# Emplacement Mechanisms and Magmatic Differentiation Induced by Magma Flow in Sill Intrusions in Sedimentary Basins

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Oslo, June 2008

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# Contents

# 1. General Introduction

Large Igneous Provinces (LIPs) are continental scale eruptions of mafic magma that occur intermittently on the Earth. Despite the discussion on the LIP definition (Sheth, 2007) numbers of common properties of the LIPs are envisaged: rapid eruption (< 5 Ma), high rate (0.1 - > 1 $km^3$/yr) and large voluminous (~$10^6$ $km^3$; Bryan and Ernst, 2008). The occurrence of picrite magmas amongst the volcanics (e.g., Sweeney et al., 1991) indicates high temperature anomalies. Most of the on-land LIPs named Continental Flood basalts (CFBs) are on or near a boundary involving a thick Achaean lithosphere (Anderson, 1995). Finally, their geochemical signatures often show negative Nb-Ta anomalies and strongly positive Pb anomalies which indicate a significant interaction of the melt with the lithospheric mantle (or crust) containing a significant arc or backarc component (Puffer, 2001). These studies give insight into the generation of melts and are important to understanding their geodynamic significance.

The volcanic basins associated with LIPs commonly present sill complexes dominated by saucer-shaped sills (Fig. 1). They have been found in the Vøring and Møre basins offshore Norway, in the Karoo Basin in South Africa, in the Parana Basin in Brazil and on the NW Australian shelf (Symonds et al., 1998; Chevallier and Woodford, 1999; Svensen and Planke, 2003). The saucers and dykes forming sill complexes occur through the whole stratigraphy of these volcanic basins. Although saucer-shaped sills are common, little is known about the processes related to their emplacement mechanisms: 1) what is the relationship between saucer-shaped sills and their feeders? Are saucer-shaped sills feeding each other or are they fed by vertical dykes or by narrow channels? 2) Is there a specific mechanism of magmatic differentiation associated with their shallow emplacement? These are the topics addressed in the present thesis.

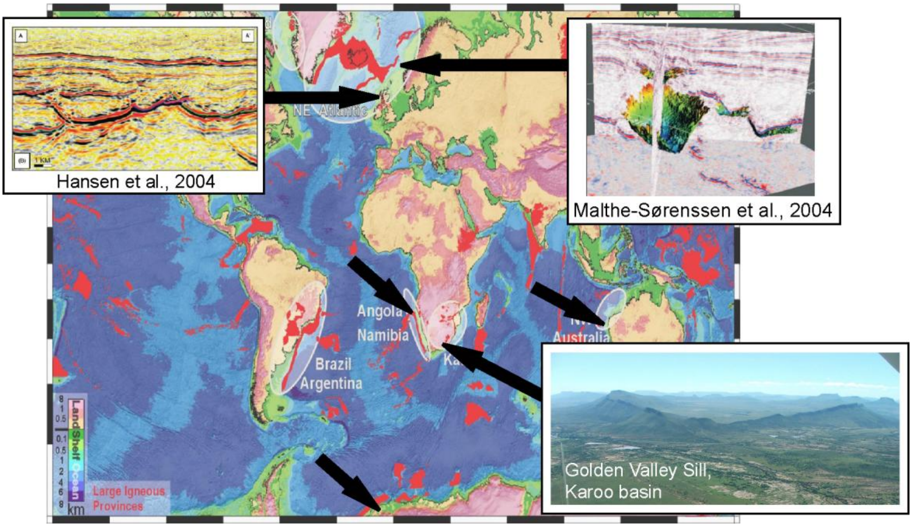


Figure 1: Worldwide distribution of saucer-shaped sills in sedimentary basins. The black arrows indicate occurrences of saucer-shaped sills and sill complexes. These sill complexes represent the intrusive or plumbing system associated with Large Igneous Provinces marked in red (Coffin and Eldholm, 1994; see LIPs definitions therein). Examples inserted from the Vøring offshore mid-Norway (Malthe-Sørenssen et al., 2004), and British island inferred from seismic images (Hansen et al., 2004a) and from the Karoo Basin, South Africa (Galerne et al., 2008).

The worldwide occurrence of saucer-shaped sills in volcanic basins suggests that they represent a fundamental way for the magma to intrude in the shallow crust. Yet the mechanisms governing their emplacement are still not clear. This comes partly from the fact that the relationships between sills and their feeders are rarely exposed (Hyndman and Alt, 1987) and are difficult to image on the basis of seismic data (Hansen et al., 2004b; Thomson and Hutton, 2004). Also, the feeding relationships between various structures in sill complexes are poorly constrained. However, the relationship between sills and their feeders are essential factors in existing models of sill emplacement. For example, some models propose that saucer-shaped sills intrude along the level of neutral buoyancy of the magma (e.g., Bradley, 1965; Francis, 1982; Chevallier and Woodford, 1999). In such models, saucer-shaped sills are fed laterally and the magma is expected to flow downward and from one side of the sill to the other. Other models propose that saucer-shaped sills are fed from a central feeder, and the magma flows radially outward and upward (Pollard and Johnson, 1973; Hansen et al., 2004b; Malthe-Sørenssen et al., 2004; Thomson and Hutton, 2004; Hansen and Cartwright, 2006; Galerne et al., 2008; Polteau et al., 2008; Galland et al., 2009; Polteau et al., submitted).

Additionally, the magmatic differentiation processes related to sills and saucer-shaped sills are unclear. Most recurrent geochemical profiles observed in these relatively thin sills (~100 m thick) are I-, D- and S-shaped profiles (Fig. 2; e.g., Gibb and Henderson, 1992; Latypov, 2003a; Latypov, 2003b). The nomenclature is based on the variations in the whole-rock *Mg#* (cation ratio 100 * Mg/[Mg + $Fe^{total}$]) from floor to roof of the sills. This variable is used as a differentiation index because magnesium is more easily partitioned into early-fractionated minerals such as olivine and pyroxene than iron. I-shapes indicate uniform composition throughout the sill height and are usually explained by a uniform closed crystallizing system (Mangan and Marsh, 1992; Marsh, 1996). D-shapes are characterized by the least differentiated composition at the sill centre (i.e., highest Mg#) and the most evolved composition at the sill margins (i.e, lowest Mg#). Finally, S-shapes are hybrid shapes, with D-shapes in the lower part of the sill and C-shapes in the upper part (Gray and Crain, 1969; Fujii, 1974; Frenkel et al., 1988; Frenkel et al., 1989; Marsh, 1989). All intermediate types from these end-member types of shapes may be found.

I-shaped compositional profiles can be readily explained by uniform closed system crystallization or quenching (Mangan and Marsh, 1992; Marsh, 1996). In contrast, there is a wide range of processes that can explain the formation of D- and S-shaped profiles. Examples range from multiple or prolonged continuous magma influxes (S-shaped: Gorring and Naslund, 1995), convective flux of refractory component within the crystal-liquid mush of the boundary layer during *in-situ* differentiation or compositional convection (S-shaped: Tait and Jaupart, 1996), and settling (S-shaped: Frenkel et al., 1989). Soret fractionation (Latypov, 2003a; Latypov, 2003b; Latypov et al., 2007) was recently proposed to explain the origin of the often observed marginal reversals in layered intrusions. This model was combined with the *in-situ* crystallization in thermal boundary layers of Tait and Jaupart (1996). Gravity-induced settling of crystals present in the magma at the time of the emplacement (Gray and Crain, 1969; Fujii, 1974; Marsh, 1989) and/or newly *in situ* grown minerals (Frenkel et al., 1988; Frenkel et al., 1989). An additional process is slow interdendritic flow, driven by shrinkage, geometry, solid deformation or gravity, summarizing the current understanding of macrosegregation (i.e., positive and negative) that causes differentiation within the liquid-solid zone in casting and ingots (Flemings, 2000).

A major problem with the D- and S-shaped profiles is that they fail to be explained by early stages of crystallization and mineral segregation through mechanisms such as convection and/or gravitational separation, resulting in fractional crystallization. Hence, D-shaped profiles are inverse to what is expected of a cooling magma. Large layered mafic intrusions have typically mafic margins and felsic cores forming C-shaped geochemical profiles (e.g., Skaergaard intrusion, Wager and Brown, 1968; Naslund, 1984). Such C-shaped profiles can be called "normal zoning," which is interpreted as the result of in situ processes of fractional crystallization involving convective fractionation (Rice, 1981). The lack of C-shaped profiles in relatively thin sills is significant, suggesting that processes occurring in large magmatic bodies are different from those in thin, i.e., 30 to 140 m thick, sills.

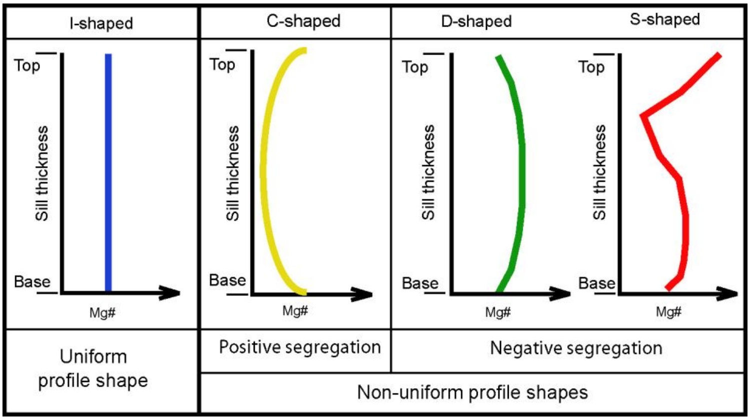


Figure 2: Characteristic shapes of compositional profiles defined on the basis of Mg# (differentiation index, Mg# = molar 100 x Mg/[Mg + $Fe_{total}$]) variations along vertical sections across igneous intrusives. The I-shaped profile is a uniform profile showing no chemical variation across the sill thickness. Non-uniform compositional profiles pattern in relatively thin sheet intrusions (100 m thick, e.g., Golden Valley Sill Complex) are characterized by D-and S-shaped compositional profiles also qualified as reversed or inverse segregation. C-shaped compositional profiles are characteristics of large magmatic plutons also qualified as positive (i.e., expected) segregation.

In order to tackle both emplacement mechanisms and magmatic differentiation in ~100 meter thick sills we carried out detailed field and geochemical investigations on a well exposed sill complex, the Golden Valley Sill Complex in the Karoo Basin, South Africa. The primary aim of my study was to characterize the geochemical architecture of a well exposed sill complex, in order to improve our understanding of sill complex emplacement. The exceptionally good exposure of the Golden Valley Sill Complex (Karoo Basin, South Africa) allowed us to produce a detailed geological map of the major sills and dykes, and to get an extensive and fairly uniform sample coverage. The chemical similarities and differences between the different units (sills and dykes) in the complex were compared by statistical analysis. Our results allowed us to construct a 3-D model of the geochemical architecture of the Golden Valley Sill Complex and to draw conclusions with respect to the emplacement processes. This work is the object of the first paper listed in the thesis entitle "*Emplacement mechanisms of sill complexes: Information from the geochemical architecture of the Golden Valley Sill Complex, South Africa*" which is introduced throughout Chapters 2 and 3. Additional constraints and results from the first paper are discussed in a combined investigation with experimental modelling presented in *Paper II* entitle "*The shapes of the feeders control the 3D shapes of sills*". Finally, the differentiation processes in ~100 meter thick sills is the object of *Paper III* which is introduced in chapter 4 and is entitle "*Magmatic Differentiation Processes in Saucer-Shaped Sills: Evidence from the Golden Valley Sill in the Karoo Basin, South Africa*". In this paper we concentrate on compositional profiles from a single saucer-shaped sill: the Golden Valley Sill in the Golden Valley Sill Complex.

# 2. Geological setting

## 2.1. The Karoo Basin

The Karoo Basin covers 500,000 km$^2$ of southern Africa (Fig. 3a). It is the main sedimentary retroarc foreland basin to the Gondwanide (Cape) fold belt (Catuneanu et al., 1998; Catuneanu et al., 2005). The orogenic event responsible for the Cape Fold Belt was the Late Paleozoic-Early Mesozoic subduction of the paleo-Pacific plate underneath the Gondwana plate (Fig. 3b; e.g., Lock, 1980; Riley et al., 2006). In a regional context, the Cape Fold Belt was part of a more extensive Pan Gondwanian Mobile Belt generated through compression, collision and terrain accretion along the southern margin of Gondwana (Catuneanu et al., 1998). The associated foreland basin subsequently fragmented as a result of orogenic unloading and the Gondwana break-up is preserved today in South America (Parana Basin), southern Africa (Karoo Basin), Antarctica (Beacon Basin) and Australia (Bowen Basin). The flexural basin of Karoo formed between 246 and 180 Ma (Catuneanu et al., 1998). The continental sediments are locally accumulated to over a 5000 meter thickness prior to the volcanic event.

The Karoo Basin hosts a vast intrusive network of dykes and sills, which are now exposed by uplift and erosion. The whole magmatic episode has been dated to the period from 185 to 174 Ma (Jourdan et al., 2007). The authors concluded that the Karoo magmatism "represents an atypical province" with a relatively long-lasting and comparatively low-emission rate of the overall magmatic activity as compared to other LIPs. Finally, the re-evaluation of major phanerozoic CFBs shows that for most of them, including the Karoo, the onset of oceanization shortly follows or is coeval with the latest CFB-related activity, indicating a closer relationship than previously thought (Jourdan et al., 2007).

Two main tectonic regimes prevailed during the magmatic emplacement of sills in the Karoo Basin. The earliest activity is the main Karoo magmatism pulse (185-177 Ma, Jourdan et al., 2007) and consists of the emplacement of basaltic intrusives and extrusives rocks (Marsh and Eales, 1984). This episode was essentially concentrated in the main Karoo basin. The stress regime during this episode appears to have been neutral. This interpretation was motivated by the presence of large volumes of sill and sheets that appeared to be saucer-shaped sills that commonly have circular geometry. The basaltic rocks in the main Karoo Basin are strikingly uniform in composition and contrast with the further described bimodal suite of the Lebombo (e.g., Eales and Marsh, 1984).

The second tectonic regime is an episode of lithospheric thinning/rifting (Sweeney et al., 1994) that overlaps with the end of earliest activity (~179 Ma, Jourdan et al., 2007). It occurred along pre-existing lithospheric weakness and controlled the formations of radiating dyke swarms: the Lebombo dyke swarm, the Save Limpopo dyke swarm and the Okavango dyke swarm (Jourdan et al., 2006). This tectonic regime is associated with emplacement of diverse magmas, dominated by tholeiitic basalts and picrites of different compositions (Sweeney et al., 1991), but including minor nephelinites as well as large volumes of high-temperature anhydrous rhyolites and rhyodacites, in a bimodal suite. Along the Lebombo and Save monoclines the volcanic sequence dips eastward below younger sedimentary sequences underlying the coastal plain of Mozambique.

### 2.2. The volcanic basin of the Karoo

The Karoo igneous province in the main Karoo Basin is expressed through the emplacement of intrusive and extrusive rocks (Fig. 3a). The great network of sill complexes in the Karoo Basin appears to be dominantly constituted of sill intrusions over dykes (Fig. 4) that crop out through the entire Karoo sedimentary sequence (Figs. 3a-4a-b; e.g. Chevallier and Woodford, 1999; Svensen and Planke, 2003). Many sills form saucer-shaped sills (Fig. 4c). Some of the largest intrusive bodies which are more that 50 kilometres in diameter but are relatively thin (~50 meters) are emplaced in the lower part of the sedimentary sequence (Fig. 4a; Svensen and Planke, 2003). The most frequent exposures of saucer-shaped sills are observed in Beaufort Group where they form large sill complexes (e.g., Golden Valley Sill Complex). Although saucers in the shallow parts of the sedimentary sequence are smaller in size (i.e., 20 km in diameter for the Golden Valley Sill) than in deeper parts, they appear to be thicker (≥100 meters thick; Svensen and Planke, 2003). The saucer-shape disappears in the uppermost Clarens Formation underlying the Drakensberg Group mainly represented by the Lesotho remnant (Fig. 3a-4a). The dykes are relatively thin compared to the sills (2 to 15 m wide). The smallest dykes are a tenth of a meter long, whereas a few of the widest dykes (15 meters) extend over 100 kilometres (Fig. 4d).

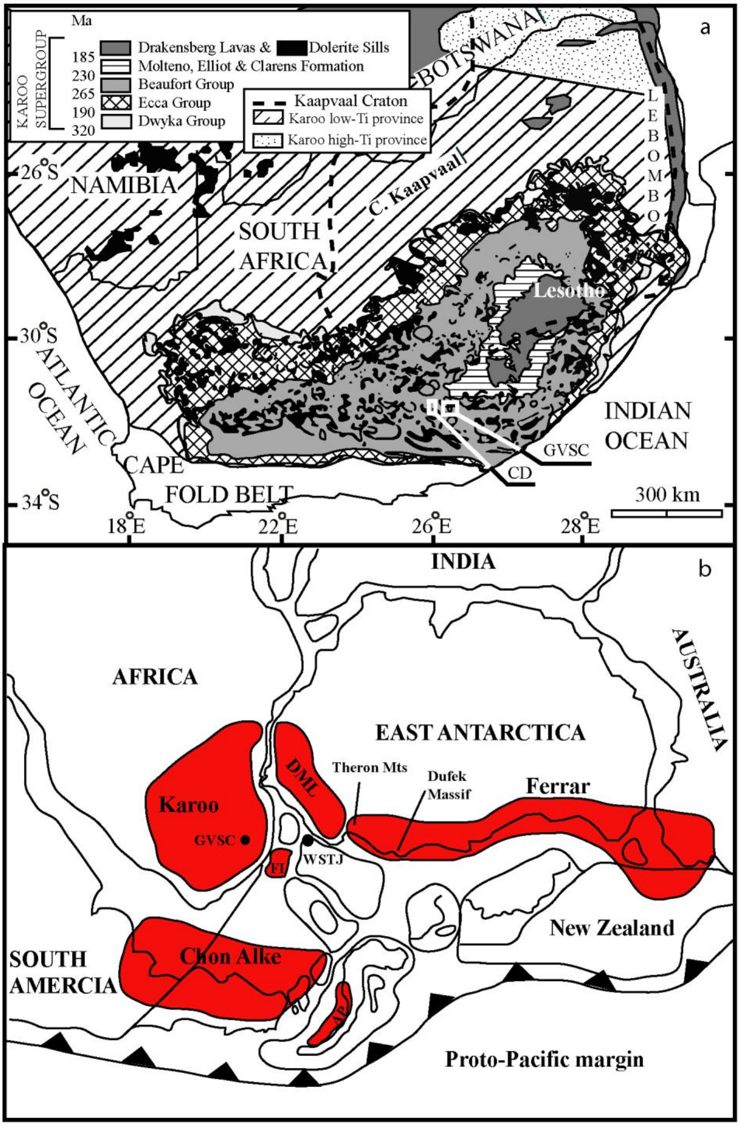


Figure 3: a. Map of the Jurassic Karoo flood basalt province in southern Africa showing the distribution of the dolerite sills (black), basaltic lavas (dark grey), and Karoo sediments (shades of grey) in the main Karoo Basin (modified after Ellam and Cox, 1991; Eglington and Armstrong, 2004; Jourdan et al., 2004). The flood basalts correspond to the uppermost stratigraphic sequences of the Karoo supergroup. The study areas, the Golden Valley Sill Complex (GVSC) and the Cradock Dyke (CD), south-west of Lesotho are indicated by white rectangles. The contour of the Kaapvaal Craton is marked by a thick dashed line. b. Pre-break-up Gondwana reconstruction (~180 Ma after, Riley et al., 2006) showing key igneous provinces of Karoo, Ferrar, and Chon Aike. FI, Falkland Islands; DML, Dronning Maud Land; WSTJ, Weddell Sea triple junction (Elliot and Fleming, 2004); AP, Antarctic Peninsula.

The Drakensberg Group represents the effusive counterpart of the Karoo intrusives. It is largely preserved in the Lesotho remnant (e.g., Marsh and Eales, 1984). Lavas of the Lesotho remnant cover 25,000 $km^2$ and are flows of mostly about ~100 meters thick (Cox and Hornung, 1966), forming a thick pile of >1.5 km flood basalts. Recent dating on the Golden Valley Sill Complex indicates a similar age, i.e., 182.7 ± 0.3 Ma (concordia age, Svensen et al., 2007) to the lavas of the Lesotho (e.g. Duncan et al., 1997). This result strongly suggests that the intrusives and the extrusives were emplaced simultaneously.

This main Karoo dolerites together with most of the lavas from the Drakensberg Group have been the focus of many studies, resulting in geochemical and petrological characterization of the Karoo igneous suite (e.g., Eales et al., 1984; Marsh and Eales, 1984; Marsh et al., 1997; Marsh and Mndaweni, 1998). Particularly in the special volume on the "Petrogenesis of the Volcanic Rock of the Karoo Province" (Erlank, 1984), it has been suggested, and later supported, that the mantle source rocks for the Central area must be chemically heterogeneous.

A typical chemical division into High-Ti and Low-Ti characterize the Karoo (Erlank, 1984). The High-Ti basalts dominantly occur north of line cutting NW across southern Africa from about Latitude 25°. The occurrence of both types in the Karoo igneous suite has lead several authors to consider a coeval occurrence of both types rising from two distinct sources (Sweeny et al., 1994). The Low-Ti, or "normal" basalts are tholeiitic and have low K, Ti, P, Ba Sr and Zr. The High-Ti type is referred to as "enriched" and has a relatively high concentration of Ti, K, P, and incompatible trace elements (Rb, Ba, Th, Nb, U, La, Ce, Zr, etc.). These differences could reflect different source materials, conditions of melting, or, alternatively, contamination by crustal components (Eales et al., 1984; Hawkesworth et al., 1984; Sweeney and Watkeys, 1990; Ellam and Cox, 1991; Sweeney et al., 1994; Jourdan, 2005; Riley et al., 2006).

Although both Low-Ti and High-Ti types are homogeneous, compositional differences exist. These allowed Marsh et al. (1997) to establish a comprehensive stratigraphic framework for the Drakensberg Group lavas based on differences in ratios between immobile highly-field-strength incompatible elements. Following Marsh et al. (1997), the Drakensberg Group has been geochemically subdivided into the older Barkley East Formation and the younger Lesotho Formation, each of which is subdivided into a series of units.

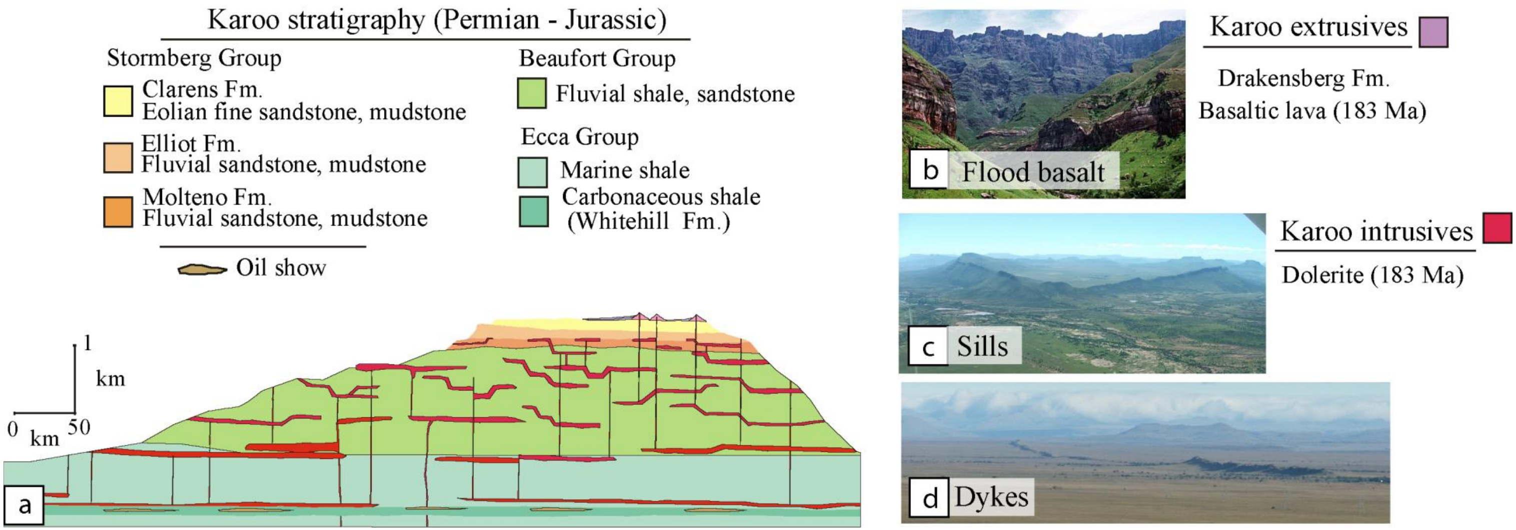


Figure 4: a. Schematic cross-section of the Karoo Basin showing the vertical and lateral distribution of the Karoo intrusives through the Karoo stratigraphy (Svensen and Planke, 2003). b. Photograph of the Karoo extrusives showing flood basalts sequences. c. Arial photograph of the Golden Valley Sill showing typical saucer-shaped geometry. d. Photograph of ~100 kilometre long dykes.

Despite the voluminous literature currently available for the Karoo flood basalt lavas, surprisingly few geochemical studies have been done on the subvolcanic counterparts (Richardson, 1979; Marsh and Mndaweni, 1998). For instance, almost none of the existing literature presents the study of group of sills closely related into complex. This stands as a fundamental lack of knowledge as sill complexes such as dyke have the potential to be connected to the above flood basalts.

### 2.3. Sill Complex and saucer-shaped sills: example of the Golden Valley Sill Complex

Dykes are tabular, often vertical or steeply dipping sheets that cut across the structure (e.g., bedding) of the invaded rocks. Sills are tabular bodies concordant with the major structure (e.g., bedding or foliation) of the invaded rocks. A saucer-shaped sill consists of a near-horizontal tabular sill which continues outwards into transgressive sheets (average angle <45º with respect to the sedimentary layers). These cut through sedimentary layers, and finally ended in a flat outer sill following the original bedding of the invaded rocks. A group of sills and dykes which are closely associated in the field are termed a "sill complex." Figure 5 presents a geological map of the main intrusives constituting the Golden Valley Sill Complex in South Africa and has all the characteristics of a sill complex.

The morphology of the Karoo sills varies with depth within the sedimentary sequence (Chevallier and Woodford, 1999). Large, flat sills are most common within the Dwyka and the Ecca groups in the lower part of the sedimentary sequence (Fig. 4a). Saucer-shaped sills (Fig. 5b) are most common and are thickest within the younger Beaufort Group (240-260 Ma, Svensen and Planke, 2003; Fig. 4a).

The Golden Valley Sill Complex, Karoo Basin, South Africa, consists of four major ~100 m thick elliptic saucer-shaped sills located SW of the Lesotho Plateau (Fig. 5a; Galerne et al., 2008; Aarnes et al., 2008; Galerne et al., in review). The saucers have been emplaced at two stratigraphic levels: the Morning Sun (MS) and Harmony Sill (HS) at the deeper level, and the Golden Valley Sill (GVS) and Glen Sill (GS) at a higher level (Galerne et al., 2008). The lower level saucers are larger than the higher level saucers (Fig. 5a). In addition, each sill at the higher level is located above a sill at the lower level, so that they appear to be stacked on top of each other (Fig. 5a). The saucers at the lower level have parallel long axes that trend NW-SE, whereas at the upper level the long axes trend roughly N-S. A minor saucer-shaped sill (MV Sill) is a direct continuation of the northwestern limb of GVS (Fig. 5a; Galerne et al.,

2008) and thus belongs to the upper level. In contrast to the major sills, the MV Sill is not elliptical. The Golden Valley Sill Complex area also includes the major Golden Valley Dyke (GVD) and four minor dykes (d1-d4 in Fig. 5a). The GVD is up to 15 m thick and 17 km long, d2 is ~5 m thick, and d1, d3, and d4 are only ~1 m thick. The dykes exhibit three main trends: NW-SE for GVD and d1, N-S for d4, and NE-SW for d2 and d3.

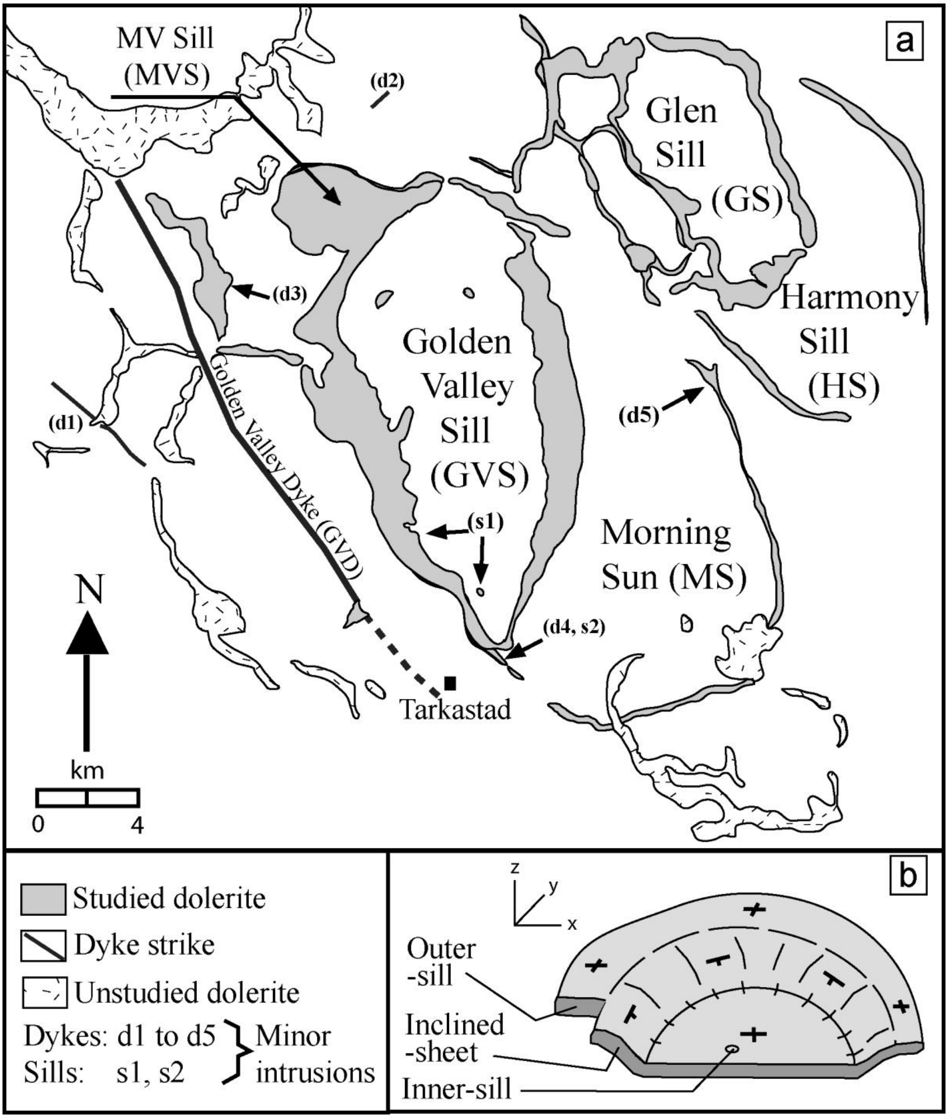


Figure 5: a. Simplified geological map of the Golden Valley Sill Complex (after Galerne et al., 2008). Five major saucer-shaped sills are included in this study (shown in grey): the Morning Sun (MS) and the Harmony Saucer (HS) at a lower stratigraphic level; the Golden Valley Sill (GVS) and the Glen Sill (GS), together with the small MV Sill (MVS) at a higher stratigraphic level. Also shown is a dyke,

the Golden Valley Dyke (GVD) within the Golden Valley Sill Complex area. The localities referred to as (s1, s2) and (d1 to d5) are minor sills and dykes, respectively. b. Morpho-structural diagram of typical saucer-shaped dolerite sill geometry, showing the inner sill, the inclined-sheet, and the outer sill.

In the Golden Valley Sill Complex we did not observe direct physical connections between the sills and the dykes. However, we noticed that the strikes of some of the dykes are parallel to the trends of the long axes of the large saucers (Galerne et al. in review): the GVD and d1 are parallel to the long axes of the sills at the deeper level (MS and HS), and d4 is parallel to the long axes of the higher sills (GVS and GS). Furthermore, the d4 dyke is exposed directly below the southern tip of the GVS (Galerne et al. in review).

# 3. Emplacement mechanisms

Several questions can be asked regarding the emplacement mechanism of sills, depending on the scale with which we are looking at them. Here we will review these questions and consider what geochemistry can bring into the discussion.

First, let us consider the sill complexes and their main structures, the saucer-shaped sills. Saucer-shaped sills on land, such as in the Karoo Basin, crop out forming single ridges or limb-like thick, inclined sheets. Their buried inner sills are rarely observed in these types of settings and are rarely even recognized (Du Toit, 1920), resulting in neglect of their full 3-D geometry as saucer-shapes (Fig. 5b). Recently, petroleum prospecting revealed that these structures were dominant and major structures of sill complexes. As evidence increased it was soon established that saucer-shaped sills are common in volcanic basins around the world (e.g., Symonds et al., 1998; Chevallier and Woodford, 1999; Svensen and Planke, 2003). This promoted interests in understanding the formation of sill complexes and saucer-shape sills. The Karoo Basin gives a unique access to very well exposed and preserved sill complexes, essentially formed by saucer-shaped sills. Thus, the Karoo Basin is an ideal field laboratory to study the mechanisms of formation and emplacement of sill complexes.

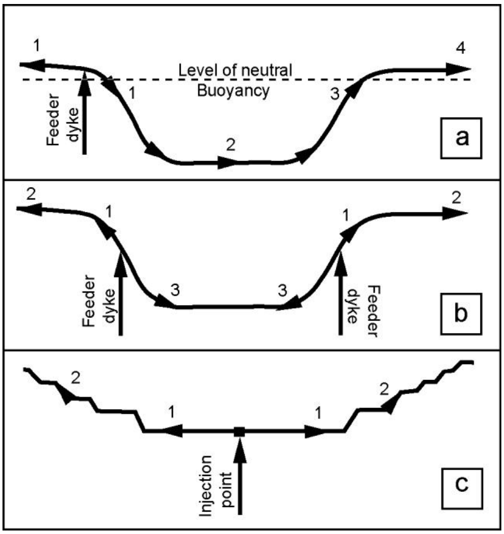


Figure 6: Sill emplacement models. a. Model after Francis (1982), explained in section 3.1.1. b. Model after Chevallier and Woodford (1999), explained in section 3.1.2. c. Model after Malthe-Sørenssen et al. (2004), explained in section 3.1.3. The numbers indicate the individual stages of development. Note that the magma flow geometries within the intrusion are different in the individual models.

Pollard and Johnson (1973) illustrated by laboratory experiment one of the earliest models of saucer-shaped sill emplacement, that the uplift of the overburden could lead to the formation of dykes climbing upwards from the sill tips. Bradley (1965) supported the idea that the sill follows the surface of neutral buoyancy, and that this surface is shaped as a saucer. The following models proposed by (Francis, 1982, Fig. 6a; Chevallier and Woodford, 1999; Fig. 6b) were essentially based on structural observations and supported laterally-fed sill models. More recently, Malthe-Sørenssen et al. (2004; Fig. 6c) made a quantitative model and their physical explanation was a centrally-fed sill model that opposed the previous models (Francis, 1982; Chevallier and Woodford, 1999).

## 3.1. The laterally-fed sills model

### *3.1.1. Model a: Francis (1982)*

The model of Francis (1982) is based on the geometry of the Midland Valley Sill and the Whin Sill, northern Britain. The author proposed that the main emplacement mechanism of saucer-shaped sills is the buoyancy. The feeding is made through vertical dykes located on the flank of the future saucer-shaped sill. As the magma overshoots a layer of neutral buoyancy the vertical propagation of the magma stops for stress related reasons (discussed later) and tends to develop a horizontal sill. The author then proposed that the density difference between the invaded rock and the magma causes the magma to flow downward below the level of neutral buoyancy. At a certain point a flat step is achieved and the magma may follow horizontally following discontinuity formed by inter-bedding of sediments of different nature. This results in the accumulation of magma at the bottom part (Fig. 6a, stage 2). In order to achieve hydrostatic equilibrium, the magma then ascends up-dip that leads to the formation of the conjugate climbing sheet of the saucer-shaped sill (Fig. 6a, stage 3 and 4).

### *3.1.2. Model b: Chevallier and Woodford (1999)*

The model of Chevallier and Woodford (1999) is based on the geometry of the Karoo intrusions. The authors proposed that the ring structure is fed by regional dykes that curve both along the strike and in vertical sections. The inclined sheet passes upwards into a flat-laying sill, uplifting the overlying sedimentary layers. The magma then propagates upwards, forming the outer sill (Fig. 6b, stage 2). The uplifted sediment creates a dragging force upon the upper contact of the inclined sheet. The resulting uplift forces create an upwrapping of the sediment and results in the formation of an open crack at the lower level, adjacent to the sheet. The newly formed crack is then filled in with magma that spread by hydrofracturing, forming the inner sill (Fig. 6b, stage 3).

### 3.2. The centrally-fed sills model

#### *3.2.1 Model c: Malthe-Sørenssen et al. (2004)*

Malthe-Sørenssen et al. (2004) used a two-dimensional numerical model using a least-stress argument to explain the formation of saucer-shaped sills. The authors proposed that the formation of saucer-shaped sills in an initially homogeneous basin may be explained by the effect of an asymmetrical stress field generated by the sill intrusion itself. This model assumes a surrounding elastic matrix as equivalent to the sedimentary basin. In this 2-D model the sill initially extends linearly from an original vertical point source because of fluid overpressure; in 3-D this point source may represent either a feeder dyke or a pipe. When the sill reaches a length of approximately the thickness of the overburden, the localized stress field at the tip of the crack initiates an asymmetrical behaviour of the sill. This initiates a preferential vertical propagation of the sill, forming the roots of the inclined sheets. The ascent of the sheets is then controlled by the asymmetrical stress field generated by the uplifted overburdened, that determines a preferential angle of propagation away from it injection point. The lateral steps produce results from progressive reduction in pressure of the fluid inside the propagating crack. These steps, equivalent to the outer sills in nature, are shown to be larger when close to the inner horizontal crack, equivalent to the inner sill (Fig. 6c, between stage 1 and 2). This model has been further supported by analogue experiments (Galland et al., 2009), that successfully reproduced saucer-shaped intrusions as well as the associated doming effect of the overburdened.

#### *3.2.2. The nested sill complex model*

Recent studies using 3-D seismics brought a new insight in the formation of saucer-shaped sills and sill complexes. Thomson and Hutton (2004) produced results on the 3-D geometries of saucer-shaped sills and sill complexes from the North Rockall Trough Volcanic continental margin. Their results lead them to propose a model to explain the geometry and growth of sill complexes. Their result generally supports the central feeder hypothesis of Malthe-Sørenssen et al. (2004). They suggest that each "radially symmetrical sill complex" is independently fed from a source located beneath the centre of the inner saucer ('T' junction, Fig. 7). In other words, this result suggests that sill complexes can be nested and could form in clusters of inter-feeding saucer-shaped sills.

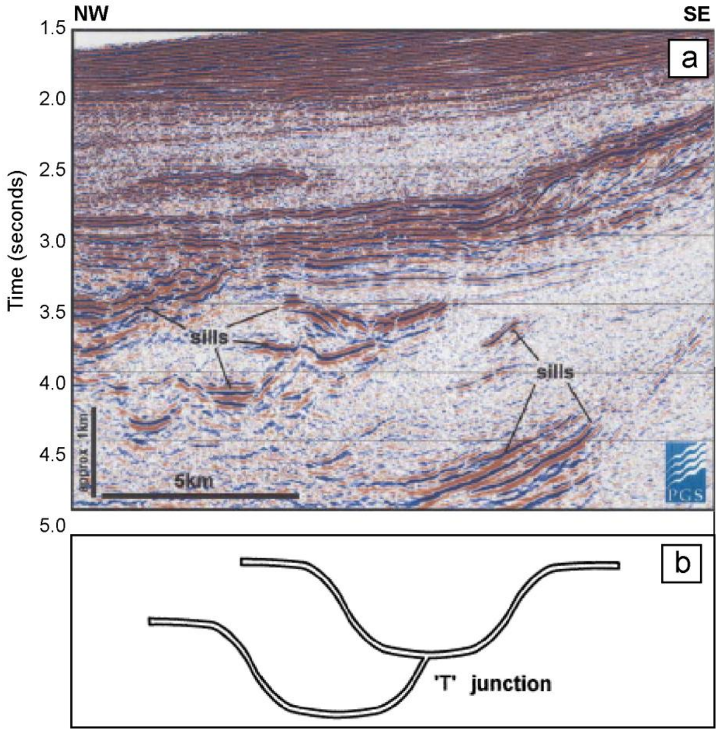


Figure 7: Figure after Thomson and Hutton (2004). a. Seismic section from the North Rockall Trough with high amplitude doleritic sills marked. b. Model proposed by Thompson and Hutton of 'T' junctions between saucer-shaped sills.

### 3.3. The geochemical test on emplacement mechanisms of sill complexes in sedimentary basins

The main questions with regard to the emplacement mechanism of saucer-shaped sills and sill complexes are: first, how are sills emplaced and what is the geometry of their feeders? Secondly, how do sill complexes form? Finally, why do sills turn into saucer-shaped sills? My interest in this thesis does not regard the last question, which is already addressed by several studies through different approaches: the study of the Golden Valley Sill Complex by Polteau et al. (2007), analogue modelling by Galland et al. (2009), and numerical modelling by Malthe-Sørenssen et al. (2004).

