	4.37	1.07	10.53	b.d.	b.d.	9.47
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	67.05	33.20	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	26.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.52	58.30	b.d.
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.13	1.13	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.94	1.58	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	5.42	b.d.	15.91	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	14.77	b.d.	5.49	3.24	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	7.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	1.45	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	2.57	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.61	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.95	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	1.54	0.83	2.34	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.80	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	96.59	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.71	100.00	99.72	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	15	15
Pos	10	11	12	13	14	15	16	17	18	19	1	2	3	4	5	6	7	8	9	10	11
Mineral	Zrn	mix	Ti-mag	Zrn-Thr +others	Mix(Ti-mag+Chl)	Mix(Nb-aes+Chl)	Mix(Nb-aes+Chl)	Ti-mag	Ti-mag	Mix(Ce +others)	Mix (Bsn +Chl)?	Thr-Xtm	Mix (Bsn+Chl)?	Mix(Bsn +Chl)?	Thr-Xtm	Mix (Bsn +Chl)?	Ilm	Chl/Bt	Chl/Bt	Thr-xtm (+others)	Ilm
SiO_2	31.70	10.58	0.72	31.01	24.38	26.23	30.17	0.63	b.d.	4.74	21.65	18.43	16.65	38.49	25.30	16.34	0.72	58.12	60.32	38.87	0.72
Al_2O_3	b.d.	5.08	b.d.	8.41	12.93	11.22	9.25	b.d.	b.d.	1.97	8.61	b.d.	7.03	13.37	3.83	6.82	b.d.	20.01	22.20	13.86	b.d.
FeO	0.46	70.21	89.22	20.30	55.95	13.45	13.77	89.96	88.74	18.93	19.05	5.79	5.52	31.85	6.02	21.34	34.64	9.43	8.34	6.28	34.09
MnO	b.d.	1.00	1.75	b.d.	b.d.	b.d.	b.d.	1.56	0.65	1.05	b.d.	b.d.	b.d.	b.d.	0.60	b.d.	2.13	b.d.	b.d.	b.d.	2.19
MgO	b.d.	b.d.	b.d.	4.07	4.76	2.21	4.15	b.d.	b.d.	b.d.	1.60	b.d.	1.06	4.78	b.d.	1.68	b.d.	4.15	3.53	1.70	b.d.
CaO	b.d.	3.71	b.d.	0.57	0.36	1.11	1.02	b.d.	b.d.	0.47	2.39	0.62	3.48	1.36	0.80	2.50	b.d.	1.23	1.37	2.53	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.60	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	0.20	b.d.	0.34	b.d.	b.d.	b.d.	0.62	b.d.	0.45	1.31	b.d.	0.74	b.d.	2.11	2.40	1.00	b.d.
P_2O_5	b.d.	4.96	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.32	b.d.	4.62	b.d.	b.d.	5.75	b.d.	b.d.	b.d.	b.d.	4.56	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.91	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	11.72	10.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	4.47	8.31	b.d.	1.42	18.74	17.06	7.86	10.61	49.45	b.d.	b.d.	b.d.	1.82	b.d.	b.d.	62.51	b.d.	1.61	b.d.	63.01
ZrO_2	66.83	b.d.	b.d.	14.70	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HfO_2	1.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	8.28	b.d.	12.02	9.61	b.d.	b.d.	b.d.	3.92	12.13	6.22	b.d.	14.48	5.18	b.d.	b.d.	b.d.	8.54	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.14	b.d.	13.41	b.d.	b.d.	9.15	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	22.07	16.45	b.d.	23.16	2.91	b.d.	16.58	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.18	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	2.03	1.51	b.d.	b.d.	b.d.	6.35	b.d.	8.70	1.07	b.d.	6.49	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	8.94	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	52.39	3.21	b.d.	39.50	3.03	b.d.	b.d.	b.d.	19.13	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	0.00	0.00	0.00	0.00	b.d.	b.d.	b.d.	0.00	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	0.00	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	1.26	2.24	b.d.	b.d.	b.d.	1.10	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	4.34	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	96.28	100.00	100.00	100.00	100.00	100.00	100.00	92.06	94.87	88.89	96.96	96.28	89.85	100.00	100.00	99.78	96.47	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	15	15	15	15	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16
Pos	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9
Mineral	Thr-Xtm	Mag (+others)	Chl/Bt	Rt	Ilm	Zrn	Thr-Xtm	Alteration ?	Thr-xtm	Ilm	Thr-Xtm (+Chl/Bt)	Ilm	Ilm (+others)	Cer (+others)	Ilm	Zrn	Ti-mag	Ab	Cer (+others)	Thr-Xtm	Fe-oxide +others)	Zrn
SiO_2	25.68	12.46	61.46	1.01	0.58	31.72	24.93	49.49	15.35	1.00	41.76	2.96	5.53	9.31	1.49	33.02	1.43	65.65	8.11	17.08	23.86	31.22
Al_2O_3	6.12	4.56	23.86	b.d.	b.d.	b.d.	b.d.	19.62	b.d.	b.d.	13.16	0.77	1.91	2.66	0.56	1.37	0.73	18.01	2.00	b.d.	10.89	b.d.
