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Doctoral Thesis

Petrological and geochemical characteristics of gabbros drilled at IODP site 1415: Evidence for an enriched mantle source beneath the East Pacific Rise

(IODP 地点 1415 で掘削されたはんれい岩の岩石学的および地球化学的特徴： 東太平洋海嶺下の肥沃なマントルソースの証拠)

By

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Doctor of Philosophy

北海道大学大学院理学院 自然史科学専攻

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Abstract

IODP Expedition 345 aimed to drill lower crust gabbros at Hess deep rift (East Pacific Rise, 2°14'N-101°30'W), which is located near the junction between EPR and the Cocos, Nazca and Ridge. Lower crust oceanic gabbros were sampled on a about 200 m wide bench located on the intrarift southern slope between 4675 and 4850 m below sea level, and total of 11 holes (1415A to P) were drilled, among which two reached a depth over 110 m below seafloor (Holes 1415J and 1415P; see IODP Expedition 345 Scientific Report, 2013). Primitive troctolites and olivine-rich gabbros were the main lithologies recovered from these two holes. Shipboard data showed a whole rock chemistry with a high Mg# in concordance with their primitive nature. In a MOR system, olivine is a typical primitive mineral and orthoyroxene (Opx) usually appear late in the crystallization sequence, when the magma already reached a significant degree of differentiation. In spite Opx is not expected in any primitive lithology, this mineral is commonly present in Hole 1415P gabbros and associated with olivine. This curious association of cumulate Opx with olivine and other primitive minerals was also observed at a lower extent in some gabbros from IODP Hole 1256D, in the upper Hess Deep crustal section (ODP Hole 894G)

We studied about 70 samples from Holes J and P, and 15 samples from the upper crust (ODP Hole 894G and rubbles from IODP site 1415) for their petrography and mineral chemistry. All samples are olivine gabbros and show an overall cumulate texture with ophitic to subophitic domain consisting of large clinopyroxenes enclosing plagioclase and olivine chadacrysts. Olivine is subhedral to sub-rounded and plagioclase appear as subhedral laths. Beside the main constituent phases in Olivine gabbros, a relatively high content of orthopyroxenes may be observed (≥ 5%). Three types of Opx textures may be distinguished in Opx-bearing olivine gabbros (1) recrystallized corona around olivine, (2)

exsolution within clinopyroxene and (3) large prismatic or poikilitic grains. The third type is the most common and overall texture points to a crystallization order starting with olivine and plagioclase, and finishing with clinopyroxene and then orthopyroxene.

In the upper crust, samples are less rich in olivine and mineral chemistry points to relatively differentiated characteristics compatible with a formation by fractional crystallization from a magma a MORB melt having undergone a certain degree of differentiation. In the lower crust, mineral chemistry show systematically primitive characteristics with high olivine forsterite content, clinopyroxene and orthopyroxene Mg# for all samples. Hole J gabbros show a clear evolution from the bottom to the top, with decreasing Mg# and increasing minor and trace elements contents in mafic minerals. Processes dominated by fractional crystallization can explain the genesis of the Hole 1415J gabbroic column. On the other hand, the narrow down hole variation ranges for Mg# in Opx (84-86%), Cpx (86-92%) and olivine (85-90%) in Hole 1415P, together with a a large scatter in minor and trace elements (Ti, Al, Cr, Ni, Mn, Yb, Cs, Zr, etc.), in Cpx and Opx suggests that, at a global scale, the gabbro column were only affected by a moderate degree of differentiation and melt/rock reaction leading to Mg/Fe ratio buffering played a major role in the formation process. However the relatively low Mg# (below 88%) values show that the reactant was rich in relatively differentiated mafic minerals with a general Mg# lower than in mantle rocks. Chemical zoning observed in the ophitic clinopyroxenes show that the crystallization process might be locally dominated by small-scale differentiation.

Calculated compositions for liquids in equilibrium with Cpx and plagioclase, using both minor and trace elements are consistently between the EPR MORB and the Galapagos basalts chemical domains. In contrast, the melt in equilibrium with Opx in Hole P plot out of the MORB and OIB domain and is significantly richer in Ti. Mg# calculations on all the

ferro-magnesian minerals show that Opx and olivine are in equilibrium while Cpx has a higher Mg# than the calculated Cpx in equilibrium with Opx These demonstrate that a two phases magmatic process occurred, in association with the melting of a enriched mantle source (similar to that producing enriched basalts at the Galapagos hotspot) to generate EPR lower gabbros: 1) Crystallization of a Mg/Fe ration buffered mush. The melt in this mush originated from an enriched mantle source, melts injected in the mush got buffered by a probable melt-rock reaction process occurring in the underlying troctolites. A certain degree of differentiation may occur in the mantle and troctolites, leading to stronger enrichment but the buffering event erased any chemical evidence of differentiation. The appearances of Opx at an early stage in the crystallization sequence suggest a Si-rich source compatible with pyroxenite melting. 2) Local differentiation leading to the crystallization of zoned Cpx in concurrence with Opx precipitation.

MORB melts crystallizing in Hole 1415J are expelled out from the lower crust to the melt lens located at the top of the gabbro section. Enriched melts crystallizing in Hole 1415P are not observed in the basalts formed at the top of the section, this show that some melts produced in the mantle were not extracted from the basaltic mush to the melt lens. They entirely crystallized in the lower crust and are not expressed at the surface. Our study showed the limitation of the basaltic glasses method, sued up to now in order to calculate a general MORB or enriched mantle source.

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Chapter 1

1. Introduction:

1.1 General motivation and scope:

The Two third of the earth surface is recovered by oceanic crust, most of it formed at fast-spreading ridge. Moreover, more than 65% of the magmatic activity on Earth and probably the largest part of hydrothermal processes take place at a spreading ridge, making ocean ridge the main center of heat and chemical transfer between the geosphere and the hydrosphere. The high amount of energy expressed at spreading ridges is also believed to have been the main energy source accounting for life birth. Despite being the place of such important processes, spreading centers functioning is still mostly unknown. From decades, scientists are eager to understand the formation process of the oceanic crust taking place at ocean ridges, which includes partial melting of a given mantle source, magma migration, crystallisation and mixing, and interaction with hydrothermal fluids. But due to poor accessibility, important information are still missing.

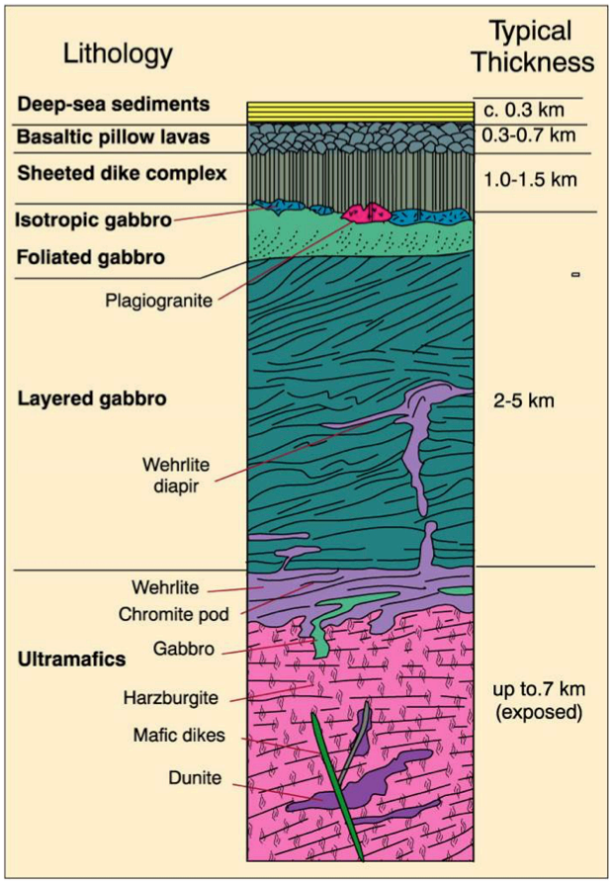


Figure 1.1: Ophiolite succession and seismic layers of oceanic (Boudier and Nicolas, 1985)

Ophiolite's Penrose model (Boudier and Nicolas,1985) (Figure 1.1) is the classical view of oceanic lithosphere layers and is believed to be representative of fast spread oceanic crust. Direct observations from Ophiolite give us some information about the lower oceanic crust and lithospheric mantle but their tectonic context of formation is always debatable (Gillis et al., 2013).

The process associated with mid ocean ridge basalt (MORB) generation involve magma migration to the base of the crust and passing through a lower crustal filter on their ascent to the upper. Most studies regarding crust genesis and ridge functioning at EPR focused on basalt and dolerite glasses and directly interpreted the results in terms of mantle source, neglecting the possible effect of fractional crystallization and other processes occurring within the thick gabbroic layer (the thickest in the oceanic crust section) (Coogan et al., 2007). Ignoring the complex processes leading to the formation of lower crustal rocks is partly due to difficult access (below several kilometers of water and mostly several hundreds of meters of basaltic rocks), but also to the difficulty to interpret crystalline rocks and magmatic chamber processes. The main consequence of this approach is that the effects of melt modification during the crystallization in lower crustal rocks, and thus on the resulting basaltic melt, are not clear.

In this context, ocean-drilling programs, i.e. DSDP and the following Ocean Drilling Program and Integrated Ocean Drilling Program, has provided deep access to lower crustal litho-units in various oceanic core complex (ODP 147 and IODP 345 reports). The surface of young ocean crust is mostly made of pillow basalts and old ocean crust is covered with a thick layer of deep marine sediments, so the access to the gabbroic crust is possible at only very specific tectonic contexts, such as transform fault or ocean lithosphere rifting where tectonic movements brought lower sections of the crust and sometime the lithospheric mantle up to the seafloor (ODP 147 report). In the vicinities of East Pacific Rise (EPR) Pito Deep and Hess Deep (Fig. 1.2) are examples of such tectonic window to

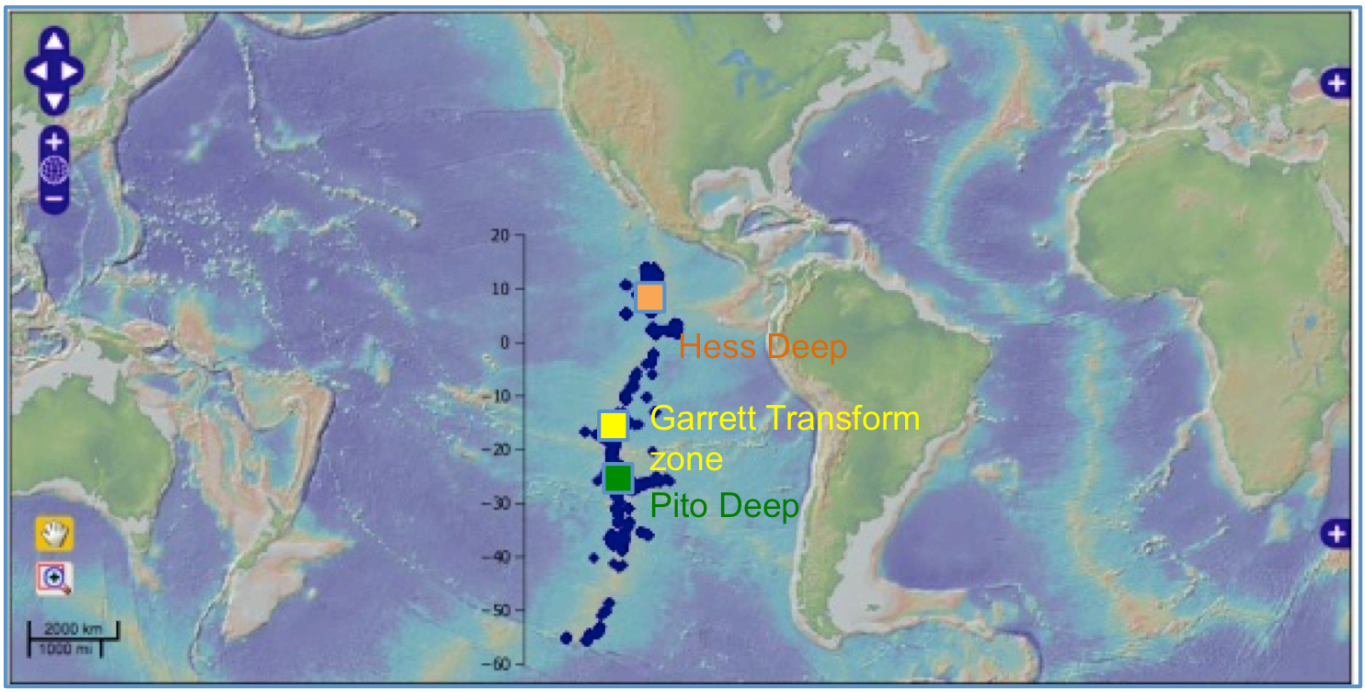


Figure 1.2: Map of East pacific rise, showing sampling point of lower crustal rock in Hess Deep, Garrett transform zone and Pito Deep. All the blue points are shown basaltic lithologies (PetDB)

the oceanic lower crust and mantle (Perk et al., 2007). At Hess Deep, the eastward propagation of Cocos-Nazca rift toward eastern flank of EPR causes the rifting which exposed lower crustal gabbroic and mantle lithology (ODP 147 and IODP 345 reports)

For at least the last 20Ma, the EPR opening rate has been the same as the Cocos-Nazca ridge propagation rate, leading to a steady state rifting uncovering deep crustal and mantle rocks at the tip of the propagator in the 20Ma old EPR lithosphere. Two drilling expeditions (ODP Leg. 147 and IODP Exp. 345) were performed at Hess Deep to recover gabbroic and mantle rocks (Natland and Dick, 1996), and several drilling and diving expedition allowed previous researchers to observe the total section of plutonic layers (Dick and Natland, 1996),. During Leg 147, the main recovered lithologies were, differentiated gabbronorites, olivine gabbros, oxide gabbros, basaltic dikes and also shallow mantle rocks (dunite, harzburgite with intercalated troctolite and olivine gabbro)

interpreted as lying close to petrological Moho (ODP 147 scientific report). The second expedition, IODP Expedition 345, was done in 2013 and aimed to recover young Lower crustal rock generated at fast spreading ridge, in order to establish a crustal accretion model in comparison with geophysical data (Gillis et al., 2013). Olivine gabbro and troctolites were the main sampled lithologies, with unexpected abundance of orthopyroxene in olivine gabbro (IODP Expedition 345 scientific report, 2013).

In this study, the petrology of lower oceanic gabbros in relation with their chemistry has been established by examining orthopyroxene rich gabbroic lithologies and some associated rocks. The present work coupled with previous study provide a complete understanding the processes involved in the formation of lower crustal rock at the fast-spreading EPR.

1.2. Previous studies:

1.2.1. Basalt petrogenesis: Mantle source

Previous studies were mainly focused on the volcanic, tectonic, hydrothermal activity of the ridge segments of oceanic crust (e.g. Allan et al 1996, Stern et al, 2011; Gillis et al; 2003 Arai, 2007). Geochemical studies of basalt reflects a wide range of composition that was interpreted in terms of different degrees of partial melting and total water contained in the mantle (which may control the extent of melting). For example, dolerite samples from the ocean drilling programs (DSDP, ODP, IODP) reflect high Mg# (>0.7), which was interpreted as representing highly primitive picritic basalt crystallizing from a melt with Mg# >0.73 (Allan et al., 1996). Their extremely depleted nature in LREE was directly linked to extremely depleted mantle source (Allan et al., 1996). On the other hand, the diversity of isotopic ratios and wide range of trace element concentrations observed in the basalts and dolerites sampled at EPR were interpreted to be the direct expression of a heterogeneous mantle source. Hofmann and White (1982) suggested that oceanic

lithosphere recycled in the mantle after subduction can be at the origin of the mantle heterogeneity. To characterize the original parental melt composition of basalt, the use of melt inclusions hosted in plagioclase and olivine phenocrysts is widely accepted (Zhang et al., 2012). The lack of variation among melt inclusions and their host crystal in N-MORB lava are interpreted in terms of extensive fractionation and mixing in the upper mantle. Finally, the correlations of the major element contents in phenocrysts with isotopic ratios were portrayed to be the result of a mixed pyroxenite-peridotite source (Zhang et al, 2012).

1.2.2. Evolution of EPR Upper gabbro:

Upper crustal gabbros are exposed along the northern escarpment and at the summit of the western end of the intrarift ridge. The northern scarp exposures, which directly underlie the sheeted dike complex, are dominated by gabbronorite, with lesser amounts of Fe-Ti oxide and amphibole gabbro, varitextured gabbro, olivine gabbronorite, Fe-Ti oxide gabbronorite, and rare tonalite (Hanna, 2004; Kirchner and Gillis, 2012; Natland and Dick, 1996). This gabbros have a wide range in Mg# (mean Mg# = 0.56; range = 0.30–0.76), with gabbronorite being the most primitive and Fe-Ti oxide ± amphibole gabbro being the most evolved end-members (Hanna, 2004; Kirchner and Gillis, 2012; Natland and Dick, 1996). The lithologies exposed at the summit of the western end of the intrarift ridge are similar to the Northern Escarpment, with gabbronorite, oxide gabbronorite, gabbro, olivine gabbro, and patches of pegmatitic amphibole gabbro (Gillis et al., 1993; Hékinian et al., 1993).

Plutonic rocks exposed along the central and eastern region of the southern slope of the intrarift ridge, between 4400 and 5400 mbsl, include gabbros, gabbronorites, olivine gabbros, and lesser trocolites that are, on average, more primitive than the summit of the intrarift ridge (mean Mg# = 0.71; range = 0.39–0.85) (Blum, 1991; MacLeod, unpubl. data, 2009). As with the gabbros, modal layering has not been documented for the deeper

gabbros. It is important to note that the stratigraphic depth of these more primitive gabbros is not known, as these rocks likely migrated downslope by mass wasting processes.

Hydrothermal fluid flow throughout the entire gabbroic sequence was dominated by pervasive fluid flow along grain boundaries, microfractures, and fractures. The shallow-level gabbros and the limited suite of gabbros show that incipient flow occurred at amphibolite facies (average temperature = 720°C) conditions and is manifest by amphibole veins that display no preferred orientation (Manning et al., 1996; Coogan et al., 2002a) and replacement of pyroxene by amphibole-dominated assemblages (Früh-Green et al., 1996; Gillis, 1995; Kirchner and Gillis, 2012). Whole-rock samples unaffected by a lower temperature stage of brittle deformation are depleted in δ 18O relative to fresh values (Agrinier et al., 1995; Lécuyer and Reynard, 1996) and show minor enrichment in 87Sr/86Sr (Lécuyer and Grau, 1996; Kirchner and Gillis, 2012). Calculated fluid/rock ratios using both isotopic systems range from 0.1 to 1 (Lécuyer and Grau, 1996; Kirchner and Gillis, 2012). The rate of cooling of the shallow-level gabbros is rapid (1,000 to 60,000°C/m.y.) and comparable to the upper gabbro section in the Oman ophiolite (Coogan et al., 2007; Faak et al., 2011).

Effects of Cocos-Nazca rifting reported in the gabbros which are exposed along the intraridge rift cooled to ~450°C, they became influenced by the creating a dense array of east–west tensile fractures filled with greenschist to zeolite facies assemblages and local cataclasis cemented with the same assemblage (Früh-Green et al., 1996; Manning and MacLeod, 1996).

1.2.3. Evolution of EPR Lower gabbro and relation with present work:

All previous work focused on the petrogenesis of the lower crust, in any context (fast or slow spreading rate, mid-ocean ridges, supra-subduction zones or ophiolites) showed that the genesis of gabbro is dominated by extremely complicated processes involving melt-

rock reaction with the upper mantle or partially crystallized mushes at the bottom of the crust, mixing of magma fractions with ambiguously different histories, fractional and non-equilibrium crystallization, etc. (Lissenberg et al 2013, Dourin et al, 2010). All these processes are likely to fractionate the trace elements and to consequently change the composition of their parental magma. Moreover, there is a strong contradiction between using the Penrose model as representative of fast to super-fast spreading ridge (Korenga and Kelemen, 1997) and neglecting the effect of gabbro genesis in the history of basaltic glasses.

Mantle peridotites are exposed in the vicinity of Site 895, southeast of Site 894. Clinopyroxene-poor harzburgites, at the most depleted end of the range for abyssal peridotites, are interpreted to be the residues of melting of a normal (N)-type MORB source (Natland and Dick, 1996). The association of dunite–troctolite-olivine gabbro with depleted harzburgite records the interaction of migrating melt with depleted harzburgite wall rock in the shallowest mantle (Natland and Dick, 1996; Arai and Matsukage, 1996; Arai et al., 1997).

Study with the lower crustal gabbros explain the formation which is always involve complicated processes that potentially have very strong influence on the composition of the magma emitted at MOR context and that gabbros should not be neglected in a general ridge model starting from mantle melting and going to basaltic magma quench at the top of the section. We report the results of petrographical and geochemical evolution of lower crustal gabbros from East Pacific Rise (EPR) recovered from Hess Deep rift. Enriched Major and trace elements evolution within the lower crustal gabbros suggests fractional crystallization along with the signature of Galapagos plume magma type malt discernible beneath EPR MORB system. Hess Deep basalts seem to be of purely MORB (Batiza et al, 1992) nature without any chemical evidence of enrichment. The lower crustal gabbroic rocks represent the main incompatible element reservoir, may act as a chemical filter by

preventing contamining primitive melts from the Galapagos hot spot to be expelled out of lower levels magmatic mushed.

1.3. Aims and structure of this thesis:

In the doctoral curriculum, I have been working with the genesis of lower crustal primitive gabbroic rocks that formed at the fast-spreading East Pacific Rise (EPR), are exposed at the Hess Deep Rift and that was sampled during Integrated Ocean Drilling Program (IODP) Expedition 345 (Gillis et al., 2013). Olivine gabbro and troctolite are the dominant plutonic rock types recovered. These rocks exhibit cumulate textures similar to ones found in layered mafic intrusions and some ophiolite complexes. A very significant first-order observation from this expedition is that orthopyroxene (Opx) was found as abundant phase in many of the layered primitive gabbroic rocks. Opx presents as interstitial and prismatic phase. Prismatic phase of opx coexisting with clinopyroxene (Cpx) in olivine gabbros and as monomineralic bands in primitive gabbros. This was unexpected, since experiments on the liquid line of descent of MORB show that opx always crystallizes late in the sequence of MORB-type systems, i.e. after the crystallization of olivine (Ol), plagioclase (Plg) and cpx.

Main objective of the research are as follows:

i) To demonstrate the origin of opx crystallization as well as cpx and other cumulates in primitive gabbro.

ii) Understanding the magmatic processes within deep oceanic crusts particularly in the fast spreading oceanic crust

iii) And ultimately the petrogenesis of oceanic gabbros and relationship between petrology and geochemistry of lower crustal rocks.

To achieve the goals of the research, following methods are performed:

i) Detailed petrographic study from thin section of gabbroic samples

ii) Modal analysis using pixel-counting method by ImageJ software

iii) Electron microprobe analysis of all the minerals and associated phases.

iv) La-ICPMS analysis of major phases (particularly core of the minerals)

Chapter 2

2. Geological context

2.1. Hess Deep:

Hess deep rift is the deepest part in a region near 2°14'N-101°30'W, i.e., north of Galapagos triple junction at the intersection of Cocos, Nazca and Pacific plates (Fig. 2.1) (Hey et al., 1972, 1977; Holdenand Dietz, 1972). The north south–trending EPR is spreading at 130 mm/y, and the east west–trending Cocos-Nazca Rift is propagating westwards toward the EPR at a rate of 42 mm/y, located 30 km from EPR axis, with 8km, wide 25km long. Studies indicate that the current configuration of the Galapagos triple junction has been active for at least 10 m.y. (Smith et al., 2011). The spreading of the EPR lead to initiate Galapagos microplate at ~1.5 Ma. Continued spreading created rifted structure bounded by a depression with depths of more than 5000 m, known as Hess Deep. It consists of oceanic lithosphere created on the axis of the fast spreading East Pacific Rise that was exposed during crustal uplift and faulting. The westward-propagating oceanic rift valley that is opening up the eastern flank of the equatorial EPR in advance of the westward-propagating Cocos-Nazca spreading center (Lonsdale, 1988). Hess Deep represent approximately 0.5Ma, East-West EPR crust exposed by two 5km wide east-west grabens which are further join to the east and deepens to >5400m below sea level (Gillis et al, 2013). Eastern end of the Cocos-Nazca spreading center initiate to building volcanic ridge, which is less significant in westward propagating ridge. Northern wall of Hess deep, called intrarift, which is less than 3000m deep and shallowest part of EPR. Northern and southern escarpments are rise to a depth of less than 2200m and the eastward rough and smooth side (Galapagos gore) indicating the eastern boundary. The uplifted intrarift exposed the lower crustal

rock as well as the upper mantle peridotite (Hekinian et al; 2014) to the western end and its southern slope.

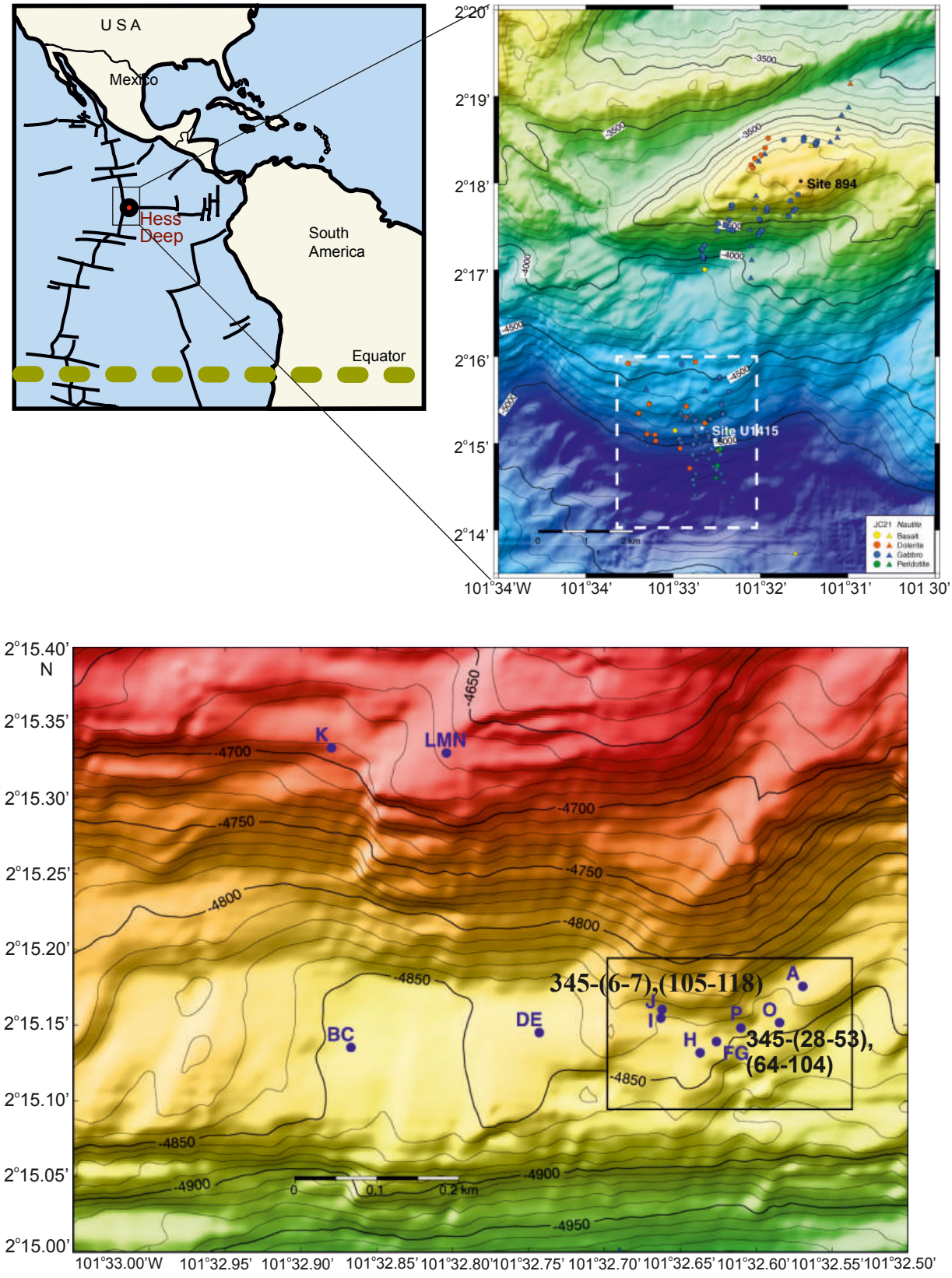


Figure 2.1: Map showing the area of Hess Deep in Equitorial Pacific. Bathymetric map showing the location of sampling in ODP 147 (Site 894) and IODP Expedition 345 (Site 1415) (Figure modified from IODP preliminary report, 2013)

2.2. IODP Expedition 147 site overview:

The principal objective of Leg 147 in 1992, was the recovery of continuous sections of crustal gabbroic rocks and shallow mantle harzburgite, dunite, and intercalated gabbroic rocks from the Hess Deep (ODP 147 report). The cored crustal sections at Site 894 were generated at the fast-spreading East Pacific Rise (EPR), approximately 1 Ma (Fig. 2.1). The exposures cored at Sites 894 (2°18.0'N, 101o31.5'W) and 895 (2°16.7'N, 101°26.7'W) were located on the crest and southern slope of an intra-rift ridge, respectively. At Site 894, 219.9 m was cored in seven holes, recovering 58.5 m of gabbroic rocks, principally gabbronorite with lesser amounts of gabbros, olivine gabbros and gabbronorites, oxide gabbros and gabbronorites, and basaltic dikes. Operations at Site 895 recovered shallow mantle rocks, interpreted as lying close to the petrological Moho, from six holes that penetrated a total of 272.9 m and recovered 64.56 m of rock. The rocks recovered were predominantly dunite and harzburgite, with intercalated, less abundant gabbro, olivine gabbro, and troctolite. In this study we are mainly concentrating on the samples recovered from site 894.

The objective of drilling at Site 894 was to sample a section of oceanic gabbros created at a fast-spreading center, by starting a hole directly on gabbros exposed at the top of the ridge. Six camera surveys were conducted at this site, covering a total area of 1.0 by 1.2 km, and seven sites were selected for test drilling to locate appropriate rock types and optimal drilling conditions.

Shallow holes were drilled on the flat, slightly sedimented summit of the ridge (Holes 894A, 894D, 894E), and on ledges close to the southern edge of the summit (Holes 894B, 894F). An attempt to start Hole 894C with a guide base failed. A second guide base was successfully deployed to start Hole 894G, close to test Hole 894F. A total of 219.9 m was cored, with a recovery of 58.5 m (26.6%). The gabbros occur in the upper parts of the section, and gabbronorites first appear at 45 mbsf. The plutonic rocks are non-layered,

show textural variations from ophitic to equigranular, and grain-size variations from fine to coarse (Natland and Dick, 1996). Some of the textural variability is related to the presence of patches, pockets, and veins of more coarse-grained gabbronorite hosted in finer grained gabbros and gabbronorites. Zircon and apatite are abundant in many of these coarser grained pockets (ODP 147 report).

2.3. IODP Expedition 345 site overview:

Taking advantage of such rare accessibility of lower crustal rocks, IODP Expedition 345 was sampled primitive lithologies from troctolite to varitextured-layered gabbros. Site U1415 is located along the southern slope of the intrarift ridge between 4675 and 4850 mbsl (Fig. 2.1). A series of 16 holes were drilled at Site U1415, two ~110 m below seafloor (mbsf) reentry holes (U1415J and U1415P), five single-bit holes (U1415E and U1415G–U1415I), two failed reentry holes (U1415K and U1415M), and six holes in which jet-in tests were conducted to assess sediment thickness (Holes U1415A–U1415D, U1415F, and U1415L) (Fig. 2.1)Site U1415 is centered on a ~200 m wide, flat-lying east-west–trending bench at 4850 mbsf that is covered with approximately <10–30 m of largely gabbroic rubbles overlain by a few meters of pelagic sediment mixed with lithic debris. Holes U1415E–U1415J are in an area where primitive gabbroic rocks were recovered. Holes U1415K–U1315N are situated along a ~100 m wide, flat-lying shoulder at ~4675 mbsl, ~160 m shallower than the bench, where slightly more evolved gabbroic rocks were recovered during the JC21 site survey. Among these 16 holes Hole P and Hole J has special significance as they recovered highest mass of lower crustal rocks with highest depth i.e more than ~50 mt thick core samples. The scale of the blocks can be assessed in the two deepest holes, U1415J and U1415P, situated ~110m apart.

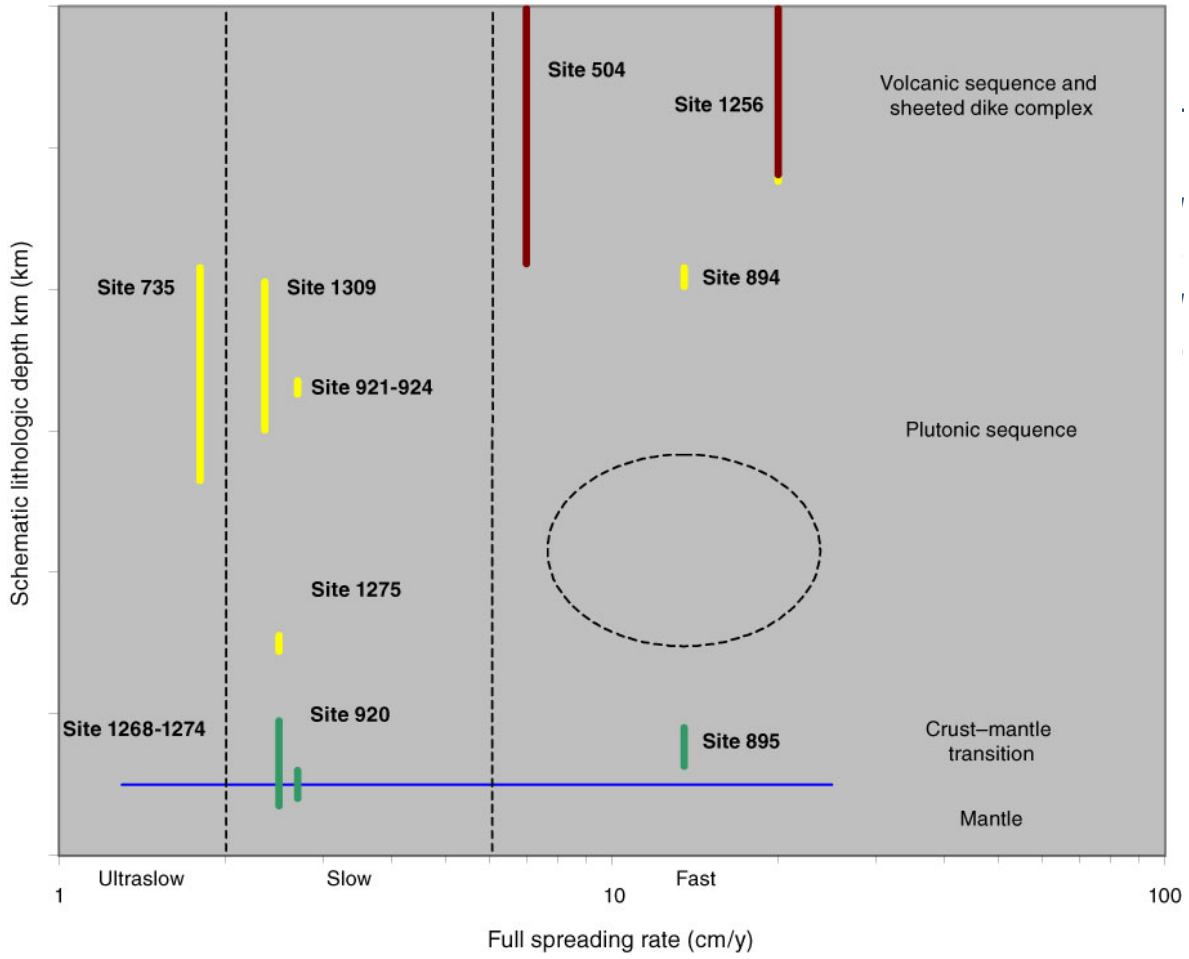


Figure 2.2: Schematic diagram of existing basement holes that have major penetrations into the ocean crust and upper mantle as a function of spreading rate.

After a failed attempt of Hole 1415I to reenter the hole with a 14.75 inch tri-cone bit, theship shifted 10 m to the north, verified that the seafloor was free of any boulders, and observed the bit tag the seafloor at 4850.0 mbrf and Hole U1415J was spudded at 1855 h using a 14.75 inch tri-cone bit. Drilling proceeded at ~1.2 m/h from 0 to 7 mbsf and then slowed to ~0.6 m/h until total depth of 4865 mbrf (15 mbsf).

Hole U1415P was sited on the southern margin of a small promontory, between Holes U1415G and U1415O. From the onset, Hole U1415P was established as a reentry hole and was intended to be a nested FFF configuration with casing similar to that at Hole U1415J.

The primary accomplishment in Hole U1415P was RCB coring that extended from 12.5 to 107.9 mbsf and recovered 30.57 m (32%) of gabbroic rocks. In addition, material was recovered in five ghost cores obtained during hole cleaning operations in previously drilled portions of the hole (IODP 345 report).

These two holes are reentry holes In the remainder of this section, and recovered massive units as well as surficial rubble unit. The dominant rock types are troctolites and olivine gabbros for both of the site. The multi textured gabbro exhibit a wide variation in mineral mode, mineral habit (Gillis et al, 2013). Mostly, an unexpected occurrence of orthopyroxene in this primitive litho-units emphasis the importance of this research.

Chapter 3

3. Analytical method:

3.1. Modal analysis:

Sample selection was based on the degree to which they represent petrographic types and on their freshness. Two blocks of 65 and 42m thickness from holes P and two blocks of 29 and 50m from hole J obtained from IODP 345, from which 66 samples are studied for petrography and mineral chemistry. Among them 30 samples are selected to performed modal analysis by pixel counting method in ImageJ software. 20 samples from Hole P and 10 samples from Hole J are selected based on best representative samples of Olivine gabbro. These samples are chosen after detailed observation by thin section analysis by microscope.

Pixel counting was done on whole section scan by selecting and contouring each mineral. Contoured minerals were grouped by types (Ol, Plg, Cpx, Opx and oxides) in as many selections. Pixels contained in each selection were automatically counted by the software

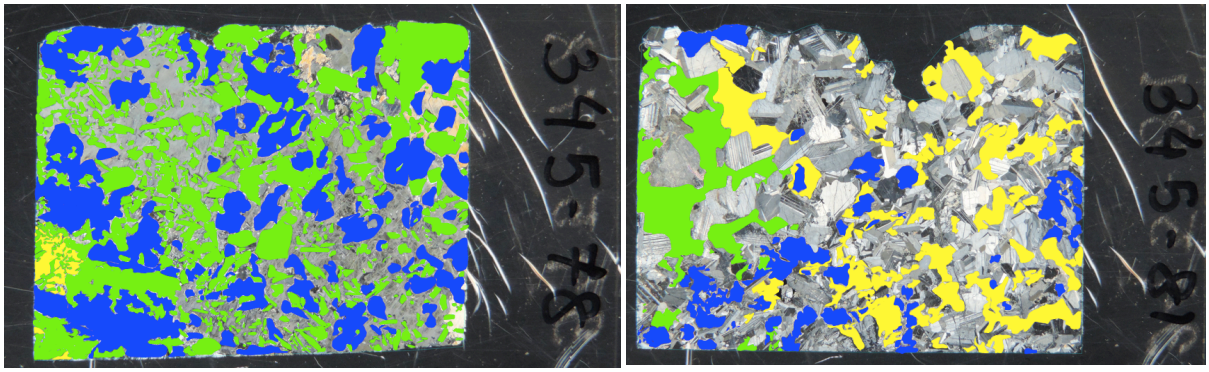


Figure 3.1: Modal analysis was done by pixel counting method. Different colours except plagioclase as it present separate contoured minerals highest in amount: blue (Ol), green (Cpx) and yellow (Opx).

imageJ, the volume percentages of each mineral were then calculated using these results and the pixel count for the total section (Fig. 4.1). This method is based on the procedure

developed by Launeau, P., and P.-Y. F. Robin (1996), which showed that precise results may be obtained by the image analysis of crystal boudaries.

3.2. Electron microprobe analysis:

Mineral chemistry were collected exclusively from representative samples (60 samples) which were selected on the basis of geochemical characteristics and expected to represent wide range of composition. Thin sections of the representative samples were polished using blue diamond solutions and were carefully carbon coated. The chemical composition of minerals in investigated rocks measured by quantitative analysis using wavelength dispersive electron probe microanalysis (JCMA- 733 and JXA-880R) installed at Hokkaido University. Analysis was performed at an acceleration voltage of 20 kV and at specimen current of 20 nA for point and line profile. The beam diameter used during analysis was 3 μm. Also elemental mapping done in one crystal of orthopyroxene.

3.3. La-ICPMS analysis:

In situ trace element compositions were determined by LA-ICPMS at Géosciences Montpellier (AETE, University of Montpellier, France). Plagioclase, clinopyroxene, orthopyroxene and olivine were analyzed using 150 μm thick polished sections. Grains were carefully selected optically to discard those affected by alteration. Trace elements analyzed were: Li, B, Sc, Ti, V, Mn, Co, Zn, Sr, Y, Zr, Nb, Ba, rare earth elements (REEs), Hf, Ta, Pb, Th and U. Analyses were performed with a Thermo Scientific Element XR (eXtended Range) high resolution ICPMS. The ICPMS was coupled to a laser ablation system consisting of a Geolas (Microlas) automated platform with a 193 nm Excimer Compex 102 laser from LambdaPhysik. Ablation analyses were performed using an in-house modified 30-cm3 ablation cell with a helium atmosphere to enhance sensitivity and reduce inter-element fractionation (Günther and Heinrich, 1999). Helium gas and ablated sample material were mixed with argon gas before entering the plasma. The laser energy

density was set to 12 J cm−2 at a frequency of 8 Hz and the beam size was set to 102 μm. Data were collected in time resolved acquisition mode, with the background signal collected for 2 min followed by 1 min of sample ablation.

Data were reduced with the GLITTER software package (Van Achterberg et al., 2001), using the linear fit to ratio method. Data were filtered for spikes on an element-by-element basis. Internal standardization relative to EMPA data was done using 29Si for all minerals. Detection limits were <1 ppb for most highly incompatible elements except for Ba, Zr and Sr (<2 ppb); they were <15 ppb for Sb, V, Cu, Zn, Co, Sc, Li and B and <200 ppb for Mn, Ti. Values that were within 1σ of the detection limit were excluded during data reduction. Instrument sensitivity due to analytical conditions was determined from the average across all days of repeat measurements of the synthetic NIST 612 glass (Pearce et al., 1997). Sensitivities were 2000-4000 cps/ppm for Ti, B and Zn, 6000-15000 cps/ppm for Li, Cu, Sb, Ba, Nd, Sm, Gd, Dy, Yb and Pb and >20000 cps/ppm for all other elements. Reproducibility as constrained by 8 analyses of reference basalt BIR 1-G (Table eA1) was better than 5% for most elements except for Pb (16%), B and Ta (<10%) and measured values were comparable within analytical uncertainties to GEOREM accepted values (Jochum et al., 2005).

3.4. Calculated melt in equillibrium:

Nominally anhydrous major-rock forming minerals in the Earth's oceanic crust include olivine, clinopyroxene (cpx), orthopyroxene (opx), spinel, and plagioclase. All elements distribute themselves unevenly between any two phase at equilibrium which is known as chemical fraction (Winter, 2010). In general, Major and REE, distribution of an elements between any two phases at equilibrium at particular pressure (P), temperature (T), oxygen fugacity (fO_2), and mineral and melt compositions (X) and can be expressed as "equilibrium constant" K. Both P and T can affect the partition coefficients of trace

elements to varying extents due to the enthalpy change and volume change, respectively, in the chemical exchange between minerals and melt (e.g., Blundy andWood, 2003;Wood and Blundy, 2003). Ryerson and Hess (1978) further suggested that mineral-melt trace element partition coefficients would increase with melt polymerization. This has been examined experimentally for trace element partitioning between olivine and basaltic melt and between cpx and melt in several recent studies (Gaetani, 2004; Mysen, 2004; Huang et al., 2006; Evans et al., 2008; Tuff and O'Neill, 2010).

If an exchange reaction of component i , between two phases – a solid & a liquid, considered, then,

$$i\ liquid \leftrightarrow i\ solid$$

A simple empirical distribution K_D, defined as constant –

$$K_D = \frac{Xi\ Solid}{Xi\ liquid}$$

' Xi ' → the mole fraction of the component ' i ' in that solid or liquid phase.

The Distribution Constant (K_D) simply states that a component has a tendency to be distributed in co-existing phases at equilibrium in a consistent & reproducible fashion . K_D values for major elements range between common phases & lie within an order of magnitude of 1.0. K_D values for trace elements range over several orders of magnitude. While dealing with trace elements, KD, replaced by d, called the Distribution Coefficient

$$D = \frac{Concentration\ of\ an\ element\ in\ the\ total\ solid\ phase\ (CS)}{Concentration\ of\ the\ same\ elemnt\ in\ the\ liquid\ (CL)}$$

D measures the degree of tendency of an element to partition itself into the total solid (inclusive of all minerals) & the co-existing liquid. A particular element has a particular value of K_D.

Chapter 4

4. Petrography of gabbroic lithologies:

4.1. Introduction:

The origin of layered structure in fast spreading ridge is controversial. Rare accessibility of lower crust in nature often compare with ophiolites, as well as from geophysical data (particularly seismic interpretation). From ocean drilling program, direct observation from crustal layers has been contributing a major scientific impact in earth science. Integrated Ocean Drilling Program (IODP) Expedition 345 aimed to sampled from lower crustal primitive gabbros (IODP Expedition 345 scientific report) at the tectonic window in fast spreading ridge East Pacific Rise (EPR), formed due to eastward propagation of Cocos-Nazca rift towards EPR and known as Hess Deep Rift. Previous expedition, Ocean drilling program (ODP) Leg 147 designed to sampled upper crustal lithologies along with uplifted upper mantle section. Based on the result from previous result IODP expedition 345 acquires the lower crustal section in order to compare with Peneros model of fast spreading ridge from Oman ophiolite.

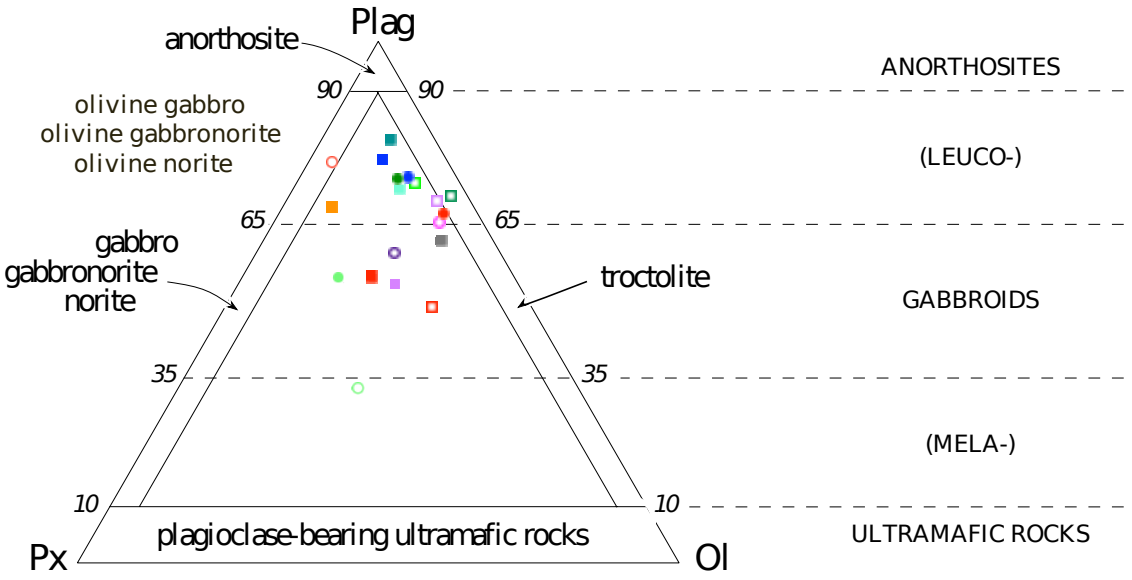


Figure 4.1: Triangular diagram showing modal plot of main constituent minerals for different samples

4.2. Upper gabbro:

4.2.1. Sampling site:

Previously from ODP leg 147 at the intrarift ridge on Hess Deep restricted to sampling depths >3000 mbsf, at approximately 2°18.0'N, 101°31.5'W, Hole 849G was drilled 18.0 m from 3034.4 to 3053.0 m (0-18.6 mbsf).only recovered upper crustal lithologies include olivine gabbros, gabbros, olivine gabbronorite, gabbronorite and patches of pegmatitic amphibole-gabbro (Gillis et al., 1993; Natland and Dick, 1996; Pedersen et al., 1996).

At site U1415, recovered overlying surficial rubbles and lithic sand beside massive blocks are fallen from unknown stratigraphic levels but which were located above the drilled samples. Only samples collected as massif blocks could be considered as lower crust rocks, the rubbles, fallen from upper or middle crust were grouped with the samples collected from ODP leg 147. Moreover, the aim of this particular study only concerns gabbroic lithologies and basalts or peridotite, either drilled during ODP Leg 147 or IODP Exp. 345, were not sampled not studied.

4.2.2. Petrographic description:

4.2.2.1. Drilled samples:

Upper crustal gabbro is usually highly altered. Olivine gabbro is usually very coarse grained and is also highly heterogenous; some irregularly shaped, olivine-rich patches are included in the leucocratic Plagioclase and clinopyroxene-rich part (Fig. 4.2.A). Olivine gabbro may be the olivine-poor equivalent to the troctolite. The olivine in olivine gabbro is similar in appearance to that in troctolite (Fig. 4.2.B). Chromian spinel is disseminated in and around some of the olivine-rich part (Fig.4.2.C). Some of the Plagioclase is euhedral and it is usually poikilitically enclosed by clinopyroxene (Fig.4.2.D & E).

Clinopyroxene is coarse and anhedral, usually poikilitically enclosing rounded olivine and euhedral Plagioclase. One of the samples is gabbronorite, consist more than 20% of

orthopyroxene in modal abundane. Clinopyroxene and orthopyroxene in gabbronorite both show poikilitic nature that encloses plagioclase (Fig. 4.2.F). Some cr-spinel present as minor phase with interstitial occurrence.

4.2.2.2. Rubbles:

A total of 8 samples are marked as rubbles, recovered from Exp. 345. These are also consist of three types of rock according to modal percentage; gabbronorite, ol-gabbro and opx-ol gabbro.

Gabbronorite consist large grain of clinopyroxene and orthopyroxene with ophitic texture, enclose plagioclase laths (Fig 4.3.A). Some of the portion of this rocks are altered to chlorite, may be hydrothermal alteration effect.

Olivine gabbro shows a very little alteration, only secondary amphibole produce around olivine. Olivine otherwise present as very unaltered phase with interstitial and subhedral crystalline form. Olivine also present as poikilitic in nature with plagioclase (Fig 4.3.B), co-crystallization may be best approximation in this case. Clinopyroxenes are tabular and mostly present as ophitic in relation with plagioclase. Two samples are Opx-ol gabbros, and consist 2-3% of Opx, 15-20% of Cpx, 5-10% od Ol and 50-60% of plagioclase. Olivines are very altered along the fracture but retain their shape (Fig 4.3.C). Orthopyroxene present as interstitial phase within plagioclase (Fig 4.3.D) and also as prismatic crystals (Fig 4.3.E). Also a few percentage of cr-spinel present in the gabbroic rocks (Fig 4.3.F)..

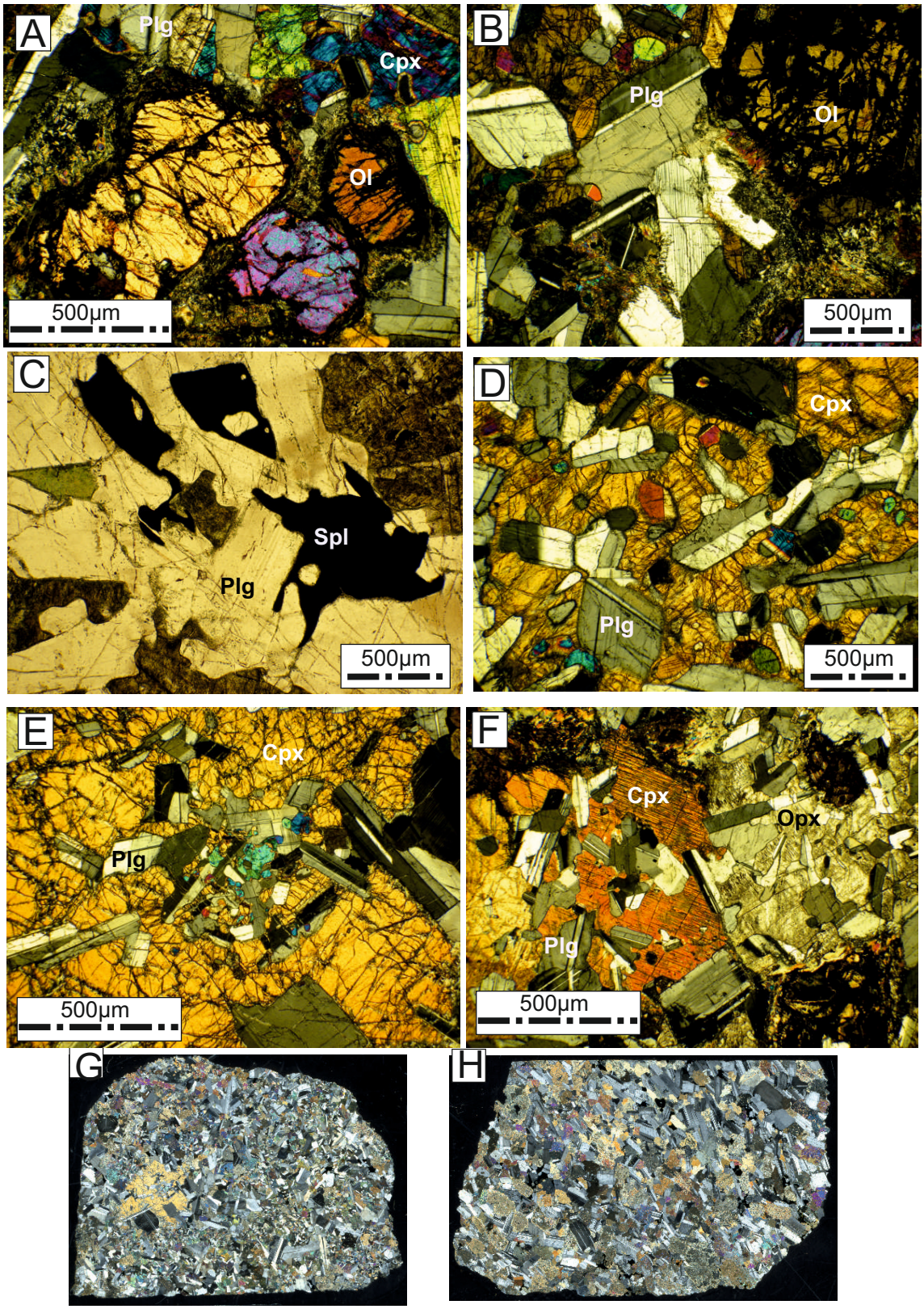


Figure 4.2: Photomicrogharph of upper gabbro samples from ODP 147 (A) Very coarse grained irregularly shaped, olivine-rich patches in the leucocratic Plagioclase and clinopyroxene-rich part, (B) The olivine in olivine gabbro is similar in appearance to that in troctolite, (C) Chromian spinel is disseminated in and around some of the olivine-rich part, (D and E) Euhedral Plagioclase poikilitically enclosed by clinopyroxene, (F) Poikilitic clinopyroxene and orthopyroxene, (G) Thin section of gabbronorite, (H) thin section of ol-gabbro

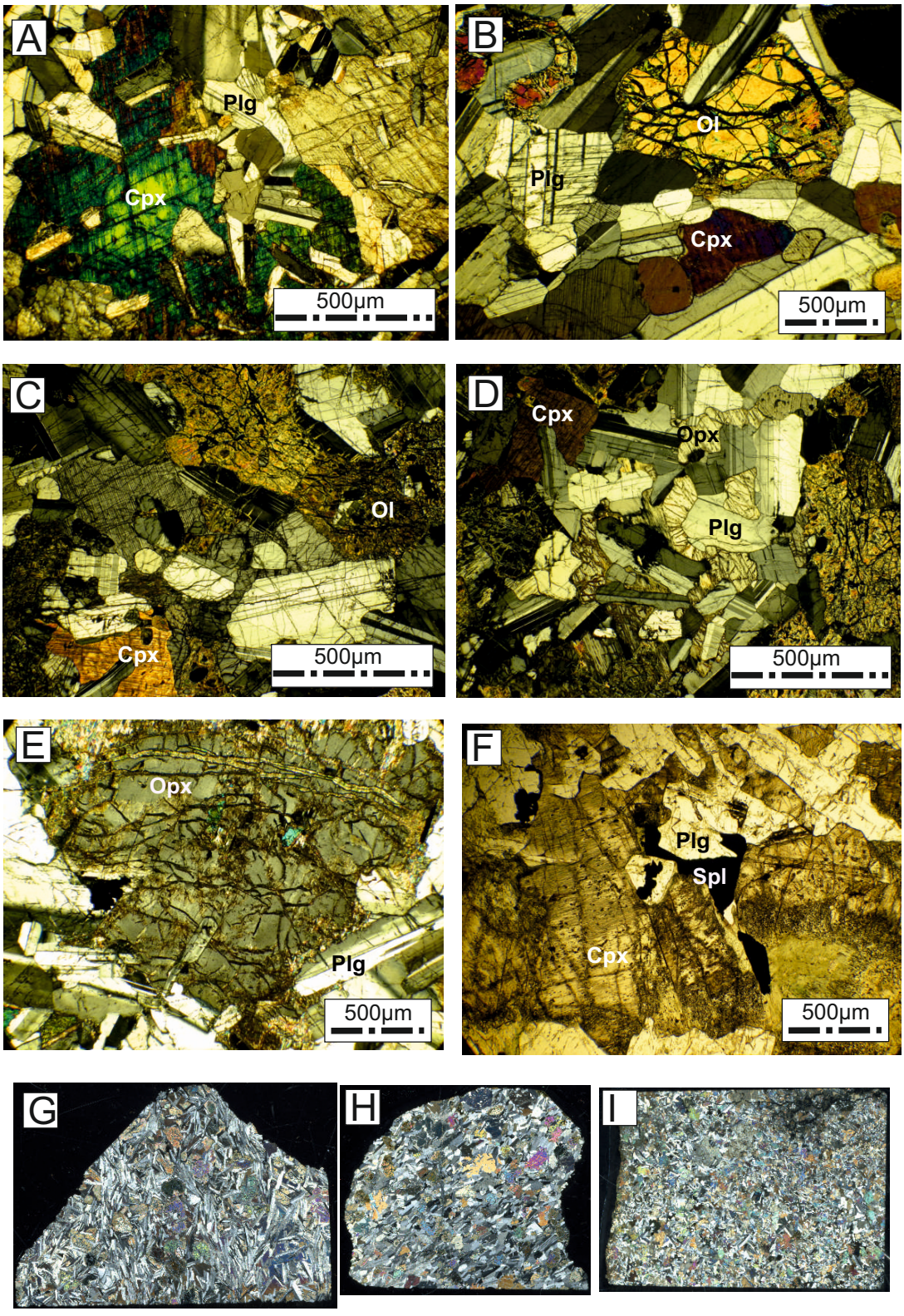


Figure 4.3. Photomicrogharph of rubbles sampled from IODP Exp.345 (A)Clinopyroxene and orthopyroxene with ophitic texture, (B) Olivine present as poikilitic in nature with plagioclase, (C) Olivines are very altered along the fracture but retain their shape, (D) Orthopyroxene present as interstitial phase within plagioclase and (E) also as prismatic crystals, (F) Cr-spinel present in the gabbroic rocks, Thin section of (G) Ol-gabbro, (H) Opx-ol gabbro, (I) Gabbronorite

4.3. Lower gabbro:

4.3.1. Sampling site:

Site U1415 is located along the southern slope of the intrarift ridge between 4675 and 4850 mbsl (Fig. 2.1). Lower crustal plutonic rocks recovered from IODP 345 with a wide range of lithologies like, Troctolites, Olivine gabbros, Clinopyroxene oikocryst bearing gabbros, gabbronorite). Olivine gabbro is the dominant rock type recovered at Site U1415, occurring in both the layered series in Holes U1415J, and U1415P and the Troctolite Series in Hole U1415P particularly. An unexpected observation is the predominance of

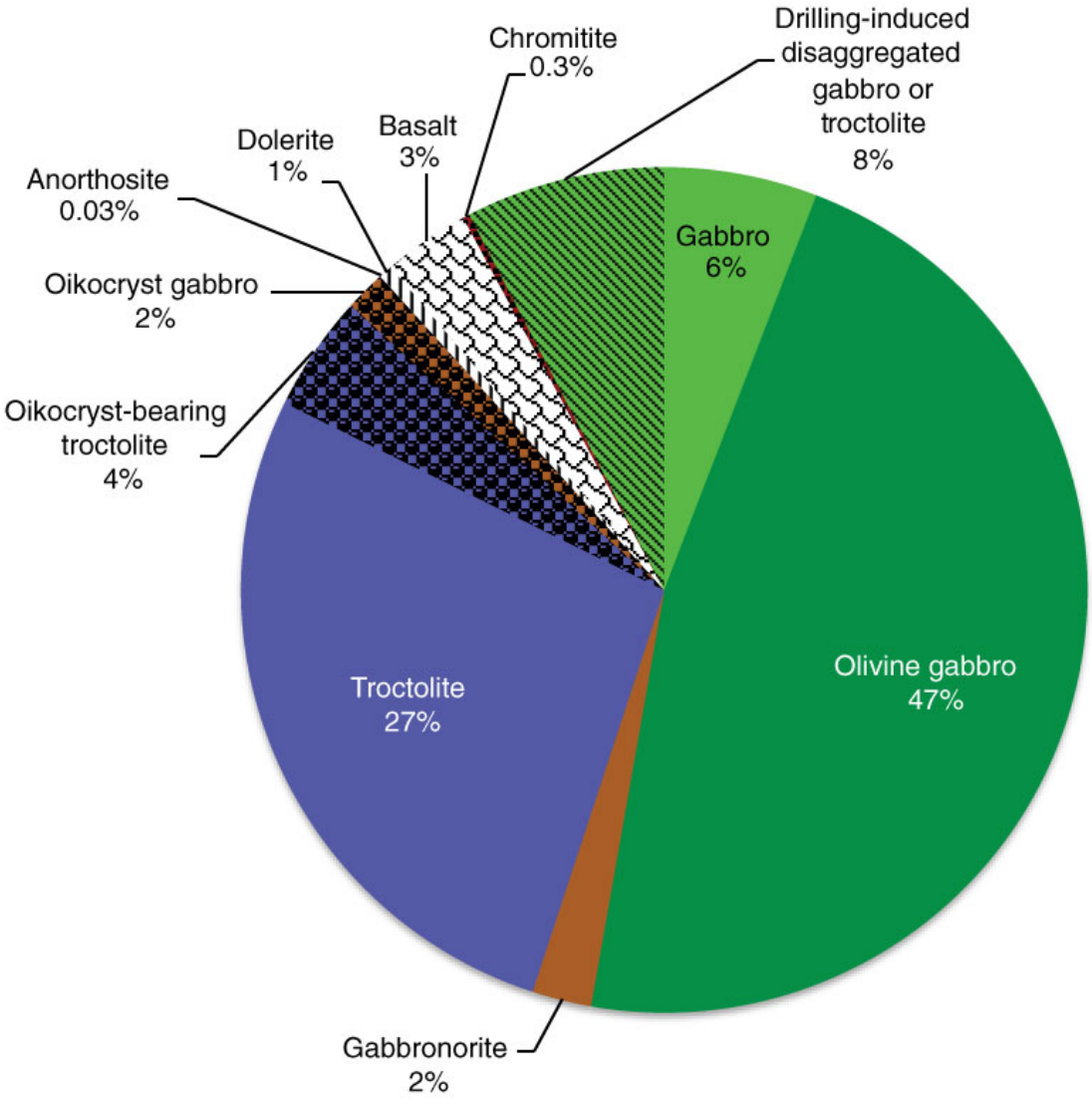


Figure 4.4: Chart showing the relative proportion of all recovered igneous lithologies from site 1415 (Exp. 345 scientific report)

orthopyroxene-bearing lithologies, particularly present in Hole P, and in some of the samples from Hole J.