Regarding the emplacement of sill complexes, the mechanisms are poorly understood. The reason is the limitations associated with the techniques used so far to infer the feeding mechanism. Firstly, seismic imaging fails to provide information on vertical or near-vertical structures such as dykes. This is linked to the resolution of the method that fails to provide information on high angle narrow structures such as dykes, and that offsets in sedimentary beddings are not usually associated with these intrusives (i.e., dykes and inclined sheets from saucer-shaped sills in volcanic basins). Secondly, the natural exposures of saucer-shaped sills and complexes of sills as in the Karoo Basin are patented by the lack of exposure of their feeders. Therefore, in this study we suggest the use of a new approach to tackle the problem of emplacement mechanisms of sill complexes.

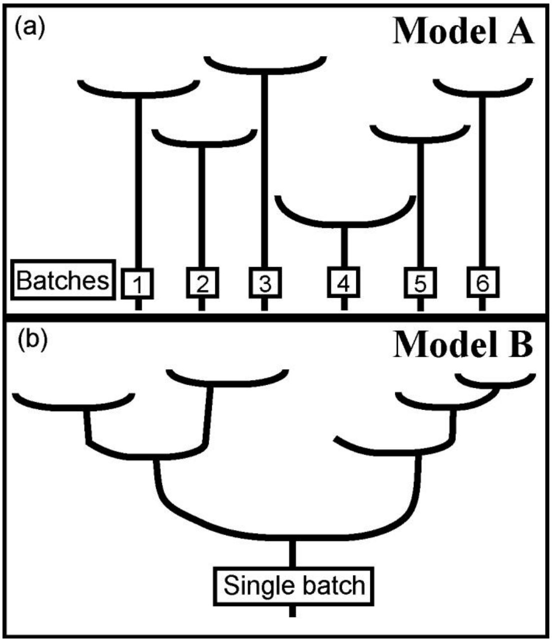


Figure 8: End member plumbing system models after Galerne et al., (2008). a) Model A: Each saucer-shaped sill represents a geochemically distinctive magma batch. b). Model B: A single batch of magma forms a physically connected, geochemically fairly uniform network of interconnected (nested) sills.

It is possible to simplify the above problem through two end-member models or emplacement scenarios that may be distinguished by geochemical fingerprinting. Model A (Fig. 8a) implies that the different sills in a sill complex are formed from different magma batches emplaced at different times. These batches may have inherited different geochemical signatures from their mantle sources and/or have followed various fractionation processes en route to the surface. In this model we may expect uniform geochemical signatures of rocks formed from the same magma batch, and different geochemical signatures of rocks formed from separate magma batches. In model B (Fig.8b), the sills are expected to have formed from a single magma batch and have similar geochemical characteristics. Small differences may result from in situ differentiation during the emplacement and/or contamination. However, it should be possible to identify the effects of local contamination, as it will affect the floor and roof of a sill more strongly than its central parts.

### 3.4. Case study: the Golden Valley Sill Complex

The main results from *Paper I* are that both single- and multi-batch feeding applies to the Golden Valley Sill Complex. Six distinct magma batches are involved in the formation of the major intrusive bodies that constitute this sill complex. We showed that some of the major intrusives carries a distinguishable chemical signature. Additionally, we showed that the saucer-shaped sills located at the uppermost stratigraphic level correspond to a single magma batch (*Paper I*). Because the minor MVS saucer-shaped sill is physically connected to the GVS we have suggested that the MVS was formed from a lateral overflow throughout the GVS West limb. Similarly, we proposed that an identical phenomenon had generated the GS saucer-shaped sill (Fig. 9a).

In the second paper we showed that the geometry of the feeder channel strongly controls the final shape of the resulting saucer-shaped sill. Evidence from field observations, geochemical signatures and analogue experiments lead us to propose that a feeder dyke resulted in the formation of strongly elliptical saucer-shaped sills (Fig. 9b). The hypothesis that the elliptical GS saucer-shaped sill had been fed from lateral overflow in fact contradicts the centrally fed model that we support in *Paper II*. Similarly to Francis (1986), it would mean that the magma first flows laterally, then downwards, then laterally again, forming the inner-sill before it climbs upward again forming the conjugated inclined sheet of the GS.

A schematic cross section could be drawn based on our results from *Paper II*, implying that all elliptical saucer-shaped sills hide a feeder dyke beneath their long axis (Fig. 9b). However, the similar, if not identical, geochemical signature of the GVS-MVS and GS suggests a common feeder to both major elliptical GVS and GS saucer-shaped sills. This suggests that large saucer-shaped sills may be located deeper in the structure of the Golden Valley Sill Complex.

This hypothesis implies that a magma batch with a GVS-MVS-GS magma signature probably formed a saucer-shaped sill due to the stress heterogeneities created by the previously emplaced saucer-shaped sills. As the incline sheets formed, they encountered the overlying sills and the magma cut across in the manner of straight dykes. The position of the transition between vertical feeder channels at this point can only be speculated, but similar conditions should apply to the formation of both GVS and GS saucer-shaped sills, resulting in fairly similar characteristics: size, elasticity, long axis trend, and geochemical signature (Fig. 9c). This would reconcile the end-member models in *Paper I*. It suggests that the first order feeding mechanism of saucer-shaped sills would be central feeding, with 1) dyke feeding, and 2) saucer-shaped feeding. A second order mechanism would be the lateral overflow mechanism demonstrated by the GVS feeding the smaller MVS saucer-shaped sill (*Paper I*).

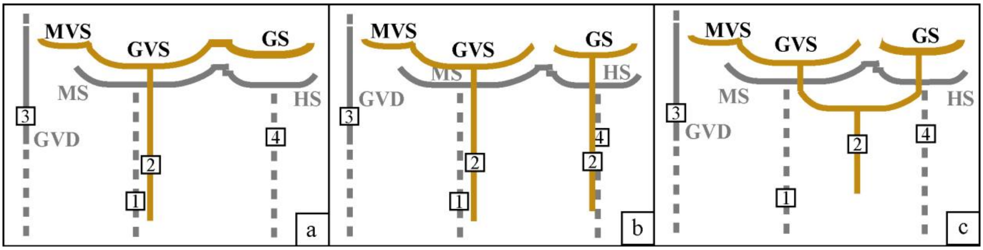


Figure 9: Schematic cross section of the Golden Valley Sill Complex. The vertical feeding channels for each magma batch (dashed lined) are arbitrarily placed beneath the centres of the inner sills. a. Model after (Galerne et al., 2008); the GVS, the MVS and the GS formed from a single magma batch [2] through overflow from one saucer-shaped sill to another. The MS, HS and the GVD are formed from separate magma batches (respectively, [1], [3], [4]). b. Model discussed in *Paper II* (Galerne et al., in review); the major GVS and GS elliptic saucer-shaped sill are centrally fed by independent feeder dykes of identical geochemical signature. c. Integrated model of the Golden Valley Sill Complex plumbing system after (Galerne et al., 2008; Galerne et al., in review). Due to their identical geochemical signature GVS and GS are suggested to be fed from a common saucer-shaped sill located deeper in the stratigraphy of the Golden Valley Sill Complex.

# 4. Differentiation of tholeiitic magma

## 4.1. Physics of magmatic differentiation in tholeiitic magma

Magmatic differentiation refers to any process that causes magma to evolve. One of the most efficient processes is fractional crystallization. Fractional crystallization is any process that prevents a solid and a melt, originally at equilibrium, to continuously re-equilibrate during physico-chemical changes (e.g., cooling). This leads to chemical changes. In detail, fractionation (i.e., segregation) processes may differ. During the early stages of crystallization in a magma, crystals may be segregated by processes such as convective fractionation (e.g., Sparks et al., 1984), or crystal settling. Thus, early formed minerals may collect in the calm part of a convecting magma body or at the cooling margins (Fig. 10a). During late stages of crystallization the magma body consists of a continuous crystal mush and convection has stopped. In this regime melt/solid separation can only occur through a flow of the remaining melt fraction through the porous crystal framework (Fig. 10b, e.g., Aarnes et al., 2008). Thus, fractional crystallization embraces a wide range of processes that occur in a cooling mass from the earliest to the latest stages of crystallization.

Igneous sill complexes emplaced in sedimentary basins such as the Golden Valley Sill Complex, South Africa, Karoo Basin, may carry chemical signatures related to both early (i.e., mineral separation from the ambient melt) and late stage segregation (melt porous flow through crystalline mush) processes leading to fractional crystallization. In this thesis I studied the magmatic processes related to the shallow magma emplacement into sedimentary basins. This topic is treated in *Paper III* and investigates the process of fractional crystallization at both the emplacement stage and post-emplacement stage to explain the various types of compositional profiles found in a single saucer-shaped sill. The question of the deep origin of the melt is not being addressed in this thesis. One of the main reasons for this is that such a question is related to a much larger scale than the main themes of my thesis. A manuscript in this direction is in preparation.

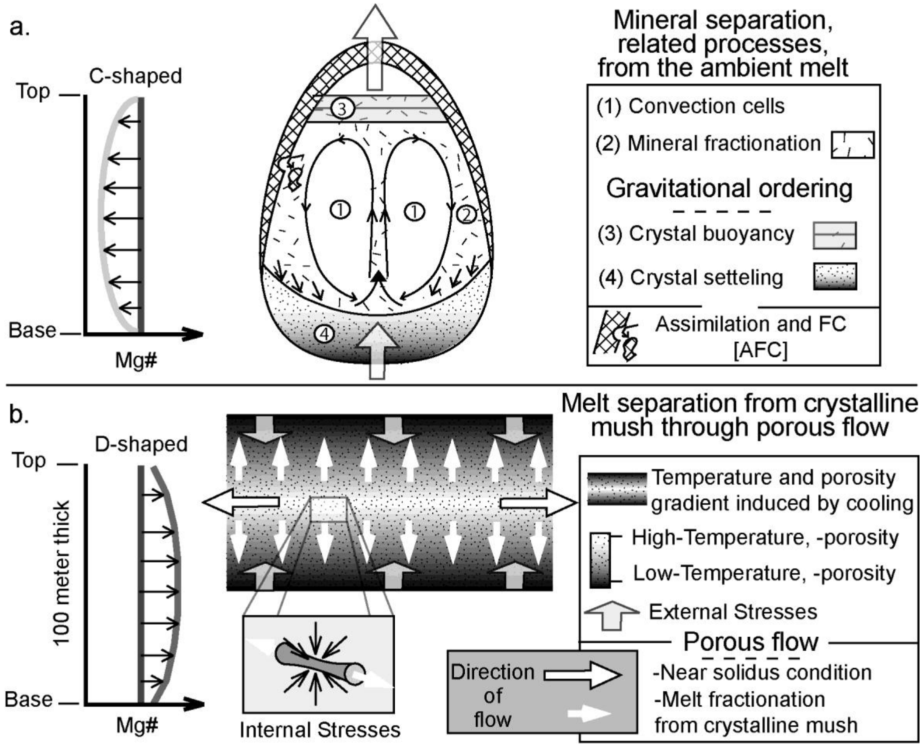


Figure 10: a. Conventional schematic figure of large magma chamber (kilometre scale, after Maury, 1993) where the magma differentiates by early segregation process of mineral separation inducing fractional crystallization. The shape of the magma chamber is arbitrary. Under the inherent effect of gravity a convective current is organized (1). As mineral phases crystallize (2), gravitational ordering can occur according to the various densities of the different minerals phases, i.e., crystal buoyancy (3) and crystal settling (4). In large layered intrusions the convective removal of high temperature mineral fractionated at the cold margins is usually invoked to explain the C-shaped compositional zoning pattern in a Mg# nomenclature (Rice, 1981). We attribute this zoning pattern to a normal profile shape. b. Schematic figure of melt fractionation inducing magma differentiation in 100 meter thick sills. Cooled from the outside, solidification fronts produce a porosity gradient, with higher porosity in the mid-plane of the sill. External stresses (i.e., thermal stress) induce marginal melt flow in the sill (Aarnes et al., 2008). Internal stresses acting on the porous skeleton provoke general compaction of the porous mush zone that induces melt to be expelled preferentially along the high mid-plane porosity (model presented in *Paper III*). This process of melt fractionation induces D-shaped profiles.

## 4.2. The concept of melt fractionation inducing magma differentiation in tholeiitic sills

### *4.2.1. Thermal stresses related to melt fractionation*

The mechanism of melt fractionation has been recently tested and proposed to produce D-shaped compositional profiles in strictly horizontal intrusions (Aarnes et al., 2008). Based on geochemical studies and numerical modelling the authors proposed that differentiation is caused by a separation of melt and crystals by a porous flow through rigid crystal networks.

This will induce a bulk differentiation in the sill through melt segregation. Aarnes et al. (2008) showed numerically that such flow may be induced by thermal stresses associated with cooling and crystallization in a horizontal intrusion. The thermal stresses induce a large under-pressure developed at the cooling margins, where melt will be sucked in by a porous flow. As a result the margins will be enriched in the incompatible elements, while the centre will be depleted.

#### *4.2.2. Buoyancy related melt fractionation*

*Paper III* shows that all types of compositional profiles can be found in a single saucer-shaped sill, the Golden Valley Sill. Furthermore, we show that the various profile types are systematically distributed around the sill. I-shaped profiles are located at the limb-tips of the elliptic GVS and the differentiated D- and S-shaped profiles are located in the central regions of the conjugated limbs. Similarly to Aarnes et al. (2008) we found a negative correlation between compatible and incompatible elements.

The mechanism that we suggest in *Paper III* is similar to that of Aarnes et al (2008); that the melt segregation and flow through crystalline mush produces bulk-rock differentiation. However, in order to explain the systematic space distribution in saucer-shaped sills we suggest the contribution of buoyancy to the previous model. A saucer-shaped sill produces large density differences between the horizontal inner-sill and horizontal outer-sill, connected through inclined sheets. We suggest that the relatively buoyant porous mush will tend to move upward relative to the surrounding material. This motion will create a dynamic over-pressure at the front of the moving mass (outer-sills). On the other hand, an under-pressure will be generated beneath, probably near the transition between the inclined-sheet and inner-sill. The pressure gradient is followed by a preferential flow and the saturated melt fraction will percolate against the gravity field through the mid-plane porosity of the saucer-shaped sill. Based on further arguments developed in *Paper III* we suggest that differentiated D-, and S-shaped profiles preferentially occur at high points of inclined and outer-sills. We propose that profiles at the transition between inclined and inner-sill could carry a C-shaped signature.

# 5. On the quantification and validity of post-emplacement melt flow differentiation

Magmatic differentiation in saucer-shaped sills emplaced at shallow levels in sedimentary basins is undeniably a complex process. Phase equilibria (i.e., mass balance) are strongly coupled with thermo-mechanical work during porous reactive flow. Modelling of multi-component multi-phase systems is best suited to constrain magmatic differentiation processes and the modelling results are also of fundamental interest to petrologists. Recent progress in the development of continuum engineering models and the increase in computational power brings numerical testing and quantification of processes such as fractional crystallization and porous reactive flow within reach (Bergantz, 1995).

Crystallization and melting are both basic processes that induce differentiation of the Earth and are therefore two of the most fundamental processes to be studied in magmatic petrology. In both cases, the porosity of the system changes drastically and the evolution of porosity is a first order process determining the behaviour of the system. However, it is difficult to quantitatively model the evolution of porosity in time and space in a manner that is consistent with geological observations. The time evolution of porosity in magmatic systems can be reduced to the problems of precipitation and dissolution of crystals. The quantification of this mass exchange rate is essential in the evaluation of dynamic crystallizing systems. Slow kinetics of reactions associated with diffusion appear to be non-trivial to estimate. However, as a fist approach we can assume local thermodynamic equilibrium at the computed pressure, temperature and composition for each time step. This can be done using thermodynamic databases (Holland and Powell, 1998) and the principle of minimization of Gibbs free energy, in combination with the physical balance laws and the second law of thermodynamics. The retardation factor can then be evaluated for the system of interest.

Existing continuum models, however, are usually only capable of solving simplified end-member problems approaching complex magmatic systems. Over-simplification of the problem results in models that are at odds with the data provided by the observations. Thus, these models remain a first order approach and are too simplified to solve real petrological and geological problems in a truly quantitative way. Before any realistic quantification of magmatic processes, we face the urgent need of a truly complete continuum description of a system of equations that is thermodynamically consistent. Several attempts in this direction have been realized, but suffer from the complexity of the derivations and often result, again, in simplified models designed to solve a specific part of a given problem in detail (e.g., influence of mechanical work on mass exchange, Nauman and He, 2001; Šrámek et al., 2007), but neglecting others. Thus, the identification of the controlling parameters remains problematic as it can result in the underestimation of certain parameters involved in specific petrological processes.

During my PhD I have been involved in a project of deriving a closed system of equations aimed at numerical testing and quantification of the specific magmatic differentiation processes that occur during the formation of saucer-shaped sills. The results of this work are presented in Tantserev's PhD thesis (2008) and in Tantserev et al. (in review).

In Tantserev et al. (in review) we present a general system of equations derived from the fundamental balance laws of mass, momentum, energy, and entropy that is capable of capturing the behaviour of multi-phase multi-component systems. Based on the assumption of local equilibrium and the second law of thermodynamics we derive the admissible fluxes and sources of the considered system. We present the derived closed system of equations in a general form. A comparison to existing continuum descriptions is then provided in order to validate our model. Additionally, we derive a relation between our continuum model to fit the exact solution of Gassman's relation for poroelasticity. Even though our study was aimed at the particular problem of melt segregation at near-solidus conditions, the general theoretical outcome of our work may be applicable to a wide variety of geological processes.

# 6. Authorship statement

This thesis is presented as a collection of three scientific papers dealing with the emplacement mechanisms and magmatic differentiation in tholeiitic sill complexes.

During this PhD work I was responsible for the sample collection and Electron Micro-Probe-analysis, except for the bulk rock chemical analysis which was performed at Royal Hollway, University of London, and at the University of Bergen (Norway). The sample responsibility in the field was partly shared in early stage of the fieldwork with Ingrid Aarnes and Kirsten Haarberg. The general structural relationships of the Golden Valley Sill Complex were established in collaboration with Stephan Polteau during two excursions on the field (more than a month and-a-half on site).

I initiated and wrote the first paper. In this work I carried out a statistical treatment of the whole-rock geochemical data set using a type of principal component analysis called Forward-Step Discriminant Function Analysis. All co-authors contributed to the paper through discussions. Else-Ragnhild Neumann in particular assisted me in writing the paper.

The second article was initiated by a discussion with Olivier Galland confronting both results from my study and his results from experimental modelling. The hypothesis of a possible linear feeder dyke to the Golden Valley Sill based on my results lead us to an original experiment that was designed and realized by Olivier Galland. I wrote first drafts of the manuscript and corrected it in collaboration with Olivier Galland. All co-authors contributed through the paper by discussions and suggestions.

In the third paper I lead the overview study of the profile chemistry on the Golden Valley Sill. This study presents 18 compositional profiles of the Golden Valley Sill that included four profiles on the responsibility of Ingrid Aarnes and Kirsten Haaberg. The specific detailed microprobe analyses that I realized was carried out after I discovered the textural pattern observed in differentiated profiles. The mechanism of post-emplacement melt fractionation was suggested after collegial discussion that involved Yuri Podladshikov, Ingrid Aarnes and Kirsten Haarberg, Else-Ragnhild Neumann, and myself. I initiated and wrote the paper. Else-Ragnhild Neumann Ingrid Aarnes and Sverre Planke contributed to the paper through discussions and reviews of the manuscript.

The papers are arranged in a logical sequence which ties together the observations and results obtained though the duration of my Ph.D. These three papers aim to answer the major questions addressed by my PhD project originally entitled "Emplacement Mechanisms and Magma Flow in Sheet Intrusion in Sedimentary Basins" granted by the Norwegian Research Council (NFR). The first two papers address the question of emplacement mechanisms of sill complexes in sedimentary basins inferred from field observations, geochemistry, which were combined and integrated with the results of experimental modelling in the second paper. The last paper deals with the magmatic differentiation process within saucer-shaped sills that relates to a post-emplacement melt flow. Ongoing work on larger scale processes related to the source of the magmas and the link to the Karoo-Ferrar Large Igneous Events appears to be out of the scope of this thesis that focused on shallow related magmatic processes. The originally planned numerical modelling and quantification of the process has been withdrawn from the present thesis. This is due to the fact that no consistent continuum description of the required system of equations was available. This led me instead to collaborate with Evgeniy Tantserev on the development of a general continuum description based on fundamental balance laws of physics and thermodynamics. This project is aimed at producing the correct governing equations to implement a Finite Element Method-code.

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# 8. Papers

# *Paper I: Emplacement mechanisms of sill complexes: Information from the geochemical architecture of the Golden Valley Sill Complex, South Africa*

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# *Paper II: The shapes of feeders control the 3D shapes of sills*

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Submitted to Terra Nova

# *Paper III: Magmatic Differentiation Processes in Saucer-Shaped Sills: Evidence from the Golden Valley Sill in the Karoo Basin, South Africa*

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Submitted to Geosphere

# Appendix

# Appendix A: Sampling locations

This appendix gives the detail of the samples locations through three maps. The following table are complementary data from the *paper I*, published in *Journal of Volcanology and Geothermal Research*.

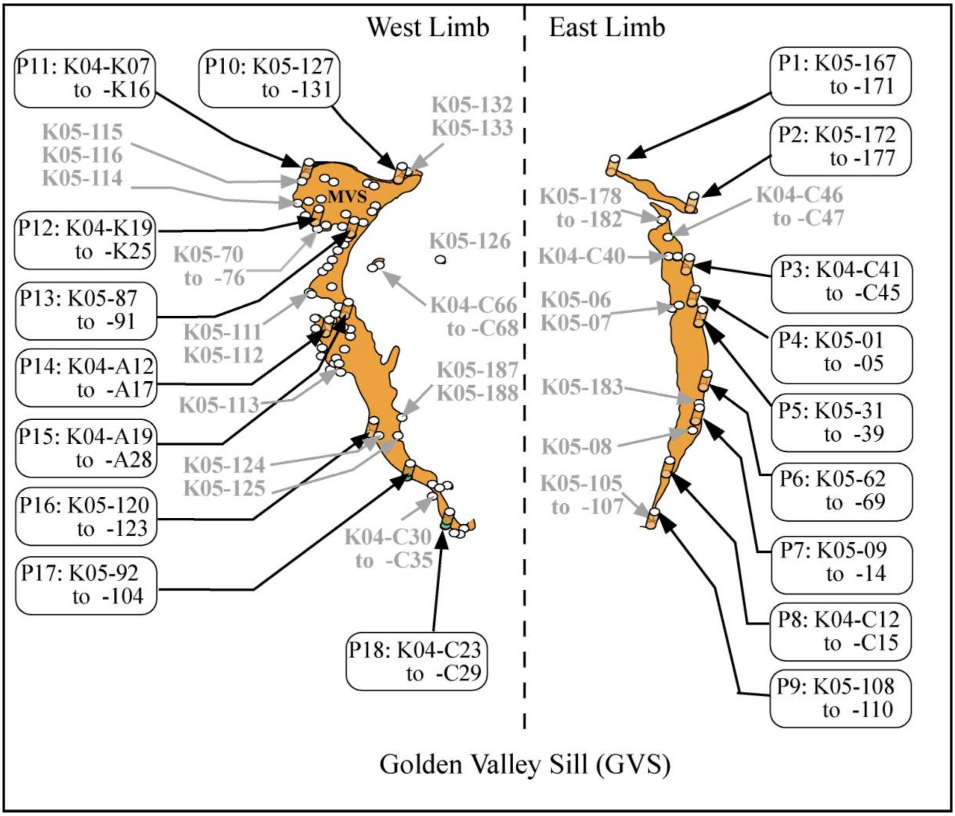


Figure A.1: Sampling locations of the Golden Valley Sill.

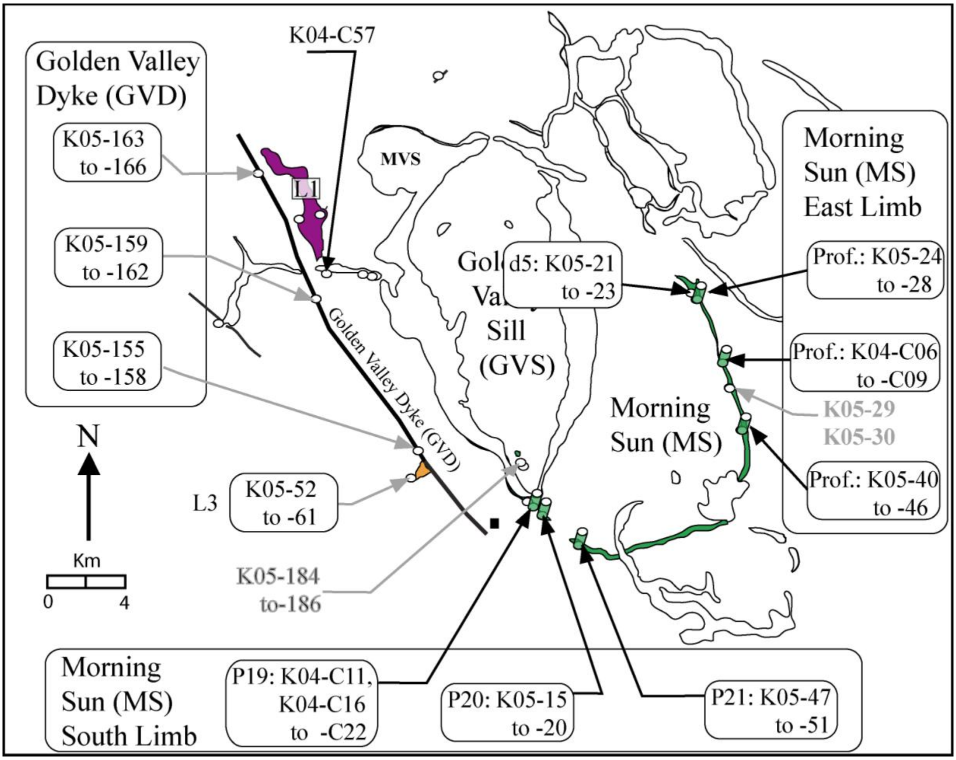


Figure A.2: Sampling locations of the Morning Sun saucer-shaped sill, Golden Valley Dyke and the sills from localities L1 and L3.

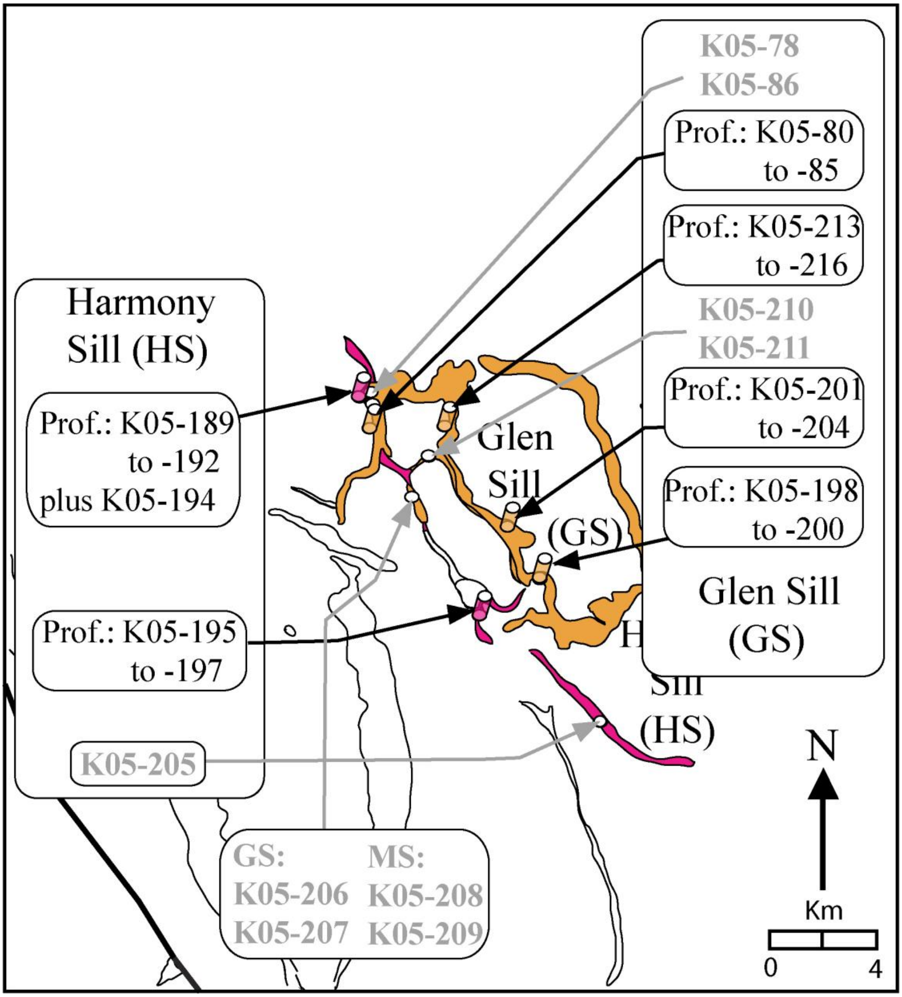


Figure A.3: Sampling locations of the saucer-shaped sills: Harmony Sill and Glen Sill.

# Appendix B. Complementary data Table 2; Galerne et al. (2008).

| Sample: | K04-C11 | K04-C17 | K04-C18 | K04-C19 | K04-C20 | K04-C21 | K04-C22 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS | MS | MS | MS | MS | MS |
| Latitude (N): | -32,0011 | -31,9986 | -31,9989 | -31,9989 | -31,9989 | -31,9988 | -31,9988 |
| Longitude ( E): | 26,2847 | 26,2793 | 26,2790 | 26,2790 | 26,2791 | 26,2791 | 26,2792 |
| Altitude (m): | 1377 | 1505 | 1488 | 1490 | 1496 | 1500 | 1505 |
| SiO2 (wt %) | 50,76 | 50,21 | 50,29 | 50,87 | 50,47 | 50,47 | 50,68 |
| TiO2 (wt %) | 0,91 | 0,91 | 0,93 | 0,93 | 0,88 | 0,93 | 0,92 |
| Al2O3 (wt %) | 15,47 | 15,25 | 15,41 | 15,60 | 15,33 | 15,44 | 15,18 |
| Fe2O3(T) (wt %) | 10,74 | 10,69 | 10,82 | 10,83 | 11,02 | 10,92 | 11,15 |
| MnO (wt %) | 0,17 | 0,17 | 0,17 | 0,17 | 0,17 | 0,17 | 0,17 |
| MgO (wt %) | 7,02 | 6,72 | 6,99 | 7,07 | 7,51 | 7,15 | 7,23 |
| CaO (wt %) | 11,03 | 10,81 | 10,95 | 10,98 | 10,69 | 10,84 | 10,75 |
| Na2O (wt %) | 2,32 | 2,40 | 2,20 | 2,39 | 2,33 | 2,39 | 2,30 |
| K2O (wt %) | 0,37 | 0,43 | 0,41 | 0,41 | 0,40 | 0,46 | 0,44 |
| P2O5 (wt %) | 0,12 | 0,13 | 0,12 | 0,12 | 0,11 | 0,12 | 0,13 |
| SUM | 98,9 | 97,7 | 98,3 | 99,4 | 98,9 | 98,9 | 98,9 |
| Cs (ppm) | 0,8 | 0,5 | 1,1 | 1,0 | 0,5 | 0,5 | 0,6 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 7 | 9 | 8 | 8 | 8 | 9 | 7 |
| Ba (ppm) | 143 | 147 | 146 | 147 | 142 | 151 | 149 |
| Th (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| U (ppm) | 0,16 | 0,17 | 0,21 | 0,18 | 0,17 | 0,19 | 0,15 |
| Nb (ppm) | 5,1 | 5,0 | 5,4 | 5,8 | 7,0 | 5,7 | 5,1 |
| Ta (ppm) | 0,26 | 0,28 | 0,27 | 0,30 | 0,29 | 0,30 | 0,28 |
| La (ppm) | 7,78 | 7,28 | 7,36 | 7,98 | 7,87 | 7,28 | 6,68 |
| Ce (ppm) | 16,97 | 16,25 | 16,71 | 17,95 | 16,22 | 16,66 | 15,72 |
| Pb (ppm) | 5 | 2 | 2 | 6 | 7 | 4 | 7 |
| Pr (ppm) | 2,13 | 2,11 | 2,14 | 2,34 | 2,08 | 2,09 | 2,01 |
| Mo (ppm) | 0,7 | 1,1 | 0,9 | 1,0 | 0,9 | 0,8 | 0,7 |
| Sr (ppm) | 188 | 183 | 190 | 193 | 189 | 193 | 183 |
| Nd (ppm) | 10,8 | 11,2 | 10,4 | 12,5 | 11,5 | 10,9 | 10,4 |
| Zr (ppm) | 80 | 81 | 81 | 81 | 79 | 79 | 77 |
| Hf (ppm) | 2,05 | 1,83 | 1,90 | 2,06 | 2,11 | 1,94 | 1,76 |
| Sm (ppm) | 2,85 | 2,90 | 2,83 | 3,04 | 2,76 | 3,25 | 2,51 |
| Eu (ppm) | 0,97 | 0,91 | 0,94 | 1,10 | 0,98 | 1,00 | 0,96 |
| Sn (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Gd (ppm) | 3,00 | 3,07 | 2,90 | 3,18 | 3,15 | 2,98 | 2,85 |
| Dy (ppm) | 3,79 | 3,79 | 3,81 | 3,98 | 3,75 | 3,81 | 3,76 |
| Li (ppm) | 8 | b.d. | 8 | 2 | b.d. | b.d. | 13 |
| Y (ppm) | 25 | 24 | 25 | 25 | 23 | 24 | 24 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 1,97 | 2,08 | 1,99 | 2,15 | 1,94 | 2,04 | 1,90 |
| Yb (ppm) | 2,06 | 1,99 | 2,05 | 2,17 | 2,08 | 2,08 | 2,00 |
| Lu (ppm) | 0,33 | 0,31 | 0,34 | 0,32 | 0,28 | 0,31 | 0,30 |
| Co (ppm) | 34 | 35 | 34 | 35 | 36 | 35 | 36 |
| Cr (ppm) | 352 | 393 | 363 | 378 | 420 | 404 | 368 |
| Cu (ppm) | 100 | 98 | 101 | 100 | 97 | 98 | 97 |
| Ni (ppm) | 96 | 95 | 99 | 108 | 121 | 108 | 104 |
| Sc (ppm) | 35 | 33 | 35 | 34 | 33 | 34 | 33 |
| V (ppm) | 256 | 245 | 247 | 252 | 234 | 247 | 241 |
| Zn (ppm) | 86 | 87 | 86 | 87 | 88 | 86 | 87 |
| Tb (ppm) | 0,6 | 0,5 | 0,5 | 0,6 | 0,5 | 0,6 | 0,5 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 1,16 | 0,11 | 0,87 | 2,06 | 2,68 | 1,93 | -0,01 |
| S II | 8,17 | 7,76 | 8,73 | 8,86 | 7,71 | 8,37 | 7,81 |
| S III | -2,16 | -1,53 | -2,65 | -0,04 | -0,14 | -0,52 | -1,72 |

| Sample: | K05-15 | K05-16 | K05-17 | K05-18 | K05-19 | K05-20 | K05-47 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS | MS | MS | MS | MS | MS |
| Latitude (N): | -32,0070 | -32,0069 | -32,0067 | -32,0067 | -32,0068 | -32,0067 | -32,0215 |
| Longitude ( E): | 26,2898 | 26,2899 | 26,2899 | 26,2901 | 26,2904 | 26,2906 | 26,3100 |
| Altitude (m): | 1320 | 1342 | 1357 | 1358 | 1357 | 1354 | 1407 |
| SiO2 (wt %) | 50,21 | 49,95 | 50,36 | 50,73 | 50,17 | 50,64 | 48,92 |
| TiO2 (wt %) | 0,92 | 0,88 | 0,98 | 1,03 | 0,87 | 1,00 | 0,91 |
| Al2O3 (wt %) | 15,24 | 15,11 | 15,38 | 15,69 | 15,89 | 15,46 | 14,82 |
| Fe2O3(T) (wt %) | 11,01 | 11,01 | 11,60 | 11,54 | 11,16 | 11,60 | 11,42 |
| MnO (wt %) | 0,17 | 0,17 | 0,18 | 0,18 | 0,18 | 0,19 | 0,17 |
| MgO (wt %) | 7,03 | 7,81 | 7,67 | 7,67 | 7,84 | 7,26 | 7,75 |
| CaO (wt %) | 10,85 | 10,87 | 10,91 | 10,85 | 11,07 | 11,12 | 10,93 |
| Na2O (wt %) | 2,31 | 2,36 | 2,42 | 2,48 | 2,34 | 2,32 | 2,39 |
| K2O (wt %) | 0,36 | 0,36 | 0,40 | 0,41 | 0,37 | 0,36 | 0,41 |
| P2O5 (wt %) | 0,12 | 0,12 | 0,13 | 0,14 | 0,11 | 0,13 | 0,12 |
| SUM | 98,2 | 98,6 | 100,0 | 100,7 | 100,0 | 100,1 | 97,8 |
| Cs (ppm) | 0,9 | 0,7 | 0,5 | 0,6 | 1,2 | 0,9 | 0,5 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | 0,2 | 0,2 | b.d. |
| Rb (ppm) | 8 | 8 | 8 | 9 | 14 | 8 | 8 |
| Ba (ppm) | 140 | 139 | 149 | 155 | 133 | 201 | 143 |
| Th (ppm) | b.d. | b.d. | b.d. | 1,3 | b.d. | 1,9 | b.d. |
| U (ppm) | 0,17 | 0,17 | 0,15 | 0,21 | 0,31 | 0,17 | 0,19 |
| Nb (ppm) | 5,3 | 5,2 | 5,1 | 5,9 | 5,1 | 5,3 | 6,1 |
| Ta (ppm) | 0,27 | 0,26 | 0,28 | 0,29 | 0,30 | 0,27 | 0,30 |
| La (ppm) | 6,99 | 6,72 | 6,85 | 7,51 | 6,68 | 7,18 | 6,88 |
| Ce (ppm) | 15,98 | 15,17 | 15,88 | 17,06 | 14,66 | 16,89 | 15,90 |
| Pb (ppm) | 4 | 2 | 3 | 5 | 4 | 2 | 3 |
| Pr (ppm) | 1,93 | 1,87 | 2,01 | 2,15 | 1,80 | 2,07 | 2,01 |
| Mo (ppm) | 1,7 | 1,4 | 1,5 | 1,1 | 1,2 | 1,4 | 1,3 |
| Sr (ppm) | 182 | 185 | 198 | 201 | 198 | 205 | 193 |
| Nd (ppm) | 10,1 | 9,7 | 10,2 | 10,4 | 9,3 | 10,8 | 10,7 |
| Zr (ppm) | 72 | 69 | 71 | 75 | 65 | 74 | 70 |
| Hf (ppm) | 1,79 | 1,82 | 1,91 | 2,02 | 1,64 | 2,00 | 1,78 |
| Sm (ppm) | 2,81 | 2,76 | 2,94 | 3,07 | 2,57 | 3,03 | 2,98 |
| Eu (ppm) | 0,96 | 0,88 | 1,00 | 1,00 | 0,91 | 1,00 | 1,06 |
| Sn (ppm) | b.d. | b.d. | b.d. | 0,6 | 0,6 | b.d. | b.d. |
| Gd (ppm) | 2,88 | 2,87 | 2,91 | 3,18 | 2,60 | 3,02 | 2,85 |
| Dy (ppm) | 3,54 | 3,38 | 3,50 | 3,82 | 3,21 | 3,68 | 3,21 |
| Li (ppm) | 9 | 5 | 6 | 5 | 6 | 12 | 5 |
| Y (ppm) | 23 | 23 | 23 | 24 | 21 | 24 | 24 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 1,98 | 2,03 | 2,16 | 2,20 | 1,81 | 2,12 | 2,14 |
| Yb (ppm) | 2,17 | 2,01 | 2,03 | 2,08 | 1,83 | 2,28 | 2,13 |
| Lu (ppm) | 0,31 | 0,30 | 0,31 | 0,31 | 0,28 | 0,30 | 0,29 |
| Co (ppm) | 36 | 39 | 37 | 38 | 38 | 37 | 35 |
| Cr (ppm) | 366 | 417 | 384 | 358 | 390 | 340 | 370 |
| Cu (ppm) | 97 | 91 | 94 | 94 | 93 | 98 | 100 |
| Ni (ppm) | 101 | 126 | 105 | 108 | 121 | 101 | 116 |
| Sc (ppm) | 34 | 33 | 34 | 34 | 33 | 35 | 35 |
| V (ppm) | 247 | 239 | 251 | 253 | 234 | 250 | 255 |
| Zn (ppm) | 85 | 86 | 86 | 87 | 84 | 87 | 87 |
| Tb (ppm) | 0,6 | 0,6 | 0,5 | 0,6 | 0,5 | 0,6 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 1,19 | 0,86 | -0,42 | -0,59 | 1,07 | 1,33 | 2,54 |
| S II | 8,16 | 9,85 | 8,09 | 9,42 | 7,91 | 8,21 | 8,16 |
| S III | -0,81 | -0,57 | -0,64 | -1,02 | -1,47 | -1,27 | -1,35 |