FeO	9.94	67.03	6.68	1.17	33.21	0.44	8.56	6.74	5.28	35.95	8.46	44.58	31.14	2.65	43.21	2.98	91.79	2.06	1.87	15.87	57.51	0.27
MnO	b.d.	b.d.	b.d.	b.d.	2.37	b.d.	b.d.	b.d.	b.d.	1.80	b.d.	1.62	0.61	b.d.	b.d.	b.d.	0.52	b.d.	1.56	b.d.	b.d.	b.d.
MgO	1.34	b.d.	3.07	b.d.	b.d.	b.d.	b.d.	2.62	b.d.	b.d.	2.99	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	6.31	b.d.
CaO	0.69	1.02	1.67	b.d.	b.d.	b.d.	0.63	1.92	1.56	b.d.	0.95	b.d.	b.d.	0.55	b.d.	b.d.	0.59	b.d.	0.75	1.03	0.39	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.64	b.d.	4.24	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	1.98	b.d.	b.d.	b.d.	b.d.	1.72	b.d.	b.d.	1.47	b.d.	1.02	b.d.	b.d.	b.d.	b.d.	10.03	b.d.	b.d.	0.51	b.d.
P_2O_5	3.97	b.d.	b.d.	b.d.	b.d.	b.d.	4.51	b.d.	4.81	b.d.	3.08	b.d.	b.d.	2.48	b.d.	b.d.	0.77	b.d.	1.95	6.39	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.16	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	2.49	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	b.d.	2.03	b.d.	95.33	63.84	b.d.	b.d.	b.d.	b.d.	61.25	b.d.	50.07	59.79	b.d.	54.74	b.d.	4.17	b.d.	b.d.	0.56	0.54	b.d.
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	66.84	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	60.82	b.d.	b.d.	b.d.	b.d.	b.d.	67.07
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.17	b.d.	b.d.	b.d.	b.d.	b.d.	1.44
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	9.93	b.d.	b.d.	b.d.	b.d.	b.d.	13.39	b.d.	12.30	b.d.	8.15	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	13.90	b.d.	b.d.
La_2O_3	b.d.	3.55	b.d.	b.d.	b.d.	b.d.	b.d.	3.71	4.28	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	5.42	0.70	b.d.	b.d.	b.d.	b.d.	6.11	6.90	b.d.	b.d.	b.d.	b.d.	82.36	b.d.	b.d.	b.d.	b.d.	81.62	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	2.26	0.58	b.d.	b.d.	b.d.	b.d.	2.40	3.16	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	40.04	b.d.	b.d.	b.d.	b.d.	b.d.	44.80	b.d.	39.10	b.d.	17.37	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	44.01	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	0.00	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ag_2O	b.d.	1.12	b.d.	b.d.	b.d.	b.d.	b.d.	0.85	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.15	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	97.71	99.45	100.00	100.00	100.00	100.00	96.81	95.17	92.73	100.00	97.40	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	16	16	16	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	18	18	18
Pos	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3
Mineral	Lm?	Gt	bad spot	Mix(Ce +others)	Qz	Zrn	Ti-Mag	Gt	Ti-mag	Ti-mag(+Ap)	Xtm(+Qz)	Zrn	Gt	Mix (Zrn+Qz)	Zrn	Zrn	Mix (Kfs+Cer)	Eux (+Qz)	Rt (+Sam?)	Nb-aes?	Rt (+others)	Zrn
SiO_2	7.79	4.79	16.71	41.46	100.00	31.71	b.d.	b.d.	b.d.	0.67	23.18	31.55	b.d.	66.59	28.81	31.48	48.66	13.74	1.10	0.03	14.07	31.68
Al_2O_3	2.57	b.d.	b.d.	12.03	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	14.98	b.d.	b.d.	b.d.	7.73	b.d.