Here we have selected 66 Hess Deep gabbroic rocks for this study. Hole J, consistency in the dip of magmatic foliation and magnetic inclinations identify two discrete blocks with vertical thicknesses of 29 and ≥50m (Fig 4.5 A,B).. In Hole P, rock type and magnetic inclinations suggest two blocks of 65 and >42 m thickness (Fig 4.7 A,B). The primitive lithologies at Site U1415 formed at a minimum of 2 km beneath the sheeted dike complex, at the lower half to one-third of the 3.8–4.8 km thick plutonic sequence (Expedition 345 Scientific report).

4.3.2. Petrographic description:

4.3.2.1 Hole J:

From the Exp. 345 report, Gabbros primarily occur in centimeter-scale intervals in the layered series in Holes J where they are fine to medium grained, and have an equigranular/granular texture. Ol-gabbro and Cpx-oikocryst gabbro are dominant rock types Hole J. Ol-gabbros were recovered at ~110m deep at holes and J. The lower gabbroic series is marked by simple modal layering with variation of grain size on centimeter to decimeter scale (Gillis et al; 2013).

Layered gabbros from Hole J consists of a ~30 m thick sequence (IODP 345 Scientific repot; 2013) with overall adcumulus texture with ophitic to subophitic domain consisting of plagioclase ~ 55-70%, olivine ~ 10-20%, Clinopyroxene ~ 20-30% and minor orthopyroxene ≤ 2%. Olivine present as subhedral to euhedral, also olivine present as skeletal in nature (Fig. 4.6.A). Plagioclases are euhedral to subhedral, some of the plagioclase are altered by cholitic mineral along fracture (Fig. 4.6.B).. Ophitic nature is prevail in plagioclase which is marek by enclose by clinopyroxenes (Fig. 4.6.C).. Larger

oikocrystic clinopyroxene present as patches in some section and encloses olivine and plagioclase (Fig. 4.6.D).. Some of the sample (here we have only 6 samples) consists of orthopyroxene mainly as oikocryst in reaction with plagioclase chadacryst (Fig. 4.6.E). or as prismatic in shape (Fig. 4.6.F).. But modally they are less in amount than we observed in Hole P samples.

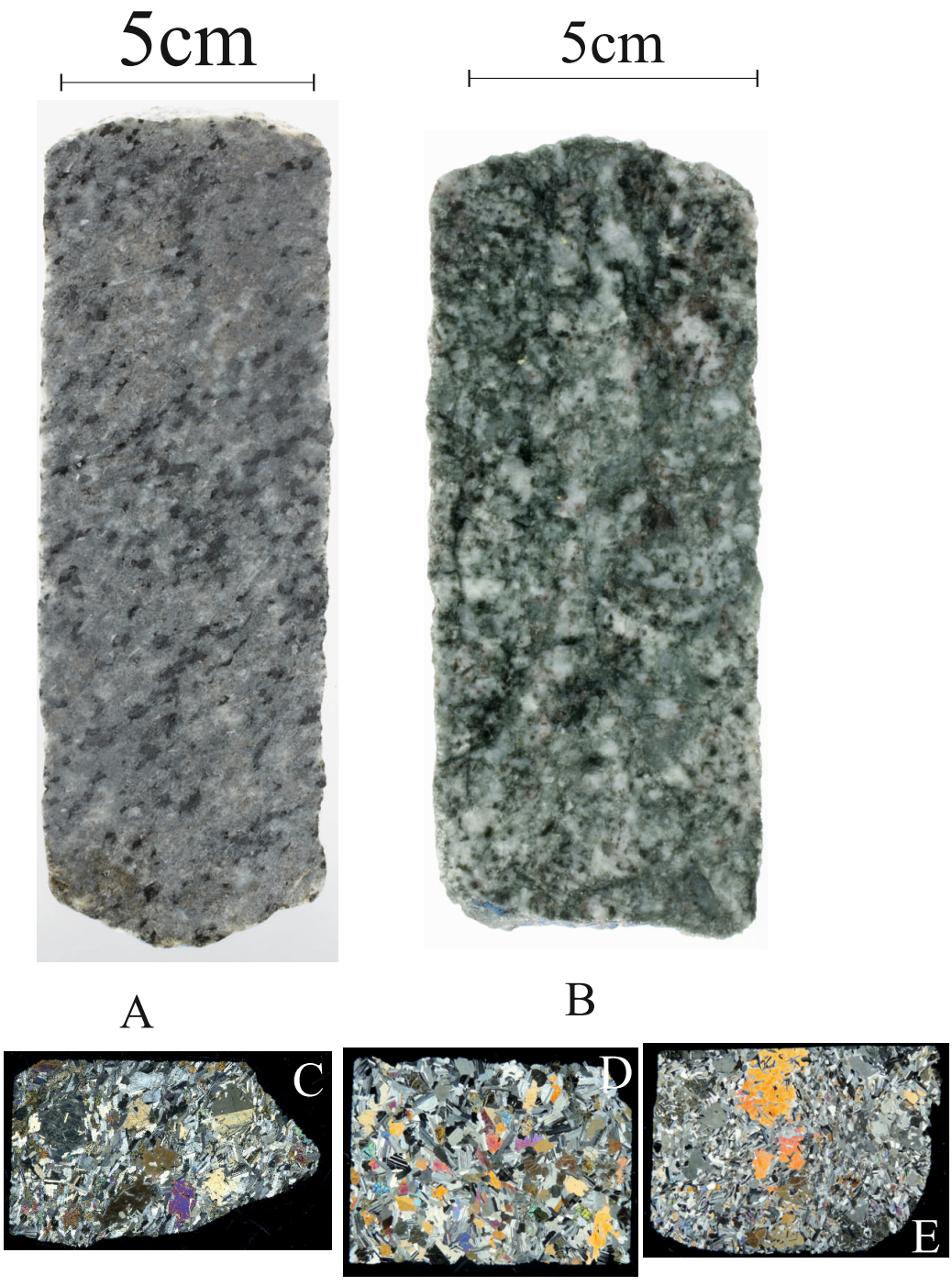


Figure 4.5: Core samples from IODP 345 U1415 J, (A) Opx-ol gabbro, (B) Ol gabbro, Thin section of (C) Oikocryst ol-gabbro, (D) Ol-gabbro, (E) Opx-Ol gabbro

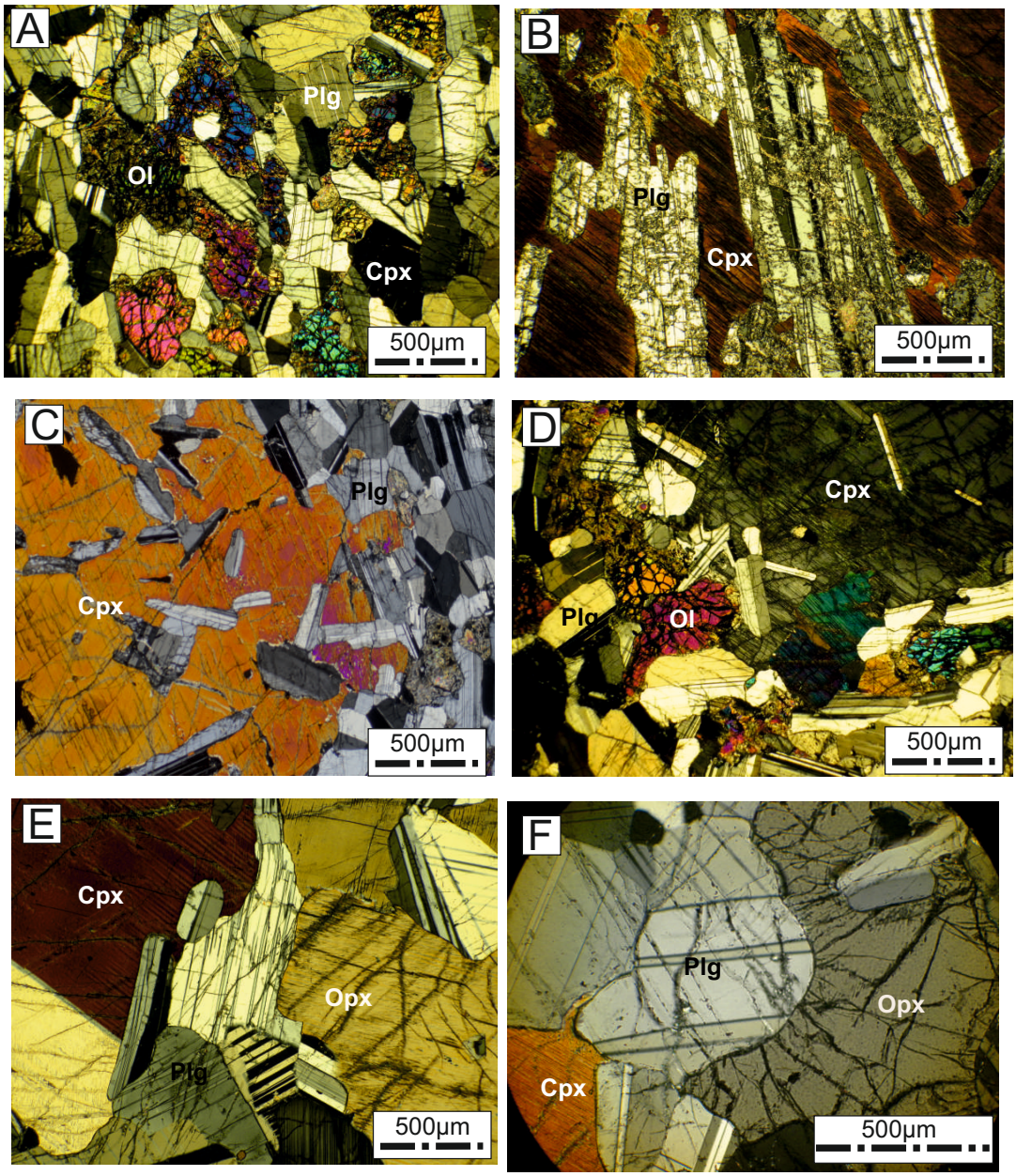


Figure 4.6: Photomicrogharph of lower gabbro samples from Hole U1415 J (A) Olivine present as skeletal in nature, (B) Plagioclase are altered by cholitic mineral along fracture, (C) Ophitic nature of clinopyroxenes, (D) Oikocrystic clinopyroxene encloses olivine and plagioclase, (E) orthopyroxene mainly as oikocryst in reation with plagioclase chadacryst and also (F) prismatic in shape

4.3.2.1 Hole P:

An astonishing observation is the prevalence of orthopyroxene-bearing lithologies, predominately orthopyroxene-bearing olivine gabbros and minor olivine-bearing gabbronorite. It was seen on classical model of fast spreading ridge, that, orthopyroxene should appear in isotropic gabbro at a later stage of crystallization and designated as gabbronorite (Grove et al, AGU, 1992). It should be present as minor interstitial grains in olivine free lithounits. In contrast to Hess Deep we found orthopyroxene rich lithologies from lower part. Presence of orthopyroxene dominated in hole P rather in Hole J. Lithologies obtained from Hole P composed Ol-gabbros were recovered at ~110m deep at reentry holes P. The lower gabbroic series is marked by simple modal layering with variation of grain size on centimeter to decimeter scale like Hole J (Gillis et al; 2013). Gabbroic lithologies are grouped into different units (IODP 345 Scientific repot; 2013), olivine gabbro, Opx-Ol gabbro, cpx-oikocryst gabbro. Varitextured layers of gabbro with ~ 50 cm thick sequence (IODP 345 Scientific repot; 2013), consists of plagioclase ~ 60-70%, olivine ~ 15-20%, Clinopyroxene ~ 15-25% and orthopyroxene 1- 5 %, two of the studied sample consist more than 12% of orthopyroxene. Olivine present as subhedral to euhedral nature with amoeboid or skeletal habit (Fig 4.8.B). Tabular plagioclase often present as chadacrysts enclosed by clinopyroxene (Fig 4.8.D). Also palgiocalse are showing recrystallization texture marked by triple junction and often rounded in shape (Fig 4.8.C). Three types of Opx textures may be distinguished in Opx-bearing olivine gabbros (1) recrystallised corona around olivine (Fig 4.8.E)., (2) exsolution within clinopyroxene (Fig 4.8.G,H). and (3) large prismatic or poikilitic grains (Fig 4.8.F).. Overall texture points to a crystallisation order starting with olivine and plagioclase, and finishing with clinopyroxene and then orthopyroxene. From the Exp. 345 scientific report, it is reported that Orthopyroxene-bearing olivine gabbros present as monogenously to dramatically banded or layered. Banding of these gabbros divided into two broad categories: steeply

dipping, asymmetric and sometimes diffuse leucocratic banding and less common, more regular, gently dipping grain size and modal layering (345 scientific report)

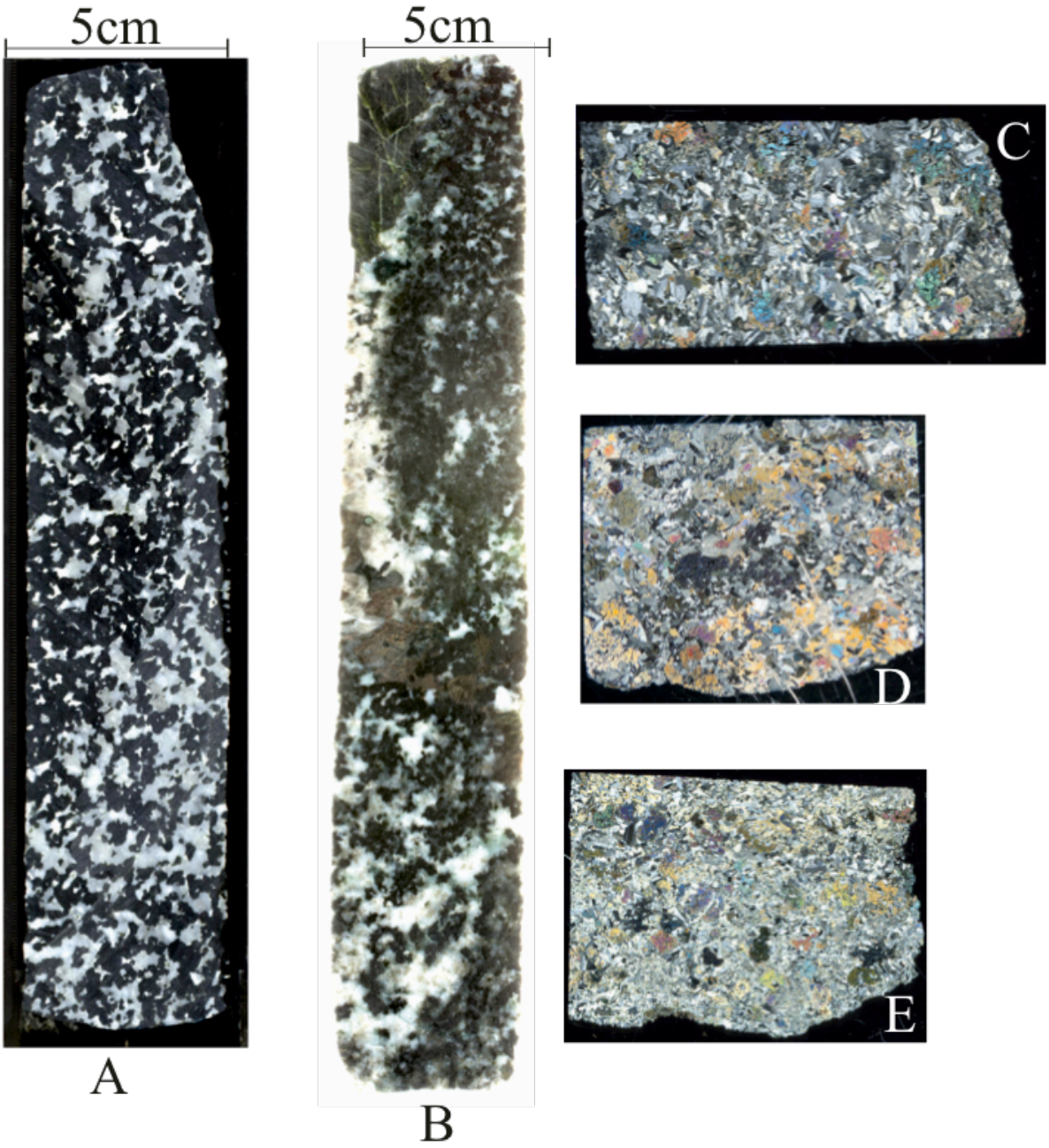


Figure 4.7: Core samples from IODP 345, U 1415 P, (A). Troctolite,(B)Opx-Ol gabbro, Thin section of (C) Troctolite ,(D) Ol-gabbro,(E) Opx-Ol gabbro

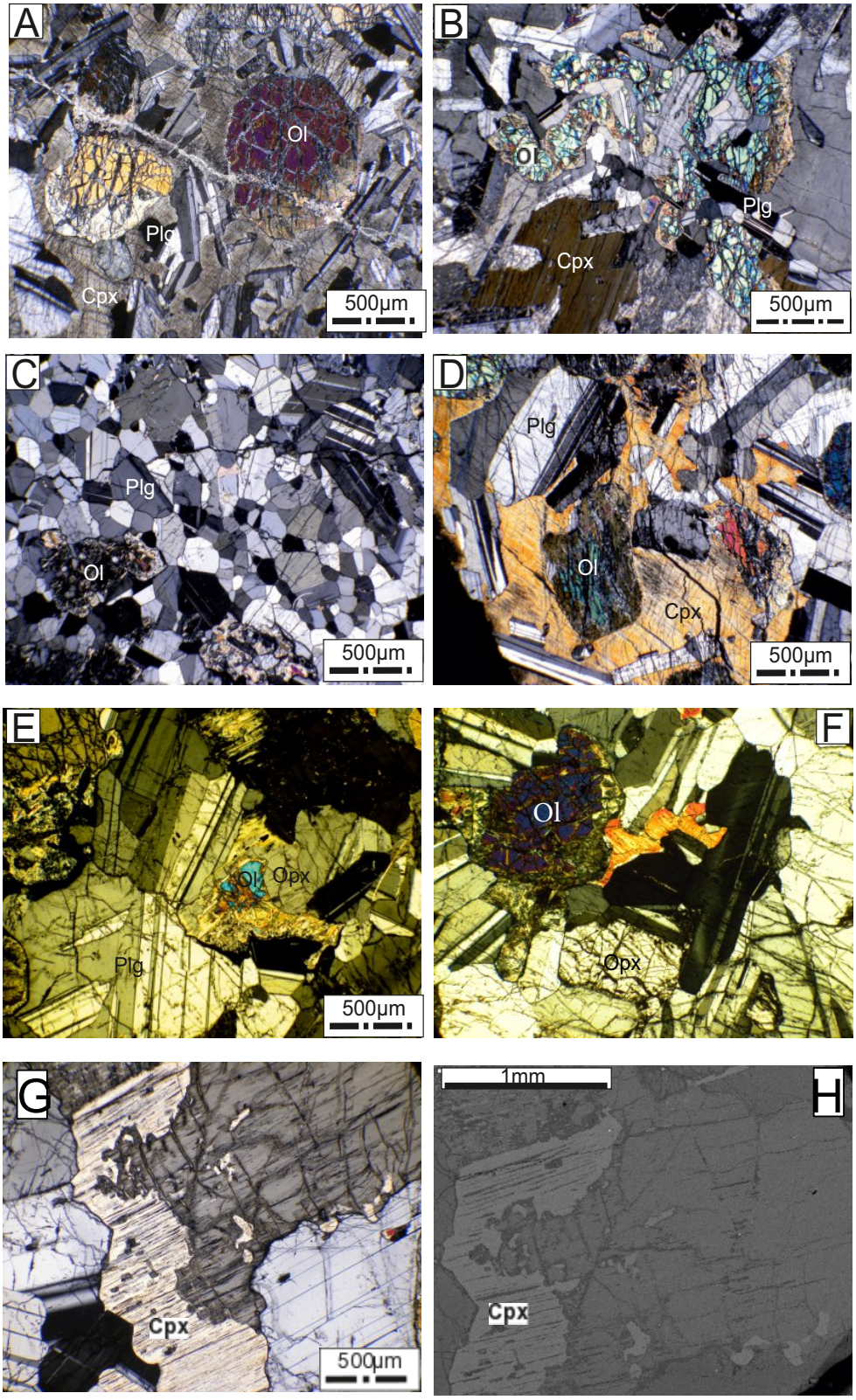


Figure 4.8. Photomicrogharph of lower gabbro samples from U1415P. (A) Typical cumulate texture of Ol-gabbro, (B) Ol shows skeletal nature (C) plagioclase shows recrystalline texture, (D) Cpx encloses lath of plg and rounder ol, (E) Opx present as corona around olivine, (F) Prismatic opx, (G and H) Interfingered relationship of cpx and opx

Chapter 5

5. Mineral Chemistry:

5.1.Chemistry of main mineral content with depth in Hole J and Hole P:

In Fig 5.1 shows the chemical evolution with depth for the main mineral content in Hole J. Along the depth troctolitic rock present all along the column with ol-gabbro, gabbro and gabbronorite at upper 70 mts (IODP 345 scientific report). A few orthopyroxene bearing lithologies present in Hole J (here we have 6 samples). The main minerals, olivine, clinopyroxene, orthopyroxene and anorthite plagioclase are shown with their Mg# content along the depth. For olivine the percentage of Fo content decrease along the depth from bottom to top, from troctolite to gabbroic lithologies. Clinopyroxene Mg# also decrease from bottom to top, as the higher percentage of Mg# (92-90%) is present in troctolite. Both troctolite and gabbroic rocks are showing scatter in a single sample. Presence of orthopyroxene is very low in Hole J and only present in Gabbroic lithologies. Mg# of Opx also decreases from higher depth to lower (85-78%). Much scatter anorthite composition present in troctolitic and gabbroic rock in Hole J and the percentage varies between 95-75% for troctolite and 85-65% for gabbroic rocks.

Fig. 5.2 (A) shows the chemical evolution with depth for the main min content in Hole P. Two series of rock are prominent in this depth column,

- The first series is Troctolitic
- The second series is represented by orthopyroxene bearing ol-gabbros.

The first series present below 70mts. Troctolilic rocks are very rich in Fo (90-84%) content of olivine and having no trend for decreasing concentration along depth. Same behavior can be noted for Mg# of clinopyroxene and anorthite content in plagioclase. Clinopyroxene Mg# has little scatter for some samples, varies between 92-85% and narrower range in plagioclase anorthite content, i.e., 90-88%. Orthopyroxene bearing lithologies (ol-gabbro and opx-ol gabbro) present above 70mts. Fo content of olivine

slightly get enrich in upper section. Mg# of clinopyroxenes are much scatter (80-92%)than the clinopyroxene present in troctolite. Similarly anorthite content of plagioclase much scatters in gabbroic lithologies (65-90%) and one single sample cover the whole range of concentration. HoleP troctolite also devoid of orthopyroxene and having narrow Mg# scatter than clinopyroxene and plagioclase. Only upper most part around 20mts, Mg# getting increase from 84 to 88%.

Fig 5.2 (B) shows the chemical evolution with depth for the only orthopyroxene in Hole P for Ol-gabbro and Opx-ol gabbro.. The Mg# remained in the first column and, in the order, TiO_2, Al_2O_3 and Cr_2O_3. The vertical trend is observable for other Opx chemical characteristics. Mg# is homogeneous in single sample but large scatters are observed for Ti, Al, Cr; one single sample cover the whole range of concentration. In accordance with the slight increase in Mg# at the uppermost 20m, Ti slightly decreases and Cr and Al increase.

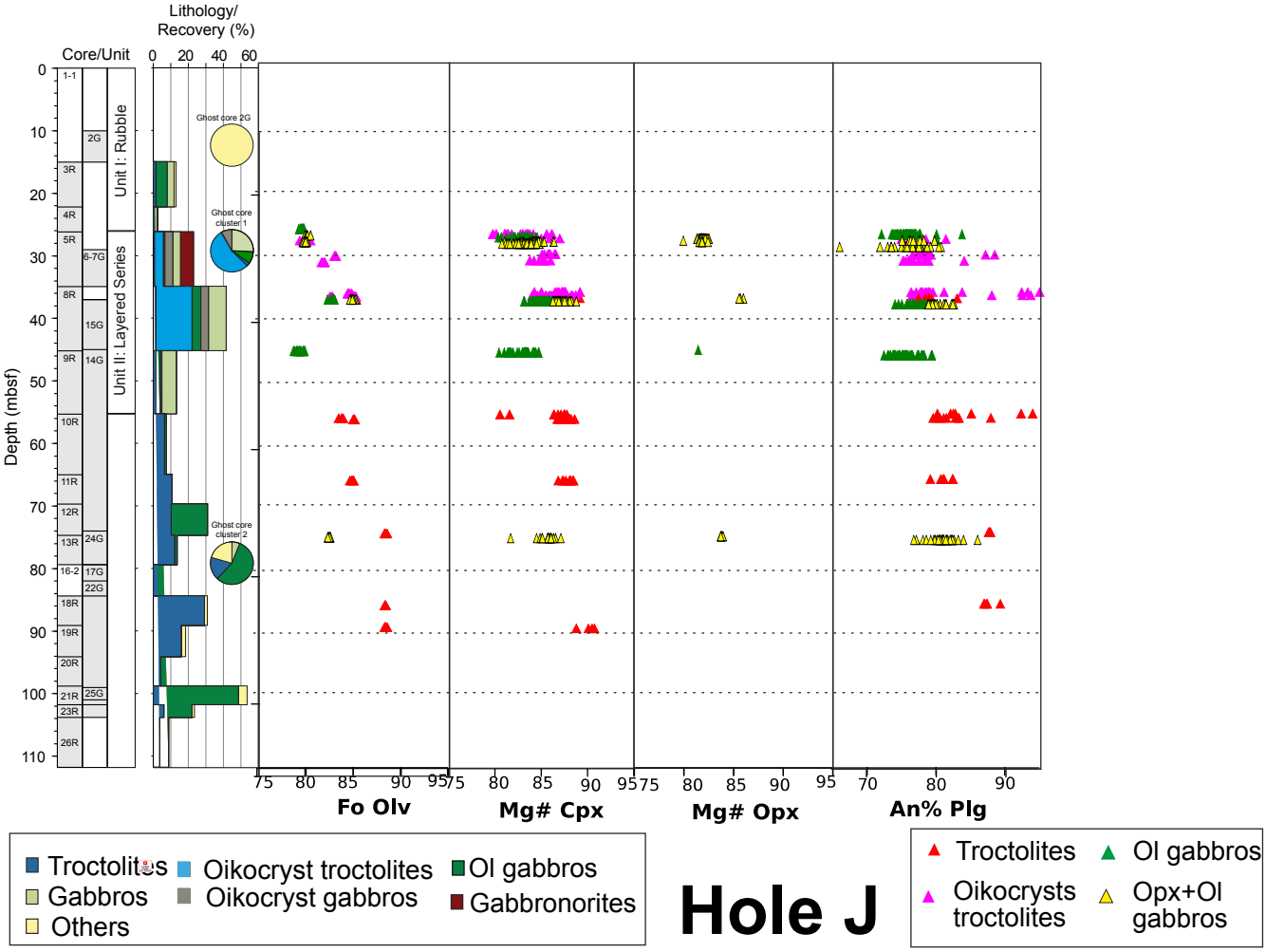


Figure 5.1: Downhole variation of the mineral chemistry of Hole J. It is notable that presence of Opx is less significant and the troctolite rest over altered unit (IODP report 345)

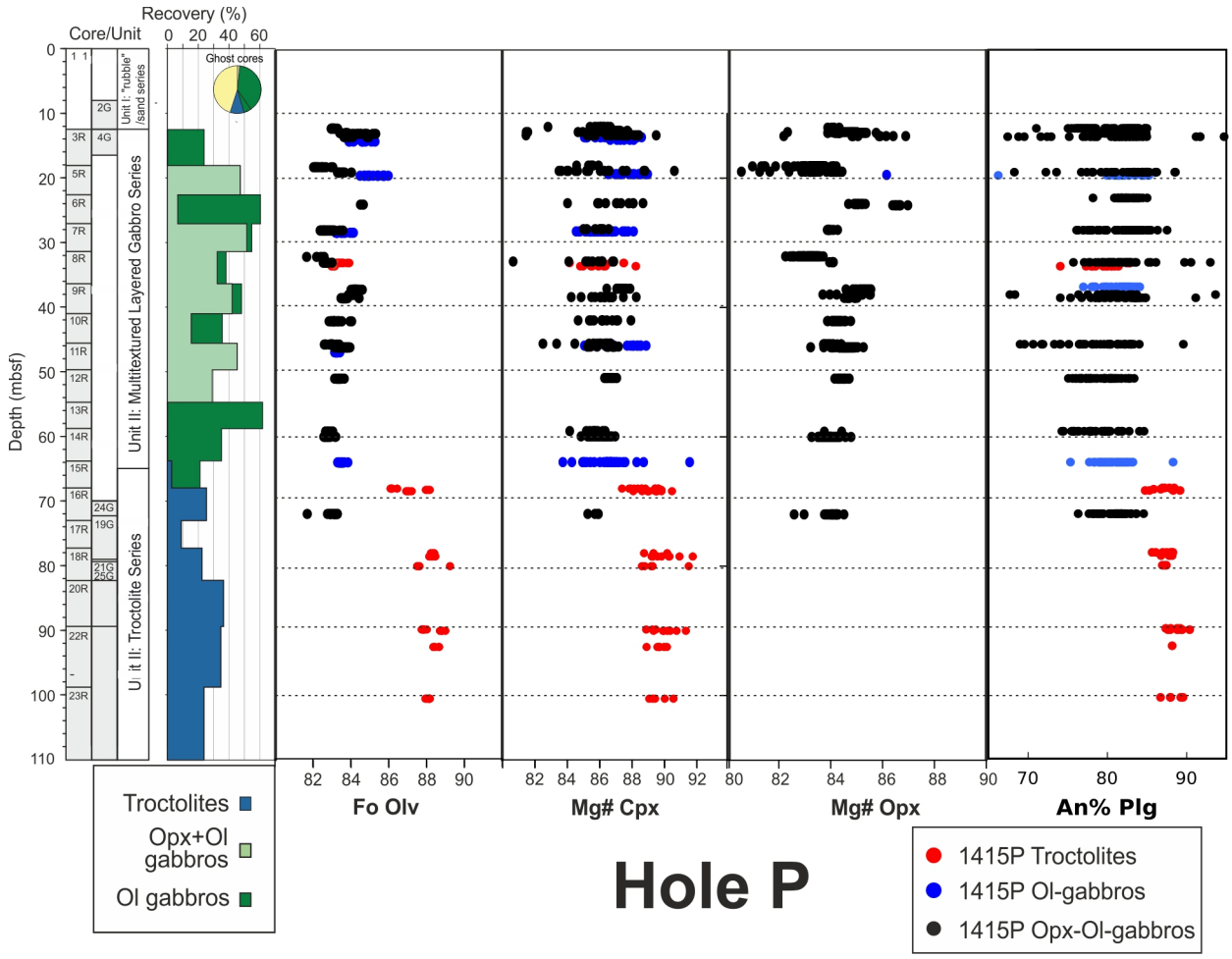


Figure 5.2 (A): Downhole variation of the mineral chemistry of Hole P. It is notable that presence of Opx is more than Hole J and the olivine gabbro is much pronounced and rest over troctolititic unit (IODP report 345)

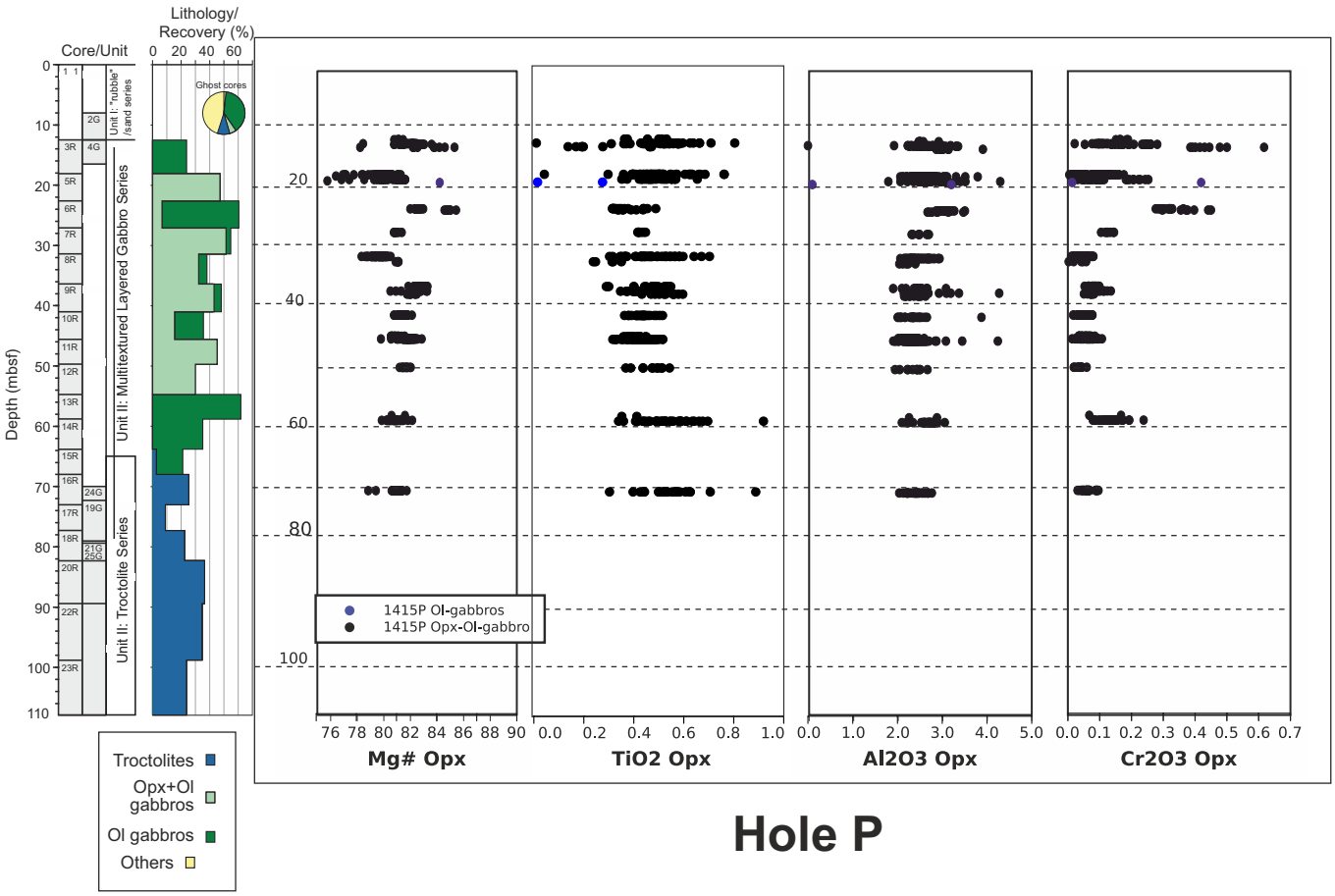


Figure 5.2 (B): Downhole variation of the mineral chemistry of Hole P. It is notable that presence of Opx is more than Hole J and the olivine gabbro is much pronounced and rest over troctolititic unit (IODP report 345)

5.2. Major element chemistry:

5.2.1. Plagioclase:

Plagioclase from Hess Deep ridge has wide compositional range from different kind of lithologies, form troctolite, ol-gabbro, opx-ol gabbro, and in the upper gabbro. Hole J and P plagioclase shows normal, reverse, patchy and oscillatory zoning. Anorthite contains in upper gabbro from ODP leg 147, ranges from 65-76%. Rubbles from 1415 holes range from 80-85%. Although more enriched samples are troctolites but opx-ol gabbros both for Hole P and Hole J, 65-90% and 65-80% respectively (Fig5.3 D).

Anorthite vs. Mg# of coexisting clinopyroxene show a decreasing Mg# with Anorthite from troctolitic series to lower gabbroic lithologies then upper gabbro. Where upper gabbro and rubbles along with Hole J are having trend, Hole P gabbros are making a cloud rather following the trend (Fig5.3 D).

5.2.2. Olivine:

Olivine geochemistry (Fig.5.3 A) of the upper crustal gabbros chemistry has lower value of Fo content in respect to other lithologies. It ranges 62-68% in Fo content and 0.02-0.1% in NiO.

Rubbles collected from IODP Exp. 345 are much enriched than upper gabbro from ODP leg 147. Their Fo content varies from 75-80% with higher NiO content of 0.08-0.15%.

Hole J olivine samples are following the trend and enriched than the rubbles with Fo content 80-85% and NiO content 0.7-0.18%.(Fig. 5.3 B)

Hole P ol-gabbro and opx-ol gabbro having narrow range of Fo content particularly in opx-ol gabbro (82-85). Ol gabbros are also having same range but few sample having Fo

content more than 85%. NiO content also much higher than Hole J, 0.1-0.2% with samples of ol-gabbro having high Fo have more than 0.2% of NiO contain (Fig. 5.3 B)

All samples from Hole J and P show enriched characteristics as Olv Fo content is always over 80. Although the most enriched samples shown on Olv Fo vs NiO are troctolites and Opx bearing lithologies are regrouped after troctolites within the general trend (Fig. 5.A,B).

5.2.3. Clinopyroxene:

Clinopyroxene mineral chemistries are shown in figure 5.4. Upper gabbro clinopyroxene have wide range in Mg# from 70-92 with TiO_2 ranges from 0.02-0.9% (Fig. 5.4 A), Cr_2O_3 from 0.01-1.2% (Fig. 5.4 B), and Al_2O_3 1.2-2.5% (Fig. 5.4 C). TIO_2 vs. Mg# of clinopyroxene shows an increasing trend of titanium concentration with decreasing Mg#, an increase trend of Cr_2O_3 and Al_2O_3 with increasing Mg#.

Rubbles from 1415 Holes also having wide range of Mg# in Cpx, 78-88% with TiO_2 ranges from 0.01-0.8% (Fig. 5.4 A), Cr_2O_3 from 0.02-0.8% (Fig. 5.4 B) and Al_2O_3 from1-4% (Fig. 5.4 C). The major element are also showing a relationship with values of Mg#. TiO_2 increases with decreasing Mg#, Cr_2O_3 and Al_2O_3 increases with increasing Mg# of Cpx.

Hole J clinopyroxene contain higher value than ODP 147 samples and almost same values of rubbles in terms of TiO_2, Cr_2O_3 and Al_2O_3, but having higher range of Mg# that varies between 80-88% (Fig 5.4 A, B,C).

In contrast Hole P show narrow value ranges for Mg# (~85-88%) but a large variation in TiO_2 (0.01-1.5%) (Fig. 5.4 A) and Cr_2O_3 (0.02-1%) (Fig. 5.4 B) Cpx. Al_2O_3 contain is restricted between 1-4% in major data cloud and some of the gabbroic samples having Al_2O_3 contain upto 7% (Fig. 5.4 C). Cpx Ti content is high in troctolites but the highest values are observed in Opx-bearing lihtologies.

Comparision with previous gabbroic lithounit from EPR data show a trend of decreasing Mg# with increasing TiO_2 and decreasing Al_2O_3 (Fig. 5.4 D). The data cover along the trend of lower crustal to upper crustal gabbro units.

Cpx Mg# vs Ol Mg# in Fig 5.5 shows, equilibrium values between coexisting ol and cpx by the solid line and the dashed lines define equilibrium composition with uncertainties of 0.02 for both kd values of minerals. Here from troctolite to Hole P and then Hole J gabbros are following the line of equilibrium.

5.2.4. Orthopyroxene:

Orthpyroxene mineral chemistries are shown in figure 5.5. Upper gabbro orthopyroxene have range in Mg# from 68-74% with TiO_2 (Fig. 5.6 A) ranges from 0.2-0.5%, Cr_2O_3 (Fig. 5.6 B) from 0.01-1%, and Al_2O_3 0.8-1.5% (Fig. 5.6 C). Cr_2O_3 and Al_2O_3 vs. Mg# of orthopyroxene shows an increasing trend of increasing Mg#.

Rubbles from 1415 Holes having wide range of Mg# in Opx, 74-83% with TiO_2 ranges from 0.2-0.4% (Fig. 5.6 A), Cr_2O_3 from 0.01-0.2% (Fig. 5.6 B) and Al_2O_3 from1-1.5% (Fig. 5.6 A). The major element are also showing a relationship with values of Mg#. TiO_2, Cr_2O_3 and Al_2O_3 increases with increasing Mg# of Opx.

Hole J orhtoyroxene are present very few in amount. But has much higher value than samples from ODP leg 147 and rubbles. TiO_2 values for Hole J orthopyroxene has a range from 0.2-0.5% (Fig. 5.6 A), Cr_2O_3 its 0.01-0.6% (Fig. 5.6 B) and Al_2O_3 1-1.2% with 82-84% of Mg# (Fig. 5.6 C).

A large scatter in TiO_2 present in Opx in Hole P ol-gabbro and opx-ol gabbro (0.2-0.85%) with narrow range of Mg# (83-87%) (Fig. 5.6 A). Also Cr_2O_3 having large scratter from 0.01-0.6% (Fig. 5.6 B) and Al_2O_3 with 1-2.5% (Fig. 5.6 C). One sample consist total range of TiO_2 with almost no variation in Mg#. This feature is particular in case of Hole P, and is thus very different from Hole J chemistry.

Comparison with previous gabbroic lithounit from EPR data show a trend of decreasing Mg# with increasing TiO_2 and decreasing Al_2O_3 (Fig. 5.6 D). A very few opx analysis make this comparison difficult but make this present study more obvious as there are very few previous work done with opx-bearing lithologies from lower crust.

5.2.5: Spinel:

In the triangular plot (Fig 5.7 A), is the spinel chemistry shows mostly Fe-chromite to Al-chromite composition and a few Cr-spinel in Hole P gabbros. There is a trend present from Al-chromite to iron enrichment for both of ol gabbros and opx-ol gabbros.

Spinel TiO_2 vs Fo content of coexisting olivine of hole P showing a narrow values for Fo content rather they have vertical trend in wide range of TiO_2 from 0.02-2.6% (Fig: 5.7 B).

Cr# vs Mg# of Hole P Ol-gabbro and opx-Ol gabbro shows a trend with increasing Mg# with decreasing Cr# (Fig: 5.7 C).

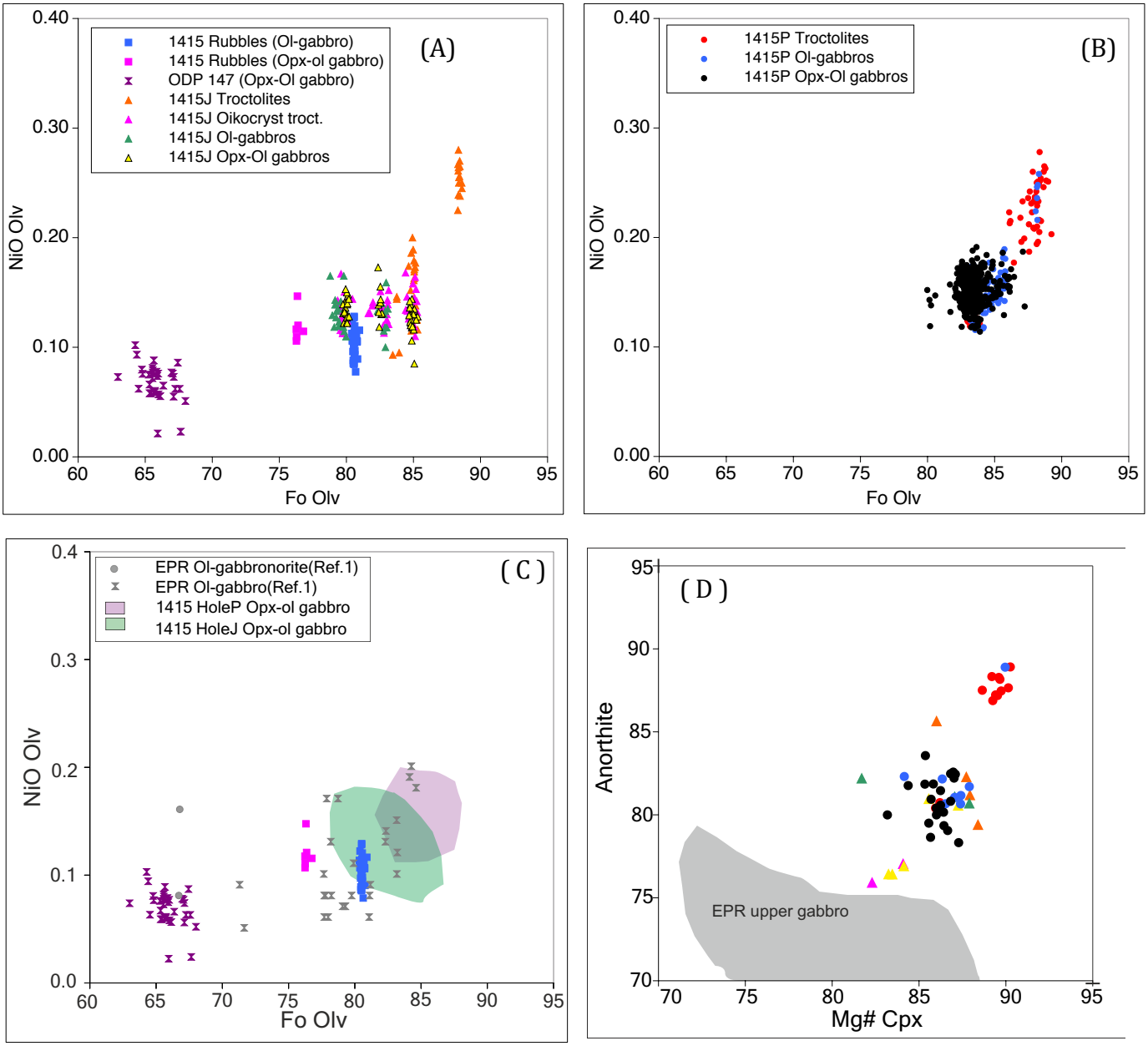
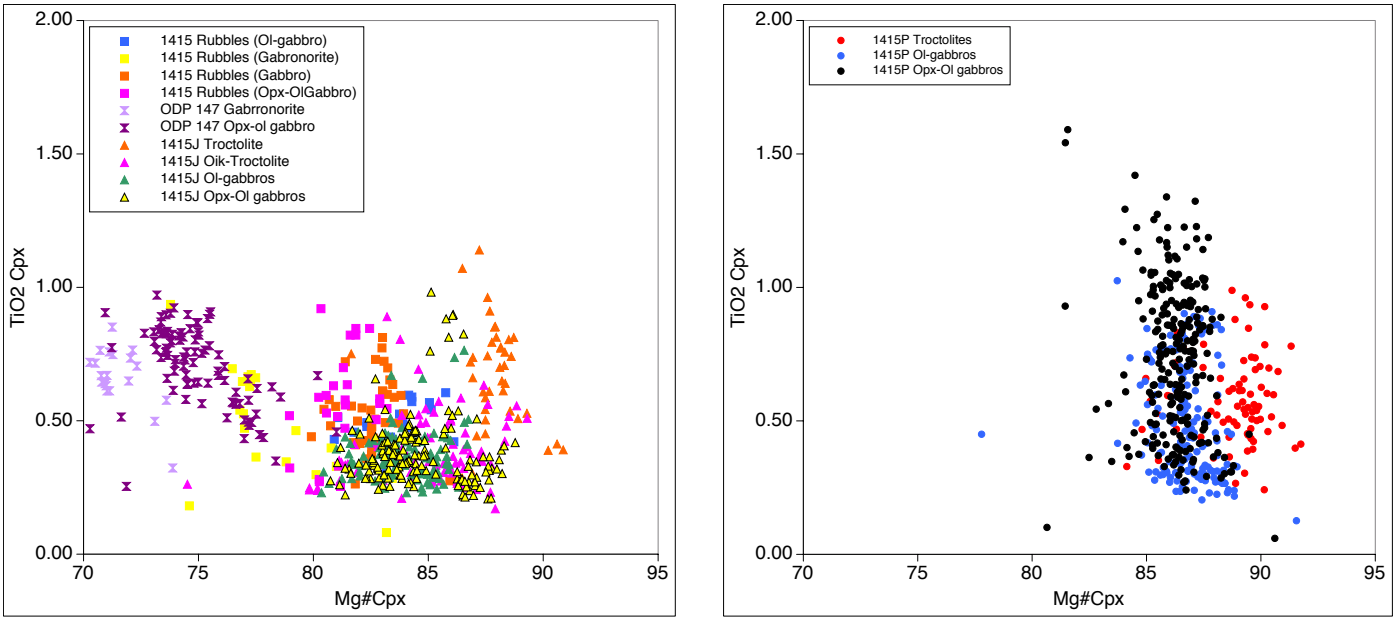


Figure 5.3:Mineral chemistry shown by Major phases;A) Ol NiO-Fo for all the types of rocks; upper gabbro collected from ODP Leg 147, rubblrs from Exp. 345, and from Hole U1415J, (B) Ol NiO-Fo for all the types of rocks; from Exp. 345 Hole U1415P (C) Upper gabbro chemistry along with previous data from EPR gabbros to make comparison (D) An vs. Mg# Cpx from Different holes and different rock types. (Symbols and colours are the same as Fig. A and B)

Reference 1: Natland and Dick, 1996; Reference 2: Lissenbarg et al., 2013

(A)



(B)

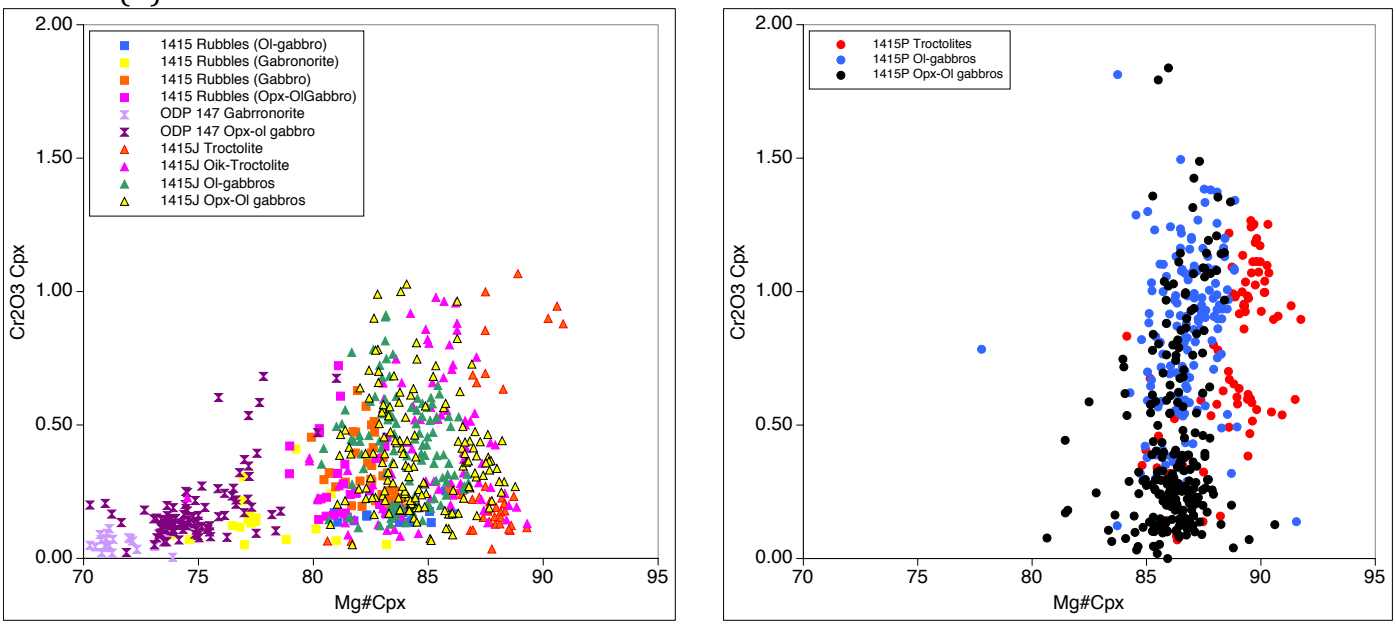
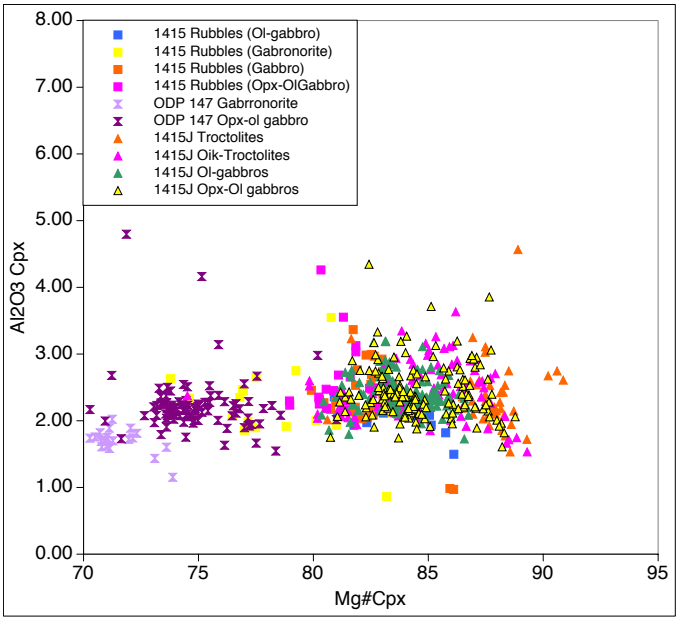
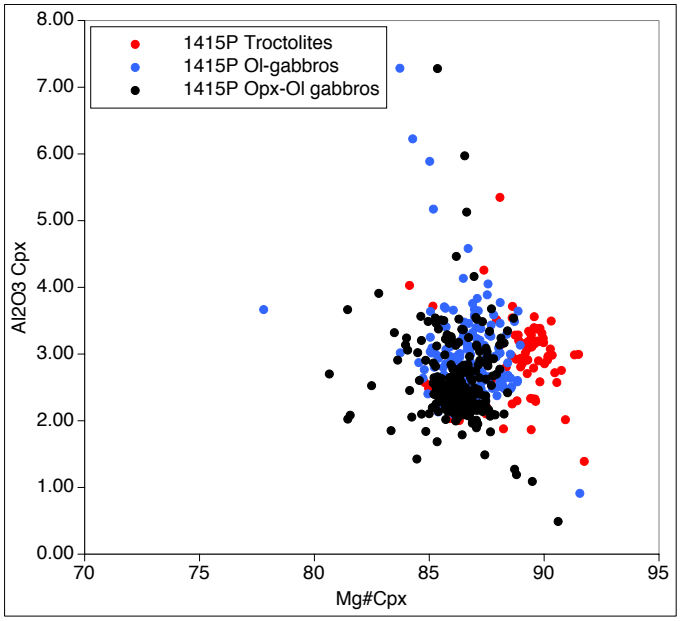


Figure 5.4: Mineral chemistry shown by Major phases; A) Cpx TiO2 vs Mg# for Exp. 345 Hole U1415J and upper gabbros from ODP Leg 147 and rubbles from Exp. 345, Cpx TiO_2 vs Mg# for Hole U1415P (B) Cpx Cr_2O_3 vs Mg# for Exp. 345 Hole U1415J and upper gabbros from ODP Leg 147 and rubbles from Exp., Cpx Cr_2O_3 vs Mg# for Hole U1415P

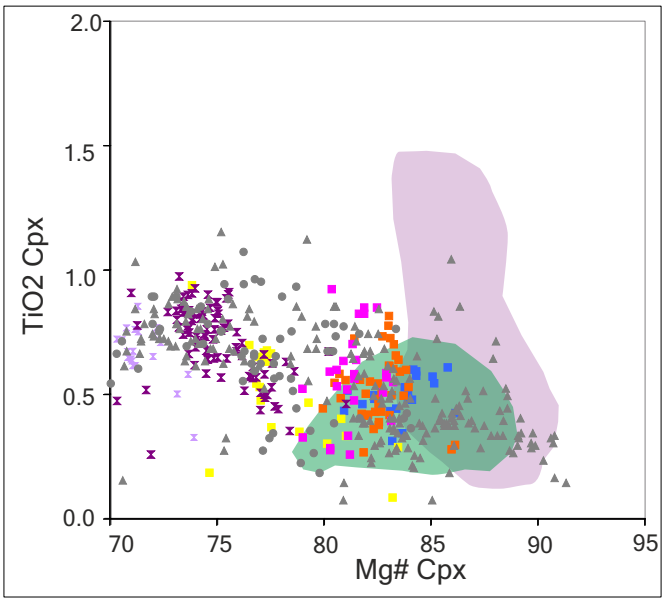
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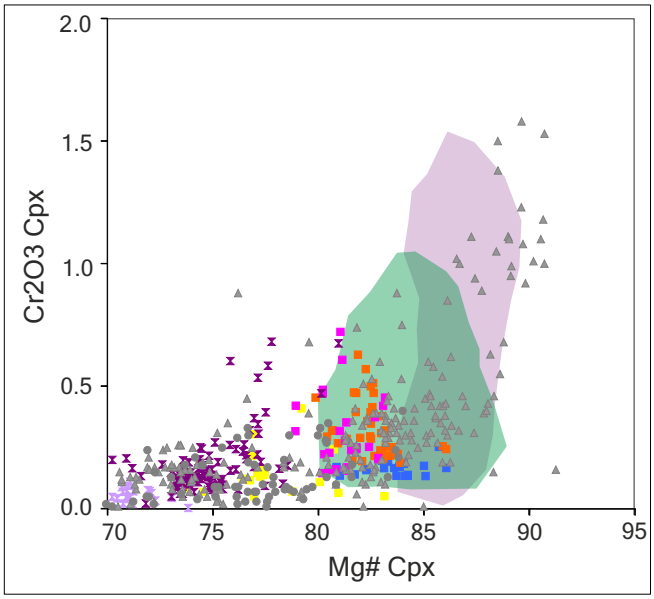
(C)





(D)





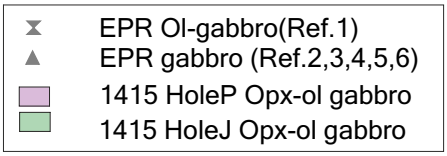


*Figure 5.4:Mineral chemistryshown by Major phases;(C)Cpx Al_2O_3 vs Mg# for Exp. 345 Hole U1415Jand upper gabbros from ODP Leg 147 and rubbles from Exp. 345, Cpx Al2O3 vs Mg#for Exp. 345 Hole U1415P(D) Upper gabbro chemistry along with previous data from EPR gabbros to make comparison ((Symbols and colours are the same as Fig. C) Reference 1: Natland and Dick, 1996; Reference 2: Lissenbarg et al., 2013Reference 3: Coogan et al., 2002; Reference 4: Arai et al., 1996, Reference 5: Dick and Natland, 1996; Reference6: Miller*et al.,*1996*

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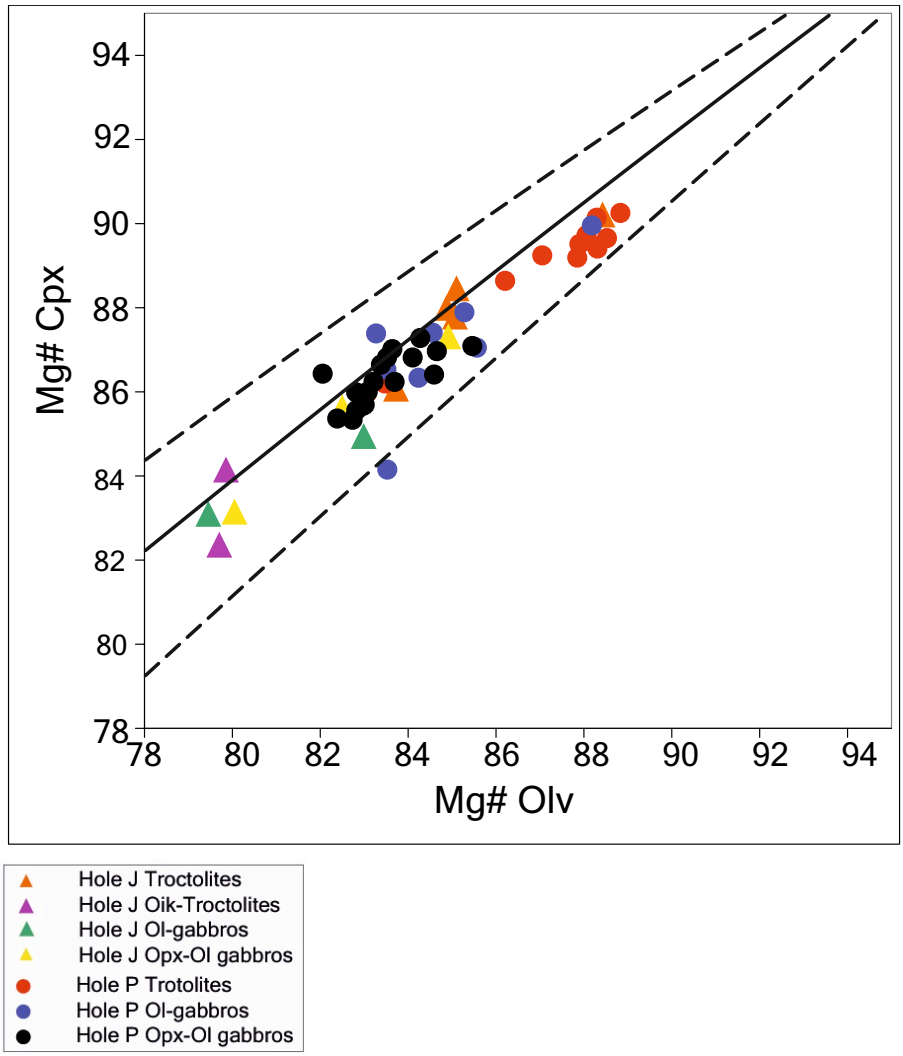
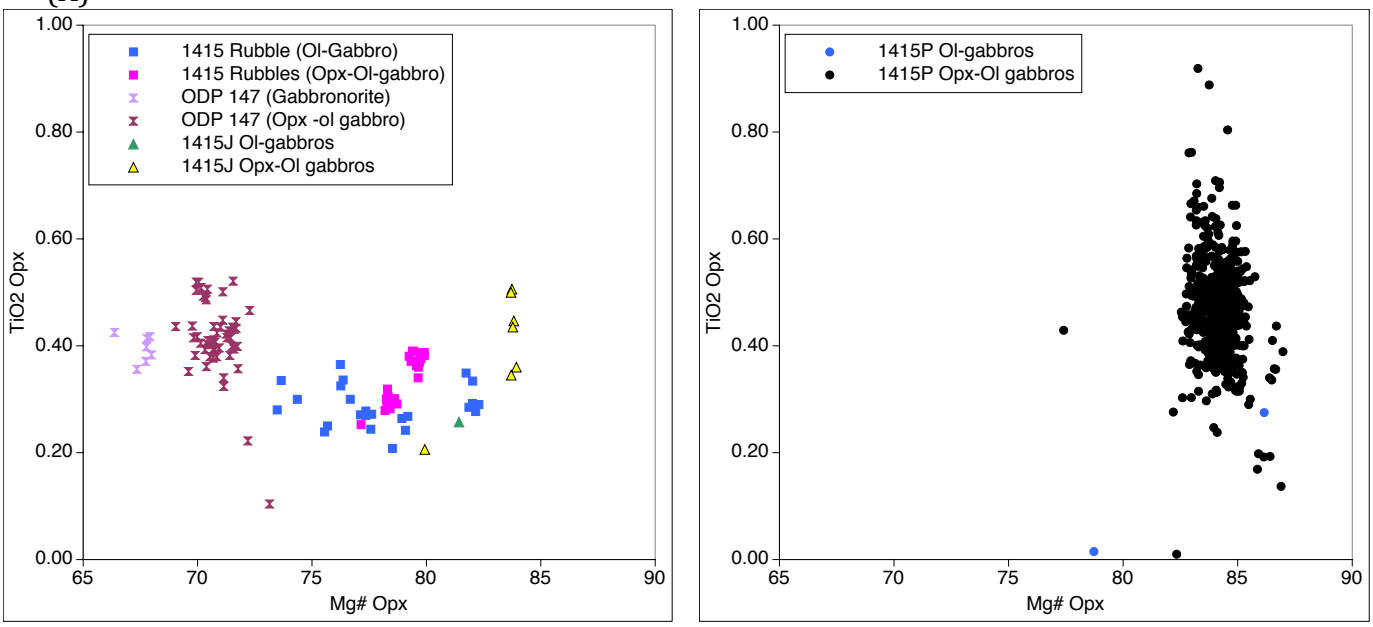


Figure 5.5: Mineral chemistry shown by Major phases; Cpx Mg# vs Ol Mg# , the solid line illustrates equilibrium values between ol and cpx , the dashed lines define equilibrium composition with uncertainties of 0.02 for both kd values of minerals.