| Sample: | K05-48 | K05-49 | K05-50 | K05-51 | K05-24 | K05-25 | K05-26 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS | MS | MS | MS | MS | MS |
| Latitude (N): | -32,0216 | -32,0218 | -32,0217 | -32,0212 | -31,8977 | -31,9011 | -31,9012 |
| Longitude ( E): | 26,3102 | 26,3105 | 26,3106 | 26,3097 | 26,3724 | 26,3748 | 26,3745 |
| Altitude (m): | 1413 | 1425 | 1431 | 1412 | 1390 | 1351 | 1361 |
| SiO2 (wt %) | 50,41 | 49,80 | 49,74 | 50,39 | 50,63 | 50,46 | 50,57 |
| TiO2 (wt %) | 1,00 | 0,85 | 0,73 | 0,90 | 0,93 | 0,93 | 0,93 |
| Al2O3 (wt %) | 15,26 | 14,94 | 15,26 | 15,33 | 15,73 | 15,42 | 15,43 |
| Fe2O3(T) (wt %) | 11,97 | 11,13 | 10,55 | 10,81 | 11,42 | 11,12 | 11,06 |
| MnO (wt %) | 0,18 | 0,17 | 0,17 | 0,17 | 0,18 | 0,17 | 0,17 |
| MgO (wt %) | 7,76 | 8,74 | 8,56 | 6,94 | 7,68 | 7,15 | 7,34 |
| CaO (wt %) | 11,16 | 10,59 | 11,48 | 11,02 | 11,17 | 11,08 | 11,05 |
| Na2O (wt %) | 2,42 | 2,36 | 2,30 | 2,25 | 2,42 | 2,42 | 2,56 |
| K2O (wt %) | 0,42 | 0,37 | 0,28 | 0,33 | 0,42 | 0,41 | 0,39 |
| P2O5 (wt %) | 0,13 | 0,12 | 0,08 | 0,12 | 0,12 | 0,12 | 0,12 |
| SUM | 100,7 | 99,1 | 99,1 | 98,3 | 100,7 | 99,3 | 99,6 |
| Cs (ppm) | 0,4 | 0,2 | 0,2 | 1,9 | 0,4 | 0,9 | 0,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | 0,3 | b.d. | b.d. | b.d. |
| Rb (ppm) | 8 | 8 | 6 | 8 | 8 | 8 | 7 |
| Ba (ppm) | 153 | 134 | 113 | 133 | 146 | 152 | 147 |
| Th (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | 1,1 | b.d. |
| U (ppm) | 0,19 | 0,15 | b.d. | 0,17 | 0,14 | 0,14 | 0,17 |
| Nb (ppm) | 5,7 | 6,1 | 4,7 | 5,5 | 5,1 | 5,3 | 5,2 |
| Ta (ppm) | 0,29 | 0,29 | 0,24 | 0,28 | 0,26 | 0,28 | 0,27 |
| La (ppm) | 7,73 | 7,28 | 5,22 | 7,17 | 6,82 | 6,86 | 6,86 |
| Ce (ppm) | 16,56 | 15,62 | 12,02 | 16,07 | 15,33 | 15,61 | 15,75 |
| Pb (ppm) | 3 | 4 | 5 | 5 | 5 | 6 | 6 |
| Pr (ppm) | 2,01 | 1,93 | 1,53 | 2,01 | 1,93 | 1,97 | 1,95 |
| Mo (ppm) | 1,4 | 1,2 | 1,1 | 1,1 | 1,3 | 1,2 | 1,1 |
| Sr (ppm) | 198 | 176 | 182 | 180 | 208 | 196 | 191 |
| Nd (ppm) | 11,2 | 10,0 | 7,7 | 10,3 | 9,9 | 9,9 | 10,2 |
| Zr (ppm) | 75 | 80 | 56 | 72 | 69 | 74 | 70 |
| Hf (ppm) | 1,82 | 1,89 | 1,38 | 1,85 | 1,72 | 1,86 | 1,69 |
| Sm (ppm) | 2,90 | 2,85 | 2,23 | 2,83 | 2,73 | 2,85 | 2,89 |
| Eu (ppm) | 1,05 | 1,00 | 0,87 | 1,01 | 0,96 | 1,05 | 1,04 |
| Sn (ppm) | 0,5 | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Gd (ppm) | 2,92 | 2,77 | 2,33 | 2,83 | 2,72 | 2,73 | 2,77 |
| Dy (ppm) | 3,43 | 3,32 | 2,71 | 3,44 | 3,29 | 3,47 | 3,46 |
| Li (ppm) | 5 | 5 | 4 | 11 | 5 | 11 | 4 |
| Y (ppm) | 24 | 22 | 18 | 23 | 21 | 23 | 22 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,15 | 1,97 | 1,70 | 2,25 | 1,94 | 2,14 | 1,94 |
| Yb (ppm) | 2,18 | 2,13 | 1,69 | 2,18 | 1,99 | 2,06 | 2,09 |
| Lu (ppm) | 0,33 | 0,29 | 0,26 | 0,30 | 0,31 | 0,27 | 0,30 |
| Co (ppm) | 35 | 37 | 34 | 34 | 37 | 36 | 36 |
| Cr (ppm) | 375 | 444 | 571 | 341 | 374 | 358 | 358 |
| Cu (ppm) | 107 | 91 | 78 | 96 | 100 | 102 | 98 |
| Ni (ppm) | 108 | 153 | 136 | 101 | 110 | 99 | 99 |
| Sc (ppm) | 36 | 32 | 35 | 34 | 34 | 36 | 34 |
| V (ppm) | 266 | 231 | 233 | 246 | 244 | 263 | 247 |
| Zn (ppm) | 91 | 86 | 79 | 86 | 87 | 87 | 86 |
| Tb (ppm) | 0,6 | 0,6 | 0,5 | 0,6 | 0,5 | 0,6 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,2 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 1,05 | 1,81 | 2,95 | 1,02 | 1,44 | 2,63 | 1,29 |
| S II | 7,38 | 9,23 | 8,95 | 8,79 | 6,87 | 7,37 | 6,28 |
| S III | -2,49 | 0,40 | 2,42 | 0,23 | -1,00 | -0,13 | -1,24 |

| Sample: | K05-27 | K05-29 | K05-30 | K05-40 | K05-41 | K05-42 | K05-44 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS | MS | MS | MS | MS | MS |
| Latitude (N): | -31,9013 | -31,9443 | -31,9445 | -31,9637 | -31,9635 | -31,9634 | -31,9638 |
| Longitude ( E): | 26,3742 | 26,3921 | 26,3923 | 26,3989 | 26,3983 | 26,3981 | 26,3973 |
| Altitude (m): | 1368 | 1365 | 1359 | 1353 | 1363 | 1367 | 1359 |
| SiO2 (wt %) | 50,90 | 50,75 | 50,27 | 49,95 | 50,78 | 50,27 | 50,76 |
| TiO2 (wt %) | 1,01 | 0,90 | 0,97 | 0,93 | 0,90 | 0,70 | 0,82 |
| Al2O3 (wt %) | 15,21 | 15,84 | 15,53 | 15,46 | 15,95 | 16,40 | 16,12 |
| Fe2O3(T) (wt %) | 12,04 | 11,44 | 11,51 | 11,17 | 11,06 | 11,21 | 10,50 |
| MnO (wt %) | 0,19 | 0,18 | 0,18 | 0,17 | 0,17 | 0,17 | 0,16 |
| MgO (wt %) | 7,27 | 7,44 | 7,36 | 7,49 | 7,62 | 7,85 | 7,55 |
| CaO (wt %) | 10,95 | 10,87 | 10,73 | 10,72 | 10,68 | 10,94 | 11,11 |
| Na2O (wt %) | 2,44 | 2,39 | 2,41 | 2,25 | 2,29 | 2,13 | 2,22 |
| K2O (wt %) | 0,38 | 0,37 | 0,41 | 0,42 | 0,43 | 0,28 | 0,36 |
| P2O5 (wt %) | 0,12 | 0,11 | 0,12 | 0,12 | 0,12 | 0,08 | 0,11 |
| SUM | 100,5 | 100,3 | 99,5 | 98,7 | 100,0 | 100,0 | 99,7 |
| Cs (ppm) | 0,4 | 0,1 | 0,2 | 0,8 | 0,3 | 0,3 | 0,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 7 | 9 | 9 | 10 | 11 | 5 | 7 |
| Ba (ppm) | 147 | 142 | 149 | 156 | 150 | 116 | 135 |
| Th (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| U (ppm) | 0,14 | 0,15 | 0,17 | 0,20 | 0,18 | 0,14 | 0,17 |
| Nb (ppm) | 5,5 | 5,1 | 5,6 | 5,8 | 5,7 | 3,7 | 5,0 |
| Ta (ppm) | 0,28 | 0,25 | 0,27 | 0,29 | 0,28 | 0,20 | 0,22 |
| La (ppm) | 6,70 | 6,96 | 7,82 | 7,79 | 7,63 | 5,30 | 6,83 |
| Ce (ppm) | 15,63 | 15,22 | 17,25 | 16,52 | 16,40 | 11,32 | 14,69 |
| Pb (ppm) | 4 | 3 | 6 | 6 | 6 | 7 | 6 |
| Pr (ppm) | 1,94 | 1,83 | 2,14 | 2,03 | 2,02 | 1,39 | 1,88 |
| Mo (ppm) | 1,7 | 1,1 | 1,1 | 1,1 | 1,0 | 0,9 | 1,0 |
| Sr (ppm) | 197 | 197 | 199 | 191 | 188 | 194 | 189 |
| Nd (ppm) | 10,1 | 9,9 | 11,7 | 9,9 | 10,2 | 7,0 | 9,3 |
| Zr (ppm) | 71 | 69 | 74 | 75 | 75 | 50 | 67 |
| Hf (ppm) | 1,92 | 1,83 | 1,86 | 1,98 | 1,92 | 1,39 | 1,69 |
| Sm (ppm) | 2,77 | 2,71 | 3,13 | 2,95 | 2,86 | 2,03 | 2,64 |
| Eu (ppm) | 1,00 | 1,09 | 1,10 | 0,90 | 0,91 | 0,79 | 0,84 |
| Sn (ppm) | b.d. | b.d. | b.d. | 0,7 | 0,6 | b.d. | 0,6 |
| Gd (ppm) | 2,85 | 2,69 | 2,92 | 2,97 | 2,90 | 2,10 | 2,59 |
| Dy (ppm) | 3,59 | 3,21 | 3,63 | 3,45 | 3,53 | 2,60 | 3,17 |
| Li (ppm) | 5 | 4 | 4 | 8 | 6 | 5 | 5 |
| Y (ppm) | 22 | 23 | 24 | 24 | 24 | 17 | 21 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,21 | 1,94 | 2,22 | 2,09 | 2,13 | 1,53 | 1,90 |
| Yb (ppm) | 2,09 | 2,02 | 2,14 | 2,01 | 2,07 | 1,51 | 1,90 |
| Lu (ppm) | 0,31 | 0,31 | 0,31 | 0,30 | 0,31 | 0,23 | 0,30 |
| Co (ppm) | 36 | 37 | 36 | 41 | 41 | 44 | 39 |
| Cr (ppm) | 346 | 349 | 339 | 405 | 403 | 445 | 472 |
| Cu (ppm) | 98 | 97 | 97 | 97 | 97 | 103 | 85 |
| Ni (ppm) | 92 | 105 | 101 | 110 | 115 | 124 | 101 |
| Sc (ppm) | 36 | 32 | 34 | 35 | 34 | 33 | 35 |
| V (ppm) | 265 | 231 | 244 | 245 | 242 | 215 | 239 |
| Zn (ppm) | 89 | 86 | 86 | 86 | 84 | 82 | 79 |
| Tb (ppm) | 0,6 | 0,6 | 0,6 | | | | |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | | | | |
| S I | 1,19 | 0,75 | 1,19 | 0,31 | 1,42 | 3,66 | 0,13 |
| S II | 6,14 | 6,55 | 6,86 | 8,40 | 7,89 | 5,25 | 8,17 |
| S III | -0,68 | -2,91 | -2,05 | -1,25 | -1,51 | -2,59 | -1,03 |

| Sample: | K05-46 | K05-208 | K05-209 | K05-93 | K05-94 | K05-95 | K05-96 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS/L7 | MS/L7 | MS/L4b | MS/L4b | MS/L4b | MS/L4b |
| Latitude (N): | -31,9638 | -31,8177 | -31,8175 | -31,9730 | -31,9713 | -31,9713 | -31,9713 |
| Longitude ( E): | 26,3973 | 26,3198 | 26,3200 | 26,2544 | 26,2518 | 26,2518 | 26,2517 |
| Altitude (m): | 1366 | 1933 | 1917 | 1539 | 1673 | 1673 | 1670 |
| SiO2 (wt %) | 49,99 | 50,26 | 50,44 | 50,75 | 50,87 | 51,36 | 50,46 |
| TiO2 (wt %) | 0,70 | 0,95 | 0,97 | 0,94 | 0,95 | 0,95 | 0,91 |
| Al2O3 (wt %) | 15,74 | 15,29 | 15,40 | 15,58 | 15,67 | 15,67 | 15,84 |
| Fe2O3(T) (wt %) | 9,93 | 11,25 | 11,99 | 11,17 | 11,19 | 11,40 | 10,91 |
| MnO (wt %) | 0,16 | 0,17 | 0,18 | 0,17 | 0,17 | 0,17 | 0,17 |
| MgO (wt %) | 8,05 | 7,00 | 7,53 | 7,22 | 7,05 | 7,06 | 7,50 |
| CaO (wt %) | 11,61 | 10,81 | 10,69 | 10,66 | 10,71 | 10,70 | 10,66 |
| Na2O (wt %) | 2,14 | 2,42 | 2,46 | 2,24 | 2,25 | 2,33 | 2,20 |
| K2O (wt %) | 0,32 | 0,43 | 0,44 | 0,42 | 0,34 | 0,40 | 0,41 |
| P2O5 (wt %) | 0,09 | 0,12 | 0,12 | 0,12 | 0,13 | 0,13 | 0,12 |
| SUM | 98,7 | 98,7 | 100,2 | 99,3 | 99,3 | 100,2 | 99,2 |
| Cs (ppm) | 0,2 | 1,5 | 0,6 | 1,1 | 2,1 | 0,6 | 1,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | 0,2 | 0,2 | 0,2 |
| Rb (ppm) | 7 | 9 | 8 | 10 | 8 | 8 | 9 |
| Ba (ppm) | 117 | 150 | 161 | 155 | 132 | 153 | 146 |
| Th (ppm) | b.d. | b.d. | b.d. | b.d. | 1,0 | b.d. | b.d. |
| U (ppm) | 0,16 | 0,19 | 0,16 | 0,21 | 0,20 | 0,22 | 0,22 |
| Nb (ppm) | 4,6 | 5,5 | 5,4 | 5,5 | 5,3 | 7,2 | 5,3 |
| Ta (ppm) | 0,21 | 0,29 | 0,27 | 0,29 | 0,30 | 0,31 | 0,25 |
| La (ppm) | 6,26 | 7,87 | 6,93 | 7,80 | 7,87 | 8,02 | 7,82 |
| Ce (ppm) | 13,29 | 17,78 | 16,18 | 16,79 | 17,29 | 17,35 | 16,86 |
| Pb (ppm) | 6 | 2 | 4 | 5 | 7 | 6 | 8 |
| Pr (ppm) | 1,71 | 2,22 | 2,01 | 2,13 | 2,13 | 2,20 | 2,07 |
| Mo (ppm) | 1,0 | 1,2 | 1,0 | 0,8 | 0,8 | 1,4 | 1,0 |
| Sr (ppm) | 182 | 187 | 200 | 190 | 192 | 189 | 187 |
| Nd (ppm) | 8,0 | 12,0 | 10,7 | 10,6 | 10,9 | 10,4 | 10,4 |
| Zr (ppm) | 58 | 80 | 78 | 78 | 81 | 80 | 78 |
| Hf (ppm) | 1,56 | 1,89 | 1,71 | 2,08 | 2,04 | 2,10 | 2,13 |
| Sm (ppm) | 2,45 | 2,90 | 2,63 | 3,21 | 3,06 | 3,11 | 2,89 |
| Eu (ppm) | 0,75 | 1,12 | 0,95 | 0,89 | 0,89 | 0,88 | 0,89 |
| Sn (ppm) | 0,5 | b.d. | b.d. | 0,5 | 0,5 | 0,7 | 0,6 |
| Gd (ppm) | 2,40 | 3,34 | 2,68 | 3,06 | 3,18 | 3,07 | 3,01 |
| Dy (ppm) | 2,77 | 3,90 | 3,73 | 3,72 | 3,67 | 3,62 | 3,58 |
| Li (ppm) | 6 | 2 | b.d. | 9 | 11 | 9 | 7 |
| Y (ppm) | 20 | 26 | 23 | 25 | 24 | 25 | 24 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 1,74 | 2,01 | 2,03 | 2,15 | 2,21 | 2,29 | 2,13 |
| Yb (ppm) | 1,64 | 2,15 | 2,10 | 2,22 | 2,32 | 2,26 | 2,07 |
| Lu (ppm) | 0,28 | 0,30 | 0,33 | 0,34 | 0,35 | 0,33 | 0,34 |
| Co (ppm) | 38 | 35 | 35 | 40 | 41 | 41 | 40 |
| Cr (ppm) | 600 | 372 | 392 | 322 | 322 | 421 | 332 |
| Cu (ppm) | 73 | 100 | 95 | 99 | 101 | 102 | 94 |
| Ni (ppm) | 108 | 99 | 101 | 102 | 99 | 101 | 109 |
| Sc (ppm) | 37 | 34 | 34 | 35 | 36 | 35 | 35 |
| V (ppm) | 241 | 246 | 240 | 251 | 261 | 252 | 245 |
| Zn (ppm) | 72 | 87 | 85 | 84 | 85 | 86 | 83 |
| Tb (ppm) | | 0,6 | 0,5 | | | | |
| Tm (ppm) | | 0,3 | 0,3 | | | | |
| S I | 1,09 | -0,59 | -1,20 | 0,81 | 1,05 | 2,12 | 0,46 |
| S II | 9,75 | 9,23 | 8,31 | 8,87 | 9,39 | 7,99 | 8,94 |
| S III | 0,56 | -0,83 | -0,71 | -1,91 | 0,23 | -0,34 | -1,87 |

| Sample: | K05-97 | K05-98 | K05-100 | K05-189 | K05-190 | K05-191A | K05-191B |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS/L4b | MS/L4b | MS/L4b | HS/L8 | HS/L8 | HS/L8 | HS/L8 |
| Latitude (N): | -31,9713 | -31,9714 | -31,9713 | -31,7827 | -31,7827 | -31,7811 | -31,7811 |
| Longitude ( E): | 26,2518 | 26,2518 | 26,2518 | 26,2994 | 26,2994 | 26,2992 | 26,2992 |
| Altitude (m): | 1673 | 1672 | 1669 | 1813 | 1823 | 1851 | 1851 |
| SiO2 (wt %) | 51,47 | 50,93 | 50,91 | 52,42 | 52,64 | 53,04 | 53,60 |
| TiO2 (wt %) | 0,94 | 0,89 | 0,89 | 1,20 | 1,14 | 1,37 | 1,87 |
| Al2O3 (wt %) | 15,85 | 16,47 | 15,80 | 15,06 | 15,58 | 14,33 | 12,95 |
| Fe2O3(T) (wt %) | 11,15 | 10,39 | 11,12 | 10,62 | 10,27 | 11,48 | 13,04 |
| MnO (wt %) | 0,17 | 0,16 | 0,17 | 0,16 | 0,15 | 0,17 | 0,18 |
| MgO (wt %) | 7,27 | 7,33 | 7,53 | 6,16 | 5,98 | 5,23 | 3,78 |
| CaO (wt %) | 10,60 | 10,77 | 10,61 | 9,14 | 9,32 | 8,90 | 7,23 |
| Na2O (wt %) | 2,23 | 2,23 | 2,18 | 2,48 | 2,50 | 2,51 | 2,92 |
| K2O (wt %) | 0,41 | 0,43 | 0,42 | 0,91 | 0,86 | 1,12 | 1,71 |
| P2O5 (wt %) | 0,13 | 0,13 | 0,12 | 0,20 | 0,19 | 0,23 | 0,32 |
| SUM | 100,2 | 99,7 | 99,7 | 98,3 | 98,6 | 98,4 | 97,6 |
| Cs (ppm) | 0,7 | 0,6 | 1,2 | 0,4 | 0,8 | 0,4 | 0,9 |
| Tl (ppm) | b.d. | b.d. | 0,2 | b.d. | b.d. | b.d. | 0,2 |
| Rb (ppm) | 9 | 10 | 11 | 16 | 17 | 23 | 43 |
| Ba (ppm) | 166 | 156 | 144 | 335 | 260 | 307 | 468 |
| Th (ppm) | b.d. | b.d. | 1,1 | 2,1 | 2,0 | 2,4 | 3,4 |
| U (ppm) | 0,21 | 0,22 | 0,19 | 0,39 | 0,36 | 0,42 | 0,70 |
| Nb (ppm) | 6,4 | 5,8 | 5,7 | 5,0 | 5,5 | 6,7 | 8,7 |
| Ta (ppm) | 0,32 | 0,32 | 0,30 | 0,31 | 0,26 | 0,34 | 0,50 |
| La (ppm) | 8,26 | 7,98 | 8,18 | 12,02 | 13,03 | 15,96 | 21,27 |
| Ce (ppm) | 18,10 | 17,46 | 17,96 | 27,03 | 28,94 | 36,42 | 48,39 |
| Pb (ppm) | 6 | 7 | 7 | 7 | 6 | 2 | 7 |
| Pr (ppm) | 2,35 | 2,21 | 2,25 | 3,28 | 3,51 | 4,30 | 5,61 |
| Mo (ppm) | 1,0 | 0,9 | 0,9 | 1,5 | 2,0 | 1,9 | 1,8 |
| Sr (ppm) | 191 | 191 | 183 | 203 | 204 | 200 | 226 |
| Nd (ppm) | 11,7 | 10,7 | 10,7 | 16,7 | 16,5 | 20,9 | 27,4 |
| Zr (ppm) | 84 | 81 | 83 | 111 | 104 | 124 | 162 |
| Hf (ppm) | 2,24 | 2,10 | 2,16 | 3,01 | 2,79 | 3,52 | 4,59 |
| Sm (ppm) | 3,16 | 3,12 | 2,87 | 4,10 | 3,79 | 5,13 | 6,41 |
| Eu (ppm) | 0,91 | 0,90 | 0,91 | 1,31 | 1,28 | 1,50 | 1,67 |
| Sn (ppm) | 0,5 | b.d. | b.d. | b.d. | 0,6 | 0,7 | 0,9 |
| Gd (ppm) | 3,08 | 3,15 | 3,02 | 3,80 | 3,85 | 4,76 | 5,98 |
| Dy (ppm) | 3,73 | 3,54 | 3,73 | 4,44 | 4,21 | 5,30 | 6,97 |
| Li (ppm) | 7 | 6 | 10 | 2 | 5 | 2 | 8 |
| Y (ppm) | 28 | 25 | 25 | 26 | 28 | 36 | 45 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | 1 | 1 |
| Er (ppm) | 2,21 | 2,12 | 2,26 | 2,45 | 2,26 | 2,85 | 3,38 |
| Yb (ppm) | 2,25 | 2,21 | 2,28 | 2,40 | 2,47 | 2,82 | 3,53 |
| Lu (ppm) | 0,35 | 0,34 | 0,36 | 0,36 | 0,35 | 0,42 | 0,53 |
| Co (ppm) | 40 | 39 | 42 | 32 | 31 | 33 | 37 |
| Cr (ppm) | 339 | 306 | 393 | 336 | 349 | 227 | 100 |
| Cu (ppm) | 99 | 89 | 100 | 33 | 32 | 31 | 27 |
| Ni (ppm) | 101 | 112 | 117 | 13 | 13 | 9 | 6 |
| Sc (ppm) | 35 | 33 | 34 | 29 | 27 | 31 | 32 |
| V (ppm) | 249 | 239 | 244 | 220 | 210 | 239 | 256 |
| Zn (ppm) | 84 | 80 | 85 | 93 | 103 | 99 | 120 |
| Tb (ppm) | | | | 0,7 | 0,7 | 0,8 | 1,1 |
| Tm (ppm) | | | | 0,3 | 0,4 | 0,5 | 0,6 |
| S I | 0,71 | 1,68 | 1,36 | -27,81 | -30,02 | -24,92 | -29,57 |
| S II | 9,53 | 10,05 | 7,94 | 1,17 | -0,62 | 1,07 | -1,16 |
| S III | -2,85 | -1,46 | -0,30 | 1,64 | 0,74 | 1,33 | 4,05 |

| Sample: | K05-192 | K05-194 | K05-195 | K05-196 | K05-197 | K05-205 | K05-167 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | HS/L8 | HS/L8 | HS/L6 | HS/L6 | HS/L6 | HS/L5 | GVS |
| Latitude (N): | -31,7810 | -31,7740 | -31,8586 | -31,8586 | -31,8586 | -31,8586 | -31,8237 |
| Longitude ( E): | 26,2994 | 26,3006 | 26,3466 | 26,3466 | 26,3466 | 26,3466 | 26,2672 |
| Altitude (m): | 1905 | 1951 | 1590 | 1651 | 1603 | 1329 | 1481 |
| SiO2 (wt %) | 54,68 | 53,73 | 51,73 | 51,51 | 53,07 | 52,96 | 51,01 |
| TiO2 (wt %) | 1,76 | 1,96 | 1,15 | 0,88 | 1,26 | 1,14 | 0,99 |
| Al2O3 (wt %) | 13,33 | 12,84 | 15,28 | 15,80 | 15,19 | 15,64 | 15,47 |
| Fe2O3(T) (wt %) | 13,00 | 13,77 | 10,51 | 9,33 | 10,83 | 10,09 | 12,02 |
| MnO (wt %) | 0,17 | 0,18 | 0,15 | 0,14 | 0,18 | 0,15 | 0,18 |
| MgO (wt %) | 4,20 | 3,60 | 6,39 | 7,20 | 5,99 | 6,12 | 6,16 |
| CaO (wt %) | 8,06 | 7,69 | 9,24 | 9,02 | 9,10 | 9,18 | 10,51 |
| Na2O (wt %) | 2,61 | 2,78 | 2,49 | 2,41 | 2,37 | 2,49 | 2,58 |
| K2O (wt %) | 1,49 | 1,50 | 0,88 | 0,79 | 0,82 | 0,91 | 0,69 |
| P2O5 (wt %) | 0,31 | 0,35 | 0,19 | 0,14 | 0,21 | 0,20 | 0,15 |
| SUM | 99,6 | 98,4 | 98,0 | 97,2 | 99,0 | 98,9 | 99,8 |
| Cs (ppm) | 0,6 | 0,6 | 0,3 | 0,6 | 0,3 | 0,7 | 0,2 |
| Tl (ppm) | 0,3 | b.d. | b.d. | b.d. | 0,2 | b.d. | b.d. |
| Rb (ppm) | 30 | 30 | 16 | 18 | 16 | 20 | 12 |
| Ba (ppm) | 401 | 456 | 271 | 226 | 271 | 262 | 203 |
| Th (ppm) | 3,5 | 3,4 | 1,8 | 1,5 | 1,9 | 2,0 | 1,6 |
| U (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | 0,32 |
| Nb (ppm) | 7,8 | 8,4 | 5,0 | 4,0 | 5,4 | 6,2 | 8,1 |
| Ta (ppm) | 0,40 | 0,50 | 0,28 | 0,23 | 0,30 | 0,31 | 0,42 |
| La (ppm) | 18,43 | 20,78 | 11,40 | 8,89 | 12,30 | 13,89 | 10,86 |
| Ce (ppm) | 42,19 | 47,45 | 26,17 | 20,84 | 28,11 | 31,16 | 22,60 |
| Pb (ppm) | 11 | 4 | b.d. | 4 | 5 | 7 | b.d. |
| Pr (ppm) | 4,98 | 5,48 | 3,17 | 2,43 | 3,37 | 3,60 | 2,58 |
| Mo (ppm) | 1,8 | 2,0 | 2,0 | 1,0 | 1,7 | 1,3 | 0,4 |
| Sr (ppm) | 197 | 186 | 210 | 218 | 193 | 216 | 206 |
| Nd (ppm) | 25,5 | 27,9 | 16,0 | 12,4 | 17,0 | 18,9 | 13,4 |
| Zr (ppm) | 161 | 176 | 103 | 85 | 110 | 106 | 91 |
| Hf (ppm) | 4,14 | 5,02 | 2,71 | 2,11 | 2,82 | 3,09 | 2,35 |
| Sm (ppm) | 5,78 | 6,99 | 3,47 | 2,76 | 4,14 | 4,46 | 3,23 |
| Eu (ppm) | 1,52 | 1,72 | 1,20 | 1,01 | 1,34 | 1,34 | 1,13 |
| Sn (ppm) | 0,9 | 0,8 | 0,5 | b.d. | b.d. | b.d. | 0,8 |
| Gd (ppm) | 5,33 | 6,40 | 3,42 | 2,89 | 3,80 | 4,18 | 3,19 |
| Dy (ppm) | 5,96 | 7,39 | 4,26 | 3,21 | 4,54 | 4,66 | 3,88 |
| Li (ppm) | 12 | 2 | b.d. | 3 | 9 | 3 | b.d. |
| Y (ppm) | 39 | 45 | 25 | 20 | 28 | 31 | 26 |
| Ho (ppm) | 1 | 1 | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 3,68 | 3,79 | 2,23 | 1,66 | 2,58 | 2,62 | 2,17 |
| Yb (ppm) | 3,48 | 3,86 | 2,36 | 1,77 | 2,56 | 2,57 | 2,43 |
| Lu (ppm) | 0,51 | 0,56 | 0,35 | 0,26 | 0,37 | 0,37 | 0,35 |
| Co (ppm) | 35 | 39 | 31 | 29 | 31 | 32 | 32 |
| Cr (ppm) | 117 | 57 | 379 | 486 | 305 | 375 | 277 |
| Cu (ppm) | 30 | 28 | 34 | 32 | 33 | 36 | 103 |
| Ni (ppm) | 7 | 5 | 15 | 14 | 11 | 15 | 64 |
| Sc (ppm) | 35 | 33 | 28 | 25 | 30 | 27 | 37 |
| V (ppm) | 270 | 263 | 211 | 184 | 227 | 214 | 262 |
| Zn (ppm) | 117 | 124 | 89 | 78 | 93 | 90 | 91 |
| Tb (ppm) | 1,1 | 1,2 | 0,6 | 0,5 | 0,8 | 0,7 | 0,6 |
| Tm (ppm) | 0,5 | 0,6 | 0,3 | 0,3 | 0,4 | 0,4 | 0,3 |
| S I | -27,56 | -30,01 | -27,83 | -30,14 | -25,17 | -27,24 | 3,19 |
| S II | 0,27 | 1,45 | 1,91 | -0,01 | 1,18 | 1,86 | 0,21 |
| S III | -0,10 | 1,64 | 2,07 | 2,96 | 0,57 | 2,36 | -0,48 |

| Sample: | K05-168 | K05-169 | K05-170 | K05-171 | K05-172 | K05-173 | K05-174 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8239 | -31,8240 | -31,8241 | -31,8242 | -31,8419 | -31,8412 | -31,8413 |
| Longitude ( E): | 26,2674 | 26,2675 | 26,2674 | 26,2674 | 26,3086 | 26,3099 | 26,3099 |
| Altitude (m): | 1537 | 1538 | 1547 | 1552 | 1819 | 1766 | 1780 |
| SiO2 (wt %) | 51,14 | 51,11 | 50,87 | 50,79 | 51,42 | 51,05 | 49,89 |
| TiO2 (wt %) | 1,05 | 1,06 | 0,97 | 1,05 | 1,09 | 1,11 | 1,03 |
| Al2O3 (wt %) | 14,93 | 14,91 | 15,49 | 15,22 | 15,10 | 15,00 | 14,30 |
| Fe2O3(T) (wt %) | 11,86 | 11,86 | 11,50 | 11,60 | 12,38 | 12,48 | 11,86 |
| MnO (wt %) | 0,18 | 0,18 | 0,18 | 0,18 | 0,19 | 0,19 | 0,18 |
| MgO (wt %) | 6,09 | 6,02 | 6,30 | 6,27 | 6,12 | 6,15 | 6,29 |
| CaO (wt %) | 10,32 | 10,35 | 10,37 | 10,56 | 10,35 | 10,38 | 10,41 |
| Na2O (wt %) | 2,71 | 2,55 | 2,61 | 2,52 | 2,74 | 2,64 | 2,47 |
| K2O (wt %) | 0,76 | 0,71 | 0,66 | 0,70 | 0,75 | 0,75 | 0,68 |
| P2O5 (wt %) | 0,16 | 0,16 | 0,16 | 0,17 | 0,16 | 0,17 | 0,16 |
| SUM | 99,2 | 98,9 | 99,1 | 99,1 | 100,3 | 99,9 | 97,3 |
| Cs (ppm) | 0,5 | 0,2 | 0,2 | 0,2 | 0,2 | 0,5 | 0,3 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 17 | 13 | 15 | 13 | 14 | 15 | 12 |
| Ba (ppm) | 216 | 211 | 198 | 207 | 222 | 223 | 206 |
| Th (ppm) | 1,5 | 1,5 | 1,3 | 1,3 | 1,4 | 1,4 | 1,4 |
| U (ppm) | 0,30 | 0,29 | 0,29 | 0,28 | 0,28 | 0,28 | 0,26 |
| Nb (ppm) | 8,2 | 8,1 | 8,7 | 8,1 | 8,4 | 8,4 | 7,8 |
| Ta (ppm) | 0,48 | 0,50 | 0,43 | 0,45 | 0,50 | 0,48 | 0,46 |
| La (ppm) | 11,16 | 11,82 | 11,38 | 11,91 | 11,45 | 11,96 | 10,88 |
| Ce (ppm) | 24,46 | 25,28 | 25,52 | 24,82 | 25,42 | 25,76 | 23,35 |
| Pb (ppm) | 4 | 4 | 6 | 4 | b.d. | 7 | 5 |
| Pr (ppm) | 3,04 | 2,90 | 2,97 | 2,87 | 3,02 | 3,04 | 2,71 |
| Mo (ppm) | 0,4 | 0,2 | b.d. | 0,2 | 0,4 | 0,7 | 0,5 |
| Sr (ppm) | 197 | 197 | 203 | 198 | 207 | 209 | 189 |
| Nd (ppm) | 14,7 | 14,8 | 15,6 | 15,2 | 15,4 | 14,5 | 13,4 |
| Zr (ppm) | 103 | 105 | 95 | 100 | 107 | 107 | 104 |
| Hf (ppm) | 2,51 | 2,47 | 2,50 | 2,52 | 2,54 | 2,56 | 2,38 |
| Sm (ppm) | 3,70 | 3,97 | 3,66 | 3,61 | 3,65 | 3,64 | 3,32 |
| Eu (ppm) | 1,05 | 1,13 | 1,16 | 1,11 | 1,06 | 1,14 | 1,03 |
| Sn (ppm) | 0,6 | 2,9 | b.d. | 0,5 | 0,7 | 0,8 | 0,7 |
| Gd (ppm) | 3,47 | 3,30 | 3,53 | 3,40 | 3,30 | 3,65 | 3,22 |
| Dy (ppm) | 4,00 | 4,16 | 4,15 | 4,25 | 4,31 | 3,97 | 3,96 |
| Li (ppm) | 3 | b.d. | 5 | b.d. | 2 | b.d. | 22 |
| Y (ppm) | 27 | 27 | 28 | 27 | 27 | 28 | 25 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,34 | 2,27 | 2,49 | 2,16 | 2,34 | 2,13 | 2,04 |
| Yb (ppm) | 2,25 | 2,37 | 2,50 | 2,27 | 2,31 | 2,28 | 2,25 |
| Lu (ppm) | 0,34 | 0,36 | 0,39 | 0,35 | 0,37 | 0,35 | 0,34 |
| Co (ppm) | 34 | 34 | 32 | 34 | 34 | 34 | 35 |
| Cr (ppm) | 272 | 269 | 251 | 274 | 284 | 268 | 301 |
| Cu (ppm) | 106 | 109 | 99 | 105 | 109 | 109 | 106 |
| Ni (ppm) | 62 | 63 | 64 | 65 | 64 | 64 | 66 |
| Sc (ppm) | 37 | 37 | 37 | 38 | 38 | 38 | 38 |
| V (ppm) | 267 | 264 | 245 | 265 | 267 | 265 | 274 |
| Zn (ppm) | 94 | 94 | 89 | 92 | 95 | 94 | 97 |
| Tb (ppm) | 0,7 | 0,6 | 0,7 | 0,6 | 0,6 | 0,7 | 0,6 |
| Tm (ppm) | 0,4 | 0,4 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 |
| S I | 2,21 | 2,69 | 3,10 | 2,73 | 4,14 | 3,29 | 1,76 |
| S II | -1,75 | -1,83 | -1,21 | -1,20 | -2,47 | -1,54 | -2,23 |
| S III | 1,87 | 1,15 | 0,06 | 0,92 | 2,43 | 2,01 | 1,46 |

| Sample: | K05-175 | K05-176 | K05-177 | K05-178 | K05-179 | K05-180 | K05-181 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8414 | -31,8415 | -31,8415 | -31,8469 | -31,8467 | -31,8465 | -31,8473 |
| Longitude ( E): | 26,3096 | 26,3097 | 26,3096 | 26,2953 | 26,2947 | 26,2941 | 26,2947 |
| Altitude (m): | 1804 | 1818 | 1831 | 1522 | 1527 | 1527 | 1552 |
| SiO2 (wt %) | 51,33 | 48,03 | 51,10 | 51,18 | 51,25 | 50,12 | 49,94 |
| TiO2 (wt %) | 1,02 | 1,05 | 1,05 | 1,06 | 1,00 | 1,06 | 0,95 |
| Al2O3 (wt %) | 15,16 | 14,01 | 14,72 | 15,05 | 15,23 | 14,55 | 14,99 |
| Fe2O3(T) (wt %) | 11,88 | 12,04 | 12,00 | 11,85 | 11,77 | 12,12 | 11,07 |
| MnO (wt %) | 0,19 | 0,19 | 0,19 | 0,19 | 0,19 | 0,19 | 0,17 |
| MgO (wt %) | 6,24 | 6,25 | 6,38 | 6,24 | 6,09 | 6,26 | 6,60 |
| CaO (wt %) | 10,43 | 10,39 | 10,42 | 10,52 | 10,20 | 10,52 | 10,73 |
| Na2O (wt %) | 2,45 | 2,43 | 2,63 | 2,67 | 2,55 | 2,60 | 2,50 |
| K2O (wt %) | 0,62 | 0,66 | 0,68 | 0,71 | 0,68 | 0,75 | 0,64 |
| P2O5 (wt %) | 0,15 | 0,16 | 0,15 | 0,16 | 0,15 | 0,17 | 0,15 |
| SUM | 99,5 | 95,2 | 99,3 | 99,6 | 99,1 | 98,3 | 97,7 |
| Cs (ppm) | 0,4 | 0,4 | 0,4 | 0,2 | 0,2 | 0,3 | 0,3 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 14 | 13 | 13 | 14 | 13 | 12 |
| Ba (ppm) | 194 | 199 | 208 | 224 | 210 | 223 | 200 |
| Th (ppm) | 1,4 | 1,2 | 1,4 | 1,6 | 1,4 | 1,3 | 1,3 |
| U (ppm) | 0,22 | 0,23 | 0,29 | 0,29 | 0,26 | 0,28 | 0,26 |
| Nb (ppm) | 9,0 | 8,3 | 7,8 | 10,5 | 8,7 | 7,8 | 7,3 |
| Ta (ppm) | 0,45 | 0,42 | 0,44 | 0,51 | 0,47 | 0,47 | 0,42 |
| La (ppm) | 11,06 | 11,31 | 11,27 | 10,76 | 10,75 | 10,49 | 10,39 |
| Ce (ppm) | 25,36 | 25,17 | 24,33 | 24,05 | 24,44 | 23,25 | 22,62 |
| Pb (ppm) | 6 | 6 | 3 | 2 | 6 | 6 | 4 |
| Pr (ppm) | 2,96 | 2,90 | 2,93 | 2,88 | 2,88 | 2,80 | 2,67 |
| Mo (ppm) | b.d. | b.d. | 0,3 | 0,3 | b.d. | 0,5 | b.d. |
| Sr (ppm) | 199 | 198 | 200 | 202 | 195 | 211 | 201 |
| Nd (ppm) | 15,2 | 14,7 | 15,0 | 14,7 | 15,3 | 13,8 | 13,1 |
| Zr (ppm) | 97 | 95 | 96 | 107 | 102 | 105 | 96 |
| Hf (ppm) | 2,50 | 2,36 | 2,49 | 2,77 | 2,61 | 2,43 | 2,14 |
| Sm (ppm) | 3,61 | 3,58 | 3,58 | 3,44 | 3,44 | 3,16 | 3,08 |
| Eu (ppm) | 1,25 | 1,19 | 1,15 | 1,13 | 1,15 | 1,13 | 1,07 |
| Sn (ppm) | 0,7 | 0,5 | 0,7 | 1,9 | b.d. | 0,8 | 0,6 |
| Gd (ppm) | 3,19 | 3,32 | 3,24 | 3,24 | 3,27 | 3,13 | 2,82 |
| Dy (ppm) | 3,96 | 3,84 | 4,10 | 4,11 | 3,72 | 3,90 | 3,63 |
| Li (ppm) | 5 | 6 | 4 | 4 | 7 | 4 | b.d. |
| Y (ppm) | 27 | 27 | 27 | 26 | 26 | 25 | 23 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,47 | 2,32 | 2,12 | 2,18 | 2,30 | 2,11 | 1,96 |
| Yb (ppm) | 2,42 | 2,35 | 2,19 | 2,26 | 2,40 | 2,17 | 2,04 |
| Lu (ppm) | 0,34 | 0,36 | 0,34 | 0,35 | 0,36 | 0,34 | 0,32 |
| Co (ppm) | 33 | 34 | 35 | 34 | 34 | 34 | 33 |
| Cr (ppm) | 257 | 256 | 287 | 273 | 277 | 288 | 304 |
| Cu (ppm) | 102 | 104 | 111 | 103 | 104 | 108 | 98 |
| Ni (ppm) | 64 | 63 | 66 | 63 | 68 | 63 | 68 |
| Sc (ppm) | 38 | 38 | 40 | 39 | 36 | 38 | 38 |
| V (ppm) | 262 | 271 | 279 | 276 | 244 | 269 | 267 |
| Zn (ppm) | 92 | 94 | 95 | 95 | 93 | 97 | 90 |
| Tb (ppm) | 0,7 | 0,7 | 0,6 | 0,6 | 0,7 | 0,6 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 |
| S I | 4,35 | 2,60 | 3,45 | 5,59 | 4,07 | 2,07 | 2,19 |
| S II | -2,41 | -1,95 | -1,72 | -2,23 | -2,94 | -2,46 | -1,44 |
| S III | 2,17 | 1,33 | 0,81 | 3,37 | 1,50 | 1,40 | 2,10 |