FeO	89.03	95.21	6.14	2.72	b.d.	0.30	99.01	100.00	99.59	95.35	0.37	b.d.	100.00	0.26	b.d.	b.d.	4.34	b.d.	0.66	0.02	3.74	b.d.
MnO	b.d.	b.d.	b.d.	0.98	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.71	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	0.21	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CaO	b.d.	b.d.	0.96	0.36	b.d.	b.d.	b.d.	b.d.	b.d.	0.82	b.d.	b.d.	b.d.	b.d.	b.d.	0.39	b.d.	0.63	b.d.	0.01	0.28	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	7.96	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	8.54	b.d.	b.d.	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	5.01	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.99	30.68	b.d.	b.d.	b.d.	b.d.	b.d.	0.79	b.d.	b.d.	b.d.	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	1.89	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	44.14	10.90	0.22	5.87	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.87	b.d.	b.d.	b.d.	b.d.
TiO_2	0.61	b.d.	b.d.	23.12	b.d.	b.d.	0.99	b.d.	0.41	2.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.18	78.79	0.11	63.74	0.51
ZrO_2	b.d.	b.d.	b.d.	b.d.	b.d.	66.90	b.d.	b.d.	b.d.	b.d.	b.d.	67.21	b.d.	32.19	60.26	66.75	b.d.	b.d.	b.d.	b.d.	b.d.	66.44
HfO_2	b.d.	b.d.	b.d.	b.d.	b.d.	1.08	b.d.	b.d.	b.d.	b.d.	b.d.	1.25	b.d.	0.97	1.11	1.38	b.d.	b.d.	b.d.	b.d.	b.d.	1.37
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	10.48	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	38.46	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	25.22	8.09	0.17	4.04	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	11.17	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	21.98	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.66	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.92	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	3.80	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.71	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.30	b.d.	0.02	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.68	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	2.86	b.d.	0.02	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	54.88	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	0.00	0.00	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	0.00	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.61	b.d.	0.01	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	99.39	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.46	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	96.07	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.46	100.00

Table 2-4A: EDS analyses of hydrothermal minerals from sample 9840.

Sample	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840	9840
Site	18	18	18	18	18	18	18	18	18	18	18	18	18
Pos	4	5	6	7	8	9	10	11	12	13	14	15	16
Mineral	**Ti-mag**	**Zrn**	**Ti-mag**	**Chl (+Rt)**	**Ti-mag**	**Ti-mag**	**Ti-mag**	**Ti-mag**	**Rt**	**Ab**	**Mix (Rt+Ap)**	**Rt (+Chl)**	**Zrn**
SiO_2	2.27	31.63	b.d.	34.19	b.d.	b.d.	b.d.	b.d.	b.d.	36.42	0.96	10.35	31.44
Al_2O_3	b.d.	b.d.	b.d.	18.24	b.d.	b.d.	b.d.	b.d.	b.d.	13.51	b.d.	5.42	b.d.
FeO	96.85	b.d.	97.91	24.18	95.01	95.49	97.81	98.72	3.34	12.59	0.70	8.92	0.63
MnO	b.d.	b.d.	b.d.	b.d.	b.d.	0.39	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
MgO	b.d.	b.d.	b.d.	7.67	b.d.	b.d.	b.d.	b.d.	b.d.	1.88	b.d.	2.64	b.d.
CaO	b.d.	b.d.	b.d.	0.30	b.d.	b.d.	b.d.	b.d.	0.28	2.08	16.20	b.d.	b.d.
SrO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
BaO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Na_2O	b.d.	b.d.	b.d.	0.45	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
K_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.33	b.d.	b.d.	b.d.
P_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.72	17.02	b.d.	b.d.
SO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
V_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nb_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ta_2O_5	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
TiO_2	0.88	b.d.	2.09	14.97	4.99	4.12	2.19	1.28	96.38	31.92	60.68	72.67	b.d.
ZrO_2	b.d.	66.65	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	66.78
HfO_2	b.d.	1.72	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	1.16
Sc_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Y_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
La_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ce_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Pr_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Nd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Sm_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Gd_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Dy_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Ho_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Er_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Yb_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Lu_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
ThO_2	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
UO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
F	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.
Cl	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	0.00	b.d.	b.d.	b.d.
Ag_2O	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
As_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
B_2O_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CoO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
CuO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
HgO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
NiO	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
WO_3	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.	b.d.
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.47	95.56	100.00	100.00