(A)



(B)

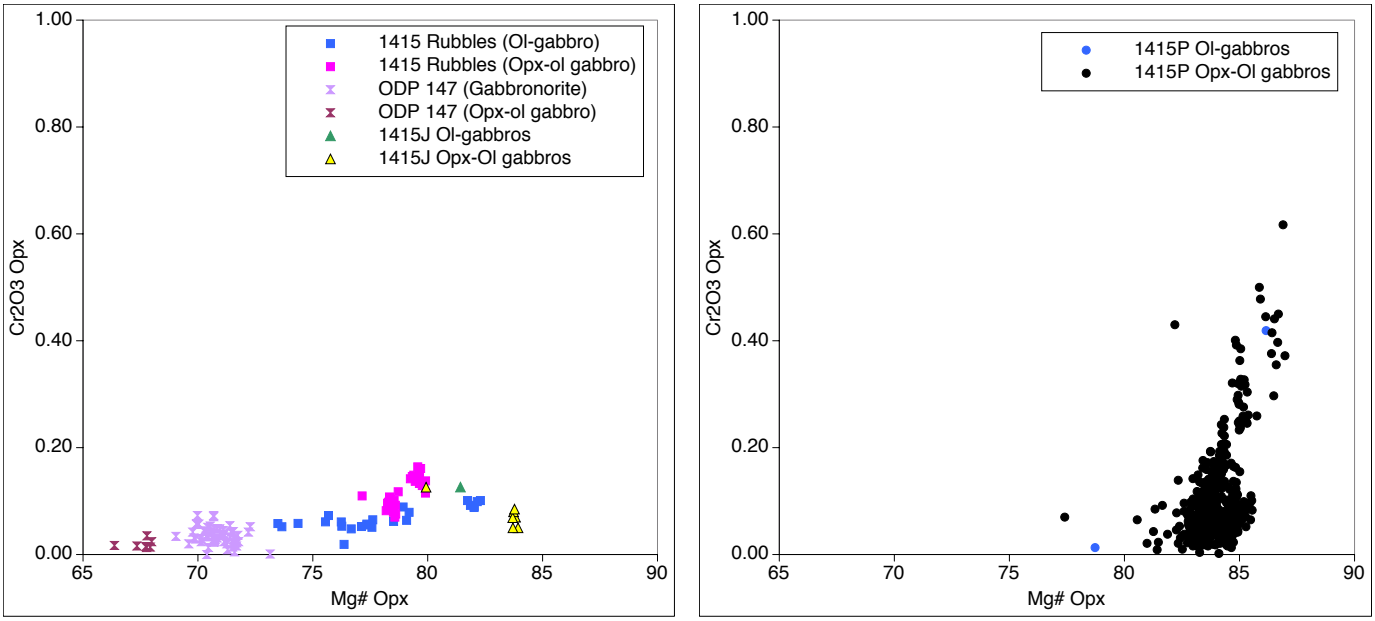


Figure 5.6: Mineral chemistry shown by Major phases; A) Opx TiO_2 vs Mg# for Exp. 345 Hole U1415J and upper gabbros from ODP Leg 147 and rubbles from Exp. 345, Opx TiO_2 vs Mg# for Hole U1415P (B) Opx Cr2O3 vs Mg# for Exp. 345 Hole U1415J and upper gabbros from ODP Leg 147 and rubbles from Exp. Opx Cr_2O_3 vs Mg# for Hole P.

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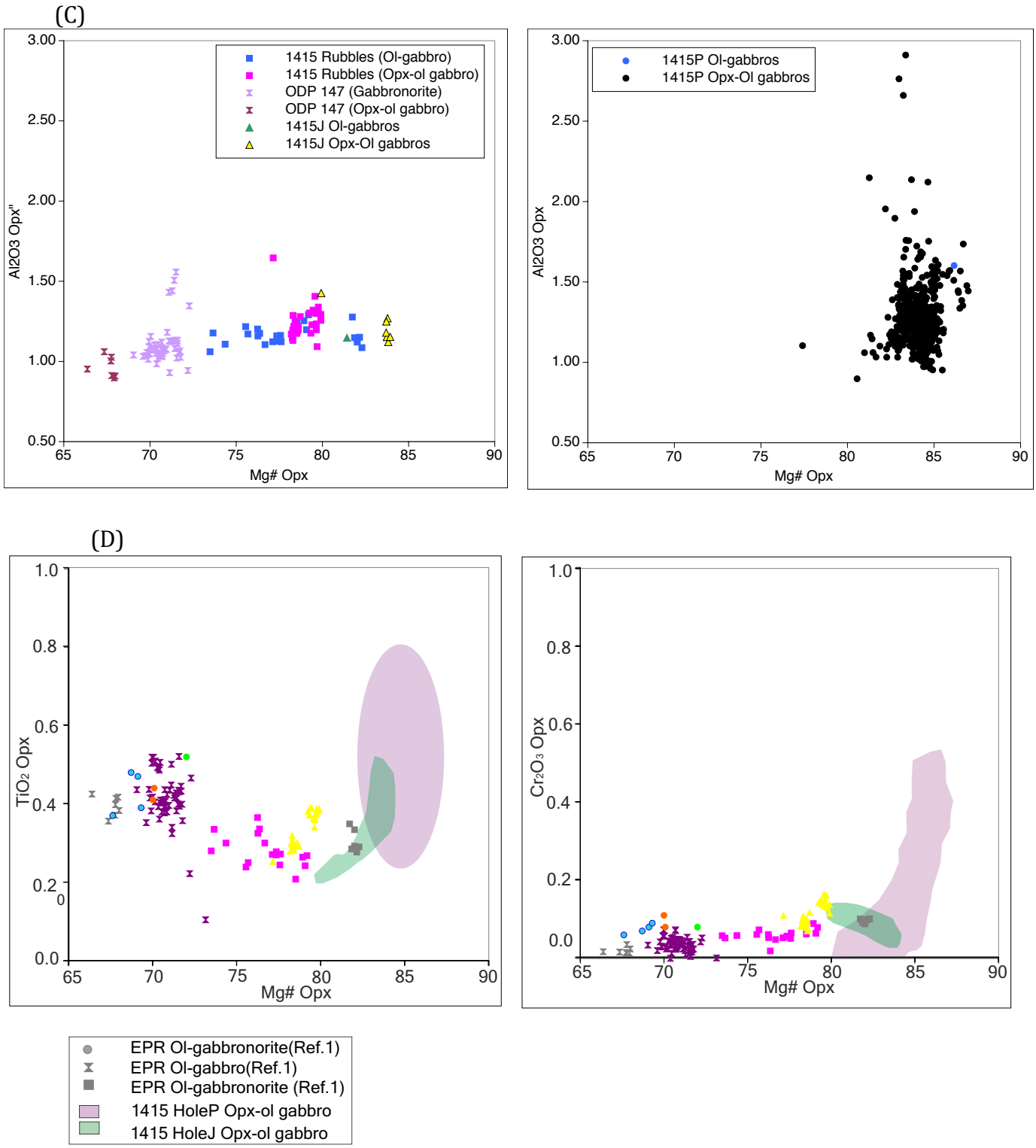


Figure 5.6: Mineral chemistry shown by Major phases; (C) Opx Al_2O_3 vs Mg# for Exp. 345 Hole U1415J and upper gabbros from ODP Leg 147 and rubbles from Exp. 345, Opx Al2O3 vs Mg# for Exp. 345 Hole P; (D)Upper gabbro chemistry along with previous data from EPR gabbros to make comparison (Symbols and colours are the same as Fig. C)

Reference 1: Natland and Dick, 1996; Reference 2: Lissenbarg et al., 2013

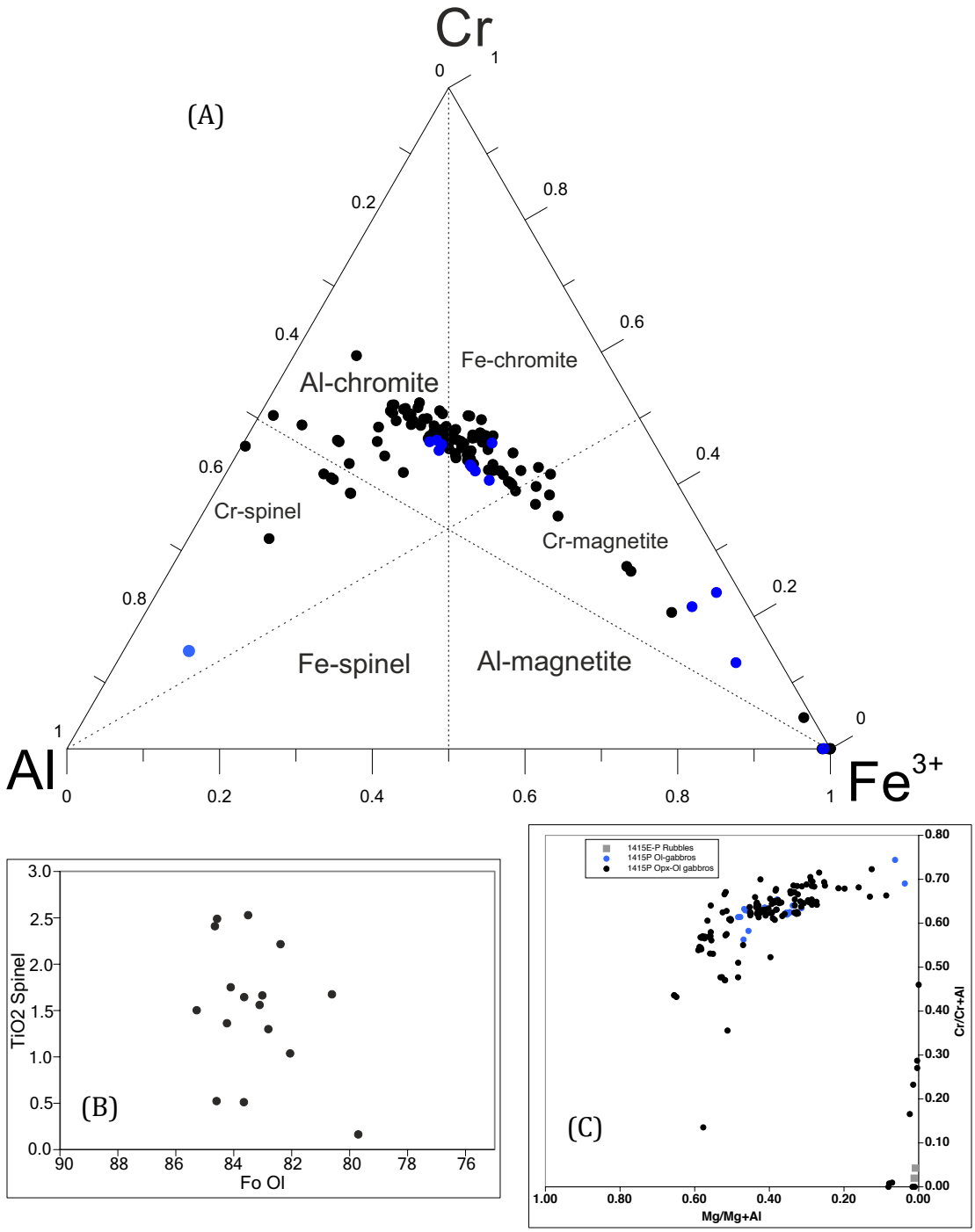


Figure 5.7. (A) Cr-Al-Fe triangular variation digram to show the composition of spinel present in Hole P Ol-gabbro and Opx-Ol gabbro. (B) TiO2 Spinel vs. Fo content of coexisting olivine Opx bearing lithogies show vertical trend of TiO2 variation, (C) Mg# Vs Cr# of Hole P lithologies with two samples from Upper gabbro.

5.3. Trace element:

5.3.1. Plagioclase:

Plagioclase trace element concentrations are given in Annex. The opx-ol gabbro samples from Hole P and J shows same trace element pattern for Chondrite Normalized, N-MORB normalized and Primitive mantle Normalized pattern, with positive europium anomaly with decreasing concentration from LREE to HREE (Fig 5.8 A). The concentration of primitive mantle normalized value of Cerium, Praseodymium, Lead and Neodymium vs. anorthite content of plagioclase show increasing trend with increasing anorthite (Fig. 5.9 A, B, C, D). Only one sample from Hole P having very differnent concentration and this sample is also highly enrich in Ti concentration.

5.3.2. Olivine:

Olivine in opx-ol gabbro samples from Hole P and J shows same trace element pattern for Chondrite Normalized, N-MORB normalized and Primitive mantle Normalized pattern. Only two samples from Hole P are showing higher enrichment of REE and are out of main data cloud, those are marked as blue line. The concentration of Chondrite normalized value of Hole P are compared with troctolite data from Exp. 345, and it the enriched samples and a few samples from general data cloud are showing same composition of troctolite. Only one sample from Hole P having very different concentration and this sample is also highly enrich in Ti concentration. Olivine has very steep in HREE slope in general, such that concentrations in Ytterbium, Thulium, Erbium, Holmium And Terbium. Cerium, Zirconium, Srontium also strongly depleted. The concentration primitive mantle normalized concentration of Lutetium, Ytterbium and Holmium vs. Fo content of olivine shows no correlation rather higher value of REE has Lower value of Fo content in Hole P olivine (Fig. 5.9 E, F, G)

5.3.3. Clinopyroxene:

Clinopyroxene in opx-ol gabbro samples from Hole P and J shows little differnt trace element pattern for Chondrite Normalized, N-MORB normalized and Primitive mantle Normalized pattern. Hole P sample are showing two types REE pattern, one, having higher europium anomaly marked as red and other samples have relatively low europium anomaly. The last samples are same as Hole J samples with almost flat Eu anomaly (Fig 5.8 C). Other than these the pattern is general. The concentration primitive mantle normalized concentration of Eu/Eu* vs. Mg# of coexisting clinopyroxene shows linear trend with increament of Mg#. Other than this, Ytterbium, Titanium and Zirconium has no such correlation rather higher value of REE has Lower value of Mg# content in Hole P clinopyroxene (Fig. 5.9 H, I, J)

5.3.4. Orthopyroxene:

Orthopyroxene in opx-ol gabbro samples from Hole P and J shows same trace element pattern for Chondrite Normalized, N-MORB normalized and Primitive mantle Normalized pattern, with strong negative europium anomaly with increasing concentration from LREE to HREE (Fig 5.8 D). Only two point from same sample shows very high enrichment, which are also high in titanium concentration. The concentration of primitive mantle normalized value of Cerium, Praseodymium, Neodymium and Zirconium vs. Mg# content of orthopyroxene show no correlation (Fig. 5.9 L, M, N, O). Only one sample from Hole P having very different concentration, which is also highly, enrich in Ti concentration.

(A)

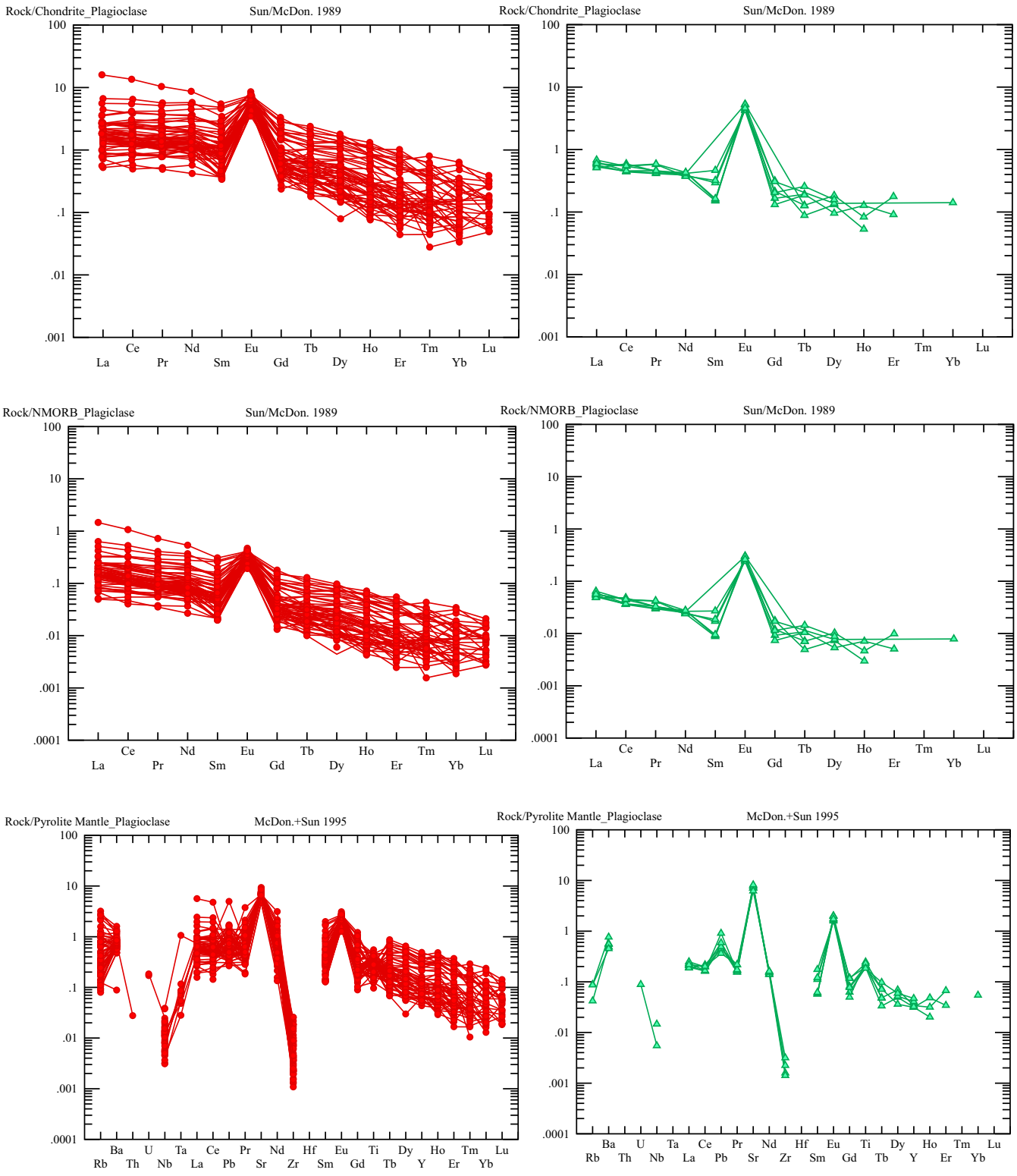


Figure 5.8: (A) REE (normalized in Chondrite and N-MORB) and trace element concentration (Primitive mantle) of Plagioclase for Hole P and Hole J.

(B)

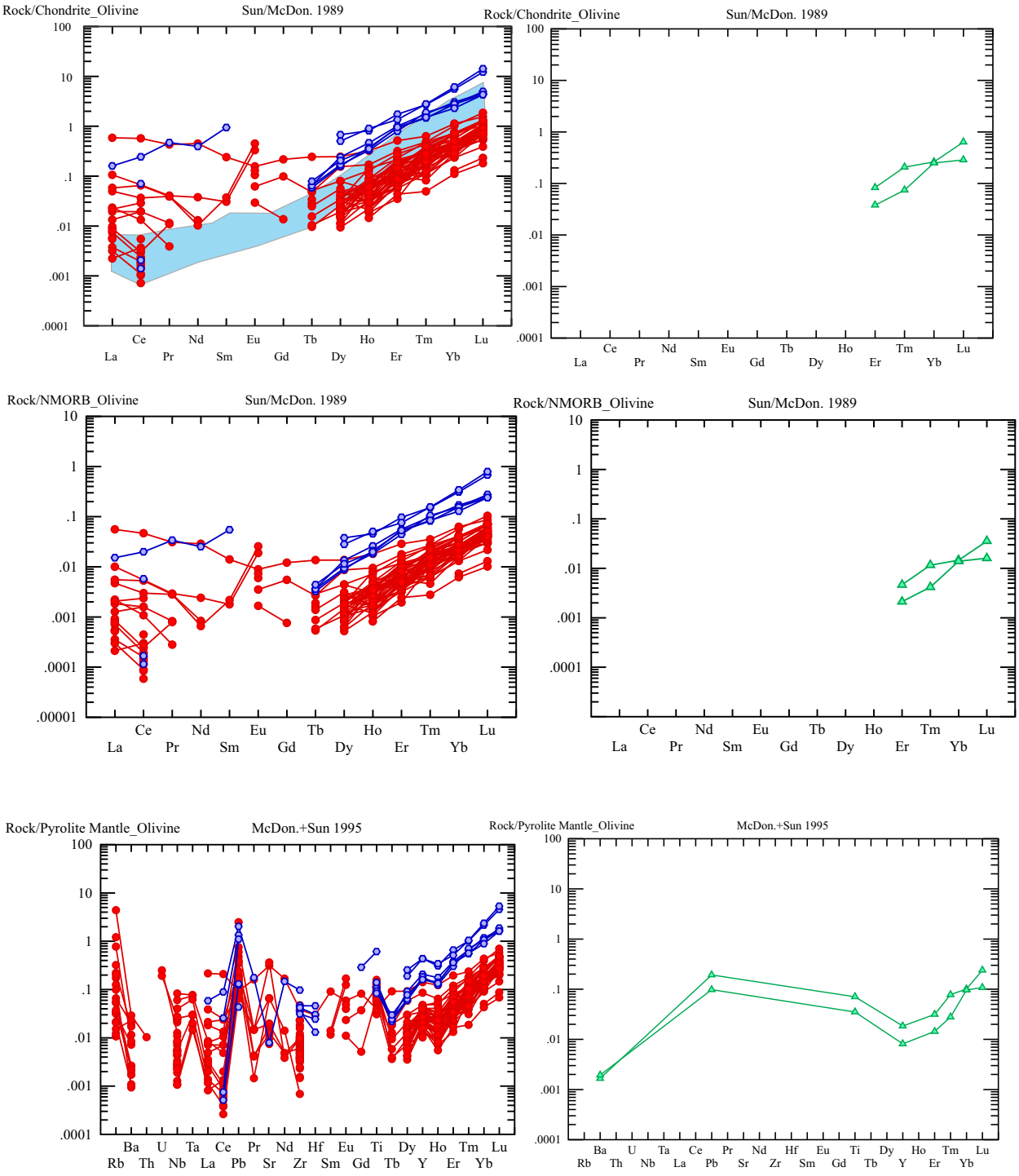


Figure 5.8: (B) REE (normalized in Chondrite and N-MORB) and trace element concentration (Primitive mantle) of Olivine for Hole P and Hole J.

(C)

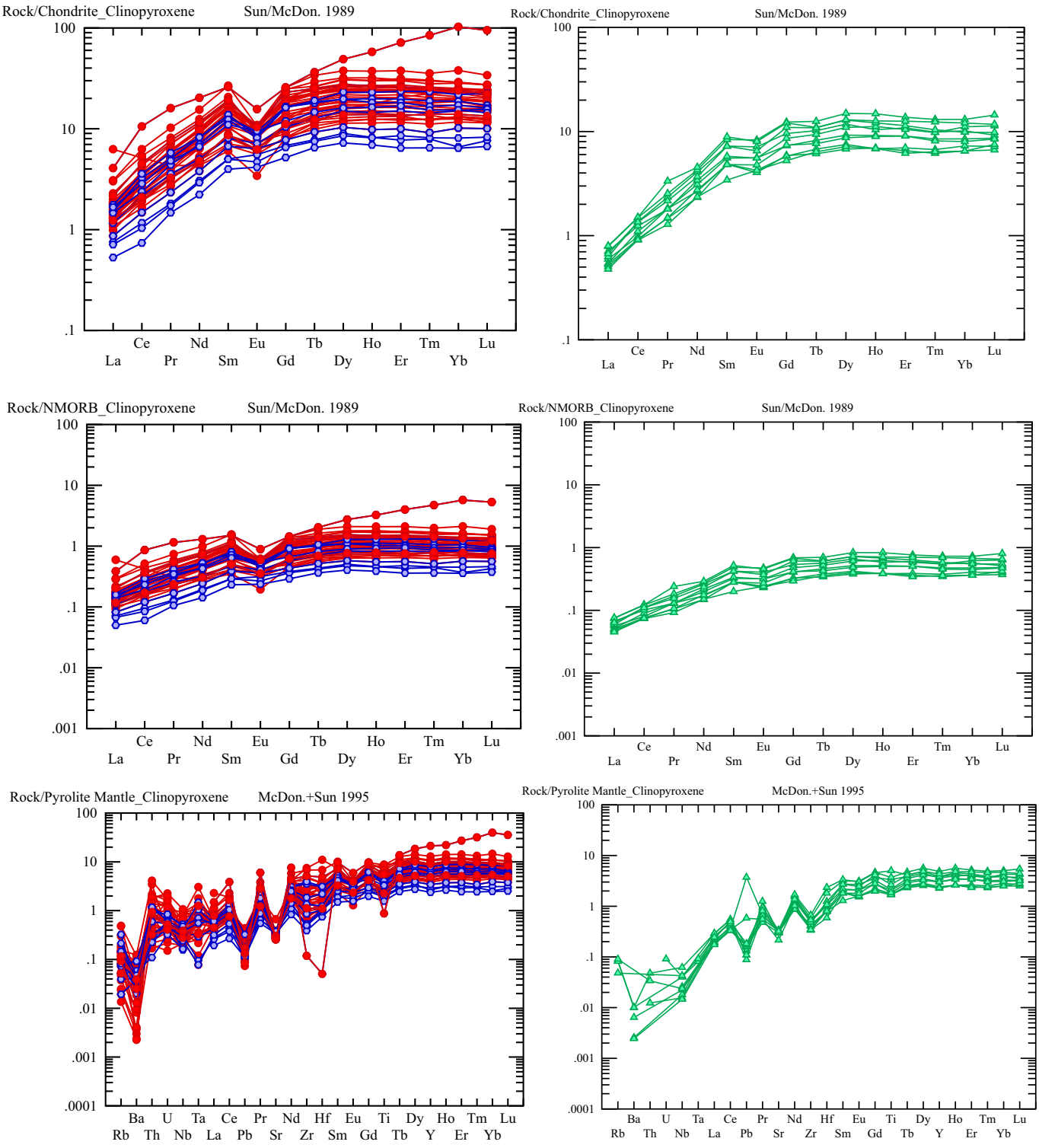


Figure 5.8: (C) REE (normalized in Chondrite and N-MORB) and trace element concentration (Primitive mantle) of Clinopyroxene for Hole P and Hole J.

(D)

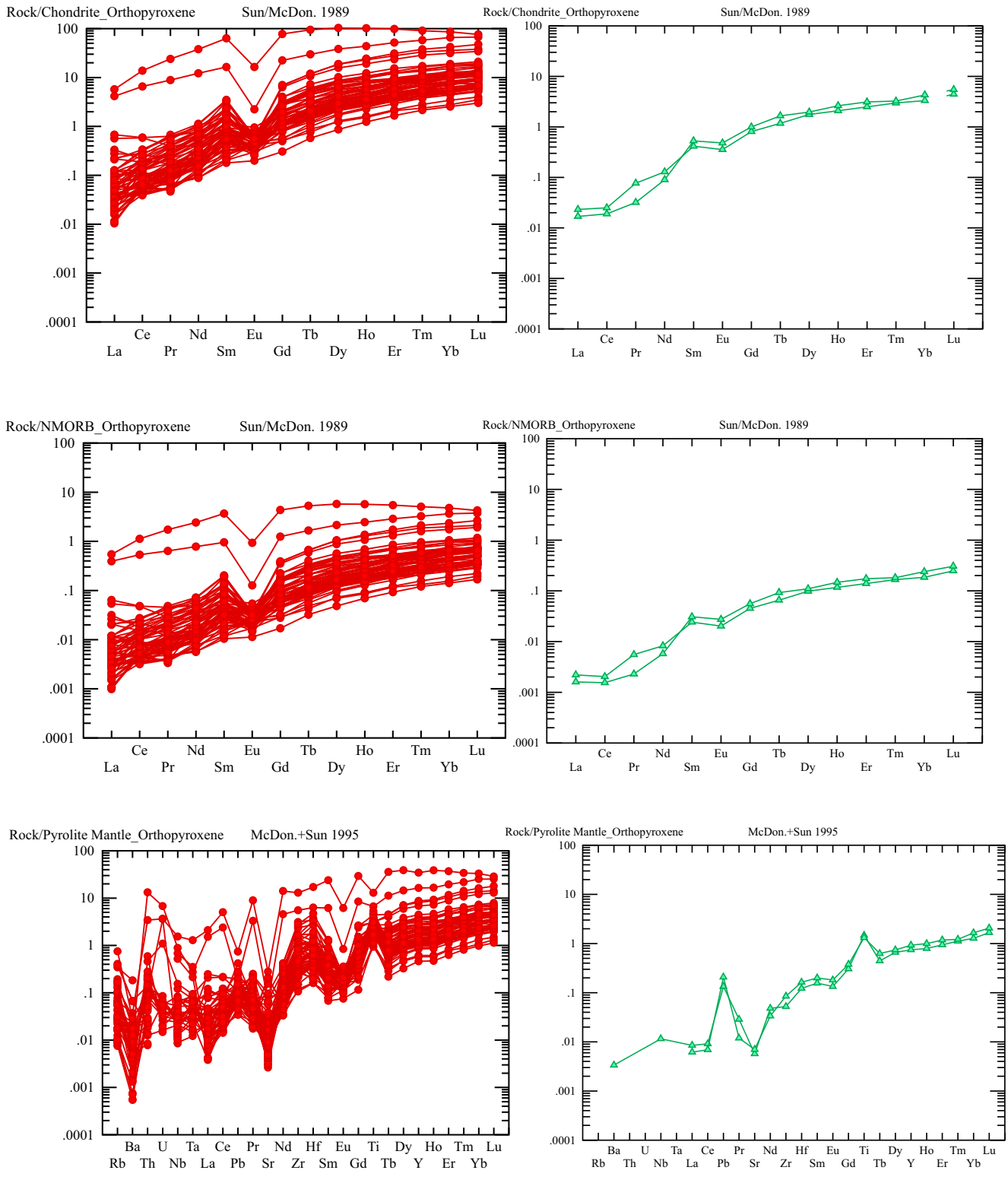


Figure 5.8: (D) REE (normalized in Chondrite and N-MORB) and trace element concentration (Primitive mantle) of Orthopyroxene for Hole P and Hole J.

Rock/Primitive mantle

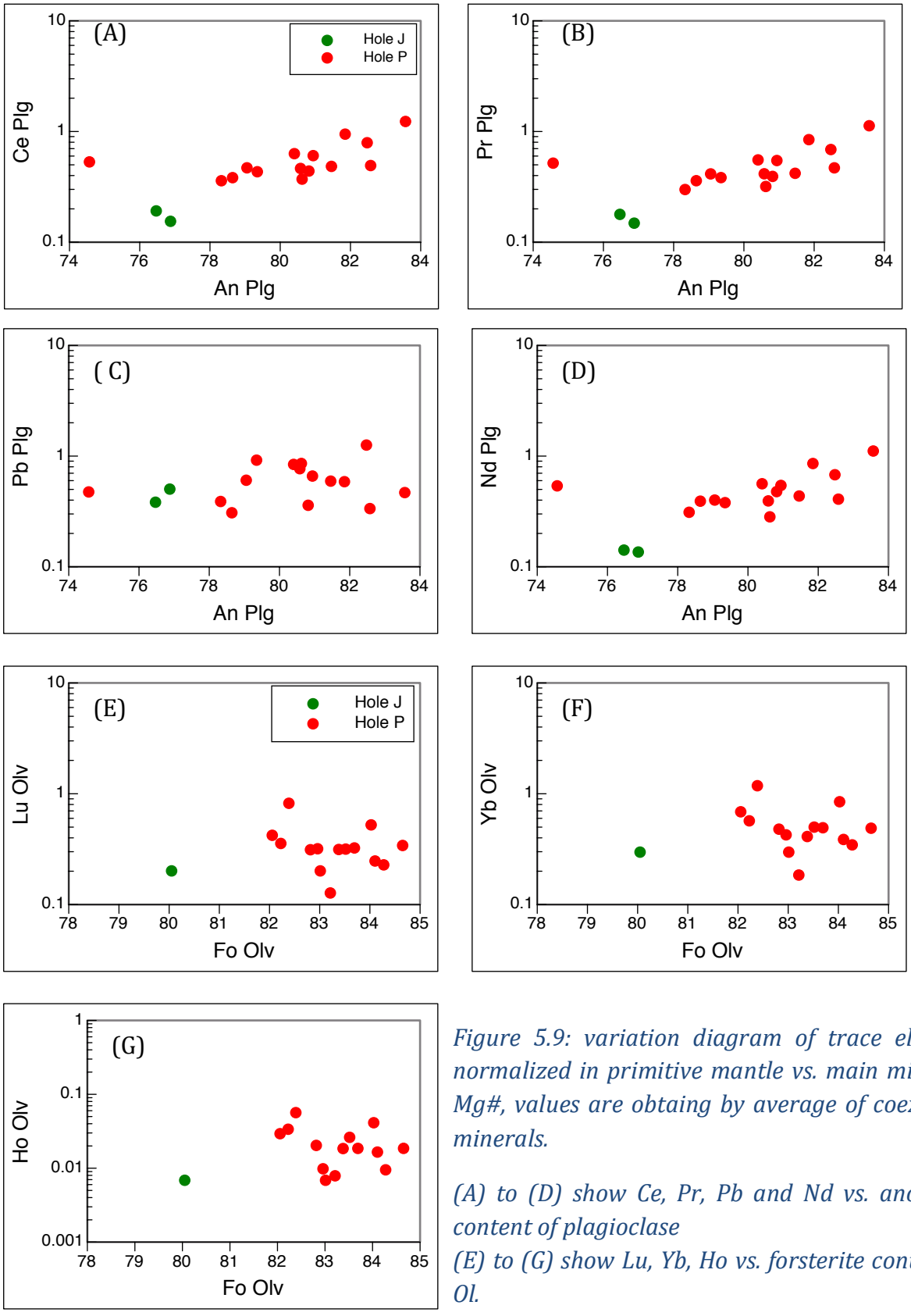


Figure 5.9: variation diagram of trace element normalized in primitive mantle vs. main minerals Mg#, values are obtaing by average of coexisting minerals.

(A) to (D) show Ce, Pr, Pb and Nd vs. anorthite content of plagioclase
(E) to (G) show Lu, Yb, Ho vs. forsterite content of Ol.
Continued.

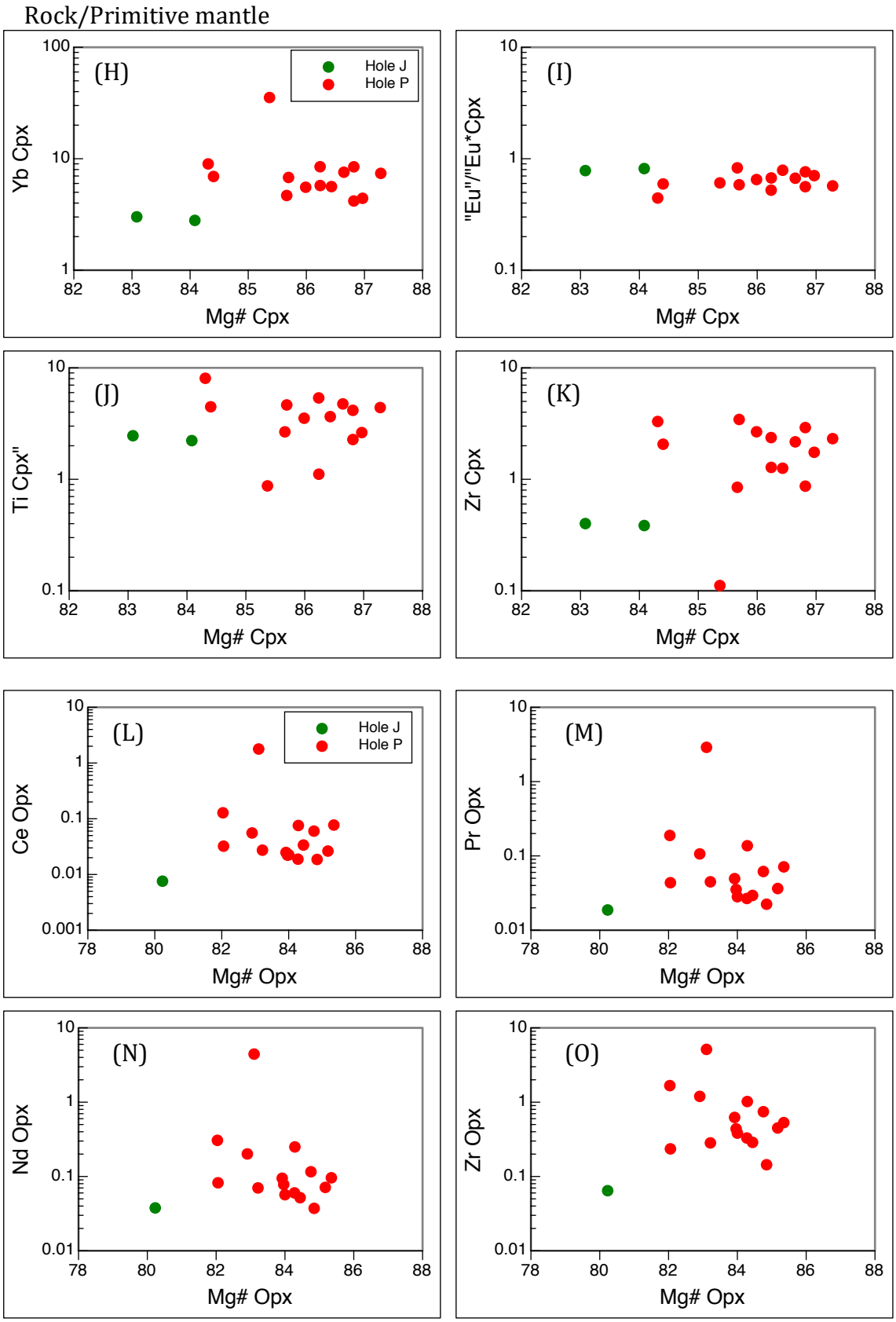


Figure 5.9: variation diagram of trace element normalized in primitive mantle vs. main mineral s Mg#, values are obtaing by average of coexisting minerals.
(H) to (K) show Yb, Eu, Ti, Zr vs. Mg# of Cpx
(L) to (O) show Ce, Pr,Nd, Zr vs. Mg# of Opx

Table 1(A)

Section No	**147-01**	**345-U1415P-3R-1-W 18/21-ILDE**	**3345-U1415J-9R-1-W 5/6-ILDE**	**345-U1415P-5R-2-W 15/16-ILDE**	**147-03**	**345-U1415I-3R-4-W 14/17-ILDE**	**345-U1415J-5R-1-W 63/67-ILDE**	**345-U1415P-5R-2-W 15/16-ILDE**
Mineral	Ol	Ol	Ol	Ol	Plg	Plg	Plg	Plg
Lithol	Opx-ol gabbro	Ol-gabbro	Ol-gabbro	Ol-gabbro	Gabbronorite	Gabbro	Oik-ol gabbro	Ol-gabbro
Hole	894G	Hole P	1415J	1415P	894G	1415I	1415J	Hole P
Depth	0.00	1415E	45.00	19.00	0.00	0.19	26.00	19.00
SiO2	36.66	38.66	38.53	40.42	53.94	48.87	49.11	48.11
TiO2	0.02	0.00	0.00	0.01	0.04	0.01	0.01	0.03
Al2O3	0.00	0.00	0.00	0.00	27.70	32.13	31.40	33.09
Cr2O3	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
FeO	30.25	17.82	18.83	14.66	0.62	0.46	0.98	0.35
MnO	0.42	0.29	0.28	0.21	0.02	0.02	0.03	0.00
MgO	32.71	42.53	41.69	46.23	0.11	0.04	0.45	0.03
CaO	0.04	0.00	0.00	0.03	11.33	16.13	15.37	16.75
Na2O	0.00	0.00	0.00	0.01	5.31	2.64	2.84	2.24
K2O	0.01	0.00	0.00	0.00	0.01	0.05	0.03	0.05
NiO	0.08	0.12	0.12	0.17	0.00	0.01	0.01	0.00
Total	100.18	99.41	99.46	101.76	99.08	100.35	100.23	100.64
Si	5.95	5.95	5.95	5.97	7.40	6.71	6.75	6.59
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.00	0.00	0.00	0.00	4.48	5.20	5.09	5.34
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	4.11	2.29	2.43	1.81	0.07	0.05	0.11	0.04
Mn	0.06	0.04	0.04	0.03	0.00	0.00	0.00	0.00
Mg	7.91	9.76	9.60	10.18	0.02	0.01	0.09	0.01
Ca	0.01	0.00	0.00	0.00	1.67	2.37	2.27	2.46
Na	0.00	0.00	0.00	0.00	1.41	0.70	0.76	0.60
K	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Ni	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00
Total Cation	18.05	18.05	18.05	18.03	15.06	15.05	15.08	15.04
Fo	65.84	80.97	79.78	84.90	54.07	76.94	74.82	80.28

Table 1 (A): Representative major mineral composition of olivine (Ol) and plagioclase (Plg), detail data are given in appendix part.

Table 1(B)

Section No	**147-U894G-7R-2-W 20/23-ILDE_147**	**345-U1415P-3R-1-W 18/21-ILDE**	**345-U1415J-9R-1-W 5/6-ILDE**	**345-U1415P-5R-2-W 15/16-ILDE**	**147-U894G-7R-2-W 20/23-ILDE_147**	**345-U1415P-3R-1-W 18/21-ILDE**	**345-U1415J-9R-1-W 5/6-ILDE**	**345-U1415P-5R-2-W 15/16-ILDE**
Mineral	Cpx	Cpx	Cpx	Cpx	Opx	Opx	Opx	Opx
Lithol	Gabbro norite	Gabbro	Ol-gabbro	Ol-gabbro	Gabbronorite	Ol-gabbro	Ol-gabbro	Ol-gabbro
Hole	894G	1415J	1415J	1415P	894G	1415P	1415J	1415P
Depth	0.00	-1.00	45.00	19.00	0.00	-1.00	45.00	19.00
SiO2	52.02	52.21	54.42	52.54	53.01	55.96	55.30	55.55
TiO2	0.64	0.64	0.42	0.86	0.43	0.24	0.26	0.28
Al2O3	1.69	2.54	1.98	2.51	0.95	1.10	1.15	1.60
Cr2O3	0.05	0.22	0.15	0.71	0.02	0.09	0.13	0.42
FeO	10.75	5.73	7.76	4.19	20.80	11.94	12.16	9.34
MnO	0.28	0.17	0.24	0.15	0.41	0.29	0.33	0.21
MgO	14.72	16.22	19.32	17.12	23.03	30.98	29.91	32.62
CaO	19.89	22.19	16.19	22.31	1.81	0.69	0.96	0.88
Na2O	0.34	0.23	0.18	0.35	0.02	0.00	0.01	0.02
K2O	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.01	0.01	0.00	0.03	0.00	0.04	0.02	0.03
Total	100.39	100.14	100.65	100.75	100.47	101.33	100.23	100.95
Si	7.76	7.68	7.86	7.64	7.83	7.83	7.84	7.73
Ti	0.07	0.07	0.05	0.09	0.05	0.03	0.03	0.03
Al	0.30	0.44	0.34	0.43	0.17	0.18	0.19	0.26
Cr	0.01	0.03	0.02	0.08	0.00	0.01	0.01	0.05
Fe	1.34	0.70	0.94	0.51	2.57	1.40	1.44	1.09
Mn	0.04	0.02	0.03	0.02	0.05	0.03	0.04	0.02
Mg	3.27	3.55	4.16	3.71	5.07	6.46	6.32	6.77
Ca	3.18	3.50	2.51	3.48	0.29	0.10	0.15	0.13
Na	0.10	0.07	0.05	0.10	0.00	0.00	0.00	0.01
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Cation	16.07	16.05	15.94	16.06	16.04	16.05	16.03	16.09
Fo	70.94	83.45	81.60	87.93	66.37	82.23	81.42	86.16

Table 1 (B): Representative major mineral composition of clinopyroxenee (Cpx) and orthopyroxene (Opx), detail data are given in appendix part.

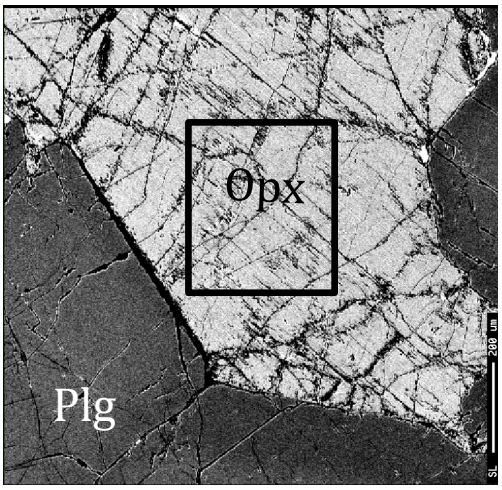
Table 2

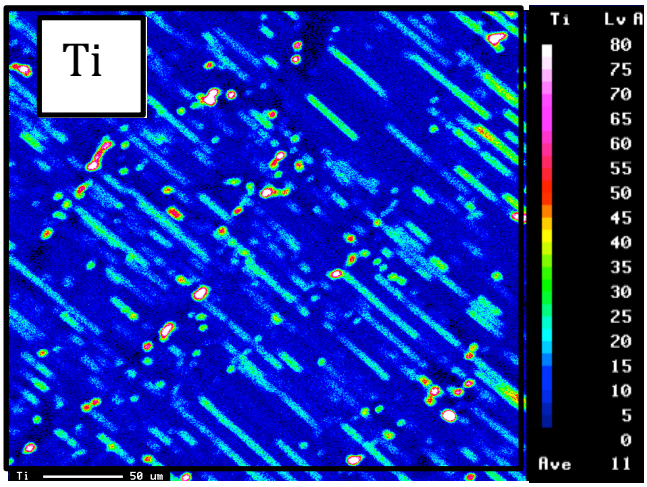
Section No	345-U1415J-5R-2-W 5/8-PYTHON	345-U1415P-14R-1-W 119/122-PYTHON	345-U1415J-5R-2-W 5/8-PYTHON	345-U1415P-14R-1-W 119/122-PYTHON	345-U1415J-5R-2-W 5/8-PYTHON	345-U1415P-14R-1-W 119/122-PYTHON	345-U1415J-5R-2-W 5/8-PYTHON	345-U1415P-14R-1-W 119/122-PYTHON
Mineral	Ol	Ol	Plg	Plg	Cpx	Cpx	Opx	Opx
Lithol	Opx-ol gabbro	Opx-ol gabbro	Opx-ol gabbro	Opx-ol gabbro	Opx-ol gabbro	Opx-ol gabbro	Opx-ol gabbro	Opx-ol gabbro
Hole	HoleJ	Hole P	HoleJ	Hole P	HoleJ	Hole P	HoleJ	Hole P
Depth	27.00	59.90	27.00	59.90	27.00	59.90	27.00	59.90
Li	1.80	2.10	0.87	1.70	1.53	6.86	0.53	0.50
B	4.45	12.27	4.87	7.00	4.06	5.86	5.00	4.92
Si	185526.66	186975.73	257229.13	263873.91	230732.41	229770.78	280756.81	171391.59
Ca	322.80	346.16	109799.50	115903.01	147442.80	154018.02	19025.34	8269.09
Sc	11.21	8.34	1.04	0.65	97.74	101.15	61.14	38.20
Ti	85.14	173.61	233.66	499.97	2104.79	2498.45	1770.00	3847.49
V	7.07	9.39	3.48	4.47	266.57	313.38	159.56	171.91
Cr	41.57	37.83	13.31	3.75	3521.15	7306.62	776.08	384.67
Cu	0.14	2.27	0.21		1.09	0.18	0.07	
Zn	111.31	103.93	4.68	10.60	30.18	33.40	94.79	54.83
Rb		0.12		0.21		0.02		
Sr		0.27	140.37	143.56	6.26	6.85	0.11	0.06
Y	0.08	0.21	0.14	0.59	9.72	11.43	3.21	6.78
Zr		0.24		0.05	4.23	5.15	0.55	12.84
Nb	0.00	0.02	0.00		0.01	0.10	0.01	0.45
Ba	0.01		3.25	5.61		0.27	0.02	0.03
La			0.13	0.65	0.14	0.18	0.01	0.01
Ce		0.00	0.27	1.38	0.60	0.71	0.02	0.04
Pr		0.00	0.04	0.23	0.17	0.17	0.01	0.01
Nd			0.18	0.92	1.25	1.42	0.06	0.11
Sm	0.00		0.05	0.23	0.74	0.77	0.06	0.13
Eu		0.00	0.25	0.35	0.23	0.32	0.02	0.02
Gd			0.07	0.18	1.21	1.40	0.17	0.38
Tb		0.00	0.00	0.03	0.23	0.29	0.04	0.08
Dy	0.00	0.02	0.03	0.12	1.72	2.29	0.45	0.89

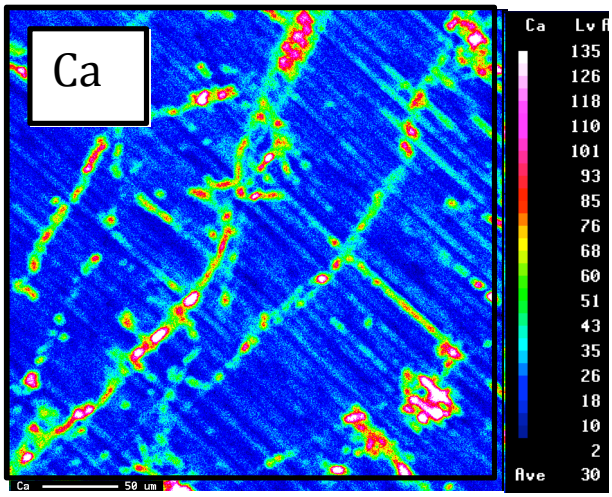
Table 2: Representative trace element composition of olivine (Ol), plagioclase (Plg), clinopyroxene (Cpx) and orthopyroxene (Opx), detail data are given in appendix part.

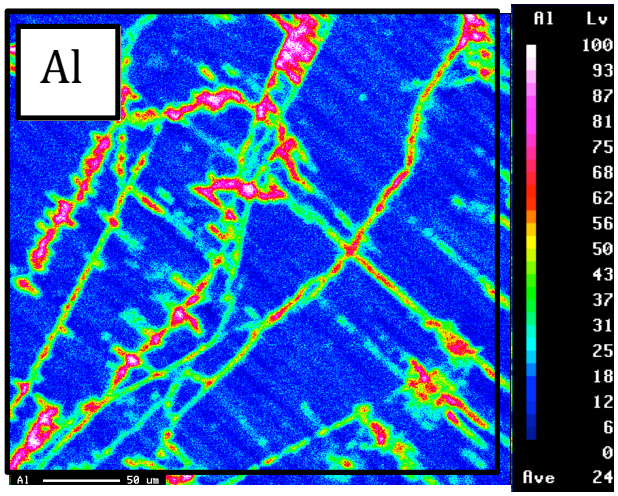
5.4. Elemental mapping of Orthopyroxene:

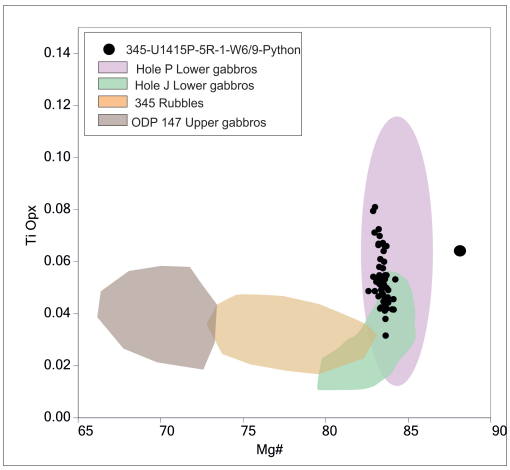
We did elemental mapping of opx in a single sample (345-U1415P-5R-1-W6/9-Python). We represent three elements mapping, Ca, Al, Ti (Fig 5.10). This one sample consist Ti 0.3-0.8%, Ca 0.15-0.6% and Al 0.18-0.32% (Fig 5.10). The enrichment zones in Al and Ca representing secondary amphibole crystallization along the fracture. Ca and Ti show enrichment lamellas. Ti rich lamellas are not corresponding to Ca rich lamellas; rather they follow the structure of orthopyroxene. Some of the points are showing enriched TiO_2, these are alteration grains. In this sample Ti have a range from 0.2-0.8, and so the higher values are corresponding to the lamella and the lower values are correspond to the background orthopyroxene.