| Sample: | K05-182 | K05-183 | K05-32 | K05-33 | K05-34 | K05-31 | K05-35 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8477 | -31,9557 | -31,8984 | -31,8984 | -31,8983 | -31,8983 | -31,8886 |
| Longitude ( E): | 26,2947 | 26,2986 | 26,3144 | 26,3146 | 26,3147 | 26,3148 | 26,3115 |
| Altitude (m): | 1570 | 1467 | 1579 | 1567 | 1557 | 1542 | 1675 |
| SiO2 (wt %) | 51,09 | 49,88 | 52,11 | 51,96 | 52,29 | 52,33 | 51,30 |
| TiO2 (wt %) | 0,99 | 1,06 | 0,72 | 0,92 | 1,30 | 1,19 | 1,07 |
| Al2O3 (wt %) | 15,13 | 14,60 | 15,86 | 15,19 | 14,17 | 15,24 | 15,45 |
| Fe2O3(T) (wt %) | 12,03 | 12,12 | 10,75 | 12,37 | 13,63 | 13,01 | 11,81 |
| MnO (wt %) | 0,19 | 0,19 | 0,18 | 0,20 | 0,21 | 0,19 | 0,17 |
| MgO (wt %) | 6,65 | 6,28 | 7,09 | 6,28 | 5,35 | 5,71 | 5,91 |
| CaO (wt %) | 10,75 | 10,40 | 10,99 | 10,43 | 9,36 | 10,06 | 10,21 |
| Na2O (wt %) | 2,68 | 2,51 | 2,27 | 2,32 | 2,54 | 2,55 | 2,40 |
| K2O (wt %) | 0,70 | 0,74 | 0,51 | 0,59 | 0,86 | 0,82 | 0,72 |
| P2O5 (wt %) | 0,14 | 0,17 | 0,11 | 0,11 | 0,20 | 0,19 | 0,17 |
| SUM | 100,3 | 97,9 | 100,6 | 100,4 | 99,9 | 101,3 | 99,2 |
| Cs (ppm) | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,4 | 0,3 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | 0,2 | b.d. |
| Rb (ppm) | 12 | 13 | 12 | 13 | 17 | 19 | 14 |
| Ba (ppm) | 212 | 220 | 161 | 193 | 264 | 255 | 220 |
| Th (ppm) | 1,3 | 1,6 | 1,3 | 1,4 | 2,2 | 1,9 | 1,8 |
| U (ppm) | 0,24 | 0,27 | 0,24 | 0,27 | 0,40 | 0,37 | 0,34 |
| Nb (ppm) | 7,3 | 7,6 | 7,0 | 7,5 | 10,8 | 10,3 | 8,7 |
| Ta (ppm) | 0,40 | 0,45 | 0,38 | 0,39 | 0,60 | 0,55 | 0,48 |
| La (ppm) | 9,94 | 10,60 | 9,35 | 10,20 | 14,71 | 14,44 | 12,32 |
| Ce (ppm) | 21,71 | 23,71 | 19,49 | 21,31 | 30,80 | 30,07 | 26,03 |
| Pb (ppm) | 3 | 5 | 5 | 7 | 7 | 7 | 8 |
| Pr (ppm) | 2,53 | 2,89 | 2,40 | 2,66 | 4,01 | 3,76 | 3,21 |
| Mo (ppm) | 0,4 | 0,3 | b.d. | 1,3 | 1,3 | 1,4 | 1,3 |
| Sr (ppm) | 212 | 205 | 199 | 198 | 195 | 203 | 198 |
| Nd (ppm) | 12,8 | 13,8 | 11,1 | 12,6 | 18,3 | 17,4 | 15,1 |
| Zr (ppm) | 98 | 103 | 79 | 88 | 133 | 117 | 111 |
| Hf (ppm) | 2,20 | 2,35 | 2,18 | 2,24 | 3,64 | 3,19 | 2,91 |
| Sm (ppm) | 2,79 | 3,43 | 2,78 | 3,12 | 4,36 | 4,42 | 4,16 |
| Eu (ppm) | 1,07 | 1,16 | 0,90 | 1,00 | 1,24 | 1,20 | 1,09 |
| Sn (ppm) | 0,7 | 0,7 | 0,5 | 0,5 | 0,8 | 0,8 | 0,6 |
| Gd (ppm) | 2,81 | 3,19 | 2,84 | 3,26 | 4,42 | 4,27 | 3,82 |
| Dy (ppm) | 3,62 | 3,92 | 3,17 | 3,72 | 5,22 | 4,71 | 4,39 |
| Li (ppm) | b.d. | b.d. | 6 | 8 | 7 | 8 | 10 |
| Y (ppm) | 24 | 25 | 23 | 26 | 35 | 36 | 28 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | 1 | 1 | b.d. |
| Er (ppm) | 1,94 | 2,20 | 1,91 | 2,29 | 3,07 | 2,88 | 2,58 |
| Yb (ppm) | 2,04 | 2,16 | 1,94 | 2,30 | 3,27 | 3,06 | 2,76 |
| Lu (ppm) | 0,34 | 0,37 | 0,29 | 0,32 | 0,49 | 0,46 | 0,41 |
| Co (ppm) | 34 | 35 | 35 | 38 | 39 | 40 | 38 |
| Cr (ppm) | 298 | 259 | 261 | 262 | 110 | 176 | 241 |
| Cu (ppm) | 98 | 111 | 70 | 98 | 130 | 130 | 109 |
| Ni (ppm) | 68 | 64 | 65 | 55 | 40 | 52 | 61 |
| Sc (ppm) | 39 | 39 | 39 | 41 | 43 | 40 | 38 |
| V (ppm) | 272 | 273 | 240 | 271 | 303 | 282 | 260 |
| Zn (ppm) | 92 | 96 | 79 | 96 | 108 | 103 | 94 |
| Tb (ppm) | 0,6 | 0,6 | | | | | |
| Tm (ppm) | 0,3 | 0,3 | | | | | |
| S I | 3,44 | 3,09 | 3,76 | 3,39 | 3,80 | 3,13 | 2,45 |
| S II | -0,95 | -2,89 | -0,79 | -3,61 | -5,81 | -2,87 | -1,93 |
| S III | 1,78 | 0,71 | -0,27 | -2,10 | -2,34 | -3,51 | -0,29 |

| Sample: | K05-36 | K05-37 | K05-38 | K05-39 | K05-1 | K05-2 | K05-3 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8984 | -31,8983 | -31,8883 | -31,8982 | -31,8882 | -31,8881 | -31,8882 |
| Longitude ( E): | 26,3149 | 26,3153 | 26,3118 | 26,3153 | 26,3117 | 26,3115 | 26,3114 |
| Altitude (m): | 1541 | 1564 | 1652 | 1616 | 1649 | 1664 | 1673 |
| SiO2 (wt %) | 51,47 | 51,38 | 51,71 | 51,99 | 51,35 | 51,27 | 51,01 |
| TiO2 (wt %) | 1,01 | 0,96 | 1,07 | 1,07 | 1,08 | 1,04 | 1,04 |
| Al2O3 (wt %) | 15,40 | 15,21 | 15,32 | 15,29 | 15,02 | 15,59 | 15,12 |
| Fe2O3(T) (wt %) | 11,81 | 11,96 | 11,79 | 12,03 | 12,62 | 12,55 | 12,99 |
| MnO (wt %) | 0,18 | 0,18 | 0,18 | 0,18 | 0,19 | 0,19 | 0,20 |
| MgO (wt %) | 6,19 | 6,24 | 6,08 | 6,06 | 6,37 | 6,68 | 6,67 |
| CaO (wt %) | 10,35 | 10,25 | 10,19 | 10,15 | 10,95 | 11,17 | 10,74 |
| Na2O (wt %) | 2,30 | 2,31 | 2,33 | 2,35 | 2,66 | 2,36 | 2,40 |
| K2O (wt %) | 0,65 | 0,65 | 0,70 | 0,70 | 0,69 | 0,65 | 0,64 |
| P2O5 (wt %) | 0,15 | 0,16 | 0,17 | 0,17 | 0,18 | 0,15 | 0,14 |
| SUM | 99,5 | 99,3 | 99,5 | 100,0 | 101,1 | 101,7 | 101,0 |
| Cs (ppm) | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,3 | 0,3 |
| Tl (ppm) | b.d. | 0,2 | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 14 | 17 | 18 | 15 | 14 | 13 |
| Ba (ppm) | 203 | 206 | 214 | 214 | 206 | 198 | 200 |
| Th (ppm) | 1,8 | 1,6 | 1,7 | 1,6 | 1,4 | 1,3 | 1,2 |
| U (ppm) | 0,31 | 0,35 | 0,32 | 0,30 | 0,29 | 0,23 | 0,23 |
| Nb (ppm) | 8,7 | 8,2 | 10,2 | 9,8 | 9,5 | 8,0 | 7,6 |
| Ta (ppm) | 0,47 | 0,46 | 0,51 | 0,45 | 0,49 | 0,44 | 0,42 |
| La (ppm) | 11,71 | 11,67 | 13,00 | 12,74 | 10,85 | 10,34 | 9,97 |
| Ce (ppm) | 24,65 | 24,68 | 27,46 | 26,79 | 24,89 | 23,17 | 22,44 |
| Pb (ppm) | 8 | 7 | 7 | 7 | 6 | 6 | 4 |
| Pr (ppm) | 2,99 | 3,08 | 3,31 | 3,29 | 2,89 | 2,78 | 2,60 |
| Mo (ppm) | 1,2 | 1,3 | 1,1 | 1,3 | 2,9 | 2,0 | 2,2 |
| Sr (ppm) | 193 | 193 | 192 | 192 | 198 | 210 | 208 |
| Nd (ppm) | 14,6 | 14,3 | 15,3 | 15,6 | 14,4 | 13,2 | 12,4 |
| Zr (ppm) | 103 | 104 | 111 | 110 | 96 | 92 | 90 |
| Hf (ppm) | 2,82 | 2,71 | 2,79 | 2,92 | 2,70 | 2,37 | 2,27 |
| Sm (ppm) | 3,72 | 3,62 | 4,10 | 3,71 | 3,80 | 3,29 | 3,15 |
| Eu (ppm) | 1,01 | 1,09 | 1,10 | 1,07 | 1,05 | 1,08 | 1,04 |
| Sn (ppm) | 0,9 | 0,7 | 0,7 | 0,6 | 0,6 | 0,7 | 0,6 |
| Gd (ppm) | 3,52 | 3,65 | 3,75 | 3,82 | 3,38 | 3,06 | 3,11 |
| Dy (ppm) | 4,07 | 4,10 | 4,24 | 4,20 | 4,01 | 3,71 | 3,57 |
| Li (ppm) | 7 | 8 | 6 | 6 | 5 | 5 | 4 |
| Y (ppm) | 27 | 27 | 32 | 31 | 27 | 25 | 24 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,48 | 2,52 | 2,48 | 2,60 | 2,41 | 2,28 | 2,28 |
| Yb (ppm) | 2,57 | 2,58 | 2,57 | 2,66 | 2,46 | 2,30 | 2,25 |
| Lu (ppm) | 0,38 | 0,38 | 0,37 | 0,40 | 0,37 | 0,32 | 0,34 |
| Co (ppm) | 39 | 39 | 38 | 38 | 38 | 37 | 39 |
| Cr (ppm) | 271 | 285 | 246 | 262 | 325 | 297 | 290 |
| Cu (ppm) | 102 | 102 | 107 | 108 | 111 | 104 | 105 |
| Ni (ppm) | 64 | 67 | 62 | 62 | 66 | 70 | 68 |
| Sc (ppm) | 38 | 38 | 38 | 38 | 39 | 38 | 40 |
| V (ppm) | 261 | 252 | 268 | 269 | 284 | 269 | 287 |
| Zn (ppm) | 92 | 92 | 93 | 94 | 99 | 94 | 97 |
| Tb (ppm) | | | | | 0,7 | 0,6 | 0,6 |
| Tm (ppm) | | | | | 0,4 | 0,3 | 0,3 |
| S I | 2,56 | 2,66 | 2,73 | 2,76 | 4,52 | 3,48 | 3,70 |
| S II | -1,47 | -1,92 | -0,55 | -1,42 | -2,90 | -1,84 | -3,27 |
| S III | 0,29 | -0,86 | -0,13 | -0,18 | 2,41 | 0,93 | 1,62 |

| Sample: | K05-4 | K05-5 | K05-6 | K05-7 | K05-8 | K05-9 | K05-10 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8882 | -31,8887 | -31,8895 | -31,8907 | -31,9731 | -31,9697 | -31,9697 |
| Longitude ( E): | 26,3113 | 26,3115 | 26,3043 | 26,3004 | 26,2955 | 26,2989 | 26,2987 |
| Altitude (m): | 1670 | 1679 | 1564 | 1494 | 1503 | 1481 | 1507 |
| SiO2 (wt %) | 51,70 | 51,57 | 51,62 | 51,68 | 51,08 | 51,40 | 51,11 |
| TiO2 (wt %) | 0,98 | 0,89 | 0,99 | 1,02 | 0,95 | 1,04 | 1,03 |
| Al2O3 (wt %) | 15,60 | 15,69 | 14,85 | 15,05 | 15,20 | 15,10 | 14,96 |
| Fe2O3(T) (wt %) | 11,53 | 11,48 | 12,23 | 11,58 | 11,45 | 11,73 | 11,64 |
| MnO (wt %) | 0,18 | 0,18 | 0,19 | 0,18 | 0,18 | 0,18 | 0,18 |
| MgO (wt %) | 5,93 | 6,06 | 6,37 | 5,99 | 6,44 | 5,96 | 6,05 |
| CaO (wt %) | 10,30 | 10,15 | 10,22 | 9,92 | 10,19 | 10,06 | 10,05 |
| Na2O (wt %) | 2,50 | 2,42 | 2,29 | 2,37 | 2,36 | 2,36 | 2,44 |
| K2O (wt %) | 0,71 | 0,63 | 0,55 | 0,65 | 0,62 | 0,66 | 0,63 |
| P2O5 (wt %) | 0,15 | 0,15 | 0,13 | 0,16 | 0,15 | 0,16 | 0,17 |
| SUM | 99,6 | 99,2 | 99,4 | 98,6 | 98,6 | 98,6 | 98,3 |
| Cs (ppm) | 0,3 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| Tl (ppm) | b.d. | b.d. | b.d. | 0,2 | b.d. | b.d. | b.d. |
| Rb (ppm) | 16 | 16 | 13 | 15 | 16 | 14 | 14 |
| Ba (ppm) | 210 | 196 | 179 | 203 | 194 | 202 | 199 |
| Th (ppm) | 1,4 | 1,6 | 1,1 | 2,7 | 2,4 | 1,2 | 1,3 |
| U (ppm) | 0,24 | 0,30 | 0,25 | 0,30 | 0,25 | 0,29 | 0,26 |
| Nb (ppm) | 8,7 | 8,1 | 7,8 | 8,6 | 7,9 | 9,8 | 8,7 |
| Ta (ppm) | 0,46 | 0,44 | 0,41 | 0,48 | 0,40 | 0,46 | 0,46 |
| La (ppm) | 11,32 | 10,54 | 9,60 | 11,14 | 10,43 | 11,14 | 11,24 |
| Ce (ppm) | 25,85 | 23,64 | 21,67 | 25,89 | 23,80 | 24,79 | 24,87 |
| Pb (ppm) | 6 | 5 | 7 | 5 | 8 | 8 | 8 |
| Pr (ppm) | 3,10 | 2,76 | 2,56 | 3,09 | 2,76 | 2,88 | 2,91 |
| Mo (ppm) | 1,7 | 1,5 | 1,8 | 1,8 | 1,6 | 1,7 | 1,7 |
| Sr (ppm) | 199 | 201 | 189 | 185 | 193 | 193 | 188 |
| Nd (ppm) | 14,4 | 13,4 | 12,5 | 14,8 | 13,5 | 14,4 | 14,7 |
| Zr (ppm) | 103 | 93 | 83 | 102 | 93 | 97 | 96 |
| Hf (ppm) | 2,82 | 2,50 | 2,27 | 2,66 | 2,36 | 2,49 | 2,55 |
| Sm (ppm) | 3,60 | 3,45 | 3,31 | 3,63 | 3,53 | 3,76 | 3,60 |
| Eu (ppm) | 1,13 | 1,18 | 1,05 | 1,18 | 1,00 | 1,12 | 1,12 |
| Sn (ppm) | b.d. | 1,8 | 0,6 | 0,8 | 0,5 | 0,5 | 0,6 |
| Gd (ppm) | 3,48 | 3,19 | 3,26 | 3,60 | 3,25 | 3,35 | 3,50 |
| Dy (ppm) | 3,89 | 3,74 | 3,75 | 4,03 | 3,78 | 4,07 | 4,03 |
| Li (ppm) | 5 | 5 | 6 | 4 | 5 | 4 | 4 |
| Y (ppm) | 27 | 25 | 24 | 26 | 26 | 27 | 27 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,37 | 2,33 | 2,15 | 2,70 | 2,31 | 2,37 | 2,45 |
| Yb (ppm) | 2,45 | 2,30 | 2,27 | 2,59 | 2,25 | 2,37 | 2,43 |
| Lu (ppm) | 0,38 | 0,35 | 0,37 | 0,37 | 0,32 | 0,37 | 0,35 |
| Co (ppm) | 33 | 33 | 36 | 35 | 34 | 34 | 34 |
| Cr (ppm) | 221 | 249 | 292 | 261 | 300 | 268 | 286 |
| Cu (ppm) | 93 | 91 | 106 | 106 | 96 | 103 | 105 |
| Ni (ppm) | 58 | 60 | 64 | 63 | 68 | 62 | 64 |
| Sc (ppm) | 36 | 35 | 39 | 37 | 36 | 37 | 37 |
| V (ppm) | 251 | 227 | 277 | 253 | 250 | 262 | 262 |
| Zn (ppm) | 89 | 87 | 92 | 92 | 87 | 91 | 93 |
| Tb (ppm) | 0,7 | 0,7 | 0,6 | 0,7 | 0,6 | 0,7 | 0,7 |
| Tm (ppm) | 0,4 | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 | 0,3 |
| S I | 3,28 | 2,35 | 3,63 | 2,47 | 1,68 | 3,46 | 2,24 |
| S II | -2,57 | -2,93 | -2,49 | -3,58 | -1,33 | -1,55 | -1,97 |
| S III | 2,69 | 0,53 | 0,84 | 1,62 | 1,27 | 2,16 | 1,76 |

| Sample: | K05-11 | K05-12 | K05-13 | K05-14 | K05-62 | K05-63 | K05-64 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,9693 | -31,9690 | -31,9690 | -31,9686 | -31,9447 | -31,9448 | -31,9448 |
| Longitude ( E): | 26,2989 | 26,2991 | 26,2986 | 26,2987 | 26,3135 | 26,3135 | 26,3133 |
| Altitude (m): | 1518 | 1541 | 1564 | 1580 | 1729 | 1745 | 1766 |
| SiO2 (wt %) | 51,19 | 51,25 | 51,34 | 51,17 | 50,50 | 51,26 | 50,03 |
| TiO2 (wt %) | 1,05 | 1,09 | 0,91 | 0,80 | 1,07 | 1,07 | 1,08 |
| Al2O3 (wt %) | 14,94 | 15,02 | 15,50 | 16,14 | 14,78 | 15,15 | 14,70 |
| Fe2O3(T) (wt %) | 12,14 | 12,40 | 11,77 | 10,99 | 12,17 | 11,99 | 11,97 |
| MnO (wt %) | 0,18 | 0,19 | 0,18 | 0,17 | 0,19 | 0,19 | 0,19 |
| MgO (wt %) | 6,22 | 6,12 | 6,48 | 5,87 | 6,27 | 6,37 | 6,29 |
| CaO (wt %) | 10,33 | 10,24 | 10,59 | 10,82 | 10,53 | 10,51 | 10,48 |
| Na2O (wt %) | 2,47 | 2,56 | 2,51 | 2,56 | 2,39 | 2,48 | 2,41 |
| K2O (wt %) | 0,69 | 0,69 | 0,65 | 0,54 | 0,67 | 0,70 | 0,70 |
| P2O5 (wt %) | 0,15 | 0,20 | 0,14 | 0,14 | 0,16 | 0,16 | 0,17 |
| SUM | 99,4 | 99,8 | 100,1 | 99,2 | 98,7 | 99,9 | 98,0 |
| Cs (ppm) | 0,2 | 0,2 | 0,3 | 0,2 | 0,8 | 0,4 | 0,4 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 15 | 15 | 14 | 11 | 15 | 14 | 13 |
| Ba (ppm) | 206 | 208 | 192 | 184 | 206 | 207 | 206 |
| Th (ppm) | 1,4 | 1,5 | 2,5 | 1,3 | 1,5 | 1,6 | 1,7 |
| U (ppm) | 0,30 | 0,31 | 0,28 | 0,22 | 0,25 | 0,29 | 0,24 |
| Nb (ppm) | 8,6 | 8,8 | 7,6 | 7,3 | 8,1 | 8,5 | 7,8 |
| Ta (ppm) | 0,47 | 0,46 | 0,40 | 0,40 | 0,47 | 0,46 | 0,42 |
| La (ppm) | 10,99 | 11,45 | 10,19 | 9,46 | 10,83 | 11,03 | 11,37 |
| Ce (ppm) | 24,38 | 25,64 | 22,75 | 21,20 | 24,31 | 25,63 | 26,02 |
| Pb (ppm) | 4 | 5 | 3 | 7 | 4 | 3 | 4 |
| Pr (ppm) | 2,88 | 3,08 | 2,63 | 2,57 | 3,01 | 3,08 | 3,05 |
| Mo (ppm) | 1,7 | 1,7 | 1,5 | 1,7 | 1,7 | 1,6 | 1,5 |
| Sr (ppm) | 194 | 193 | 200 | 200 | 199 | 202 | 210 |
| Nd (ppm) | 14,0 | 15,3 | 12,8 | 12,3 | 14,4 | 15,4 | 15,3 |
| Zr (ppm) | 97 | 99 | 92 | 78 | 96 | 97 | 92 |
| Hf (ppm) | 2,59 | 2,57 | 2,52 | 2,11 | 2,46 | 2,50 | 2,44 |
| Sm (ppm) | 3,66 | 3,92 | 3,42 | 3,03 | 3,63 | 3,49 | 3,59 |
| Eu (ppm) | 1,05 | 1,16 | 0,98 | 1,12 | 1,17 | 1,13 | 1,13 |
| Sn (ppm) | 0,6 | 0,8 | b.d. | 0,6 | 0,7 | 0,7 | 0,7 |
| Gd (ppm) | 3,31 | 3,75 | 3,09 | 2,88 | 3,49 | 3,65 | 3,36 |
| Dy (ppm) | 3,95 | 4,22 | 3,62 | 3,53 | 3,76 | 3,91 | 3,91 |
| Li (ppm) | 5 | 6 | 5 | 5 | 6 | 6 | 6 |
| Y (ppm) | 26 | 28 | 24 | 23 | 26 | 26 | 26 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,42 | 2,59 | 2,32 | 2,10 | 2,45 | 2,47 | 2,39 |
| Yb (ppm) | 2,50 | 2,68 | 2,26 | 2,09 | 2,35 | 2,40 | 2,21 |
| Lu (ppm) | 0,34 | 0,38 | 0,33 | 0,34 | 0,33 | 0,36 | 0,33 |
| Co (ppm) | 36 | 36 | 34 | 34 | 34 | 34 | 34 |
| Cr (ppm) | 251 | 246 | 268 | 241 | 222 | 224 | 215 |
| Cu (ppm) | 106 | 110 | 95 | 88 | 108 | 106 | 109 |
| Ni (ppm) | 62 | 61 | 67 | 65 | 67 | 67 | 64 |
| Sc (ppm) | 38 | 37 | 35 | 35 | 38 | 39 | 39 |
| V (ppm) | 268 | 265 | 236 | 220 | 269 | 270 | 270 |
| Zn (ppm) | 94 | 95 | 88 | 88 | 95 | 95 | 95 |
| Tb (ppm) | 0,7 | 0,7 | 0,6 | 0,6 | 0,7 | 0,7 | 0,7 |
| Tm (ppm) | 0,4 | 0,4 | 0,3 | 0,3 | 0,4 | 0,4 | 0,3 |
| S I | 2,82 | 2,41 | 2,23 | 5,34 | 3,44 | 3,94 | 3,72 |
| S II | -2,79 | -2,56 | -2,51 | -2,65 | -1,95 | -3,18 | -4,17 |
| S III | 0,70 | 0,14 | 0,51 | 0,76 | 1,10 | 1,33 | 1,46 |

| Sample: | K05-65 | K05-66 | K05-67 | K05-68 | K05-69 | S66 | K05-105 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,9448 | -31,9449 | -31,9451 | -31,9456 | -31,9459 | -31,9464 | -31,9963 |
| Longitude ( E): | 26,3133 | 26,3133 | 26,3134 | 26,3131 | 26,3133 | 26,3133 | 26,2828 |
| Altitude (m): | 1753 | 1757 | 1764 | 1780 | 1795 | 1812 | 1550 |
| SiO2 (wt %) | 50,97 | 51,34 | 51,12 | 51,17 | 51,38 | 50,92 | 50,93 |
| TiO2 (wt %) | 0,99 | 1,07 | 1,07 | 0,98 | 0,99 | 0,91 | 0,94 |
| Al2O3 (wt %) | 15,02 | 15,12 | 15,33 | 14,04 | 13,00 | 15,87 | 15,89 |
| Fe2O3(T) (wt %) | 11,70 | 12,31 | 12,23 | 12,32 | 12,69 | 11,21 | 11,20 |
| MnO (wt %) | 0,18 | 0,20 | 0,19 | 0,20 | 0,21 | 0,17 | 0,17 |
| MgO (wt %) | 6,55 | 6,52 | 6,19 | 7,51 | 8,08 | 6,56 | 5,99 |
| CaO (wt %) | 10,78 | 10,65 | 10,49 | 10,90 | 10,69 | 10,97 | 10,61 |
| Na2O (wt %) | 2,41 | 2,48 | 2,56 | 2,31 | 2,11 | 2,58 | 2,48 |
| K2O (wt %) | 0,60 | 0,61 | 0,70 | 0,58 | 0,60 | 0,68 | 0,61 |
| P2O5 (wt %) | 0,13 | 0,17 | 0,16 | 0,14 | 0,14 | 0,13 | 0,14 |
| SUM | 99,3 | 100,5 | 100,0 | 100,1 | 99,9 | 100,0 | 99,0 |
| Cs (ppm) | 0,3 | 0,4 | 0,2 | 0,3 | 0,2 | 0,3 | 0,4 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 12 | 13 | 15 | 13 | 14 | 13 | 13 |
| Ba (ppm) | 188 | 201 | 205 | 177 | 179 | 193 | 182 |
| Th (ppm) | 1,3 | 1,5 | 1,3 | 1,1 | 1,4 | 1,2 | 1,2 |
| U (ppm) | 0,23 | 0,26 | 0,25 | 0,24 | 0,30 | 0,26 | 0,24 |
| Nb (ppm) | 7,4 | 8,9 | 8,9 | 7,5 | 8,3 | 7,1 | 7,5 |
| Ta (ppm) | 0,40 | 0,46 | 0,48 | 0,41 | 0,43 | 0,42 | 0,39 |
| La (ppm) | 9,12 | 11,34 | 11,62 | 9,97 | 10,23 | 9,24 | 9,63 |
| Ce (ppm) | 21,57 | 26,15 | 26,13 | 22,69 | 23,76 | 21,61 | 21,47 |
| Pb (ppm) | 5 | 4 | 4 | 5 | 4 | 5 | 4 |
| Pr (ppm) | 2,53 | 3,07 | 3,11 | 2,70 | 2,75 | 2,62 | 2,52 |
| Mo (ppm) | 1,4 | 1,8 | 1,7 | 1,2 | 1,7 | 0,8 | 1,1 |
| Sr (ppm) | 193 | 206 | 203 | 178 | 169 | 209 | 204 |
| Nd (ppm) | 12,3 | 15,0 | 14,9 | 13,4 | 13,4 | 12,9 | 12,5 |
| Zr (ppm) | 88 | 96 | 100 | 88 | 94 | 93 | 86 |
| Hf (ppm) | 2,14 | 2,40 | 2,48 | 2,37 | 2,45 | 2,09 | 2,20 |
| Sm (ppm) | 3,17 | 3,41 | 3,73 | 3,39 | 3,56 | 3,30 | 3,66 |
| Eu (ppm) | 1,07 | 1,12 | 1,11 | 0,99 | 1,02 | 0,93 | 1,07 |
| Sn (ppm) | 0,5 | 0,7 | b.d. | 0,6 | 0,5 | b.d. | 0,5 |
| Gd (ppm) | 3,03 | 3,55 | 3,62 | 3,22 | 3,39 | 2,87 | 2,92 |
| Dy (ppm) | 3,58 | 3,98 | 4,10 | 3,73 | 4,03 | 3,50 | 3,41 |
| Li (ppm) | 4 | 5 | 6 | 6 | 4 | b.d. | 7 |
| Y (ppm) | 23 | 27 | 28 | 26 | 27 | 23 | 24 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,24 | 2,46 | 2,60 | 2,48 | 2,62 | 1,89 | 2,20 |
| Yb (ppm) | 2,19 | 2,37 | 2,39 | 2,26 | 2,44 | 1,96 | 2,00 |
| Lu (ppm) | 0,32 | 0,36 | 0,36 | 0,34 | 0,36 | 0,31 | 0,32 |
| Co (ppm) | 34 | 34 | 33 | 35 | 38 | 32 | 32 |
| Cr (ppm) | 289 | 279 | 261 | 390 | 442 | 321 | 253 |
| Cu (ppm) | 101 | 107 | 104 | 102 | 99 | 84 | 98 |
| Ni (ppm) | 73 | 69 | 66 | 82 | 90 | 73 | 66 |
| Sc (ppm) | 39 | 39 | 37 | 42 | 44 | 36 | 35 |
| V (ppm) | 261 | 268 | 259 | 286 | 290 | 236 | 244 |
| Zn (ppm) | 93 | 94 | 94 | 94 | 96 | 86 | 89 |
| Tb (ppm) | 0,6 | 0,7 | 0,7 | 0,7 | 0,7 | 0,5 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 4,13 | 4,46 | 3,62 | 2,79 | 1,92 | 2,19 | 3,46 |
| S II | -2,04 | -2,29 | -2,27 | -1,38 | -2,17 | 0,48 | -0,64 |
| S III | 0,69 | 1,65 | 1,97 | 0,07 | -0,82 | 2,27 | 0,95 |

| Sample: | K05-106 | K05-107 | K05-108 | K05-109 | K05-110 | K05-87 | K05-88 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,9962 | -31,9964 | -31,9959 | -31,9958 | -31,9955 | -31,8517 | -31,8517 |
| Longitude ( E): | 26,2829 | 26,2826 | 26,2845 | 26,2846 | 26,2847 | 26,2208 | 26,2207 |
| Altitude (m): | 1555 | 1558 | 1534 | 1538 | 1551 | 1643 | 1633 |
| SiO2 (wt %) | 50,99 | 51,40 | 51,97 | 50,90 | 51,75 | 51,09 | 50,83 |
| TiO2 (wt %) | 0,99 | 1,10 | 1,08 | 1,05 | 1,03 | 1,11 | 1,03 |
| Al2O3 (wt %) | 15,27 | 15,02 | 15,29 | 14,86 | 15,31 | 15,07 | 15,62 |
| Fe2O3(T) (wt %) | 11,66 | 12,18 | 12,19 | 12,03 | 12,00 | 12,01 | 11,63 |
| MnO (wt %) | 0,18 | 0,19 | 0,19 | 0,18 | 0,19 | 0,19 | 0,18 |
| MgO (wt %) | 6,11 | 6,28 | 6,16 | 6,33 | 6,51 | 6,13 | 6,23 |
| CaO (wt %) | 10,46 | 10,35 | 10,45 | 10,36 | 10,45 | 10,26 | 10,55 |
| Na2O (wt %) | 2,49 | 2,55 | 2,54 | 2,59 | 2,50 | 2,55 | 2,45 |
| K2O (wt %) | 0,61 | 0,65 | 0,69 | 0,68 | 0,67 | 0,69 | 0,65 |
| P2O5 (wt %) | 0,15 | 0,19 | 0,16 | 0,16 | 0,15 | 0,15 | 0,16 |
| SUM | 98,9 | 99,9 | 100,7 | 99,1 | 100,6 | 99,2 | 99,3 |
| Cs (ppm) | 0,3 | 0,3 | 0,6 | 0,3 | 0,3 | 0,2 | 0,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | 0,2 | b.d. | b.d. |
| Rb (ppm) | 12 | 14 | 14 | 14 | 15 | 15 | 13 |
| Ba (ppm) | 192 | 206 | 208 | 205 | 197 | 200 | 197 |
| Th (ppm) | 1,4 | 1,5 | 1,5 | 1,6 | 1,5 | 1,5 | 1,7 |
| U (ppm) | 0,23 | 0,24 | 0,28 | 0,26 | 0,32 | 0,29 | 0,25 |
| Nb (ppm) | 7,4 | 8,6 | 8,4 | 8,2 | 8,1 | 8,3 | 7,7 |
| Ta (ppm) | 0,43 | 0,43 | 0,46 | 0,44 | 0,45 | 0,46 | 0,43 |
| La (ppm) | 9,94 | 11,22 | 11,18 | 11,21 | 10,69 | 10,66 | 10,53 |
| Ce (ppm) | 22,81 | 25,52 | 25,85 | 25,41 | 23,98 | 23,96 | 24,31 |
| Pb (ppm) | 4 | 7 | 5 | 6 | 3 | 4 | 5 |
| Pr (ppm) | 2,67 | 3,11 | 3,10 | 3,12 | 2,75 | 2,88 | 3,05 |
| Mo (ppm) | 1,0 | 1,4 | 1,2 | 1,5 | 1,1 | 1,4 | 1,2 |
| Sr (ppm) | 199 | 200 | 206 | 194 | 201 | 200 | 210 |
| Nd (ppm) | 13,3 | 15,1 | 14,8 | 15,0 | 13,8 | 13,7 | 13,8 |
| Zr (ppm) | 87 | 93 | 101 | 96 | 93 | 96 | 89 |
| Hf (ppm) | 2,20 | 2,38 | 2,75 | 2,41 | 2,39 | 2,46 | 2,24 |
| Sm (ppm) | 3,43 | 3,95 | 3,91 | 3,68 | 3,59 | 3,50 | 3,69 |
| Eu (ppm) | 1,11 | 1,21 | 1,21 | 1,19 | 1,15 | 1,07 | 1,07 |
| Sn (ppm) | 0,5 | 1,4 | b.d. | b.d. | b.d. | 0,6 | b.d. |
| Gd (ppm) | 3,18 | 3,54 | 3,34 | 3,26 | 3,10 | 3,31 | 3,11 |
| Dy (ppm) | 3,62 | 4,02 | 4,10 | 3,83 | 3,76 | 4,15 | 3,82 |
| Li (ppm) | 4 | 5 | 5 | 4 | 3 | 5 | 4 |
| Y (ppm) | 25 | 27 | 28 | 26 | 26 | 26 | 24 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,13 | 2,41 | 2,48 | 2,33 | 2,41 | 2,46 | 2,20 |
| Yb (ppm) | 2,16 | 2,42 | 2,41 | 2,38 | 2,39 | 2,43 | 2,15 |
| Lu (ppm) | 0,35 | 0,36 | 0,38 | 0,38 | 0,35 | 0,35 | 0,33 |
| Co (ppm) | 34 | 35 | 34 | 34 | 34 | 33 | 32 |
| Cr (ppm) | 259 | 264 | 261 | 256 | 293 | 269 | 288 |
| Cu (ppm) | 103 | 115 | 108 | 111 | 104 | 103 | 102 |
| Ni (ppm) | 67 | 65 | 64 | 65 | 68 | 64 | 68 |
| Sc (ppm) | 37 | 39 | 38 | 39 | 38 | 37 | 36 |
| V (ppm) | 258 | 277 | 267 | 275 | 267 | 266 | 251 |
| Zn (ppm) | 93 | 97 | 95 | 96 | 92 | 92 | 89 |
| Tb (ppm) | 0,6 | 0,7 | 0,7 | 0,7 | 0,7 | 0,7 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 3,53 | 3,75 | 2,99 | 3,56 | 2,46 | 2,95 | 3,13 |
| S II | -2,16 | -3,25 | -1,65 | -3,74 | -1,55 | -1,18 | -2,08 |
| S III | 1,45 | 1,39 | 1,28 | 1,42 | 0,83 | 1,89 | 2,83 |

| Sample: | K05-89 | K05-90 | K05-91 | K05-111 | K05-112 | K05-113 | K05-119 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8517 | -31,8516 | -31,8515 | -31,8817 | -31,8782 | -31,9151 | -31,9496 |
| Longitude ( E): | 26,2206 | 26,2206 | 26,2208 | 26,1993 | 26,1987 | 26,2142 | 26,2307 |
| Altitude (m): | 1665 | 1626 | 1617 | 1770 | 1755 | 1954 | 1818 |
| SiO2 (wt %) | 51,56 | 51,10 | 51,31 | 51,46 | 50,36 | 50,60 | 50,05 |
| TiO2 (wt %) | 0,98 | 0,97 | 1,02 | 0,96 | 1,08 | 0,83 | 1,04 |
| Al2O3 (wt %) | 15,38 | 14,59 | 15,00 | 15,36 | 14,78 | 15,80 | 12,51 |
| Fe2O3(T) (wt %) | 11,49 | 12,10 | 11,75 | 11,31 | 11,57 | 11,11 | 13,41 |
| MnO (wt %) | 0,18 | 0,19 | 0,18 | 0,18 | 0,18 | 0,17 | 0,21 |
| MgO (wt %) | 6,38 | 6,80 | 6,31 | 6,05 | 6,19 | 6,52 | 8,15 |
| CaO (wt %) | 10,34 | 10,51 | 10,36 | 10,33 | 10,42 | 10,87 | 10,84 |
| Na2O (wt %) | 2,56 | 2,48 | 2,58 | 2,64 | 2,55 | 2,53 | 2,09 |
| K2O (wt %) | 0,63 | 0,57 | 0,70 | 0,66 | 0,61 | 0,51 | 0,40 |
| P2O5 (wt %) | 0,15 | 0,15 | 0,16 | 0,16 | 0,16 | 0,13 | 0,12 |
| SUM | 99,6 | 99,5 | 99,4 | 99,1 | 97,9 | 99,1 | 98,8 |
| Cs (ppm) | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 13 | 12 | 15 | 14 | 12 | 11 | 9 |
| Ba (ppm) | 195 | 188 | 201 | 205 | 214 | 175 | 146 |
| Th (ppm) | 1,4 | 1,2 | 1,7 | 1,6 | 1,3 | 1,1 | 0,9 |
| U (ppm) | 0,28 | 0,25 | 0,26 | 0,28 | 0,24 | 0,18 | 0,18 |
| Nb (ppm) | 8,1 | 7,1 | 8,3 | 8,4 | 8,3 | 6,5 | 6,7 |
| Ta (ppm) | 0,43 | 0,37 | 0,45 | 0,47 | 0,47 | 0,34 | 0,32 |
| La (ppm) | 10,56 | 9,63 | 11,39 | 10,74 | 10,33 | 8,55 | 7,75 |
| Ce (ppm) | 24,21 | 21,97 | 25,97 | 24,72 | 23,65 | 19,07 | 17,79 |
| Pb (ppm) | 5 | 6 | 4 | 6 | 6 | 3 | 6 |
| Pr (ppm) | 2,75 | 2,69 | 3,03 | 2,97 | 2,78 | 2,34 | 2,13 |
| Mo (ppm) | 1,2 | 1,1 | 1,3 | 1,4 | 1,3 | 1,0 | 1,2 |
| Sr (ppm) | 197 | 191 | 192 | 193 | 208 | 206 | 162 |
| Nd (ppm) | 13,9 | 12,6 | 14,9 | 13,5 | 13,0 | 11,1 | 10,4 |
| Zr (ppm) | 94 | 87 | 98 | 98 | 93 | 76 | 70 |
| Hf (ppm) | 2,44 | 2,09 | 2,53 | 2,57 | 2,38 | 1,80 | 1,76 |
| Sm (ppm) | 3,76 | 3,17 | 3,78 | 3,41 | 3,68 | 3,00 | 2,91 |
| Eu (ppm) | 1,15 | 1,05 | 1,21 | 1,13 | 1,20 | 1,09 | 0,91 |
| Sn (ppm) | 0,5 | 2,0 | b.d. | 0,8 | 0,6 | b.d. | b.d. |
| Gd (ppm) | 3,24 | 3,11 | 3,40 | 3,28 | 3,17 | 2,58 | 2,89 |
| Dy (ppm) | 3,78 | 3,67 | 3,78 | 3,88 | 3,92 | 3,27 | 3,57 |
| Li (ppm) | 5 | 5 | 5 | 5 | 7 | 4 | 5 |
| Y (ppm) | 25 | 24 | 27 | 26 | 25 | 21 | 22 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,29 | 2,24 | 2,45 | 2,37 | 2,34 | 1,88 | 2,13 |
| Yb (ppm) | 2,41 | 2,22 | 2,26 | 2,28 | 2,33 | 2,10 | 2,12 |
| Lu (ppm) | 0,35 | 0,33 | 0,39 | 0,33 | 0,33 | 0,29 | 0,34 |
| Co (ppm) | 33 | 35 | 34 | 32 | 34 | 32 | 41 |
| Cr (ppm) | 280 | 325 | 283 | 249 | 260 | 272 | 450 |
| Cu (ppm) | 103 | 105 | 104 | 103 | 113 | 90 | 123 |
| Ni (ppm) | 68 | 76 | 70 | 61 | 60 | 66 | 91 |
| Sc (ppm) | 37 | 39 | 37 | 37 | 39 | 38 | 47 |
| V (ppm) | 260 | 271 | 257 | 255 | 294 | 247 | 349 |
| Zn (ppm) | 91 | 97 | 93 | 93 | 95 | 87 | 104 |
| Tb (ppm) | 0,7 | 0,6 | 0,7 | 0,7 | 0,7 | 0,6 | 0,5 |
| Tm (ppm) | 0,3 | 0,3 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 |
| S I | 2,90 | 2,38 | 3,17 | 3,56 | 3,66 | 4,42 | 3,89 |
| S II | -2,04 | -2,88 | -2,86 | -3,64 | -2,11 | -1,83 | -2,74 |
| S III | 1,55 | 0,25 | 2,10 | 1,44 | 2,70 | 0,80 | -0,68 |