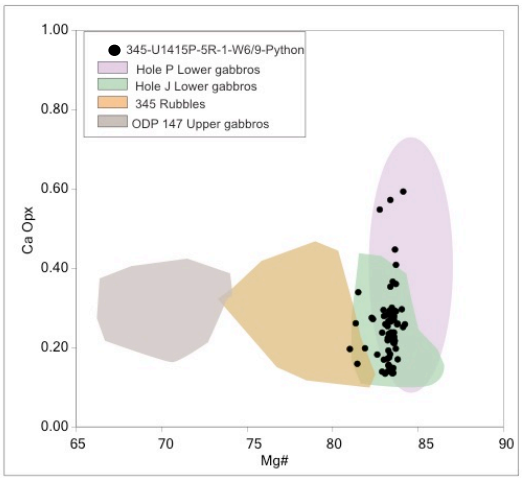












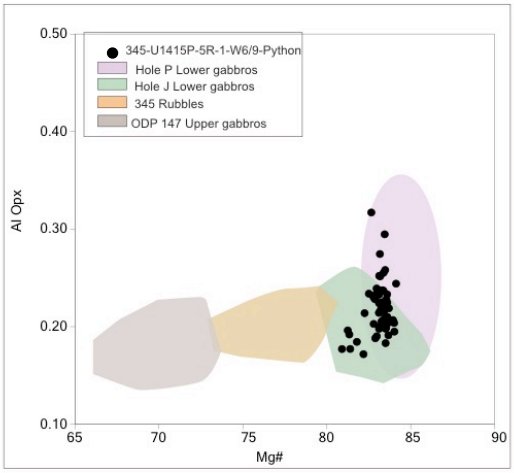


Figure 5.1. Elemental mapping of a single orthopyroxene crystal: Ti, Ca, Al considered for mapping to see the alteration pattern and signature of crystallization of Opx rather secondary precipitation. Three Variation diagram of Ti, Ca and Al vs. Mg# are the analysis of single sample where elemental mapping was performed.

5.5. Calculated liquid in equillibrium:

The distribution of major and rare earth elements (REEs) between these major rock-forming minerals and basaltic melts is important to the interpretation of origin and evolution of mafic and ultramafic igneous rocks.

Here we have calculated the liquid in equilibrium with the major mineral phases of clinopyroxene and orthopyroxene to compare their equilibrium liquid composition for troctolite, ol-gabbro, opx-ol gabbro from Hole P and Hole J; rubbles and upper gabbro.

In case of Hole P ol-gabbro and opx-ol gabbro, melt in equilibrium with clinopyroxene have TiO_2 value ranges from 0.2-3% with narrow scatter of Mg#, 60-70% (Fig 5.11 A). The higher value observed in troctolitic rock melt in equilibrium, with Mg# 70-80% and lower TiO_2 composition varies between 0.5-2%. Hole J ol-gabbro and opx-ol gabbro, TiO_2 of melt having lower concentration that is below 3% with Mg# 55-66%. Troctolitc melt covering a range of Mg# 55-70% with TiO_2 from0.3-2.2%. Like Hole J gabbros, similar concentration of TiO_2 can observed from upper gabbro sample with TiO_2 0.2-2% (Fig 5.11 B).

Hole P melt in equilibrium with orthopyroxene have very high range in TiO_2 value, from 1-7% with narrow scatter of Mg#, 50-60%(Fig 5.11 C). Hole J TiO_2 of melt having lower concentration ranges, 1-5% with Mg# 50-55%. Rubbles having TiO_2, 2-4% with Mg# 35-45%. Upper gabbros are much enrich in TiO_2, 3-5% with lower value of Mg#, 30-40% (Fig 5.11 D).

We also calculate melt in equilibrium with the REE elements for plagioclase, olivine, clinopyroxene and orthopyroxene. Hole P clinopyroxene REE melt in equilibrium, normalized in N-MORB has flat trend, with negative europium anomaly (Fig. 5.11A). Two types of melt in equilibrium with olivine can be observed. The blue lines are very enriched in terms of HREE than the main data cloud (Fig. 5.11A). Orthopyroxene melt in equilibrium has very strong Europium anomaly, with less flat trend than clinopyroxene and

having high enrichment in HREE (Fig 5.11B). Melt equilibrium with plagioclase has lower value of HREE, just reverse as olivine (Fig 5.11B).

Hole J, melt in equilibrium with REE concentration of clinopyroxene has flat trend, with almost low europium anomaly (Fig 5.11C). Opx melt in equilibrium has negative europium anomaly with slight enrichment in HREE (Fig 5.11C). Ol melt in equilibrium is also having same value as HoleP main data cloud (Fig 5.11C).

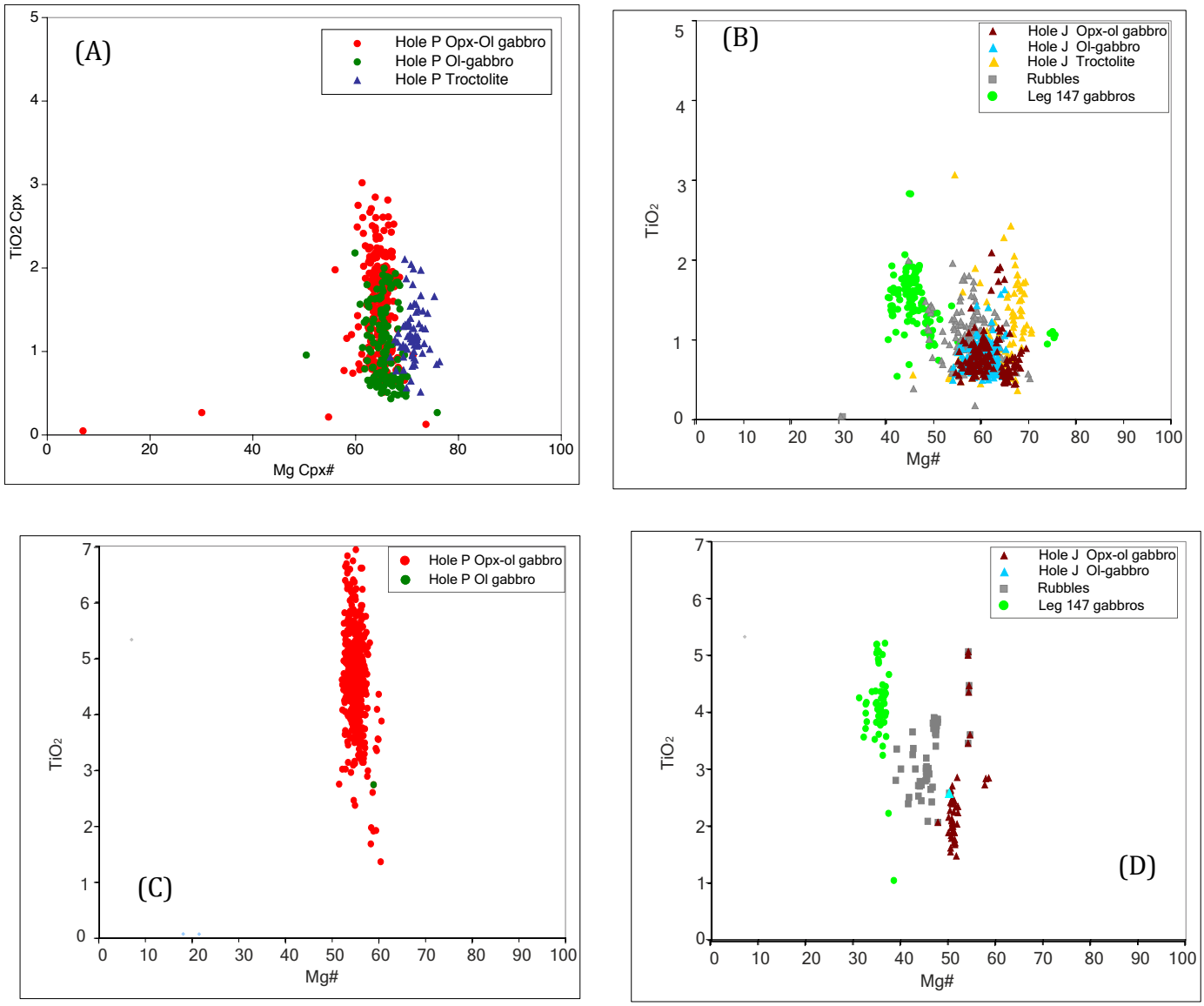


Figure 5.11: Melt in equilibrium with Clinopyroxene (A) for Hole P and (B) for Hole J; and with Orthopyroxene (C) for Hole P and (D) for Hole J using the calculation method by Bédard,2010, with the KD values of corresponding elements for particular mineral phases .

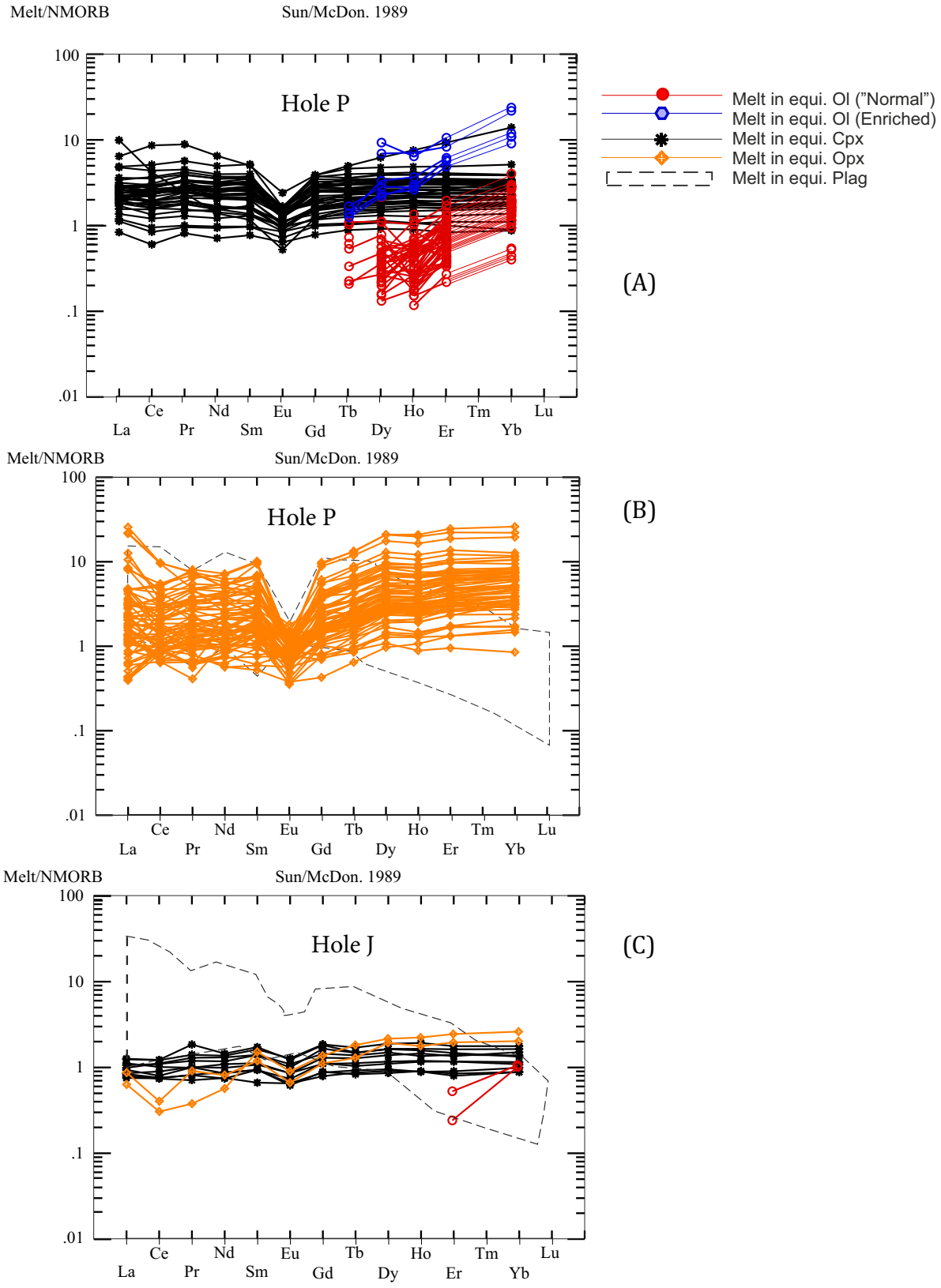


Figure 5.12: Melt in equilibrium with REE elements of (A) Clinopyroxene, Olivine and (B) for Orthopyroxene and Plagioclase for Hole P, (C) Clinopyroxene, Olivine, Plagioclase and Orthopyroxene for Hole J

Chapter 6

6. Discussion

6.1. Petrogenesis of gabbros at EPR

6.1.1. Upper gabbros

Upper crustal gabbros recovered during Leg 147 and rubbles during IODP Exp. 345 are collected from different sites.

The upper gabbros collected during ODP Leg 147 represent the most differentiated terms of our sampling. Olivine bearing lihtologies are more primitive with a Cpx Mg# higher than in gabbronorites. Rubbles sampled at the top of Holes J and P during IODP Exp. 345 show a chemistry partially recovering Hole J and P chemical fields, and located at the most differentiated side of these zones. They globally show intermediate characteristics between upper gabbros and Hole P and J (Fig. 5.3, 5.4 and 5.6). We can then infer that rubbles are actually not fallen from the uppermost part of the crust but from some intermediate level above the lower gabbros drilled during IODP Exp. 345 and relatively close to them.

Olivine bearing sample are in every cases more primitive than olivine-free samples, the presence or absence of Opx itself and mafic minerals chemistry seem to be independent as olivine bearing samples show the highest Mg# whether Opx are present or not (Fig. 5.3, 5.4, 5.6). This point to a genesis in Opx independent from fractional crystallization process in primitive facies. Opx bearing olivine gabbros have mostly a mineral chemical composition similar to that observed in Opx free olivine gabbros (Fig. 5.3, 5.4, 5.6). Opx chemistry ranges from primitive (Mg# > 85%) in Hole J Opx bearing olivine gabbros to differentiated (Mg# < 70%) in upper gabbros gabbronorites, showing that Opx is possibly crystallizing at any step during magma differentiation in Hess Deep gabbros.

On the other hand, when olivine is absent, gabbronorites show more differentiated chemistries than gabbros. This suggests that when the magma reached the Ol-out limit, the crystallization of Opx is linked to differentiation and this mineral will appear only after the crystallization process is quite advanced and SiO_2 increased enough in the magma to allow its formation.

From liquid in equilibrium diagram (Fig. 6.4 A, B), we can see that the upper gabbros crystallized from a melt with compositions very similar to EPR MORB. Then the parental melt composition was likely a pure MORB and local crystallization processes in the magmatic mush probably acquired the scatter in Cpx and Opx chemistries.

Previous studies on upper Hess Deep gabbros showed that hydrothermal fluid flowed throughout the entire gabbroic sequence and alteration was dominated by pervasive fluid flow along grain boundaries, microfractures, and fractures. These upper gabbros show that incipient flow occurred at amphibolite facies (average temperature = 720°C) conditions and is manifested by amphibole veins that display no preferred orientation (Manning et al., 1996; Coogan et al., 2002a) and replacement of pyroxene by amphibole-dominated assemblages (Früh-Green et al., 1996; Gillis, 1995; Kirchner and Gillis, 2012). Whole-rock samples unaffected by a lower temperature stage of brittle deformation are depleted in δ18O relative to fresh values (Agrinier et al., 1995; Lécuyer and Reynard, 1996) and show minor enrichment in 87Sr/86Sr (Lécuyer and Grau, 1996; Kirchner and Gillis, 2012). Calculated fluid/rock ratios using both isotopic systems range from 0.1 to 1 (Lécuyer and Grau, 1996; Lécuyer and Reynard, 1996; Kirchner and Gillis, 2012). The rate of cooling of the shallow-level gabbros is rapid (1,000 to 60,000°C/m.y.) and comparable to the upper gabbro section in the Oman ophiolite (Coogan et al., 2007; Faak et al., 2011).

Effects of Cocos-Nazca rifting reported in the gabbros which are exposed along the intraridge rift cooled to ~450°C, they became influenced by the creating a dense array of east–west tensile fractures filled with greenschist to zeolite facies assemblages and local cataclasis cemented with the same assemblage (Früh-Green et al., 1996; Manning and MacLeod, 1996). The Cocos-Nazca rifting influence was mainly post-magmatic and influenced the cooling rate and the hydrothermal temperature. Primary magmatic processes appear to have mainly occurred at the East Pacific Rise.

6.1.2. The lower sequence (Holes J and P)

The study of the lower gabbroic section was the main purpose of this project. We will see that the gabbros from Hole J resulted from complex crystallization processes in a magmatic mush and that the chemistry of the gabbros from Hole P show the existence of an enriched mantle source beneath EPR.

6.1.2.1. Crystallization in a mush:

Textural relationships in olivine-rich gabbros indicate that clinopyroxene crystallized after a melt that was in disequilibrium with primitive plagioclase, and olivine (Fig 4.8D). However, Fe-Mg chemical equilibrium is observed (Fig. 5.5), showing chemical Ol/Cpx re-equilibration during crystallization. This is compatible with the very low cooling rate calculated by Faak and Gillis (2016). These observations suggest that the crystallization of the gabbros occurred as a multi-stage (at least two stages) process and sub-solidus re-equilibration: crystallization fo Pl and Ol, assimilation/crystallization for clinopyroxene with chemical equilibration with Ol, and subsolidus re-equilibration.

Assimilation of olivine induces changes in the crystallizing melt composition (Lissenberg and Dick, 2008). The addition of an olivine component in the melt may explain the particularly high contents in compatible and refractory elements, such as Mg or Ni (Fig. 5.3) and Mg# buffering observed in particular in Hole P Opx bearing gabbros (see following sections).

Olivine and high Mg# clinopyroxenes are in Fe-Mg equilibrium in olivine-rich rich gabbros and in neighbouring samples, in a way similar to what is described in the troctolites sampled at the Kane Megamullion (Fig. 6.2, Lissenberg and Dick, 2008). This

indicates that elemental reequilibration occurs between melts and partially assimilated minerals in the olivine-rich intervals. The continuous melt/mineral chemical reequilibration produces geochemical trends analogue to those predicted by equilibrium crystallization models, for compatible elements such as Ni. This suggests that separation of melts and minerals (both wall rock and newly crystallized grains) is slow compared to the time-scale(s) over which Mg-Fe and Ni diffusive re-equilibration occurs. This is also can be confirmed from the recrystalline texture of plagioclase (Fig 4.8 C). Also from Ce vs. An plagioclase shows increasing percentage of An in terms of Ce (Fig. 5.9 A), and has a linear relationship, which also suggests fractional crystallization of plagioclase in a system from a single batch of melt. This result is compatible with recent result obtained by Faak and Gillis (Geology, 2016) on Hess Deep gabbros, and its documented the cooling rate is $0.005\text{-}0.0001^{0}$ per year.

Figs. 5.3,5.4 and 5.6 show that Gabbros in Hole J are in chemical continuity with rubbles and upper gabbros drilled during ODP Leg. 147. Some scatter in Cpx TiO_2 content of troctolites can be explained by the low modal proportion of Cpx in troctolites. Cpx chemistry is then modified by subsolidus reaction with the modally dominant olivine or the Cpx parental melt did already reacted with olivine leading to Mg# increase before Cpx crystallization. This process can also explain Ti enrichment in some Cpx in olivine rich gabbros but Cpx chemisry is mainly constrained in a trend compatible with MORB differentiation, and the Cpx parental melt has a chemistry very similar to MORB produced at EPR (Fig. 6.5 A). This shows that Hole J, rubbles, upper gabbros are all linked to the same MORB parental melt by a fractional crystallization trend. The most differentiated terms were produced at the top section as the lower section is primitive. This general evolution is in contrast to the strong lithological diversity observed along 110m in Hole J and in the cores obtained at the top of the section (Fig. 5.1). This suggest that fractional crystallization was the dominant process in the whole column as local processes leading to

variation in the crystallization order and modal composition act in margin and led to only limited chemical variation.

6.1.2.2. Origin of olivine:

All samples from Hole J and P show high Fo value of in Olivine (Fig. 5.1 and 5.2), which suggests primitive parental melt (Fo content always over 80). The most primitive samples shown on the plot Olv Fo vs NiO are troctolites in Hole P (Fig. 5.3A). Opx bearing lithologies show a narrow scatter of olivine Fo, between 83 and 85% and are regrouped after troctolites, which is also a lower value than what is observed in troctolite, but still very high for Opx-bearing gabbroic cumulates.

We found two groups types of olivine in Hole P: when the liquid in equilibrium of REE elements is compared with EPR MORB (Fig. 6.1). Some Ol are very enriched in HREE and are out of the main cloud. They are subrounded in shape, showing resorption figures and are then probably left from an original rock after extensive melt-rock reaction. These olivines may be relics of mantle as it was suggested by previous research (Drouin et.al 2009) on Atlantis Massif. However, in the case of Hole P olivines, subrounded crystals do not show any deformation structure, like subgrain boundary or kink band. Moreover, olivine richer in HREE have a rather low Fo content (Fig. 5.8), which is in contradiction with a mantle origin. On the other hand, their chemistry is very similar to olivine chemistry in the troctolites layer located right below the gabbros (Akizawa et al, unpublished data) suggesting that they may be relic from troctolites rather than peridotites. Other olivine from the major group, show a melt composition compatible with MORB and in equilibrium with Cpx and Plg. These olivines are present as various texture, from subrounded to skeletal.

Olivine from Hole J have a chemistry very similar to EPR MORB, and are also in equilibrium with other minerals (Fig. 5.4 and 5.8).

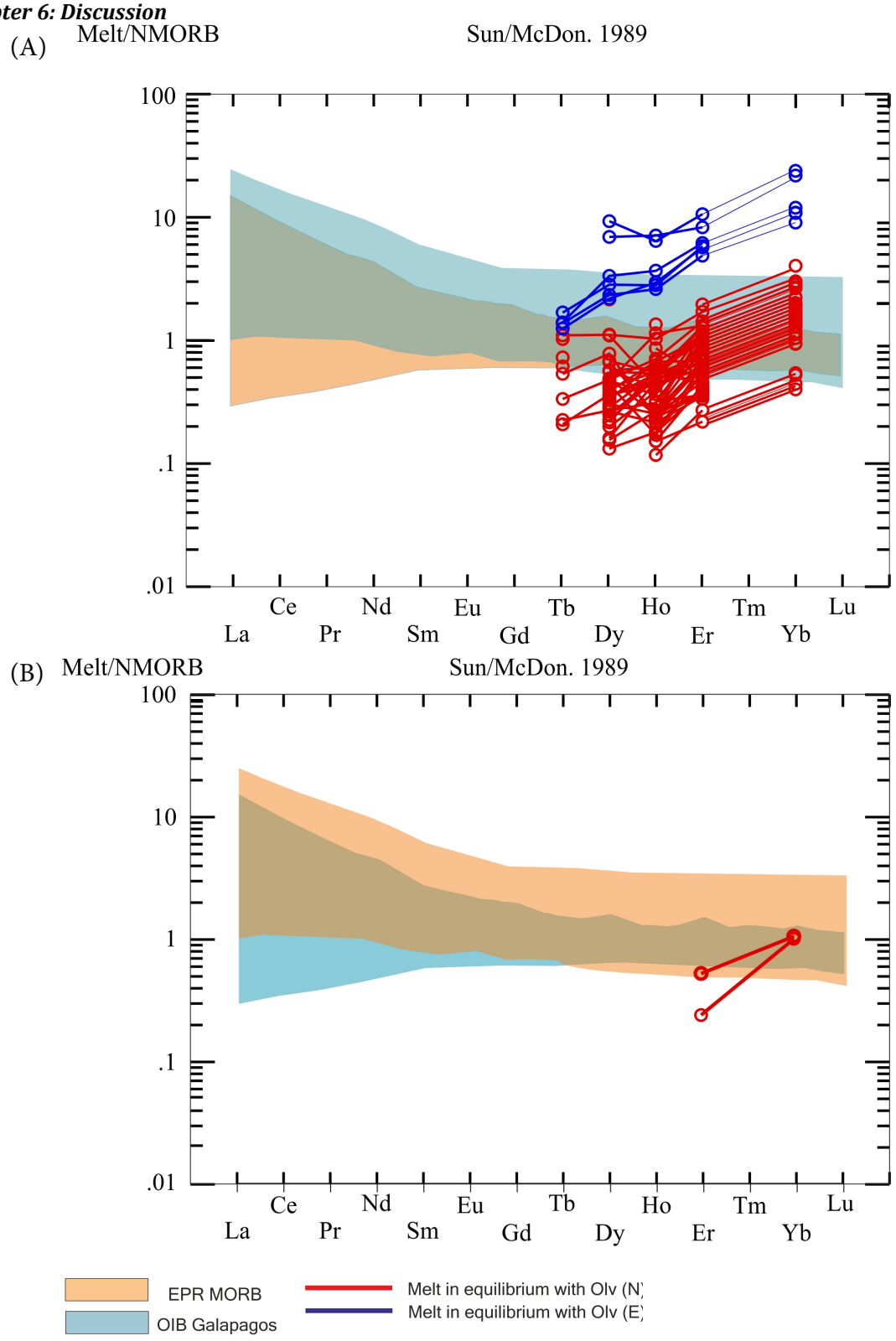


Figure 6.1 Liquid in equilibrium of REE element of olivine in Hole J (A) and Hole P(B) the blue line marked as enriched type and red line as main data cloud.

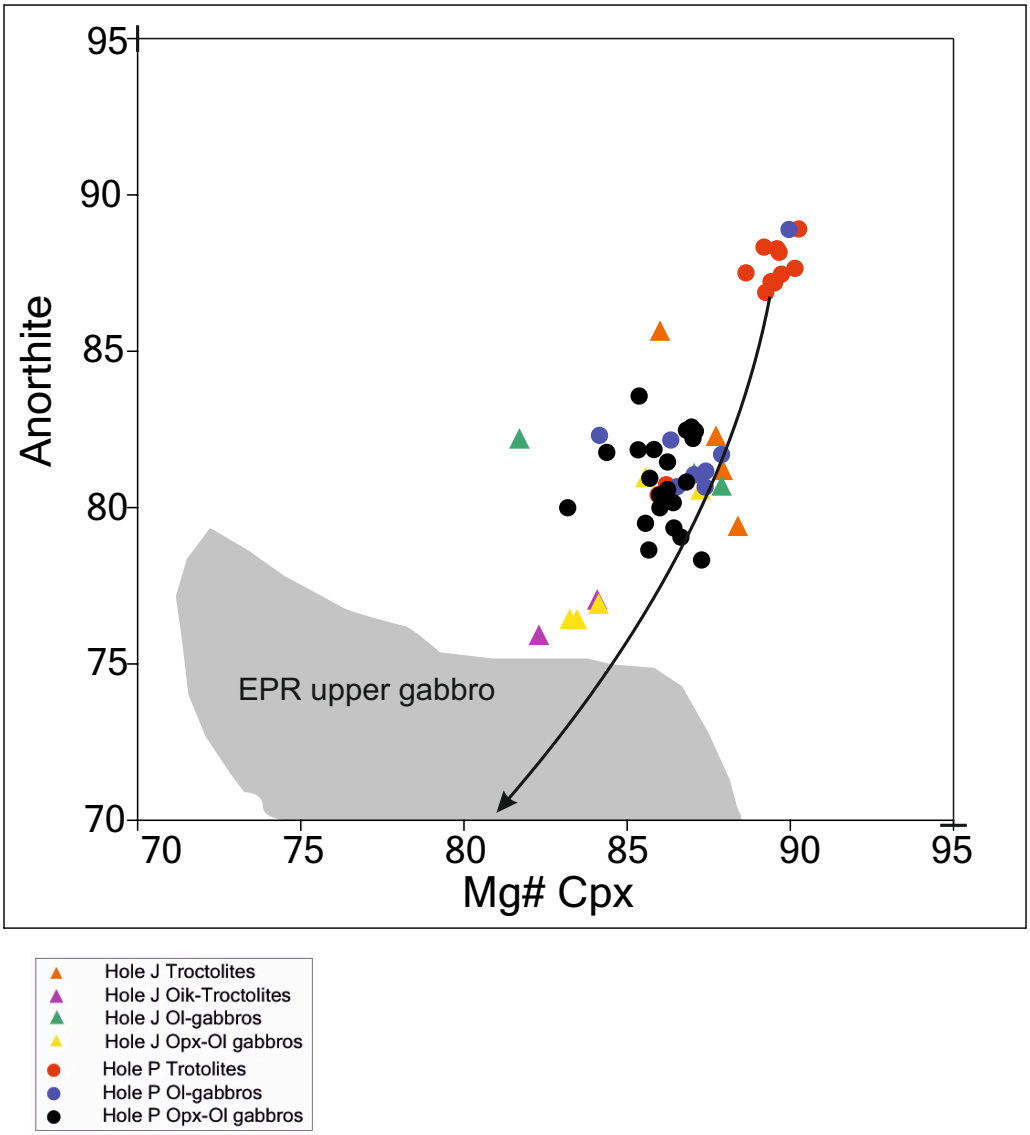


Figure 6.2. An vs. Mg# Cpx from Different holes and different rock types showing evolution trend of Hole J gabbros towards EPR MORB)

6.1.2.3. Hole J:

The downhole variation of olivine gabbro of Hole J, which detailed section is given in Fig. 5.1, show a pronounced differences between mineral compositions from rocks located at the top and at the bottom of the section. The differences between Mg# are pronounced in Cpx, Opx, Ol, and the anorthite content of Plg between gabbros located at the bottom of the section and those at the top. Mineral chemistries show a relative trend with Olv, Cpx and Opx Mg# decreasing with depth. The concentration modal proportion of Opx in Hole J is very less low compared to Hole P (less than 2%). The large chemical scatter observed in Cpx can be the expression of their presence as chemically zoned oikocryst throughout Hole J.

The petrographic observations show that the crystallization sequence starts with Ol+Plg then Cpx crystallizes into system. The poikilitic texture of most of the Cpx showed that they probably crystallized late from some kind of trapped melt. Orthopyroxene in Hole J is present in few samples at low modal percentage.

Olivine Fo content is higher in Hole J samples than in upper gabbros, but are much evolved than Hole P gabbros. In the variation diagram showing of olivine Fo vs NiO (Fig 5.3), shows a continuous evolution trend from Hole J gabbro to upper gabbro, suggesting a continuous differentiation link from the bottom to the top of the section. The variation in TiO_2 with Mg# in Cpx and Opx chemistry shows same results, with variation in Mg# with TiO_2 concentration (Fig. 5.4, 5.6). The plot anorthite in Plg vs. Mg# in Cpx shows that Hole J gabbros are located in a trend of fractionation from the troctolites towards EPR upper gabbro (Fig. 6.2) and have then an intermediate composition between primitive and differentiated crustal lithologies. The chemical evolution with depth of Ol and Plg suggest that upper, lower and intermediate gabbros are globally linked by a fractional crystallization trend and local dispersion is probably local crystallization processes leading

to the formation of the last crystals. Poikilitic Cpx are zoned and represent the last magma crystallizing during the last steps of cooling..

Fo content is higher in Hole J samples than in upper gabbro. The variation diagrams showing olivine Fo vs NiO (Fig 5.3) and Cpx/Opx chemistry (Fig. 5.4 and 5.6) show an evolution trend from Hole J gabbro to upper gabbro, suggesting again a global MORB fractional crystallization trend from Hole J to upper gabbros.

Liquids in equilibrium with Cpx and Opx (TiO2 vs Mg#, see Fig. 6.3 and 6.5) show that the melts in equilibrium with Hole J gabbros had the same composition as EPR MORB. The REE pattern for all the phases shows also compositions comparable to with EPR MORB. Hole J gabbros are then in equilibrium with the most typical MORB melt emitted at EPR. These observations suggest that the parental melt was a MORB type melt, and that the gabbros formed by crystallization in a magmatic mush largely in equilibrium with MORB and that the chemical variations in the various crystals from sample to sample are probably due to large scale fractional crystallization process, whereas the scatter within one single sample is inherited from local crystallization processes after closure of melt migration within the mush.

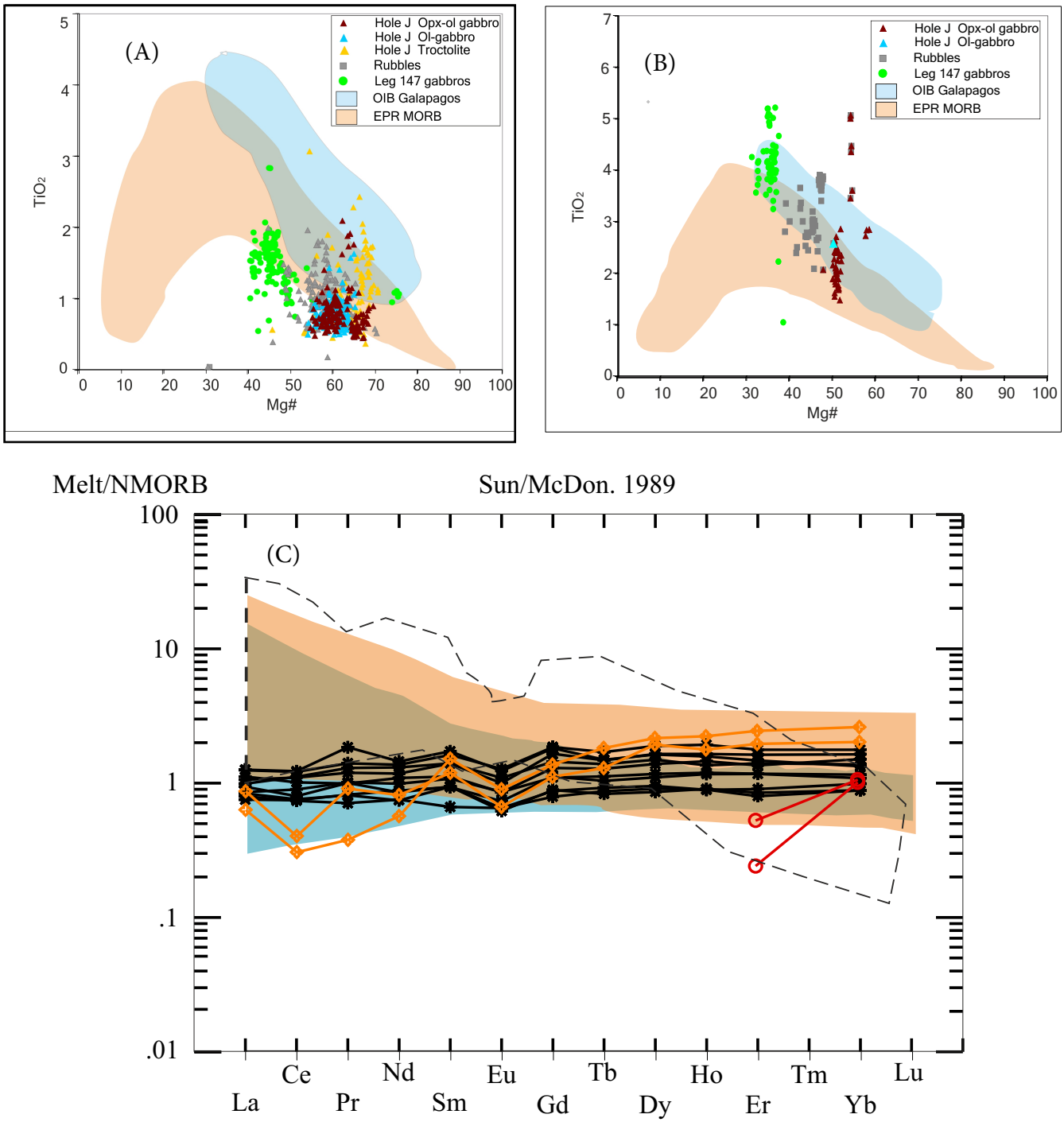


Figure 6.3. (A) Liquid in equilibrium of TiO2 vs Mg# for clinopyroxene and orthopyroxene in A and B respectively (B) Liquid in equilibrium of REE element for clinopyroxene, olivine, orthopyroxene and plagioclase in comparison with EPR MORB and OIB Galapagos type melt

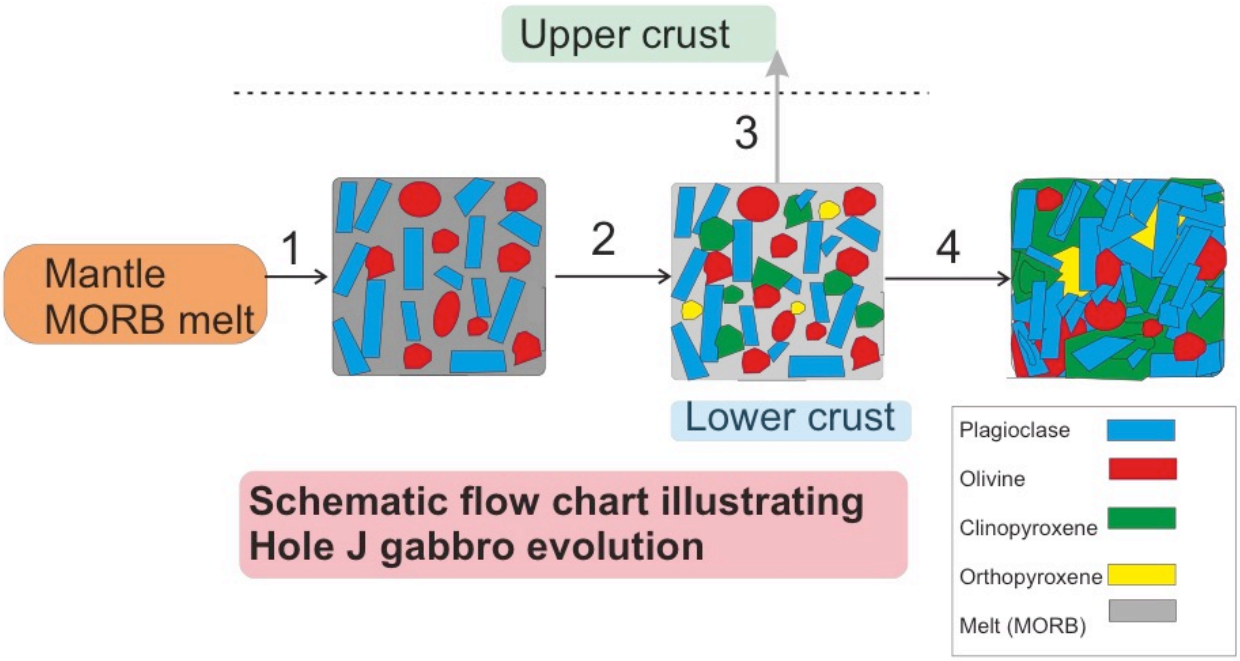


Figure 6.4: Evolution model of the Hess Deep lower crust: Hole J. First Fractional crystallization OF morb type melt form a mush, with crystallization of olivine and plagioclase, then thr gabbroic mush continue crystallization with nucleation of clinopyroxene and orthopyroxene. At this stage some melt may be extracted out to the upper crust and at last stage orthopyroxene and clinopyroxene crystallize as poikilitic texture.

6.1.2.2. Hole P:

The chemical evolution with depth for the main mineral content in Hole P shows is linked to the presence of two contrasted lithological series (Fig. 5.2). The first series was drilled from the bottom to about 70 mbsf, it is composed of troctolites with variable modal amount of olivine. Its chemistry is primitive, with high Mg# for mafic minerals, and high An content in Plg. Above 70 mbsf, olivine gabbros and Opx-bearing olivine-gabbros make the second series. Although it is represented by Opx bearing lithologies which is less primitive than troctolite and exhibit lower Mg# in mafic minerals and lower An content in Plg, mineral chemical characteristics are still quite primitive. Anorthite content in Plg is more scattered in the Opx bearing lithology gabbros than in troctolites, which points to stronger zoning in Plg in the gabbros. Two different vertical Mg# trends corresponding with the two series show that if Mg# is linked with the lithological facies, there is no clear evolution of the differentiation degree with depth within a given lithological facies (Fig. 5.2). The narrow Mg# scatter in a single sample for Ol and Opx suggest that the magma was Mg/(Mg+Fe) buffered for the formation of these minerals. In contrast the wider scatter for Cpx outline a stronger zoning for this mineral probably in relation to its textural appearance as poikilitic crystal. Local and late crystallization processes probably affected Cpx during the final stages of crystallization. In the Opx bearing gabbros the highest Opx Mg# are observed in the uppermost 20 m, together with higher TiO_2, Cr_2O_3 and Al_2O_3 content. This suggest that a rather primitive magma was present at the top of the section, whether directly injected or resulting from the reaction of the magma in the magmatic chamber with primitive walls.

Orthopyroxene and clinopyroxene both have high concentrations in Cr, Al and Ti along with high value of Mg#. These concentrations are higher than what could be expected from the fractional crystallization of a MORB melt (Fig. 5.2 B). Spinel TiO_2 vs Fo content of the coexisting olivine show that melt-rock reaction clearly occurred in association with

fractional crystallization (Fig. 6.5 D). Dick and Natland (1996) showed that melt-rock reaction predominated in Hess Deep troctolite crystallization. Fo value for Ol is buffered around 87-88% as mantle value is around 90-91%. They deduced that mantle-melt reaction led to some drop together with buffering in Mg#. Moreover, the presence of inherited olivines from a mantle slab in oceanic deep troctolites has already been described at Atlantis Massif (Drouin et al. 2009 and Suhr et al. 2008). Troctolites located at the bottom of Hole P show similar value for Ol forsterite content and no evolution with depth (around 87-88%, see Fig. 5.2), pointing to a similar formation dominated by melt-rock reaction involving a MORB melt and mantle wall rock. However, Fo value for olivine in Opx-bearing gabbros is buffered at lower values, between 83-86%, which seems to indicate a more differentiated buffer. Moreover, olivine show no deformation texture like kink band, suggesting that they originally crystallized from a melt and were not inherited from mantle. However, subrounded shape clearly shows that olivine resorption and melt-rock reaction did occur during Opx bearing gabbro formation and explain the Mg# buffering for all mafic minerals.

The trace element content in some olivine is enriched in HREE (Fig. 6.1) and show significant differences with the main composition in other olivine which is about one order lower. This olivine show subrounded texture that may have been acquired by a certain degree of resorption resulting from the reaction with a melt. HREE content in Ol does not show any significant evolution with its Fo content (Fig. 5.9), which is compatible with the crystallization from a buffered melt, however the highest HREE content are observed in olivine with rather low Mg#. The relatively low value in Fo (in comparison with mantle values) and high HREE concentration in the most differentiated olivine seems to rule out a possible mantle origin for resorbed olivines. On the other hand, the chemistry of enriched olivine is very similar to that of olivines from the troctolite layer located below the Opx-bearing gabbros in Hole P (Akizawa et al., personal communication). This points to a

possible troctolitic buffer and olivine inherited from troctolite after melt-rock reaction during the formation of Opx-bearing lithologies above the troctolite layer. This hypothesis is also compatible with the large Mg# scatter in Cpx and An scatter in Plg, those minerals being partly crystallized in the troctolites before being reacted with the Opx-bearing gabbros parental melt.

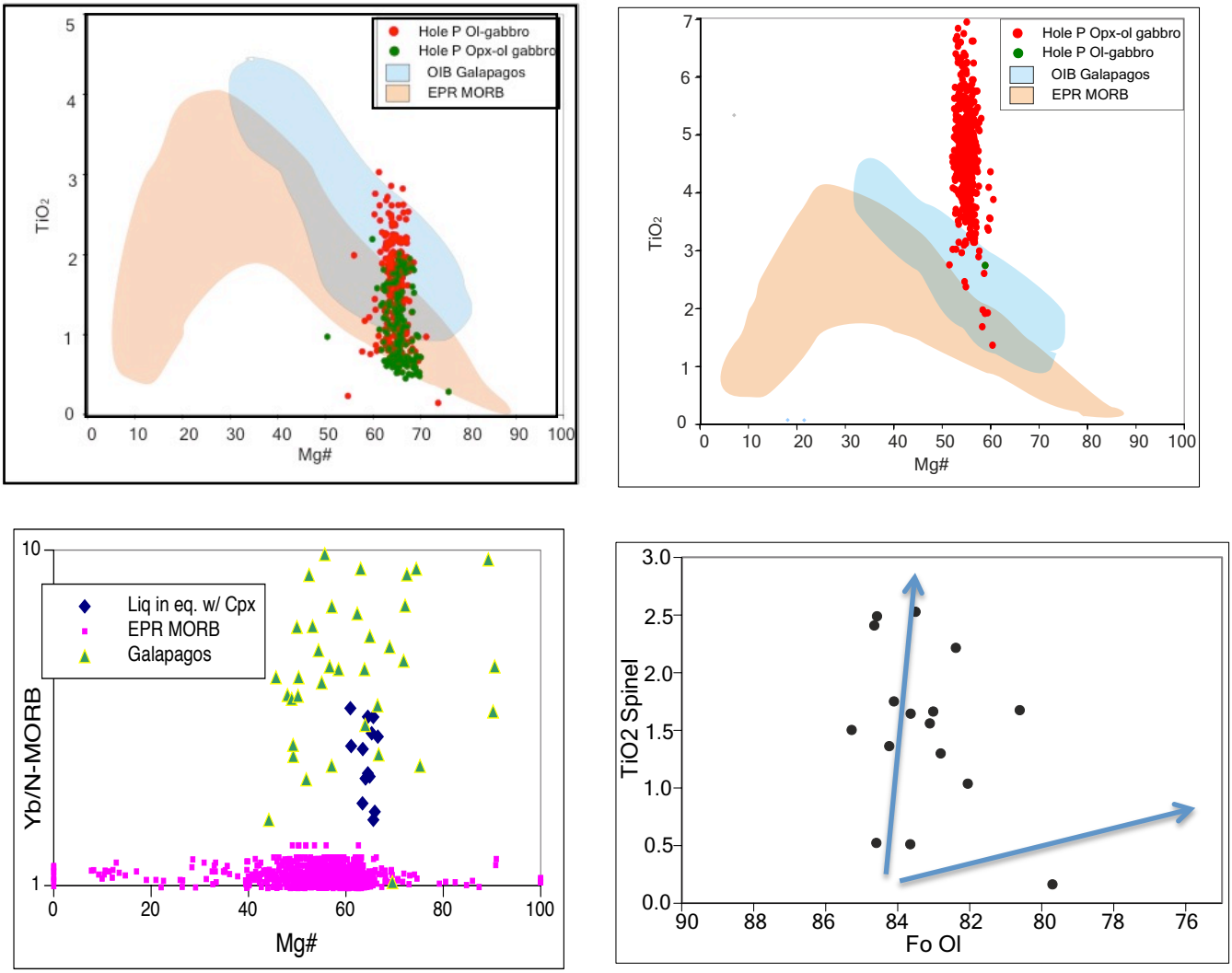


Figure 6.5 Liquid in equilibrium of TiO2 vs Mg# for clinopyroxene and orthopyroxene in A and B respectively, (C)Liquid in equilibrium with Yb comaperd with EPR MORB and galapagos glass (D) Hole P gabbros, Weight percent TiO2 spinel plotted against the forsterite content of coexisting olivine. Shown for comparison are the approximate trends for meltrock reaction, where Mg# is buffered, and without fractional crystallization (Dick and Natland, 1996)

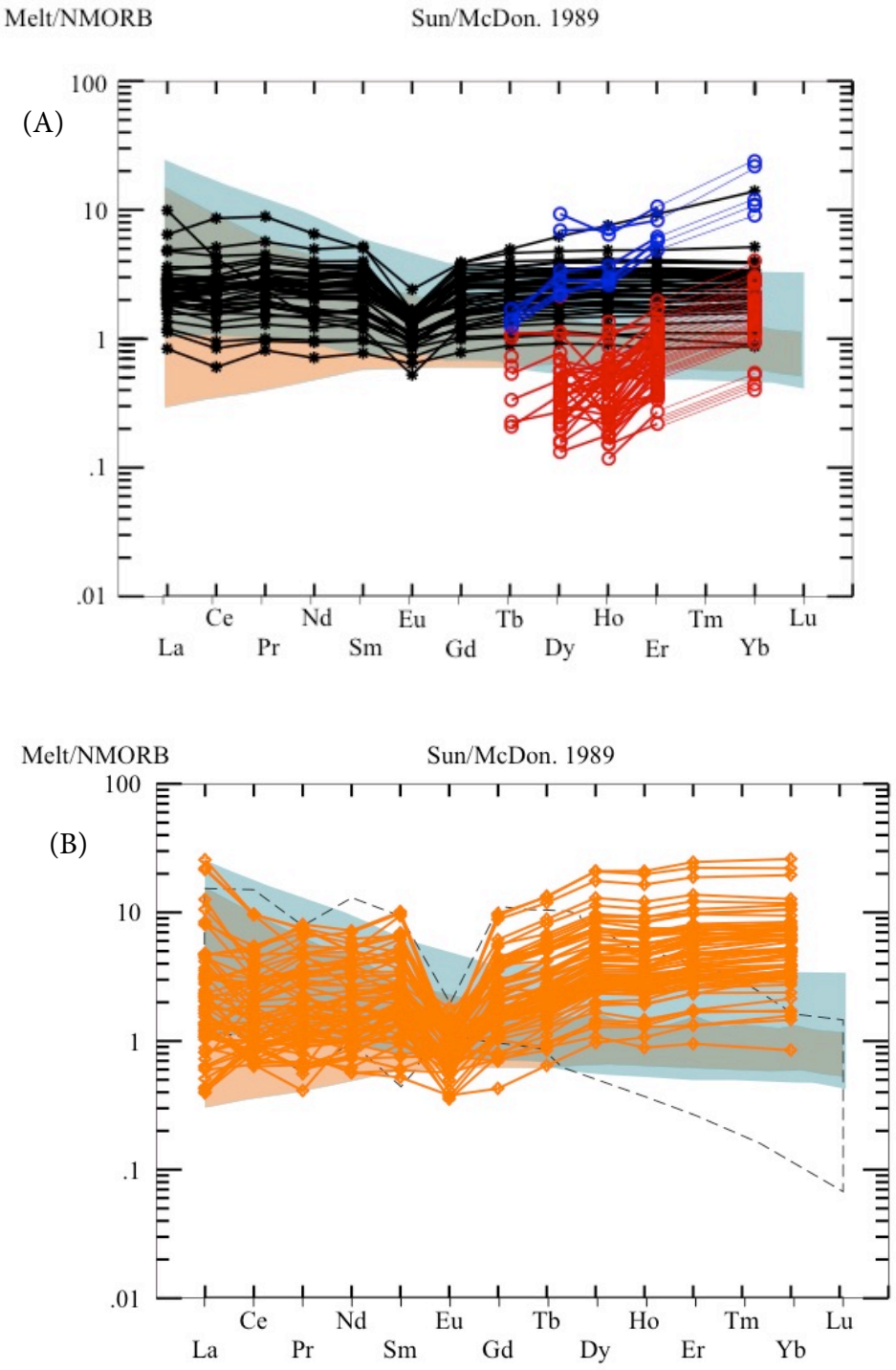


Figure 6.6. (A) Liquid in equilibrium of REE element for clinopyroxene and olivine and (B) orthopyroxene and plagioclase in comparisons with EPR MORB and OIB Galapagos type melt

6.2. Enriched component in mantle source:

Melts in equilibrium with gabbros from Hole J show a MORB like chemistry making a continuous trend with the melts in equilibrium with upper gabbros (Fig. 6.3). In Hess Deep lower gabbros, Cpx occur as oikocrysts that enclose, and therefore overgrew, early crystallized olivine and plagioclase. Cpx are then precipitated as late interstitial grains between olivine and plagioclase. This indicates that gabbro crystallization followed the normal fractionation trend for MORB, with clinopyroxene saturation following olivine+plagioclase.

In Hole P gabbros, the poikilitic texture of Cpx outline a high temperature crystallization where Ol and Plg co-crystallized and pyroxenes came later and where trapped in melt pockets. Orthopyroxene occur as poikilitic, prismatic and interfingered with Cpx. Thus Opx crystallized together with Cpx but sometimes slightly earlier as shown by the existence of prismatic Opx included in poikilitic Cpx. High pressure early clinopyroxene fractionation would lower the Mg# of the melt significantly by the time it saturates in plagioclase, leading to lower clinopyroxene Mg# at a given plagioclase anorthite content. Finally, the TiO_2 and Cr_2O_3 contents of the oikocrysts differ from those expected from fractionation of a MORB melt (Fig. 6.5). The melt in equilibrium with the oikocrysts has TiO_2 concentrations as high as evolved melts in equilibrium with MORB but a primitive Mg#. On the other hand, Orthopyroxene also has higher Mg# and extremely high TiO_2 content. In a MORB crystallization sequence, orthopyroxene crystallize late and should have lower Mg#, higher incompatible elements concentrations. In Hess Deep gabbros however, Cpx and Opx Mg# stay in the primitive range. The TiO_2 and REE contents largely exceed any values obtained by differentiation from MORB or OIB enriched melts (Fig. 6.5). The chemistry of the melts in equilibrium with Cpx is in between the MORB and Galapagos OIB chemical domains. On the Other hand, TiO_2 and REE concentrations in the melts in equilibrium with Opx exceeds the highest values recorded in Galapagos

enriched melts, even the most differentiated (Fig. 6.5). This indicates that the clinopyroxene and orthopyroxene could not have been produced by extensive fractionation of a MORB under equilibrium conditions. High TiO_2 and REE contents of the parental melts indicate an enriched source for Hole P Opx-bearing gabbros.

The two main candidates for the enriched source are:

1- Deep mantle enriched source coming from the Galapagos hot spot and contaminating EPR westward to Hess Deep;

2- An eclogite-pyroxenitic source present in the mantle below EPR at the time of Hess Deep gabbros genesis.

A weak degree of contamination from the Hawaii hot spot was detected in EPR basaltic glasses (Niu et al.,1999) but Hess Deep basalts seems to be of purely MORB nature without any chemical evidence of enriched melt (Batiza et al, 1992). Primitive melt from hot spots has enriched chemical characteristics that make a good candidate for the mixing melt and a contamination by the relatively close Galapagos hot spot cannot be totally excluded. However, geophysical data showed that the Galapagos plume tends to migrate southward and gets away from any potential Hess Deep source (Villagómez et al. 2014). The ubiquitous presence of Opx in Hole P gabbros, as well as olivine resorption textures, suggest that the enriched melt was rich in Si. The high Mg# of all mafic minerals is an evidence showing that this melt was also primitive. High-Si primitive melt are likely to be formed by the melting of pyroxenite as, on the other hand, picritic olivine-saturated melts should be emitted from the melting of a deep mantle source. Thus, in Hess Deep gabbro case, a pyroxenitic source was probably present in the mantle 20 Ma ago.

6.3. Origin of Orthopyroxene

We have already seen that Opx bearing gabbros in Hole P crystallized from a melt buffered in Mg# by reaction of a MORB melt with the crystallizing underlying troctolite, this process leading to enrichment in Ti, Cr and Al. Whereas orthopyroxene in Hole J has a lower modal abundance and a very comparable chemical signature with EPR MORB. Evolution of Opx chemistry with depth in Hole P (Fig: 5.2) show that large scatters are observed for TiO_2, Al_2O_3, Cr_2O_3 as one single sample cover about the whole range of concentration (Fig. 5.10). In accordance with the slight increase in Mg# at the uppermost 20m, TiO_2 slightly decreases and Cr_2O_3 and Al_2O_3 increase. Cr_2O_3 significantly increase at the top section. Which also implies more enriched melt injection in the upper section.

Opx elemental mapping shows enriched zones in Al and Ca representing secondary amphibole crystallization along Opx fractures and some Ca-rich exsolution lamellas, corresponding to slow cooling event (Fig. 5.10). Ti rich lamellas are also present and are parrallel to the Opx crystallographic structures but do not correspond to the Ca rich lamellas, implying that they are not related to Ti local enrichment due to exsolution during cooling but are more probably of magmatic origin. The origin of these Ti-rich lamellas are puzzling, as it is unusual for magma inherited chemical characteristic to be included within exsolution-like structures. It is possible to imagine that small increment of Ti and Si-rich magma, produced by the melting of the pyroxenitic source, may have been injected in the crystallizing mush, leading to a enrichment pic in Ti while increased Si would put the magma on the Opx cotectic leading to the sporadic crystallization of unusually Ti-rich Opx. However, instead Ti diffusion rate is quite slow, subsolidus exsolution cannot be excluded without detailed crystallographic study. It has to be noted that out of the Ti-rich lamellas, the TiO_2 average content in Opx (blue background in Fig 5.10, and see Fig 6.7 for Opx average composition) is still higher than any Opx crystallizing from Galapagos or MORB magma could be.

The generation of Opx in Hole P is driven by melt-rock reaction process buffering the Mg#; mixing of MORB with an pyroxenitic enriched melt leading to enrichment in Ti, Cr and Al; and crystallization in a mush leading to the formation of poikilitic Cpx and prismatic to poikilitic Opx.

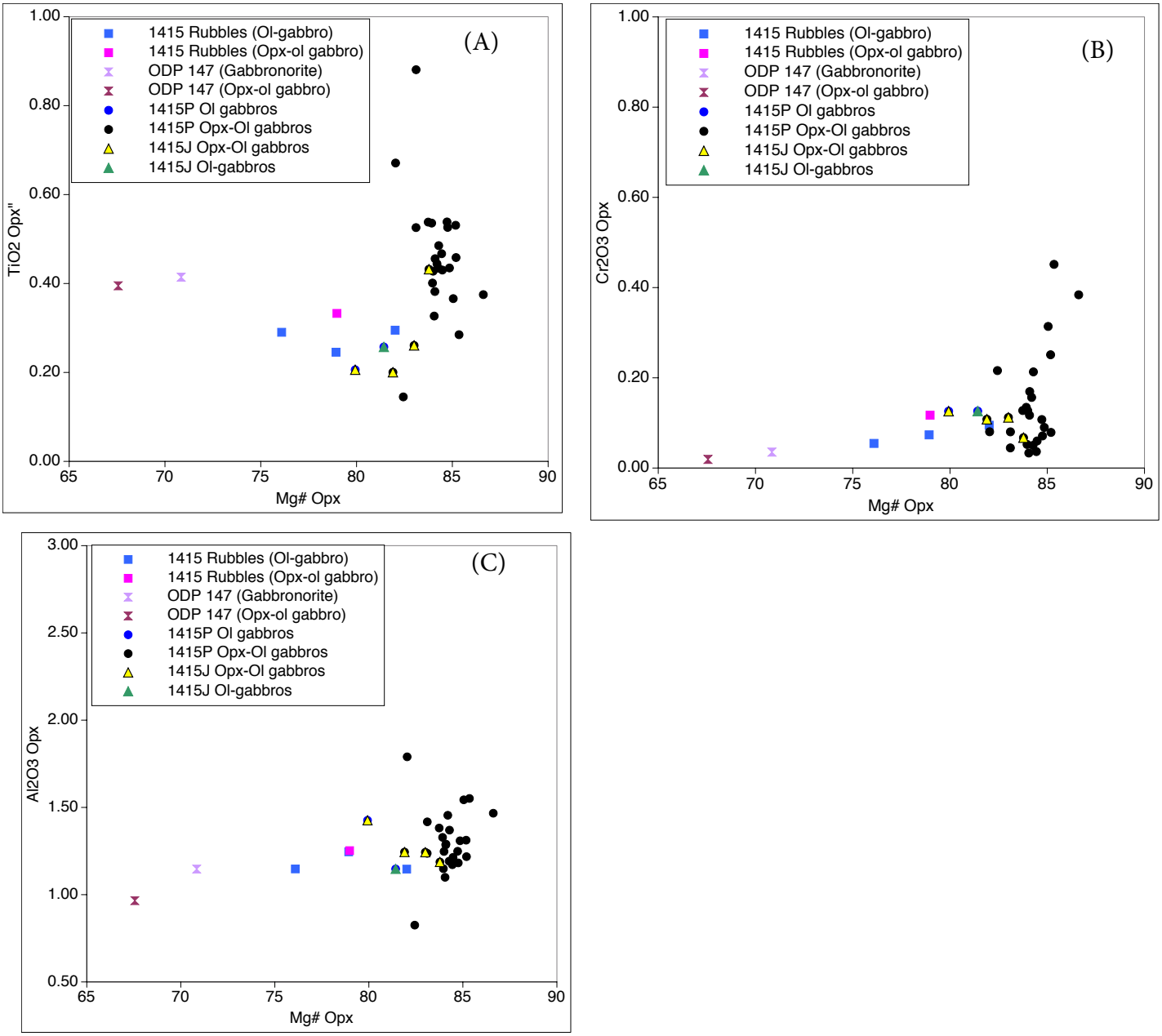


Figure 6.7: Average Opx chemistry for each samplse from upper gabbros from ODP Leg 147, rubbles from Exp. 345, Ol-gabbro and Opx-ol gabbro from Hole U1415J and Hole U1415P (A) TiO_2 vs.Mg#, (B) Cr_2O_3 vs Mg# (C) Al_2O_3 vs. Mg#

6.4. Non-Extracted melt from lower crust:

Previous studies showed from petrological and geophysical evidence that two paired magma lenses are present at two levels beneath the East pacific Rise. The first is located about 1.5 km below the sea floor, its existence was already shown by seismic reflection techniques nearly three decades ago (e.g., Ludwig et al., 1980; Herron et al., 1980). It is widespread and considered to reside just beneath the base of sheeted dikes (Kent et al., 1993), it is emitting all the magma that is expressed at the surface and that makes the basaltic layer. The location of the upper melt lenses at fast-spreading ridges is controlled by a permeability barrier, the barrier blocks upward flow of buoyant magma and corresponds to a conductive boundary layer (Natland and Dick, 2009). Cracking under over-pressure in the magma lens is the only process which can allow the melt to be extracted from the lens.

Seismic refraction results published by Garmany (1989) showed that the lower melt lens is located at the base of the crust, just above the mantle. This result was later confirmed using compliance techniques by Crawford et al. (1999). These studies showed that both lenses are thin (50–100 m), narrow (1–1.5 km), axially centered, and mostly molten. The rocks in between the two lenses are nearly solid, with no more than 2.5–18% melt, at least at the time the geophysical experiments were conducted - the variance depending on model parameters (Natland and Dick 2009). This lens will emit almost no magma in the upper crust but rather form primitive olivine-rich gabbros in-situ. The non-extraction of magma from the deep lens would be explained by it picritic composition. Picritic magma are heavier than a MORB melt crystallizing gabbros and then sink below the MORB mush (Natland and Dick 2009).

At the time of Hess Deep gabbros genesis, the melting of a pyroxenitic source below EPR would lead to the emission of a primitive Ti, Cr and REE enriched primitive melt. This

melt is richer in Si and then lighter than MORB or picritic melts. However, it is also more viscous and is less likely to be extracted from a crystal-rich mush. The pyroxenitic melt would then contaminate the picritic melt lens, which is rich in olivine and crystallizing troctolite. The contamination would lead to increase of Si content in the interstitial magma, pulling it out of the olivine stability field and in the enstatite field. Opx then crystallize as Ol is progressively resorbed. These two processes act in a reverse way than the contamination, the resorption of Ol and crystallization of Opx lowering the Si content of the magma, Ol will be a liquidus phase and then crystallize again. Incremental contamination by several injection events would move the chemistry of the magma over the Ol-Opx stability field boundary and allow concurrent crystallization of both phases in an environment buffered in Mg# thanks to the high concentration in olivine of the starting picritic melt. Each batch of pyroxenitic melt will lead to pic enrichment in Ti, Cr, REE that are expressed in the enriched lamellas in Opx.

Here it is noted that the composition of Hole P, Cpx show chemistry inherited from this mixing process, while the Hole J and the upper gabbros chemistry can be explained by pure crystallization from a MORB. In other hand Hole P Opx shows very different characteristic, we can assume that as late crystalline phase Opx crystallize from more differentiated and chemically buffered melt that react with the crystalline mush. Only 200m away Hole J Opx shows different chemistry and can be formed by crystallization from a MORB melt.

So either the gabbros acted as a significant chemical and physical filter preventing the contaminated magma to rise up to the basalts, or other process resulted in the blockage of some magma fractions in the deeper crustal level.

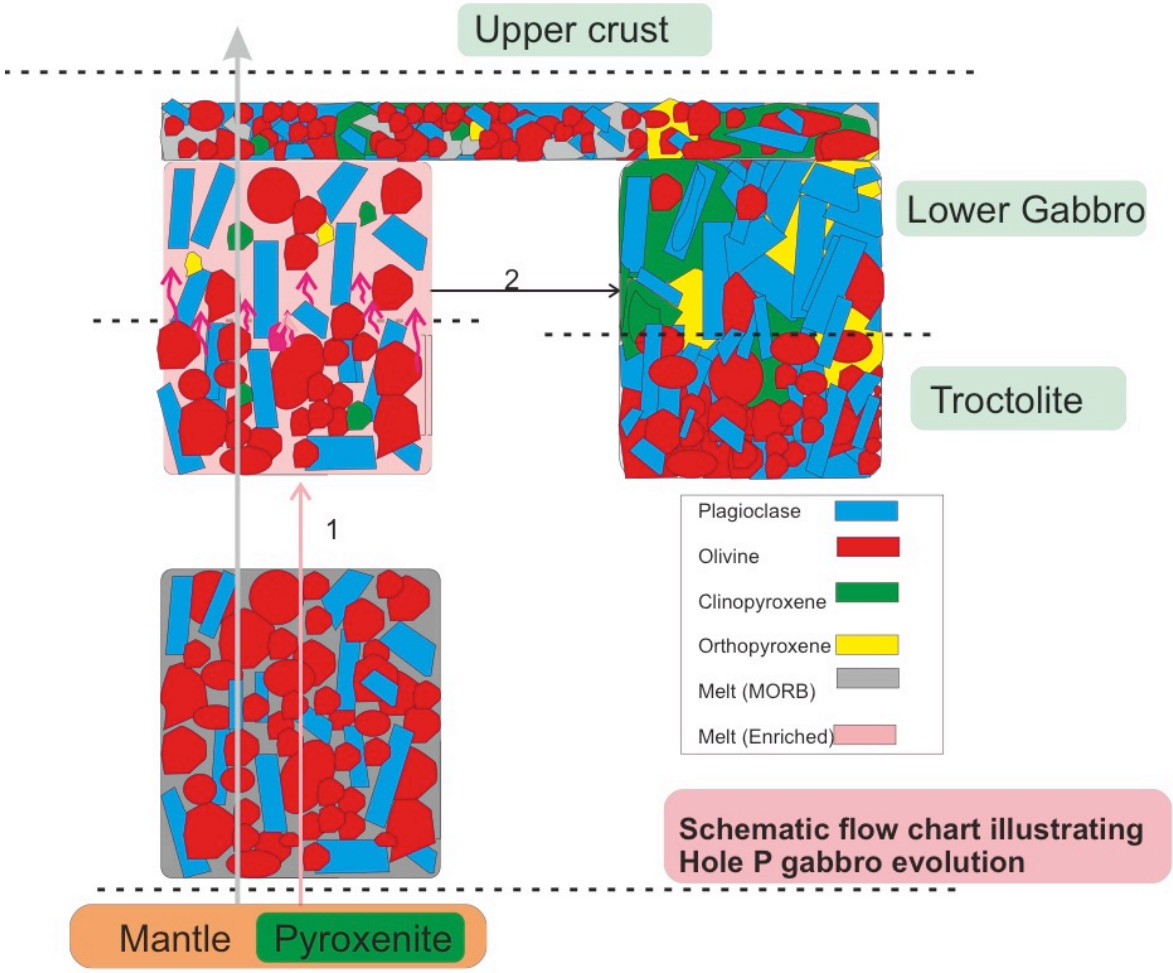


Figure 6.8: Evolution model of the Hess Deep lower crust: Hole P . First crystallization of a troctolitic mush with high Mg#, then injection of silica and trace element enriched melt comes into the mush and mixing with the interstitial melt that lead olivine to resorb. Lighter melt expel at the top of the melt lense and started nucleating clinopyroxene and orthopyroxene. Olivine resorption buffered Mg# so that the last crystal here clinopyroxene, but mostly orthopyroxene are highly enriched in the trace element with high Mg#.

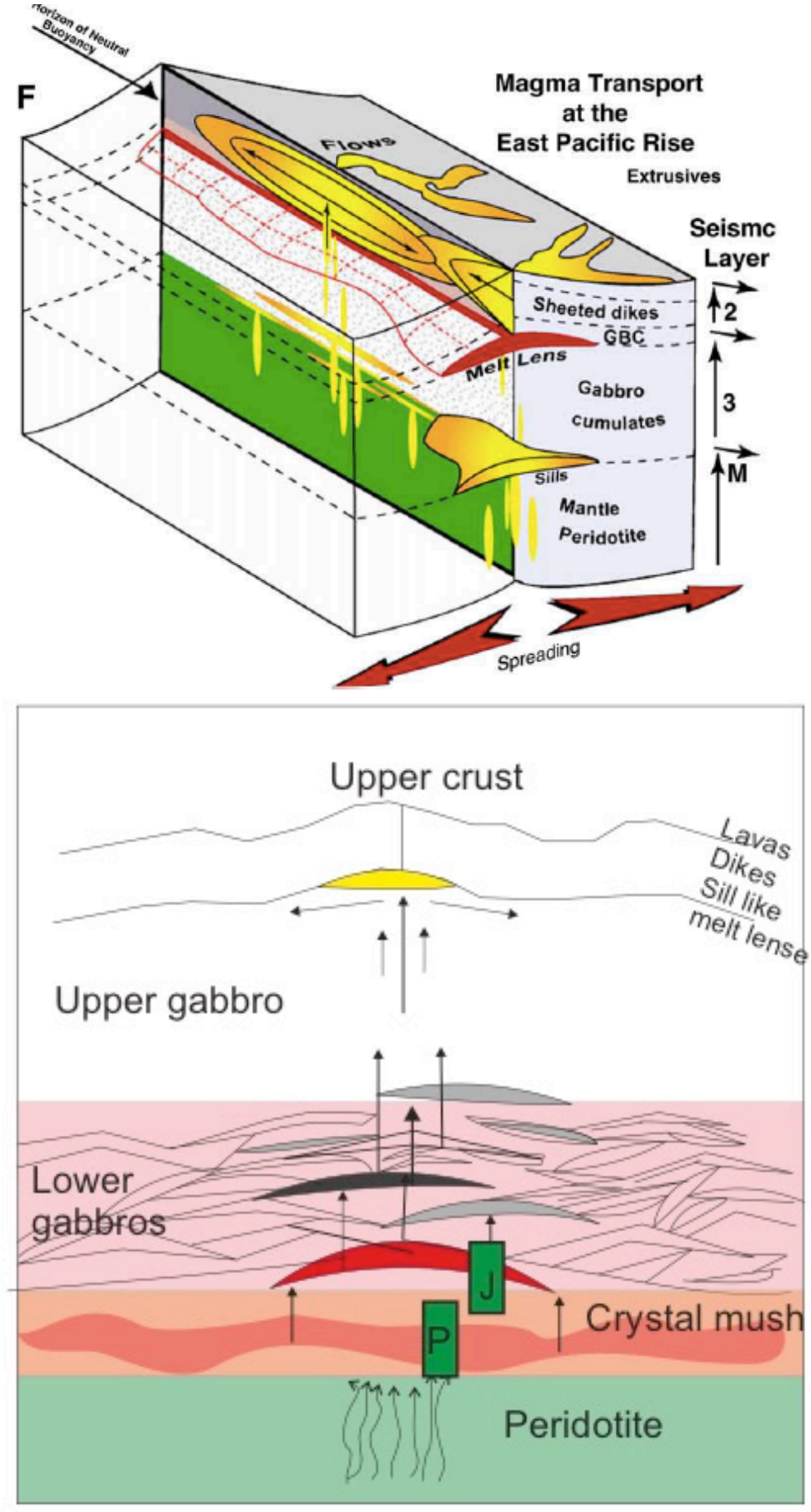


Figure 6.9: Diagram shows upper melt lense and lower melt lense presence beneath the EPR. Therefore the crystalline mush of layer 3 gabbros, act as a filter to explede the enriched magma from lower level to upper crustal level. Figure taken from Natland and Dick, 2009.

Chapter 7

7. Conclusion

Most studies about EPR indicated a MORB source for all basalts and a similar MORB source was also documented for Hess Deep upper gabbros (ODP Leg 147 report).

Our study showed that gabbros from Hole J are compatible with this model. However, although it is located only 110 m away from Hole J, Hole P gabbros show radically different chemical signature.

Two major events were involved in gabbro formation in Hess deep:

1) Crystallization of a MORB melt in a mush leading to formation of Hole J gabbros and upper gabbro;

2) Contamination from a Ti, Zr, REE, Si rich source, leading to the local crystallization of highly Ti, Al, Cr-enriched Opx and Cpx in Hole P.

The crystallization process implied melt buffered Mg#, by olivine resorption from Ol-rich troctolites formed in a deep picritic magma chamber. Troctolite present just below the Opx bearing gabbro have the same trace element characteristic as EPR lower crustal gabbro and EPR basaltic glass.

The best candidate for the enriched melt source is eclogitic layers in the mantle as suggested by the enrichment in Si together with incompatible elements. However, contamination by some melt similar to those emitted at the Galapagos hot spot cannot be totally ruled out on our chemical study basis.

This Si and incompatible elements enrichment was not found in the EPR basalts, suggesting that some melt may not be extracted from the magma chamber and completely crystallize in situ. We showed that the gabbroic mush may act as a chemical filter between

the mantle and basalts and only a certain type of magma will go through this filter to be emitted at the surface. This filter results in the blockage of some magma fractions in the deeper crustal levels and, in this case, prevents the contaminating primitive melts to be expelled out to the basaltic layer.

In this study case, non-extraction of light silica rich melts can be partly explained by a higher viscosity that prevent any trapped melt to escape from a crystal-rich mush. The amount of poikilitic crystals in studied samples suggest a maximum porosity of 25%. But as Cpx started to crystallize from a MORB mush before contamination, the porosity was probably lower at the mixing point so that the mush may have reach the permeability allowing to less viscous MORB melt to be expelled but not the viscous Si-rich melt in equilibrium with Opx. For the Opx richest gabbros, the relatively low amount of poikilitic Opx suggest a porosity level of 5 to 6% on average and lower than 15% in every cases.

References

Adachi, Y., and S. Miyashita (2003), Geology and petrology of the plutonic complexes in the Wadi Fizh area: Multiple magmatic events and segment structure in the northern Oman ophiolite, *Geochemistry, Geophysics, Geosystems*, *4*(9), n/a-n/a.

Aghaei, O., M. R. Nedimovic, H. Carton, S. M. Carbotte, J. P. Canales, and J. C. Mutter (2014), Crustal thickness and Moho character of the fast-spreading East Pacific Rise from 9 degrees 42 ' N to 9 degrees 57 ' N from poststack-migrated 3-D MCS data, *Geochemistry Geophysics Geosystems*, *15*(3), 634-657.

Agrinier, P., R. Hékinian, D. Bideau, and M. Javoy (1995), O and H stable isotope compositions of oceanic crust and upper mantle rocks exposed in the Hess Deep near the Galapagos Triple Junction, *Earth and Planetary Science Letters*, *136*(3-4), 183-196.

Allan, J. F., T. Falloon, R. Pedersen, B. Shankar Lakkapragada, J. Natland, and J. Malpas (1996), Petrology of selected Leg 147 basaltic lavas and dikes, paper presented at proceedings-ocean drilling program scientific results, national science foundation.

Arai, s., and k. Matsukage (1996), petrology of gabbro-troctolite-peridotite complex from Hess Deep, equatorial Pacific: Implications for mantle-melt interaction within the oceanic lithosphere, paper presented at proceedings-ocean drilling program scientific results, national science foundation.

Arai, S., K. Matsukage, E. Isobe, and S. Vysotskiy (1997), Concentration of incompatible elements in oceanic mantle: effect of melt/wall interaction in stagnant or failed melt conduits within peridotite, *Geochimica et Cosmochimica Acta*, *61*(3), 671-675.

Arai, S., and Y. Takemoto (2007), Mantle wehrlite from Hess Deep as a crystal cumulate from an ultra-depleted primary melt in East Pacific Rise, *Geophysical Research Letters*, *34*(8).

Batiza, R., J. Allan, W. Bach, K. Boström, J. Brophy, G. Fryer, S. Goldstein, K. Harpp, R. Haymon, and R. Hekinian (1995), Petrology, geochemistry, and petrogenesis of Leg 142 basalts: synthesis of results: East Pacific Rise, paper presented at Proceedings of the Ocean Drilling Program. Scientific results, Ocean Drilling Program.

Batiza, R., and Y. Niu (1992), Petrology and magma chamber processes at the East Pacific Rise~ 9 30′ N, *J. geophys. Res*, *97*(6), 779-776,798.

Batiza, R., R. Oestrike, and K. Futa (1982), Chemical and isotopic diversity in basalts dredged from the East Pacific Rise at 10 S, the fossil Galapagos Rise and the Nazca Plate, *Marine Geology*, *49*(1), 115-132.

Bédard, J. H. (2006), Trace element partitioning in plagioclase feldspar, *Geochimica et Cosmochimica Acta*, *70*(14), 3717-3742.

Bédard, J. H. (2010), Parameterization of the Fe=Mg exchange coefficient (Kd) between clinopyroxene and silicate melts, *Chemical Geology*, *274*(3), 169-176.

Benoit, M., G. Ceuleneer, and M. Polvé (1999), The remelting of hydrothermally altered peridotite at mid-ocean ridges by intruding mantle diapirs, *Nature*, *402*(6761), 514.

Benoit, M., M. Polvé, and G. Ceuleneer (1996), Trace element and isotopic characterization of mafic cumulates in a fossil mantle diapir (Oman ophiolite), *Chemical Geology*, *134*(1-3), 199-214.

Bideau, D., and R. Hekinian (1995), A dynamic-model for generating small-scale heterogeneities in ocean-floor basalts, *Journal of Geophysical Research-Solid Earth*, *100*(B6), 10141-10162.

Boudier, F., and A. Nicolas (1985), Harzburgite and lherzolite subtypes in ophiolitic and oceanic environments, *Earth and Planetary Science Letters*, *76*(1), 84-92.

Brandl, P. A., C. Beier, M. Regelous, W. Abouchami, K. M. Haase, D. Garbe-Schoenberg, and S. J. G. Galer (2012), Volcanism on the flanks of the East Pacific Rise: Quantitative constraints on mantle heterogeneity and melting processes, *Chemical Geology*, *298*, 41-56.

Brooks, C. K., T. Nielsen, J. A. Karson, S. D. Hurst, and P. Lonsdale (1993), Tectonic rotations of dikes in fast-spread oceanic crust exposed near Hess Deep: Comment and Reply, *Geology*, *21*(9), 857-858.

Buck, W. R., C. Small, and W. B. F. Ryan (2009), Constraints on asthenospheric flow from the depths of oceanic spreading centers: The East Pacific Rise and the Australian-Antarctic Discordance, *Geochemistry Geophysics Geosystems*, *10*.

Colman, A., J. M. Sinton, and V. D. Wanless (2015), Constraints from melt inclusions on depths of magma residence at intermediate magma supply along the Galápagos Spreading Center, *Earth and Planetary Science Letters*, *412*, 122-131.

Coogan, L., G. Jenkin, and R. Wilson (2007), Contrasting cooling rates in the lower oceanic crust at fast-and slow-spreading ridges revealed by geospeedometry, *Journal of Petrology*, *48*(11), 2211-2231.

Coogan, L. A., K. M. Gillis, C. J. MacLeod, G. M. Thompson, and R. Hékinian (2002), Petrology and geochemistry of the lower ocean crust formed at the East Pacific Rise and exposed at Hess Deep: A synthesis and new results, *Geochemistry, Geophysics, Geosystems*, *3*(11), 1-30.

Coogan, L. A., A. D. Saunders, P. D. Kempton, and M. J. Norry (2000), Evidence from oceanic gabbros for porous melt migration within a crystal mush beneath the Mid-Atlantic Ridge, *Geochemistry, Geophysics, Geosystems*, *1*(9), n/a-n/a.

Coogan, L. A., G. Thompson, and C. J. MacLeod (2002), A textural and geochemical investigation of high level gabbros from the Oman ophiolite: implications for the role of the axial magma chamber at fast-spreading ridges, *Lithos*, *63*(1), 67-82.

Crawford, W. C., and S. C. Webb (2002), Variations in the distribution of magma in the lower crust and at the Moho beneath the East Pacific Rise at 9°–10°N, *Earth and Planetary Science Letters*, *203*(1), 117-130.

Crawford, W. C., S. C. Webb, and J. A. Hildebrand (1999), Constraints on melt in the lower crust and Moho at the East Pacific Rise, 9°48′N, using seafloor compliance measurements, *Journal of Geophysical Research: Solid Earth*, *104*(B2), 2923-2939.

Dick, H. J., and J. H. Natland (1996), Late-stage melt evolution and transport in the shallow mantle beneath the East Pacific Rise, paper presented at Proceedings-Ocean Drilling Program Scientific Results, National Science Foundation.

Donnelly, K. E., S. L. Goldstein, C. H. Langmuir, and M. Spiegelman (2004), Origin of enriched ocean ridge basalts and implications for mantle dynamics, *Earth and Planetary Science Letters*, *226*(3–4), 347-366.

Drouin, M., M. Godard, B. Ildefonse, O. Bruguier, and C. J. Garrido (2009), Geochemical and petrographic evidence for magmatic impregnation in the oceanic lithosphere at Atlantis Massif, Mid-Atlantic Ridge (IODP Hole U1309D, 30°N), *Chemical Geology*, *264*(1–4), 71-88.

Drouin, M., B. Ildefonse, and M. Godard (2010), A microstructural imprint of melt impregnation in slow spreading lithosphere: Olivine‐rich troctolites from the Atlantis Massif, Mid‐Atlantic Ridge, 30 N, IODP Hole U1309D, *Geochemistry, Geophysics, Geosystems*, *11*(6).

Eason, D., and J. Sinton (2006), Origin of high-Al N-MORB by fractional crystallization in the upper mantle beneath the Galapagos Spreading Center, *Earth and Planetary Science Letters*, *252*(3), 423-436.

Embley, R. W., J. E. Lupton, G. Massoth, T. Urabe, V. Tunnicliffe, D. A. Butterfield, T. Shibata, O. Okano, M. Kinoshita, and K. Fujioka (1998), Geological, chemical, and biological evidence for recent volcanism at 17.5°S: East Pacific Rise, *Earth and Planetary Science Letters*, *163*(1–4), 131-147.

Faak, K., S. Chakraborty, and L. Coogan (2011), Evaluation of the Variation in Cooling

Rate with Depth in the Lower Oceanic Crust at Fast-Spreading Ridges Using a Newly Developed Mg in Plagioclase Geospeedometer, paper presented at AGU Fall Meeting Abstracts.

Faak, K., L. A. Coogan, and S. Chakraborty (2015), Near conductive cooling rates in the upper-plutonic section of crust formed at the East Pacific Rise, *Earth and Planetary Science Letters*, *423*, 36-47.

Faak, K., and K. M. Gillis (2016), Slow cooling of the lowermost oceanic crust at the fast-spreading East Pacific Rise, *Geology*, *44*(2), 115-118.

Faak, K., and K. M. Gillis (2016), Slow cooling of the lowermost oceanic crust at the fast-spreading East Pacific Rise, *Geology*, *44*(2), 115-118.

Floyd, J. S., M. Tolstoy, J. C. Mutter, and C. H. Scholz (2002), Seismotectonics of mid-ocean ridge propagation in Hess Deep, *Science*, *298*(5599), 1765-1768.

Früh-Green, G. L., A. Plas, and C. Lécuyer (1996), 14. Petrologic and stable isotope constraints on hydrothermal alteration and serpentinization of the EPR shallow mantle at Hess Deep (site 895), paper presented at Proceedings of the Ocean Drilling Program, Scientific Results.

Garmany, J. (1989), Accumulations of melt at the base of young oceanic crust, *Nature*, *340*(6235), 628-632.

Geshi, N., S. Umino, H. Kumagai, J. M. Sinton, S. M. White, K. Kisimoto, and T. W. Hilde (2007), Discrete plumbing systems and heterogeneous magma sources of a 24 km(3) off-axis lava field on the western flank of East Pacific Rise, 14 degrees S, *Earth and Planetary Science Letters*, *258*(1-2), 61-72.

Gillis, K., C. Mével, J. Allan, S. Arai, F. Boulder, B. Célérier, H. Dick, T. Falloon, G. Früh-Green, and G. Iturrino (1993), Introduction and principal results, paper presented at Proceedings of the Ocean Drilling Program, initial reports.

Gillis, K. M. (1995), Controls on hydrothermal alteration in a section of fast-spreading oceanic crust, *Earth and Planetary Science Letters*, *134*(3-4), 473-489.

Gillis, K. M., L. A. Coogan, and M. Chaussidon (2003), Volatile element (B, Cl, F) behaviour in the roof of an axial magma chamber from the East Pacific Rise, *Earth and Planetary Science Letters*, *213*(3), 447-462.

Gillis, K. M., K. Muehlenbachs, M. Stewart, T. Gleeson, and J. Karson (2001), Fluid flow patterns in fast spreading East Pacific Rise crust exposed at Hess Deep, *Journal of Geophysical Research: Solid Earth*, *106*(B11), 26311-26329.

Gillis, K. M., J. E. Snow, A. Klaus, N. Abe, A. B. Adriao, N. Akizawa, G. Ceuleneer, M.

J. Cheadle, K. Faak, and T. J. Falloon (2014), Primitive layered gabbros fromfast-spreading lower oceanic crust, *Nature*, *505*(7482), 204.

Godard, M., J.-L. Bodinier, and G. Vasseur (1995), Effects of mineralogical reactions on trace element redistributions in mantle rocks during percolation processes: A chromatographic approach, *Earth and Planetary Science Letters*, *133*(3), 449-461.

Goss, A. R., M. R. Perfit, W. I. Ridley, K. H. Rubin, G. D. Kamenov, S. A. Soule, A. Fundis, and D. J. Fornari (2010), Geochemistry of lavas from the 2005-2006 eruption at the East Pacific Rise, 9 degrees 46 ' N-9 degrees 56 ' N: Implications for ridge crest plumbing and decadal changes in magma chamber compositions, *Geochemistry Geophysics Geosystems*, *11*.

Griffin, W., W. Powell, N. Pearson, and S. O'reilly (2008), GLITTER: data reduction software for laser ablation ICP-MS, *Laser Ablation-ICP-MS in the earth sciences. Mineralogical association of Canada short course series*, *40*, 204-207.

Günther, D., and C. A. Heinrich (1999), Enhanced sensitivity in laser ablation-ICP mass spectrometry using helium-argon mixtures as aerosol carrier, *Journal of Analytical Atomic Spectrometry*, *14*(9), 1363-1368.

Hekinian, R. (2014), *Sea floor exploration: Scientific adventures diving into the abyss*, Springer.

Hekinian, R., D. Bideau, J. Francheteau, J. L. Cheminee, R. Armijo, P. Lonsdale, and N. Blum (1993), Petrology of the East Pacific Rise crust and upper mantle exposed in Hess Deep (eastern equatorial Pacific), *Journal of Geophysical Research: Solid Earth (1978–2012)*, *98*(B5), 8069-8094.

Hekinian, R., D. Bideau, J. Francheteau, J. L. Cheminee, R. Armijo, P. Lonsdale, and N. Blum (1993), Petrology of the East Pacific Rise crust and upper mantle exposed in Hess deep (eastern equatorial Pacific), *Journal of Geophysical Research: Solid Earth*, *98*(B5), 8069-8094.

Hekinian, R., D. Bideau, R. Hebert, and Y. L. Niu (1995), MAGMATISM IN THE GARRETT TRANSFORM-FAULT (EAST PACIFIC RISE NEAR 13-DEGREES-27-MINUTES-S), *Journal of Geophysical Research-Solid Earth*, *100*(B6), 10163-10185.

Herron, T. J., P. L. Stoffa, and P. Buhl (1980), Magma chamber and mantle reflections – East Pacific Rise, *Geophysical Research Letters*, *7*(11), 989-992.

Hesse, K. T., J. Gose, R. Stalder, and E. Schmädicke (2015), Water in orthopyroxene from abyssal spinel peridotites of the East Pacific Rise (ODP Leg 147: Hess Deep), *Lithos*, *232*, 23-34.

Hey, R. (1977), Tectonic evolution of the Cocos-Nazca spreading center, *Geological Society of America Bulletin*, *88*(12), i-vi.

Hey, R. N., and K. Deffeyes (1972), The Galapagos triple junction and plate motions in the east Pacific, *Nature*, *237*, 20-22.

Hieronymus, C. F. (2004), Control on seafloor spreading geometries by stress- and strain-induced lithospheric weakening, *Earth and Planetary Science Letters*, *222*(1), 177-189.

Hofmann, A. W., and W. M. White (1982), Mantle plumes from ancient oceanic crust, *Earth and Planetary Science Letters*, *57*(2), 421-436.

Hurst, S. D., and J. A. Karson (2004), Side-scan sonar along the north wall of the Hess Deep Rift: Processing, texture analysis, and geologic ground truth on an oceanic escarpment, *Journal of Geophysical Research: Solid Earth*, *109*(B2), n/a-n/a.

Jochum, K. P., U. Nohl, K. Herwig, E. Lammel, B. Stoll, and A. W. Hofmann (2005), GeoReM: a new geochemical database for reference materials and isotopic standards, *Geostandards and Geoanalytical Research*, *29*(3), 333-338.

Kashintsev, G. L., and A. A. Shreider (2009), Tectonics and magmatism of the Hess deep region of the Galapagos rift, *Oceanology*, *49*(4), 515-522.

Kay, R., N. Hubbard, and P. Gast (1970), Chemical characteristics and origin of oceanic ridge volcanic rocks1, *Journal of Geophysical Research*, *75*(8), 1585-1613.

Kelley, D. S., and J. Malpas (1996), Melt-fluid evolution in gabbroic rocks from Hess Deep, paper presented at Proceedings of Ocean Drilling Program, Scientific Results, Ocean Drilling Program, Texas A&M University.

Kent, G. M., A. J. Harding, and J. A. Orcutt (1990), Evidence for a smaller magma chamber beneath the East Pacific Rise at 9[deg]30[prime] N, *Nature*, *344*(6267), 650-653.

Kirchner, T. M., and K. M. Gillis (2012), Mineralogical and strontium isotopic record of hydrothermal processes in the lower ocean crust at and near the East Pacific Rise, *Contributions to Mineralogy and Petrology*, *164*(1), 123-141.

Klein, E. M., D. K. Smith, C. M. Williams, and H. Schouten (2005), Counter-rotating microplates at the Galapagos triple junction, *Nature*, *433*(7028), 855.

Koepke, J., J. Berndt, S. T. Feig, and F. Holtz (2007), The formation of SiO2-rich melts within the deep oceanic crust by hydrous partial melting of gabbros, *Contributions to*

Mineralogy and Petrology, *153*(1), 67-84.

Koepke, J., D. Christie, W. Dziony, F. Holtz, D. Lattard, J. Maclennan, S. Park, B. Scheibner, T. Yamasaki, and S. Yamazaki (2008), Petrography of the dike‐gabbro transition at IODP Site 1256 (equatorial Pacific): The evolution of the granoblastic dikes, *Geochemistry, Geophysics, Geosystems*, *9*(7).

Koepke, J., S. T. Feig, and J. Snow (2005), Hydrous partial melting within the lower oceanic crust, *Terra Nova*, *17*(3), 286-291.

Koepke, J., S. T. Feig, J. Snow, and M. Freise (2004), Petrogenesis of oceanic plagiogranites by partial melting of gabbros: an experimental study, *Contributions to Mineralogy and Petrology*, *146*(4), 414-432.

Koepke, J., L. France, T. Müller, F. Faure, N. Goetze, W. Dziony, and B. Ildefonse (2011), Gabbros from IODP Site 1256, equatorial Pacific: Insight into axial magma chamber processes at fast spreading ocean ridges, *Geochemistry, Geophysics, Geosystems*, *12*(9).

Korenaga, J., and P. B. Kelemen (1997), Origin of gabbro sills in the Moho transition zone of the Oman ophiolite: Implications for magma transport in the oceanic lower crust, *Journal of Geophysical Research: Solid Earth*, *102*(B12), 27729-27749.

Launeau, P., J.-L. Bouchez, and K. Benn (1990), Shape preferred orientation of object populations: automatic analysis of digitized images, *Tectonophysics*, *180*(2-4), 201-211.

Lecroart, P., F. Albarede, and A. Cazenave (1997), Correlations of Mid-Ocean Ridge Basalt chemistry with the geoid, *Earth and Planetary Science Letters*, *153*(1-2), 37-55.

Lecuyer, C., and B. Reynard (1996), High‐temperature alteration of oceanic gabbros by seawater (Hess Deep, Ocean Drilling Program Leg 147): Evidence from oxygen isotopes and elemental fluxes, *Journal of Geophysical Research: Solid Earth*, *101*(B7), 15883-15897.

Lissenberg, C. J., and H. J. B. Dick (2008), Melt–rock reaction in the lower oceanic crust and its implications for the genesis of mid-ocean ridge basalt, *Earth and Planetary Science Letters*, *271*(1), 311-325.

Lissenberg, C. J., C. J. MacLeod, K. A. Howard, and M. Godard (2013), Pervasive reactive melt migration through fast-spreading lower oceanic crust (Hess Deep, equatorial Pacific Ocean), *Earth and Planetary Science Letters*, *361*, 436-447.

Lonsdale, P. (1988), Structural pattern of the Galapagos microplate and evolution of the Galapagos triple junctions, *Journal of Geophysical Research: Solid Earth*, *93*(B11),

13551-13574.

Lonsdale, P. (2005), Creation of the Cocos and Nazca plates by fission of the Farallon plate, *Tectonophysics*, *404*(3-4), 237-264.

Ludwig, W. J., and P. D. Rabinowitz (1980), Structure of Vema fracture zone, *Marine Geology*, *35*(1-3), 99-110.

MacLeod, C. J., C. J. Lissenberg, and L. E. Bibby (2013), "Moist MORB" axial magmatism in the Oman ophiolite: The evidence against a mid-ocean ridge origin, *Geology*, *41*(4), 459-462.

Manning, C. E., and C. MacLeod (1996), Fracture-controlled metamorphism of Hess Deep gabbros, Site 894: constraints on the roots of mid-ocean-ridge hydrothermal systems at fast-spreading centers, Ocean Drilling Program.

Manning, C. E., P. E. Weston, and K. I. Mahon (1996), Rapid high-temperature metamorphism of East Pacific Rise gabbros from Hess Deep, *Earth and Planetary Science Letters*, *144*(1-2), 123-132.

Meschede, M., U. Barckhausen, M. Engels, and W. Weinrebe (2008), The trace of the Pacific-Cocos-Nazca triple junction in the Central Pacific and the formation of an overlapping spreading centre, *Terra Nova*, *20*(3), 246-251.

Moore, A., L. Coogan, F. Costa, and M. Perfit (2014), Primitive melt replenishment and crystal-mush disaggregation in the weeks preceding the 2005–2006 eruption 9° 50′ N, EPR, *Earth and Planetary Science Letters*, *403*, 15-26.

Natland, J. H. (1989), Partial melting of a lithologically heterogeneous mantle: inferences from crystallization histories of magnesian abyssal tholeiites from the Siqueiros Fracture Zone, *Geological Society, London, Special Publications*, *42*(1), 41-70.

Natland, J. H., and H. J. Dick (1996), Melt migration through high-level gabbroic cumulates of the East Pacific Rise at Hess Deep: the origin of magma lenses and the deep crustal structure of fast-spreading ridges, paper presented at proceedings-ocean drilling program scientific results, national science foundation.

Natland, J. H., and H. J. Dick (2009), Paired melt lenses at the East Pacific Rise and the pattern of melt flow through the gabbroic layer at a fast-spreading ridge, *Lithos*, *112*(1), 73-86.

Niu, Y., D. Bideau, R. Hékinian, and R. Batiza (2001), Mantle compositional control on the extent of mantle melting, crust production, gravity anomaly, ridge morphology, and ridge segmentation: a case study at the Mid-Atlantic Ridge 33–35°N, *Earth and Planetary Science Letters*, *186*(3–4), 383-399.

Niu, Y. L., K. D. Collerson, R. Batiza, J. I. Wendt, and M. Regelous (1999), Origin of enriched-type mid-ocean ridge basalt at ridges far from mantle plumes: The East Pacific Rise at 11 degrees 20 ' N, *Journal of Geophysical Research-Solid Earth*, *104*(B4), 7067-7087.

Niu, Y. L., M. Regelous, I. J. Wendt, R. Batiza, and M. J. O'Hara (2002), Geochemistry of near-EPR seamounts: importance of source vs. process and the origin of enriched mantle component, *Earth and Planetary Science Letters*, *199*(3-4), 327-345.

Niu, Y. L., D. G. Waggoner, J. M. Sinton, and J. J. Mahoney (1996), Mantle source heterogeneity and melting processes beneath seafloor spreading centers: The East Pacific Rise, 18 degrees-19S, *Journal of Geophysical Research-Solid Earth*, *101*(B12), 27711-27733.

Pan, Y., and R. Batiza (2002), Mid-ocean ridge magma chamber processes: Constraints from olivine zonation in lavas from the East Pacific Rise at 9° 30′ N and 10° 30′ N, *Journal of Geophysical Research: Solid Earth (1978–2012)*, *107*(B1), ECV 9-1-ECV 9-13.

Pan, Y., and R. Batiza (2003), Magmatic processes under mid-ocean ridges: A detailed mineralogic study of lavas from East Pacific Rise 9° 30′ N, 10° 30′ N, and 11° 20′ N, *Geochemistry, Geophysics, Geosystems*, *4*(11).

Pandey, S. K., S. Pal, J. P. Shrivastava, and G. S. Roonwal (2013), Trace elements geochemistry and petrogenesis of basalt from the southern part of the East Pacific Rise, *Journal of the Geological Society of India*, *81*(1), 91-100.

Pearce, N. J., W. T. Perkins, J. A. Westgate, M. P. Gorton, S. E. Jackson, C. R. Neal, and S. P. Chenery (1997), A compilation of new and published major and trace element data for NIST SRM 610 and NIST SRM 612 glass reference materials, *Geostandards and Geoanalytical Research*, *21*(1), 115-144.

Pedersen, R., J. Malpas, and T. Falloon (1996), Petrology and geochmistry of gabbroic and related rocks from Site 894, Hess Deep, paper presented at Proceedings of the Ocean Drilling Program, scientific results, Ocean Drilling Program, Texas A&M University.

Perfit, M. R., J. R. Cann, D. J. Fornari, J. Engels, D. K. Smith, W. I. Ridley, and M. H. Edwards (2003), Interaction of sea water and lava during submarine eruptions at mid-ocean ridges, *Nature*, *426*(6962), 62-65.

Perk, N. W., L. A. Coogan, J. A. Karson, E. M. Klein, and H. D. Hanna (2007), Petrology and geochemistry of primitive lower oceanic crust from Pito Deep: implications for the

accretion of the lower crust at the Southern East Pacific Rise, *Contributions to Mineralogy and Petrology*, *154*(5), 575-590.

Phipps Morgan, J., and W. J. Morgan (1999), Two-stage melting and the geochemical evolution of the mantle: a recipe for mantle plum-pudding, *Earth and Planetary Science Letters*, *170*(3), 215-239.

Putirka, K. (1999), Melting depths and mantle heterogeneity beneath Hawaii and the East Pacific Rise: Constraints from Na/Ti and rare earth element ratios, *Journal of Geophysical Research-Solid Earth*, *104*(B2), 2817-2829.

Schouten, H., K. D. Klitgord, and D. G. Gallo (1993), Edge‐driven microplate kinematics, *Journal of Geophysical Research: Solid Earth*, *98*(B4), 6689-6701.

Schouten, H., D. K. Smith, L. G. J. Montési, W. Zhu, and E. M. Klein (2008), Cracking of lithosphere north of the Galapagos triple junction, *Geology*, *36*(5), 339.

Searle, R. C., and R. N. Hey (1983), Gloria observations of the propagating rift at 95.50W on the Cocos-Nazca Spreading Center, *Journal of Geophysical Research*, *88*(B8), 6433.

Shimoda, G., O. Ishizuka, K. Yamashita, M. Yoshitake, M. Ogasawara, and M. Yuasa (2011), Tectonic influence on chemical composition of ocean island basalts in the West and South Pacific: Implication for a deep mantle origin, *Geochemistry, Geophysics, Geosystems*, *12*(7), n/a-n/a.

Sims, K. W. W., M. Perfit, J. Blichert-Toft, D. Fornari, J. Blusztajn, L. Ball, and C. L. Waters (2006), Progressive melting of a heterogeneous mantle source beneath 9-10 degrees N EPR, *Geochimica Et Cosmochimica Acta*, *70*(18), A592-A592.

Sinton, J., R. Detrick, J. P. Canales, G. Ito, and M. Behn (2003), Morphology and segmentation of the western Galápagos Spreading Center, 90.5°-98°W: Plume-ridge interaction at an intermediate spreading ridge, *Geochemistry, Geophysics, Geosystems*, *4*(12), n/a-n/a.

Smith, D. K., H. Schouten, W. l. Zhu, L. G. Montési, and J. R. Cann (2011), Distributed deformation ahead of the Cocos‐Nazca Rift at the Galapagos triple junction, *Geochemistry, Geophysics, Geosystems*, *12*(11).

Sours-Page, R., R. L. Nielsen, and R. Batiza (2002), Melt inclusions as indicators of parental magma diversity on the northern East Pacific Rise, *Chemical Geology*, *183*(1-4), 237-261.

Stern, C. R. (2011), Subduction erosion: Rates, mechanisms, and its role in arc magmatism and the evolution of the continental crust and mantle, *Gondwana*

Research, *20*(2–3), 284-308.

Stewart, M. A., E. M. Klein, J. A. Karson, and J. G. Brophy (2003), Geochemical relationships between dikes and lavas at the Hess Deep Rift: Implications for magma eruptibility, *Journal of Geophysical Research: Solid Earth*, *108*(B4), n/a-n/a.

Tepley, F. J., C. C. Lundstrom, K. W. W. Sims, and R. Hekinian (2004), U-series disequilibria in MORB from the Garrett Transform and implications for mantle melting, *Earth and Planetary Science Letters*, *223*(1-2), 79-97.

Ustunisik, G., H. Nekvasil, and D. Lindsley (2011), Differential degassing of H2O, Cl, F, and S: Potential effects on lunar apatite, *American Mineralogist*, *96*(10), 1650-1653.

Wanless, V. D., and A. M. Shaw (2012), Lower crustal crystallization and melt evolution at mid-ocean ridges, *Nature Geoscience*, *5*(9), 651-655.

Waters, C. L., K. W. W. Sims, M. R. Perfit, J. Blichert-Toft, and J. Blusztajn (2011), Perspective on the Genesis of E-MORB from Chemical and Isotopic Heterogeneity at 9-10 degrees N East Pacific Rise, *Journal of Petrology*, *52*(3), 565-602.

Waters, C. L., K. W. W. Sims, S. A. Soule, J. Blichert-Toft, N. W. Dunbar, T. Plank, J. Prytulak, R. A. Sohn, and M. A. Tivey (2013), Recent volcanic accretion at 9 degrees N-10 degrees N East Pacific Rise as resolved by combined geochemical and geological observations, *Geochemistry Geophysics Geosystems*, *14*(8), 2547-2574.

Wortel, R., and S. Cloetingh (1981), On the origin of the Cocos-Nazca spreading center, *Geology*, *9*(9), 425-430.

Zhang, G.-L., L.-H. Chen, and S.-Z. Li (2013), Mantle dynamics and generation of a geochemical mantle boundary along the East Pacific Rise – Pacific/Antarctic ridge, *Earth and Planetary Science Letters*, *383*, 153-163.

Zhang, G.-L., Z.-G. Zeng, C. Beier, X.-B. Yin, and S. Turner (2010), Generation and evolution of magma beneath the East Pacific Rise: Constraints from U-series disequilibrium.

Zhang, G.-L., C.-L. Zong, X.-B. Yin, and H. Li (2012), Geochemical constraints on a mixed pyroxenite-peridotite source for East Pacific Rise basalts, *Chemical Geology*, *330*, 176-187.