| Sample: | K05-120 | K05-121 | K05-122 | K05-123 | K05-124 | K05-125 | K05-127 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,9504 | -31,9504 | -31,9506 | -31,9505 | -31,9499 | -31,9504 | -31,8249 |
| Longitude ( E): | 26,2319 | 26,2318 | 26,2319 | 26,2319 | 26,2358 | 26,2468 | 26,2481 |
| Altitude (m): | 1769 | 1766 | 1779 | 1778 | 1679 | 1478 | 1701 |
| SiO2 (wt %) | 51,16 | 50,49 | 51,17 | 50,84 | 51,31 | 50,86 | 51,65 |
| TiO2 (wt %) | 1,00 | 0,95 | 1,04 | 1,05 | 1,03 | 1,07 | 0,98 |
| Al2O3 (wt %) | 15,34 | 14,49 | 15,09 | 15,01 | 15,13 | 14,89 | 16,09 |
| Fe2O3(T) (wt %) | 11,61 | 12,07 | 11,77 | 12,00 | 11,95 | 12,21 | 10,95 |
| MnO (wt %) | 0,18 | 0,19 | 0,18 | 0,18 | 0,18 | 0,19 | 0,16 |
| MgO (wt %) | 6,45 | 6,72 | 5,95 | 6,00 | 6,35 | 6,17 | 6,43 |
| CaO (wt %) | 10,53 | 10,67 | 10,23 | 10,26 | 10,46 | 10,39 | 10,45 |
| Na2O (wt %) | 2,48 | 2,41 | 2,47 | 2,46 | 2,46 | 2,46 | 2,35 |
| K2O (wt %) | 0,61 | 0,53 | 0,67 | 0,64 | 0,61 | 0,67 | 0,69 |
| P2O5 (wt %) | 0,16 | 0,13 | 0,16 | 0,16 | 0,16 | 0,16 | 0,15 |
| SUM | 99,5 | 98,6 | 98,7 | 98,6 | 99,6 | 99,1 | 99,9 |
| Cs (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,7 | 0,2 |
| Tl (ppm) | 0,1 | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 10 | 14 | 11 | 12 | 14 | 16 |
| Ba (ppm) | 199 | 176 | 209 | 187 | 199 | 214 | 206 |
| Th (ppm) | 1,3 | 1,0 | 1,5 | 1,2 | 1,3 | 1,4 | 1,7 |
| U (ppm) | 0,24 | 0,21 | 0,31 | 0,22 | 0,28 | 0,25 | 0,33 |
| Nb (ppm) | 7,8 | 7,8 | 8,5 | 7,0 | 8,2 | 8,6 | 9,6 |
| Ta (ppm) | 0,41 | 0,38 | 0,42 | 0,34 | 0,43 | 0,44 | 0,50 |
| La (ppm) | 10,48 | 8,74 | 10,75 | 8,82 | 10,42 | 11,49 | 12,40 |
| Ce (ppm) | 23,55 | 19,95 | 24,88 | 20,26 | 23,56 | 25,21 | 26,30 |
| Pb (ppm) | 7 | 4 | 7 | 4 | 6 | 3 | 7 |
| Pr (ppm) | 2,71 | 2,39 | 2,90 | 2,44 | 2,76 | 2,89 | 3,30 |
| Mo (ppm) | 1,0 | 1,3 | 1,3 | 1,0 | 1,1 | 0,9 | 0,8 |
| Sr (ppm) | 204 | 195 | 199 | 198 | 202 | 204 | 202 |
| Nd (ppm) | 13,6 | 11,6 | 14,4 | 11,7 | 13,1 | 14,9 | 15,0 |
| Zr (ppm) | 92 | 77 | 101 | 80 | 93 | 98 | 107 |
| Hf (ppm) | 2,47 | 2,00 | 2,77 | 1,99 | 2,45 | 2,53 | 2,72 |
| Sm (ppm) | 3,07 | 2,89 | 3,45 | 2,83 | 3,64 | 3,52 | 3,72 |
| Eu (ppm) | 1,14 | 1,04 | 1,10 | 0,93 | 1,15 | 1,10 | 1,07 |
| Sn (ppm) | b.d. | 0,7 | 0,5 | b.d. | b.d. | b.d. | 0,6 |
| Gd (ppm) | 3,36 | 2,91 | 3,36 | 2,72 | 3,41 | 3,45 | 3,46 |
| Dy (ppm) | 3,74 | 3,36 | 4,13 | 3,40 | 3,79 | 3,99 | 4,04 |
| Li (ppm) | 4 | 4 | 4 | 5 | 4 | 8 | 6 |
| Y (ppm) | 25 | 23 | 27 | 22 | 25 | 27 | 28 |
| Ho (ppm) | b.d. | b.d. | 1 | 1 | 1 | 1 | 1 |
| Er (ppm) | 2,34 | 2,17 | 2,42 | 2,05 | 2,52 | 2,41 | 2,39 |
| Yb (ppm) | 2,25 | 1,99 | 2,45 | 2,11 | 2,35 | 2,33 | 2,48 |
| Lu (ppm) | 0,31 | 0,28 | 0,35 | 0,28 | 0,36 | 0,34 | 0,37 |
| Co (ppm) | 34 | 35 | 33 | 34 | 34 | 34 | 36 |
| Cr (ppm) | 299 | 362 | 272 | 244 | 279 | 280 | 294 |
| Cu (ppm) | 105 | 97 | 103 | 105 | 105 | 142 | 94 |
| Ni (ppm) | 69 | 75 | 63 | 63 | 65 | 64 | 71 |
| Sc (ppm) | 37 | 38 | 36 | 37 | 38 | 37 | 36 |
| V (ppm) | 265 | 263 | 256 | 261 | 274 | 262 | 248 |
| Zn (ppm) | 92 | 95 | 93 | 94 | 94 | 96 | 86 |
| Tb (ppm) | 0,7 | 0,6 | 0,6 | 0,5 | 0,7 | 0,7 | |
| Tm (ppm) | 0,3 | 0,3 | 0,4 | 0,3 | 0,4 | 0,3 | |
| S I | 2,76 | 2,46 | 1,80 | 2,54 | 2,61 | 5,02 | 2,08 |
| S II | -2,14 | -1,24 | -1,33 | -1,85 | -1,75 | -4,64 | 0,26 |
| S III | 2,02 | 1,66 | 0,68 | 0,76 | 1,40 | -0,54 | 1,95 |

| Sample: | K05-128 | K05-129 | K05-130 | K05-131 | K05-132 | K05-133 | K05-92 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | -31,8250 | -31,8250 | -31,8252 | -31,8254 | -31,8213 | -31,8206 | -31,9720 |
| Longitude ( E): | 26,2482 | 26,2483 | 26,2479 | 26,2474 | 26,2505 | 26,2515 | 26,2539 |
| Altitude (m): | 1704 | 1723 | 1730 | 1742 | 1581 | 1541 | 1651 |
| SiO2 (wt %) | 51,47 | 51,41 | 51,53 | 51,67 | 51,92 | 51,12 | 51,31 |
| TiO2 (wt %) | 0,91 | 1,05 | 1,00 | 0,99 | 1,00 | 0,95 | 0,98 |
| Al2O3 (wt %) | 15,94 | 15,75 | 16,41 | 16,53 | 15,58 | 15,24 | 14,88 |
| Fe2O3(T) (wt %) | 11,32 | 11,78 | 11,26 | 11,31 | 11,52 | 11,84 | 12,21 |
| MnO (wt %) | 0,17 | 0,18 | 0,17 | 0,17 | 0,17 | 0,18 | 0,19 |
| MgO (wt %) | 6,46 | 6,35 | 5,80 | 5,41 | 5,85 | 6,81 | 6,70 |
| CaO (wt %) | 10,56 | 10,47 | 10,32 | 10,25 | 9,93 | 10,52 | 10,47 |
| Na2O (wt %) | 2,34 | 2,34 | 2,48 | 2,49 | 2,38 | 2,23 | 2,26 |
| K2O (wt %) | 0,64 | 0,65 | 0,69 | 0,70 | 0,69 | 0,57 | 0,63 |
| P2O5 (wt %) | 0,15 | 0,15 | 0,16 | 0,16 | 0,16 | 0,14 | 0,16 |
| SUM | 100,0 | 100,1 | 99,8 | 99,7 | 99,2 | 99,6 | 99,8 |
| Cs (ppm) | 0,3 | 0,2 | 0,3 | 0,2 | 0,2 | 0,2 | 0,3 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 14 | 15 | 14 | 16 | 13 | 15 |
| Ba (ppm) | 197 | 198 | 208 | 220 | 211 | 186 | 198 |
| Th (ppm) | 1,7 | 1,5 | 1,9 | 1,7 | 1,7 | 1,3 | 1,6 |
| U (ppm) | 0,31 | 0,29 | 0,32 | 0,32 | 0,33 | 0,25 | 0,29 |
| Nb (ppm) | 8,5 | 8,5 | 8,9 | 8,7 | 9,3 | 7,9 | 9,0 |
| Ta (ppm) | 0,45 | 0,45 | 0,47 | 0,47 | 0,46 | 0,41 | 0,46 |
| La (ppm) | 11,29 | 10,87 | 11,59 | 11,70 | 12,28 | 10,45 | 11,34 |
| Ce (ppm) | 23,86 | 23,88 | 24,71 | 24,93 | 26,18 | 21,53 | 24,45 |
| Pb (ppm) | 6 | 7 | 7 | 7 | 10 | 7 | 9 |
| Pr (ppm) | 2,89 | 2,90 | 3,00 | 2,99 | 3,27 | 2,69 | 3,04 |
| Mo (ppm) | 0,8 | 0,9 | 0,8 | 0,8 | 0,9 | 0,8 | 1,1 |
| Sr (ppm) | 197 | 198 | 205 | 213 | 196 | 194 | 188 |
| Nd (ppm) | 13,7 | 13,5 | 14,1 | 14,3 | 14,7 | 12,4 | 14,5 |
| Zr (ppm) | 100 | 104 | 112 | 108 | 113 | 92 | 100 |
| Hf (ppm) | 2,57 | 2,54 | 2,69 | 2,68 | 2,89 | 2,32 | 2,59 |
| Sm (ppm) | 3,40 | 3,60 | 3,66 | 3,79 | 3,81 | 3,37 | 3,96 |
| Eu (ppm) | 1,00 | 0,99 | 1,06 | 1,07 | 1,12 | 0,96 | 1,00 |
| Sn (ppm) | 0,6 | b.d. | 0,5 | 0,9 | 0,7 | b.d. | 0,6 |
| Gd (ppm) | 3,35 | 3,18 | 3,32 | 3,29 | 3,77 | 2,99 | 3,48 |
| Dy (ppm) | 3,75 | 3,84 | 3,83 | 4,04 | 4,13 | 3,53 | 3,90 |
| Li (ppm) | 6 | 6 | 7 | 6 | 8 | 7 | 7 |
| Y (ppm) | 26 | 26 | 26 | 26 | 29 | 25 | 28 |
| Ho (ppm) | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Er (ppm) | 2,24 | 2,27 | 2,43 | 2,49 | 2,51 | 2,09 | 2,43 |
| Yb (ppm) | 2,39 | 2,43 | 2,51 | 2,56 | 2,59 | 2,11 | 2,55 |
| Lu (ppm) | 0,37 | 0,33 | 0,36 | 0,37 | 0,40 | 0,37 | 0,38 |
| Co (ppm) | 38 | 38 | 36 | 34 | 37 | 40 | 41 |
| Cr (ppm) | 293 | 260 | 229 | 209 | 242 | 331 | 292 |
| Cu (ppm) | 93 | 102 | 98 | 100 | 101 | 99 | 104 |
| Ni (ppm) | 70 | 67 | 59 | 53 | 58 | 75 | 72 |
| Sc (ppm) | 37 | 38 | 35 | 35 | 36 | 38 | 40 |
| V (ppm) | 246 | 275 | 245 | 239 | 252 | 263 | 267 |
| Zn (ppm) | 87 | 90 | 88 | 91 | 90 | 90 | 92 |
| Tb (ppm) | | | | | | | |
| Tm (ppm) | | | | | | | |
| S I | 3,11 | 3,13 | 2,65 | 2,81 | 2,14 | 2,09 | 4,45 |
| S II | -0,93 | -0,46 | -1,10 | -2,28 | -1,66 | -0,26 | -2,13 |
| S III | 0,77 | 1,40 | 1,40 | 0,74 | 0,30 | 0,24 | -0,33 |

| Sample: | K05-99 | K05-101 | K05-102 | K05-103 | K05-104 | K05-186 | K05-126 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | GVS |
| Latitude (N): | | -31,971763 | -31,971638 | -31,971646 | -31,971511 | -31,984306 | -31,864722 |
| Longitude ( E): | | 26,252645 | 26,25266 | 26,25261 | 26,252764 | 26,272787 | 26,270747 |
| Altitude (m): | | 1680 | 1682 | 1724 | 1714 | 1405 | 1419 |
| SiO2 (wt %) | 51,83 | 51,36 | 51,99 | 51,35 | 51,46 | 51,18 | 50,93 |
| TiO2 (wt %) | 1,07 | 1,00 | 1,03 | 1,06 | 1,03 | 1,06 | 1,05 |
| Al2O3 (wt %) | 15,10 | 14,99 | 15,40 | 15,33 | 15,57 | 15,11 | 15,02 |
| Fe2O3(T) (wt %) | 12,19 | 12,00 | 11,84 | 12,10 | 11,67 | 11,98 | 11,86 |
| MnO (wt %) | 0,18 | 0,18 | 0,18 | 0,18 | 0,18 | 0,18 | 0,19 |
| MgO (wt %) | 6,35 | 6,71 | 6,10 | 6,24 | 6,33 | 6,25 | 6,04 |
| CaO (wt %) | 10,24 | 10,31 | 10,16 | 10,25 | 10,19 | 10,36 | 10,49 |
| Na2O (wt %) | 2,49 | 2,28 | 2,33 | 2,40 | 2,35 | 2,70 | 2,53 |
| K2O (wt %) | 0,74 | 0,66 | 0,69 | 0,64 | 0,66 | 0,74 | 0,33 |
| P2O5 (wt %) | 0,17 | 0,15 | 0,15 | 0,16 | 0,16 | 0,16 | 0,16 |
| SUM | 100,4 | 99,6 | 99,9 | 99,7 | 99,6 | 99,7 | 98,6 |
| Cs (ppm) | 0,3 | 0,3 | 0,6 | 0,5 | 0,5 | 0,3 | 0,4 |
| Tl (ppm) | 0,2 | b.d. | 0,2 | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 17 | 14 | 16 | 15 | 15 | 14 | 6 |
| Ba (ppm) | 218 | 202 | 213 | 205 | 212 | 220 | 199 |
| Th (ppm) | 1,7 | 1,6 | 1,6 | 1,6 | 1,7 | 1,4 | 1,3 |
| U (ppm) | 0,36 | 0,30 | 0,34 | 0,33 | 0,31 | 0,28 | 0,29 |
| Nb (ppm) | 9,4 | 8,6 | 9,3 | 9,4 | 9,6 | 8,2 | 7,8 |
| Ta (ppm) | 0,50 | 0,48 | 0,48 | 0,47 | 0,46 | 0,41 | 0,43 |
| La (ppm) | 12,81 | 11,00 | 11,83 | 11,93 | 12,40 | 11,83 | 10,56 |
| Ce (ppm) | 26,91 | 24,36 | 25,36 | 25,05 | 26,69 | 25,49 | 23,96 |
| Pb (ppm) | 8 | 8 | 9 | 9 | 5 | 3 | 4 |
| Pr (ppm) | 3,32 | 3,03 | 3,07 | 3,08 | 3,20 | 3,12 | 2,85 |
| Mo (ppm) | 1,0 | 0,7 | 0,8 | 1,1 | 1,0 | 1,9 | 0,8 |
| Sr (ppm) | 195 | 185 | 188 | 192 | 192 | 205 | 203 |
| Nd (ppm) | 15,7 | 13,9 | 14,7 | 14,8 | 14,9 | 14,6 | 14,4 |
| Zr (ppm) | 113 | 106 | 116 | 108 | 108 | 102 | 96 |
| Hf (ppm) | 2,81 | 2,65 | 2,71 | 2,73 | 2,75 | 2,37 | 2,49 |
| Sm (ppm) | 3,85 | 3,71 | 3,79 | 3,82 | 3,82 | 3,54 | 3,32 |
| Eu (ppm) | 1,03 | 0,97 | 1,02 | 1,03 | 1,10 | 1,27 | 1,11 |
| Sn (ppm) | 0,7 | b.d. | 0,6 | 0,6 | 0,5 | b.d. | b.d. |
| Gd (ppm) | 3,72 | 3,53 | 3,73 | 3,62 | 3,69 | 3,53 | 3,45 |
| Dy (ppm) | 4,18 | 3,91 | 4,14 | 3,90 | 4,03 | 4,11 | 3,82 |
| Li (ppm) | 9 | 6 | 7 | 7 | 7 | 3 | 12 |
| Y (ppm) | 30 | 27 | 27 | 27 | 29 | 27 | 26 |
| Ho (ppm) | 1 | 1 | 1 | 1 | 1 | 1 | b.d. |
| Er (ppm) | 2,54 | 2,34 | 2,51 | 2,51 | 2,40 | 2,29 | 2,39 |
| Yb (ppm) | 2,61 | 2,41 | 2,65 | 2,62 | 2,59 | 2,39 | 2,34 |
| Lu (ppm) | 0,40 | 0,38 | 0,39 | 0,39 | 0,39 | 0,33 | 0,35 |
| Co (ppm) | 40 | 40 | 38 | 39 | 38 | 34 | 34 |
| Cr (ppm) | 239 | 314 | 262 | 285 | 289 | 245 | 246 |
| Cu (ppm) | 111 | 103 | 106 | 107 | 105 | 108 | 106 |
| Ni (ppm) | 64 | 73 | 63 | 68 | 67 | 63 | 63 |
| Sc (ppm) | 40 | 39 | 38 | 38 | 38 | 38 | 37 |
| V (ppm) | 275 | 269 | 262 | 265 | 264 | 271 | 263 |
| Zn (ppm) | 95 | 92 | 93 | 94 | 91 | 94 | 95 |
| Tb (ppm) | | | | | | 0,6 | 0,7 |
| Tm (ppm) | | | | | | 0,3 | 0,3 |
| S I | 3,33 | 2,54 | 2,63 | 2,81 | 2,35 | 2,64 | 2,65 |
| S II | -2,06 | -1,48 | -2,16 | -1,20 | -0,56 | -1,63 | 0,17 |
| S III | -0,87 | 0,67 | 0,42 | 0,78 | 0,77 | 0,90 | -0,22 |

| Sample: | K04-C16 | K05-70 | K05-71 | K05-72 | K05-73 | K05-74 | K05-75 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | MVS | MVS | MVS | MVS | MVS | MVS |
| Latitude (N): | -31,998349 | -31,847305 | -31,847368 | -31,847349 | -31,847381 | -31,847365 | -31,847039 |
| Longitude ( E): | 26,279713 | 26,200067 | 26,200026 | 26,200094 | 26,200063 | 26,200083 | 26,200174 |
| Altitude (m): | 1505 | 1688 | 1690 | 1714 | 1720 | 1723 | 1724 |
| SiO2 (wt %) | 50,97 | 50,88 | 51,09 | 51,40 | 50,90 | 50,86 | 50,20 |
| TiO2 (wt %) | 1,01 | 0,93 | 0,94 | 0,85 | 0,95 | 0,96 | 0,90 |
| Al2O3 (wt %) | 15,15 | 15,66 | 15,67 | 15,23 | 15,13 | 15,54 | 15,34 |
| Fe2O3(T) (wt %) | 11,35 | 11,10 | 11,35 | 11,52 | 12,11 | 11,43 | 11,17 |
| MnO (wt %) | 0,18 | 0,17 | 0,18 | 0,18 | 0,19 | 0,18 | 0,18 |
| MgO (wt %) | 5,93 | 6,64 | 6,48 | 7,00 | 7,34 | 6,56 | 6,69 |
| CaO (wt %) | 10,59 | 11,01 | 10,81 | 10,87 | 10,93 | 10,81 | 10,88 |
| Na2O (wt %) | 2,42 | 2,49 | 2,45 | 2,40 | 2,30 | 2,39 | 2,48 |
| K2O (wt %) | 0,45 | 0,57 | 0,62 | 0,57 | 0,57 | 0,62 | 0,57 |
| P2O5 (wt %) | 0,16 | 0,15 | 0,15 | 0,13 | 0,14 | 0,14 | 0,15 |
| SUM | 98,2 | 99,6 | 99,7 | 100,2 | 100,6 | 99,5 | 98,6 |
| Cs (ppm) | 0,6 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 8 | 13 | 14 | 12 | 10 | 12 | 12 |
| Ba (ppm) | 190 | 182 | 192 | 181 | 178 | 183 | 177 |
| Th (ppm) | 1,4 | 1,4 | 1,3 | 1,3 | 1,2 | 1,3 | 1,3 |
| U (ppm) | 0,27 | 0,25 | 0,26 | 0,23 | 0,21 | 0,23 | 0,23 |
| Nb (ppm) | 7,7 | 7,5 | 7,1 | 7,4 | 6,7 | 7,1 | 7,3 |
| Ta (ppm) | 0,47 | 0,40 | 0,42 | 0,42 | 0,36 | 0,37 | 0,35 |
| La (ppm) | 10,59 | 9,57 | 10,23 | 9,40 | 8,78 | 9,03 | 9,27 |
| Ce (ppm) | 24,49 | 21,93 | 23,06 | 21,55 | 20,77 | 21,42 | 21,19 |
| Pb (ppm) | 5 | 4 | 5 | b.d. | 5 | 6 | 8 |
| Pr (ppm) | 2,91 | 2,63 | 2,71 | 2,62 | 2,36 | 2,47 | 2,53 |
| Mo (ppm) | 0,9 | 1,2 | 1,2 | 0,9 | 1,2 | 1,1 | 1,1 |
| Sr (ppm) | 197 | 194 | 204 | 194 | 203 | 204 | 196 |
| Nd (ppm) | 16,0 | 12,8 | 13,4 | 13,2 | 11,5 | 11,7 | 11,9 |
| Zr (ppm) | 103 | 88 | 89 | 85 | 80 | 82 | 83 |
| Hf (ppm) | 2,59 | 2,31 | 2,39 | 2,29 | 2,13 | 1,99 | 2,10 |
| Sm (ppm) | 3,60 | 3,04 | 3,31 | 3,31 | 3,14 | 3,04 | 3,16 |
| Eu (ppm) | 1,15 | 0,97 | 1,02 | 1,01 | 0,98 | 0,96 | 0,97 |
| Sn (ppm) | 0,6 | b.d. | 0,6 | b.d. | b.d. | 0,5 | b.d. |
| Gd (ppm) | 3,56 | 3,41 | 3,24 | 3,02 | 3,01 | 2,87 | 2,80 |
| Dy (ppm) | 4,00 | 3,57 | 3,70 | 3,60 | 3,36 | 3,34 | 3,49 |
| Li (ppm) | 2 | 5 | 4 | 4 | 5 | 5 | 5 |
| Y (ppm) | 27 | 24 | 25 | 23 | 22 | 23 | 22 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,26 | 2,19 | 2,40 | 2,17 | 2,12 | 2,00 | 2,08 |
| Yb (ppm) | 2,28 | 2,21 | 2,20 | 2,21 | 2,01 | 2,11 | 2,11 |
| Lu (ppm) | 0,35 | 0,33 | 0,34 | 0,33 | 0,30 | 0,32 | 0,31 |
| Co (ppm) | 33 | 33 | 33 | 34 | 35 | 33 | 33 |
| Cr (ppm) | 250 | 291 | 276 | 341 | 336 | 295 | 283 |
| Cu (ppm) | 108 | 95 | 94 | 97 | 99 | 98 | 96 |
| Ni (ppm) | 64 | 74 | 72 | 81 | 81 | 74 | 75 |
| Sc (ppm) | 37 | 36 | 36 | 39 | 37 | 36 | 36 |
| V (ppm) | 265 | 250 | 248 | 245 | 252 | 247 | 247 |
| Zn (ppm) | 94 | 88 | 88 | 88 | 89 | 88 | 88 |
| Tb (ppm) | 0,6 | 0,6 | 0,7 | 0,6 | 0,6 | 0,6 | 0,6 |
| Tm (ppm) | 0,4 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 2,82 | 2,85 | 3,16 | 5,73 | 2,24 | 3,38 | 3,59 |
| S II | -0,21 | -0,01 | -0,92 | -2,85 | -1,87 | -1,02 | -1,28 |
| S III | 0,66 | 0,45 | 0,65 | 1,11 | 0,70 | 1,01 | 0,61 |

| Sample: | K05-76 | S71 | K05-114 | K05-115 | K05-116 | K04K-03 | K05-78 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | GS |
| Latitude (N): | -31,846733 | -31,847753 | -31,836163 | -31,821451 | -31,821843 | -31,823025 | -31,781047 |
| Longitude ( E): | 26,200017 | 26,201153 | 26,194101 | 26,195134 | 26,195395 | 26,20672 | 26,301448 |
| Altitude (m): | 1701 | 1746 | 1519 | 1528 | 1584 | 1521 | 2148 |
| SiO2 (wt %) | 50,71 | 50,49 | 51,72 | 51,15 | 51,04 | 51,29 | 51,27 |
| TiO2 (wt %) | 0,96 | 0,89 | 1,01 | 1,08 | 1,19 | 1,09 | 1,03 |
| Al2O3 (wt %) | 15,45 | 15,56 | 15,28 | 15,20 | 14,92 | 14,61 | 15,14 |
| Fe2O3(T) (wt %) | 11,49 | 11,12 | 11,52 | 11,90 | 12,18 | 12,15 | 11,87 |
| MnO (wt %) | 0,18 | 0,17 | 0,18 | 0,18 | 0,19 | 0,19 | 0,18 |
| MgO (wt %) | 6,61 | 6,70 | 5,92 | 6,16 | 6,54 | 5,99 | 6,08 |
| CaO (wt %) | 10,75 | 11,08 | 10,28 | 10,42 | 10,50 | 10,46 | 10,37 |
| Na2O (wt %) | 2,45 | 2,44 | 2,62 | 2,48 | 2,50 | 2,43 | 2,52 |
| K2O (wt %) | 0,60 | 0,64 | 0,66 | 0,63 | 0,60 | 0,68 | 0,66 |
| P2O5 (wt %) | 0,16 | 0,14 | 0,17 | 0,16 | 0,15 | 0,16 | 0,16 |
| SUM | 99,4 | 99,2 | 99,4 | 99,4 | 99,8 | 99,0 | 99,3 |
| Cs (ppm) | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,3 | 0,5 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 13 | 12 | 15 | 13 | 13 | 15 | 14 |
| Ba (ppm) | 187 | 181 | 213 | 199 | 198 | 213 | 199 |
| Th (ppm) | 1,3 | 1,2 | 1,3 | 1,4 | 1,3 | 2,0 | 1,5 |
| U (ppm) | 0,25 | 0,24 | 0,29 | 0,26 | 0,25 | 0,25 | 0,25 |
| Nb (ppm) | 7,7 | 7,4 | 8,3 | 8,4 | 8,3 | 8,3 | 8,9 |
| Ta (ppm) | 0,40 | 0,42 | 0,41 | 0,42 | 0,43 | 0,45 | 0,46 |
| La (ppm) | 10,04 | 9,56 | 10,94 | 10,71 | 10,24 | 10,78 | 12,02 |
| Ce (ppm) | 23,53 | 22,16 | 24,85 | 24,21 | 23,21 | 24,76 | 27,14 |
| Pb (ppm) | 5 | 5 | 7 | 4 | 4 | 8 | 7 |
| Pr (ppm) | 2,68 | 2,74 | 2,90 | 2,85 | 2,85 | 2,92 | 3,10 |
| Mo (ppm) | 1,6 | 0,8 | 1,2 | 1,1 | 1,1 | 1,4 | 1,6 |
| Sr (ppm) | 201 | 198 | 204 | 205 | 204 | 195 | 192 |
| Nd (ppm) | 13,4 | 13,4 | 14,3 | 13,9 | 13,5 | 14,5 | 15,1 |
| Zr (ppm) | 87 | 92 | 94 | 95 | 93 | 98 | 103 |
| Hf (ppm) | 2,23 | 2,09 | 2,53 | 2,46 | 2,46 | 2,47 | 2,43 |
| Sm (ppm) | 3,08 | 3,12 | 3,49 | 3,34 | 3,17 | 3,82 | 3,91 |
| Eu (ppm) | 1,04 | 1,04 | 1,24 | 1,16 | 1,20 | 1,15 | 1,21 |
| Sn (ppm) | 0,6 | b.d. | 0,5 | 0,6 | 0,6 | 0,6 | 0,6 |
| Gd (ppm) | 3,17 | 2,97 | 3,56 | 3,17 | 3,28 | 3,34 | 3,39 |
| Dy (ppm) | 3,55 | 3,58 | 4,06 | 3,85 | 3,71 | 3,91 | 3,86 |
| Li (ppm) | 5 | 3 | 5 | 5 | 5 | 5 | 5 |
| Y (ppm) | 24 | 24 | 27 | 26 | 25 | 26 | 27 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,32 | 2,06 | 2,47 | 2,34 | 2,22 | 2,35 | 2,46 |
| Yb (ppm) | 2,04 | 1,98 | 2,30 | 2,19 | 2,39 | 2,40 | 5,06 |
| Lu (ppm) | 0,34 | 0,29 | 0,32 | 0,33 | 0,34 | 0,37 | 0,38 |
| Co (ppm) | 34 | 33 | 33 | 34 | 36 | 34 | 33 |
| Cr (ppm) | 307 | 343 | 228 | 285 | 284 | 278 | 239 |
| Cu (ppm) | 98 | 97 | 104 | 107 | 114 | 123 | 106 |
| Ni (ppm) | 73 | 73 | 57 | 64 | 66 | 60 | 62 |
| Sc (ppm) | 36 | 37 | 37 | 38 | 40 | 38 | 37 |
| V (ppm) | 246 | 246 | 257 | 275 | 312 | 269 | 266 |
| Zn (ppm) | 89 | 88 | 94 | 94 | 99 | 96 | 94 |
| Tb (ppm) | 0,7 | 0,6 | 0,7 | 0,7 | 0,6 | | 0,7 |
| Tm (ppm) | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 | | 0,3 |
| S I | 2,79 | 2,91 | 2,52 | 2,77 | 1,52 | 4,43 | 3,63 |
| S II | -1,90 | -0,72 | -2,74 | -1,34 | -0,66 | -4,10 | -4,12 |
| S III | 1,54 | 0,71 | 0,07 | 1,69 | 2,13 | 0,24 | 2,96 |

| Sample: | K05-80 | K05-81 | K05-82 | K05-83 | K05-84 | S76 | K05-85 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GS | GS | GS | GS | GS | GS | GS |
| Latitude (N): | -31,793876 | -31,793829 | -31,793753 | -31,793633 | -31,793609 | -31,79295 | -31,792983 |
| Longitude ( E): | 26,303327 | 26,303277 | 26,303378 | 26,30346 | 26,303351 | 26,302633 | 26,302783 |
| Altitude (m): | 2011 | 2010 | 2008 | 2000 | 1986 | 1967 | 1972 |
| SiO2 (wt %) | 50,81 | 51,24 | 50,45 | 50,57 | 51,38 | 50,67 | 50,60 |
| TiO2 (wt %) | 1,01 | 0,98 | 0,90 | 0,97 | 1,06 | 1,02 | 1,06 |
| Al2O3 (wt %) | 14,91 | 15,09 | 15,42 | 15,17 | 15,00 | 14,99 | 14,87 |
| Fe2O3(T) (wt %) | 12,11 | 11,89 | 11,35 | 11,79 | 11,99 | 11,58 | 11,93 |
| MnO (wt %) | 0,19 | 0,19 | 0,18 | 0,19 | 0,19 | 0,18 | 0,19 |
| MgO (wt %) | 6,32 | 6,26 | 6,88 | 6,63 | 6,06 | 6,00 | 6,13 |
| CaO (wt %) | 10,38 | 10,46 | 10,90 | 10,61 | 10,20 | 10,46 | 10,37 |
| Na2O (wt %) | 2,48 | 2,46 | 2,40 | 2,42 | 2,50 | 2,45 | 2,49 |
| K2O (wt %) | 0,62 | 0,63 | 0,55 | 0,60 | 0,68 | 0,70 | 0,67 |
| P2O5 (wt %) | 0,15 | 0,15 | 0,13 | 0,15 | 0,16 | 0,16 | 0,16 |
| SUM | 99,0 | 99,4 | 99,2 | 99,1 | 99,2 | 98,2 | 98,5 |
| Cs (ppm) | 0,6 | 0,7 | 0,6 | 0,5 | 0,7 | 1,1 | 0,4 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 13 | 14 | 12 | 12 | 14 | 15 | 14 |
| Ba (ppm) | 211 | 215 | 180 | 191 | 209 | 254 | 200 |
| Th (ppm) | 1,6 | 1,5 | 1,1 | 1,3 | 1,9 | 1,4 | 1,5 |
| U (ppm) | 0,24 | 0,23 | 0,20 | 0,23 | 0,29 | 0,27 | 0,26 |
| Nb (ppm) | 8,3 | 8,1 | 7,1 | 7,6 | 8,4 | 8,4 | 8,8 |
| Ta (ppm) | 0,44 | 0,43 | 0,38 | 0,41 | 0,41 | 0,50 | 0,46 |
| La (ppm) | 11,03 | 10,77 | 8,96 | 9,89 | 12,56 | 11,46 | 11,53 |
| Ce (ppm) | 25,05 | 24,98 | 20,66 | 22,43 | 28,00 | 26,35 | 24,81 |
| Pb (ppm) | 7 | 5 | 4 | 3 | 5 | 4 | 3 |
| Pr (ppm) | 2,90 | 2,76 | 2,46 | 2,71 | 3,27 | 3,14 | 2,99 |
| Mo (ppm) | 1,5 | 1,3 | 1,1 | 1,5 | 1,5 | 0,9 | 1,1 |
| Sr (ppm) | 197 | 205 | 198 | 197 | 209 | 197 | 193 |
| Nd (ppm) | 14,3 | 13,7 | 12,0 | 13,1 | 15,6 | 15,7 | 14,8 |
| Zr (ppm) | 98 | 95 | 83 | 90 | 97 | 102 | 97 |
| Hf (ppm) | 2,48 | 2,53 | 2,14 | 2,37 | 2,48 | 2,41 | 2,57 |
| Sm (ppm) | 3,78 | 3,39 | 3,39 | 3,12 | 4,07 | 3,91 | 3,67 |
| Eu (ppm) | 1,04 | 1,09 | 0,96 | 1,03 | 1,11 | 1,13 | 1,10 |
| Sn (ppm) | b.d. | 0,5 | b.d. | b.d. | 0,7 | b.d. | b.d. |
| Gd (ppm) | 3,32 | 3,08 | 2,87 | 3,08 | 3,65 | 3,59 | 3,24 |
| Dy (ppm) | 3,89 | 4,02 | 3,35 | 3,68 | 4,08 | 4,10 | 3,95 |
| Li (ppm) | 4 | 5 | 3 | 4 | 5 | 2 | 4 |
| Y (ppm) | 26 | 26 | 23 | 24 | 28 | 28 | 27 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,42 | 2,28 | 1,98 | 2,27 | 2,26 | 2,36 | 2,46 |
| Yb (ppm) | 2,42 | 2,29 | 2,10 | 2,15 | 2,40 | 2,50 | 2,31 |
| Lu (ppm) | 0,34 | 0,35 | 0,32 | 0,32 | 0,38 | 0,37 | 0,35 |
| Co (ppm) | 33 | 33 | 32 | 33 | 33 | 34 | 34 |
| Cr (ppm) | 278 | 266 | 317 | 300 | 267 | 258 | 262 |
| Cu (ppm) | 108 | 99 | 95 | 100 | 106 | 106 | 110 |
| Ni (ppm) | 63 | 63 | 74 | 70 | 64 | 64 | 63 |
| Sc (ppm) | 39 | 38 | 38 | 38 | 37 | 36 | 38 |
| V (ppm) | 272 | 256 | 257 | 258 | 264 | 251 | 269 |
| Zn (ppm) | 94 | 91 | 86 | 90 | 95 | 95 | 94 |
| Tb (ppm) | 0,7 | 0,7 | 0,6 | 0,6 | 0,7 | 0,7 | 0,7 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 | 0,4 | 0,4 |
| S I | 3,85 | 3,68 | 3,53 | 3,12 | 2,54 | 1,86 | 3,85 |
| S II | -3,53 | -2,55 | -0,07 | -1,44 | -3,28 | -2,28 | -2,13 |
| S III | 2,17 | 2,22 | 1,93 | 1,55 | 2,61 | 2,15 | 1,29 |

| Sample: | K05-86 | K05-193 | K05-198 | K05-199 | K05-200 | K05-201 | K05-202 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GS | GS | GS | GS | GS | GS | GS |
| Latitude (N): | -31,782386 | -31,774939 | -31,858596 | -31,858596 | -31,858596 | -31,858596 | -31,858596 |
| Longitude ( E): | 26,301823 | 26,301913 | 26,346569 | 26,346569 | 26,346569 | 26,346569 | 26,346569 |
| Altitude (m): | 2056 | 2053 | 1418 | 1434 | 1424 | 1408 | 1419 |
| SiO2 (wt %) | 50,93 | 51,26 | 51,01 | 50,61 | 50,37 | 50,72 | 51,67 |
| TiO2 (wt %) | 1,08 | 1,13 | 1,09 | 1,00 | 1,03 | 1,08 | 1,21 |
| Al2O3 (wt %) | 14,90 | 14,39 | 14,75 | 15,25 | 14,47 | 14,88 | 15,05 |
| Fe2O3(T) (wt %) | 12,08 | 12,86 | 12,46 | 11,70 | 12,13 | 12,24 | 12,61 |
| MnO (wt %) | 0,19 | 0,19 | 0,20 | 0,18 | 0,18 | 0,18 | 0,18 |
| MgO (wt %) | 6,19 | 6,49 | 6,24 | 6,60 | 6,86 | 6,20 | 5,53 |
| CaO (wt %) | 10,19 | 10,24 | 10,15 | 10,77 | 10,45 | 10,51 | 10,00 |
| Na2O (wt %) | 2,42 | 2,73 | 2,64 | 2,44 | 2,56 | 2,59 | 2,55 |
| K2O (wt %) | 0,69 | 0,78 | 0,86 | 0,59 | 0,71 | 0,74 | 0,80 |
| P2O5 (wt %) | 0,17 | 0,17 | 0,16 | 0,16 | 0,16 | 0,17 | 0,19 |
| SUM | 98,8 | 100,2 | 99,6 | 99,3 | 98,9 | 99,3 | 99,8 |
| Cs (ppm) | 1,0 | 0,2 | 0,2 | 0,3 | 0,2 | 0,3 | 0,4 |
| Tl (ppm) | 0,2 | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 15 | 15 | 14 | 12 | 12 | 14 | 16 |
| Ba (ppm) | 270 | 228 | 230 | 197 | 207 | 221 | 231 |
| Th (ppm) | 1,4 | 1,5 | 1,5 | 1,1 | 1,3 | 1,6 | 1,7 |
| U (ppm) | 0,23 | 0,28 | 0,32 | 0,23 | 0,22 | 0,29 | 0,33 |
| Nb (ppm) | 8,1 | 9,3 | 7,9 | 7,1 | 7,1 | 9,0 | 11,0 |
| Ta (ppm) | 0,44 | 0,54 | 0,46 | 0,40 | 0,46 | 0,53 | 0,57 |
| La (ppm) | 10,91 | 11,55 | 10,79 | 9,19 | 10,21 | 12,50 | 13,98 |
| Ce (ppm) | 24,85 | 26,48 | 24,65 | 21,25 | 23,19 | 29,28 | 31,51 |
| Pb (ppm) | 5 | 5 | 5 | 5 | 4 | 3 | 3 |
| Pr (ppm) | 2,92 | 3,16 | 2,92 | 2,61 | 2,84 | 3,43 | 3,74 |
| Mo (ppm) | 1,2 | 2,1 | 1,6 | 1,5 | 1,4 | 1,5 | 1,7 |
| Sr (ppm) | 207 | 203 | 211 | 212 | 196 | 206 | 202 |
| Nd (ppm) | 14,3 | 15,7 | 14,5 | 12,9 | 13,6 | 16,0 | 18,3 |
| Zr (ppm) | 96 | 107 | 106 | 86 | 97 | 102 | 115 |
| Hf (ppm) | 2,69 | 2,82 | 2,64 | 2,11 | 2,51 | 2,78 | 3,30 |
| Sm (ppm) | 3,78 | 4,06 | 3,63 | 3,43 | 3,39 | 3,84 | 4,23 |
| Eu (ppm) | 1,07 | 1,11 | 1,10 | 1,00 | 1,08 | 1,26 | 1,40 |
| Sn (ppm) | b.d. | 0,6 | 0,6 | 0,6 | b.d. | b.d. | b.d. |
| Gd (ppm) | 3,37 | 3,87 | 3,39 | 3,17 | 3,26 | 3,62 | 4,07 |
| Dy (ppm) | 3,93 | 4,43 | 4,19 | 3,39 | 3,82 | 4,44 | 4,84 |
| Li (ppm) | 8 | b.d. | 11 | 5 | b.d. | b.d. | b.d. |
| Y (ppm) | 26 | 28 | 26 | 23 | 24 | 30 | 33 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,45 | 2,32 | 2,44 | 2,18 | 2,18 | 2,38 | 2,79 |
| Yb (ppm) | 2,32 | 2,55 | 2,48 | 2,06 | 2,22 | 2,44 | 2,70 |
| Lu (ppm) | 0,36 | 0,37 | 0,36 | 0,31 | 0,34 | 0,40 | 0,42 |
| Co (ppm) | 34 | 35 | 34 | 33 | 35 | 35 | 35 |
| Cr (ppm) | 257 | 321 | 253 | 283 | 330 | 265 | 239 |
| Cu (ppm) | 110 | 110 | 106 | 98 | 103 | 105 | 121 |
| Ni (ppm) | 64 | 65 | 62 | 73 | 71 | 65 | 52 |
| Sc (ppm) | 38 | 39 | 38 | 37 | 39 | 37 | 38 |
| V (ppm) | 271 | 279 | 261 | 255 | 270 | 261 | 274 |
| Zn (ppm) | 94 | 96 | 94 | 89 | 93 | 95 | 100 |
| Tb (ppm) | 0,7 | 0,7 | 0,6 | 0,6 | 0,6 | 0,6 | 0,8 |
| Tm (ppm) | 0,3 | 0,4 | 0,4 | 0,3 | 0,4 | 0,4 | 0,4 |
| S I | 2,98 | 2,36 | 2,68 | 2,98 | 1,46 | 2,50 | 2,54 |
| S II | -2,48 | -2,08 | -2,95 | -0,28 | -2,46 | -2,77 | -3,10 |
| S III | 3,11 | 3,52 | 0,89 | 1,63 | 2,76 | 2,70 | 1,53 |