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Annexure

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Plagioclase (ODP Leg 147)																												
147-03	Gabbronorite	894G	0.00	53.94	0.04	27.70	0.00	0.62	0.02	0.11	11.33	5.31	0.01	0.00	99.08	7.40	0.00	4.48	0.00	0.07	0.00	0.02	1.67	1.41	0.00	0.00	15.06	54.
147-03	Gabbronorite	894G	0.00	53.38	0.05	27.71	0.02	0.57	0.00	0.03	11.55	5.17	0.04	0.00	98.50	7.37	0.00	4.51	0.00	0.07	0.00	0.01	1.71	1.38	0.01	0.00	15.06	55.
147-03	Gabbronorite	894G	0.00	52.02	0.06	28.59	0.00	0.55	0.00	0.05	12.69	4.59	0.07	0.03	98.64	7.20	0.01	4.67	0.00	0.06	0.00	0.01	1.88	1.23	0.01	0.00	15.08	60.
147-03	Gabbronorite	894G	0.00	53.08	0.06	28.51	0.00	0.37	0.00	0.03	11.91	5.03	0.04	0.00	99.03	7.29	0.01	4.62	0.00	0.04	0.00	0.01	1.75	1.34	0.01	0.00	15.07	56.
147-03	Gabbronorite	894G	0.00	53.31	0.06	27.96	0.00	0.51	0.02	0.02	11.56	5.38	0.06	0.01	98.88	7.34	0.01	4.54	0.00	0.06	0.00	0.00	1.71	1.44	0.01	0.00	15.11	54.
147-03	Gabbronorite	894G	0.00	54.04	0.05	27.87	0.00	0.62	0.00	0.05	11.25	5.50	0.04	0.00	99.44	7.39	0.01	4.49	0.00	0.07	0.00	0.01	1.65	1.46	0.01	0.00	15.09	52.
147-03	Gabbronorite	894G	0.00	54.13	0.12	27.74	0.01	0.48	0.00	0.06	11.14	5.50	0.11	0.02	99.31	7.41	0.01	4.48	0.00	0.05	0.00	0.01	1.63	1.46	0.02	0.00	15.08	52.
147-03	Gabbronorite	894G	0.00	51.98	0.07	29.36	0.01	0.53	0.03	0.09	12.87	4.48	0.08	0.00	99.50	7.14	0.01	4.75	0.00	0.06	0.00	0.02	1.89	1.19	0.01	0.00	15.08	61.
147-03	Gabbronorite	894G	0.00	51.61	0.06	29.61	0.00	0.56	0.00	0.07	13.10	4.26	0.07	0.04	99.38	7.10	0.01	4.80	0.00	0.06	0.00	0.02	1.93	1.14	0.01	0.00	15.07	62.
147-03	Gabbronorite	894G	0.00	51.63	0.07	29.39	0.00	0.46	0.00	0.04	13.24	4.38	0.05	0.00	99.26	7.11	0.01	4.77	0.00	0.05	0.00	0.01	1.95	1.17	0.01	0.00	15.09	62.
147-03	Gabbronorite	894G	0.00	51.69	0.04	28.95	0.00	0.49	0.00	0.16	12.99	4.37	0.06	0.00	98.75	7.15	0.00	4.72	0.00	0.06	0.00	0.03	1.93	1.17	0.01	0.00	15.08	61.
147-03	Gabbronorite	894G	0.00	52.80	0.07	29.38	0.02	0.52	0.02	0.03	12.48	4.80	0.05	0.01	100.16	7.19	0.01	4.72	0.00	0.06	0.00	0.01	1.82	1.27	0.01	0.00	15.08	58.
147-03	Gabbronorite	894G	0.00	53.19	0.04	27.98	0.01	0.61	0.00	0.28	11.19	5.22	0.06	0.00	98.58	7.34	0.00	4.55	0.00	0.07	0.00	0.06	1.65	1.40	0.01	0.00	15.09	54.
147-03	Gabbronorite	894G	0.00	53.74	0.07	28.62	0.00	0.51	0.00	0.06	11.52	5.31	0.08	0.01	99.92	7.32	0.01	4.59	0.00	0.06	0.00	0.01	1.68	1.40	0.01	0.00	15.09	54.
147-03	Gabbronorite	894G	0.00	53.63	0.08	28.93	0.00	0.70	0.02	0.12	11.89	5.16	0.06	0.00	100.58	7.27	0.01	4.62	0.00	0.08	0.00	0.02	1.73	1.36	0.01	0.00	15.10	55.
147-03	Gabbronorite	894G	0.00	53.56	0.08	28.81	0.00	0.57	0.00	0.05	11.81	5.21	0.07	0.00	100.16	7.28	0.01	4.62	0.00	0.07	0.00	0.01	1.72	1.37	0.01	0.00	15.09	55.
147-03	Gabbronorite	894G	0.00	54.17	0.09	28.44	0.00	0.57	0.01	0.03	11.47	5.41	0.10	0.02	100.31	7.35	0.01	4.55	0.00	0.07	0.00	0.01	1.67	1.42	0.02	0.00	15.09	53.
147-03	Gabbronorite	894G	0.00	52.79	0.06	29.45	0.01	0.52	0.00	0.02	12.45	4.80	0.06	0.01	100.16	7.19	0.01	4.73	0.00	0.06	0.00	0.00	1.82	1.27	0.01	0.00	15.08	58.
147-03	Gabbronorite	894G	0.00	54.17	0.06	28.28	0.01	0.55	0.00	0.06	11.24	5.42	0.09	0.00	99.87	7.37	0.01	4.54	0.00	0.06	0.00	0.01	1.64	1.43	0.02	0.00	15.07	53.
147-01	Opx-Ol gabbro	894G	0.00	52.74	0.06	30.13	0.00	0.52	0.00	0.04	13.15	4.24	0.06	0.00	100.94	7.13	0.01	4.80	0.00	0.06	0.00	0.01	1.90	1.11	0.01	0.00	15.03	62.
147-01	Opx-Ol gabbro	894G	0.00	52.44	0.06	30.09	0.00	0.46	0.00	0.03	13.18	4.30	0.04	0.01	100.62	7.11	0.01	4.81	0.00	0.05	0.00	0.01	1.92	1.13	0.01	0.00	15.04	62.
147-01	Opx-Ol gabbro	894G	0.00	54.01	0.09	29.26	0.00	0.51	0.01	0.03	12.09	4.88	0.03	0.00	100.91	7.28	0.01	4.65	0.00	0.06	0.00	0.01	1.75	1.28	0.01	0.00	15.03	57.
147-01	Opx-Ol gabbro	894G	0.00	51.98	0.06	30.65	0.00	0.47	0.00	0.06	13.68	4.08	0.04	0.00	101.03	7.03	0.01	4.89	0.00	0.05	0.00	0.01	1.98	1.07	0.01	0.00	15.05	64.
147-01	Opx-Ol gabbro	894G	0.00	52.88	0.06	30.40	0.00	0.48	0.01	0.05	13.12	4.42	0.05	0.00	101.47	7.11	0.01	4.82	0.00	0.05	0.00	0.01	1.89	1.15	0.01	0.00	15.05	61.
147-01	Opx-Ol gabbro	894G	0.00	51.31	0.04	30.19	0.00	1.05	0.00	0.54	13.50	3.87	0.04	0.00	100.54	7.00	0.00	4.85	0.00	0.12	0.00	0.11	1.97	1.02	0.01	0.00	15.09	65.
147-01	Opx-Ol gabbro	894G	0.00	53.48	0.05	29.74	0.00	0.37	0.00	0.03	12.49	4.77	0.01	0.00	100.93	7.21	0.00	4.73	0.00	0.04	0.00	0.01	1.80	1.25	0.00	0.00	15.04	59.
147-01	Opx-Ol gabbro	894G	0.00	52.95	0.04	30.25	0.00	0.46	0.01	0.05	13.07	4.31	0.05	0.01	101.20	7.13	0.00	4.80	0.00	0.05	0.00	0.01	1.89	1.12	0.01	0.00	15.03	62.
147-01	Opx-Ol gabbro	894G	0.00	54.37	0.07	29.40	0.02	0.37	0.01	0.03	12.13	4.96	0.07	0.00	101.42	7.29	0.01	4.64	0.00	0.04	0.00	0.01	1.74	1.29	0.01	0.00	15.03	57.
147-01	Opx-Ol gabbro	894G	0.00	53.61	0.07	29.59	0.00	0.38	0.00	0.08	12.52	4.68	0.09	0.01	101.04	7.22	0.01	4.70	0.00	0.04	0.00	0.02	1.81	1.22	0.02	0.00	15.04	59.
147-01	Opx-Ol gabbro	894G	0.00	52.93	0.07	30.11	0.00	0.49	0.02	0.11	13.23	4.24	0.08	0.00	101.27	7.13	0.01	4.78	0.00	0.06	0.00	0.02	1.91	1.11	0.01	0.00	15.03	63.
147-01	Opx-Ol gabbro	894G	0.00	53.24	0.05	29.99	0.02	0.44	0.00	0.04	12.97	4.40	0.07	0.00	101.23	7.17	0.01	4.76	0.00	0.05	0.00	0.01	1.87	1.15	0.01	0.00	15.03	61.
147-01	Opx-Ol gabbro	894G	0.00	52.51	0.06	30.11	0.02	0.45	0.02	0.07	13.27	4.15	0.07	0.01	100.74	7.11	0.01	4.81	0.00	0.05	0.00	0.01	1.93	1.09	0.01	0.00	15.03	63.
147-01	Opx-Ol gabbro	894G	0.00	54.01	0.04	29.16	0.01	0.54	0.00	0.03	12.10	4.95	0.05	0.00	100.88	7.28	0.00	4.64	0.00	0.06	0.00	0.01	1.75	1.29	0.01	0.00	15.04	57.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-01	Opx-Ol gabbro	894G	0.00	53.79	0.05	29.31	0.01	0.66	0.01	0.04	12.17	4.97	0.04	0.00	101.04	7.25	0.01	4.66	0.00	0.07	0.00	0.01	1.76	1.30	0.01	0.00	15.06	57.
147-01	Opx-Ol gabbro	894G	0.00	52.89	0.07	30.23	0.00	0.49	0.00	0.04	13.09	4.38	0.01	0.03	101.22	7.13	0.01	4.80	0.00	0.05	0.00	0.01	1.89	1.14	0.00	0.00	15.04	62.
147-01	Opx-Ol gabbro	894G	0.00	52.93	0.04	30.00	0.01	0.46	0.00	0.04	12.96	4.56	0.01	0.00	100.99	7.15	0.00	4.78	0.00	0.05	0.00	0.01	1.88	1.19	0.00	0.00	15.06	61.
147-01	Opx-Ol gabbro	894G	0.00	53.81	0.05	29.78	0.00	0.42	0.00	0.02	12.42	4.86	0.04	0.00	101.40	7.22	0.01	4.71	0.00	0.05	0.00	0.00	1.79	1.26	0.01	0.00	15.05	58.
147-01	Opx-Ol gabbro	894G	0.00	52.33	0.06	30.15	0.01	0.48	0.00	0.04	13.25	4.27	0.03	0.02	100.63	7.10	0.01	4.82	0.00	0.05	0.00	0.01	1.93	1.12	0.01	0.00	15.05	63.
147-01	Opx-Ol gabbro	894G	0.00	53.12	0.05	29.93	0.00	0.49	0.00	0.05	12.86	4.32	0.06	0.00	100.87	7.17	0.00	4.76	0.00	0.06	0.00	0.01	1.86	1.13	0.01	0.00	15.01	61.
147-01	Opx-Ol gabbro	894G	0.00	53.27	0.06	29.90	0.00	0.42	0.00	0.04	12.60	4.65	0.07	0.01	101.01	7.18	0.01	4.75	0.00	0.05	0.00	0.01	1.82	1.22	0.01	0.00	15.05	59.
147-01	Opx-Ol gabbro	894G	0.00	53.11	0.07	29.95	0.00	0.48	0.00	0.08	12.78	4.48	0.07	0.00	101.03	7.17	0.01	4.76	0.00	0.05	0.00	0.02	1.85	1.17	0.01	0.00	15.04	60.
147-01	Opx-Ol gabbro	894G	0.00	53.01	0.06	30.03	0.02	0.45	0.00	0.06	13.02	4.37	0.06	0.00	101.06	7.15	0.01	4.77	0.00	0.05	0.00	0.01	1.88	1.14	0.01	0.00	15.03	61.
147-01	Opx-Ol gabbro	894G	0.00	53.76	0.09	29.63	0.00	0.49	0.01	0.04	12.33	4.77	0.03	0.00	101.15	7.23	0.01	4.70	0.00	0.06	0.00	0.01	1.78	1.25	0.01	0.00	15.03	58.
147-01	Opx-Ol gabbro	894G	0.00	53.44	0.06	29.81	0.02	0.48	0.00	0.03	12.73	4.67	0.04	0.00	101.26	7.19	0.01	4.73	0.00	0.05	0.00	0.01	1.84	1.22	0.01	0.00	15.05	59.
147-01	Opx-Ol gabbro	894G	0.00	53.45	0.08	29.90	0.00	0.39	0.00	0.04	12.75	4.59	0.07	0.01	101.28	7.19	0.01	4.74	0.00	0.04	0.00	0.01	1.84	1.20	0.01	0.00	15.04	60.
147-01	Opx-Ol gabbro	894G	0.00	53.23	0.06	29.91	0.00	0.51	0.00	0.09	12.65	4.58	0.02	0.00	101.05	7.18	0.01	4.75	0.00	0.06	0.00	0.02	1.83	1.20	0.00	0.00	15.04	60.
147-01	Opx-Ol gabbro	894G	0.00	52.76	0.05	30.18	0.00	0.46	0.01	0.06	12.92	4.37	0.06	0.01	100.87	7.13	0.01	4.81	0.00	0.05	0.00	0.01	1.87	1.15	0.01	0.00	15.04	61.
147-01	Opx-Ol gabbro	894G	0.00	53.34	0.02	29.93	0.01	0.48	0.02	0.04	12.78	4.49	0.07	0.00	101.18	7.18	0.00	4.75	0.00	0.05	0.00	0.01	1.84	1.17	0.01	0.00	15.03	60.
147-01	Opx-Ol gabbro	894G	0.00	53.37	0.07	29.72	0.02	0.43	0.00	0.05	12.81	4.57	0.05	0.00	101.07	7.19	0.01	4.72	0.00	0.05	0.00	0.01	1.85	1.19	0.01	0.00	15.04	60.
147-01	Opx-Ol gabbro	894G	0.00	51.99	0.06	29.95	0.00	1.18	0.00	0.80	12.75	4.18	0.07	0.00	100.97	7.05	0.01	4.79	0.00	0.13	0.00	0.16	1.85	1.10	0.01	0.00	15.10	62.
147-01	Opx-Ol gabbro	894G	0.00	52.79	0.08	30.05	0.00	0.47	0.01	0.08	13.06	4.34	0.11	0.00	100.98	7.13	0.01	4.79	0.00	0.05	0.00	0.02	1.89	1.14	0.02	0.00	15.04	62.
147-01	Opx-Ol gabbro	894G	0.00	52.74	0.06	30.24	0.00	0.57	0.00	0.10	13.04	4.48	0.08	0.00	101.33	7.11	0.01	4.80	0.00	0.06	0.00	0.02	1.88	1.17	0.01	0.00	15.07	61.
147-01	Opx-Ol gabbro	894G	0.00	53.25	0.04	29.84	0.00	0.42	0.00	0.07	12.62	4.56	0.06	0.00	100.87	7.19	0.00	4.75	0.00	0.05	0.00	0.01	1.83	1.19	0.01	0.00	15.03	60.
147-01	Opx-Ol gabbro	894G	0.00	53.61	0.09	29.72	0.01	0.45	0.01	0.02	12.49	4.74	0.05	0.01	101.19	7.21	0.01	4.71	0.00	0.05	0.00	0.00	1.80	1.24	0.01	0.00	15.04	59.
147-01	Opx-Ol gabbro	894G	0.00	53.85	0.08	29.47	0.01	0.48	0.00	0.04	12.26	4.86	0.04	0.00	101.08	7.25	0.01	4.68	0.00	0.05	0.00	0.01	1.77	1.27	0.01	0.00	15.04	58.
147-01	Opx-Ol gabbro	894G	0.00	53.84	0.06	29.89	0.00	0.54	0.01	0.04	12.45	4.86	0.01	0.01	101.71	7.21	0.01	4.72	0.00	0.06	0.00	0.01	1.79	1.26	0.00	0.00	15.06	58.
147-01	Opx-Ol gabbro	894G	0.00	52.56	0.05	30.00	0.01	0.54	0.00	0.05	13.09	4.40	0.03	0.00	100.72	7.12	0.01	4.79	0.00	0.06	0.00	0.01	1.90	1.16	0.00	0.00	15.05	62.
147-04	Opx-Ol gabbro	894G	0.00	51.70	0.06	30.12	0.00	0.57	0.00	0.03	13.50	4.12	0.04	0.00	100.14	7.06	0.01	4.85	0.00	0.06	0.00	0.01	1.97	1.09	0.01	0.00	15.06	64.
147-04	Opx-Ol gabbro	894G	0.00	50.49	0.03	31.24	0.00	0.39	0.01	0.01	14.50	3.47	0.03	0.01	100.17	6.90	0.00	5.04	0.00	0.04	0.00	0.00	2.12	0.92	0.00	0.00	15.04	69.
147-04	Opx-Ol gabbro	894G	0.00	50.54	0.12	24.77	0.02	5.51	0.12	4.01	11.50	4.06	0.10	0.00	100.75	7.05	0.01	4.07	0.00	0.64	0.01	0.83	1.72	1.10	0.02	0.00	15.46	60.
147-04	Opx-Ol gabbro	894G	0.00	51.22	0.05	30.37	0.01	0.52	0.01	0.04	13.51	3.88	0.04	0.00	99.64	7.03	0.01	4.91	0.00	0.06	0.00	0.01	1.99	1.03	0.01	0.00	15.03	65.
147-04	Opx-Ol gabbro	894G	0.00	51.44	0.05	29.65	0.00	0.87	0.02	0.62	13.12	3.78	0.06	0.03	99.64	7.06	0.00	4.80	0.00	0.10	0.00	0.13	1.93	1.01	0.01	0.00	15.04	65.
147-04	Opx-Ol gabbro	894G	0.00	50.93	0.05	30.83	0.00	0.53	0.00	0.05	13.97	3.59	0.05	0.00	100.01	6.97	0.01	4.97	0.00	0.06	0.00	0.01	2.05	0.95	0.01	0.00	15.02	68.
147-04	Opx-Ol gabbro	894G	0.00	52.55	0.05	29.81	0.01	0.47	0.00	0.06	12.65	4.51	0.07	0.00	100.18	7.15	0.01	4.78	0.00	0.05	0.00	0.01	1.84	1.19	0.01	0.00	15.05	60.
147-04	Opx-Ol gabbro	894G	0.00	52.34	0.05	29.80	0.00	0.44	0.00	0.05	12.58	4.40	0.03	0.00	99.69	7.15	0.01	4.80	0.00	0.05	0.00	0.01	1.84	1.16	0.01	0.00	15.03	61.
147-04	Opx-Ol gabbro	894G	0.00	53.26	0.08	29.34	0.01	0.49	0.00	0.05	12.22	4.76	0.02	0.02	100.24	7.23	0.01	4.70	0.00	0.06	0.00	0.01	1.78	1.25	0.00	0.00	15.04	58.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-04	Opx-Ol gabbro	894G	0.00	51.64	0.05	30.16	0.00	0.41	0.00	0.03	13.36	4.16	0.04	0.00	99.85	7.07	0.00	4.86	0.00	0.05	0.00	0.01	1.96	1.10	0.01	0.00	15.05	63.
147-04	Opx-Ol gabbro	894G	0.00	51.35	0.05	30.30	0.00	0.53	0.01	0.09	13.46	3.87	0.10	0.03	99.79	7.04	0.01	4.89	0.00	0.06	0.00	0.02	1.98	1.03	0.02	0.00	15.04	65.
147-04	Opx-Ol gabbro	894G	0.00	52.22	0.05	30.05	0.00	0.57	0.02	0.06	12.97	4.23	0.04	0.00	100.21	7.11	0.01	4.82	0.00	0.07	0.00	0.01	1.89	1.12	0.01	0.00	15.03	62.
147-04	Opx-Ol gabbro	894G	0.00	50.67	0.05	31.05	0.00	0.53	0.01	0.01	14.17	3.50	0.00	0.00	99.99	6.94	0.00	5.01	0.00	0.06	0.00	0.00	2.08	0.93	0.00	0.00	15.02	69.
147-04	Opx-Ol gabbro	894G	0.00	51.08	0.04	30.89	0.01	0.56	0.01	0.06	13.93	3.69	0.02	0.01	100.31	6.97	0.00	4.97	0.00	0.06	0.00	0.01	2.04	0.98	0.00	0.00	15.03	67.
147-04	Opx-Ol gabbro	894G	0.00	52.76	0.08	29.63	0.00	0.43	0.01	0.03	12.48	4.56	0.02	0.02	100.00	7.18	0.01	4.76	0.00	0.05	0.00	0.01	1.82	1.20	0.00	0.00	15.03	60.
147-04	Opx-Ol gabbro	894G	0.00	52.78	0.05	29.73	0.03	0.35	0.00	0.01	12.50	4.66	0.04	0.01	100.16	7.18	0.01	4.77	0.00	0.04	0.00	0.00	1.82	1.23	0.01	0.00	15.05	59.
147-04	Opx-Ol gabbro	894G	0.00	51.11	0.04	30.71	0.01	0.53	0.00	0.02	14.04	3.73	0.03	0.01	100.24	6.98	0.00	4.94	0.00	0.06	0.00	0.00	2.05	0.99	0.01	0.00	15.04	67.
147-04	Opx-Ol gabbro	894G	0.00	52.01	0.02	29.82	0.00	0.45	0.00	0.04	12.84	4.39	0.04	0.02	99.63	7.12	0.00	4.81	0.00	0.05	0.00	0.01	1.88	1.17	0.01	0.00	15.05	61.
147-04	Opx-Ol gabbro	894G	0.00	52.97	0.05	29.51	0.00	0.47	0.00	0.03	12.66	4.56	0.03	0.00	100.28	7.20	0.01	4.73	0.00	0.05	0.00	0.01	1.84	1.20	0.00	0.00	15.04	60.
147-04	Opx-Ol gabbro	894G	0.00	52.85	0.05	29.34	0.00	0.52	0.01	0.09	12.37	4.66	0.04	0.00	99.94	7.21	0.00	4.71	0.00	0.06	0.00	0.02	1.81	1.23	0.01	0.00	15.05	59.
147-04	Opx-Ol gabbro	894G	0.00	52.62	0.06	29.22	0.00	0.51	0.01	0.02	12.23	4.49	0.03	0.03	99.21	7.22	0.01	4.72	0.00	0.06	0.00	0.00	1.80	1.19	0.01	0.00	15.01	59.
147-04	Opx-Ol gabbro	894G	0.00	51.74	0.06	30.29	0.00	0.56	0.02	0.08	13.50	4.00	0.06	0.01	100.33	7.05	0.01	4.87	0.00	0.06	0.00	0.02	1.97	1.06	0.01	0.00	15.04	64.
147-04	Opx-Ol gabbro	894G	0.00	52.21	0.06	29.96	0.02	0.45	0.01	0.03	13.14	4.17	0.02	0.01	100.06	7.12	0.01	4.81	0.00	0.05	0.00	0.01	1.92	1.10	0.00	0.00	15.02	63.
147-04	Opx-Ol gabbro	894G	0.00	53.29	0.06	29.08	0.00	0.63	0.01	0.05	12.03	4.79	0.02	0.01	99.96	7.26	0.01	4.67	0.00	0.07	0.00	0.01	1.76	1.27	0.00	0.00	15.04	58.
147-04	Opx-Ol gabbro	894G	0.00	53.61	0.07	29.05	0.00	0.32	0.00	0.02	11.68	5.01	0.00	0.00	99.77	7.30	0.01	4.66	0.00	0.04	0.00	0.00	1.70	1.32	0.00	0.00	15.03	56.
147-04	Opx-Ol gabbro	894G	0.00	53.49	0.07	29.34	0.01	0.47	0.02	0.02	11.98	4.81	0.04	0.00	100.24	7.26	0.01	4.69	0.00	0.05	0.00	0.00	1.74	1.27	0.01	0.00	15.03	57.
147-04	Opx-Ol gabbro	894G	0.00	53.16	0.06	29.17	0.00	0.43	0.00	0.12	12.14	4.85	0.03	0.02	99.98	7.24	0.01	4.68	0.00	0.05	0.00	0.02	1.77	1.28	0.00	0.00	15.06	57.
147-04	Opx-Ol gabbro	894G	0.00	52.97	0.07	29.47	0.01	0.46	0.01	0.03	12.34	4.70	0.04	0.01	100.10	7.21	0.01	4.73	0.00	0.05	0.00	0.01	1.80	1.24	0.01	0.00	15.05	59.
147-04	Opx-Ol gabbro	894G	0.00	52.49	0.09	29.75	0.00	0.46	0.03	0.03	12.82	4.29	0.05	0.00	100.00	7.15	0.01	4.78	0.00	0.05	0.00	0.01	1.87	1.13	0.01	0.00	15.02	62.
147-04	Opx-Ol gabbro	894G	0.00	51.74	0.04	30.25	0.01	0.45	0.04	0.08	13.17	4.02	0.06	0.04	99.88	7.07	0.00	4.87	0.00	0.05	0.00	0.02	1.93	1.07	0.01	0.00	15.03	64.
147-04	Opx-Ol gabbro	894G	0.00	51.46	0.06	30.51	0.02	0.44	0.01	0.05	13.52	3.89	0.05	0.02	100.01	7.03	0.01	4.91	0.00	0.05	0.00	0.01	1.98	1.03	0.01	0.00	15.03	65.
147-04	Opx-Ol gabbro	894G	0.00	51.36	0.03	29.99	0.01	0.64	0.00	0.50	13.45	3.66	0.04	0.00	99.67	7.04	0.00	4.85	0.00	0.07	0.00	0.10	1.98	0.97	0.01	0.00	15.02	66.
147-04	Opx-Ol gabbro	894G	0.00	51.59	0.05	30.42	0.00	0.50	0.00	0.04	13.54	3.89	0.05	0.00	100.07	7.04	0.00	4.89	0.00	0.06	0.00	0.01	1.98	1.03	0.01	0.00	15.03	65.
147-04	Opx-Ol gabbro	894G	0.00	53.33	0.06	29.33	0.00	0.43	0.00	0.02	12.27	4.80	0.02	0.01	100.28	7.24	0.01	4.69	0.00	0.05	0.00	0.00	1.78	1.26	0.00	0.00	15.04	58.
147-04	Opx-Ol gabbro	894G	0.00	50.93	0.04	30.60	0.03	0.43	0.00	0.06	13.77	3.87	0.03	0.01	99.77	6.98	0.00	4.95	0.00	0.05	0.00	0.01	2.02	1.03	0.00	0.00	15.06	66.
147-04	Opx-Ol gabbro	894G	0.00	49.90	0.06	31.57	0.00	0.43	0.00	0.04	14.89	3.11	0.01	0.00	100.01	6.84	0.01	5.10	0.00	0.05	0.00	0.01	2.19	0.83	0.00	0.00	15.02	72.
147-04	Opx-Ol gabbro	894G	0.00	51.09	0.07	30.74	0.00	0.42	0.00	0.04	13.82	3.71	0.03	0.00	99.92	6.99	0.01	4.96	0.00	0.05	0.00	0.01	2.03	0.98	0.01	0.00	15.02	67.
147-04	Opx-Ol gabbro	894G	0.00	51.95	0.07	30.11	0.00	0.49	0.00	0.03	13.10	4.09	0.02	0.00	99.84	7.10	0.01	4.85	0.00	0.06	0.00	0.01	1.92	1.08	0.00	0.00	15.02	63.
147-04	Opx-Ol gabbro	894G	0.00	52.04	0.06	30.31	0.01	0.39	0.00	0.02	13.31	4.14	0.03	0.00	100.31	7.08	0.01	4.86	0.00	0.04	0.00	0.00	1.94	1.09	0.00	0.00	15.03	63.
147-04	Opx-Ol gabbro	894G	0.00	53.15	0.05	29.59	0.03	0.23	0.01	0.01	12.23	4.73	0.02	0.00	100.03	7.22	0.00	4.74	0.00	0.03	0.00	0.00	1.78	1.25	0.00	0.00	15.03	58.
147-04	Opx-Ol gabbro	894G	0.00	49.68	0.06	31.58	0.02	0.46	0.00	0.04	14.93	3.11	0.03	0.00	99.90	6.82	0.01	5.11	0.00	0.05	0.00	0.01	2.20	0.83	0.00	0.00	15.03	72.
147-04	Opx-Ol gabbro	894G	0.00	52.15	0.03	29.99	0.01	0.49	0.01	0.02	13.09	4.30	0.02	0.02	100.14	7.11	0.00	4.82	0.00	0.06	0.00	0.00	1.91	1.14	0.00	0.00	15.05	62.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-04	Opx-Ol gabbro	894G	0.00	50.53	0.05	30.68	0.00	0.57	0.00	0.16	14.13	3.55	0.09	0.01	99.76	6.94	0.00	4.97	0.00	0.07	0.00	0.03	2.08	0.95	0.02	0.00	15.05	68.
147-04	Opx-Ol gabbro	894G	0.00	51.66	0.06	29.97	0.01	0.48	0.00	0.04	13.37	4.11	0.03	0.00	99.73	7.08	0.01	4.84	0.00	0.06	0.00	0.01	1.96	1.09	0.01	0.00	15.05	64.
147-04	Opx-Ol gabbro	894G	0.00	48.38	0.02	32.50	0.00	0.45	0.00	0.02	16.07	2.39	0.02	0.00	99.84	6.67	0.00	5.28	0.00	0.05	0.00	0.00	2.37	0.64	0.00	0.00	15.01	78.
147-04	Opx-Ol gabbro	894G	0.00	51.45	0.06	30.46	0.00	0.48	0.00	0.07	13.65	3.89	0.06	0.00	100.11	7.02	0.01	4.90	0.00	0.06	0.00	0.01	2.00	1.03	0.01	0.00	15.04	65.
147-04	Opx-Ol gabbro	894G	0.00	49.02	0.04	31.29	0.00	0.46	0.00	0.04	14.73	3.19	0.02	0.02	98.80	6.81	0.00	5.12	0.00	0.05	0.00	0.01	2.19	0.86	0.00	0.00	15.06	71.
147-04	Opx-Ol gabbro	894G	0.00	52.48	0.04	30.19	0.00	0.38	0.00	0.02	13.00	4.24	0.04	0.02	100.40	7.12	0.00	4.83	0.00	0.04	0.00	0.00	1.89	1.12	0.01	0.00	15.02	62.
147-06	Opx-Ol gabbro	894G	0.00	52.11	0.06	30.19	0.00	0.43	0.00	0.03	13.08	4.24	0.05	0.00	100.19	7.10	0.01	4.85	0.00	0.05	0.00	0.01	1.91	1.12	0.01	0.00	15.04	62.
147-06	Opx-Ol gabbro	894G	0.00	51.83	0.03	29.85	0.00	0.72	0.00	0.08	13.11	4.13	0.03	0.01	99.80	7.10	0.00	4.82	0.00	0.08	0.00	0.02	1.92	1.10	0.01	0.00	15.04	63.
147-06	Opx-Ol gabbro	894G	0.00	51.94	0.05	30.22	0.00	0.52	0.01	0.05	13.42	4.07	0.05	0.01	100.34	7.07	0.00	4.85	0.00	0.06	0.00	0.01	1.96	1.07	0.01	0.00	15.04	64.
147-06	Opx-Ol gabbro	894G	0.00	51.50	0.04	30.24	0.01	0.64	0.00	0.03	13.48	4.02	0.01	0.00	99.96	7.04	0.00	4.87	0.00	0.07	0.00	0.01	1.98	1.07	0.00	0.00	15.05	64.
147-06	Opx-Ol gabbro	894G	0.00	53.10	0.04	29.02	0.01	0.89	0.03	0.31	12.02	4.81	0.03	0.00	100.26	7.23	0.00	4.65	0.00	0.10	0.00	0.06	1.75	1.27	0.00	0.00	15.08	57.
147-06	Opx-Ol gabbro	894G	0.00	53.34	0.06	29.29	0.01	0.44	0.02	0.23	12.23	4.68	0.03	0.00	100.33	7.23	0.01	4.68	0.00	0.05	0.00	0.05	1.78	1.23	0.01	0.00	15.04	58.
147-06	Opx-Ol gabbro	894G	0.00	53.03	0.05	29.37	0.01	0.54	0.00	0.03	12.30	4.62	0.03	0.03	100.00	7.22	0.00	4.71	0.00	0.06	0.00	0.01	1.80	1.22	0.00	0.00	15.03	59.
147-06	Opx-Ol gabbro	894G	0.00	52.40	0.05	29.05	0.00	0.52	0.00	0.11	12.23	4.65	0.05	0.00	99.07	7.21	0.00	4.71	0.00	0.06	0.00	0.02	1.80	1.24	0.01	0.00	15.06	59.
147-06	Opx-Ol gabbro	894G	0.00	53.20	0.09	29.36	0.00	0.54	0.00	0.06	12.17	4.66	0.04	0.00	100.11	7.23	0.01	4.70	0.00	0.06	0.00	0.01	1.77	1.23	0.01	0.00	15.02	58.
147-06	Opx-Ol gabbro	894G	0.00	53.27	0.08	29.41	0.00	0.47	0.00	0.06	12.19	4.72	0.04	0.00	100.24	7.23	0.01	4.71	0.00	0.05	0.00	0.01	1.77	1.24	0.01	0.00	15.03	58.
147-06	Opx-Ol gabbro	894G	0.00	53.84	0.08	28.91	0.00	0.56	0.02	0.05	11.76	4.93	0.03	0.00	100.18	7.31	0.01	4.62	0.00	0.06	0.00	0.01	1.71	1.30	0.01	0.00	15.03	56.
147-06	Opx-Ol gabbro	894G	0.00	53.81	0.08	28.84	0.00	0.45	0.00	0.02	11.70	5.05	0.04	0.03	100.01	7.31	0.01	4.62	0.00	0.05	0.00	0.00	1.70	1.33	0.01	0.00	15.04	56.
147-06	Opx-Ol gabbro	894G	0.00	54.18	0.09	28.46	0.01	0.41	0.03	0.03	11.09	5.27	0.05	0.02	99.63	7.38	0.01	4.57	0.00	0.05	0.00	0.01	1.62	1.39	0.01	0.00	15.03	53.
147-06	Opx-Ol gabbro	894G	0.00	54.39	0.10	28.79	0.00	0.29	0.00	0.04	11.20	5.34	0.03	0.00	100.17	7.36	0.01	4.59	0.00	0.03	0.00	0.01	1.62	1.40	0.01	0.00	15.04	53.
147-06	Opx-Ol gabbro	894G	0.00	53.75	0.09	28.83	0.00	0.34	0.00	0.02	11.70	5.01	0.03	0.01	99.79	7.32	0.01	4.63	0.00	0.04	0.00	0.00	1.71	1.32	0.01	0.00	15.03	56.
147-06	Opx-Ol gabbro	894G	0.00	53.52	0.08	29.11	0.00	0.33	0.00	0.03	11.76	4.96	0.03	0.00	99.82	7.28	0.01	4.67	0.00	0.04	0.00	0.01	1.71	1.31	0.01	0.00	15.03	56.
147-06	Opx-Ol gabbro	894G	0.00	53.64	0.04	29.15	0.00	0.63	0.00	0.10	11.79	5.02	0.03	0.00	100.41	7.27	0.00	4.66	0.00	0.07	0.00	0.02	1.71	1.32	0.01	0.00	15.06	56.
147-06	Opx-Ol gabbro	894G	0.00	53.31	0.06	29.36	0.02	0.66	0.01	0.06	11.94	4.95	0.05	0.04	100.45	7.23	0.01	4.69	0.00	0.07	0.00	0.01	1.74	1.30	0.01	0.00	15.07	56.
147-06	Opx-Ol gabbro	894G	0.00	52.52	0.05	29.35	0.00	0.41	0.00	0.02	12.21	4.74	0.02	0.02	99.34	7.20	0.01	4.74	0.00	0.05	0.00	0.00	1.79	1.26	0.00	0.00	15.06	58.
147-06	Opx-Ol gabbro	894G	0.00	52.18	0.05	29.41	0.01	0.51	0.02	0.12	12.42	4.63	0.02	0.01	99.36	7.16	0.01	4.76	0.00	0.06	0.00	0.02	1.83	1.23	0.00	0.00	15.07	59.
147-06	Opx-Ol gabbro	894G	0.00	51.72	0.06	29.87	0.00	0.51	0.00	0.11	12.90	4.26	0.03	0.00	99.46	7.10	0.01	4.83	0.00	0.06	0.00	0.02	1.90	1.13	0.00	0.00	15.05	62.
147-06	Opx-Ol gabbro	894G	0.00	51.55	0.05	30.21	0.00	0.58	0.00	0.08	13.28	4.11	0.03	0.00	99.89	7.05	0.01	4.87	0.00	0.07	0.00	0.02	1.95	1.09	0.01	0.00	15.05	63.
147-06	Opx-Ol gabbro	894G	0.00	51.64	0.07	29.79	0.00	0.57	0.00	0.14	13.31	4.05	0.03	0.00	99.58	7.08	0.01	4.82	0.00	0.07	0.00	0.03	1.96	1.08	0.01	0.00	15.04	64.
147-06	Opx-Ol gabbro	894G	0.00	51.34	0.06	30.08	0.02	0.50	0.02	0.06	13.41	4.03	0.03	0.00	99.54	7.05	0.01	4.87	0.00	0.06	0.00	0.01	1.97	1.07	0.01	0.00	15.05	64.
147-06	Opx-Ol gabbro	894G	0.00	51.23	0.04	30.23	0.00	0.43	0.01	0.06	13.56	3.85	0.04	0.00	99.45	7.04	0.00	4.90	0.00	0.05	0.00	0.01	2.00	1.03	0.01	0.00	15.03	65.
147-06	Opx-Ol gabbro	894G	0.00	53.09	0.07	29.17	0.00	0.57	0.00	0.05	12.14	4.70	0.02	0.01	99.82	7.24	0.01	4.69	0.00	0.07	0.00	0.01	1.77	1.24	0.00	0.00	15.03	58.
147-06	Opx-Ol gabbro	894G	0.00	51.75	0.04	29.79	0.02	0.62	0.00	0.06	12.93	4.22	0.03	0.03	99.49	7.10	0.00	4.82	0.00	0.07	0.00	0.01	1.90	1.12	0.01	0.00	15.05	62.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-06	Opx-Ol gabbro	894G	0.00	51.49	0.06	29.90	0.00	0.56	0.00	0.04	13.12	4.12	0.03	0.00	99.31	7.08	0.01	4.85	0.00	0.06	0.00	0.01	1.93	1.10	0.00	0.00	15.04	63.
147-06	Opx-Ol gabbro	894G	0.00	51.59	0.05	30.06	0.00	0.49	0.01	0.06	13.16	4.08	0.11	0.01	99.61	7.07	0.01	4.86	0.00	0.06	0.00	0.01	1.93	1.08	0.02	0.00	15.04	63.
147-06	Opx-Ol gabbro	894G	0.00	51.43	0.04	30.11	0.01	0.51	0.01	0.05	13.22	4.04	0.05	0.00	99.47	7.06	0.00	4.87	0.00	0.06	0.00	0.01	1.94	1.08	0.01	0.00	15.04	64.
147-06	Opx-Ol gabbro	894G	0.00	51.19	0.04	29.93	0.00	0.63	0.01	0.09	13.33	3.91	0.05	0.00	99.17	7.06	0.00	4.86	0.00	0.07	0.00	0.02	1.97	1.04	0.01	0.00	15.04	65.
147-06	Opx-Ol gabbro	894G	0.00	51.29	0.05	29.98	0.00	0.66	0.00	0.38	13.37	3.80	0.05	0.00	99.59	7.04	0.01	4.85	0.00	0.08	0.00	0.08	1.97	1.01	0.01	0.00	15.04	65.
147-06	Opx-Ol gabbro	894G	0.00	50.78	0.04	30.67	0.03	0.50	0.00	0.03	13.88	3.69	0.02	0.00	99.65	6.97	0.00	4.96	0.00	0.06	0.00	0.01	2.04	0.98	0.00	0.00	15.04	67.
147-06	Opx-Ol gabbro	894G	0.00	51.43	0.06	29.92	0.00	0.97	0.03	0.22	13.36	4.04	0.07	0.00	100.11	7.04	0.01	4.83	0.00	0.11	0.00	0.05	1.96	1.07	0.01	0.00	15.08	64.
147-06	Opx-Ol gabbro	894G	0.00	51.66	0.05	29.81	0.00	0.60	0.00	0.11	13.22	4.06	0.06	0.03	99.59	7.09	0.01	4.82	0.00	0.07	0.00	0.02	1.94	1.08	0.01	0.00	15.04	64.
147-06	Opx-Ol gabbro	894G	0.00	51.92	0.03	29.78	0.00	0.36	0.00	0.03	12.64	4.31	0.05	0.00	99.12	7.14	0.00	4.82	0.00	0.04	0.00	0.01	1.86	1.15	0.01	0.00	15.03	61.
147-06	Opx-Ol gabbro	894G	0.00	51.45	0.04	30.33	0.00	0.37	0.02	0.04	13.46	3.97	0.04	0.00	99.71	7.05	0.00	4.90	0.00	0.04	0.00	0.01	1.97	1.05	0.01	0.00	15.03	65.
147-06	Opx-Ol gabbro	894G	0.00	51.39	0.06	30.40	0.00	0.52	0.01	0.03	13.64	3.81	0.04	0.00	99.89	7.03	0.01	4.90	0.00	0.06	0.00	0.01	2.00	1.01	0.01	0.00	15.02	66.
147-06	Opx-Ol gabbro	894G	0.00	51.43	0.02	30.23	0.00	0.50	0.01	0.06	13.56	3.95	0.06	0.01	99.84	7.04	0.00	4.88	0.00	0.06	0.00	0.01	1.99	1.05	0.01	0.00	15.04	65.
147-06	Opx-Ol gabbro	894G	0.00	51.09	0.03	30.53	0.01	0.49	0.00	0.03	13.86	3.78	0.04	0.00	99.85	7.00	0.00	4.93	0.00	0.06	0.00	0.01	2.03	1.00	0.01	0.00	15.04	66.
147-06	Opx-Ol gabbro	894G	0.00	51.54	0.05	30.54	0.00	0.49	0.00	0.03	13.54	3.88	0.03	0.00	100.10	7.03	0.01	4.91	0.00	0.06	0.00	0.01	1.98	1.03	0.00	0.00	15.02	65.
147-06	Opx-Ol gabbro	894G	0.00	51.71	0.05	30.21	0.00	0.48	0.00	0.05	13.32	4.09	0.04	0.00	99.94	7.07	0.00	4.87	0.00	0.05	0.00	0.01	1.95	1.08	0.01	0.00	15.04	64.
147-06	Opx-Ol gabbro	894G	0.00	52.71	0.03	29.51	0.00	0.32	0.01	0.01	12.48	4.60	0.05	0.00	99.72	7.20	0.00	4.75	0.00	0.04	0.00	0.00	1.83	1.22	0.01	0.00	15.04	59.
147-06	Opx-Ol gabbro	894G	0.00	52.79	0.07	29.55	0.03	0.53	0.00	0.04	12.41	4.62	0.04	0.00	100.07	7.19	0.01	4.74	0.00	0.06	0.00	0.01	1.81	1.22	0.01	0.00	15.05	59.
147-06	Opx-Ol gabbro	894G	0.00	52.21	0.06	29.39	0.00	0.44	0.00	0.03	12.88	4.40	0.03	0.00	99.44	7.16	0.01	4.75	0.00	0.05	0.00	0.01	1.89	1.17	0.01	0.00	15.04	61.
147-06	Opx-Ol gabbro	894G	0.00	51.22	0.07	30.61	0.00	0.57	0.01	0.08	13.69	3.76	0.04	0.01	100.06	7.00	0.01	4.93	0.00	0.07	0.00	0.02	2.00	1.00	0.01	0.00	15.03	66.
147-06	Opx-Ol gabbro	894G	0.00	54.41	0.09	28.40	0.00	0.49	0.02	0.07	11.06	5.32	0.06	0.00	99.90	7.39	0.01	4.55	0.00	0.06	0.00	0.01	1.61	1.40	0.01	0.00	15.03	53.
147-06	Opx-Ol gabbro	894G	0.00	54.58	0.08	28.26	0.00	0.47	0.01	0.04	11.23	5.34	0.06	0.01	100.09	7.40	0.01	4.52	0.00	0.05	0.00	0.01	1.63	1.40	0.01	0.00	15.04	53.
147-06	Opx-Ol gabbro	894G	0.00	54.72	0.09	28.26	0.01	0.49	0.00	0.03	11.11	5.41	0.06	0.00	100.18	7.41	0.01	4.51	0.00	0.06	0.00	0.01	1.61	1.42	0.01	0.00	15.04	52.
147-06	Opx-Ol gabbro	894G	0.00	53.89	0.06	28.48	0.01	0.52	0.01	0.05	11.56	5.20	0.05	0.01	99.83	7.34	0.01	4.57	0.00	0.06	0.00	0.01	1.69	1.37	0.01	0.00	15.06	55.
147-06	Opx-Ol gabbro	894G	0.00	54.04	0.07	28.82	0.00	0.40	0.00	0.02	11.50	5.27	0.04	0.00	100.16	7.33	0.01	4.61	0.00	0.05	0.00	0.00	1.67	1.39	0.01	0.00	15.06	54.
147-06	Opx-Ol gabbro	894G	0.00	54.78	0.12	28.20	0.01	0.49	0.01	0.04	11.09	5.50	0.06	0.00	100.31	7.41	0.01	4.50	0.00	0.06	0.00	0.01	1.61	1.44	0.01	0.00	15.05	52.
147-06	Opx-Ol gabbro	894G	0.00	52.63	0.08	28.67	0.01	0.43	0.00	0.06	12.22	4.70	0.06	0.02	98.88	7.25	0.01	4.65	0.00	0.05	0.00	0.01	1.80	1.26	0.01	0.00	15.05	58.
147-06	Opx-Ol gabbro	894G	0.00	52.57	0.06	29.15	0.00	0.51	0.00	0.07	12.32	4.62	0.06	0.01	99.36	7.21	0.01	4.71	0.00	0.06	0.00	0.01	1.81	1.23	0.01	0.00	15.05	59.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Plagioclase (Rubbles Exp. 345)																												
345-04	Gabbro	1415I	0.00	48.87	0.01	32.13	0.00	0.46	0.02	0.04	16.13	2.64	0.05	0.01	100.35	6.71	0.00	5.20	0.00	0.05	0.00	0.01	2.37	0.70	0.01	0.00	15.05	76.
345-04	Gabbro	1415I	0.00	49.03	0.02	31.41	0.00	0.43	0.00	0.05	15.94	2.83	0.05	0.02	99.78	6.76	0.00	5.11	0.00	0.05	0.00	0.01	2.36	0.76	0.01	0.00	15.06	75.
345-04	Gabbro	1415I	0.00	48.87	0.02	31.48	0.00	0.41	0.01	0.04	16.10	2.65	0.03	0.00	99.60	6.75	0.00	5.13	0.00	0.05	0.00	0.01	2.38	0.71	0.01	0.00	15.04	76.
345-04	Gabbro	1415I	0.00	48.64	0.01	32.18	0.01	0.38	0.00	0.04	16.44	2.50	0.04	0.03	100.27	6.68	0.00	5.21	0.00	0.04	0.00	0.01	2.42	0.67	0.01	0.00	15.05	78.
345-04	Gabbro	1415I	0.00	48.29	0.03	32.76	0.00	0.41	0.02	0.04	16.62	2.35	0.04	0.00	100.54	6.62	0.00	5.29	0.00	0.05	0.00	0.01	2.44	0.62	0.01	0.00	15.05	79.
345-04	Gabbro	1415I	0.00	48.68	0.02	32.22	0.00	0.41	0.00	0.03	16.32	2.51	0.04	0.00	100.23	6.69	0.00	5.22	0.00	0.05	0.00	0.01	2.40	0.67	0.01	0.00	15.04	78.
345-04	Gabbro	1415I	0.00	49.39	0.03	31.87	0.02	0.55	0.00	0.07	15.92	2.75	0.05	0.03	100.68	6.75	0.00	5.14	0.00	0.06	0.00	0.02	2.33	0.73	0.01	0.00	15.04	75.
345-04	Gabbro	1415I	0.00	49.49	0.06	31.16	0.01	0.59	0.01	0.05	15.38	2.94	0.06	0.00	99.75	6.82	0.01	5.06	0.00	0.07	0.00	0.01	2.27	0.79	0.01	0.00	15.04	74.
345-04	Gabbro	1415I	0.00	49.30	0.06	31.73	0.02	0.49	0.00	0.04	15.90	2.71	0.06	0.00	100.29	6.76	0.01	5.13	0.00	0.06	0.00	0.01	2.34	0.72	0.01	0.00	15.03	76.
345-04	Gabbro	1415I	0.00	49.22	0.04	31.86	0.00	0.51	0.00	0.05	16.00	2.61	0.06	0.00	100.34	6.75	0.00	5.15	0.00	0.06	0.00	0.01	2.35	0.69	0.01	0.00	15.02	76.
345-04	Gabbro	1415I	0.00	49.71	0.04	31.48	0.00	0.55	0.00	0.06	15.56	2.91	0.05	0.01	100.37	6.81	0.00	5.08	0.00	0.06	0.00	0.01	2.28	0.77	0.01	0.00	15.04	74.
345-04	Gabbro	1415I	0.00	49.88	0.03	31.25	0.00	0.50	0.01	0.05	15.59	2.82	0.05	0.00	100.17	6.84	0.00	5.05	0.00	0.06	0.00	0.01	2.29	0.75	0.01	0.00	15.01	75.
345-04	Gabbro	1415I	0.00	49.63	0.02	31.35	0.00	0.48	0.00	0.04	15.65	2.87	0.05	0.01	100.11	6.82	0.00	5.07	0.00	0.06	0.00	0.01	2.30	0.76	0.01	0.00	15.03	74.
345-04	Gabbro	1415I	0.00	49.64	0.04	31.53	0.00	0.36	0.00	0.04	15.65	2.90	0.04	0.03	100.22	6.80	0.00	5.09	0.00	0.04	0.00	0.01	2.30	0.77	0.01	0.00	15.03	74.
345-04	Gabbro	1415I	0.00	49.58	0.01	31.69	0.00	0.43	0.01	0.04	15.54	2.92	0.05	0.00	100.27	6.79	0.00	5.12	0.00	0.05	0.00	0.01	2.28	0.78	0.01	0.00	15.04	74.
345-04	Gabbro	1415I	0.00	49.45	0.04	31.80	0.00	0.43	0.00	0.05	15.86	2.77	0.04	0.00	100.44	6.77	0.00	5.13	0.00	0.05	0.00	0.01	2.33	0.74	0.01	0.00	15.03	75.
345-04	Gabbro	1415I	0.00	50.02	0.03	31.54	0.01	0.42	0.00	0.04	15.40	3.01	0.05	0.02	100.53	6.83	0.00	5.08	0.00	0.05	0.00	0.01	2.25	0.80	0.01	0.00	15.03	73.
345-04	Gabbro	1415I	0.00	49.95	0.03	31.17	0.00	0.47	0.00	0.04	15.34	3.13	0.06	0.00	100.20	6.85	0.00	5.04	0.00	0.05	0.00	0.01	2.25	0.83	0.01	0.00	15.05	72.
345-04	Gabbro	1415I	0.00	49.05	0.03	31.66	0.01	0.41	0.00	0.05	15.94	2.73	0.04	0.00	99.92	6.75	0.00	5.14	0.00	0.05	0.00	0.01	2.35	0.73	0.01	0.00	15.04	76.
345-04	Gabbro	1415I	0.00	49.80	0.01	31.83	0.01	0.44	0.00	0.04	15.64	2.88	0.05	0.01	100.71	6.79	0.00	5.12	0.00	0.05	0.00	0.01	2.29	0.76	0.01	0.00	15.03	74.
345-04	Gabbro	1415I	0.00	48.64	0.03	32.26	0.00	0.40	0.01	0.04	16.34	2.44	0.03	0.00	100.18	6.68	0.00	5.22	0.00	0.05	0.00	0.01	2.41	0.65	0.01	0.00	15.03	78.
345-04	Gabbro	1415I	0.00	48.25	0.04	32.20	0.00	0.42	0.00	0.04	16.42	2.35	0.05	0.01	99.76	6.66	0.00	5.24	0.00	0.05	0.00	0.01	2.43	0.63	0.01	0.00	15.03	79.
345-04	Gabbro	1415I	0.00	49.36	0.04	31.24	0.00	0.44	0.00	0.03	15.03	3.15	0.07	0.00	99.35	6.82	0.00	5.09	0.00	0.05	0.00	0.01	2.23	0.84	0.01	0.00	15.06	72.
345-06	Gabbro	1415J	0.00	49.28	0.02	31.91	0.00	0.46	0.01	0.05	15.49	2.81	0.04	0.01	100.08	6.76	0.00	5.16	0.00	0.05	0.00	0.01	2.28	0.75	0.01	0.00	15.03	75.
345-06	Gabbro	1415J	0.00	63.29	0.00	22.04	0.00	0.04	0.00	0.00	2.92	10.51	0.04	0.00	98.84	8.49	0.00	3.48	0.00	0.00	0.00	0.00	0.42	2.73	0.01	0.00	15.14	13.
345-06	Gabbro	1415J	0.00	51.02	0.05	29.99	0.00	0.35	0.02	0.07	12.96	4.19	0.05	0.00	98.71	7.06	0.01	4.89	0.00	0.04	0.00	0.01	1.92	1.12	0.01	0.00	15.06	62.
345-06	Gabbro	1415J	0.00	48.69	0.06	31.96	0.00	0.53	0.00	0.06	15.62	2.76	0.03	0.00	99.71	6.72	0.01	5.20	0.00	0.06	0.00	0.01	2.31	0.74	0.00	0.00	15.05	75.
345-06	Gabbro	1415J	0.00	50.19	0.05	30.99	0.01	0.43	0.00	0.07	14.58	3.56	0.05	0.00	99.92	6.89	0.01	5.01	0.00	0.05	0.00	0.01	2.15	0.95	0.01	0.00	15.07	69.
345-06	Gabbro	1415J	0.00	49.76	0.04	31.90	0.00	0.44	0.00	0.08	15.31	2.99	0.04	0.00	100.54	6.79	0.00	5.13	0.00	0.05	0.00	0.02	2.24	0.79	0.01	0.00	15.03	73.
345-06	Gabbro	1415J	0.00	49.99	0.01	32.09	0.00	0.47	0.00	0.05	15.29	3.03	0.03	0.00	100.95	6.80	0.00	5.14	0.00	0.05	0.00	0.01	2.23	0.80	0.01	0.00	15.03	73.
345-06	Gabbro	1415J	0.00	49.14	0.04	31.11	0.02	0.47	0.00	0.08	14.75	3.15	0.05	0.00	98.80	6.83	0.00	5.09	0.00	0.05	0.00	0.02	2.20	0.85	0.01	0.00	15.05	71.
345-06	Gabbro	1415J	0.00	48.33	0.02	31.48	0.02	0.48	0.00	0.08	15.08	3.03	0.03	0.00	98.54	6.74	0.00	5.18	0.00	0.06	0.00	0.02	2.25	0.82	0.01	0.00	15.08	73.
345-06	Gabbro	1415J	0.00	49.97	0.04	32.13	0.00	0.51	0.00	0.08	15.45	2.93	0.03	0.00	101.15	6.78	0.00	5.14	0.00	0.06	0.00	0.02	2.25	0.77	0.01	0.00	15.03	74.
345-06	Gabbro	1415J	0.00	50.02	0.05	32.15	0.00	0.54	0.00	0.08	15.47	2.85	0.03	0.02	101.21	6.79	0.00	5.14	0.00	0.06	0.00	0.02	2.25	0.75	0.00	0.00	15.02	74.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-06	Gabbro	1415J	0.00	49.56	0.05	32.16	0.01	0.49	0.01	0.06	15.63	2.79	0.03	0.00	100.78	6.76	0.01	5.17	0.00	0.06	0.00	0.01	2.28	0.74	0.01	0.00	15.02	75.
345-06	Gabbro	1415J	0.00	49.50	0.02	32.53	0.00	0.49	0.01	0.08	15.88	2.61	0.03	0.00	101.14	6.73	0.00	5.21	0.00	0.06	0.00	0.02	2.31	0.69	0.01	0.00	15.01	76.
345-06	Gabbro	1415J	0.00	49.83	0.04	31.97	0.00	0.52	0.01	0.07	15.45	2.97	0.05	0.01	100.91	6.78	0.00	5.13	0.00	0.06	0.00	0.01	2.25	0.78	0.01	0.00	15.04	73.
345-06	Gabbro	1415J	0.00	49.55	0.04	31.76	0.00	0.49	0.01	0.08	15.44	2.97	0.04	0.02	100.39	6.78	0.00	5.13	0.00	0.06	0.00	0.02	2.27	0.79	0.01	0.00	15.05	74.
345-06	Gabbro	1415J	0.00	49.25	0.06	32.18	0.00	0.49	0.00	0.05	15.64	2.80	0.04	0.00	100.50	6.74	0.01	5.19	0.00	0.06	0.00	0.01	2.29	0.74	0.01	0.00	15.04	75.
345-06	Gabbro	1415J	0.00	49.49	0.05	31.92	0.02	0.53	0.00	0.04	15.39	2.85	0.04	0.00	100.33	6.78	0.01	5.15	0.00	0.06	0.00	0.01	2.26	0.76	0.01	0.00	15.02	74.
345-06	Gabbro	1415J	0.00	49.44	0.03	32.64	0.02	0.52	0.00	0.06	16.01	2.60	0.03	0.00	101.35	6.71	0.00	5.22	0.00	0.06	0.00	0.01	2.33	0.68	0.01	0.00	15.02	77.
345-06	Gabbro	1415J	0.00	49.59	0.03	32.13	0.00	0.51	0.00	0.07	15.44	2.83	0.03	0.03	100.66	6.77	0.00	5.17	0.00	0.06	0.00	0.01	2.26	0.75	0.01	0.00	15.02	74.
345-01	Gabbronorite	1415E	-1.00	49.13	0.02	31.36	0.00	0.63	0.00	0.12	14.96	3.14	0.07	0.00	99.43	6.79	0.00	5.11	0.00	0.07	0.00	0.02	2.22	0.84	0.01	0.00	15.08	72.
345-01	Gabbronorite	1415E	-1.00	53.06	0.04	29.08	0.00	0.68	0.00	0.24	12.44	5.42	0.09	0.00	101.05	7.19	0.00	4.64	0.00	0.08	0.00	0.05	1.81	1.42	0.02	0.00	15.21	55.
345-01	Gabbronorite	1415E	-1.00	48.90	0.03	29.68	0.01	2.60	0.03	1.90	13.38	3.08	0.11	0.02	99.73	6.79	0.00	4.86	0.00	0.30	0.00	0.39	1.99	0.83	0.02	0.00	15.20	70.
345-01	Gabbronorite	1415E	-1.00	50.47	0.05	31.17	0.00	0.70	0.01	0.10	14.81	3.36	0.07	0.00	100.72	6.88	0.00	5.01	0.00	0.08	0.00	0.02	2.16	0.89	0.01	0.00	15.06	70.
345-01	Gabbronorite	1415E	-1.00	50.12	0.05	31.02	0.00	0.64	0.00	0.12	14.83	3.33	0.07	0.00	100.19	6.87	0.01	5.01	0.00	0.07	0.00	0.02	2.18	0.89	0.01	0.00	15.07	70.
345-01	Gabbronorite	1415E	-1.00	50.22	0.04	31.38	0.01	0.66	0.01	0.11	14.96	3.22	0.07	0.00	100.69	6.85	0.00	5.05	0.00	0.08	0.00	0.02	2.19	0.85	0.01	0.00	15.05	71.
345-01	Gabbronorite	1415E	-1.00	50.44	0.06	31.19	0.02	0.62	0.00	0.12	14.68	3.33	0.09	0.01	100.56	6.88	0.01	5.02	0.00	0.07	0.00	0.02	2.15	0.88	0.01	0.00	15.05	70.
345-01	Gabbronorite	1415E	-1.00	49.90	0.10	31.46	0.00	0.63	0.01	0.12	14.94	3.26	0.07	0.01	100.49	6.82	0.01	5.07	0.00	0.07	0.00	0.03	2.19	0.86	0.01	0.00	15.07	71.
345-01	Gabbronorite	1415E	-1.00	50.17	0.06	31.37	0.02	0.59	0.02	0.11	14.86	3.32	0.09	0.00	100.61	6.85	0.01	5.05	0.00	0.07	0.00	0.02	2.17	0.88	0.02	0.00	15.07	70.
345-01	Gabbronorite	1415E	-1.00	50.52	0.06	31.46	0.00	0.63	0.01	0.09	14.76	3.36	0.07	0.02	100.98	6.87	0.01	5.04	0.00	0.07	0.00	0.02	2.15	0.88	0.01	0.00	15.05	70.
345-01	Gabbronorite	1415E	-1.00	50.44	0.04	31.36	0.00	0.65	0.02	0.10	14.96	3.35	0.08	0.02	101.01	6.86	0.00	5.03	0.00	0.07	0.00	0.02	2.18	0.88	0.01	0.00	15.07	70.
345-01	Gabbronorite	1415E	-1.00	50.68	0.02	31.30	0.00	0.64	0.01	0.11	14.75	3.35	0.07	0.00	100.92	6.89	0.00	5.02	0.00	0.07	0.00	0.02	2.15	0.88	0.01	0.00	15.05	70.
345-01	Gabbronorite	1415E	-1.00	50.65	0.01	31.33	0.00	0.62	0.04	0.12	14.89	3.35	0.07	0.00	101.08	6.88	0.00	5.02	0.00	0.07	0.00	0.02	2.17	0.88	0.01	0.00	15.06	70.
345-01	Gabbronorite	1415E	-1.00	50.52	0.02	31.24	0.00	0.67	0.01	0.12	14.76	3.38	0.07	0.00	100.79	6.88	0.00	5.02	0.00	0.08	0.00	0.02	2.15	0.89	0.01	0.00	15.06	70.
345-01	Gabbronorite	1415E	-1.00	50.48	0.02	31.50	0.00	0.64	0.01	0.10	14.90	3.29	0.06	0.02	101.00	6.86	0.00	5.05	0.00	0.07	0.00	0.02	2.17	0.87	0.01	0.00	15.05	71.
345-01	Gabbronorite	1415E	-1.00	49.30	0.03	31.84	0.00	0.64	0.00	0.09	15.38	2.93	0.06	0.02	100.29	6.76	0.00	5.15	0.00	0.07	0.00	0.02	2.26	0.78	0.01	0.00	15.06	74.
345-01	Gabbronorite	1415E	-1.00	49.43	0.04	32.00	0.00	0.67	0.01	0.09	15.52	2.92	0.05	0.00	100.75	6.75	0.00	5.15	0.00	0.08	0.00	0.02	2.27	0.77	0.01	0.00	15.06	74.
345-01	Gabbronorite	1415E	-1.00	48.59	0.03	32.60	0.00	0.63	0.01	0.09	16.20	2.62	0.05	0.00	100.81	6.65	0.00	5.26	0.00	0.07	0.00	0.02	2.37	0.69	0.01	0.00	15.07	77.
345-01	Gabbronorite	1415E	-1.00	48.02	0.02	33.09	0.00	0.58	0.01	0.06	16.68	2.21	0.03	0.00	100.70	6.58	0.00	5.34	0.00	0.07	0.00	0.01	2.45	0.59	0.01	0.00	15.05	80.
345-01	Gabbronorite	1415E	-1.00	48.42	0.04	32.85	0.00	0.61	0.00	0.08	16.45	2.31	0.04	0.00	100.79	6.62	0.00	5.30	0.00	0.07	0.00	0.02	2.41	0.61	0.01	0.00	15.04	79.
345-01	Gabbronorite	1415E	-1.00	48.89	0.02	32.72	0.00	0.64	0.02	0.07	16.11	2.54	0.06	0.02	101.09	6.66	0.00	5.26	0.00	0.07	0.00	0.01	2.35	0.67	0.01	0.00	15.05	77.
345-01	Gabbronorite	1415E	-1.00	49.24	0.03	32.15	0.00	0.62	0.00	0.09	15.71	2.82	0.06	0.00	100.73	6.73	0.00	5.18	0.00	0.07	0.00	0.02	2.30	0.75	0.01	0.00	15.06	75.
345-01	Gabbronorite	1415E	-1.00	49.96	0.03	31.78	0.00	0.65	0.00	0.08	15.18	3.11	0.07	0.02	100.89	6.81	0.00	5.10	0.00	0.07	0.00	0.02	2.22	0.82	0.01	0.00	15.06	72.
345-01	Gabbronorite	1415E	-1.00	50.82	0.03	31.25	0.00	0.63	0.00	0.09	14.63	3.44	0.07	0.00	100.97	6.90	0.00	5.00	0.00	0.07	0.00	0.02	2.13	0.91	0.01	0.00	15.05	69.
345-01	Gabbronorite	1415E	-1.00	51.24	0.03	31.17	0.00	0.64	0.01	0.11	14.35	3.60	0.07	0.00	101.21	6.94	0.00	4.97	0.00	0.07	0.00	0.02	2.08	0.95	0.01	0.00	15.05	68.
345-01	Gabbronorite	1415E	-1.00	51.27	0.02	30.85	0.01	0.67	0.00	0.12	14.15	3.71	0.09	0.01	100.89	6.96	0.00	4.94	0.00	0.08	0.00	0.02	2.06	0.98	0.01	0.00	15.06	67.
345-01	Gabbronorite	1415E	-1.00	51.17	0.03	31.61	0.00	0.73	0.01	0.09	14.59	3.46	0.06	0.02	101.77	6.90	0.00	5.02	0.00	0.08	0.00	0.02	2.11	0.91	0.01	0.00	15.05	69.
345-01	Gabbronorite	1415E	-1.00	50.29	0.03	30.98	0.00	0.68	0.03	0.06	14.48	3.38	0.06	0.00	99.97	6.90	0.00	5.01	0.00	0.08	0.00	0.01	2.13	0.90	0.01	0.00	15.05	70.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-01	Gabbronorite	1415E	-1.00	50.45	0.05	31.36	0.01	0.68	0.00	0.08	14.91	3.24	0.05	0.01	100.86	6.87	0.01	5.03	0.00	0.08	0.00	0.02	2.18	0.86	0.01	0.00	15.04	71.
345-01	Gabbronorite	1415E	-1.00	49.07	0.01	32.34	0.00	0.66	0.01	0.06	15.79	2.73	0.06	0.02	100.75	6.71	0.00	5.21	0.00	0.07	0.00	0.01	2.31	0.72	0.01	0.00	15.05	75.
345-01	Gabbronorite	1415E	-1.00	49.79	0.02	31.73	0.01	0.67	0.00	0.10	15.21	3.07	0.07	0.00	100.66	6.80	0.00	5.11	0.00	0.08	0.00	0.02	2.23	0.81	0.01	0.00	15.06	72.
345-01	Gabbronorite	1415E	-1.00	49.15	0.04	32.03	0.00	0.73	0.00	0.08	15.37	2.81	0.07	0.02	100.29	6.74	0.00	5.18	0.00	0.08	0.00	0.02	2.26	0.75	0.01	0.00	15.04	74.
345-01	Gabbronorite	1415E	-1.00	48.91	0.06	31.60	0.00	0.64	0.02	0.19	15.70	2.72	0.07	0.00	99.90	6.74	0.01	5.13	0.00	0.07	0.00	0.04	2.32	0.73	0.01	0.00	15.05	75.
345-01	Gabbronorite	1415E	-1.00	49.65	0.02	32.18	0.00	0.64	0.00	0.07	15.53	2.87	0.06	0.01	101.04	6.76	0.00	5.16	0.00	0.07	0.00	0.01	2.26	0.76	0.01	0.00	15.04	74.
345-01	Gabbronorite	1415E	-1.00	49.87	0.06	31.65	0.00	0.67	0.00	0.08	15.36	3.00	0.07	0.00	100.76	6.81	0.01	5.09	0.00	0.08	0.00	0.02	2.25	0.79	0.01	0.00	15.05	73.
345-01	Gabbronorite	1415E	-1.00	50.22	0.05	31.25	0.00	0.62	0.02	0.06	14.82	3.27	0.02	0.00	100.33	6.87	0.01	5.04	0.00	0.07	0.00	0.01	2.17	0.87	0.00	0.00	15.04	71.
345-01	Gabbronorite	1415E	-1.00	50.36	0.04	31.69	0.00	0.67	0.01	0.09	15.01	3.16	0.08	0.00	101.11	6.84	0.00	5.07	0.00	0.08	0.00	0.02	2.18	0.83	0.01	0.00	15.04	72.
345-01	Gabbronorite	1415E	-1.00	51.75	0.05	30.45	0.00	0.66	0.02	0.09	13.72	3.88	0.12	0.02	100.75	7.03	0.00	4.88	0.00	0.07	0.00	0.02	2.00	1.02	0.02	0.00	15.05	65.
345-01	Gabbronorite	1415E	-1.00	51.67	0.05	30.30	0.00	0.63	0.00	0.11	13.74	3.91	0.10	0.00	100.51	7.04	0.01	4.86	0.00	0.07	0.00	0.02	2.00	1.03	0.02	0.00	15.05	65.
345-01	Gabbronorite	1415E	-1.00	51.26	0.04	30.08	0.00	0.66	0.03	0.09	13.44	4.08	0.07	0.00	99.75	7.04	0.00	4.87	0.00	0.08	0.00	0.02	1.98	1.08	0.01	0.00	15.08	64.
345-01	Gabbronorite	1415E	-1.00	51.96	0.03	30.58	0.00	0.73	0.05	0.11	13.93	3.87	0.09	0.00	101.34	7.02	0.00	4.87	0.00	0.08	0.01	0.02	2.02	1.01	0.02	0.00	15.05	66.
345-01	Gabbronorite	1415E	-1.00	50.89	0.04	31.19	0.00	0.67	0.00	0.08	14.65	3.36	0.09	0.02	100.98	6.91	0.00	4.99	0.00	0.08	0.00	0.02	2.13	0.88	0.02	0.00	15.04	70.
345-01	Gabbronorite	1415E	-1.00	49.39	0.02	31.46	0.00	0.56	0.00	0.06	13.90	3.67	0.05	0.03	99.14	6.83	0.00	5.13	0.00	0.06	0.00	0.01	2.06	0.99	0.01	0.00	15.10	67.
345-01	Gabbronorite	1415E	-1.00	48.49	0.01	33.34	0.00	0.63	0.00	0.06	16.76	2.16	0.05	0.02	101.51	6.59	0.00	5.34	0.00	0.07	0.00	0.01	2.44	0.57	0.01	0.00	15.03	80.
345-01	Gabbronorite	1415E	-1.00	49.68	0.04	32.33	0.00	0.63	0.00	0.08	15.86	2.74	0.07	0.00	101.43	6.74	0.00	5.17	0.00	0.07	0.00	0.02	2.31	0.72	0.01	0.00	15.04	75.
345-01	Gabbronorite	1415E	-1.00	52.76	0.02	30.13	0.00	0.61	0.02	0.08	13.13	4.26	0.02	0.00	101.02	7.13	0.00	4.80	0.00	0.07	0.00	0.02	1.90	1.12	0.00	0.00	15.03	62.
345-01	Gabbronorite	1415E	-1.00	50.97	0.03	30.64	0.02	0.75	0.00	0.07	13.91	3.61	0.02	0.02	100.03	6.98	0.00	4.94	0.00	0.09	0.00	0.01	2.04	0.96	0.00	0.00	15.03	67.
345-01	Gabbronorite	1415E	-1.00	51.25	0.05	30.31	0.00	0.65	0.01	0.10	13.83	3.67	0.09	0.04	100.00	7.01	0.01	4.89	0.00	0.07	0.00	0.02	2.03	0.97	0.02	0.00	15.03	67.
345-01	Gabbronorite	1415E	-1.00	51.29	0.03	30.64	0.00	0.66	0.00	0.07	13.86	3.50	0.08	0.00	100.12	7.00	0.00	4.93	0.00	0.07	0.00	0.01	2.03	0.93	0.01	0.00	15.00	68.
345-01	Gabbronorite	1415E	-1.00	50.86	0.02	31.37	0.02	0.67	0.00	0.08	14.67	3.38	0.10	0.00	101.17	6.90	0.00	5.01	0.00	0.08	0.00	0.02	2.13	0.89	0.02	0.00	15.05	70.
345-01	Gabbronorite	1415E	-1.00	50.30	0.00	31.44	0.00	0.72	0.00	0.11	14.81	3.35	0.09	0.01	100.82	6.85	0.00	5.05	0.00	0.08	0.00	0.02	2.16	0.89	0.02	0.00	15.07	70.
345-01	Gabbronorite	1415E	-1.00	51.84	0.02	30.50	0.00	0.68	0.02	0.08	13.96	3.83	0.14	0.00	101.08	7.03	0.00	4.87	0.00	0.08	0.00	0.02	2.03	1.01	0.02	0.00	15.05	66.
345-01	Gabbronorite	1415E	-1.00	50.62	0.04	31.36	0.01	0.70	0.00	0.08	15.03	3.27	0.07	0.00	101.18	6.87	0.00	5.02	0.00	0.08	0.00	0.02	2.19	0.86	0.01	0.00	15.05	71.
345-01	Gabbronorite	1415E	-1.00	52.12	0.06	30.33	0.00	0.63	0.01	0.11	13.89	3.96	0.08	0.03	101.23	7.05	0.01	4.84	0.00	0.07	0.00	0.02	2.01	1.04	0.01	0.00	15.05	65.
345-01	Gabbronorite	1415E	-1.00	49.28	0.05	31.79	0.01	0.58	0.01	0.06	15.17	3.07	0.05	0.00	100.06	6.77	0.01	5.15	0.00	0.07	0.00	0.01	2.23	0.82	0.01	0.00	15.06	73.
345-01	Gabbronorite	1415E	-1.00	49.15	0.02	31.59	0.00	0.58	0.00	0.07	15.06	3.21	0.05	0.01	99.73	6.78	0.00	5.13	0.00	0.07	0.00	0.01	2.22	0.86	0.01	0.00	15.09	71.
345-01	Gabbronorite	1415E	-1.00	51.95	0.04	30.73	0.01	0.72	0.01	0.06	13.95	3.82	0.12	0.00	101.40	7.02	0.00	4.89	0.00	0.08	0.00	0.01	2.02	1.00	0.02	0.00	15.04	66.
345-01	Gabbronorite	1415E	-1.00	52.43	0.13	30.33	0.00	0.88	0.00	0.06	13.48	4.11	0.14	0.01	101.56	7.07	0.01	4.82	0.00	0.10	0.00	0.01	1.95	1.08	0.02	0.00	15.06	63.
345-28	Ol-gabbro	1415P	-1.00	49.97	0.04	30.85	0.00	2.05	0.04	0.74	14.17	3.35	0.03	0.00	101.24	6.82	0.00	4.96	0.00	0.23	0.00	0.15	2.07	0.89	0.01	0.00	15.14	69.
345-28	Ol-gabbro	1415P	-1.00	50.75	0.07	31.76	0.00	0.52	0.00	0.10	14.93	3.36	0.04	0.02	101.55	6.86	0.01	5.06	0.00	0.06	0.00	0.02	2.16	0.88	0.01	0.00	15.05	70.
345-28	Ol-gabbro	1415P	-1.00	50.84	0.05	31.63	0.00	0.56	0.00	0.09	14.88	3.36	0.02	0.01	101.44	6.87	0.01	5.04	0.00	0.06	0.00	0.02	2.16	0.88	0.00	0.00	15.04	70.
345-28	Ol-gabbro	1415P	-1.00	50.65	0.06	31.67	0.01	0.54	0.00	0.11	14.91	3.32	0.03	0.01	101.31	6.86	0.01	5.05	0.00	0.06	0.00	0.02	2.16	0.87	0.00	0.00	15.05	71.
345-28	Ol-gabbro	1415P	-1.00	50.59	0.06	31.71	0.01	0.57	0.00	0.13	14.94	3.24	0.02	0.01	101.28	6.85	0.01	5.06	0.00	0.06	0.00	0.03	2.17	0.85	0.00	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.57	0.04	31.54	0.00	0.48	0.01	0.13	15.08	3.20	0.01	0.00	101.06	6.86	0.00	5.05	0.00	0.05	0.00	0.03	2.19	0.84	0.00	0.00	15.03	72.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-28	Ol-gabbro	1415P	-1.00	50.42	0.03	31.54	0.00	0.45	0.00	0.07	15.02	3.23	0.02	0.01	100.78	6.86	0.00	5.06	0.00	0.05	0.00	0.01	2.19	0.85	0.00	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	50.17	0.03	31.58	0.00	0.47	0.00	0.08	15.17	3.11	0.01	0.00	100.60	6.84	0.00	5.08	0.00	0.05	0.00	0.02	2.22	0.82	0.00	0.00	15.03	72.
345-28	Ol-gabbro	1415P	-1.00	50.40	0.05	31.68	0.00	0.52	0.03	0.16	15.18	3.17	0.02	0.00	101.22	6.84	0.01	5.06	0.00	0.06	0.00	0.03	2.21	0.83	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.60	0.06	31.73	0.00	0.50	0.01	0.07	15.12	3.21	0.02	0.02	101.34	6.85	0.01	5.06	0.00	0.06	0.00	0.01	2.19	0.84	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.44	0.04	31.53	0.01	0.47	0.01	0.08	15.02	3.24	0.02	0.00	100.86	6.86	0.00	5.05	0.00	0.05	0.00	0.02	2.19	0.85	0.00	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.67	0.03	31.54	0.00	0.47	0.01	0.07	15.11	3.34	0.02	0.01	101.27	6.87	0.00	5.04	0.00	0.05	0.00	0.01	2.19	0.88	0.00	0.00	15.05	71.
345-28	Ol-gabbro	1415P	-1.00	50.04	0.06	31.16	0.00	0.47	0.00	0.07	15.06	3.27	0.02	0.00	100.15	6.86	0.01	5.03	0.00	0.05	0.00	0.02	2.21	0.87	0.00	0.00	15.05	71.
345-28	Ol-gabbro	1415P	-1.00	50.74	0.04	31.41	0.02	0.52	0.00	0.16	14.96	3.31	0.03	0.02	101.21	6.88	0.00	5.02	0.00	0.06	0.00	0.03	2.17	0.87	0.01	0.00	15.05	71.
345-28	Ol-gabbro	1415P	-1.00	50.67	0.03	31.46	0.01	0.51	0.00	0.11	15.10	3.29	0.02	0.00	101.20	6.87	0.00	5.03	0.00	0.06	0.00	0.02	2.19	0.87	0.00	0.00	15.05	71.
345-28	Ol-gabbro	1415P	-1.00	50.63	0.02	31.59	0.00	0.54	0.00	0.12	15.19	3.19	0.01	0.00	101.29	6.86	0.00	5.04	0.00	0.06	0.00	0.02	2.21	0.84	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.46	0.03	31.44	0.00	0.54	0.00	0.09	15.06	3.23	0.01	0.01	100.89	6.86	0.00	5.04	0.00	0.06	0.00	0.02	2.20	0.85	0.00	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.32	0.06	31.37	0.00	0.55	0.00	0.10	15.12	3.25	0.03	0.00	100.79	6.85	0.01	5.04	0.00	0.06	0.00	0.02	2.21	0.86	0.00	0.00	15.05	71.
345-28	Ol-gabbro	1415P	-1.00	49.73	0.03	30.74	0.00	0.95	0.01	0.66	14.66	3.17	0.03	0.00	99.96	6.84	0.00	4.99	0.00	0.11	0.00	0.13	2.16	0.84	0.01	0.00	15.09	71.
345-28	Ol-gabbro	1415P	-1.00	50.91	0.03	32.07	0.00	0.52	0.00	0.12	15.19	3.13	0.04	0.01	102.02	6.84	0.00	5.08	0.00	0.06	0.00	0.02	2.19	0.82	0.01	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	50.03	0.02	31.81	0.00	0.50	0.00	0.09	15.51	3.05	0.01	0.01	101.03	6.80	0.00	5.10	0.00	0.06	0.00	0.02	2.26	0.80	0.00	0.00	15.05	73.
345-28	Ol-gabbro	1415P	-1.00	50.25	0.05	31.70	0.00	0.53	0.00	0.09	15.38	3.10	0.01	0.00	101.11	6.83	0.01	5.08	0.00	0.06	0.00	0.02	2.24	0.82	0.00	0.00	15.04	73.
345-28	Ol-gabbro	1415P	-1.00	50.07	0.06	31.56	0.00	0.51	0.01	0.10	15.40	3.08	0.03	0.00	100.82	6.82	0.01	5.07	0.00	0.06	0.00	0.02	2.25	0.81	0.00	0.00	15.05	73.
345-28	Ol-gabbro	1415P	-1.00	50.46	0.03	31.50	0.00	0.53	0.02	0.11	15.18	3.15	0.02	0.02	101.01	6.86	0.00	5.05	0.00	0.06	0.00	0.02	2.21	0.83	0.00	0.00	15.03	72.
345-28	Ol-gabbro	1415P	-1.00	50.27	0.04	31.34	0.00	0.53	0.00	0.09	14.80	3.19	0.02	0.03	100.31	6.87	0.00	5.05	0.00	0.06	0.00	0.02	2.17	0.85	0.00	0.00	15.02	71.
345-28	Ol-gabbro	1415P	-1.00	50.25	0.06	31.40	0.00	0.49	0.00	0.10	15.19	3.21	0.02	0.00	100.71	6.85	0.01	5.04	0.00	0.06	0.00	0.02	2.22	0.85	0.00	0.00	15.05	72.
345-28	Ol-gabbro	1415P	-1.00	50.40	0.03	31.50	0.00	0.48	0.01	0.10	15.11	3.13	0.01	0.01	100.77	6.86	0.00	5.05	0.00	0.05	0.00	0.02	2.20	0.82	0.00	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	50.32	0.04	31.43	0.00	0.46	0.01	0.09	15.18	3.21	0.01	0.00	100.76	6.85	0.00	5.05	0.00	0.05	0.00	0.02	2.22	0.85	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.35	0.04	31.40	0.00	0.48	0.01	0.09	15.11	3.22	0.02	0.01	100.73	6.86	0.00	5.04	0.00	0.05	0.00	0.02	2.21	0.85	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.42	0.06	31.66	0.00	0.50	0.01	0.09	15.16	3.17	0.03	0.01	101.10	6.84	0.01	5.07	0.00	0.06	0.00	0.02	2.21	0.83	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.29	0.04	31.32	0.02	0.49	0.00	0.09	14.97	3.15	0.02	0.00	100.40	6.87	0.00	5.04	0.00	0.06	0.00	0.02	2.19	0.83	0.00	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	50.43	0.03	31.56	0.01	0.48	0.00	0.09	15.14	3.14	0.03	0.01	100.92	6.86	0.00	5.06	0.00	0.05	0.00	0.02	2.21	0.83	0.00	0.00	15.03	72.
345-28	Ol-gabbro	1415P	-1.00	50.32	0.03	31.42	0.00	0.49	0.00	0.09	15.13	3.19	0.02	0.02	100.71	6.86	0.00	5.05	0.00	0.06	0.00	0.02	2.21	0.84	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.03	0.02	31.67	0.01	0.52	0.01	0.09	15.13	3.07	0.02	0.00	100.57	6.83	0.00	5.09	0.00	0.06	0.00	0.02	2.21	0.81	0.00	0.00	15.03	73.
345-28	Ol-gabbro	1415P	-1.00	50.17	0.03	31.32	0.00	0.47	0.00	0.09	15.29	3.12	0.03	0.00	100.50	6.85	0.00	5.04	0.00	0.05	0.00	0.02	2.24	0.83	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.14	0.02	31.29	0.00	0.51	0.00	0.09	15.05	3.18	0.02	0.00	100.31	6.86	0.00	5.05	0.00	0.06	0.00	0.02	2.21	0.84	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.19	0.03	31.36	0.00	0.50	0.00	0.09	15.00	3.23	0.02	0.00	100.43	6.86	0.00	5.05	0.00	0.06	0.00	0.02	2.20	0.86	0.00	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.47	0.04	31.34	0.00	0.52	0.00	0.08	14.91	3.29	0.04	0.00	100.69	6.88	0.00	5.03	0.00	0.06	0.00	0.02	2.18	0.87	0.01	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.45	0.04	31.13	0.00	0.51	0.01	0.07	14.80	3.31	0.03	0.00	100.36	6.89	0.00	5.01	0.00	0.06	0.00	0.01	2.17	0.88	0.00	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	49.74	0.02	31.14	0.00	0.53	0.00	0.08	14.97	3.13	0.03	0.00	99.63	6.85	0.00	5.06	0.00	0.06	0.00	0.02	2.21	0.84	0.01	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.69	0.03	31.72	0.02	0.44	0.01	0.07	14.99	3.18	0.03	0.02	101.18	6.87	0.00	5.06	0.00	0.05	0.00	0.01	2.18	0.84	0.00	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	48.62	0.04	30.32	0.01	3.39	0.11	0.77	13.85	2.98	0.03	0.00	100.11	6.76	0.00	4.97	0.00	0.39	0.01	0.16	2.06	0.80	0.01	0.00	15.16	71.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-28	Ol-gabbro	1415P	-1.00	50.73	0.03	31.37	0.00	0.55	0.03	0.09	14.75	3.36	0.02	0.00	100.92	6.89	0.00	5.02	0.00	0.06	0.00	0.02	2.15	0.88	0.00	0.00	15.04	70.
345-28	Ol-gabbro	1415P	-1.00	46.57	0.01	33.86	0.02	0.57	0.01	0.33	17.96	1.41	0.02	0.00	100.75	6.40	0.00	5.49	0.00	0.07	0.00	0.07	2.64	0.38	0.00	0.00	15.04	87.
345-28	Ol-gabbro	1415P	-1.00	50.25	0.03	32.04	0.00	0.44	0.00	0.06	15.47	3.03	0.02	0.04	101.39	6.81	0.00	5.11	0.00	0.05	0.00	0.01	2.24	0.80	0.00	0.00	15.03	73.
345-28	Ol-gabbro	1415P	-1.00	50.51	0.06	31.47	0.02	0.51	0.00	0.09	14.86	3.25	0.03	0.02	100.80	6.87	0.01	5.05	0.00	0.06	0.00	0.02	2.17	0.86	0.01	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	47.44	0.02	29.78	0.00	3.20	0.13	4.74	11.96	2.67	0.03	0.02	99.97	6.59	0.00	4.87	0.00	0.37	0.01	0.98	1.78	0.72	0.00	0.00	15.34	71.
345-28	Ol-gabbro	1415P	-1.00	50.46	0.06	31.30	0.00	0.44	0.00	0.08	14.98	3.22	0.03	0.00	100.57	6.88	0.01	5.03	0.00	0.05	0.00	0.02	2.19	0.85	0.00	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	50.87	0.04	31.50	0.00	0.51	0.01	0.08	14.78	3.36	0.03	0.02	101.19	6.89	0.00	5.03	0.00	0.06	0.00	0.02	2.15	0.88	0.01	0.00	15.03	70.
345-28	Ol-gabbro	1415P	-1.00	50.25	0.04	31.87	0.01	0.49	0.01	0.06	15.20	3.13	0.02	0.00	101.07	6.82	0.00	5.10	0.00	0.06	0.00	0.01	2.21	0.83	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.52	0.02	31.79	0.01	0.42	0.00	0.08	15.11	3.16	0.01	0.00	101.11	6.85	0.00	5.08	0.00	0.05	0.00	0.02	2.20	0.83	0.00	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	50.15	0.02	31.71	0.00	0.46	0.01	0.05	15.10	3.13	0.03	0.00	100.65	6.84	0.00	5.09	0.00	0.05	0.00	0.01	2.21	0.83	0.01	0.00	15.03	72.
345-28	Ol-gabbro	1415P	-1.00	50.76	0.05	31.45	0.00	0.44	0.01	0.09	14.93	3.34	0.03	0.02	101.11	6.88	0.00	5.03	0.00	0.05	0.00	0.02	2.17	0.88	0.01	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.49	0.04	31.41	0.00	0.45	0.00	0.08	14.93	3.21	0.01	0.00	100.63	6.88	0.00	5.04	0.00	0.05	0.00	0.02	2.18	0.85	0.00	0.00	15.02	71.
345-28	Ol-gabbro	1415P	-1.00	50.36	0.04	31.57	0.01	0.45	0.01	0.09	14.99	3.19	0.03	0.00	100.72	6.86	0.00	5.07	0.00	0.05	0.00	0.02	2.19	0.84	0.00	0.00	15.03	72.
345-28	Ol-gabbro	1415P	-1.00	51.02	0.03	31.44	0.00	0.46	0.00	0.08	14.87	3.24	0.02	0.00	101.16	6.91	0.00	5.02	0.00	0.05	0.00	0.02	2.16	0.85	0.00	0.00	15.01	71.
345-28	Ol-gabbro	1415P	-1.00	50.52	0.05	31.73	0.00	0.84	0.02	0.17	14.84	3.17	0.03	0.00	101.36	6.84	0.01	5.07	0.00	0.09	0.00	0.03	2.15	0.83	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.24	0.03	31.98	0.01	0.48	0.01	0.08	15.20	3.02	0.02	0.00	101.06	6.82	0.00	5.12	0.00	0.05	0.00	0.02	2.21	0.79	0.00	0.00	15.02	73.
345-28	Ol-gabbro	1415P	-1.00	51.05	0.05	31.49	0.00	0.47	0.00	0.10	14.85	3.32	0.04	0.00	101.36	6.90	0.00	5.02	0.00	0.05	0.00	0.02	2.15	0.87	0.01	0.00	15.02	71.
345-28	Ol-gabbro	1415P	-1.00	49.73	0.04	31.89	0.00	0.52	0.00	0.10	15.33	2.87	0.02	0.03	100.53	6.79	0.00	5.13	0.00	0.06	0.00	0.02	2.24	0.76	0.00	0.00	15.02	74.
345-28	Ol-gabbro	1415P	-1.00	49.81	0.04	31.98	0.02	0.48	0.00	0.09	15.52	2.84	0.02	0.01	100.81	6.79	0.00	5.13	0.00	0.06	0.00	0.02	2.27	0.75	0.00	0.00	15.02	75.
345-28	Ol-gabbro	1415P	-1.00	50.17	0.03	32.04	0.00	0.46	0.00	0.07	15.47	2.87	0.02	0.00	101.14	6.81	0.00	5.12	0.00	0.05	0.00	0.01	2.25	0.76	0.00	0.00	15.01	74.
345-28	Ol-gabbro	1415P	-1.00	50.25	0.04	31.74	0.00	0.45	0.00	0.09	15.32	3.01	0.02	0.00	100.93	6.83	0.00	5.09	0.00	0.05	0.00	0.02	2.23	0.79	0.00	0.00	15.02	73.
345-28	Ol-gabbro	1415P	-1.00	49.96	0.05	31.95	0.00	0.45	0.00	0.08	15.42	2.90	0.03	0.00	100.83	6.80	0.01	5.13	0.00	0.05	0.00	0.02	2.25	0.76	0.00	0.00	15.02	74.
345-28	Ol-gabbro	1415P	-1.00	50.21	0.03	31.42	0.02	0.43	0.00	0.16	14.98	3.23	0.03	0.00	100.50	6.85	0.00	5.06	0.00	0.05	0.00	0.03	2.19	0.85	0.01	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	50.65	0.06	31.65	0.00	0.50	0.00	0.09	15.10	3.20	0.03	0.01	101.28	6.86	0.01	5.05	0.00	0.06	0.00	0.02	2.19	0.84	0.00	0.00	15.03	72.
345-28	Ol-gabbro	1415P	-1.00	48.92	0.03	31.96	0.00	0.74	0.02	0.55	15.54	2.62	0.01	0.01	100.39	6.71	0.00	5.17	0.00	0.09	0.00	0.11	2.28	0.70	0.00	0.00	15.06	76.
345-28	Ol-gabbro	1415P	-1.00	50.58	0.05	31.54	0.01	0.46	0.00	0.09	14.90	3.29	0.02	0.00	100.93	6.87	0.00	5.05	0.00	0.05	0.00	0.02	2.17	0.87	0.00	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	49.43	0.04	30.93	0.02	0.48	0.01	0.10	15.06	3.04	0.04	0.00	99.13	6.85	0.00	5.05	0.00	0.06	0.00	0.02	2.24	0.82	0.01	0.00	15.04	73.
345-28	Ol-gabbro	1415P	-1.00	50.90	0.05	31.46	0.00	0.49	0.01	0.12	14.84	3.35	0.02	0.00	101.25	6.89	0.01	5.02	0.00	0.06	0.00	0.02	2.15	0.88	0.00	0.00	15.03	70.
345-28	Ol-gabbro	1415P	-1.00	50.41	0.05	31.78	0.00	0.48	0.01	0.11	15.18	3.16	0.02	0.00	101.20	6.83	0.01	5.08	0.00	0.05	0.00	0.02	2.21	0.83	0.00	0.00	15.04	72.
345-28	Ol-gabbro	1415P	-1.00	50.88	0.04	31.44	0.00	0.42	0.00	0.10	14.83	3.35	0.01	0.00	101.07	6.90	0.00	5.02	0.00	0.05	0.00	0.02	2.15	0.88	0.00	0.00	15.03	70.
345-28	Ol-gabbro	1415P	-1.00	50.78	0.04	31.65	0.00	0.46	0.00	0.07	14.98	3.20	0.02	0.00	101.20	6.88	0.00	5.05	0.00	0.05	0.00	0.01	2.17	0.84	0.00	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	50.67	0.05	31.40	0.00	0.49	0.02	0.11	14.90	3.29	0.02	0.02	100.98	6.88	0.01	5.03	0.00	0.06	0.00	0.02	2.17	0.87	0.00	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	49.41	0.02	32.25	0.00	0.53	0.01	0.09	15.86	2.75	0.02	0.00	100.94	6.73	0.00	5.18	0.00	0.06	0.00	0.02	2.32	0.73	0.00	0.00	15.04	76.
345-28	Ol-gabbro	1415P	-1.00	49.66	0.03	31.98	0.01	0.62	0.02	0.12	15.40	2.94	0.02	0.01	100.79	6.77	0.00	5.14	0.00	0.07	0.00	0.02	2.25	0.78	0.00	0.00	15.05	74.
345-28	Ol-gabbro	1415P	-1.00	50.75	0.05	31.52	0.02	0.52	0.00	0.12	14.93	3.28	0.02	0.03	101.24	6.88	0.01	5.03	0.00	0.06	0.00	0.02	2.17	0.86	0.00	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	50.55	0.02	31.47	0.00	0.57	0.00	0.10	14.97	3.15	0.03	0.00	100.87	6.87	0.00	5.04	0.00	0.06	0.00	0.02	2.18	0.83	0.01	0.00	15.02	72.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-28	Ol-gabbro	1415P	-1.00	50.67	0.06	31.31	0.00	0.52	0.00	0.12	15.03	3.18	0.00	0.00	100.89	6.89	0.01	5.02	0.00	0.06	0.00	0.02	2.19	0.84	0.00	0.00	15.02	72.
345-28	Ol-gabbro	1415P	-1.00	50.68	0.05	31.49	0.00	0.49	0.00	0.24	15.06	3.56	0.06	0.00	101.63	6.85	0.01	5.02	0.00	0.06	0.00	0.05	2.18	0.93	0.01	0.00	15.11	69.
345-28	Ol-gabbro	1415P	-1.00	50.60	0.04	31.60	0.01	0.51	0.01	0.10	15.08	3.24	0.02	0.01	101.22	6.86	0.00	5.05	0.00	0.06	0.00	0.02	2.19	0.85	0.00	0.00	15.04	71.
345-28	Ol-gabbro	1415P	-1.00	51.44	0.07	31.11	0.00	0.44	0.02	0.09	14.53	3.58	0.04	0.00	101.31	6.95	0.01	4.96	0.00	0.05	0.00	0.02	2.10	0.94	0.01	0.00	15.03	69.
345-28	Ol-gabbro	1415P	-1.00	51.38	0.04	31.13	0.00	0.43	0.01	0.09	14.56	3.59	0.03	0.00	101.25	6.95	0.00	4.96	0.00	0.05	0.00	0.02	2.11	0.94	0.01	0.00	15.04	69.
345-28	Ol-gabbro	1415P	-1.00	50.55	0.06	31.50	0.00	0.43	0.01	0.07	15.04	3.25	0.03	0.03	100.96	6.87	0.01	5.04	0.00	0.05	0.00	0.01	2.19	0.85	0.01	0.00	15.03	71.
345-28	Ol-gabbro	1415P	-1.00	50.80	0.03	31.45	0.00	0.40	0.01	0.08	14.97	3.28	0.02	0.00	101.04	6.89	0.00	5.03	0.00	0.04	0.00	0.02	2.18	0.86	0.00	0.00	15.03	71.
345-02	Opx-ol gabbro	1415G	-1.00	49.31	0.04	31.78	0.01	0.57	0.00	0.04	15.43	2.93	0.02	0.00	100.14	6.77	0.00	5.14	0.00	0.07	0.00	0.01	2.27	0.78	0.00	0.00	15.05	74.
345-02	Opx-ol gabbro	1415G	-1.00	50.69	0.04	31.17	0.01	0.55	0.00	0.08	14.83	3.40	0.04	0.00	100.81	6.90	0.00	5.00	0.00	0.06	0.00	0.02	2.16	0.90	0.01	0.00	15.05	70.
345-02	Opx-ol gabbro	1415G	-1.00	49.89	0.05	31.94	0.00	0.54	0.02	0.06	15.51	2.89	0.03	0.00	100.92	6.79	0.00	5.12	0.00	0.06	0.00	0.01	2.26	0.76	0.01	0.00	15.03	74.
345-02	Opx-ol gabbro	1415G	-1.00	49.49	0.03	32.55	0.00	0.57	0.00	0.05	15.98	2.72	0.02	0.01	101.43	6.71	0.00	5.20	0.00	0.06	0.00	0.01	2.32	0.72	0.00	0.00	15.04	76.
345-02	Opx-ol gabbro	1415G	-1.00	49.11	0.05	32.38	0.00	0.56	0.00	0.08	16.18	2.57	0.04	0.00	100.98	6.70	0.01	5.20	0.00	0.06	0.00	0.02	2.36	0.68	0.01	0.00	15.04	77.
345-02	Opx-ol gabbro	1415G	-1.00	49.47	0.05	32.43	0.00	0.60	0.00	0.06	15.91	2.76	0.04	0.00	101.32	6.72	0.01	5.19	0.00	0.07	0.00	0.01	2.32	0.73	0.01	0.00	15.05	75.
345-02	Opx-ol gabbro	1415G	-1.00	50.28	0.05	31.65	0.01	0.55	0.01	0.11	15.03	3.19	0.03	0.00	100.89	6.84	0.00	5.07	0.00	0.06	0.00	0.02	2.19	0.84	0.00	0.00	15.04	72.
345-02	Opx-ol gabbro	1415G	-1.00	49.75	0.03	32.12	0.00	0.63	0.00	0.22	15.62	2.86	0.03	0.00	101.28	6.76	0.00	5.14	0.00	0.07	0.00	0.05	2.27	0.75	0.01	0.00	15.05	74.
345-02	Opx-ol gabbro	1415G	-1.00	46.73	0.03	28.38	0.00	6.14	0.15	3.67	11.59	2.79	0.01	0.01	99.49	6.62	0.00	4.74	0.00	0.73	0.02	0.77	1.76	0.77	0.00	0.00	15.40	69.
345-02	Opx-ol gabbro	1415G	-1.00	50.09	0.05	32.17	0.01	0.62	0.00	0.07	15.70	2.85	0.03	0.01	101.59	6.78	0.00	5.13	0.00	0.07	0.00	0.01	2.28	0.75	0.00	0.00	15.03	75.
345-02	Opx-ol gabbro	1415G	-1.00	50.71	0.05	31.28	0.01	0.53	0.00	0.08	14.85	3.38	0.04	0.01	100.93	6.89	0.00	5.01	0.00	0.06	0.00	0.02	2.16	0.89	0.01	0.00	15.05	70.
345-02	Opx-ol gabbro	1415G	-1.00	48.90	0.05	32.69	0.00	0.52	0.01	0.08	16.27	2.46	0.01	0.00	100.98	6.67	0.00	5.25	0.00	0.06	0.00	0.02	2.38	0.65	0.00	0.00	15.03	78.
345-02	Opx-ol gabbro	1415G	-1.00	51.11	0.04	31.14	0.00	0.51	0.00	0.11	14.68	3.48	0.04	0.01	101.10	6.93	0.00	4.98	0.00	0.06	0.00	0.02	2.13	0.91	0.01	0.00	15.04	69.
345-02	Opx-ol gabbro	1415G	-1.00	49.61	0.04	32.29	0.01	0.51	0.00	0.05	15.94	2.71	0.03	0.01	101.20	6.74	0.00	5.17	0.00	0.06	0.00	0.01	2.32	0.71	0.00	0.00	15.03	76.
345-02	Opx-ol gabbro	1415G	-1.00	50.94	0.07	31.38	0.01	0.50	0.00	0.07	14.57	3.43	0.02	0.00	101.00	6.91	0.01	5.02	0.00	0.06	0.00	0.01	2.12	0.90	0.00	0.00	15.03	70.
345-02	Opx-ol gabbro	1415G	-1.00	50.93	0.03	31.76	0.00	0.51	0.00	0.06	14.89	3.35	0.04	0.02	101.59	6.87	0.00	5.05	0.00	0.06	0.00	0.01	2.15	0.88	0.01	0.00	15.04	70.
345-02	Opx-ol gabbro	1415G	-1.00	50.92	0.04	31.39	0.00	0.53	0.00	0.06	14.64	3.45	0.03	0.00	101.05	6.91	0.00	5.02	0.00	0.06	0.00	0.01	2.13	0.91	0.01	0.00	15.04	70.
345-02	Opx-ol gabbro	1415G	-1.00	50.79	0.03	30.76	0.01	0.83	0.00	0.57	14.16	3.56	0.04	0.00	100.76	6.92	0.00	4.94	0.00	0.09	0.00	0.12	2.07	0.94	0.01	0.00	15.08	68.
345-02	Opx-ol gabbro	1415G	-1.00	49.65	0.04	31.49	0.02	0.54	0.00	0.06	15.32	3.07	0.03	0.00	100.22	6.81	0.00	5.09	0.00	0.06	0.00	0.01	2.25	0.82	0.01	0.00	15.05	73.
345-02	Opx-ol gabbro	1415G	-1.00	50.48	0.02	31.61	0.01	0.45	0.00	0.13	15.08	3.21	0.03	0.01	101.01	6.86	0.00	5.06	0.00	0.05	0.00	0.03	2.19	0.85	0.00	0.00	15.04	72.
345-02	Opx-ol gabbro	1415G	-1.00	50.60	0.03	31.49	0.00	0.54	0.00	0.07	15.12	3.23	0.04	0.00	101.12	6.87	0.00	5.04	0.00	0.06	0.00	0.01	2.20	0.85	0.01	0.00	15.04	71.
345-02	Opx-ol gabbro	1415G	-1.00	50.01	0.06	31.75	0.01	0.46	0.01	0.06	15.30	3.05	0.03	0.02	100.76	6.81	0.01	5.10	0.00	0.05	0.00	0.01	2.23	0.81	0.01	0.00	15.04	73.
345-02	Opx-ol gabbro	1415G	-1.00	50.00	0.05	31.67	0.00	0.48	0.00	0.06	15.41	3.02	0.03	0.01	100.73	6.82	0.00	5.09	0.00	0.06	0.00	0.01	2.25	0.80	0.01	0.00	15.04	73.
345-02	Opx-ol gabbro	1415G	-1.00	50.52	0.06	31.35	0.00	0.49	0.00	0.09	14.95	3.29	0.03	0.00	100.77	6.88	0.01	5.03	0.00	0.06	0.00	0.02	2.18	0.87	0.01	0.00	15.04	71.
345-02	Opx-ol gabbro	1415G	-1.00	47.24	0.00	34.41	0.01	0.17	0.00	0.00	17.62	1.68	0.01	0.01	101.13	6.44	0.00	5.53	0.00	0.02	0.00	0.00	2.57	0.44	0.00	0.00	15.01	85.
345-02	Opx-ol gabbro	1415G	-1.00	50.89	0.03	31.13	0.02	0.56	0.01	0.08	14.50	3.59	0.04	0.01	100.85	6.92	0.00	4.99	0.00	0.06	0.00	0.02	2.11	0.95	0.01	0.00	15.06	68.
345-02	Opx-ol gabbro	1415G	-1.00	51.60	0.06	30.49	0.01	0.50	0.00	0.07	13.97	3.86	0.04	0.00	100.59	7.02	0.01	4.89	0.00	0.06	0.00	0.01	2.04	1.02	0.01	0.00	15.04	66.
345-02	Opx-ol gabbro	1415G	-1.00	49.50	0.05	32.23	0.00	0.49	0.02	0.06	15.79	2.77	0.03	0.00	100.93	6.74	0.01	5.17	0.00	0.06	0.00	0.01	2.30	0.73	0.01	0.00	15.03	75.
345-02	Opx-ol gabbro	1415G	-1.00	51.13	0.05	31.68	0.01	0.65	0.00	0.08	14.78	3.54	0.04	0.01	101.97	6.88	0.00	5.03	0.00	0.07	0.00	0.02	2.13	0.93	0.01	0.00	15.07	69.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-02	Opx-ol gabbro	1415G	-1.00	50.77	0.05	31.31	0.00	0.57	0.00	0.07	14.67	3.51	0.04	0.01	101.00	6.90	0.01	5.01	0.00	0.06	0.00	0.01	2.13	0.93	0.01	0.00	15.06	69.
345-02	Opx-ol gabbro	1415G	-1.00	50.32	0.03	31.63	0.01	0.48	0.00	0.10	15.19	3.10	0.04	0.01	100.91	6.84	0.00	5.07	0.00	0.05	0.00	0.02	2.21	0.82	0.01	0.00	15.03	72.
345-02	Opx-ol gabbro	1415G	-1.00	51.18	0.05	30.70	0.00	0.58	0.01	0.11	14.22	3.75	0.04	0.02	100.64	6.97	0.00	4.93	0.00	0.07	0.00	0.02	2.08	0.99	0.01	0.00	15.06	67.
345-02	Opx-ol gabbro	1415G	-1.00	51.27	0.03	31.06	0.00	0.55	0.00	0.07	14.34	3.64	0.01	0.00	100.96	6.95	0.00	4.96	0.00	0.06	0.00	0.01	2.08	0.96	0.00	0.00	15.04	68.
345-02	Opx-ol gabbro	1415G	-1.00	50.98	0.03	31.21	0.01	0.57	0.00	0.09	14.63	3.40	0.04	0.02	100.96	6.92	0.00	4.99	0.00	0.07	0.00	0.02	2.13	0.89	0.01	0.00	15.03	70.
345-02	Opx-ol gabbro	1415G	-1.00	50.92	0.07	31.26	0.00	0.54	0.00	0.08	14.71	3.40	0.04	0.00	101.02	6.91	0.01	5.00	0.00	0.06	0.00	0.02	2.14	0.89	0.01	0.00	15.03	70.
345-02	Opx-ol gabbro	1415G	-1.00	50.96	0.04	31.41	0.00	0.54	0.01	0.08	14.82	3.39	0.03	0.00	101.28	6.90	0.00	5.01	0.00	0.06	0.00	0.02	2.15	0.89	0.01	0.00	15.04	70.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Plagioclase (Exp. 345 U1415 J)																												
345-16	Ol-gabbro	1415J	45.00	49.05	0.01	32.28	0.00	0.75	0.03	0.09	15.92	2.55	0.01	0.02	100.71	6.71	0.00	5.20	0.00	0.09	0.00	0.02	2.33	0.68	0.00	0.00	15.03	77.
345-16	Ol-gabbro	1415J	45.00	49.81	0.01	31.94	0.04	0.48	0.00	0.11	15.65	2.78	0.01	0.03	100.85	6.78	0.00	5.13	0.00	0.06	0.00	0.02	2.28	0.73	0.00	0.00	15.02	75.
345-16	Ol-gabbro	1415J	45.00	49.23	0.04	32.43	0.00	0.47	0.01	0.10	16.19	2.53	0.02	0.00	101.02	6.70	0.00	5.21	0.00	0.05	0.00	0.02	2.36	0.67	0.00	0.00	15.02	77.
345-16	Ol-gabbro	1415J	45.00	48.77	0.03	32.57	0.04	0.45	0.02	0.07	16.41	2.36	0.01	0.00	100.73	6.67	0.00	5.25	0.00	0.05	0.00	0.02	2.40	0.63	0.00	0.00	15.02	79.
345-16	Ol-gabbro	1415J	45.00	48.64	0.02	32.32	0.00	0.46	0.00	0.09	16.47	2.36	0.00	0.00	100.35	6.67	0.00	5.23	0.00	0.05	0.00	0.02	2.42	0.63	0.00	0.00	15.02	79.
345-16	Ol-gabbro	1415J	45.00	48.77	0.02	32.28	0.00	0.43	0.00	0.08	16.22	2.50	0.01	0.00	100.32	6.69	0.00	5.22	0.00	0.05	0.00	0.02	2.38	0.67	0.00	0.00	15.03	78.
345-16	Ol-gabbro	1415J	45.00	49.48	0.02	32.29	0.00	0.48	0.00	0.12	15.96	2.58	0.01	0.00	100.94	6.74	0.00	5.18	0.00	0.05	0.00	0.02	2.33	0.68	0.00	0.00	15.01	77.
345-16	Ol-gabbro	1415J	45.00	50.31	0.03	32.19	0.00	0.46	0.01	0.13	15.59	2.85	0.02	0.00	101.58	6.80	0.00	5.13	0.00	0.05	0.00	0.03	2.26	0.75	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	50.47	0.05	31.79	0.01	0.46	0.00	0.13	15.38	2.91	0.03	0.00	101.22	6.84	0.01	5.08	0.00	0.05	0.00	0.03	2.23	0.76	0.00	0.00	15.00	74.
345-16	Ol-gabbro	1415J	45.00	49.61	0.04	32.53	0.00	0.48	0.00	0.09	16.15	2.59	0.01	0.01	101.51	6.72	0.00	5.19	0.00	0.05	0.00	0.02	2.34	0.68	0.00	0.00	15.02	77.
345-16	Ol-gabbro	1415J	45.00	49.29	0.04	32.44	0.01	0.49	0.00	0.11	16.19	2.47	0.03	0.00	101.06	6.71	0.00	5.20	0.00	0.06	0.00	0.02	2.36	0.65	0.00	0.00	15.01	78.
345-16	Ol-gabbro	1415J	45.00	49.98	0.04	32.36	0.01	0.49	0.00	0.10	15.83	2.69	0.02	0.01	101.52	6.76	0.00	5.16	0.00	0.06	0.00	0.02	2.29	0.71	0.00	0.00	15.01	76.
345-16	Ol-gabbro	1415J	45.00	49.51	0.02	31.24	0.03	0.60	0.02	0.54	14.93	2.86	0.02	0.01	99.77	6.81	0.00	5.07	0.00	0.07	0.00	0.11	2.20	0.76	0.00	0.00	15.03	74.
345-16	Ol-gabbro	1415J	45.00	50.62	0.01	31.86	0.00	0.45	0.00	0.11	15.35	3.00	0.02	0.00	101.42	6.84	0.00	5.08	0.00	0.05	0.00	0.02	2.22	0.79	0.00	0.00	15.01	73.
345-16	Ol-gabbro	1415J	45.00	50.36	0.04	31.80	0.01	0.49	0.00	0.09	15.40	2.87	0.03	0.00	101.08	6.83	0.00	5.09	0.00	0.06	0.00	0.02	2.24	0.76	0.00	0.00	15.00	74.
345-16	Ol-gabbro	1415J	45.00	50.64	0.05	31.32	0.00	0.49	0.00	0.11	15.09	3.15	0.02	0.00	100.87	6.88	0.01	5.02	0.00	0.06	0.00	0.02	2.20	0.83	0.00	0.00	15.02	72.
345-16	Ol-gabbro	1415J	45.00	50.69	0.05	31.56	0.00	0.44	0.01	0.11	15.24	3.10	0.02	0.01	101.22	6.87	0.00	5.04	0.00	0.05	0.00	0.02	2.21	0.81	0.00	0.00	15.01	73.
345-16	Ol-gabbro	1415J	45.00	49.94	0.03	32.32	0.00	0.55	0.00	0.10	15.81	2.68	0.03	0.01	101.46	6.76	0.00	5.16	0.00	0.06	0.00	0.02	2.29	0.70	0.01	0.00	15.01	76.
345-16	Ol-gabbro	1415J	45.00	49.70	0.04	32.21	0.00	0.57	0.02	0.18	15.97	2.68	0.03	0.02	101.42	6.74	0.00	5.15	0.00	0.06	0.00	0.04	2.32	0.71	0.01	0.00	15.03	76.
345-16	Ol-gabbro	1415J	45.00	48.85	0.05	30.96	0.01	0.67	0.01	0.10	15.27	2.95	0.03	0.02	98.91	6.80	0.01	5.08	0.00	0.08	0.00	0.02	2.28	0.79	0.01	0.00	15.06	74.
345-16	Ol-gabbro	1415J	45.00	50.02	0.03	31.57	0.00	0.52	0.02	0.07	15.36	2.96	0.03	0.00	100.57	6.83	0.00	5.08	0.00	0.06	0.00	0.01	2.25	0.78	0.00	0.00	15.02	74.
345-16	Ol-gabbro	1415J	45.00	50.14	0.02	31.73	0.01	0.47	0.02	0.11	15.37	2.99	0.02	0.01	100.88	6.82	0.00	5.09	0.00	0.05	0.00	0.02	2.24	0.79	0.00	0.00	15.03	73.
345-16	Ol-gabbro	1415J	45.00	50.56	0.02	31.71	0.01	0.46	0.00	0.09	15.18	3.02	0.02	0.00	101.07	6.86	0.00	5.07	0.00	0.05	0.00	0.02	2.21	0.79	0.00	0.00	15.00	73.
345-16	Ol-gabbro	1415J	45.00	50.46	0.02	31.68	0.00	0.42	0.00	0.10	15.21	3.06	0.02	0.00	100.96	6.85	0.00	5.07	0.00	0.05	0.00	0.02	2.21	0.81	0.00	0.00	15.01	73.
345-16	Ol-gabbro	1415J	45.00	50.47	0.02	31.71	0.00	0.46	0.01	0.16	15.26	2.97	0.02	0.00	101.09	6.85	0.00	5.07	0.00	0.05	0.00	0.03	2.22	0.78	0.00	0.00	15.01	73.
345-16	Ol-gabbro	1415J	45.00	50.22	0.04	31.71	0.02	0.43	0.00	0.09	15.36	2.88	0.02	0.01	100.76	6.84	0.00	5.09	0.00	0.05	0.00	0.02	2.24	0.76	0.00	0.00	15.00	74.
345-16	Ol-gabbro	1415J	45.00	50.29	0.05	31.96	0.01	0.43	0.02	0.11	15.44	2.88	0.02	0.02	101.23	6.82	0.00	5.11	0.00	0.05	0.00	0.02	2.24	0.76	0.00	0.00	15.01	74.
345-16	Ol-gabbro	1415J	45.00	50.23	0.04	32.05	0.00	0.42	0.00	0.09	15.50	2.88	0.02	0.00	101.24	6.81	0.00	5.12	0.00	0.05	0.00	0.02	2.25	0.76	0.00	0.00	15.01	74.
345-16	Ol-gabbro	1415J	45.00	49.96	0.01	31.92	0.00	0.45	0.01	0.10	15.45	2.87	0.02	0.00	100.78	6.80	0.00	5.12	0.00	0.05	0.00	0.02	2.25	0.76	0.00	0.00	15.02	74.
345-16	Ol-gabbro	1415J	45.00	49.34	0.01	33.03	0.00	0.40	0.01	0.14	16.19	2.52	0.01	0.00	101.64	6.67	0.00	5.27	0.00	0.04	0.00	0.03	2.35	0.66	0.00	0.00	15.02	77.
345-16	Ol-gabbro	1415J	45.00	49.76	0.02	32.22	0.03	0.44	0.00	0.08	15.58	2.75	0.02	0.02	100.92	6.77	0.00	5.17	0.00	0.05	0.00	0.02	2.27	0.72	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	49.82	0.03	32.52	0.00	0.46	0.01	0.08	15.91	2.68	0.01	0.01	101.52	6.74	0.00	5.19	0.00	0.05	0.00	0.02	2.31	0.70	0.00	0.00	15.01	76.
345-16	Ol-gabbro	1415J	45.00	49.63	0.03	32.38	0.00	0.48	0.00	0.07	15.75	2.66	0.03	0.01	101.04	6.75	0.00	5.19	0.00	0.05	0.00	0.01	2.29	0.70	0.01	0.00	15.01	76.
345-16	Ol-gabbro	1415J	45.00	49.90	0.04	32.26	0.00	0.47	0.00	0.09	15.66	2.84	0.02	0.02	101.28	6.77	0.00	5.16	0.00	0.05	0.00	0.02	2.28	0.75	0.00	0.00	15.02	75.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-16	Ol-gabbro	1415J	45.00	50.05	0.02	32.39	0.00	0.44	0.02	0.08	15.73	2.75	0.02	0.01	101.51	6.77	0.00	5.16	0.00	0.05	0.00	0.02	2.28	0.72	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	49.74	0.00	32.28	0.00	0.45	0.00	0.08	15.55	2.76	0.02	0.00	100.89	6.77	0.00	5.18	0.00	0.05	0.00	0.02	2.27	0.73	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	49.79	0.04	32.61	0.01	0.50	0.00	0.08	15.76	2.71	0.04	0.00	101.52	6.74	0.00	5.20	0.00	0.06	0.00	0.02	2.29	0.71	0.01	0.00	15.02	76.
345-16	Ol-gabbro	1415J	45.00	49.58	0.03	31.78	0.01	0.44	0.00	0.08	15.71	2.76	0.02	0.00	100.42	6.78	0.00	5.13	0.00	0.05	0.00	0.02	2.30	0.73	0.00	0.00	15.02	75.
345-16	Ol-gabbro	1415J	45.00	49.97	0.05	32.09	0.00	0.50	0.00	0.08	15.56	2.80	0.01	0.02	101.08	6.79	0.00	5.14	0.00	0.06	0.00	0.02	2.27	0.74	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	50.08	0.03	32.20	0.00	0.49	0.00	0.08	15.53	2.82	0.02	0.00	101.24	6.79	0.00	5.15	0.00	0.06	0.00	0.02	2.26	0.74	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	49.96	0.03	32.33	0.00	0.45	0.00	0.06	15.66	2.76	0.02	0.01	101.26	6.77	0.00	5.17	0.00	0.05	0.00	0.01	2.27	0.73	0.00	0.00	15.01	75.
345-16	Ol-gabbro	1415J	45.00	50.40	0.03	31.73	0.00	0.52	0.00	0.12	15.25	2.93	0.02	0.03	101.05	6.84	0.00	5.08	0.00	0.06	0.00	0.02	2.22	0.77	0.00	0.00	15.00	74.
345-16	Ol-gabbro	1415J	45.00	50.55	0.04	31.97	0.02	0.49	0.01	0.12	15.35	2.97	0.01	0.00	101.52	6.83	0.00	5.09	0.00	0.06	0.00	0.02	2.22	0.78	0.00	0.00	15.01	74.
345-16	Ol-gabbro	1415J	45.00	50.35	0.03	32.15	0.00	0.53	0.00	0.11	15.62	2.79	0.01	0.00	101.60	6.80	0.00	5.12	0.00	0.06	0.00	0.02	2.26	0.73	0.00	0.00	15.00	75.
345-107	Ol-gabbro	1415P	27.00	49.30	0.06	31.72	0.00	0.67	0.00	0.34	15.36	2.59	0.02	0.01	100.08	6.77	0.01	5.13	0.00	0.08	0.00	0.07	2.26	0.69	0.00	0.00	15.01	76.
345-107	Ol-gabbro	1415P	27.00	48.88	0.00	32.38	0.03	0.55	0.00	0.08	16.03	2.51	0.03	0.00	100.48	6.69	0.00	5.23	0.00	0.06	0.00	0.02	2.35	0.67	0.01	0.00	15.03	77.
345-107	Ol-gabbro	1415P	27.00	48.88	0.05	32.12	0.00	0.48	0.00	0.08	15.68	2.48	0.02	0.01	99.80	6.73	0.01	5.21	0.00	0.05	0.00	0.02	2.31	0.66	0.00	0.00	14.99	77.
345-107	Ol-gabbro	1415P	27.00	48.28	0.00	32.81	0.00	0.48	0.00	0.11	16.37	2.23	0.02	0.00	100.30	6.63	0.00	5.31	0.00	0.06	0.00	0.02	2.41	0.59	0.00	0.00	15.02	80.
345-107	Ol-gabbro	1415P	27.00	48.89	0.01	32.45	0.02	0.55	0.02	0.10	15.74	2.20	0.02	0.00	99.98	6.71	0.00	5.25	0.00	0.06	0.00	0.02	2.32	0.58	0.00	0.00	14.96	79.
345-107	Ol-gabbro	1415P	27.00	49.33	0.03	32.25	0.00	0.43	0.00	0.08	15.34	2.56	0.01	0.00	100.04	6.76	0.00	5.21	0.00	0.05	0.00	0.02	2.25	0.68	0.00	0.00	14.97	76.
345-107	Ol-gabbro	1415P	27.00	48.97	0.01	32.30	0.01	0.51	0.00	0.08	15.63	2.42	0.02	0.00	99.95	6.73	0.00	5.23	0.00	0.06	0.00	0.02	2.30	0.65	0.00	0.00	14.98	78.
345-107	Ol-gabbro	1415P	27.00	48.54	0.02	32.28	0.00	0.44	0.00	0.09	16.13	2.22	0.02	0.00	99.74	6.69	0.00	5.24	0.00	0.05	0.00	0.02	2.38	0.59	0.00	0.00	14.98	79.
345-117	Ol-gabbro	1415J	37.00	48.36	0.01	32.12	0.00	0.34	0.00	0.04	15.79	2.49	0.03	0.00	99.18	6.70	0.00	5.25	0.00	0.04	0.00	0.01	2.34	0.67	0.00	0.00	15.01	77.
345-117	Ol-gabbro	1415J	37.00	48.70	0.01	32.09	0.02	0.36	0.00	0.08	15.23	2.54	0.01	0.00	99.04	6.74	0.00	5.24	0.00	0.04	0.00	0.02	2.26	0.68	0.00	0.00	14.98	76.
345-117	Ol-gabbro	1415J	37.00	48.28	0.04	31.93	0.00	0.39	0.00	0.06	15.85	2.32	0.01	0.00	98.87	6.71	0.00	5.23	0.00	0.04	0.00	0.01	2.36	0.63	0.00	0.00	14.99	79.
345-117	Ol-gabbro	1415J	37.00	48.51	0.02	32.35	0.02	0.46	0.00	0.07	15.83	2.43	0.03	0.00	99.71	6.69	0.00	5.26	0.00	0.05	0.00	0.02	2.34	0.65	0.00	0.00	15.01	78.
345-117	Ol-gabbro	1415J	37.00	48.65	0.04	32.14	0.01	0.41	0.02	0.08	15.84	2.41	0.02	0.00	99.60	6.71	0.00	5.23	0.00	0.05	0.00	0.02	2.34	0.64	0.00	0.00	15.00	78.
345-117	Ol-gabbro	1415J	37.00	48.31	0.04	31.97	0.02	0.44	0.02	0.36	15.60	2.37	0.04	0.00	99.15	6.70	0.00	5.22	0.00	0.05	0.00	0.07	2.32	0.64	0.01	0.00	15.01	78.
345-117	Ol-gabbro	1415J	37.00	48.05	0.03	32.24	0.01	0.35	0.00	0.06	15.85	2.25	0.02	0.01	98.87	6.68	0.00	5.28	0.00	0.04	0.00	0.01	2.36	0.61	0.00	0.00	14.99	79.
345-117	Ol-gabbro	1415J	37.00	48.38	0.04	32.11	0.00	0.36	0.00	0.05	15.35	2.42	0.02	0.01	98.74	6.72	0.00	5.26	0.00	0.04	0.00	0.01	2.28	0.65	0.00	0.00	14.97	77.
345-117	Ol-gabbro	1415J	37.00	48.39	0.01	32.49	0.00	0.37	0.02	0.04	16.00	2.45	0.00	0.01	99.78	6.67	0.00	5.28	0.00	0.04	0.00	0.01	2.36	0.66	0.00	0.00	15.02	78.
345-117	Ol-gabbro	1415J	37.00	48.33	0.02	32.39	0.00	0.33	0.00	0.04	15.89	2.49	0.02	0.00	99.52	6.68	0.00	5.27	0.00	0.04	0.00	0.01	2.35	0.67	0.00	0.00	15.02	77.
345-117	Ol-gabbro	1415J	37.00	48.55	0.03	32.17	0.02	0.34	0.00	0.05	15.63	2.49	0.02	0.00	99.29	6.71	0.00	5.24	0.00	0.04	0.00	0.01	2.32	0.67	0.00	0.00	15.00	77.
345-117	Ol-gabbro	1415J	37.00	48.67	0.03	31.61	0.04	0.40	0.01	0.08	15.22	2.62	0.02	0.00	98.70	6.77	0.00	5.18	0.00	0.05	0.00	0.02	2.27	0.71	0.00	0.00	14.99	76.
345-117	Ol-gabbro	1415J	37.00	47.94	0.03	32.14	0.02	0.37	0.00	0.07	15.83	2.37	0.02	0.02	98.81	6.67	0.00	5.27	0.00	0.04	0.00	0.01	2.36	0.64	0.00	0.00	15.01	78.
345-117	Ol-gabbro	1415J	37.00	48.99	0.01	31.85	0.05	0.35	0.00	0.05	15.23	2.94	0.01	0.02	99.49	6.76	0.00	5.18	0.01	0.04	0.00	0.01	2.25	0.79	0.00	0.00	15.04	74.
345-117	Ol-gabbro	1415J	37.00	48.35	0.03	32.19	0.04	0.34	0.01	0.06	15.72	2.62	0.02	0.00	99.37	6.69	0.00	5.25	0.00	0.04	0.00	0.01	2.33	0.70	0.00	0.00	15.03	76.
345-117	Ol-gabbro	1415J	37.00	48.01	0.01	32.06	0.00	0.38	0.01	0.10	15.87	2.67	0.02	0.00	99.12	6.67	0.00	5.25	0.00	0.04	0.00	0.02	2.36	0.72	0.00	0.00	15.07	76.
345-117	Ol-gabbro	1415J	37.00	48.64	0.03	32.39	0.01	0.36	0.00	0.06	15.85	2.64	0.02	0.01	100.02	6.69	0.00	5.25	0.00	0.04	0.00	0.01	2.34	0.70	0.00	0.00	15.04	76.
345-117	Ol-gabbro	1415J	37.00	48.28	0.03	32.19	0.00	0.41	0.00	0.07	15.86	2.49	0.02	0.00	99.34	6.68	0.00	5.25	0.00	0.05	0.00	0.01	2.35	0.67	0.00	0.00	15.02	77.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-117	Ol-gabbro	1415J	37.00	48.67	0.04	32.26	0.00	0.39	0.02	0.08	15.66	2.67	0.03	0.00	99.80	6.70	0.00	5.24	0.00	0.04	0.00	0.02	2.31	0.71	0.01	0.00	15.03	76.
345-117	Ol-gabbro	1415J	37.00	48.99	0.02	32.41	0.00	0.69	0.02	0.06	15.78	2.70	0.02	0.01	100.71	6.70	0.00	5.22	0.00	0.08	0.00	0.01	2.31	0.71	0.00	0.00	15.05	76.
345-117	Ol-gabbro	1415J	37.00	48.69	0.01	31.42	0.01	0.50	0.01	0.11	16.24	2.50	0.01	0.00	99.50	6.74	0.00	5.13	0.00	0.06	0.00	0.02	2.41	0.67	0.00	0.00	15.03	78.
345-117	Ol-gabbro	1415J	37.00	49.26	0.02	31.89	0.00	0.42	0.00	0.09	15.50	2.89	0.04	0.02	100.13	6.76	0.00	5.16	0.00	0.05	0.00	0.02	2.28	0.77	0.01	0.00	15.05	74.
345-117	Ol-gabbro	1415J	37.00	49.26	0.04	32.21	0.01	0.44	0.00	0.06	15.70	2.76	0.02	0.00	100.50	6.74	0.00	5.19	0.00	0.05	0.00	0.01	2.30	0.73	0.00	0.00	15.03	75.
345-117	Ol-gabbro	1415J	37.00	48.92	0.00	32.41	0.00	0.33	0.01	0.05	15.57	2.73	0.03	0.01	100.07	6.71	0.00	5.24	0.00	0.04	0.00	0.01	2.29	0.73	0.01	0.00	15.03	75.
345-117	Ol-gabbro	1415J	37.00	48.58	0.04	32.92	0.00	0.32	0.01	0.02	15.96	2.61	0.02	0.02	100.51	6.65	0.00	5.31	0.00	0.04	0.00	0.00	2.34	0.69	0.00	0.00	15.04	77.
345-117	Ol-gabbro	1415J	37.00	49.17	0.05	32.62	0.01	0.33	0.00	0.04	15.60	2.72	0.02	0.00	100.56	6.71	0.00	5.25	0.00	0.04	0.00	0.01	2.28	0.72	0.00	0.00	15.02	75.
345-117	Ol-gabbro	1415J	37.00	48.71	0.01	32.42	0.01	0.39	0.00	0.06	15.89	2.65	0.03	0.01	100.17	6.69	0.00	5.25	0.00	0.04	0.00	0.01	2.34	0.71	0.01	0.00	15.04	76.
345-117	Ol-gabbro	1415J	37.00	48.89	0.04	32.06	0.00	0.37	0.00	0.06	16.03	2.63	0.01	0.00	100.10	6.72	0.00	5.19	0.00	0.04	0.00	0.01	2.36	0.70	0.00	0.00	15.03	77.
345-117	Ol-gabbro	1415J	37.00	48.87	0.03	32.45	0.00	0.32	0.00	0.04	15.52	2.84	0.01	0.01	100.08	6.71	0.00	5.25	0.00	0.04	0.00	0.01	2.28	0.76	0.00	0.00	15.04	75.
345-07	Oik-ol gabbro	1415J	26.00	46.09	0.04	29.97	0.03	4.26	0.33	1.95	13.85	2.30	0.02	0.02	98.83	6.54	0.00	5.01	0.00	0.51	0.04	0.41	2.11	0.63	0.00	0.00	15.26	76.
345-07	Oik-ol gabbro	1415J	26.00	46.99	0.03	30.56	0.00	3.39	0.23	2.60	13.30	2.51	0.02	0.00	99.62	6.57	0.00	5.04	0.00	0.40	0.03	0.54	1.99	0.68	0.00	0.00	15.25	74.
345-07	Oik-ol gabbro	1415J	26.00	49.11	0.01	31.40	0.00	0.98	0.03	0.45	15.37	2.84	0.03	0.01	100.23	6.75	0.00	5.09	0.00	0.11	0.00	0.09	2.27	0.76	0.01	0.00	15.08	74.
345-07	Oik-ol gabbro	1415J	26.00	49.58	0.01	31.80	0.00	0.77	0.01	0.50	15.53	2.88	0.02	0.01	101.10	6.75	0.00	5.10	0.00	0.09	0.00	0.10	2.27	0.76	0.00	0.00	15.08	74.
345-07	Oik-ol gabbro	1415J	26.00	49.91	0.04	32.01	0.01	0.65	0.00	0.16	15.55	2.92	0.03	0.00	101.27	6.78	0.00	5.12	0.00	0.07	0.00	0.03	2.26	0.77	0.01	0.00	15.05	74.
345-07	Oik-ol gabbro	1415J	26.00	48.03	0.03	30.92	0.00	3.31	0.23	2.48	13.60	2.64	0.02	0.00	101.25	6.60	0.00	5.01	0.00	0.38	0.03	0.51	2.00	0.70	0.00	0.00	15.24	73.
345-07	Oik-ol gabbro	1415J	26.00	49.96	0.02	32.40	0.01	0.62	0.01	0.11	15.75	2.77	0.02	0.00	101.67	6.76	0.00	5.16	0.00	0.07	0.00	0.02	2.28	0.73	0.00	0.00	15.02	75.
345-07	Oik-ol gabbro	1415J	26.00	50.25	0.01	31.82	0.00	0.54	0.00	0.10	15.39	3.01	0.02	0.00	101.15	6.82	0.00	5.09	0.00	0.06	0.00	0.02	2.24	0.79	0.00	0.00	15.03	73.
345-07	Oik-ol gabbro	1415J	26.00	49.35	0.03	32.20	0.00	0.57	0.02	0.16	15.74	2.72	0.02	0.01	100.80	6.73	0.00	5.18	0.00	0.06	0.00	0.03	2.30	0.72	0.00	0.00	15.04	76.
345-07	Oik-ol gabbro	1415J	26.00	49.38	0.01	31.99	0.00	0.49	0.00	0.10	15.84	2.78	0.02	0.00	100.60	6.75	0.00	5.16	0.00	0.06	0.00	0.02	2.32	0.74	0.00	0.00	15.04	75.
345-07	Oik-ol gabbro	1415J	26.00	50.01	0.01	32.24	0.00	0.60	0.01	0.10	15.61	2.89	0.01	0.03	101.52	6.77	0.00	5.14	0.00	0.07	0.00	0.02	2.26	0.76	0.00	0.00	15.04	74.
345-07	Oik-ol gabbro	1415J	26.00	49.26	0.03	32.22	0.00	0.57	0.02	0.14	15.91	2.71	0.02	0.02	100.89	6.72	0.00	5.18	0.00	0.06	0.00	0.03	2.33	0.72	0.00	0.00	15.05	76.
345-07	Oik-ol gabbro	1415J	26.00	49.17	0.02	32.83	0.00	0.51	0.01	0.08	16.26	2.59	0.02	0.00	101.49	6.67	0.00	5.25	0.00	0.06	0.00	0.02	2.36	0.68	0.00	0.00	15.05	77.
345-07	Oik-ol gabbro	1415J	26.00	49.38	0.04	32.44	0.00	0.50	0.01	0.07	16.08	2.66	0.03	0.00	101.21	6.71	0.00	5.20	0.00	0.06	0.00	0.01	2.34	0.70	0.01	0.00	15.04	76.
345-07	Oik-ol gabbro	1415J	26.00	48.90	0.02	32.24	0.00	0.46	0.00	0.09	16.02	2.61	0.02	0.00	100.35	6.70	0.00	5.21	0.00	0.05	0.00	0.02	2.35	0.69	0.00	0.00	15.04	77.
345-07	Oik-ol gabbro	1415J	26.00	49.45	0.04	32.61	0.00	0.49	0.01	0.08	16.12	2.67	0.01	0.01	101.48	6.70	0.00	5.21	0.00	0.06	0.00	0.02	2.34	0.70	0.00	0.00	15.04	76.
345-07	Oik-ol gabbro	1415J	26.00	49.37	0.00	32.23	0.00	0.48	0.00	0.07	15.82	2.73	0.01	0.02	100.73	6.74	0.00	5.19	0.00	0.05	0.00	0.01	2.31	0.72	0.00	0.00	15.03	76.
345-07	Oik-ol gabbro	1415J	26.00	50.49	0.02	31.36	0.01	0.51	0.00	0.09	15.08	3.20	0.03	0.00	100.77	6.87	0.00	5.03	0.00	0.06	0.00	0.02	2.20	0.84	0.00	0.00	15.03	72.
345-07	Oik-ol gabbro	1415J	26.00	50.10	0.02	31.88	0.02	0.54	0.01	0.09	15.68	2.90	0.02	0.00	101.25	6.80	0.00	5.10	0.00	0.06	0.00	0.02	2.28	0.76	0.00	0.00	15.03	74.
345-07	Oik-ol gabbro	1415J	26.00	50.32	0.02	31.86	0.01	0.50	0.01	0.10	15.55	3.07	0.02	0.00	101.46	6.81	0.00	5.09	0.00	0.06	0.00	0.02	2.26	0.81	0.00	0.00	15.05	73.
345-07	Oik-ol gabbro	1415J	26.00	49.54	0.02	32.45	0.03	0.49	0.00	0.08	16.09	2.68	0.01	0.00	101.38	6.72	0.00	5.19	0.00	0.06	0.00	0.02	2.34	0.71	0.00	0.00	15.03	76.
345-07	Oik-ol gabbro	1415J	26.00	49.93	0.03	32.22	0.00	0.48	0.01	0.09	15.75	2.79	0.01	0.00	101.31	6.77	0.00	5.15	0.00	0.05	0.00	0.02	2.29	0.73	0.00	0.00	15.02	75.
345-07	Oik-ol gabbro	1415J	26.00	49.51	0.02	32.32	0.00	0.48	0.00	0.10	15.95	2.75	0.03	0.02	101.17	6.73	0.00	5.18	0.00	0.05	0.00	0.02	2.32	0.72	0.00	0.00	15.04	76.
345-07	Oik-ol gabbro	1415J	26.00	49.53	0.01	31.89	0.01	0.51	0.00	0.07	15.83	2.78	0.03	0.01	100.68	6.77	0.00	5.13	0.00	0.06	0.00	0.01	2.32	0.74	0.01	0.00	15.04	75.
345-07	Oik-ol gabbro	1415J	26.00	50.07	0.02	32.06	0.00	0.47	0.00	0.12	15.57	2.86	0.03	0.03	101.22	6.79	0.00	5.13	0.00	0.05	0.00	0.03	2.26	0.75	0.00	0.00	15.02	74.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-07	Oik-ol gabbro	1415J	26.00	49.95	0.05	31.92	0.00	0.49	0.01	0.11	15.61	2.92	0.04	0.00	101.07	6.79	0.00	5.11	0.00	0.06	0.00	0.02	2.27	0.77	0.01	0.00	15.04	74.
345-07	Oik-ol gabbro	1415J	26.00	50.13	0.01	31.75	0.01	0.46	0.01	0.12	15.60	3.04	0.01	0.01	101.13	6.81	0.00	5.08	0.00	0.05	0.00	0.02	2.27	0.80	0.00	0.00	15.05	73.
345-07	Oik-ol gabbro	1415J	26.00	49.31	0.01	32.41	0.01	0.49	0.00	0.10	16.12	2.64	0.03	0.01	101.11	6.71	0.00	5.20	0.00	0.06	0.00	0.02	2.35	0.70	0.00	0.00	15.04	77.
345-07	Oik-ol gabbro	1415J	26.00	49.59	0.00	32.45	0.01	0.44	0.01	0.07	16.00	2.63	0.03	0.03	101.26	6.73	0.00	5.19	0.00	0.05	0.00	0.01	2.33	0.69	0.00	0.00	15.02	76.
345-07	Oik-ol gabbro	1415J	26.00	49.73	0.01	32.18	0.02	0.47	0.00	0.09	15.73	2.82	0.02	0.00	101.05	6.76	0.00	5.16	0.00	0.05	0.00	0.02	2.29	0.74	0.00	0.00	15.03	75.
345-07	Oik-ol gabbro	1415J	26.00	49.27	0.00	32.51	0.01	0.43	0.01	0.07	16.20	2.57	0.02	0.00	101.08	6.71	0.00	5.21	0.00	0.05	0.00	0.01	2.36	0.68	0.00	0.00	15.03	77.
345-07	Oik-ol gabbro	1415J	26.00	49.49	0.02	32.45	0.00	0.48	0.04	0.08	16.13	2.55	0.02	0.00	101.24	6.72	0.00	5.19	0.00	0.05	0.00	0.02	2.35	0.67	0.00	0.00	15.02	77.
345-07	Oik-ol gabbro	1415J	26.00	48.38	0.01	30.74	0.02	1.58	0.03	2.23	14.15	2.72	0.01	0.00	99.88	6.69	0.00	5.01	0.00	0.18	0.00	0.46	2.10	0.73	0.00	0.00	15.17	74.
345-07	Oik-ol gabbro	1415J	26.00	49.52	0.00	31.95	0.00	0.46	0.00	0.08	15.83	2.86	0.02	0.00	100.72	6.76	0.00	5.14	0.00	0.05	0.00	0.02	2.32	0.76	0.00	0.00	15.05	75.
345-07	Oik-ol gabbro	1415J	26.00	49.91	0.00	32.17	0.00	0.50	0.02	0.06	15.76	2.86	0.02	0.00	101.30	6.77	0.00	5.14	0.00	0.06	0.00	0.01	2.29	0.75	0.00	0.00	15.03	75.
345-07	Oik-ol gabbro	1415J	26.00	49.92	0.03	32.15	0.01	0.50	0.00	0.08	15.81	2.91	0.01	0.00	101.41	6.77	0.00	5.14	0.00	0.06	0.00	0.02	2.30	0.76	0.00	0.00	15.04	74.
345-07	Oik-ol gabbro	1415J	26.00	50.39	0.02	32.04	0.00	0.51	0.00	0.10	15.51	2.94	0.04	0.01	101.55	6.81	0.00	5.11	0.00	0.06	0.00	0.02	2.25	0.77	0.01	0.00	15.02	74.
345-07	Oik-ol gabbro	1415J	26.00	50.01	0.04	32.28	0.00	0.52	0.01	0.10	15.75	2.84	0.01	0.00	101.56	6.77	0.00	5.15	0.00	0.06	0.00	0.02	2.28	0.75	0.00	0.00	15.03	75.
345-07	Oik-ol gabbro	1415J	26.00	48.24	0.01	32.59	0.00	0.40	0.01	0.07	17.39	1.86	0.02	0.00	100.59	6.62	0.00	5.27	0.00	0.05	0.00	0.01	2.56	0.49	0.00	0.00	15.00	83.
345-07	Oik-ol gabbro	1415J	26.00	49.98	0.04	32.01	0.01	0.58	0.02	0.11	15.79	2.87	0.01	0.00	101.42	6.78	0.00	5.12	0.00	0.07	0.00	0.02	2.29	0.75	0.00	0.00	15.04	75.
345-07	Oik-ol gabbro	1415J	26.00	49.50	0.00	32.05	0.02	0.54	0.00	0.09	15.84	2.79	0.02	0.00	100.84	6.75	0.00	5.15	0.00	0.06	0.00	0.02	2.32	0.74	0.00	0.00	15.04	75.
345-07	Oik-ol gabbro	1415J	26.00	49.21	0.04	32.33	0.02	0.49	0.02	0.06	15.99	2.69	0.03	0.02	100.89	6.71	0.00	5.20	0.00	0.06	0.00	0.01	2.34	0.71	0.01	0.00	15.04	76.
345-07	Oik-ol gabbro	1415J	26.00	49.95	0.01	32.44	0.00	0.60	0.01	0.09	15.75	2.74	0.02	0.01	101.61	6.76	0.00	5.17	0.00	0.07	0.00	0.02	2.28	0.72	0.00	0.00	15.02	75.
345-07	Oik-ol gabbro	1415J	26.00	49.92	0.03	32.28	0.00	0.57	0.01	0.10	15.81	2.80	0.01	0.04	101.56	6.76	0.00	5.15	0.00	0.06	0.00	0.02	2.29	0.73	0.00	0.00	15.03	75.
345-07	Oik-ol gabbro	1415J	26.00	49.97	0.02	32.20	0.00	0.62	0.00	0.19	15.57	2.95	0.01	0.00	101.54	6.77	0.00	5.14	0.00	0.07	0.00	0.04	2.26	0.78	0.00	0.00	15.05	74.
345-07	Oik-ol gabbro	1415J	26.00	49.04	0.03	31.82	0.02	0.58	0.02	0.22	15.68	2.76	0.02	0.00	100.18	6.74	0.00	5.15	0.00	0.07	0.00	0.05	2.31	0.73	0.00	0.00	15.05	75.
345-07	Oik-ol gabbro	1415J	26.00	49.78	0.04	31.97	0.01	0.86	0.04	0.27	15.41	2.83	0.03	0.00	101.25	6.77	0.00	5.12	0.00	0.10	0.01	0.06	2.24	0.75	0.01	0.00	15.05	74.
345-07	Oik-ol gabbro	1415J	26.00	49.77	0.02	32.18	0.00	0.51	0.00	0.09	15.80	2.83	0.01	0.00	101.22	6.76	0.00	5.15	0.00	0.06	0.00	0.02	2.30	0.75	0.00	0.00	15.04	75.
345-07	Oik-ol gabbro	1415J	26.00	49.98	0.04	32.37	0.00	0.48	0.00	0.09	15.81	2.79	0.03	0.00	101.59	6.76	0.00	5.16	0.00	0.05	0.00	0.02	2.29	0.73	0.00	0.00	15.02	75.
345-07	Oik-ol gabbro	1415J	26.00	49.64	0.03	32.22	0.00	0.54	0.00	0.10	15.82	2.73	0.01	0.00	101.10	6.75	0.00	5.16	0.00	0.06	0.00	0.02	2.31	0.72	0.00	0.00	15.03	76.
345-07	Oik-ol gabbro	1415J	26.00	49.78	0.00	32.35	0.00	0.53	0.00	0.12	15.83	2.78	0.02	0.00	101.40	6.75	0.00	5.17	0.00	0.06	0.00	0.02	2.30	0.73	0.00	0.00	15.03	75.
345-07	Oik-ol gabbro	1415J	26.00	49.52	0.03	32.39	0.03	0.48	0.00	0.09	15.93	2.71	0.03	0.01	101.21	6.73	0.00	5.19	0.00	0.05	0.00	0.02	2.32	0.71	0.00	0.00	15.03	76.
345-07	Oik-ol gabbro	1415J	26.00	49.43	0.01	32.35	0.00	0.50	0.00	0.10	15.94	2.69	0.01	0.00	101.02	6.73	0.00	5.19	0.00	0.06	0.00	0.02	2.32	0.71	0.00	0.00	15.03	76.
345-07	Oik-ol gabbro	1415J	26.00	49.00	0.02	31.96	0.00	1.03	0.03	0.56	15.60	2.55	0.03	0.00	100.78	6.70	0.00	5.15	0.00	0.12	0.00	0.11	2.29	0.68	0.01	0.00	15.06	77.
345-07	Oik-ol gabbro	1415J	26.00	49.65	0.02	32.39	0.00	0.54	0.00	0.14	15.91	2.51	0.03	0.00	101.20	6.74	0.00	5.18	0.00	0.06	0.00	0.03	2.31	0.66	0.01	0.00	15.00	77.
345-07	Oik-ol gabbro	1415J	26.00	47.54	0.02	32.17	0.01	0.61	0.01	0.41	16.16	2.21	0.03	0.00	99.17	6.61	0.00	5.27	0.00	0.07	0.00	0.09	2.41	0.60	0.00	0.00	15.05	80.
345-07	Oik-ol gabbro	1415J	26.00	49.58	0.02	32.21	0.00	0.58	0.01	0.15	15.81	2.68	0.04	0.00	101.08	6.74	0.00	5.16	0.00	0.07	0.00	0.03	2.30	0.71	0.01	0.00	15.03	76.
345-07	Oik-ol gabbro	1415J	26.00	49.56	0.04	32.57	0.00	0.60	0.02	0.10	16.06	2.73	0.01	0.00	101.68	6.71	0.00	5.20	0.00	0.07	0.00	0.02	2.33	0.72	0.00	0.00	15.05	76.
345-07	Oik-ol gabbro	1415J	26.00	49.63	0.03	32.45	0.00	0.58	0.00	0.09	15.99	2.73	0.03	0.00	101.54	6.73	0.00	5.18	0.00	0.07	0.00	0.02	2.32	0.72	0.00	0.00	15.04	76.
345-07	Oik-ol gabbro	1415J	26.00	49.44	0.01	31.93	0.01	0.59	0.02	0.10	15.76	2.71	0.02	0.00	100.57	6.76	0.00	5.15	0.00	0.07	0.00	0.02	2.31	0.72	0.00	0.00	15.03	76.
345-09	Opx-ol gabbro	1415J	28.00	48.45	0.03	31.99	0.02	0.43	0.01	0.08	15.68	2.63	0.02	0.00	99.35	6.71	0.00	5.22	0.00	0.05	0.00	0.02	2.33	0.71	0.00	0.00	15.03	76.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-09	Opx-ol gabbro	1415J	28.00	48.96	0.02	32.06	0.00	0.48	0.00	0.09	15.61	2.69	0.01	0.01	99.94	6.73	0.00	5.20	0.00	0.06	0.00	0.02	2.30	0.72	0.00	0.00	15.03	76.
345-09	Opx-ol gabbro	1415J	28.00	48.95	0.04	32.13	0.00	0.47	0.02	0.10	15.73	2.57	0.02	0.01	100.03	6.73	0.00	5.20	0.00	0.05	0.00	0.02	2.32	0.68	0.00	0.00	15.01	77.
345-09	Opx-ol gabbro	1415J	28.00	48.91	0.03	32.01	0.00	0.48	0.00	0.08	15.85	2.52	0.01	0.03	99.92	6.73	0.00	5.19	0.00	0.06	0.00	0.02	2.34	0.67	0.00	0.00	15.01	77.
345-09	Opx-ol gabbro	1415J	28.00	48.82	0.02	31.91	0.02	0.50	0.00	0.09	15.59	2.58	0.02	0.00	99.55	6.74	0.00	5.19	0.00	0.06	0.00	0.02	2.31	0.69	0.00	0.00	15.01	76.
345-09	Opx-ol gabbro	1415J	28.00	48.87	0.03	31.94	0.00	0.51	0.02	0.12	15.64	2.55	0.03	0.01	99.73	6.73	0.00	5.19	0.00	0.06	0.00	0.02	2.31	0.68	0.00	0.00	15.01	77.
345-09	Opx-ol gabbro	1415J	28.00	48.91	0.03	31.99	0.00	0.54	0.01	0.12	15.69	2.60	0.02	0.01	99.90	6.73	0.00	5.19	0.00	0.06	0.00	0.02	2.31	0.69	0.00	0.00	15.02	76.
345-09	Opx-ol gabbro	1415J	28.00	48.89	0.04	31.98	0.01	0.51	0.01	0.10	15.77	2.54	0.02	0.00	99.86	6.73	0.00	5.19	0.00	0.06	0.00	0.02	2.33	0.68	0.00	0.00	15.01	77.
345-09	Opx-ol gabbro	1415J	28.00	48.85	0.02	31.85	0.01	0.54	0.00	0.09	15.40	2.71	0.02	0.00	99.49	6.75	0.00	5.18	0.00	0.06	0.00	0.02	2.28	0.73	0.00	0.00	15.02	75.
345-09	Opx-ol gabbro	1415J	28.00	49.34	0.04	31.84	0.00	0.53	0.00	0.11	15.39	2.76	0.01	0.00	100.02	6.77	0.00	5.15	0.00	0.06	0.00	0.02	2.26	0.73	0.00	0.00	15.01	75.
345-09	Opx-ol gabbro	1415J	28.00	49.21	0.01	32.05	0.01	0.55	0.00	0.10	15.36	2.71	0.02	0.01	100.02	6.76	0.00	5.19	0.00	0.06	0.00	0.02	2.26	0.72	0.00	0.00	15.01	75.
345-09	Opx-ol gabbro	1415J	28.00	45.98	0.04	30.45	0.00	4.38	0.08	2.65	13.11	2.26	0.02	0.00	98.97	6.50	0.00	5.07	0.00	0.52	0.01	0.56	1.99	0.62	0.00	0.00	15.27	76.
345-09	Opx-ol gabbro	1415J	28.00	48.25	0.00	33.17	0.02	0.40	0.00	0.16	16.54	2.17	0.02	0.03	100.76	6.59	0.00	5.34	0.00	0.05	0.00	0.03	2.42	0.58	0.00	0.00	15.02	80.
345-09	Opx-ol gabbro	1415J	28.00	49.64	0.02	31.55	0.00	0.39	0.01	0.07	15.26	2.80	0.02	0.01	99.76	6.82	0.00	5.11	0.00	0.04	0.00	0.01	2.25	0.75	0.00	0.00	14.99	75.
345-09	Opx-ol gabbro	1415J	28.00	48.89	0.05	31.93	0.00	0.47	0.00	0.13	15.70	2.51	0.02	0.01	99.71	6.74	0.01	5.19	0.00	0.05	0.00	0.03	2.32	0.67	0.00	0.00	15.00	77.
345-09	Opx-ol gabbro	1415J	28.00	49.13	0.01	32.16	0.01	0.47	0.01	0.07	15.85	2.48	0.01	0.01	100.19	6.74	0.00	5.20	0.00	0.05	0.00	0.01	2.33	0.66	0.00	0.00	14.99	77.
345-09	Opx-ol gabbro	1415J	28.00	48.95	0.01	31.68	0.00	0.59	0.00	0.42	15.42	2.58	0.01	0.01	99.67	6.75	0.00	5.15	0.00	0.07	0.00	0.09	2.28	0.69	0.00	0.00	15.02	76.
345-09	Opx-ol gabbro	1415J	28.00	49.00	0.04	31.81	0.01	0.52	0.02	0.26	15.53	2.59	0.02	0.02	99.79	6.75	0.00	5.16	0.00	0.06	0.00	0.05	2.29	0.69	0.00	0.00	15.01	76.
345-09	Opx-ol gabbro	1415J	28.00	48.96	0.04	31.92	0.01	0.40	0.00	0.09	15.54	2.60	0.02	0.01	99.59	6.75	0.00	5.19	0.00	0.05	0.00	0.02	2.30	0.70	0.00	0.00	15.00	76.
345-09	Opx-ol gabbro	1415J	28.00	48.92	0.04	32.19	0.00	0.46	0.00	0.09	15.73	2.52	0.01	0.00	99.95	6.72	0.00	5.21	0.00	0.05	0.00	0.02	2.32	0.67	0.00	0.00	15.00	77.
345-09	Opx-ol gabbro	1415J	28.00	49.01	0.03	31.93	0.00	0.42	0.01	0.08	15.67	2.57	0.01	0.02	99.75	6.75	0.00	5.18	0.00	0.05	0.00	0.02	2.31	0.69	0.00	0.00	15.00	77.
345-09	Opx-ol gabbro	1415J	28.00	49.37	0.04	31.68	0.00	0.44	0.00	0.07	15.51	2.68	0.03	0.00	99.81	6.79	0.00	5.14	0.00	0.05	0.00	0.01	2.29	0.71	0.01	0.00	15.00	76.
345-09	Opx-ol gabbro	1415J	28.00	49.27	0.04	31.70	0.01	0.44	0.01	0.09	15.45	2.67	0.03	0.00	99.70	6.78	0.00	5.14	0.00	0.05	0.00	0.02	2.28	0.71	0.01	0.00	15.00	76.
345-09	Opx-ol gabbro	1415J	28.00	49.31	0.02	31.86	0.00	0.46	0.01	0.07	15.53	2.67	0.02	0.00	99.94	6.77	0.00	5.16	0.00	0.05	0.00	0.01	2.29	0.71	0.00	0.00	15.00	76.
345-09	Opx-ol gabbro	1415J	28.00	48.90	0.03	31.58	0.03	0.45	0.00	0.09	15.65	2.63	0.03	0.00	99.37	6.76	0.00	5.15	0.00	0.05	0.00	0.02	2.32	0.71	0.00	0.00	15.01	76.
345-09	Opx-ol gabbro	1415J	28.00	48.75	0.01	31.58	0.02	0.48	0.01	0.09	15.52	2.61	0.03	0.02	99.10	6.76	0.00	5.16	0.00	0.06	0.00	0.02	2.31	0.70	0.00	0.00	15.01	76.
345-09	Opx-ol gabbro	1415J	28.00	50.03	0.05	31.26	0.01	0.38	0.00	0.09	14.93	3.03	0.02	0.00	99.79	6.87	0.00	5.06	0.00	0.04	0.00	0.02	2.20	0.81	0.00	0.00	15.00	73.
345-09	Opx-ol gabbro	1415J	28.00	49.35	0.03	31.76	0.00	0.42	0.00	0.10	15.46	2.71	0.02	0.01	99.85	6.78	0.00	5.15	0.00	0.05	0.00	0.02	2.28	0.72	0.00	0.00	15.00	75.
345-09	Opx-ol gabbro	1415J	28.00	48.38	0.00	32.70	0.00	0.45	0.01	0.06	16.05	2.33	0.00	0.00	99.98	6.65	0.00	5.30	0.00	0.05	0.00	0.01	2.37	0.62	0.00	0.00	15.01	79.
345-09	Opx-ol gabbro	1415J	28.00	49.38	0.00	32.14	0.03	0.44	0.01	0.07	15.64	2.62	0.02	0.00	100.34	6.76	0.00	5.18	0.00	0.05	0.00	0.01	2.29	0.70	0.00	0.00	15.00	76.
345-09	Opx-ol gabbro	1415J	28.00	50.97	0.02	30.42	0.00	0.43	0.00	0.50	13.36	3.76	0.02	0.02	99.49	7.00	0.00	4.92	0.00	0.05	0.00	0.10	1.96	1.00	0.00	0.00	15.04	66.
345-09	Opx-ol gabbro	1415J	28.00	49.33	0.02	31.98	0.01	0.37	0.02	0.07	15.52	2.71	0.01	0.00	100.04	6.77	0.00	5.17	0.00	0.04	0.00	0.01	2.28	0.72	0.00	0.00	15.01	75.
345-09	Opx-ol gabbro	1415J	28.00	50.03	0.04	30.73	0.03	0.48	0.00	0.12	14.60	3.14	0.02	0.02	99.19	6.91	0.00	5.00	0.00	0.06	0.00	0.02	2.16	0.84	0.00	0.00	15.00	71.
345-09	Opx-ol gabbro	1415J	28.00	48.56	0.02	32.13	0.01	0.48	0.01	0.09	16.01	2.40	0.02	0.01	99.73	6.70	0.00	5.22	0.00	0.06	0.00	0.02	2.37	0.64	0.00	0.00	15.01	78.
345-09	Opx-ol gabbro	1415J	28.00	48.26	0.03	32.38	0.00	0.46	0.00	0.09	16.33	2.20	0.01	0.00	99.75	6.66	0.00	5.27	0.00	0.05	0.00	0.02	2.41	0.59	0.00	0.00	15.00	80.
345-22	Opx-ol gabbro	1415J	74.00	48.66	0.03	32.71	0.01	0.43	0.00	0.04	16.60	2.33	0.02	0.00	100.83	6.65	0.00	5.27	0.00	0.05	0.00	0.01	2.43	0.62	0.00	0.00	15.03	79.
345-22	Opx-ol gabbro	1415J	74.00	48.58	0.04	32.56	0.01	0.42	0.00	0.05	16.50	2.28	0.03	0.00	100.46	6.66	0.00	5.26	0.00	0.05	0.00	0.01	2.42	0.60	0.01	0.00	15.01	79.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-22	Opx-ol gabbro	1415J	74.00	48.23	0.04	32.65	0.00	0.42	0.01	0.04	16.62	2.26	0.03	0.00	100.28	6.63	0.00	5.29	0.00	0.05	0.00	0.01	2.45	0.60	0.00	0.00	15.03	80.
345-22	Opx-ol gabbro	1415J	74.00	48.20	0.03	32.73	0.00	0.41	0.00	0.04	16.88	2.21	0.02	0.00	100.51	6.61	0.00	5.29	0.00	0.05	0.00	0.01	2.48	0.59	0.00	0.00	15.03	80.
345-22	Opx-ol gabbro	1415J	74.00	47.84	0.03	33.02	0.00	0.39	0.00	0.04	17.21	2.04	0.02	0.04	100.63	6.56	0.00	5.34	0.00	0.04	0.00	0.01	2.53	0.54	0.00	0.00	15.04	82.
345-22	Opx-ol gabbro	1415J	74.00	48.22	0.04	32.51	0.01	0.37	0.00	0.04	16.62	2.31	0.02	0.02	100.16	6.63	0.00	5.27	0.00	0.04	0.00	0.01	2.45	0.62	0.00	0.00	15.04	79.
345-22	Opx-ol gabbro	1415J	74.00	47.34	0.02	32.61	0.00	0.38	0.01	0.02	17.17	2.00	0.01	0.00	99.55	6.57	0.00	5.33	0.00	0.04	0.00	0.00	2.55	0.54	0.00	0.00	15.04	82.
345-22	Opx-ol gabbro	1415J	74.00	48.25	0.04	33.13	0.00	0.38	0.03	0.04	16.97	2.10	0.02	0.00	100.96	6.59	0.00	5.33	0.00	0.04	0.00	0.01	2.48	0.56	0.00	0.00	15.02	81.
345-22	Opx-ol gabbro	1415J	74.00	47.77	0.05	33.11	0.01	0.43	0.00	0.04	17.09	2.05	0.01	0.00	100.57	6.56	0.01	5.36	0.00	0.05	0.00	0.01	2.51	0.55	0.00	0.00	15.04	82.
345-22	Opx-ol gabbro	1415J	74.00	47.86	0.02	32.62	0.00	0.40	0.00	0.04	16.78	2.16	0.02	0.01	99.91	6.60	0.00	5.31	0.00	0.05	0.00	0.01	2.48	0.58	0.00	0.00	15.03	81.
345-22	Opx-ol gabbro	1415J	74.00	48.35	0.03	32.67	0.01	0.46	0.00	0.04	16.80	2.20	0.01	0.00	100.56	6.63	0.00	5.28	0.00	0.05	0.00	0.01	2.47	0.59	0.00	0.00	15.02	80.
345-22	Opx-ol gabbro	1415J	74.00	45.91	0.00	31.68	0.00	2.21	0.03	2.37	14.78	1.96	0.03	0.01	98.99	6.44	0.00	5.24	0.00	0.26	0.00	0.50	2.22	0.53	0.01	0.00	15.21	80.
345-22	Opx-ol gabbro	1415J	74.00	47.48	0.03	32.82	0.00	0.71	0.01	0.17	16.93	2.09	0.02	0.00	100.26	6.55	0.00	5.33	0.00	0.08	0.00	0.04	2.50	0.56	0.00	0.00	15.06	81.
345-22	Opx-ol gabbro	1415J	74.00	48.13	0.03	33.34	0.01	0.40	0.00	0.03	16.97	2.18	0.01	0.00	101.10	6.56	0.00	5.36	0.00	0.05	0.00	0.01	2.48	0.58	0.00	0.00	15.04	81.
345-22	Opx-ol gabbro	1415J	74.00	48.84	0.03	32.34	0.00	0.44	0.01	0.03	16.21	2.49	0.03	0.00	100.44	6.69	0.00	5.22	0.00	0.05	0.00	0.01	2.38	0.66	0.01	0.00	15.03	78.
345-22	Opx-ol gabbro	1415J	74.00	47.61	0.04	33.33	0.00	0.43	0.01	0.04	17.32	1.93	0.01	0.00	100.71	6.53	0.00	5.39	0.00	0.05	0.00	0.01	2.54	0.51	0.00	0.00	15.03	83.
345-22	Opx-ol gabbro	1415J	74.00	48.14	0.04	32.80	0.00	0.41	0.00	0.04	16.88	2.17	0.02	0.04	100.54	6.60	0.00	5.30	0.00	0.05	0.00	0.01	2.48	0.58	0.00	0.00	15.03	81.
345-22	Opx-ol gabbro	1415J	74.00	48.25	0.05	32.73	0.01	0.42	0.00	0.04	16.90	2.20	0.03	0.01	100.64	6.61	0.01	5.29	0.00	0.05	0.00	0.01	2.48	0.58	0.01	0.00	15.03	80.
345-22	Opx-ol gabbro	1415J	74.00	48.06	0.03	32.95	0.01	0.41	0.00	0.03	16.99	2.02	0.02	0.00	100.50	6.59	0.00	5.33	0.00	0.05	0.00	0.01	2.50	0.54	0.00	0.00	15.01	82.
345-22	Opx-ol gabbro	1415J	74.00	48.16	0.04	32.71	0.01	0.40	0.01	0.03	16.69	2.21	0.02	0.01	100.28	6.62	0.00	5.30	0.00	0.05	0.00	0.01	2.46	0.59	0.00	0.00	15.03	80.
345-22	Opx-ol gabbro	1415J	74.00	47.85	0.04	33.06	0.00	0.42	0.02	0.03	17.03	2.11	0.03	0.00	100.58	6.57	0.00	5.35	0.00	0.05	0.00	0.01	2.50	0.56	0.00	0.00	15.04	81.
345-22	Opx-ol gabbro	1415J	74.00	47.22	0.02	33.85	0.00	0.41	0.02	0.03	17.83	1.60	0.01	0.03	101.02	6.46	0.00	5.46	0.00	0.05	0.00	0.01	2.61	0.43	0.00	0.00	15.02	85.
345-22	Opx-ol gabbro	1415J	74.00	49.30	0.06	32.45	0.00	0.43	0.01	0.03	16.08	2.61	0.04	0.00	100.99	6.71	0.01	5.21	0.00	0.05	0.00	0.01	2.35	0.69	0.01	0.00	15.02	77.
345-22	Opx-ol gabbro	1415J	74.00	48.39	0.04	33.45	0.00	0.53	0.01	0.08	16.79	2.17	0.03	0.01	101.50	6.57	0.00	5.36	0.00	0.06	0.00	0.02	2.44	0.57	0.01	0.00	15.03	80.
345-22	Opx-ol gabbro	1415J	74.00	47.70	0.04	33.83	0.01	0.47	0.00	0.03	17.32	1.83	0.01	0.00	101.23	6.50	0.00	5.44	0.00	0.05	0.00	0.01	2.53	0.48	0.00	0.00	15.02	83.
345-22	Opx-ol gabbro	1415J	74.00	48.21	0.04	33.35	0.00	0.41	0.00	0.05	16.87	2.10	0.02	0.01	101.06	6.57	0.00	5.36	0.00	0.05	0.00	0.01	2.47	0.55	0.00	0.00	15.02	81.
345-22	Opx-ol gabbro	1415J	74.00	47.99	0.03	33.51	0.00	0.39	0.00	0.05	17.04	2.01	0.02	0.00	101.02	6.55	0.00	5.39	0.00	0.04	0.00	0.01	2.49	0.53	0.00	0.00	15.02	82.
345-22	Opx-ol gabbro	1415J	74.00	48.41	0.05	33.56	0.02	0.46	0.01	0.04	17.02	2.05	0.03	0.00	101.63	6.57	0.01	5.37	0.00	0.05	0.00	0.01	2.47	0.54	0.00	0.00	15.02	81.
345-22	Opx-ol gabbro	1415J	74.00	48.48	0.06	33.13	0.02	0.44	0.01	0.04	16.93	2.18	0.03	0.00	101.32	6.60	0.01	5.31	0.00	0.05	0.00	0.01	2.47	0.57	0.01	0.00	15.03	80.
345-22	Opx-ol gabbro	1415J	74.00	48.34	0.04	33.41	0.01	0.37	0.01	0.04	16.79	2.23	0.03	0.00	101.27	6.58	0.00	5.36	0.00	0.04	0.00	0.01	2.45	0.59	0.01	0.00	15.04	80.
345-22	Opx-ol gabbro	1415J	74.00	48.96	0.02	32.91	0.00	0.41	0.01	0.03	16.26	2.43	0.03	0.00	101.07	6.66	0.00	5.28	0.00	0.05	0.00	0.01	2.37	0.64	0.00	0.00	15.02	78.
345-22	Opx-ol gabbro	1415J	74.00	48.24	0.02	33.33	0.00	0.41	0.00	0.03	16.88	2.16	0.03	0.00	101.10	6.58	0.00	5.36	0.00	0.05	0.00	0.01	2.47	0.57	0.00	0.00	15.03	81.
345-22	Opx-ol gabbro	1415J	74.00	49.16	0.04	32.67	0.02	0.36	0.01	0.04	16.09	2.66	0.04	0.01	101.10	6.69	0.00	5.24	0.00	0.04	0.00	0.01	2.35	0.70	0.01	0.00	15.04	76.
345-22	Opx-ol gabbro	1415J	74.00	48.13	0.07	33.17	0.01	0.43	0.00	0.04	16.76	2.21	0.03	0.00	100.85	6.58	0.01	5.35	0.00	0.05	0.00	0.01	2.45	0.59	0.01	0.00	15.04	80.
345-22	Opx-ol gabbro	1415J	74.00	48.66	0.08	33.31	0.02	0.43	0.02	0.04	16.70	2.24	0.03	0.00	101.52	6.60	0.01	5.33	0.00	0.05	0.00	0.01	2.43	0.59	0.01	0.00	15.02	80.
345-22	Opx-ol gabbro	1415J	74.00	48.21	0.06	33.29	0.01	0.40	0.01	0.05	16.93	2.13	0.03	0.00	101.11	6.57	0.01	5.35	0.00	0.05	0.00	0.01	2.47	0.56	0.00	0.00	15.03	81.
345-22	Opx-ol gabbro	1415J	74.00	48.81	0.07	33.16	0.00	0.43	0.01	0.05	16.57	2.38	0.04	0.01	101.53	6.62	0.01	5.30	0.00	0.05	0.00	0.01	2.41	0.63	0.01	0.00	15.04	79.
345-109	Opx-ol gabbro	1415J	28.00	48.81	0.04	32.08	0.00	0.49	0.00	0.11	15.51	2.51	0.02	0.02	99.59	6.73	0.00	5.21	0.00	0.06	0.00	0.02	2.29	0.67	0.00	0.00	15.00	77.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-109	Opx-ol gabbro	1415J	28.00	49.20	0.02	31.80	0.00	0.48	0.00	0.11	15.53	2.63	0.03	0.00	99.82	6.77	0.00	5.16	0.00	0.06	0.00	0.02	2.29	0.70	0.01	0.00	15.00	76.
345-109	Opx-ol gabbro	1415J	28.00	48.77	0.03	31.78	0.00	0.48	0.01	0.10	15.77	2.64	0.02	0.00	99.61	6.73	0.00	5.17	0.00	0.06	0.00	0.02	2.33	0.71	0.00	0.00	15.03	76.
345-109	Opx-ol gabbro	1415J	28.00	48.66	0.03	32.31	0.02	0.54	0.02	0.06	16.03	2.57	0.04	0.01	100.28	6.68	0.00	5.23	0.00	0.06	0.00	0.01	2.36	0.69	0.01	0.00	15.04	77.
345-109	Opx-ol gabbro	1415J	28.00	48.82	0.04	32.19	0.01	0.39	0.01	0.08	15.80	2.65	0.02	0.00	100.00	6.71	0.00	5.22	0.00	0.04	0.00	0.02	2.33	0.71	0.00	0.00	15.03	76.
345-109	Opx-ol gabbro	1415J	28.00	48.61	0.05	32.37	0.00	0.40	0.01	0.09	16.18	2.41	0.02	0.00	100.12	6.68	0.01	5.24	0.00	0.05	0.00	0.02	2.38	0.64	0.00	0.00	15.02	78.
345-109	Opx-ol gabbro	1415J	28.00	48.28	0.03	32.10	0.04	0.48	0.00	0.08	15.87	2.48	0.03	0.00	99.38	6.68	0.00	5.24	0.00	0.06	0.00	0.02	2.35	0.67	0.00	0.00	15.03	77.
345-109	Opx-ol gabbro	1415J	28.00	49.88	0.04	31.46	0.00	0.46	0.01	0.08	15.17	2.93	0.02	0.00	100.06	6.84	0.00	5.08	0.00	0.05	0.00	0.02	2.23	0.78	0.00	0.00	15.01	74.
345-109	Opx-ol gabbro	1415J	28.00	49.34	0.03	31.92	0.00	0.42	0.02	0.08	15.12	2.68	0.03	0.02	99.65	6.79	0.00	5.17	0.00	0.05	0.00	0.02	2.23	0.71	0.01	0.00	14.98	75.
345-109	Opx-ol gabbro	1415J	28.00	49.79	0.03	31.57	0.00	0.48	0.00	0.07	14.50	2.87	0.02	0.00	99.33	6.86	0.00	5.12	0.00	0.06	0.00	0.01	2.14	0.77	0.00	0.00	14.96	73.
345-109	Opx-ol gabbro	1415J	28.00	49.36	0.03	32.05	0.00	0.38	0.02	0.07	15.54	2.49	0.01	0.01	99.95	6.77	0.00	5.18	0.00	0.04	0.00	0.01	2.28	0.66	0.00	0.00	14.97	77.
345-109	Opx-ol gabbro	1415J	28.00	49.21	0.01	31.95	0.01	0.43	0.01	0.08	15.71	2.48	0.02	0.00	99.90	6.76	0.00	5.17	0.00	0.05	0.00	0.02	2.31	0.66	0.00	0.00	14.98	77.
345-109	Opx-ol gabbro	1415J	28.00	49.05	0.01	31.69	0.00	0.42	0.00	0.07	15.69	2.51	0.02	0.01	99.48	6.77	0.00	5.16	0.00	0.05	0.00	0.02	2.32	0.67	0.00	0.00	14.99	77.
345-109	Opx-ol gabbro	1415J	28.00	48.68	0.02	32.09	0.03	0.46	0.01	0.09	15.78	2.52	0.02	0.02	99.71	6.71	0.00	5.22	0.00	0.05	0.00	0.02	2.33	0.67	0.00	0.00	15.01	77.
345-109	Opx-ol gabbro	1415J	28.00	49.90	0.05	30.79	0.00	0.46	0.00	0.08	14.48	2.84	0.04	0.01	98.65	6.92	0.00	5.03	0.00	0.05	0.00	0.02	2.15	0.76	0.01	0.00	14.95	73.
345-109	Opx-ol gabbro	1415J	28.00	49.82	0.03	31.91	0.00	0.40	0.00	0.09	15.42	2.70	0.02	0.00	100.39	6.80	0.00	5.14	0.00	0.05	0.00	0.02	2.26	0.72	0.00	0.00	14.98	75.
345-113	Opx-ol gabbro	1415J	37.00	47.81	0.03	32.74	0.00	0.42	0.01	0.06	16.27	2.22	0.02	0.00	99.58	6.61	0.00	5.34	0.00	0.05	0.00	0.01	2.41	0.60	0.00	0.00	15.02	80.
345-113	Opx-ol gabbro	1415J	37.00	48.05	0.01	32.26	0.00	0.34	0.00	0.06	16.09	2.36	0.03	0.01	99.22	6.66	0.00	5.27	0.00	0.04	0.00	0.01	2.39	0.64	0.01	0.00	15.02	78.
345-113	Opx-ol gabbro	1415J	37.00	48.06	0.03	32.49	0.02	0.39	0.00	0.09	16.06	2.33	0.02	0.03	99.52	6.64	0.00	5.29	0.00	0.04	0.00	0.02	2.38	0.62	0.00	0.00	15.02	79.
345-113	Opx-ol gabbro	1415J	37.00	48.00	0.04	32.53	0.00	0.38	0.01	0.07	16.06	2.24	0.03	0.01	99.37	6.64	0.00	5.31	0.00	0.04	0.00	0.02	2.38	0.60	0.01	0.00	15.00	79.
345-113	Opx-ol gabbro	1415J	37.00	47.77	0.04	32.65	0.00	0.36	0.02	0.04	15.88	2.23	0.02	0.00	99.00	6.63	0.00	5.34	0.00	0.04	0.00	0.01	2.36	0.60	0.00	0.00	14.99	79.
345-113	Opx-ol gabbro	1415J	37.00	47.83	0.04	32.49	0.00	0.34	0.01	0.05	16.33	2.18	0.00	0.00	99.27	6.63	0.00	5.31	0.00	0.04	0.00	0.01	2.43	0.59	0.00	0.00	15.00	80.
345-113	Opx-ol gabbro	1415J	37.00	47.93	0.03	32.43	0.00	0.38	0.02	0.09	16.25	2.31	0.01	0.00	99.44	6.64	0.00	5.29	0.00	0.04	0.00	0.02	2.41	0.62	0.00	0.00	15.03	79.
345-113	Opx-ol gabbro	1415J	37.00	47.89	0.02	32.75	0.00	0.36	0.00	0.04	16.23	2.07	0.02	0.01	99.40	6.62	0.00	5.34	0.00	0.04	0.00	0.01	2.41	0.56	0.00	0.00	14.98	81.
345-113	Opx-ol gabbro	1415J	37.00	47.41	0.01	33.14	0.02	0.41	0.00	0.07	16.68	1.95	0.02	0.01	99.72	6.55	0.00	5.40	0.00	0.05	0.00	0.01	2.47	0.52	0.00	0.00	15.01	82.
345-113	Opx-ol gabbro	1415J	37.00	48.13	0.02	32.51	0.02	0.41	0.01	0.09	16.09	2.19	0.02	0.00	99.49	6.65	0.00	5.30	0.00	0.05	0.00	0.02	2.38	0.59	0.00	0.00	14.99	80.
345-113	Opx-ol gabbro	1415J	37.00	47.59	0.04	32.91	0.00	0.36	0.00	0.06	16.67	1.97	0.01	0.01	99.62	6.58	0.00	5.36	0.00	0.04	0.00	0.01	2.47	0.53	0.00	0.00	15.00	82.
345-113	Opx-ol gabbro	1415J	37.00	46.63	0.03	32.55	0.00	1.53	0.02	0.78	15.82	1.85	0.01	0.00	99.22	6.50	0.00	5.35	0.00	0.18	0.00	0.16	2.36	0.50	0.00	0.00	15.07	82.
345-113	Opx-ol gabbro	1415J	37.00	48.19	0.03	32.43	0.00	0.35	0.00	0.05	15.79	2.27	0.02	0.02	99.16	6.67	0.00	5.29	0.00	0.04	0.00	0.01	2.34	0.61	0.00	0.00	14.98	79.
345-113	Opx-ol gabbro	1415J	37.00	47.62	0.01	32.46	0.00	0.39	0.01	0.05	16.05	2.24	0.02	0.00	98.84	6.63	0.00	5.33	0.00	0.05	0.00	0.01	2.39	0.60	0.00	0.00	15.01	79.
345-113	Opx-ol gabbro	1415J	37.00	47.46	0.02	32.97	0.02	0.31	0.00	0.03	16.69	1.98	0.00	0.01	99.49	6.57	0.00	5.38	0.00	0.04	0.00	0.01	2.48	0.53	0.00	0.00	15.00	82.
345-113	Opx-ol gabbro	1415J	37.00	47.69	0.02	32.85	0.01	0.43	0.00	0.05	16.54	2.13	0.01	0.00	99.72	6.59	0.00	5.35	0.00	0.05	0.00	0.01	2.45	0.57	0.00	0.00	15.02	81.
345-113	Opx-ol gabbro	1415J	37.00	48.14	0.03	32.59	0.00	0.41	0.00	0.06	16.12	2.38	0.00	0.01	99.74	6.64	0.00	5.30	0.00	0.05	0.00	0.01	2.38	0.64	0.00	0.00	15.02	78.
345-113	Opx-ol gabbro	1415J	37.00	48.37	0.01	32.70	0.00	0.38	0.00	0.07	15.94	2.37	0.01	0.01	99.85	6.66	0.00	5.30	0.00	0.04	0.00	0.02	2.35	0.63	0.00	0.00	15.01	78.
345-113	Opx-ol gabbro	1415J	37.00	48.00	0.02	32.54	0.00	0.42	0.00	0.06	15.80	2.20	0.02	0.00	99.04	6.66	0.00	5.32	0.00	0.05	0.00	0.01	2.35	0.59	0.00	0.00	14.98	79.
345-113	Opx-ol gabbro	1415J	37.00	48.07	0.03	32.58	0.00	0.40	0.01	0.05	16.22	2.23	0.03	0.00	99.63	6.64	0.00	5.30	0.00	0.05	0.00	0.01	2.40	0.60	0.01	0.00	15.01	79.
345-113	Opx-ol gabbro	1415J	37.00	47.41	0.01	33.07	0.01	0.32	0.00	0.05	16.51	1.97	0.01	0.00	99.36	6.57	0.00	5.40	0.00	0.04	0.00	0.01	2.45	0.53	0.00	0.00	15.00	82.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-113	Opx-ol gabbro	1415J	37.00	48.16	0.01	32.44	0.02	0.38	0.00	0.07	16.13	2.29	0.02	0.00	99.52	6.66	0.00	5.28	0.00	0.04	0.00	0.01	2.39	0.61	0.00	0.00	15.01	79.
345-113	Opx-ol gabbro	1415J	37.00	47.36	0.04	33.07	0.00	0.33	0.00	0.05	16.68	1.94	0.02	0.00	99.48	6.56	0.00	5.40	0.00	0.04	0.00	0.01	2.47	0.52	0.00	0.00	15.00	82.
345-113	Opx-ol gabbro	1415J	37.00	47.74	0.02	32.76	0.00	0.45	0.00	0.16	16.46	2.06	0.03	0.01	99.69	6.60	0.00	5.33	0.00	0.05	0.00	0.03	2.44	0.55	0.00	0.00	15.01	81.
345-113	Opx-ol gabbro	1415J	37.00	48.06	0.00	32.33	0.00	0.38	0.01	0.06	15.95	2.34	0.03	0.01	99.16	6.66	0.00	5.28	0.00	0.04	0.00	0.01	2.37	0.63	0.01	0.00	15.01	78.
345-113	Opx-ol gabbro	1415J	37.00	47.34	0.02	32.99	0.00	0.32	0.00	0.05	16.58	1.94	0.03	0.00	99.26	6.57	0.00	5.39	0.00	0.04	0.00	0.01	2.46	0.52	0.01	0.00	15.00	82.
345-113	Opx-ol gabbro	1415J	37.00	47.53	0.04	32.69	0.01	0.37	0.00	0.04	16.09	2.02	0.01	0.00	98.80	6.61	0.00	5.36	0.00	0.04	0.00	0.01	2.40	0.55	0.00	0.00	14.98	81.
345-108	Opx-ol gabbro	1415P	27.00	49.62	0.02	31.80	0.02	0.43	0.01	0.06	15.14	2.76	0.00	0.00	99.86	6.81	0.00	5.14	0.00	0.05	0.00	0.01	2.23	0.73	0.00	0.00	14.98	75.
345-108	Opx-ol gabbro	1415P	27.00	49.07	0.02	31.93	0.01	0.45	0.00	0.06	15.72	2.51	0.02	0.01	99.79	6.75	0.00	5.18	0.00	0.05	0.00	0.01	2.32	0.67	0.00	0.00	14.99	77.
345-108	Opx-ol gabbro	1415P	27.00	49.85	0.00	32.07	0.00	0.50	0.01	0.10	15.36	2.65	0.02	0.00	100.55	6.80	0.00	5.15	0.00	0.06	0.00	0.02	2.24	0.70	0.00	0.00	14.98	76.
345-108	Opx-ol gabbro	1415P	27.00	49.61	0.01	32.24	0.00	0.43	0.00	0.09	15.53	2.69	0.01	0.01	100.61	6.77	0.00	5.18	0.00	0.05	0.00	0.02	2.27	0.71	0.00	0.00	15.00	76.
345-108	Opx-ol gabbro	1415P	27.00	48.88	0.02	32.64	0.00	0.41	0.01	0.10	16.20	2.27	0.00	0.00	100.53	6.68	0.00	5.26	0.00	0.05	0.00	0.02	2.37	0.60	0.00	0.00	14.99	79.
345-108	Opx-ol gabbro	1415P	27.00	49.62	0.02	31.34	0.00	0.45	0.00	0.09	15.63	2.66	0.02	0.01	99.83	6.82	0.00	5.08	0.00	0.05	0.00	0.02	2.30	0.71	0.00	0.00	14.99	76.
345-108	Opx-ol gabbro	1415P	27.00	48.33	0.00	31.62	0.00	0.40	0.00	0.06	15.60	2.47	0.01	0.00	98.49	6.74	0.00	5.20	0.00	0.05	0.00	0.01	2.33	0.67	0.00	0.00	15.00	77.
345-108	Opx-ol gabbro	1415P	27.00	48.94	0.03	32.25	0.01	0.45	0.01	0.06	15.62	2.38	0.04	0.00	99.79	6.73	0.00	5.23	0.00	0.05	0.00	0.01	2.30	0.63	0.01	0.00	14.97	78.
345-108	Opx-ol gabbro	1415P	27.00	49.42	0.04	32.09	0.02	0.46	0.00	0.07	15.57	2.61	0.00	0.00	100.29	6.76	0.00	5.18	0.00	0.05	0.00	0.01	2.28	0.69	0.00	0.00	14.99	76.
345-108	Opx-ol gabbro	1415P	27.00	49.95	0.01	31.63	0.00	0.38	0.00	0.10	15.42	2.81	0.02	0.00	100.32	6.83	0.00	5.10	0.00	0.04	0.00	0.02	2.26	0.75	0.00	0.00	15.00	75.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Plagioclase (Exp. 345 U1415 P)																												
345-90	Ol-gabbro	1415P	46	47.572	0.012	32.663	0.012	0.421	0.031	0.243	16.521	2.16	0.042	0.008	99.685	6.5808	0.0012	5.3258	0.0013	0.0487	0.0036	0.0501	2.4488	0.5793	0.0074	0.0009	15.048	80.6727
345-90	Ol-gabbro	1415P	46	47.924	0.002	33.004	0.002	0.325	0.01	0.031	16.173	2.124	0.026	0	99.621	6.6126	0.0002	5.3677	0.0003	0.0375	0.0011	0.0063	2.3911	0.5683	0.0046	0	14.9897	80.6710
345-90	Ol-gabbro	1415P	46	47.796	0.035	32.751	0	0.358	0.024	0.055	16.381	2.189	0.029	0	99.618	6.6006	0.0037	5.3355	0	0.0414	0.0028	0.0113	2.4216	0.5867	0.0052	0	15.0187	80.3874
345-90	Ol-gabbro	1415P	46	48.495	0.032	31.892	0	0.365	0	0.065	15.577	2.449	0.028	0	98.903	6.7312	0.0033	5.2176	0	0.0423	0	0.0134	2.3168	0.6591	0.0035	0	14.9888	77.7213
345-90	Ol-gabbro	1415P	46	47.474	0.038	33.105	0	0.41	0.004	0.018	16.735	2.022	0.009	0	99.815	6.5554	0.0038	5.3881	0	0.0474	0.0004	0.0037	2.4761	0.5406	0.0014	0	15.0182	82.0131
345-90	Ol-gabbro	1415P	46	47.731	0.031	32.734	0.006	0.553	0.016	0.028	16.606	2.298	0.031	0	100.034	6.5854	0.0032	5.3234	0.0007	0.0638	0.0019	0.0057	2.4549	0.6147	0.0047	0	15.0592	79.8310
345-90	Ol-gabbro	1415P	46	49.236	0.018	32.38	0.005	0.417	0.004	0.048	15.52	2.532	0.039	0.007	100.206	6.7411	0.0019	5.2255	0.0005	0.0477	0.0004	0.0097	2.2769	0.6721	0.0068	0.0008	14.9835	77.0318
345-90	Ol-gabbro	1415P	46	47.491	0.032	33.17	0.022	0.415	0.027	0.077	16.522	2.069	0.017	0	99.842	6.5544	0.0033	5.3955	0.0025	0.0479	0.0032	0.0059	2.4432	0.5536	0.0036	0	15.022	81.4484
345-90	Ol-gabbro	1415P	46	47.434	0.027	33.406	0.014	0.356	0	0.008	17.069	1.912	0.019	0	100.245	6.5255	0.0027	5.4116	0	0.0416	0	0.0017	2.5161	0.5101	0.0033	0	15.0191	83.0539
345-90	Ol-gabbro	1415P	46	47.025	0.042	33.289	0.008	0.393	0	0.011	16.876	1.923	0.027	0.015	99.609	6.5124	0.0044	5.4339	0.0009	0.0455	0	0.0022	2.4943	0.5163	0.0047	0.0016	15.0262	82.7787
345-90	Ol-gabbro	1415P	46	47.614	0.04	33.291	0.005	0.347	0.007	0.007	16.34	2.026	0.014	0.007	99.698	6.5644	0.0041	5.4107	0.0005	0.0405	0.0008	0.0015	2.4148	0.5408	0.0024	0.0008	14.9914	81.6089
345-78	Ol-gabbro	1415P	28	47.327	0.005	33.495	0.004	0.365	0	0.033	16.671	1.875	0.023	0	99.798	6.5302	0.0005	5.4475	0.0004	0.0421	0	0.0069	2.4618	0.5018	0.0021	0	14.9981	82.9723
345-78	Ol-gabbro	1415P	28	47.667	0.045	32.957	0	0.354	0.008	0.107	16.156	2.102	0.042	0.011	99.449	6.5943	0.0046	5.3733	0	0.0404	0.0009	0.0202	2.3946	0.5637	0.0037	0.0013	15.0014	80.7392
345-78	Ol-gabbro	1415P	28	47.168	0.026	33.817	0.001	0.302	0	0.027	17.377	1.882	0.041	0	100.641	6.4713	0.0027	5.4687	0.0001	0.0346	0	0.0056	2.5545	0.5008	0.0071	0	15.0455	83.4148
345-78	Ol-gabbro	1415P	28	45.663	0.012	35.165	0	0.163	0	0.019	18.212	1.071	0.003	0.002	100.31	6.2898	0.0013	5.7092	0	0.0187	0	0.0038	2.6879	0.2806	0.0006	0.0002	14.9975	90.3647
345-78	Ol-gabbro	1415P	28	46.705	0.035	33.842	0.009	0.407	0.022	0.018	17.378	1.635	0.022	0	100.073	6.4453	0.0036	5.5048	0.0007	0.0467	0.0026	0.0037	2.5637	0.4337	0.0029	0	15.0189	85.3467
345-78	Ol-gabbro	1415P	28	46.483	0.034	32.232	0	1.201	0.061	2.414	15.229	1.856	0.043	0.027	99.58	6.4555	0.0036	5.2758	0	0.1395	0.0071	0.0496	2.2669	0.4997	0.0077	0.0031	15.1571	81.7046
345-78	Ol-gabbro	1415P	28	46.308	0.022	33.33	0	0.534	0.014	0.142	17.363	1.675	0.014	0.022	99.429	6.4426	0.0023	5.4636	0	0.0621	0.0017	0.0294	2.5884	0.4525	0.0021	0.0026	15.0497	85.0520
345-78	Ol-gabbro	1415P	28	47.289	0	33.255	0	0.428	0	0.038	16.873	1.862	0.014	0	99.757	6.5346	0	5.4165	0	0.0495	0	0.0078	2.4984	0.4989	0.0021	0	15.0077	83.2996
345-78	Ol-gabbro	1415P	28	48.263	0.043	33.036	0	0.372	0	0.028	16.228	2.135	0.022	0.013	100.147	6.6225	0.0044	5.3452	0	0.0427	0	0.0057	2.3837	0.5669	0.0031	0.0014	14.9846	80.6331
345-78	Ol-gabbro	1415P	28	48.072	0.03	32.955	0	0.41	0	0.053	16.449	2.134	0.022	0	100.125	6.6086	0.0031	5.3292	0	0.0471	0	0.0108	2.4233	0.5663	0.0048	0	15.0056	80.8557
345-78	Ol-gabbro	1415P	28	47.48	0.009	33.211	0	0.372	0.033	0.044	16.834	1.889	0.025	0	99.897	6.5497	0.0009	5.3991	0	0.0429	0.0038	0.0099	2.4825	0.5042	0.0045	0	15.0042	82.9950
345-78	Ol-gabbro	1415P	28	48.093	0.028	32.855	0	0.414	0	0.043	15.904	2.374	0.017	0	99.728	6.6304	0.0029	5.3394	0	0.0479	0	0.0088	2.3494	0.6348	0.0031	0	15.016	78.6514
345-78	Ol-gabbro	1415P	28	49.023	0.038	31.943	0	0.452	0.008	0.046	15.106	2.915	0.031	0	99.562	6.7593	0.0039	5.1913	0	0.0521	0.0011	0.0094	2.2318	0.7737	0.0054	0	15.0336	73.9868
345-33	Opx- Ol gabbro	1415P	19.5	48.111	0.027	33.092	0	0.352	0	0.026	16.748	2.241	0.048	0	100.644	6.5886	0.0028	5.3416	0	0.0403	0	0.0053	2.4575	0.5984	0.0051	0	15.0396	80.2840
345-33	Opx- Ol gabbro	1415P	19.5	46.632	0.039	33.531	0	0.362	0.014	0.012	17.556	1.668	0.018	0	99.8319	6.4551	0.0041	5.4709	0	0.0419	0.0016	0.0025	2.6044	0.4431	0.0031	0	15.0309	85.2406
345-33	Opx- Ol gabbro	1415P	19.5	47.056	0.026	33.996	0	0.334	0.019	0.013	17.605	1.683	0.034	0	100.765	6.4501	0.0027	5.4926	0	0.0383	0.0022	0.0026	2.5874	0.4447	0.0059	0	15.0276	85.0849
345-33	Opx- Ol gabbro	1415P	19.5	47.185	0.028	32.684	0.004	0.332	0.01	0.041	16.839	2.123	0.024	0.008	99.298	6.5576	0.0029	5.3541	0.0004	0.0386	0.0011	0.0085	2.5076	0.5722	0.0043	0.0031	15.0505	81.3074
345-33	Opx- Ol gabbro	1415P	19.5	48.022	0.038	33.026	0	0.385	0.006	0.043	16.701	2.113	0.013	0.006	100.362	6.5916	0.0039	5.3433	0	0.0424	0.0006	0.0087	2.4564	0.5624	0.0022	0.0017	15.015	81.3104
345-33	Opx- Ol gabbro	1415P	19.5	48.111	0.031	32.681	0	0.337	0.004	0.031	16.651	2.294	0.023	0	100.161	6.6184	0.0032	5.2993	0	0.0388	0.0005	0.0063	2.4545	0.6107	0.0041	0	15.0369	79.9404
345-33	Opx- Ol gabbro	1415P	19.5	47.319	0.019	32.578	0.007	0.359	0	0.023	16.646	2.13	0.025	0.004	99.11	6.5823	0.0020	5.3416	0.0008	0.0418	0	0.0049	2.4811	0.5744	0.0045	0.0004	15.034	81.0760
345-33	Opx- Ol gabbro	1415P	19.5	47.771	0	33.526	0.009	0.414	0	0.025	17.169	1.975	0.014	0	100.899	6.5317	0	5.4031	0.0010	0.0474	0	0.0051	2.5154	0.5235	0.0018	0	15.029	82.7242