| Sample: | K05-203 | K05-204 | K05-206 | K05-207 | K05-210 | K05-211 | K05-213 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GS | GS | GS/L7 | GS/L7 | GS/L9 | GS/L9 | GS |
| Latitude (N): | -31,858596 | -31,858596 | -31,816319 | -31,817693 | -31,802511 | -31,802355 | -31,792508 |
| Longitude ( E): | 26,346569 | 26,346569 | 26,319152 | 26,319768 | 26,327109 | 26,327121 | 26,332992 |
| Altitude (m): | 1421 | 1430 | 1936 | 1933 | 1610 | 1606 | 1532 |
| SiO2 (wt %) | 51,70 | 51,02 | 50,79 | 50,22 | 51,31 | 51,80 | 51,89 |
| TiO2 (wt %) | 1,05 | 1,14 | 1,08 | 1,09 | 0,83 | 0,90 | 1,05 |
| Al2O3 (wt %) | 15,20 | 15,04 | 15,06 | 15,12 | 15,32 | 15,55 | 15,36 |
| Fe2O3(T) (wt %) | 11,71 | 12,56 | 12,32 | 12,22 | 10,74 | 9,85 | 11,80 |
| MnO (wt %) | 0,18 | 0,19 | 0,18 | 0,19 | 0,17 | 0,15 | 0,18 |
| MgO (wt %) | 6,18 | 6,18 | 6,34 | 6,24 | 7,89 | 6,70 | 6,25 |
| CaO (wt %) | 10,49 | 10,39 | 10,48 | 10,43 | 10,97 | 11,09 | 10,53 |
| Na2O (wt %) | 2,54 | 2,54 | 2,53 | 2,44 | 2,23 | 2,26 | 2,57 |
| K2O (wt %) | 0,66 | 0,75 | 0,74 | 0,62 | 0,50 | 0,55 | 0,67 |
| P2O5 (wt %) | 0,16 | 0,16 | 0,16 | 0,16 | 0,11 | 0,12 | 0,17 |
| SUM | 99,9 | 100,0 | 99,7 | 98,7 | 100,1 | 99,0 | 100,5 |
| Cs (ppm) | 0,3 | 0,2 | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 15 | 14 | 12 | 12 | 13 | 14 |
| Ba (ppm) | 203 | 219 | 211 | 205 | 162 | 173 | 217 |
| Th (ppm) | 1,4 | 1,6 | 1,4 | 1,4 | 1,6 | 2,1 | 2,0 |
| U (ppm) | 0,25 | 0,31 | 0,29 | 0,29 | 0,42 | 0,48 | 0,47 |
| Nb (ppm) | 8,8 | 9,7 | 8,9 | 8,9 | 7,0 | 7,8 | 10,2 |
| Ta (ppm) | 0,47 | 0,54 | 0,49 | 0,49 | 0,52 | 0,62 | 0,76 |
| La (ppm) | 11,04 | 12,17 | 11,85 | 11,88 | 8,45 | 9,07 | 10,90 |
| Ce (ppm) | 25,65 | 27,51 | 27,12 | 27,59 | 19,12 | 21,07 | 25,48 |
| Pb (ppm) | 4 | 5 | 3 | 5 | b.d. | 6 | 2 |
| Pr (ppm) | 3,02 | 3,34 | 3,23 | 3,26 | 2,22 | 2,48 | 3,00 |
| Mo (ppm) | 1,9 | 1,6 | 1,2 | 1,2 | 1,2 | 1,0 | 1,3 |
| Sr (ppm) | 200 | 206 | 200 | 201 | 184 | 180 | 204 |
| Nd (ppm) | 14,5 | 16,9 | 16,7 | 15,6 | 11,2 | 12,3 | 14,4 |
| Zr (ppm) | 98 | 105 | 101 | 106 | 77 | 84 | 100 |
| Hf (ppm) | 2,67 | 3,00 | 2,71 | 2,88 | 1,99 | 2,14 | 2,51 |
| Sm (ppm) | 3,56 | 3,82 | 3,79 | 3,58 | 2,89 | 3,29 | 3,42 |
| Eu (ppm) | 1,19 | 1,32 | 1,34 | 1,25 | 0,99 | 0,98 | 1,11 |
| Sn (ppm) | 0,5 | b.d. | b.d. | b.d. | b.d. | b.d. | 0,9 |
| Gd (ppm) | 3,52 | 3,59 | 3,56 | 3,57 | 2,75 | 3,03 | 3,45 |
| Dy (ppm) | 3,76 | 4,56 | 4,38 | 4,51 | 3,33 | 3,64 | 3,99 |
| Li (ppm) | 4 | b.d. | b.d. | b.d. | 6 | 5 | 5 |
| Y (ppm) | 27 | 30 | 29 | 29 | 22 | 24 | 27 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,47 | 2,49 | 2,53 | 2,44 | 2,17 | 2,25 | 2,48 |
| Yb (ppm) | 2,39 | 2,53 | 2,47 | 2,38 | 2,03 | 2,05 | 2,38 |
| Lu (ppm) | 0,37 | 0,39 | 0,41 | 0,37 | 0,31 | 0,36 | 0,35 |
| Co (ppm) | 33 | 35 | 34 | 34 | 33 | 30 | 34 |
| Cr (ppm) | 260 | 274 | 272 | 276 | 500 | 372 | 303 |
| Cu (ppm) | 108 | 108 | 106 | 108 | 84 | 85 | 107 |
| Ni (ppm) | 63 | 64 | 64 | 63 | 107 | 69 | 66 |
| Sc (ppm) | 38 | 37 | 38 | 38 | 34 | 37 | 37 |
| V (ppm) | 270 | 262 | 263 | 267 | 232 | 277 | 268 |
| Zn (ppm) | 94 | 95 | 94 | 93 | 83 | 82 | 93 |
| Tb (ppm) | 0,7 | 0,8 | 0,6 | 0,7 | 0,6 | 0,7 | 0,7 |
| Tm (ppm) | 0,3 | 0,4 | 0,4 | 0,4 | 0,3 | 0,3 | 0,3 |
| S I | 3,68 | 2,19 | 2,24 | 2,90 | -1,28 | -0,25 | 3,52 |
| S II | -2,49 | -1,03 | -1,91 | -1,53 | 4,34 | 3,60 | -1,68 |
| S III | 1,76 | 1,46 | 1,32 | 1,19 | 0,81 | 1,22 | 3,27 |

| Sample: | K05-214 | K05-215 | K05-216 | K05-134 | K05-135 | K05-136 | K05-137 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GS | GS | GS | CD | CD | CD | CD |
| Latitude (N): | -31,79252 | -31,792504 | -31,792276 | -32,0549 | -32,0549 | -32,0549 | -32,0548 |
| Longitude ( E): | 26,332988 | 26,333114 | 26,333137 | 25,3592 | 25,3593 | 25,3593 | 25,3593 |
| Altitude (m): | 1539 | 1539 | 1546 | 1088 | 1087 | 1086 | 1086 |
| SiO2 (wt %) | 51,43 | 51,56 | 51,58 | 52,36 | 50,99 | 50,98 | 51,83 |
| TiO2 (wt %) | 1,09 | 1,01 | 1,01 | 1,08 | 1,35 | 1,45 | 1,33 |
| Al2O3 (wt %) | 14,92 | 15,19 | 15,16 | 15,00 | 14,18 | 14,13 | 14,49 |
| Fe2O3(T) (wt %) | 12,10 | 11,73 | 11,48 | 12,00 | 13,62 | 13,92 | 13,22 |
| MnO (wt %) | 0,19 | 0,18 | 0,18 | 0,19 | 0,20 | 0,20 | 0,20 |
| MgO (wt %) | 6,29 | 6,08 | 6,26 | 6,10 | 5,66 | 5,15 | 5,33 |
| CaO (wt %) | 10,35 | 10,45 | 10,37 | 10,07 | 9,71 | 9,45 | 9,69 |
| Na2O (wt %) | 2,50 | 2,60 | 2,59 | 2,39 | 2,50 | 2,49 | 2,47 |
| K2O (wt %) | 0,66 | 0,64 | 0,67 | 0,74 | 0,78 | 0,78 | 0,69 |
| P2O5 (wt %) | 0,20 | 0,16 | 0,16 | 0,17 | 0,19 | 0,21 | 0,19 |
| SUM | 99,7 | 99,6 | 99,5 | 100,1 | 99,2 | 98,8 | 99,4 |
| Cs (ppm) | 0,3 | 0,2 | 0,3 | 1,0 | 1,6 | 1,5 | 1,2 |
| Tl (ppm) | b.d. | b.d. | b.d. | 0,2 | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 14 | 15 | 16 | 17 | 18 | 16 |
| Ba (ppm) | 218 | 215 | 257 | 226 | 226 | 246 | 230 |
| Th (ppm) | 2,4 | 3,5 | 28,2 | 1,9 | 1,6 | 1,9 | 1,8 |
| U (ppm) | 0,62 | 1,01 | 9,83 | 0,45 | 0,41 | 0,42 | 0,37 |
| Nb (ppm) | 11,0 | 13,4 | 52,7 | 8,6 | 7,7 | 7,7 | 7,5 |
| Ta (ppm) | 0,91 | 1,47 | 12,15 | 0,48 | 0,42 | 0,44 | 0,41 |
| La (ppm) | 11,72 | 10,87 | 12,71 | 12,21 | 11,45 | 12,23 | 11,86 |
| Ce (ppm) | 27,24 | 25,60 | 35,20 | 27,24 | 25,93 | 28,71 | 26,31 |
| Pb (ppm) | 4 | 6 | 8 | 5 | 7 | 7 | 6 |
| Pr (ppm) | 3,19 | 2,93 | 3,72 | 3,07 | 3,11 | 3,31 | 3,22 |
| Mo (ppm) | 1,4 | 1,6 | 1,8 | 1,3 | 1,3 | 1,2 | 1,3 |
| Sr (ppm) | 203 | 196 | 198 | 216 | 215 | 199 | 197 |
| Nd (ppm) | 16,1 | 15,0 | 17,9 | 15,6 | 15,9 | 17,2 | 16,1 |
| Zr (ppm) | 102 | 102 | 126 | 99 | 108 | 120 | 113 |
| Hf (ppm) | 2,58 | 2,58 | 2,96 | 2,52 | 2,94 | 2,91 | 2,94 |
| Sm (ppm) | 3,95 | 3,63 | 4,30 | 3,66 | 3,97 | 4,39 | 4,43 |
| Eu (ppm) | 1,14 | 1,13 | 1,30 | 1,07 | 1,30 | 1,32 | 1,29 |
| Sn (ppm) | b.d. | 0,5 | 0,5 | b.d. | b.d. | b.d. | b.d. |
| Gd (ppm) | 3,82 | 3,48 | 3,89 | 3,49 | 3,79 | 4,22 | 3,96 |
| Dy (ppm) | 4,48 | 4,00 | 4,02 | 3,88 | 4,62 | 5,05 | 4,56 |
| Li (ppm) | 5 | 4 | 8 | 8 | 7 | 8 | 8 |
| Y (ppm) | 28 | 27 | 27 | 26 | 31 | 33 | 31 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | 1 | b.d. |
| Er (ppm) | 2,56 | 2,45 | 2,54 | 2,38 | 2,94 | 3,16 | 2,86 |
| Yb (ppm) | 2,48 | 2,30 | 2,58 | 2,51 | 2,79 | 3,07 | 2,72 |
| Lu (ppm) | 0,36 | 0,38 | 0,38 | 0,39 | 0,41 | 0,45 | 0,43 |
| Co (ppm) | 34 | 34 | 34 | 33 | 37 | 37 | 37 |
| Cr (ppm) | 269 | 289 | 363 | 240 | 183 | 184 | 172 |
| Cu (ppm) | 111 | 109 | 113 | 90 | 149 | 156 | 148 |
| Ni (ppm) | 64 | 66 | 66 | 43 | 48 | 46 | 45 |
| Sc (ppm) | 39 | 37 | 38 | 37 | 39 | 37 | 37 |
| V (ppm) | 274 | 260 | 266 | 245 | 297 | 289 | 280 |
| Zn (ppm) | 96 | 96 | 94 | 100 | 110 | 114 | 111 |
| Tb (ppm) | 0,8 | 0,7 | 0,8 | 0,7 | 0,8 | 0,9 | 0,8 |
| Tm (ppm) | 0,4 | 0,3 | 0,4 | 0,4 | 0,4 | 0,5 | 0,4 |
| S I | 3,81 | 4,52 | 3,04 | -5,26 | -2,54 | -4,01 | -2,81 |
| S II | -3,14 | -2,82 | -2,49 | -4,99 | -1,68 | -2,49 | -3,33 |
| S III | 2,09 | 2,67 | 2,37 | -0,42 | -4,96 | -5,55 | -5,79 |

| Sample: | K05-138 | K05-140 | K05-141 | K05-142 | K05-143 | K05-144 | K05-145 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | CD | CD | CD | CD | CD | CD | CD |
| Latitude (N): | -32,0548 | -31,9262 | -31,9261 | -31,9261 | -31,9261 | -31,9261 | -31,7683 |
| Longitude ( E): | 25,3594 | 25,3064 | 25,3065 | 25,3065 | 25,3065 | 25,3065 | 25,2127 |
| Altitude (m): | 1087 | 1052 | 1053 | 1037 | 1036 | 1037 | 1143 |
| SiO2 (wt %) | 52,05 | 51,30 | 50,50 | 51,40 | 51,67 | 51,58 | 50,59 |
| TiO2 (wt %) | 1,07 | 1,16 | 1,18 | 1,19 | 1,25 | 1,13 | 1,07 |
| Al2O3 (wt %) | 14,92 | 14,65 | 14,45 | 14,66 | 14,48 | 14,76 | 14,74 |
| Fe2O3(T) (wt %) | 12,04 | 12,47 | 12,84 | 12,74 | 13,01 | 12,60 | 12,07 |
| MnO (wt %) | 0,19 | 0,19 | 0,20 | 0,20 | 0,20 | 0,19 | 0,18 |
| MgO (wt %) | 6,11 | 6,04 | 6,00 | 5,88 | 5,88 | 6,08 | 6,20 |
| CaO (wt %) | 9,86 | 9,79 | 9,61 | 9,75 | 9,77 | 9,79 | 10,08 |
| Na2O (wt %) | 2,29 | 2,32 | 2,28 | 2,29 | 2,34 | 2,19 | 2,30 |
| K2O (wt %) | 0,70 | 0,80 | 0,68 | 0,80 | 0,75 | 0,73 | 0,76 |
| P2O5 (wt %) | 0,17 | 0,17 | 0,17 | 0,17 | 0,18 | 0,17 | 0,17 |
| SUM | 99,4 | 98,9 | 97,9 | 99,1 | 99,5 | 99,2 | 98,2 |
| Cs (ppm) | 0,9 | 0,6 | 0,7 | 1,0 | 0,9 | 0,8 | 0,4 |
| Tl (ppm) | 0,2 | b.d. | b.d. | 0,2 | 0,2 | 0,2 | b.d. |
| Rb (ppm) | 17 | 17 | 16 | 19 | 22 | 18 | 16 |
| Ba (ppm) | 217 | 227 | 193 | 222 | 216 | 215 | 218 |
| Th (ppm) | 1,8 | 2,0 | 1,7 | 2,2 | 2,7 | 2,0 | 1,9 |
| U (ppm) | 0,45 | 0,43 | 0,40 | 0,46 | 0,53 | 0,44 | 0,47 |
| Nb (ppm) | 8,6 | 8,5 | 7,8 | 8,9 | 8,9 | 9,2 | 9,3 |
| Ta (ppm) | 0,43 | 0,47 | 0,45 | 0,47 | 0,54 | 0,46 | 0,54 |
| La (ppm) | 11,84 | 11,40 | 11,24 | 12,86 | 13,33 | 12,49 | 13,79 |
| Ce (ppm) | 27,01 | 26,38 | 25,53 | 29,04 | 30,04 | 28,02 | 29,42 |
| Pb (ppm) | 5 | 6 | 5 | 7 | 6 | 3 | 3 |
| Pr (ppm) | 3,26 | 3,18 | 3,05 | 3,32 | 3,51 | 3,29 | 3,35 |
| Mo (ppm) | 1,4 | 2,0 | 1,8 | 1,8 | 1,7 | 1,9 | 1,2 |
| Sr (ppm) | 204 | 201 | 202 | 205 | 193 | 204 | 199 |
| Nd (ppm) | 15,7 | 15,8 | 15,1 | 16,7 | 17,2 | 16,2 | 15,9 |
| Zr (ppm) | 100 | 103 | 97 | 108 | 113 | 103 | 97 |
| Hf (ppm) | 2,58 | 2,69 | 2,48 | 2,98 | 2,98 | 2,61 | 2,53 |
| Sm (ppm) | 3,71 | 3,77 | 3,79 | 4,37 | 4,49 | 4,02 | 3,47 |
| Eu (ppm) | 1,11 | 1,06 | 1,21 | 1,24 | 1,26 | 1,19 | 1,17 |
| Sn (ppm) | b.d. | 0,8 | 0,9 | 0,8 | 1,0 | 0,7 | 1,1 |
| Gd (ppm) | 3,37 | 3,50 | 3,50 | 3,76 | 4,24 | 3,71 | 3,54 |
| Dy (ppm) | 3,93 | 4,12 | 4,36 | 4,83 | 5,08 | 4,15 | 4,25 |
| Li (ppm) | 9 | 6 | 11 | 7 | 8 | 7 | 29 |
| Y (ppm) | 26 | 28 | 29 | 31 | 33 | 29 | 29 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | 1 | b.d. | b.d. |
| Er (ppm) | 2,56 | 2,60 | 2,53 | 2,95 | 2,92 | 2,53 | 2,36 |
| Yb (ppm) | 2,46 | 2,66 | 2,71 | 2,79 | 2,88 | 2,64 | 2,41 |
| Lu (ppm) | 0,39 | 0,40 | 0,42 | 0,42 | 0,44 | 0,40 | 0,36 |
| Co (ppm) | 32 | 33 | 34 | 33 | 35 | 33 | 33 |
| Cr (ppm) | 250 | 239 | 229 | 226 | 217 | 242 | 313 |
| Cu (ppm) | 91 | 104 | 111 | 106 | 130 | 92 | 94 |
| Ni (ppm) | 42 | 45 | 46 | 44 | 46 | 43 | 46 |
| Sc (ppm) | 37 | 37 | 37 | 36 | 39 | 37 | 37 |
| V (ppm) | 239 | 249 | 259 | 253 | 277 | 236 | 246 |
| Zn (ppm) | 99 | 101 | 104 | 102 | 106 | 101 | 97 |
| Tb (ppm) | 0,7 | 0,7 | 0,7 | 0,8 | 0,8 | 0,7 | 0,6 |
| Tm (ppm) | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| S I | -5,87 | -4,84 | -5,67 | -5,83 | -3,54 | -6,18 | -4,79 |
| S II | -5,45 | -4,44 | -3,65 | -3,41 | -4,44 | -4,75 | -4,76 |
| S III | -1,58 | -2,75 | -3,84 | -3,15 | -5,77 | -2,63 | -0,35 |

| Sample: | K05-146 | K05-147 | K05-148 | K05-149 | K05-150 | K05-151 | K05-152 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | CD | CD | CD | CD | CD | CD | CD |
| Latitude (N): | -31,7683 | -31,7683 | -31,7684 | -31,7684 | -31,5525 | -31,5525 | -31,5527 |
| Longitude ( E): | 25,2127 | 25,2126 | 25,2126 | 25,2125 | 25,0827 | 25,0827 | 25,0827 |
| Altitude (m): | 1143 | 1147 | 1149 | 1147 | 1206 | 1207 | 1207 |
| SiO2 (wt %) | 51,35 | 51,41 | 50,45 | 49,81 | 51,10 | 50,59 | 51,37 |
| TiO2 (wt %) | 1,14 | 1,15 | 1,15 | 1,12 | 1,14 | 1,22 | 1,22 |
| Al2O3 (wt %) | 14,64 | 14,96 | 14,40 | 14,22 | 14,65 | 14,34 | 14,59 |
| Fe2O3(T) (wt %) | 12,56 | 12,35 | 12,46 | 12,39 | 12,65 | 13,24 | 13,21 |
| MnO (wt %) | 0,19 | 0,19 | 0,19 | 0,19 | 0,19 | 0,20 | 0,20 |
| MgO (wt %) | 6,17 | 5,94 | 6,10 | 6,01 | 6,22 | 6,32 | 6,24 |
| CaO (wt %) | 9,97 | 9,83 | 10,09 | 9,95 | 10,03 | 9,93 | 9,69 |
| Na2O (wt %) | 2,35 | 2,27 | 2,40 | 2,34 | 2,34 | 2,46 | 2,28 |
| K2O (wt %) | 0,77 | 0,72 | 0,76 | 0,79 | 0,80 | 0,82 | 0,75 |
| P2O5 (wt %) | 0,18 | 0,17 | 0,17 | 0,17 | 0,17 | 0,17 | 0,17 |
| SUM | 99,3 | 99,0 | 98,2 | 97,0 | 99,3 | 99,3 | 99,7 |
| Cs (ppm) | 0,4 | 0,4 | 0,4 | 0,4 | 0,5 | 0,3 | 0,3 |
| Tl (ppm) | b.d. | 0,2 | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 15 | 16 | 14 | 15 | 18 | 15 | 16 |
| Ba (ppm) | 227 | 219 | 224 | 222 | 234 | 230 | 233 |
| Th (ppm) | 2,0 | 1,8 | 2,1 | 1,8 | 2,1 | 1,8 | 2,1 |
| U (ppm) | 0,52 | 0,36 | 0,42 | 0,46 | 0,48 | 0,46 | 0,40 |
| Nb (ppm) | 9,4 | 7,9 | 7,9 | 7,0 | 8,0 | 8,7 | 8,6 |
| Ta (ppm) | 0,51 | 0,42 | 0,47 | 0,49 | 0,49 | 0,49 | 0,50 |
| La (ppm) | 13,69 | 11,69 | 13,30 | 12,49 | 13,22 | 12,82 | 12,76 |
| Ce (ppm) | 29,87 | 25,59 | 27,77 | 26,22 | 28,35 | 26,82 | 27,93 |
| Pb (ppm) | 2 | 5 | 6 | 3 | 1 | 3 | 6 |
| Pr (ppm) | 3,51 | 3,09 | 3,44 | 3,10 | 3,29 | 3,15 | 3,17 |
| Mo (ppm) | 1,2 | 2,1 | 0,7 | 0,5 | 0,6 | 0,8 | 2,0 |
| Sr (ppm) | 206 | 214 | 205 | 197 | 207 | 233 | 215 |
| Nd (ppm) | 16,6 | 15,0 | 16,7 | 15,2 | 15,2 | 15,2 | 16,4 |
| Zr (ppm) | 106 | 97 | 104 | 102 | 105 | 102 | 107 |
| Hf (ppm) | 2,67 | 2,40 | 2,46 | 2,52 | 2,62 | 2,52 | 2,69 |
| Sm (ppm) | 3,81 | 3,74 | 3,73 | 3,18 | 3,82 | 3,75 | 4,02 |
| Eu (ppm) | 1,26 | 1,10 | 1,21 | 1,21 | 1,19 | 1,17 | 1,24 |
| Sn (ppm) | 0,9 | 0,8 | 1,0 | 1,1 | 0,7 | 0,8 | 0,8 |
| Gd (ppm) | 3,56 | 3,47 | 3,73 | 3,56 | 3,44 | 3,59 | 3,82 |
| Dy (ppm) | 4,55 | 4,13 | 4,33 | 3,98 | 4,06 | 4,45 | 4,35 |
| Li (ppm) | 14 | 8 | 14 | 10 | 6 | 9 | 11 |
| Y (ppm) | 30 | 27 | 28 | 27 | 29 | 28 | 31 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,58 | 2,59 | 2,41 | 2,36 | 2,43 | 2,38 | 2,78 |
| Yb (ppm) | 2,66 | 2,44 | 2,47 | 2,35 | 2,38 | 2,40 | 2,78 |
| Lu (ppm) | 0,38 | 0,40 | 0,37 | 0,32 | 0,38 | 0,37 | 0,44 |
| Co (ppm) | 35 | 33 | 34 | 34 | 33 | 34 | 34 |
| Cr (ppm) | 258 | 240 | 255 | 241 | 243 | 255 | 247 |
| Cu (ppm) | 104 | 105 | 104 | 101 | 96 | 110 | 111 |
| Ni (ppm) | 46 | 44 | 45 | 45 | 44 | 47 | 46 |
| Sc (ppm) | 38 | 36 | 37 | 36 | 37 | 39 | 38 |
| V (ppm) | 248 | 245 | 244 | 244 | 250 | 261 | 257 |
| Zn (ppm) | 102 | 99 | 99 | 98 | 97 | 100 | 102 |
| Tb (ppm) | 0,7 | 0,7 | 0,7 | 0,6 | 0,6 | 0,6 | 0,7 |
| Tm (ppm) | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| S I | -4,92 | -4,79 | -4,84 | -5,78 | -5,77 | -3,79 | -4,70 |
| S II | -4,51 | -3,76 | -3,96 | -3,58 | -3,94 | -2,91 | -3,89 |
| S III | -3,85 | -2,81 | -2,91 | -3,66 | -2,38 | -2,59 | -3,50 |

| Sample: | K05-153 | K05-154 | K05-155 | K05-156 | K05-157 | K05-158 | K05-159 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | CD | CD | GVD | GVD | GVD | GVD | GVD |
| Latitude (N): | -31,5527 | -31,5527 | -31,9754 | -31,9754 | -31,9754 | -31,9752 | -31,9009 |
| Longitude ( E): | 25,0827 | 25,0827 | 26,2203 | 26,2203 | 26,2201 | 26,2200 | 26,1639 |
| Altitude (m): | 1208 | 1209 | 1290 | 1291 | 1291 | 1288 | 1225 |
| SiO2 (wt %) | 51,11 | 51,35 | 51,20 | 50,83 | 51,08 | 51,40 | 50,23 |
| TiO2 (wt %) | 1,07 | 1,07 | 1,29 | 1,20 | 1,27 | 1,23 | 1,30 |
| Al2O3 (wt %) | 14,72 | 14,75 | 14,38 | 14,40 | 14,37 | 14,39 | 14,06 |
| Fe2O3(T) (wt %) | 11,95 | 11,95 | 13,89 | 13,43 | 13,76 | 13,22 | 13,80 |
| MnO (wt %) | 0,18 | 0,18 | 0,21 | 0,20 | 0,21 | 0,21 | 0,20 |
| MgO (wt %) | 6,23 | 6,43 | 5,78 | 5,82 | 5,82 | 5,90 | 5,64 |
| CaO (wt %) | 10,07 | 10,07 | 10,38 | 10,62 | 10,28 | 10,34 | 10,50 |
| Na2O (wt %) | 2,24 | 2,30 | 2,38 | 2,41 | 2,32 | 2,43 | 2,56 |
| K2O (wt %) | 0,74 | 0,77 | 0,41 | 0,36 | 0,38 | 0,45 | 0,40 |
| P2O5 (wt %) | 0,17 | 0,17 | 0,16 | 0,15 | 0,16 | 0,16 | 0,16 |
| SUM | 98,5 | 99,0 | 100,1 | 99,4 | 99,7 | 99,7 | 98,9 |
| Cs (ppm) | 0,3 | 0,3 | 0,6 | 0,4 | 0,5 | 1,1 | 0,4 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 16 | 11 | 9 | 10 | 11 | 8 |
| Ba (ppm) | 213 | 216 | 171 | 152 | 164 | 171 | 189 |
| Th (ppm) | 1,9 | 2,1 | 1,4 | 1,2 | 1,3 | 1,4 | 1,4 |
| U (ppm) | 0,43 | 0,49 | 0,30 | 0,29 | 0,28 | 0,31 | 0,33 |
| Nb (ppm) | 8,8 | 9,0 | 6,6 | 6,1 | 6,0 | 6,2 | 6,4 |
| Ta (ppm) | 0,47 | 0,54 | 0,33 | 0,33 | 0,33 | 0,35 | 0,33 |
| La (ppm) | 13,22 | 15,67 | 9,53 | 8,66 | 9,24 | 9,39 | 10,13 |
| Ce (ppm) | 28,39 | 30,33 | 21,76 | 20,72 | 21,26 | 22,00 | 22,63 |
| Pb (ppm) | 6 | 4 | 8 | 5 | 5 | 5 | 3 |
| Pr (ppm) | 3,29 | 3,42 | 2,62 | 2,54 | 2,58 | 2,68 | 2,75 |
| Mo (ppm) | 0,6 | 1,0 | 1,6 | 1,5 | 1,8 | 1,5 | 0,5 |
| Sr (ppm) | 198 | 194 | 185 | 186 | 190 | 184 | 186 |
| Nd (ppm) | 15,8 | 17,3 | 13,9 | 13,3 | 13,9 | 13,8 | 13,9 |
| Zr (ppm) | 104 | 100 | 97 | 92 | 96 | 97 | 97 |
| Hf (ppm) | 2,58 | 2,79 | 2,45 | 2,31 | 2,53 | 2,45 | 2,43 |
| Sm (ppm) | 3,80 | 3,82 | 3,72 | 3,63 | 3,81 | 3,83 | 3,76 |
| Eu (ppm) | 1,14 | 1,19 | 1,24 | 1,32 | 1,32 | 1,32 | 1,18 |
| Sn (ppm) | 0,8 | 0,9 | 0,6 | 0,6 | 0,6 | 0,7 | 0,9 |
| Gd (ppm) | 3,33 | 3,66 | 3,88 | 3,78 | 4,00 | 3,86 | 3,68 |
| Dy (ppm) | 4,31 | 4,47 | 4,65 | 4,52 | 4,29 | 4,58 | 4,42 |
| Li (ppm) | 13 | 6 | 12 | 10 | 13 | 12 | 8 |
| Y (ppm) | 28 | 30 | 31 | 30 | 30 | 30 | 30 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | 1 |
| Er (ppm) | 2,42 | 2,55 | 2,83 | 2,69 | 2,83 | 2,96 | 2,54 |
| Yb (ppm) | 2,49 | 2,67 | 2,66 | 2,58 | 2,77 | 2,70 | 2,70 |
| Lu (ppm) | 0,39 | 0,36 | 0,40 | 0,39 | 0,43 | 0,43 | 0,38 |
| Co (ppm) | 33 | 33 | 36 | 36 | 37 | 37 | 39 |
| Cr (ppm) | 234 | 253 | 184 | 174 | 172 | 170 | 184 |
| Cu (ppm) | 97 | 96 | 150 | 137 | 150 | 155 | 147 |
| Ni (ppm) | 44 | 44 | 55 | 59 | 57 | 56 | 58 |
| Sc (ppm) | 38 | 39 | 40 | 39 | 40 | 41 | 39 |
| V (ppm) | 249 | 245 | 310 | 299 | 310 | 315 | 303 |
| Zn (ppm) | 98 | 97 | 105 | 101 | 102 | 105 | 108 |
| Tb (ppm) | 0,7 | 0,7 | 0,7 | 0,7 | 0,7 | 0,8 | 0,7 |
| Tm (ppm) | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| S I | -4,71 | -4,61 | 2,38 | 2,89 | 3,06 | 2,78 | 0,95 |
| S II | -4,73 | -5,64 | 1,70 | 2,84 | 1,71 | 0,34 | 1,78 |
| S III | -2,80 | -2,93 | -8,93 | -8,37 | -8,28 | -8,00 | -8,48 |

| Sample: | K05-160 | K05-161 | K05-162 | K05-163 | K05-164 | K05-165 | K05-166 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVD | GVD | GVD | GVD | GVD | GVD | GVD |
| Latitude (N): | -31,9010 | -31,9009 | -31,9009 | -31,8402 | -31,8402 | -31,8402 | -31,8400 |
| Longitude ( E): | 26,1639 | 26,1640 | 26,1640 | 26,1327 | 26,1326 | 26,1328 | 26,1327 |
| Altitude (m): | 1229 | 1230 | 1232 | 1273 | 1277 | 1278 | 1270 |
| SiO2 (wt %) | 50,56 | 51,05 | 50,20 | 50,45 | 50,54 | 50,93 | 50,84 |
| TiO2 (wt %) | 1,25 | 1,30 | 1,22 | 1,26 | 1,26 | 1,23 | 1,21 |
| Al2O3 (wt %) | 14,08 | 14,34 | 14,03 | 14,07 | 14,17 | 14,58 | 14,06 |
| Fe2O3(T) (wt %) | 13,40 | 13,96 | 13,37 | 13,44 | 13,52 | 13,47 | 13,16 |
| MnO (wt %) | 0,20 | 0,21 | 0,20 | 0,20 | 0,20 | 0,20 | 0,20 |
| MgO (wt %) | 5,85 | 5,85 | 5,67 | 5,80 | 5,76 | 5,92 | 5,75 |
| CaO (wt %) | 10,38 | 10,29 | 10,54 | 10,49 | 10,43 | 10,52 | 10,47 |
| Na2O (wt %) | 2,35 | 2,31 | 2,40 | 2,41 | 2,47 | 2,41 | 2,42 |
| K2O (wt %) | 0,56 | 0,54 | 0,52 | 0,59 | 0,58 | 0,56 | 0,56 |
| P2O5 (wt %) | 0,16 | 0,16 | 0,16 | 0,17 | 0,16 | 0,16 | 0,16 |
| SUM | 98,8 | 100,0 | 98,3 | 98,9 | 99,1 | 100,0 | 98,8 |
| Cs (ppm) | 0,5 | 0,5 | 0,5 | 0,3 | 0,4 | 0,4 | 0,5 |
| Tl (ppm) | b.d. | 0,2 | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 11 | 12 | 10 | 12 | 13 | 12 | 12 |
| Ba (ppm) | 170 | 177 | 174 | 203 | 198 | 180 | 184 |
| Th (ppm) | 1,3 | 1,4 | 1,3 | 1,3 | 1,4 | 1,2 | 1,4 |
| U (ppm) | 0,31 | 0,26 | 0,35 | 0,30 | 0,36 | 0,28 | 0,37 |
| Nb (ppm) | 6,2 | 6,0 | 5,8 | 5,7 | 6,2 | 5,7 | 6,4 |
| Ta (ppm) | 0,35 | 0,36 | 0,37 | 0,34 | 0,36 | 0,32 | 0,38 |
| La (ppm) | 9,82 | 9,29 | 9,39 | 9,57 | 10,10 | 8,80 | 9,73 |
| Ce (ppm) | 21,61 | 21,26 | 20,38 | 21,28 | 22,12 | 21,04 | 22,20 |
| Pb (ppm) | 5 | 5 | b.d. | 3 | b.d. | 4 | 2 |
| Pr (ppm) | 2,73 | 2,54 | 2,66 | 2,63 | 2,74 | 2,51 | 2,68 |
| Mo (ppm) | 0,3 | 1,5 | 0,5 | b.d. | 0,3 | 1,4 | 0,4 |
| Sr (ppm) | 172 | 188 | 179 | 183 | 185 | 187 | 178 |
| Nd (ppm) | 13,5 | 14,4 | 13,4 | 13,8 | 13,8 | 12,1 | 14,2 |
| Zr (ppm) | 101 | 95 | 98 | 97 | 97 | 92 | 97 |
| Hf (ppm) | 2,27 | 2,54 | 2,28 | 2,41 | 2,48 | 2,41 | 2,49 |
| Sm (ppm) | 3,41 | 3,88 | 3,75 | 3,66 | 3,89 | 3,67 | 3,57 |
| Eu (ppm) | 1,24 | 1,18 | 1,11 | 1,12 | 1,20 | 1,21 | 1,15 |
| Sn (ppm) | 0,8 | 0,8 | 1,2 | 0,8 | 0,7 | 0,7 | 0,9 |
| Gd (ppm) | 3,51 | 3,86 | 3,39 | 3,55 | 3,65 | 3,23 | 3,65 |
| Dy (ppm) | 4,56 | 4,37 | 4,31 | 4,44 | 4,71 | 4,33 | 4,59 |
| Li (ppm) | 3 | 9 | 22 | 7 | 4 | 7 | 3 |
| Y (ppm) | 30 | 30 | 29 | 30 | 31 | 29 | 30 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,48 | 2,67 | 2,41 | 2,44 | 2,41 | 2,54 | 2,49 |
| Yb (ppm) | 2,76 | 2,69 | 2,54 | 2,58 | 2,60 | 2,62 | 2,45 |
| Lu (ppm) | 0,39 | 0,42 | 0,36 | 0,35 | 0,40 | 0,39 | 0,36 |
| Co (ppm) | 38 | 37 | 37 | 38 | 38 | 36 | 38 |
| Cr (ppm) | 180 | 178 | 197 | 181 | 185 | 189 | 193 |
| Cu (ppm) | 154 | 151 | 147 | 156 | 151 | 152 | 150 |
| Ni (ppm) | 57 | 57 | 59 | 57 | 58 | 58 | 58 |
| Sc (ppm) | 41 | 40 | 40 | 41 | 41 | 42 | 40 |
| V (ppm) | 316 | 311 | 305 | 318 | 311 | 318 | 308 |
| Zn (ppm) | 103 | 104 | 103 | 104 | 102 | 101 | 103 |
| Tb (ppm) | 0,7 | 0,8 | 0,7 | 0,7 | 0,7 | 0,7 | 0,6 |
| Tm (ppm) | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| S I | 2,79 | 2,67 | 2,97 | 3,56 | 3,75 | 5,07 | 3,24 |
| S II | 1,07 | 0,64 | 1,83 | 0,47 | 1,45 | -0,10 | 0,35 |
| S III | -8,88 | -7,90 | -8,72 | -9,06 | -8,93 | -7,44 | -8,37 |

| Sample: | K04C-53 | K04C-54 | K04C-55 | K04C-56 | K04C-62 | K04K-04 | K04K-05 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | L1 | L1 | L1 | L1 | L1 | L1 | L1 |
| Latitude (N): | -31,8617 | -31,8618 | -31,8616 | -31,8618 | -31,8614 | -31,8168 | -31,8160 |
| Longitude ( E): | 26,1578 | 26,1578 | 26,1575 | 26,1570 | 26,1569 | 26,1975 | 26,1980 |
| Altitude (m): | 1215 | 1227 | 1239 | 1253 | 1255 | 1434 | 1428 |
| SiO2 (wt %) | 50,43 | 50,17 | 49,82 | 49,95 | 52,07 | 49,54 | 50,58 |
| TiO2 (wt %) | 0,99 | 0,92 | 0,83 | 0,88 | 1,15 | 0,83 | 1,02 |
| Al2O3 (wt %) | 15,38 | 15,89 | 16,30 | 16,23 | 14,71 | 15,80 | 16,01 |
| Fe2O3(T) (wt %) | 10,64 | 10,24 | 10,27 | 10,73 | 11,28 | 10,15 | 10,60 |
| MnO (wt %) | 0,16 | 0,16 | 0,16 | 0,16 | 0,18 | 0,16 | 0,16 |
| MgO (wt %) | 7,04 | 7,04 | 7,67 | 7,88 | 5,78 | 8,30 | 6,34 |
| CaO (wt %) | 10,69 | 10,41 | 10,40 | 10,23 | 10,49 | 10,41 | 10,68 |
| Na2O (wt %) | 2,51 | 2,46 | 2,32 | 2,41 | 2,56 | 2,37 | 2,51 |
| K2O (wt %) | 0,44 | 0,45 | 0,41 | 0,40 | 0,51 | 0,40 | 0,51 |
| P2O5 (wt %) | 0,14 | 0,13 | 0,12 | 0,12 | 0,17 | 0,12 | 0,15 |
| SUM | 98,4 | 97,9 | 98,3 | 99,0 | 98,9 | 98,1 | 98,6 |
| Cs (ppm) | 0,9 | 0,7 | 0,4 | 0,5 | 1,1 | 0,4 | 0,4 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 9 | 9 | 8 | 8 | 10 | 8 | 10 |
| Ba (ppm) | 165 | 159 | 138 | 148 | 188 | 135 | 162 |
| Th (ppm) | 1,4 | 1,1 | 0,8 | 1,0 | 2,3 | 1,1 | 1,8 |
| U (ppm) | 0,25 | 0,21 | 0,15 | 0,20 | 0,32 | 0,19 | 0,24 |
| Nb (ppm) | 7,5 | 6,9 | 6,8 | 5,8 | 8,8 | 6,1 | 7,7 |
| Ta (ppm) | 0,35 | 0,41 | 0,32 | 0,31 | 0,49 | 0,32 | 0,37 |
| La (ppm) | 8,29 | 7,51 | 6,66 | 7,15 | 10,12 | 6,73 | 7,94 |
| Ce (ppm) | 18,73 | 16,72 | 15,06 | 15,98 | 22,84 | 14,86 | 18,16 |
| Pb (ppm) | 3 | 5 | 5 | 4 | 3 | 5 | 3 |
| Pr (ppm) | 2,32 | 2,10 | 1,76 | 1,94 | 2,69 | 1,76 | 2,06 |
| Mo (ppm) | 1,1 | 0,9 | 0,9 | 0,8 | 1,0 | 0,8 | 1,0 |
| Sr (ppm) | 218 | 234 | 227 | 241 | 221 | 216 | 245 |
| Nd (ppm) | 11,5 | 10,5 | 9,2 | 9,5 | 13,2 | 9,3 | 10,7 |
| Zr (ppm) | 70 | 61 | 55 | 55 | 80 | 61 | 70 |
| Hf (ppm) | 1,74 | 1,48 | 1,35 | 1,44 | 1,97 | 1,45 | 1,78 |
| Sm (ppm) | 3,24 | 2,53 | 2,66 | 2,82 | 3,64 | 2,41 | 3,02 |
| Eu (ppm) | 1,02 | 0,97 | 0,92 | 0,99 | 1,25 | 0,83 | 1,03 |
| Sn (ppm) | b.d. | b.d. | b.d. | b.d. | 3,5 | 0,6 | 0,7 |
| Gd (ppm) | 2,83 | 2,65 | 2,32 | 2,48 | 3,45 | 2,45 | 2,85 |
| Dy (ppm) | 3,32 | 3,14 | 2,92 | 3,10 | 3,99 | 2,79 | 3,43 |
| Li (ppm) | 9 | 6 | 4 | 4 | 6 | 3 | 5 |
| Y (ppm) | 23 | 21 | 19 | 20 | 27 | 18 | 21 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,10 | 1,84 | 1,65 | 1,84 | 2,46 | 1,68 | 2,05 |
| Yb (ppm) | 2,03 | 1,78 | 1,72 | 1,84 | 2,43 | 1,64 | 1,95 |
| Lu (ppm) | 0,32 | 0,24 | 0,28 | 0,28 | 0,36 | 0,25 | 0,30 |
| Co (ppm) | 33 | 33 | 34 | 34 | 33 | 35 | 31 |
| Cr (ppm) | 477 | 422 | 440 | 384 | 361 | 487 | 336 |
| Cu (ppm) | 93 | 83 | 80 | 84 | 100 | 78 | 94 |
| Ni (ppm) | 113 | 123 | 145 | 145 | 60 | 170 | 82 |
| Sc (ppm) | 34 | 30 | 28 | 28 | 37 | 29 | 33 |
| V (ppm) | 255 | 216 | 204 | 203 | 268 | 201 | 237 |
| Zn (ppm) | 83 | 80 | 79 | 82 | 87 | 80 | 82 |
| Tb (ppm) | 0,6 | 0,6 | 0,4 | 0,5 | 0,7 | 0,5 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,2 | 0,3 | 0,4 | 0,2 | 0,3 |
| S I | 2,52 | 2,50 | 3,42 | 1,41 | 0,81 | 3,93 | 2,18 |
| S II | 10,07 | 10,04 | 10,01 | 9,63 | 6,49 | 11,42 | 6,52 |
| S III | 5,64 | 6,60 | 6,06 | 4,00 | 3,92 | 6,08 | 3,60 |

| Sample: | K04A-06 | K04A-07 | K04A-05 | K04A-08 | K04A-09 | K04A-10 | K04-C57 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | L2 | L2 | L2 | L2 | L2 | L2 | L2 |
| Latitude (N): | -31,8887 | -31,8925 | | -31,8891 | -31,8882 | -31,8888 | -31,8871 |
| Longitude ( E): | 26,1920 | 26,2018 | | 26,1970 | 26,1967 | 26,1934 | 26,1720 |
| Altitude (m): | 1362 | 1509 | | 1401 | 1380 | 1375 | 1303 |
| SiO2 (wt %) | 50,55 | 49,83 | 49,00 | 49,16 | 50,21 | 51,27 | 50,34 |
| TiO2 (wt %) | 0,97 | 0,93 | 0,90 | 0,85 | 0,77 | 0,86 | 0,93 |
| Al2O3 (wt %) | 15,28 | 15,26 | 15,18 | 15,21 | 15,99 | 14,71 | 15,46 |
| Fe2O3(T) (wt %) | 11,31 | 10,93 | 10,64 | 10,31 | 9,91 | 11,00 | 11,16 |
| MnO (wt %) | 0,18 | 0,17 | 0,16 | 0,16 | 0,16 | 0,19 | 0,17 |
| MgO (wt %) | 6,97 | 7,50 | 7,33 | 7,04 | 6,56 | 6,13 | 7,14 |
| CaO (wt %) | 10,66 | 10,82 | 10,84 | 10,65 | 11,22 | 10,57 | 11,06 |
| Na2O (wt %) | 2,51 | 2,46 | 2,37 | 2,28 | 2,33 | 2,47 | 2,23 |
| K2O (wt %) | 0,46 | 0,45 | 0,43 | 0,44 | 0,39 | 0,46 | 0,42 |
| P2O5 (wt %) | 0,14 | 0,12 | 0,12 | 0,12 | 0,10 | 0,11 | 0,12 |
| SUM | 99,0 | 98,5 | 97,0 | 96,2 | 97,6 | 97,8 | 99,0 |
| Cs (ppm) | 2,2 | 0,6 | 0,4 | 0,3 | 0,4 | 0,2 | 0,7 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 23 | 10 | 7 | 7 | 7 | 9 | 7 |
| Ba (ppm) | 160 | 150 | 146 | 139 | 130 | 226 | 156 |
| Th (ppm) | 1,9 | 0,8 | 0,8 | 0,7 | 0,8 | 0,8 | 0,7 |
| U (ppm) | 0,66 | 0,21 | 0,18 | 0,17 | 0,16 | 0,16 | 0,19 |
| Nb (ppm) | 7,3 | 5,2 | 5,2 | 4,4 | 4,3 | 4,5 | 4,5 |
| Ta (ppm) | 0,48 | 0,30 | 0,26 | 0,29 | 0,26 | 0,29 | 0,29 |
| La (ppm) | 9,25 | 6,77 | 6,87 | 6,55 | 6,13 | 6,89 | 6,64 |
| Ce (ppm) | 20,63 | 16,11 | 15,68 | 15,26 | 14,53 | 15,15 | 15,60 |
| Pb (ppm) | 2 | 4 | 4 | 4 | 3 | 4 | 4 |
| Pr (ppm) | 2,61 | 1,97 | 2,00 | 1,86 | 1,83 | 1,95 | 1,93 |
| Mo (ppm) | 1,0 | 0,8 | 0,6 | 0,7 | 0,9 | 0,6 | 0,8 |
| Sr (ppm) | 194 | 202 | 200 | 180 | 191 | 194 | 191 |
| Nd (ppm) | 12,7 | 9,9 | 11,6 | 10,3 | 9,5 | 10,2 | 10,4 |
| Zr (ppm) | 85 | 78 | 76 | 74 | 71 | 71 | 77 |
| Hf (ppm) | 1,90 | 1,77 | 1,80 | 1,74 | 1,62 | 1,80 | 1,71 |
| Sm (ppm) | 3,89 | 2,94 | 2,66 | 2,61 | 2,70 | 2,84 | 2,55 |
| Eu (ppm) | 1,10 | 0,89 | 0,95 | 0,94 | 0,93 | 0,96 | 0,86 |
| Sn (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Gd (ppm) | 3,18 | 2,57 | 2,64 | 2,69 | 2,59 | 2,71 | 2,73 |
| Dy (ppm) | 4,12 | 3,55 | 3,72 | 3,31 | 3,10 | 3,45 | 3,40 |
| Li (ppm) | b.d. | b.d. | 2 | 12 | 2 | 2 | 2 |
| Y (ppm) | 27 | 23 | 24 | 21 | 21 | 24 | 23 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,13 | 1,76 | 1,98 | 1,97 | 1,73 | 2,12 | 1,97 |
| Yb (ppm) | 2,26 | 1,82 | 1,92 | 1,87 | 1,82 | 2,13 | 1,74 |
| Lu (ppm) | 0,32 | 0,32 | 0,28 | 0,26 | 0,28 | 0,31 | 0,29 |
| Co (ppm) | 35 | 35 | 36 | 34 | 31 | 35 | 35 |
| Cr (ppm) | 345 | 402 | 400 | 384 | 258 | 115 | 368 |
| Cu (ppm) | 103 | 92 | 96 | 94 | 87 | 149 | 96 |
| Ni (ppm) | 92 | 112 | 117 | 103 | 80 | 61 | 105 |
| Sc (ppm) | 35 | 34 | 33 | 33 | 34 | 39 | 33 |
| V (ppm) | 254 | 240 | 232 | 234 | 240 | 275 | 240 |
| Zn (ppm) | 89 | 86 | 86 | 85 | 79 | 89 | 88 |
| Tb (ppm) | 0,6 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | -1,83 | 0,19 | 1,08 | 0,42 | 3,15 | 9,66 | -0,47 |
| S II | 6,37 | 8,20 | 9,91 | 6,10 | 5,47 | -1,78 | 8,23 |
| S III | -3,77 | -0,18 | -1,87 | -1,19 | -2,24 | -8,52 | -2,49 |

| Sample: | K05-52 | K05-54 | K05-55 | K05-56 | K05-57 | K05-58 | K05-60 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | L3 | L3 | L3 | L3 | L3 | L3 | L3 |
| Latitude (N): | -31,9886 | -31,9884 | -31,9885 | -31,9886 | -31,9887 | -31,9887 | -31,9888 |
| Longitude ( E): | 26,2196 | 26,2197 | 26,2197 | 26,2198 | 26,2199 | 26,2199 | 26,2201 |
| Altitude (m): | 1245 | 1242 | 1248 | 1246 | 1249 | 1248 | 1251 |
| SiO2 (wt %) | 50,67 | 50,78 | 50,68 | 50,80 | 50,61 | 51,26 | 50,16 |
| TiO2 (wt %) | 0,94 | 0,90 | 0,91 | 0,91 | 0,89 | 0,94 | 0,94 |
| Al2O3 (wt %) | 15,36 | 15,31 | 15,37 | 15,57 | 15,71 | 15,62 | 15,35 |
| Fe2O3(T) (wt %) | 11,34 | 10,96 | 11,18 | 11,14 | 11,24 | 11,30 | 11,34 |
| MnO (wt %) | 0,17 | 0,17 | 0,18 | 0,18 | 0,17 | 0,17 | 0,17 |
| MgO (wt %) | 6,95 | 6,72 | 6,97 | 7,05 | 7,37 | 7,09 | 7,02 |
| CaO (wt %) | 10,94 | 10,71 | 10,90 | 10,75 | 11,08 | 10,82 | 10,92 |
| Na2O (wt %) | 2,37 | 2,31 | 2,34 | 2,36 | 2,35 | 2,37 | 2,36 |
| K2O (wt %) | 0,56 | 0,58 | 0,58 | 0,59 | 0,55 | 0,67 | 0,59 |
| P2O5 (wt %) | 0,14 | 0,14 | 0,14 | 0,14 | 0,14 | 0,15 | 0,14 |
| SUM | 99,4 | 98,6 | 99,2 | 99,5 | 100,1 | 100,4 | 99,0 |
| Cs (ppm) | 1,3 | 1,5 | 0,4 | 1,1 | 0,9 | 0,4 | 0,9 |
| Tl (ppm) | 0,2 | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Rb (ppm) | 14 | 14 | 12 | 13 | 12 | 13 | 11 |
| Ba (ppm) | 175 | 173 | 180 | 179 | 167 | 188 | 185 |
| Th (ppm) | 1,5 | 1,4 | 1,2 | 1,2 | 2,0 | 1,3 | 1,2 |
| U (ppm) | 0,31 | 0,26 | 0,26 | 0,23 | 0,32 | 0,26 | 0,24 |
| Nb (ppm) | 6,9 | 7,3 | 6,8 | 6,8 | 6,6 | 7,5 | 6,9 |
| Ta (ppm) | 0,36 | 0,37 | 0,38 | 0,34 | 0,39 | 0,39 | 0,36 |
| La (ppm) | 9,36 | 9,63 | 9,55 | 9,19 | 9,29 | 10,07 | 8,93 |
| Ce (ppm) | 21,67 | 22,08 | 21,42 | 20,92 | 21,29 | 22,58 | 19,42 |
| Pb (ppm) | 6 | 8 | 5 | 7 | 7 | 5 | b.d. |
| Pr (ppm) | 2,60 | 2,59 | 2,53 | 2,44 | 2,47 | 2,73 | 2,30 |
| Mo (ppm) | 1,1 | 1,3 | 1,2 | 1,2 | 1,1 | 0,9 | 1,4 |
| Sr (ppm) | 206 | 199 | 202 | 202 | 206 | 216 | 211 |
| Nd (ppm) | 13,0 | 12,5 | 13,0 | 12,3 | 12,5 | 13,3 | 11,7 |
| Zr (ppm) | 84 | 90 | 85 | 82 | 79 | 86 | 80 |
| Hf (ppm) | 2,20 | 2,18 | 2,12 | 2,03 | 1,89 | 2,34 | 1,87 |
| Sm (ppm) | 3,00 | 3,19 | 3,22 | 3,02 | 3,10 | 3,22 | 2,94 |
| Eu (ppm) | 1,01 | 0,98 | 1,02 | 1,00 | 0,98 | 1,10 | 0,89 |
| Sn (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | 1,6 |
| Gd (ppm) | 2,97 | 3,04 | 3,03 | 2,81 | 2,80 | 3,03 | 2,54 |
| Dy (ppm) | 3,36 | 3,51 | 3,47 | 3,54 | 3,47 | 3,56 | 3,16 |
| Li (ppm) | 12 | 8 | 5 | 8 | 7 | 8 | 7 |
| Y (ppm) | 24 | 23 | 23 | 22 | 22 | 24 | 21 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,21 | 2,14 | 2,08 | 2,05 | 2,07 | 2,26 | 1,99 |
| Yb (ppm) | 2,22 | 2,23 | 2,18 | 2,08 | 2,06 | 2,26 | 2,00 |
| Lu (ppm) | 0,32 | 0,32 | 0,34 | 0,29 | 0,30 | 0,33 | 0,30 |
| Co (ppm) | 34 | 33 | 34 | 33 | 33 | 33 | 33 |
| Cr (ppm) | 306 | 303 | 312 | 295 | 292 | 284 | 293 |
| Cu (ppm) | 91 | 89 | 89 | 89 | 90 | 93 | 90 |
| Ni (ppm) | 84 | 81 | 83 | 84 | 85 | 79 | 81 |
| Sc (ppm) | 36 | 35 | 36 | 36 | 36 | 37 | 36 |
| V (ppm) | 246 | 243 | 242 | 238 | 236 | 250 | 243 |
| Zn (ppm) | 85 | 91 | 88 | 92 | 89 | 88 | 88 |
| Tb (ppm) | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 | 0,6 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| S I | 1,14 | 0,20 | 1,58 | 0,16 | -0,67 | 1,52 | 0,70 |
| S II | 3,29 | 0,26 | 0,56 | -0,21 | 0,35 | -0,34 | 1,64 |
| S III | 0,92 | 2,23 | 0,36 | 0,99 | -0,57 | 1,01 | 1,29 |

| Sample: | K05-61 | K05-184 | K05-185 | K05-187 | K05-188 | K05-21 | K05-22 |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | L3 | s1 | s1 | s1 | s1 | d5 | d5 |
| Latitude (N): | -31,9888 | -31,9779 | -31,9803 | -31,9416 | -31,9419 | -31,8978 | -31,8978 |
| Longitude ( E): | 26,2201 | 26,2713 | 26,2726 | 26,2490 | 26,2487 | 26,3700 | 26,3699 |
| Altitude (m): | 1252 | 1353 | 1362 | 1419 | 1425 | 1298 | 1365 |
| SiO2 (wt %) | 50,53 | 50,56 | 50,68 | 49,73 | 49,72 | 53,01 | 52,60 |
| TiO2 (wt %) | 0,91 | 0,95 | 0,89 | 0,98 | 0,88 | 1,36 | 1,38 |
| Al2O3 (wt %) | 15,44 | 15,58 | 15,34 | 14,77 | 15,63 | 14,72 | 14,61 |
| Fe2O3(T) (wt %) | 11,24 | 11,43 | 10,71 | 11,38 | 10,84 | 10,98 | 11,28 |
| MnO (wt %) | 0,18 | 0,18 | 0,17 | 0,18 | 0,16 | 0,18 | 0,17 |
| MgO (wt %) | 7,08 | 7,53 | 7,21 | 7,33 | 7,45 | 5,69 | 6,10 |
| CaO (wt %) | 10,72 | 10,99 | 10,86 | 10,92 | 11,16 | 9,39 | 9,44 |
| Na2O (wt %) | 2,37 | 2,62 | 2,27 | 2,46 | 2,41 | 2,47 | 2,55 |
| K2O (wt %) | 0,57 | 0,45 | 0,11 | 0,48 | 0,43 | 0,77 | 0,79 |
| P2O5 (wt %) | 0,14 | 0,13 | 0,12 | 0,12 | 0,11 | 0,22 | 0,22 |
| SUM | 99,2 | 100,4 | 98,4 | 98,3 | 98,8 | 98,8 | 99,1 |
| Cs (ppm) | 1,3 | 0,2 | 0,5 | 0,2 | 0,1 | 0,7 | 0,8 |
| Tl (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | 0,2 | 0,2 |
| Rb (ppm) | 13 | 7 | 3 | 8 | 7 | 17 | 16 |
| Ba (ppm) | 181 | 154 | 76 | 159 | 142 | 263 | 259 |
| Th (ppm) | 1,5 | b.d. | b.d. | b.d. | b.d. | 1,8 | 1,8 |
| U (ppm) | 0,24 | 0,18 | 0,17 | 0,19 | 0,16 | 0,36 | 0,35 |
| Nb (ppm) | 6,7 | 5,0 | 5,4 | 5,2 | 4,5 | 5,7 | 5,1 |
| Ta (ppm) | 0,32 | 0,26 | 0,26 | 0,29 | 0,24 | 0,39 | 0,25 |
| La (ppm) | 10,2 | 6,9 | 7,8 | 7,1 | 5,7 | 11,4 | 11,9 |
| Ce (ppm) | 24,1 | 15,7 | 17,0 | 16,6 | 14,1 | 26,0 | 26,4 |
| Pb (ppm) | 6 | 0 | 5 | 4 | 5 | 7 | 5 |
| Pr (ppm) | 2,70 | 1,90 | 2,11 | 2,10 | 1,82 | 3,08 | 3,15 |
| Mo (ppm) | 1,5 | 0,3 | 2,1 | 1,7 | 1,7 | 1,3 | 1,4 |
| Sr (ppm) | 211 | 199 | 193 | 197 | 198 | 192 | 206 |
| Nd (ppm) | 13,5 | 10,3 | 10,8 | 11,5 | 9,0 | 15,1 | 14,6 |
| Zr (ppm) | 82 | 78 | 78 | 79 | 71 | 96 | 94 |
| Hf (ppm) | 2,10 | 1,58 | 1,72 | 1,82 | 1,68 | 2,40 | 2,51 |
| Sm (ppm) | 3,17 | 2,75 | 3,19 | 3,24 | 2,56 | 3,97 | 3,93 |
| Eu (ppm) | 1,10 | 1,01 | 1,05 | 1,11 | 0,81 | 1,23 | 1,27 |
| Sn (ppm) | 0,5 | 0,6 | 0,5 | b.d. | b.d. | 0,6 | 0,5 |
| Gd (ppm) | 3,07 | 2,83 | 2,99 | 2,85 | 2,65 | 3,92 | 3,77 |
| Dy (ppm) | 3,45 | 3,45 | 3,82 | 3,59 | 3,08 | 4,46 | 4,07 |
| Li (ppm) | 16 | b.d. | 11 | 7 | b.d. | 11 | 10 |
| Y (ppm) | 23 | 23 | 25 | 24 | 20 | 28 | 28 |
| Ho (ppm) | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. | b.d. |
| Er (ppm) | 2,12 | 1,91 | 2,02 | 2,04 | 1,80 | 2,46 | 2,47 |
| Yb (ppm) | 2,04 | 2,00 | 2,13 | 2,23 | 1,87 | 2,52 | 2,35 |
| Lu (ppm) | 0,30 | 0,27 | 0,31 | 0,31 | 0,31 | 0,35 | 0,34 |
| Co (ppm) | 33 | 35 | 34 | 34 | 34 | 33 | 33 |
| Cr (ppm) | 271 | 403 | 345 | 442 | 447 | 247 | 276 |
| Cu (ppm) | 90 | 101 | 102 | 94 | 83 | 35 | 35 |
| Ni (ppm) | 81 | 100 | 99 | 96 | 103 | 14 | 14 |
| Sc (ppm) | 36 | 36 | 35 | 37 | 33 | 31 | 31 |
| V (ppm) | 243 | 260 | 252 | 262 | 234 | 248 | 255 |
| Zn (ppm) | 87 | 87 | 85 | 84 | 80 | 94 | 96 |
| Tb (ppm) | 0,6 | 0,5 | 0,6 | 0,5 | 0,5 | 0,7 | 0,7 |
| Tm (ppm) | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 | 0,4 | 0,4 |
| S I | 0,71 | 0,74 | 1,39 | 0,42 | -0,79 | -22,64 | -27,26 |
| S II | -0,73 | 7,37 | 8,59 | 8,41 | 9,07 | 4,51 | 5,61 |
| S III | 2,56 | -1,32 | -2,84 | -0,45 | 0,05 | 1,75 | 1,11 |

| Sample: | K05-23 | K05-28 | % |
| --- | --- | --- | --- |
| Magma b./Loc.: | d5 | d5 | 3 x STD |
| Latitude (N): | -31,8982 | -31,9016 | |
| Longitude ( E): | 26,3698 | 26,3743 | |
| Altitude (m): | 1364 | 1368 | |
| SiO2 (wt %) | 52,95 | 53,11 | |
| TiO2 (wt %) | 1,32 | 1,40 | |
| Al2O3 (wt %) | 14,71 | 14,62 | |
| Fe2O3(T) (wt %) | 11,20 | 11,24 | |
| MnO (wt %) | 0,17 | 0,18 | |
| MgO (wt %) | 6,32 | 5,92 | |
| CaO (wt %) | 9,35 | 9,48 | |
| Na2O (wt %) | 2,50 | 2,50 | |
| K2O (wt %) | 0,88 | 0,50 | |
| P2O5 (wt %) | 0,22 | 0,23 | |
| SUM | 99,6 | 99,2 | |
| Cs (ppm) | 0,4 | 0,6 | 0,085 |
| Tl (ppm) | 0,2 | b.d. | 0,064 |
| Rb (ppm) | 17 | 11 | 0,700 |
| Ba (ppm) | 252 | 238 | 1,273 |
| Th (ppm) | 2,0 | 2,1 | 1,527 |
| U (ppm) | 0,35 | 0,34 | 0,021 |
| Nb (ppm) | 5,5 | 5,1 | 1,973 |
| Ta (ppm) | 0,25 | 0,29 | 0,042 |
| La (ppm) | 12,0 | 11,7 | 0,361 |
| Ce (ppm) | 26,5 | 25,9 | 0,445 |
| Pb (ppm) | 6 | 5 | 2,503 |
| Pr (ppm) | 3,21 | 3,08 | 0,064 |
| Mo (ppm) | 1,4 | 1,5 | 1,421 |
| Sr (ppm) | 199 | 210 | 0,270 |
| Nd (ppm) | 15,0 | 15,5 | 0,212 |
| Zr (ppm) | 95 | 93 | 6,512 |
| Hf (ppm) | 2,52 | 2,51 | 0,127 |
| Sm (ppm) | 4,08 | 3,99 | 0,042 |
| Eu (ppm) | 1,23 | 1,32 | 0,042 |
| Sn (ppm) | b.d. | b.d. | 0,700 |
| Gd (ppm) | 3,81 | 3,75 | 0,042 |
| Dy (ppm) | 4,13 | 4,37 | 0,021 |
| Li (ppm) | 9 | 16 | 0,267 |
| Y (ppm) | 29 | 27 | 0,148 |
| Ho (ppm) | b.d. | b.d. | 0,636 |
| Er (ppm) | 2,54 | 2,46 | 0,021 |
| Yb (ppm) | 2,47 | 2,47 | 0,064 |
| Lu (ppm) | 0,34 | 0,38 | 0,021 |
| Co (ppm) | 34 | 33 | 0,814 |
| Cr (ppm) | 290 | 275 | 0,018 |
| Cu (ppm) | 36 | 36 | 2,546 |
| Ni (ppm) | 14 | 14 | 0,424 |
| Sc (ppm) | 30 | 31 | 1,026 |
| V (ppm) | 242 | 256 | 0,000 |
| Zn (ppm) | 97 | 95 | 1,697 |
| Tb (ppm) | 0,7 | 0,7 | 0,064 |
| Tm (ppm) | 0,4 | 0,4 | 0,636 |
| S I | -28,08 | -25,42 | |
| S II | 4,15 | 6,42 | |
| S III | -0,99 | 1,69 | |

These analyses have been completed at the University of London, Royal Holloway using inductively coupled plasma - atomic emission spectrometry (ICP-AES) and - mass spectrometry (ICP-MS).

The analytical precision for major elements is 1% for Si, AL, Fe, Mg and Ca and 2% for Na, K, Ti, P and Mn. The analytical precisions and the standard deviations for the measured traces elements are directly reported from communicated values by the commercial laboratory of London.

| Sample: | K04C-38 | K04C-39 | K04C-27 | K04C-28 | K04C-29 | K04C-06 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS | MS/L4a | MS/L4a | MS/L4a | MS | STD |
| Latitude (N): | -31,9756 | -31,9793 | -31,9967 | -31,9968 | -31,9969 | -31,9346 | |
| Longitude ( E): | 26,2678 | 26,2673 | 26,2763 | 26,2764 | 26,2765 | 26,3875 | |
| Altitude (m): | 1353 | 1314 | 1601 | 1594 | 1582 | 1271 | |
| SiO2 (wt %) | 52,69 | 51,36 | 51,78 | 51,41 | 52,94 | 51,59 | 0,09 |
| TiO2 (wt %) | 1,13 | 0,90 | 0,99 | 0,78 | 1,19 | 0,99 | 0,80 |
| Al2O3 (wt %) | 15,17 | 16,01 | 15,52 | 15,85 | 14,05 | 15,59 | 0,44 |
| Fe2O3(T) (wt %) | 12,23 | 10,84 | 11,37 | 11,00 | 13,44 | 11,79 | 0,11 |
| MnO (wt %) | 0,19 | 0,17 | 0,18 | 0,17 | 0,21 | 0,18 | 0,00 |
| MgO (wt %) | 6,25 | 7,44 | 7,00 | 7,35 | 5,83 | 6,89 | 0,35 |
| CaO (wt %) | 10,21 | 10,92 | 10,80 | 11,32 | 9,38 | 10,44 | 0,15 |
| Na2O (wt %) | 2,16 | 2,31 | 2,18 | 2,16 | 2,36 | 2,12 | 0,40 |
| K2O (wt %) | 0,77 | 0,45 | 0,43 | 0,37 | 0,61 | 0,49 | 0,00 |
| P2O5 (wt %) | 0,19 | 0,13 | 0,13 | 0,09 | 0,15 | 0,13 | 6,29 |
| L.O.I | 0,03 | 0,06 | 0,17 | 0,22 | 0,46 | 0,25 | 0,00 |
| SUM | 101,0 | 100,6 | 100,6 | 100,7 | 100,6 | 100,5 | 0,06 |
| Rb (ppm) | 18 | 10 | 10 | 7 | 11 | 10 | 4,09 |
| Nb (ppm) | 8 | 7 | 6 | 5 | 9 | 7 | 6,42 |
| Sr (ppm) | 194 | 190 | 188 | 199 | 206 | 195 | 0,80 |
| Zr (ppm) | 111 | 80 | 79 | 53 | 92 | 78 | 1,68 |
| Y (ppm) | 30 | 24 | 27 | 20 | 32 | 27 | 4,25 |
| Co (ppm) | 48 | 47 | 51 | 50 | 57 | 53 | 1,20 |
| Cr (ppm) | 266 | 411 | 429 | 538 | 96 | 431 | 1,70 |
| Cu (ppm) | 117 | 96 | 104 | 90 | 140 | 108 | 0,86 |
| Ni (ppm) | 58 | 117 | 102 | 110 | 49 | 97 | 1,26 |
| V (ppm) | 299 | 261 | 279 | 279 | 352 | 288 | 1,80 |
| Zn (ppm) | 97 | 82 | 91 | 89 | 119 | 96 | 1,65 |

| Sample: | K04C-07 | K04C-09 | K04C-48 | K04C-66 | K04C-67 | K04C-68 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MS | MS | MS | GVS | GVS | GVS | STD |
| Latitude (N): | -31,9351 | -31,9352 | -31,9801 | -31,867096 | -31,865938 | -31,865758 | |
| Longitude ( E): | 26,3878 | 26,3875 | 26,2668 | 26,232899 | 26,23678 | 26,236905 | |
| Altitude (m): | 1272 | 1269 | 1275 | 1453 | 1436 | 1437 | |
| SiO2 (wt %) | 51,52 | 52,92 | 51,63 | 52,06 | 51,73 | 51,37 | 0,09 |
| TiO2 (wt %) | 0,85 | 1,39 | 0,94 | 1,05 | 1,05 | 1,05 | 0,80 |
| Al2O3 (wt %) | 15,86 | 13,86 | 15,89 | 15,36 | 15,49 | 15,35 | 0,44 |
| Fe2O3(T) (wt %) | 10,87 | 14,07 | 11,22 | 11,95 | 11,88 | 11,94 | 0,11 |
| MnO (wt %) | 0,17 | 0,21 | 0,18 | 0,19 | 0,20 | 0,19 | 0,00 |
| MgO (wt %) | 7,34 | 5,58 | 7,33 | 6,49 | 6,50 | 6,26 | 0,35 |
| CaO (wt %) | 11,03 | 9,20 | 10,82 | 10,45 | 10,40 | 10,49 | 0,15 |
| Na2O (wt %) | 2,13 | 2,26 | 2,16 | 2,22 | 2,29 | 2,27 | 0,40 |
| K2O (wt %) | 0,40 | 0,67 | 0,42 | 0,46 | 0,24 | 0,29 | 0,00 |
| P2O5 (wt %) | 0,12 | 0,21 | 0,12 | 0,14 | 0,16 | 0,15 | 6,29 |
| L.O.I | 0,29 | 0,36 | 0,26 | 0,59 | 1,05 | 0,71 | 0,00 |
| SUM | 100,6 | 100,7 | 101,0 | 101,0 | 101,0 | 100,1 | 0,06 |
| Rb (ppm) | 8 | 14 | 11 | 14 | 5 | 6 | 4,09 |
| Nb (ppm) | 6 | 9 | 7 | 9 | 8 | 7 | 6,42 |
| Sr (ppm) | 196 | 193 | 192 | 212 | 232 | 213 | 0,80 |
| Zr (ppm) | 67 | 120 | 79 | 106 | 110 | 112 | 1,68 |
| Y (ppm) | 20 | 39 | 25 | 30 | 28 | 29 | 4,25 |
| Co (ppm) | 50 | 54 | 51 | 53 | 54 | 53 | 1,20 |
| Cr (ppm) | 466 | 111 | 408 | 281 | 255 | 262 | 1,70 |
| Cu (ppm) | 100 | 157 | 97 | 110 | 112 | 113 | 0,86 |
| Ni (ppm) | 112 | 42 | 113 | 72 | 72 | 70 | 1,26 |
| V (ppm) | 262 | 346 | 274 | 322 | 292 | 300 | 1,80 |
| Zn (ppm) | 83 | 113 | 89 | 101 | 104 | 104 | 1,65 |

| Sample: | K04C-40 | K04C-41 | K04C-42 | K04C-43 | K04C-44 | K04C-45 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | STD |
| Latitude (N): | -31,863297 | -31,870807 | -31,87087 | -31,870931 | -31,870288 | -31,8708 | |
| Longitude ( E): | 26,297931 | 26,307636 | 26,30759 | 26,30744 | 26,306951 | 26,30705 | |
| Altitude (m): | 1635 | 1684 | 1693 | 1700 | 1736 | 1751 | |
| SiO2 (wt %) | 52,70 | 51,70 | 52,08 | 52,20 | 51,78 | 51,98 | 0,09 |
| TiO2 (wt %) | 1,07 | 1,01 | 1,06 | 1,05 | 1,17 | 0,99 | 0,80 |
| Al2O3 (wt %) | 15,70 | 15,65 | 15,54 | 15,73 | 15,39 | 15,88 | 0,44 |
| Fe2O3(T) (wt %) | 12,17 | 11,82 | 11,92 | 11,88 | 12,06 | 11,50 | 0,11 |
| MnO (wt %) | 0,19 | 0,18 | 0,19 | 0,18 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,18 | 6,23 | 6,38 | 6,30 | 6,58 | 6,45 | 0,35 |
| CaO (wt %) | 10,34 | 10,55 | 10,44 | 10,43 | 10,51 | 10,65 | 0,15 |
| Na2O (wt %) | 2,25 | 2,14 | 2,27 | 2,25 | 2,14 | 2,28 | 0,40 |
| K2O (wt %) | 0,70 | 0,64 | 0,72 | 0,71 | 0,67 | 0,65 | 0,00 |
| P2O5 (wt %) | 0,17 | 0,15 | 0,14 | 0,17 | 0,14 | 0,13 | 6,29 |
| L.O.I | 0,09 | 0,26 | 0 | 0,17 | 0,15 | 0,24 | 0,00 |
| SUM | 101,6 | 100,3 | 100,7 | 101,1 | 100,8 | 100,9 | 0,06 |
| Rb (ppm) | 16 | 14 | 16 | 15 | 17 | 16 | 4,09 |
| Nb (ppm) | 11 | 8 | 9 | 9 | 9 | 8 | 6,42 |
| Sr (ppm) | 202 | 201 | 201 | 198 | 197 | 207 | 0,80 |
| Zr (ppm) | 102 | 102 | 108 | 102 | 109 | 99 | 1,68 |
| Y (ppm) | 30 | 27 | 30 | 28 | 31 | 28 | 4,25 |
| Co (ppm) | 49 | 50 | 48 | 48 | 50 | 48 | 1,20 |
| Cr (ppm) | 276 | 281 | 277 | 273 | 298 | 281 | 1,70 |
| Cu (ppm) | 109 | 102 | 112 | 106 | 120 | 106 | 0,86 |
| Ni (ppm) | 66 | 69 | 66 | 67 | 67 | 66 | 1,26 |
| V (ppm) | 299 | 291 | 286 | 292 | 331 | 284 | 1,80 |
| Zn (ppm) | 97 | 93 | 96 | 94 | 93 | 93 | 1,65 |

| Sample: | K04C-46 | K04C-47 | K04C-12 | K04C-13 | K04C-14 | K04C-15 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | STD |
| Latitude (N): | -31,863094 | -31,863633 | -31,987903 | -31,987828 | -31,987908 | -31,987926 | |
| Longitude ( E): | 26,302794 | 26,302487 | 26,287726 | 26,287925 | 26,287948 | 26,28803 | |
| Altitude (m): | 1687 | 1668 | 1439 | 1456 | 1455 | 1456 | |
| SiO2 (wt %) | 52,09 | 51,66 | 52,39 | 51,98 | 52,06 | 51,94 | 0,09 |
| TiO2 (wt %) | 1,08 | 1,05 | 1,06 | 1,03 | 1,06 | 1,02 | 0,80 |
| Al2O3 (wt %) | 15,50 | 15,44 | 15,54 | 15,32 | 15,51 | 15,46 | 0,44 |
| Fe2O3(T) (wt %) | 11,99 | 11,83 | 12,11 | 12,13 | 12,14 | 11,89 | 0,11 |
| MnO (wt %) | 0,19 | 0,19 | 0,19 | 0,19 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,22 | 6,25 | 6,24 | 6,36 | 6,28 | 6,38 | 0,35 |
| CaO (wt %) | 10,35 | 10,37 | 10,33 | 10,45 | 10,33 | 10,45 | 0,15 |
| Na2O (wt %) | 2,19 | 2,19 | 2,24 | 2,19 | 2,22 | 2,18 | 0,40 |
| K2O (wt %) | 0,74 | 0,65 | 0,72 | 0,68 | 0,72 | 0,71 | 0,00 |
| P2O5 (wt %) | 0,17 | 0,17 | 0,15 | 0,15 | 0,16 | 0,16 | 6,29 |
| L.O.I | 0,1 | 0,71 | 0,06 | 0,06 | 0,1 | 0,12 | 0,00 |
| SUM | 100,6 | 100,5 | 101,0 | 100,5 | 100,8 | 100,5 | 0,06 |
| Rb (ppm) | 17 | 16 | 15 | 14 | 16 | 15 | 4,09 |
| Nb (ppm) | 10 | 9 | 8 | 7 | 8 | 7 | 6,42 |
| Sr (ppm) | 200 | 208 | 202 | 198 | 199 | 201 | 0,80 |
| Zr (ppm) | 107 | 108 | 102 | 94 | 102 | 100 | 1,68 |
| Y (ppm) | 28 | 29 | 28 | 27 | 27 | 28 | 4,25 |
| Co (ppm) | 48 | 49 | 48 | 48 | 48 | 47 | 1,20 |
| Cr (ppm) | 270 | 271 | 282 | 293 | 275 | 296 | 1,70 |
| Cu (ppm) | 108 | 101 | 105 | 107 | 108 | 102 | 0,86 |
| Ni (ppm) | 64 | 69 | 64 | 68 | 62 | 66 | 1,26 |
| V (ppm) | 296 | 294 | 304 | 295 | 303 | 293 | 1,80 |
| Zn (ppm) | 95 | 98 | 96 | 95 | 93 | 92 | 1,65 |

| Sample: | K04C-23 | K04C-24 | K04C-25 | K04C-26 | K04C-30 | K04C-31 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | STD |
| Latitude (N): | -31,994224 | -31,9948 | -31,996589 | -31,996694 | -31,977376 | -31,977632 | |
| Longitude ( E): | 26,272432 | 26,273533 | 26,276351 | 26,276502 | 26,268863 | 26,269036 | |
| Altitude (m): | 1692 | 1692 | 1614 | 1604 | 1364 | 1377 | |
| SiO2 (wt %) | 51,69 | 52,02 | 52,09 | 52,03 | 52,02 | 52,23 | 0,09 |
| TiO2 (wt %) | 0,95 | 0,98 | 1,06 | 1,06 | 1,01 | 1,05 | 0,80 |
| Al2O3 (wt %) | 15,87 | 15,68 | 15,45 | 15,61 | 15,55 | 15,67 | 0,44 |
| Fe2O3(T) (wt %) | 11,43 | 11,57 | 12,01 | 12,01 | 11,73 | 12,00 | 0,11 |
| MnO (wt %) | 0,18 | 0,19 | 0,18 | 0,18 | 0,18 | 0,18 | 0,00 |
| MgO (wt %) | 6,51 | 6,67 | 6,30 | 6,13 | 6,41 | 6,28 | 0,35 |
| CaO (wt %) | 10,73 | 10,67 | 10,43 | 10,36 | 10,49 | 10,38 | 0,15 |
| Na2O (wt %) | 2,19 | 2,18 | 2,30 | 2,30 | 2,17 | 2,24 | 0,40 |
| K2O (wt %) | 0,63 | 0,67 | 0,65 | 0,68 | 0,70 | 0,71 | 0,00 |
| P2O5 (wt %) | 0,13 | 0,14 | 0,18 | 0,17 | 0,15 | 0,17 | 6,29 |
| L.O.I | 0,09 | 0 | 0,22 | 0,43 | 0,03 | 0 | 0,00 |
| SUM | 100,4 | 100,8 | 100,9 | 101,0 | 100,4 | 100,9 | 0,06 |
| Rb (ppm) | 13 | 17 | 12 | 16 | 14 | 16 | 4,09 |
| Nb (ppm) | 7 | 8 | 9 | 8 | 7 | 7 | 6,42 |
| Sr (ppm) | 208 | 204 | 201 | 201 | 200 | 201 | 0,80 |
| Zr (ppm) | 90 | 102 | 102 | 97 | 98 | 102 | 1,68 |
| Y (ppm) | 25 | 27 | 29 | 29 | 25 | 25 | 4,25 |
| Co (ppm) | 47 | 48 | 49 | 49 | 47 | 47 | 1,20 |
| Cr (ppm) | 329 | 306 | 266 | 246 | 287 | 266 | 1,70 |
| Cu (ppm) | 95 | 103 | 111 | 105 | 101 | 103 | 0,86 |
| Ni (ppm) | 75 | 71 | 67 | 65 | 68 | 64 | 1,26 |
| V (ppm) | 293 | 280 | 294 | 294 | 284 | 294 | 1,80 |
| Zn (ppm) | 90 | 90 | 93 | 100 | 91 | 94 | 1,65 |

| Sample: | K04C-32 | K04C-33 | K04C-34 | K04C-35 | K04C-36 | K04C-37 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | STD |
| Latitude (N): | -31,977263 | -31,977133 | -31,977148 | -31,977014 | -31,975615 | -31,974794 | |
| Longitude ( E): | 26,268909 | 26,268842 | 26,26871 | 26,268636 | 26,270141 | 26,26674 | |
| Altitude (m): | 1368 | 1364 | 1355 | 1343 | 1332 | 1420 | |
| SiO2 (wt %) | 52,20 | 51,93 | 52,21 | 52,19 | 52,41 | 52,16 | 0,09 |
| TiO2 (wt %) | 0,99 | 1,02 | 0,85 | 0,96 | 1,05 | 0,97 | 0,80 |
| Al2O3 (wt %) | 15,64 | 15,49 | 15,97 | 15,68 | 15,60 | 15,63 | 0,44 |
| Fe2O3(T) (wt %) | 11,60 | 12,36 | 11,32 | 11,75 | 12,05 | 11,86 | 0,11 |
| MnO (wt %) | 0,19 | 0,19 | 0,18 | 0,18 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,79 | 6,45 | 6,77 | 6,28 | 6,29 | 6,43 | 0,35 |
| CaO (wt %) | 10,71 | 10,52 | 10,95 | 10,46 | 10,45 | 10,43 | 0,15 |
| Na2O (wt %) | 2,16 | 2,16 | 2,10 | 2,15 | 2,18 | 2,33 | 0,40 |
| K2O (wt %) | 0,64 | 0,66 | 0,57 | 0,69 | 0,68 | 0,67 | 0,00 |
| P2O5 (wt %) | 0,13 | 0,16 | 0,12 | 0,15 | 0,17 | 0,15 | 6,29 |
| L.O.I | 0 | 0 | 0,03 | 0,13 | 0 | 0 | 0,00 |
| SUM | 101,1 | 100,9 | 101,1 | 100,6 | 101,1 | 100,8 | 0,06 |
| Rb (ppm) | 15 | 15 | 12 | 14 | 15 | 16 | 4,09 |
| Nb (ppm) | 7 | 7 | 6 | 7 | 9 | 7 | 6,42 |
| Sr (ppm) | 198 | 200 | 207 | 206 | 204 | 204 | 0,80 |
| Zr (ppm) | 99 | 93 | 79 | 91 | 101 | 98 | 1,68 |
| Y (ppm) | 28 | 26 | 22 | 28 | 30 | 26 | 4,25 |
| Co (ppm) | 48 | 50 | 46 | 50 | 49 | 48 | 1,20 |
| Cr (ppm) | 315 | 306 | 276 | 319 | 282 | 295 | 1,70 |
| Cu (ppm) | 103 | 104 | 93 | 106 | 112 | 101 | 0,86 |
| Ni (ppm) | 69 | 70 | 67 | 74 | 67 | 66 | 1,26 |
| V (ppm) | 295 | 312 | 283 | 282 | 298 | 300 | 1,80 |
| Zn (ppm) | 90 | 95 | 85 | 104 | 95 | 91 | 1,65 |

| Sample: | K04C-52 | K04K-01 | K04K-02 | K04K-07 | K04K-08 | K04K-09 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31,996094 | -31,851324 | -31,825099 | -31,820648 | -31,820721 | -31,820822 | |
| Longitude ( E): | 26,282938 | 26,220757 | 26,211922 | 26,195939 | 26,196055 | 26,196004 | |
| Altitude (m): | 1564 | 1657 | 1488 | 1555 | 1562 | 1572 | |
| SiO2 (wt %) | 52,08 | 51,94 | 51,40 | 52,08 | 51,98 | 52,32 | 0,09 |
| TiO2 (wt %) | 1,04 | 0,99 | 0,92 | 1,05 | 1,05 | 1,06 | 0,80 |
| Al2O3 (wt %) | 15,93 | 15,29 | 15,60 | 15,46 | 15,46 | 15,49 | 0,44 |
| Fe2O3(T) (wt %) | 11,84 | 12,10 | 11,46 | 12,19 | 12,04 | 12,20 | 0,11 |
| MnO (wt %) | 0,18 | 0,19 | 0,18 | 0,19 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,26 | 6,78 | 7,11 | 6,30 | 6,32 | 6,34 | 0,35 |
| CaO (wt %) | 10,48 | 10,66 | 11,06 | 10,40 | 10,37 | 10,41 | 0,15 |
| Na2O (wt %) | 2,21 | 2,10 | 2,11 | 2,16 | 2,25 | 2,20 | 0,40 |
| K2O (wt %) | 0,71 | 0,63 | 0,59 | 0,70 | 0,70 | 0,71 | 0,00 |
| P2O5 (wt %) | 0,16 | 0,16 | 0,12 | 0,15 | 0,15 | 0,15 | 6,29 |
| L.O.I | 0 | 0,02 | 0,2 | 0 | 0 | 0 | 0,00 |
| SUM | 100,9 | 100,9 | 100,8 | 100,7 | 100,5 | 101,1 | 0,06 |
| Rb (ppm) | 15 | 15 | 15 | 15 | 17 | 15 | 4,09 |
| Nb (ppm) | 7 | 8 | 7 | 9 | 8 | 8 | 6,42 |
| Sr (ppm) | 206 | 206 | 212 | 200 | 203 | 200 | 0,80 |
| Zr (ppm) | 102 | 94 | 83 | 100 | 100 | 96 | 1,68 |
| Y (ppm) | 26 | 28 | 25 | 29 | 30 | 26 | 4,25 |
| Co (ppm) | 48 | 51 | 51 | 48 | 49 | 50 | 1,20 |
| Cr (ppm) | 280 | 392 | 398 | 272 | 290 | 288 | 1,70 |
| Cu (ppm) | 103 | 109 | 96 | 103 | 115 | 109 | 0,86 |
| Ni (ppm) | 67 | 75 | 81 | 64 | 66 | 68 | 1,26 |
| V (ppm) | 286 | 310 | 303 | 302 | 298 | 305 | 1,80 |
| Zn (ppm) | 96 | 96 | 89 | 98 | 94 | 97 | 1,65 |

| Sample: | K04K-10 | K04K-11 | K04K-12 | K04K-13 | K04K-14 | K04K-15 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31,820895 | -31,820991 | -31,821118 | -31,821386 | -31,821403 | -31,821591 | |
| Longitude ( E): | 26,195964 | 26,195937 | 26,196166 | 26,195943 | 26,195978 | 26,195927 | |
| Altitude (m): | 1575 | 1579 | 1587 | 1600 | 1609 | 1611 | |
| SiO2 (wt %) | 52,22 | 52,07 | 51,67 | 52,17 | 52,12 | 52,30 | 0,09 |
| TiO2 (wt %) | 0,99 | 1,02 | 0,92 | 0,92 | 0,82 | 1,05 | 0,80 |
| Al2O3 (wt %) | 15,73 | 16,02 | 15,58 | 15,86 | 15,41 | 15,81 | 0,44 |
| Fe2O3(T) (wt %) | 11,65 | 11,48 | 12,20 | 11,58 | 11,27 | 11,84 | 0,11 |
| MnO (wt %) | 0,18 | 0,18 | 0,20 | 0,19 | 0,19 | 0,18 | 0,00 |
| MgO (wt %) | 6,51 | 6,04 | 6,45 | 6,56 | 6,75 | 6,08 | 0,35 |
| CaO (wt %) | 10,65 | 10,54 | 10,73 | 10,75 | 10,79 | 10,32 | 0,15 |
| Na2O (wt %) | 2,20 | 2,44 | 2,19 | 2,19 | 2,25 | 2,32 | 0,40 |
| K2O (wt %) | 0,66 | 0,70 | 0,58 | 0,61 | 0,60 | 0,76 | 0,00 |
| P2O5 (wt %) | 0,13 | 0,16 | 0,13 | 0,14 | 0,10 | 0,16 | 6,29 |
| L.O.I | 0 | 0,06 | 0,05 | 0,07 | 0 | 0,11 | 0,00 |
| SUM | 100,9 | 100,7 | 100,7 | 101,0 | 100,3 | 100,9 | 0,06 |
| Rb (ppm) | 16 | 16 | 13 | 12 | 13 | 17 | 4,09 |
| Nb (ppm) | 8 | 8 | 8 | 7 | 7 | 7 | 6,42 |
| Sr (ppm) | 205 | 210 | 207 | 199 | 209 | 199 | 0,80 |
| Zr (ppm) | 97 | 96 | 88 | 83 | 83 | 106 | 1,68 |
| Y (ppm) | 27 | 26 | 27 | 23 | 23 | 29 | 4,25 |
| Co (ppm) | 49 | 45 | 49 | 46 | 47 | 46 | 1,20 |
| Cr (ppm) | 320 | 250 | 346 | 267 | 290 | 248 | 1,70 |
| Cu (ppm) | 105 | 94 | 103 | 90 | 89 | 106 | 0,86 |
| Ni (ppm) | 69 | 60 | 60 | 62 | 66 | 60 | 1,26 |
| V (ppm) | 300 | 289 | 312 | 281 | 294 | 279 | 1,80 |
| Zn (ppm) | 93 | 91 | 91 | 87 | 86 | 92 | 1,65 |

| Sample: | K04K-16 | K04K-17 | K04K-18 | K04K-19 | K04K-20 | K04K-21 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31,821928 | -31,841542 | -31,847869 | -31,847753 | -31,847637 | -31,847504 | |
| Longitude ( E): | 26,196009 | 26,195615 | 26,201906 | 26,206881 | 26,206876 | 26,206646 | |
| Altitude (m): | 1621 | 1612 | 1734 | 1646 | 1657 | 1670 | |
| SiO2 (wt %) | 51,98 | 52,12 | 51,70 | 52,00 | 51,74 | 51,48 | 0,09 |
| TiO2 (wt %) | 1,06 | 0,99 | 1,01 | 1,02 | 0,96 | 0,96 | 0,80 |
| Al2O3 (wt %) | 15,58 | 15,95 | 15,54 | 15,56 | 15,41 | 15,00 | 0,44 |
| Fe2O3(T) (wt %) | 12,03 | 11,67 | 11,67 | 12,09 | 11,80 | 11,97 | 0,11 |
| MnO (wt %) | 0,18 | 0,18 | 0,18 | 0,19 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,23 | 6,20 | 6,68 | 6,37 | 6,82 | 6,95 | 0,35 |
| CaO (wt %) | 10,34 | 10,57 | 10,65 | 10,49 | 10,72 | 10,80 | 0,15 |
| Na2O (wt %) | 2,22 | 2,26 | 2,18 | 2,19 | 2,33 | 2,05 | 0,40 |
| K2O (wt %) | 0,71 | 0,67 | 0,65 | 0,68 | 0,63 | 0,61 | 0,00 |
| P2O5 (wt %) | 0,17 | 0,15 | 0,14 | 0,16 | 0,14 | 0,15 | 6,29 |
| L.O.I | 0,08 | 0,16 | 0,03 | 0,12 | 0 | 0,09 | 0,00 |
| SUM | 100,6 | 100,9 | 100,4 | 100,9 | 100,7 | 100,3 | 0,06 |
| Rb (ppm) | 15 | 16 | 17 | 15 | 15 | 13 | 4,09 |
| Nb (ppm) | 7 | 7 | 7 | 7 | 7 | | 6,42 |
| Sr (ppm) | 197 | 204 | 209 | 210 | 211 | 201 | 0,80 |
| Zr (ppm) | 98 | 90 | 100 | 96 | 90 | 85 | 1,68 |
| Y (ppm) | 28 | 27 | 30 | 26 | 25 | 26 | 4,25 |
| Co (ppm) | 47 | 48 | 48 | 50 | 50 | 50 | 1,20 |
| Cr (ppm) | 260 | 274 | 332 | 298 | 348 | 366 | 1,70 |
| Cu (ppm) | 105 | 101 | 106 | 104 | 105 | 98 | 0,86 |
| Ni (ppm) | 65 | 65 | 73 | 69 | 76 | 80 | 1,26 |
| V (ppm) | 286 | 288 | 302 | 300 | 305 | 298 | 1,80 |
| Zn (ppm) | 95 | 92 | 92 | 98 | 92 | 93 | 1,65 |

| Sample: | K04K-23 | K04K-24 | K04K-25 | K04K-26 | K04K-27 | K04K-27 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31,847572 | -31,847618 | -31,847837 | -31,846034 | -31,846576 | -31.846576 | |
| Longitude ( E): | 26,206302 | 26,206043 | 26,205289 | 26,20958 | 26,216795 | 26.216795 | |
| Altitude (m): | 1694 | 1707 | 1711 | 1631 | 1646 | 1645.65 | |
| SiO2 (wt %) | 51,67 | 51,72 | 52,18 | 51,77 | 51,80 | 51,73 | 0,09 |
| TiO2 (wt %) | 0,99 | 1,00 | 0,99 | 1,00 | 1,01 | 1,00 | 0,80 |
| Al2O3 (wt %) | 15,43 | 15,52 | 15,29 | 15,47 | 15,15 | 15,56 | 0,44 |
| Fe2O3(T) (wt %) | 11,74 | 11,67 | 11,99 | 11,84 | 12,02 | 11,92 | 0,11 |
| MnO (wt %) | 0,18 | 0,18 | 0,20 | 0,19 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,70 | 6,79 | 6,82 | 6,49 | 6,59 | 6,56 | 0,35 |
| CaO (wt %) | 10,59 | 10,63 | 10,63 | 10,55 | 10,49 | 10,63 | 0,15 |
| Na2O (wt %) | 2,12 | 2,20 | 2,12 | 2,19 | 2,21 | 2,18 | 0,40 |
| K2O (wt %) | 0,66 | 0,66 | 0,65 | 0,68 | 0,69 | 0,63 | 0,00 |
| P2O5 (wt %) | 0,17 | 0,13 | 0,14 | 0,14 | 0,12 | 0,14 | 6,29 |
| L.O.I | 0,11 | 0,03 | 0,15 | 0,18 | 0,06 | 0,14 | 0,00 |
| SUM | 100,4 | 100,5 | 101,2 | 100,5 | 100,3 | 100,7 | 0,06 |
| Rb (ppm) | 15 | 17 | 15 | 17 | 16 | 15 | 4,09 |
| Nb (ppm) | 8 | 8 | 7 | 7 | 9 | 8 | 6,42 |
| Sr (ppm) | 194 | 203 | 200 | 201 | 203 | 197 | 0,80 |
| Zr (ppm) | 93 | 99 | 87 | 101 | 96 | 90 | 1,68 |
| Y (ppm) | 27 | 27 | 24 | 27 | 29 | 24 | 4,25 |
| Co (ppm) | 49 | 49 | 50 | 49 | 52 | 49 | 1,20 |
| Cr (ppm) | 328 | 323 | 345 | 305 | 354 | 301 | 1,70 |
| Cu (ppm) | 97 | 104 | 105 | 107 | 109 | 101 | 0,86 |
| Ni (ppm) | 75 | 75 | 77 | 71 | 73 | 70 | 1,26 |
| V (ppm) | 284 | 306 | 299 | 289 | 303 | 296 | 1,80 |
| Zn (ppm) | 92 | 91 | 97 | 94 | 97 | 96 | 1,65 |

| Sample: | K04K-28 | K04K-29 | K04K-30 | K04K-31 | K04K-32 | K04K-33 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31,847568 | -31,834978 | -31,833031 | -31.839595 | -31.837295 | -31.837377 | |
| Longitude ( E): | 26,216467 | 26,198255 | 26,205633 | 26.232880 | 26.235059 | 26.232203 | |
| Altitude (m): | 1653 | 1580 | 1601 | 1580.52 | 1588.45 | 1591.34 | |
| SiO2 (wt %) | 51,95 | 51,61 | 52,39 | 51,92 | 51,78 | 52,16 | 0,09 |
| TiO2 (wt %) | 1,03 | 1,05 | 1,03 | 1,08 | 1,04 | 0,98 | 0,80 |
| Al2O3 (wt %) | 15,88 | 15,43 | 15,48 | 15,72 | 15,45 | 15,68 | 0,44 |
| Fe2O3(T) (wt %) | 11,65 | 12,17 | 12,04 | 11,97 | 11,96 | 11,64 | 0,11 |
| MnO (wt %) | 0,18 | 0,19 | 0,19 | 0,19 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,36 | 6,32 | 6,31 | 6,08 | 6,26 | 6,27 | 0,35 |
| CaO (wt %) | 10,51 | 10,43 | 10,34 | 10,23 | 10,48 | 10,44 | 0,15 |
| Na2O (wt %) | 2,23 | 2,20 | 2,25 | 2,32 | 2,28 | 2,30 | 0,40 |
| K2O (wt %) | 0,69 | 0,70 | 0,71 | 0,73 | 0,69 | 0,70 | 0,00 |
| P2O5 (wt %) | 0,17 | 0,17 | 0,16 | 0,16 | 0,15 | 0,14 | 6,29 |
| L.O.I | 0,12 | 0,02 | 0,17 | 0,1 | 0,04 | 0,1 | 0,00 |
| SUM | 100,8 | 100,3 | 101,1 | 100,5 | 100,3 | 100,6 | 0,06 |
| Rb (ppm) | 16 | 14 | 17 | 16 | 15 | 16 | 4,09 |
| Nb (ppm) | 7 | 8 | 9 | 9 | 8 | 8 | 6,42 |
| Sr (ppm) | 202 | 207 | 212 | 207 | 201 | 205 | 0,80 |
| Zr (ppm) | 97 | 101 | 102 | 106 | 97 | 102 | 1,68 |
| Y (ppm) | 28 | 28 | 28 | 33 | 27 | 29 | 4,25 |
| Co (ppm) | 47 | 48 | 48 | 50 | 47 | 48 | 1,20 |
| Cr (ppm) | 289 | 260 | 254 | 279 | 264 | 258 | 1,70 |
| Cu (ppm) | 103 | 108 | 106 | 114 | 100 | 105 | 0,86 |
| Ni (ppm) | 69 | 65 | 61 | 60 | 64 | 62 | 1,26 |
| V (ppm) | 286 | 292 | 292 | 296 | 297 | 292 | 1,80 |
| Zn (ppm) | 92 | 95 | 95 | 101 | 94 | 93 | 1,65 |

| Sample: | K04K-34 | K04K-35 | K04K-36 | K04K-37 | K04K-38 | K04K-39 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31.844804 | -31.845305 | -31.826017 | -31.826477 | -31.841271 | -31.850484 | |
| Longitude ( E): | 26.227736 | 26.229411 | 26.230976 | 26.234055 | 26.218479 | 26.221734 | |
| Altitude (m): | 1587.25 | 1576.44 | 1674.01 | 1695.40 | 1656.47 | 1668.00 | |
| SiO2 (wt %) | 51,96 | 52,09 | 51,61 | 51,54 | 51,71 | 51,84 | 0,09 |
| TiO2 (wt %) | 1,03 | 1,03 | 0,99 | 0,97 | 0,96 | 1,04 | 0,80 |
| Al2O3 (wt %) | 15,24 | 15,48 | 15,43 | 15,57 | 15,80 | 15,61 | 0,44 |
| Fe2O3(T) (wt %) | 11,95 | 11,96 | 11,78 | 11,40 | 12,24 | 11,81 | 0,11 |
| MnO (wt %) | 0,19 | 0,19 | 0,18 | 0,18 | 0,19 | 0,19 | 0,00 |
| MgO (wt %) | 6,48 | 6,32 | 6,65 | 6,51 | 6,67 | 6,76 | 0,35 |
| CaO (wt %) | 10,41 | 10,54 | 10,70 | 10,63 | 10,72 | 10,60 | 0,15 |
| Na2O (wt %) | 2,21 | 2,18 | 2,14 | 2,23 | 2,12 | 2,36 | 0,40 |
| K2O (wt %) | 0,70 | 0,67 | 0,67 | 0,66 | 0,59 | 0,67 | 0,00 |
| P2O5 (wt %) | 0,15 | 0,16 | 0,16 | 0,14 | 0,12 | 0,15 | 6,29 |
| L.O.I | 0,16 | 0,12 | 0,05 | 0,19 | 0 | 0 | 0,00 |
| SUM | 100,5 | 100,7 | 100,4 | 100,0 | 101,1 | 101,0 | 0,06 |
| Rb (ppm) | 17 | 15 | 16 | 17 | 13 | 15 | 4,09 |
| Nb (ppm) | 8 | 7 | 8 | 8 | 8 | 9 | 6,42 |
| Sr (ppm) | 206 | 205 | 200 | 206 | 203 | 201 | 0,80 |
| Zr (ppm) | 104 | 97 | 96 | 96 | 86 | 101 | 1,68 |
| Y (ppm) | 30 | 26 | 27 | 28 | 26 | 27 | 4,25 |
| Co (ppm) | 50 | 48 | 48 | 48 | 50 | 49 | 1,20 |
| Cr (ppm) | 282 | 251 | 341 | 319 | 320 | 320 | 1,70 |
| Cu (ppm) | 113 | 103 | 97 | 107 | 101 | 106 | 0,86 |
| Ni (ppm) | 67 | 64 | 77 | 74 | 74 | 74 | 1,26 |
| V (ppm) | 293 | 308 | 283 | 289 | 303 | 302 | 1,80 |
| Zn (ppm) | 97 | 93 | 92 | 91 | 94 | 94 | 1,65 |

| Sample: | K04K-40 | K04K-41 | K04K-42 | K04K-43 | K04K-44 | K04K-45 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | MVS | MVS | STD |
| Latitude (N): | -31.852338 | -31.855888 | -31,8201087 | -31,8235045 | -31,8245638 | -31,8281289 | |
| Longitude ( E): | 26.220092 | 26.217240 | 26,2179908 | 26,216669 | 26,2176725 | 26,2241824 | |
| Altitude (m): | 1671.37 | 1684.82 | 1462.04 | 1497.85 | 1524 | 1545 | |
| SiO2 (wt %) | 52,13 | 52,03 | 52,03 | 51,63 | 51,42 | 51,92 | 0,09 |
| TiO2 (wt %) | 1,03 | 1,01 | 1,03 | 0,82 | 0,91 | 0,94 | 0,80 |
| Al2O3 (wt %) | 15,71 | 15,54 | 15,89 | 16,43 | 15,60 | 16,15 | 0,44 |
| Fe2O3(T) (wt %) | 11,80 | 11,82 | 11,64 | 10,45 | 11,33 | 11,32 | 0,11 |
| MnO (wt %) | 0,19 | 0,19 | 0,18 | 0,17 | 0,18 | 0,18 | 0,00 |
| MgO (wt %) | 6,32 | 6,60 | 6,25 | 6,96 | 6,83 | 6,35 | 0,35 |
| CaO (wt %) | 10,40 | 10,53 | 10,53 | 11,33 | 10,80 | 10,70 | 0,15 |
| Na2O (wt %) | 2,26 | 2,20 | 2,26 | 2,19 | 2,22 | 2,28 | 0,40 |
| K2O (wt %) | 0,71 | 0,67 | 0,72 | 0,57 | 0,60 | 0,66 | 0,00 |
| P2O5 (wt %) | 0,17 | 0,15 | 0,16 | 0,11 | 0,12 | 0,12 | 6,29 |
| L.O.I | 0,18 | 0 | 0,09 | 0,03 | 0,55 | 0 | 0,00 |
| SUM | 100,9 | 100,7 | 100,8 | 100,7 | 100,6 | 100,6 | 0,06 |
| Rb (ppm) | 16 | 18 | 16 | 12 | 16 | 17 | 4,09 |
| Nb (ppm) | 8 | 8 | 9 | 6 | 8 | 7 | 6,42 |
| Sr (ppm) | 200 | 197 | 203 | 208 | 202 | 212 | 0,80 |
| Zr (ppm) | 98 | 102 | 103 | 80 | 87 | 92 | 1,68 |
| Y (ppm) | 27 | 29 | 28 | 21 | 23 | 56 | 4,25 |
| Co (ppm) | 47 | 49 | 48 | 45 | 48 | 47 | 1,20 |
| Cr (ppm) | 281 | 286 | 284 | 338 | 309 | 308 | 1,70 |
| Cu (ppm) | 103 | 108 | 101 | 84 | 102 | 101 | 0,86 |
| Ni (ppm) | 67 | 66 | 69 | 81 | 71 | 71 | 1,26 |
| V (ppm) | 286 | 297 | 302 | 274 | 300 | 285 | 1,80 |
| Zn (ppm) | 94 | 93 | 95 | 79 | 89 | 91 | 1,65 |

| Sample: | K04K-46 | K04K-47 | K04K-48 | K04K-49 | K04K-06 | K04C-01 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | MVS | MVS | MVS | MVS | L1 | s1 | STD |
| Latitude (N): | -31,8324564 | -31,8338917 | -31,8363638 | -31,8395138 | -31,8168 | -31,9754 | |
| Longitude ( E): | 26,223367 | 26,2262388 | 26,2262002 | 26,2155426 | 26,1975 | 26,2718 | |
| Altitude (m): | 1526 | 1528 | 1542 | 1599 | 1440 | 1335 | |
| SiO2 (wt %) | 52,56 | 52,19 | 51,75 | 52,24 | 52,27 | 51,42 | 0,09 |
| TiO2 (wt %) | 1,15 | 0,99 | 1,03 | 1,08 | 1,05 | 0,94 | 0,80 |
| Al2O3 (wt %) | 16,04 | 15,74 | 15,59 | 15,70 | 16,51 | 15,82 | 0,44 |
| Fe2O3(T) (wt %) | 11,75 | 11,58 | 11,96 | 11,98 | 10,96 | 11,17 | 0,11 |
| MnO (wt %) | 0,18 | 0,18 | 0,19 | 0,19 | 0,17 | 0,17 | 0,00 |
| MgO (wt %) | 5,50 | 6,10 | 6,26 | 6,01 | 6,40 | 7,12 | 0,35 |
| CaO (wt %) | 10,01 | 10,45 | 10,45 | 10,24 | 10,02 | 10,92 | 0,15 |
| Na2O (wt %) | 2,48 | 2,30 | 2,24 | 2,26 | 2,38 | 2,13 | 0,40 |
| K2O (wt %) | 0,81 | 0,71 | 0,71 | 0,75 | 0,72 | 0,44 | 0,00 |
| P2O5 (wt %) | 0,16 | 0,14 | 0,18 | 0,19 | 0,18 | 0,13 | 6,29 |
| L.O.I | 0,17 | 0,11 | 0,08 | 0,13 | 0,64 | 0,52 | 0,00 |
| SUM | 100,8 | 100,5 | 100,4 | 100,8 | 101,3 | 100,8 | 0,06 |
| Rb (ppm) | 18 | 16 | 18 | 17 | 18 | 13 | 4,09 |
| Nb (ppm) | 8 | 7 | 7 | 7 | 9 | 6 | 6,42 |
| Sr (ppm) | 214 | 209 | 204 | 208 | 247 | 193 | 0,80 |
| Zr (ppm) | 111 | 100 | 93 | 104 | 77 | 77 | 1,68 |
| Y (ppm) | 30 | 28 | 26 | 29 | 23 | 23 | 4,25 |
| Co (ppm) | 46 | 47 | 48 | 49 | 47 | 50 | 1,20 |
| Cr (ppm) | 178 | 220 | 275 | 252 | 222 | 518 | 1,70 |
| Cu (ppm) | 119 | 108 | 102 | 110 | 93 | 101 | 0,86 |
| Ni (ppm) | 50 | 58 | 64 | 63 | 87 | 112 | 1,26 |
| V (ppm) | 295 | 294 | 297 | 302 | 270 | 273 | 1,80 |
| Zn (ppm) | 97 | 92 | 94 | 99 | 89 | 90 | 1,65 |

| Sample: | K04-AA11 | KO4 AA-12 | KO4 AA-13 | KO4 AA-14 | KO4 AA-15 | KO4 AA-16 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | STD |
| Latitude (N): | | | | | | | |
| Longitude ( E): | | | | | | | |
| Altitude (m): | | | | | | | |
| SiO2 (wt %) | 52,64 | 52,31 | 52,02 | 51,44 | 51,57 | 52,03 | 0,09 |
| TiO2 (wt %) | 1,05 | 0,97 | 0,92 | 0,93 | 0,95 | 0,96 | 0,80 |
| Al2O3 (wt %) | 16,07 | 15,28 | 16,20 | 15,57 | 15,36 | 16,09 | 0,44 |
| Fe2O3(T) (wt %) | 11,83 | 11,80 | 10,99 | 11,41 | 11,67 | 11,16 | 0,11 |
| MnO (wt %) | 0,19 | 0,19 | 0,17 | 0,18 | 0,18 | 0,18 | 0,00 |
| MgO (wt %) | 5,71 | 6,42 | 6,65 | 6,98 | 7,13 | 6,58 | 0,35 |
| CaO (wt %) | 10,09 | 10,37 | 10,86 | 10,89 | 10,81 | 10,76 | 0,15 |
| Na2O (wt %) | 2,34 | 2,18 | 2,23 | 2,14 | 2,12 | 2,26 | 0,40 |
| K2O (wt %) | 0,73 | 0,71 | 0,64 | 0,60 | 0,61 | 0,64 | 0,00 |
| P2O5 (wt %) | 0,16 | 0,16 | 0,15 | 0,13 | 0,13 | 0,15 | 6,29 |
| L.O.I | 0,10 | 0,19 | 0,11 | 0 | 0,02 | 0,09 | 0,00 |
| SUM | 100,9 | 100,6 | 100,9 | 100,3 | 100,6 | 100,9 | 0,06 |
| Rb (ppm) | 12 | 16 | 14 | 15 | 16 | 15 | 4,09 |
| Nb (ppm) | 9 | 7 | 7 | 6 | 8 | 6 | 6,42 |
| Sr (ppm) | 231 | 198 | 207 | 198 | 196 | 206 | 0,80 |
| Zr (ppm) | 98 | 101 | 90 | 89 | 87 | 88 | 1,68 |
| Y (ppm) | 29 | 26 | 24 | 21 | 22 | 24 | 4,25 |
| Co (ppm) | 47 | 48 | 45 | 48 | 49 | 46 | 1,20 |
| Cr (ppm) | 193 | 269 | 346 | 362 | 384 | 341 | 1,70 |
| Cu (ppm) | 111 | 98 | 83 | 92 | 95 | 91 | 0,86 |
| Ni (ppm) | 49 | 63 | 77 | 81 | 84 | 76 | 1,26 |
| V (ppm) | 311 | 280 | 273 | 274 | 286 | 286 | 1,80 |
| Zn (ppm) | 95 | 94 | 85 | 89 | 92 | 89 | 1,65 |

| Sample: | KO4 AA-17 | KO4 AA-19 | KO4 AA-20 | KO4 AA-21 | KO4 AA-22 | KO4 AA-23 | % |
|---|---|---|---|---|---|---|---|
| Magma b./Loc.: | GVS | GVS | GVS | GVS | GVS | GVS | STD |
| Latitude (N): | | | | | | | |
| Longitude ( E): | | | | | | | |
| Altitude (m): | | | | | | | |
| SiO2 (wt %) | 51,82 | 51,75 | 52,24 | 52,47 | 52,19 | 51,43 | 0,09 |
| TiO2 (wt %) | 1,01 | 0,98 | 0,97 | 1,01 | 1,10 | 0,93 | 0,80 |
| Al2O3 (wt %) | 15,87 | 15,85 | 16,38 | 15,89 | 15,72 | 16,01 | 0,44 |
| Fe2O3(T) (wt %) | 11,66 | 11,44 | 11,33 | 11,61 | 12,11 | 11,29 | 0,11 |
| MnO (wt %) | 0,18 | 0,18 | 0,18 | 0,19 | 0,19 | 0,17 | 0,00 |
| MgO (wt %) | 6,44 | 6,71 | 6,11 | 5,86 | 5,94 | 6,51 | 0,35 |
| CaO (wt %) | 10,64 | 10,88 | 10,55 | 10,39 | 10,23 | 10,85 | 0,15 |
| Na2O (wt %) | 2,18 | 2,18 | 2,28 | 2,32 | 2,31 | 2,20 | 0,40 |
| K2O (wt %) | 0,68 | 0,63 | 0,67 | 0,76 | 0,74 | 0,62 | 0,00 |
| P2O5 (wt %) | 0,15 | 0,14 | 0,17 | 0,17 | 0,17 | 0,14 | 6,29 |
| L.O.I | 0,15 | 0 | 0,1 | 0,12 | 0 | 0,11 | 0,00 |
| SUM | 100,8 | 100,7 | 101,0 | 100,8 | 100,7 | 100,3 | 0,06 |
| Rb (ppm) | 17 | 14 | 16 | 15 | 13 | 13 | 4,09 |
| Nb (ppm) | 7 | 6 | 6 | 7 | 9 | 7 | 6,42 |
| Sr (ppm) | 204 | 207 | 212 | 211 | 203 | 205 | 0,80 |
| Zr (ppm) | 96 | 93 | 98 | 101 | 100 | 88 | 1,68 |
| Y (ppm) | 25 | 26 | 27 | 28 | 28 | 25 | 4,25 |
| Co (ppm) | 45 | 47 | 45 | 45 | 48 | 46 | 1,20 |
| Cr (ppm) | 296 | 317 | 278 | 250 | 247 | 312 | 1,70 |
| Cu (ppm) | 102 | 95 | 96 | 105 | 109 | 93 | 0,86 |
| Ni (ppm) | 69 | 74 | 65 | 57 | 61 | 72 | 1,26 |
| V (ppm) | 277 | 278 | 278 | 275 | 294 | 277 | 1,80 |
| Zn (ppm) | 90 | 87 | 91 | 95 | 98 | 87 | 1,65 |

| Sample: | KO4 AA-24 | KO4 AA-25 | KO4 AA-26 | KO4 AA-27 | KO4 AA-28 | K04C-02 | % |
|---|---|---|---|---|---|---|---|
| **Magma b./Loc.:** | **P 18** | **P 18** | **P 18** | **P 18** | **P 18** | **s1** | **STD** |
| **Latitude (N):** | | | | | | -31,9741 | |
| **Longitude ( E):** | | | | | | 26,2734 | |
| **Altitude (m):** | | | | | | 1333 | |
| **SiO2 (wt %)** | 51,28 | 51,71 | 52,02 | 51,92 | 51,69 | 51,07 | 0,09 |
| **TiO2 (wt %)** | 0,97 | 0,99 | 0,97 | 0,99 | 0,92 | 0,94 | 0,80 |
| **Al2O3 (wt %)** | 15,88 | 15,54 | 15,40 | 15,68 | 15,84 | 15,64 | 0,44 |
| **Fe2O3(T) (wt %)** | 11,40 | 11,81 | 11,92 | 11,72 | 11,44 | 11,10 | 0,11 |
| **MnO (wt %)** | 0,18 | 0,19 | 0,19 | 0,18 | 0,18 | 0,18 | 0,00 |
| **MgO (wt %)** | 6,92 | 6,90 | 6,97 | 6,39 | 6,60 | 7,32 | 0,35 |
| **CaO (wt %)** | 11,09 | 10,72 | 10,65 | 10,64 | 10,87 | 11,11 | 0,15 |
| **Na2O (wt %)** | 2,10 | 2,05 | 2,06 | 2,19 | 2,15 | 2,05 | 0,40 |
| **K2O (wt %)** | 0,58 | 0,64 | 0,64 | 0,70 | 0,63 | 0,13 | 0,00 |
| **P2O5 (wt %)** | 0,14 | 0,15 | 0,14 | 0,17 | 0,14 | 0,12 | 6,29 |
| **L.O.I** | 0 | 0,06 | 0,15 | 0 | 0 | 0,94 | 0,00 |
| **SUM** | 100,5 | 100,8 | 101,1 | 100,6 | 100,5 | 100,6 | 0,06 |
| **Rb (ppm)** | 14 | 15 | 15 | 14 | 14 | n.d | 4,09 |
| **Nb (ppm)** | 6 | 7 | 8 | 7 | 7 | 6 | 6,42 |
| **Sr (ppm)** | 201 | 200 | 195 | 207 | 205 | 227 | 0,80 |
| **Zr (ppm)** | 82 | 87 | 89 | 97 | 88 | 79 | 1,68 |
| **Y (ppm)** | 24 | 25 | 26 | 24 | 24 | 25 | 4,25 |
| **Co (ppm)** | 47 | 47 | 50 | 46 | 46 | 53 | 1,20 |
| **Cr (ppm)** | 355 | 351 | 341 | 276 | 326 | 433 | 1,70 |
| **Cu (ppm)** | 95 | 98 | 100 | 105 | 94 | 106 | 0,86 |
| **Ni (ppm)** | 80 | 76 | 82 | 66 | 74 | 121 | 1,26 |
| **V (ppm)** | 293 | 299 | 297 | 276 | 276 | 260 | 1,80 |
| **Zn (ppm)** | 88 | 92 | 92 | 90 | 87 | 91 | 1,65 |

| Sample: | K04C-03 | K04C-04 | K04C-05 | K04C-10 | K04C-51 | K04C-59 | % |
|---|---|---|---|---|---|---|---|
| **Magma b./Loc.:** | **s1** | **s1** | **d1** | **d2** | **s2** | **d3** | **STD** |
| **Latitude (N):** | -31,9741 | -31,9741 | -31,9117 | -31,7909 | -31,9984 | -31,8591 | |
| **Longitude ( E):** | 26,2738 | 26,2738 | 26,1131 | 26,2331 | 26,2808 | 26,1693 | |
| **Altitude (m):** | 1324 | 1324 | 1226 | 1359 | 1470 | 1243 | |
| **SiO2 (wt %)** | 51,51 | 51,31 | 51,83 | 51,45 | 51,78 | 51,83 | 0,09 |
| **TiO2 (wt %)** | 0,94 | 0,94 | 1,00 | 0,97 | 1,04 | 1,04 | 0,80 |
| **Al2O3 (wt %)** | 15,90 | 15,91 | 15,17 | 15,43 | 15,74 | 15,39 | 0,44 |
| **Fe2O3(T) (wt %)** | 10,53 | 11,19 | 11,04 | 10,83 | 11,89 | 11,90 | 0,11 |
| **MnO (wt %)** | 0,16 | 0,18 | 0,18 | 0,32 | 0,19 | 0,19 | 0,00 |
| **MgO (wt %)** | 6,88 | 7,10 | 7,23 | 6,98 | 6,17 | 6,40 | 0,35 |
| **CaO (wt %)** | 11,12 | 10,94 | 10,73 | 10,83 | 10,61 | 10,50 | 0,15 |
| **Na2O (wt %)** | 2,08 | 2,06 | 2,22 | 2,07 | 2,09 | 2,24 | 0,40 |
| **K2O (wt %)** | 0,12 | 0,23 | 0,39 | 0,35 | 0,37 | 0,67 | 0,00 |
| **P2O5 (wt %)** | 0,11 | 0,15 | 0,14 | 0,13 | 0,16 | 0,16 | 6,29 |
| **L.O.I** | 1,42 | 0,92 | 0,73 | 1,44 | 0,83 | 0,4 | 0,00 |
| **SUM** | 100,8 | 100,9 | 100,7 | 100,8 | 100,9 | 100,7 | 0,06 |
| **Rb (ppm)** | b.d. | 5 | 8 | 7 | 5 | 16 | 4,09 |
| **Nb (ppm)** | 5 | 5 | 7 | 7 | 7 | 8 | 6,42 |
| **Sr (ppm)** | 267 | 233 | 225 | 234 | 209 | 206 | 0,80 |
| **Zr (ppm)** | 76 | 73 | 82 | 77 | 107 | 107 | 1,68 |
| **Y (ppm)** | 24 | 23 | 26 | 26 | 29 | 30 | 4,25 |
| **Co (ppm)** | 51 | 53 | 51 | 54 | 53 | 50 | 1,20 |
| **Cr (ppm)** | 469 | 450 | 426 | 436 | 263 | 277 | 1,70 |
| **Cu (ppm)** | 104 | 99 | 98 | 98 | 107 | 111 | 0,86 |
| **Ni (ppm)** | 111 | 120 | 89 | 109 | 70 | 69 | 1,26 |
| **V (ppm)** | 283 | 271 | 271 | 254 | 297 | 307 | 1,80 |
| **Zn (ppm)** | 93 | 92 | 98 | 93 | 100 | 99 | 1,65 |

| Sample: | K04C-60 | K04C-49 | K04C-50 | % |
|---|---|---|---|---|
| Magma b./Loc.: | d3 | d4 | d4 | STD |
| Latitude (N): | -31,8591 | -31,9990 | -31,9990 | |
| Longitude ( E): | 26,1693 | 26,2816 | 26,2816 | |
| Altitude (m): | 1243 | 1421 | 1421 | |
| SiO2 (wt %) | 52,14 | 49,45 | 51,02 | 0,09 |
| TiO2 (wt %) | 1,05 | 1,03 | 1,02 | 0,80 |
| Al2O3 (wt %) | 15,65 | 17,58 | 16,38 | 0,44 |
| Fe2O3(T) (wt %) | 11,79 | 11,84 | 11,56 | 0,11 |
| MnO (wt %) | 0,19 | 0,14 | 0,20 | 0,00 |
| MgO (wt %) | 6,30 | 6,01 | 5,96 | 0,35 |
| CaO (wt %) | 10,59 | 7,65 | 10,34 | 0,15 |
| Na2O (wt %) | 2,15 | 2,43 | 2,21 | 0,40 |
| K2O (wt %) | 0,62 | 0,53 | 0,59 | 0,00 |
| P2O5 (wt %) | 0,16 | 0,17 | 0,16 | 6,29 |
| L.O.I | 0,8 | 3,69 | 1,35 | 0,00 |
| SUM | 101,4 | 100,5 | 100,8 | 0,06 |
| Rb (ppm) | 15 | 12 | 11 | 4,09 |
| Nb (ppm) | 9 | 9 | 8 | 6,42 |
| Sr (ppm) | 209 | 349 | 223 | 0,80 |
| Zr (ppm) | 113 | 113 | 106 | 1,68 |
| Y (ppm) | 30 | 34 | 28 | 4,25 |
| Co (ppm) | 49 | 59 | 53 | 1,20 |
| Cr (ppm) | 255 | 211 | 210 | 1,70 |
| Cu (ppm) | 117 | 116 | 110 | 0,86 |
| Ni (ppm) | 71 | 90 | 84 | 1,26 |
| V (ppm) | 296 | 387 | 307 | 1,80 |
| Zn (ppm) | 97 | 114 | 103 | 1,65 |

These analyses have been completed by standard XRF techniques at the University of Bergen (Norway).