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-33	Opx- Ol gabbro	1415P	19.5	47.871	0.011	33.197	0.009	0.323	0.001	0.027	16.856	2.113	0.011	0	100.419	6.5692	0.001	5.3696	0.001	0.0371	0.000	0.0056	2.4786	0.5622	0.002	0	15.0265	81.457
345-33	Opx- Ol gabbro	1415P	19.5	47.81	0.028	33.207	0.004	0.48	0.004	0.043	17.055	2.063	0.010	0.003	100.706	6.551	0.002	5.363	0.000	0.055	0.000	0.000	2.502	0.540	0.000	0.000	15.0395	81.954
345-33	Opx- Ol gabbro	1415P	19.5	46.697	0.022	32.447	0.002	1.466	0.033	0.955	15.808	2.029	0.032	0.023	99.514	6.50	0.002	5.326	0.000	0.170	0.000	0.192	2.356	0.540	0.000	0.000	15.1126	80.990
345-33	Opx- Ol gabbro	1415P	19.5	51.905	0.01	30.717	0.012	0.375	0.001	0.078	13.882	3.86	0.077	0.022	100.937	7.020	0.001	4.904	0.000	0.040	0.000	0.011	2.011	1.011	0.001	0.000	15.0331	66.234
345-33	Opx- Ol gabbro	1415P	19.5	47.496	0.041	33.249	0.003	0.399	0.005	0.028	16.949	2.018	0.010	0.007	100.213	6.536	0.004	5.395	0.000	0.040	0.000	0.000	2.492	0.530	0.000	0.000	15.0317	82.181
345-33	Opx- Ol gabbro	1415P	19.5	47.121	0	33.542	0.009	0.339	0.002	0.013	17.339	1.747	0.009	0.003	100.125	6.490	0	5.440	0.000	0.038	0.000	0.000	2.552	0.460	0.000	0.000	15.0154	84.523
345-33	Opx- Ol gabbro	1415P	19.5	47.971	0.036	33.281	0	0.314	0.009	0.028	16.829	2.167	0.010	0	100.654	6.566	0.003	5.378	0	0.030	0.000	0.000	2.462	0.570	0.000	0	15.0324	81.013
345-33	Opx- Ol gabbro	1415P	19.5	48.014	0.014	33.034	0.003	0.342	0	0.053	16.731	2.17	0.02	0	100.381	6.580	0.001	5.340	0.000	0.033	0	0.010	2.466	0.570	0.000	0	15.0273	80.894
345-33	Opx- Ol gabbro	1415P	19.5	46.662	0	33.29	0	0.364	0	0.025	17.157	1.741	0.020	0.009	99.272	6.480	0	5.456	0	0.040	0	0.000	2.559	0.460	0.000	0.000	15.0214	84.361
345-33	Opx- Ol gabbro	1415P	19.5	47.029	0.029	33.135	0	0.327	0	0.031	16.996	1.941	0.020	0	99.512	6.52	0.003	5.415	0	0.033	0	0.000	2.525	0.520	0.000	0	15.0327	82.755
345-33	Opx- Ol gabbro	1415P	19.5	44.968	0.008	32.267	0.005	2.8	0.105	2.52	14.893	1.619	0.010	0	99.196	6.321	0.000	5.345	0.000	0.320	0.011	0.520	2.241	0.440	0.000	0	15.2258	83.499
345-33	Opx- Ol gabbro	1415P	19.5	48.216	0.015	33.286	0	0.341	0.007	0.032	16.776	2.096	0.020	0.003	100.794	6.580	0.001	5.365	0	0.030	0.000	0.000	2.455	0.550	0.000	0.000	15.0105	81.458
345-33	Opx- Ol gabbro	1415P	19.5	47.126	0.035	33.662	0	0.35	0.009	0.026	17.316	1.766	0.010	0.008	100.309	6.480	0.003	5.456	0	0.040	0.000	0.000	2.559	0.470	0.000	0.000	15.0203	84.334
345-33	Opx- Ol gabbro	1415P	19.5	47.165	0.012	33.810	0	0.356	0	0.022	17.362	1.739	0.010	0	100.482	6.470	0.003	5.473	0	0.040	0	0.000	2.550	0.460	0.000	0	15.0178	84.574
345-33	Opx- Ol gabbro	1415P	19.5	48.469	0	33.981	0	0.314	0	0.02	16.992	2.068	0.020	0.005	101.895	6.550	0	5.410	0	0.030	0	0.000	2.460	0.540	0.000	0.000	15.0144	81.866
345-47	Opx- Ol gabbro	1415P	64	48.443	0.001	32.997	0	0.477	0	0.034	16.427	2.354	0.020	0	100.757	6.620	0.000	5.318	0	0.050	0	0.000	2.400	0.620	0.000	0	15.0339	79.296
345-47	Opx- Ol gabbro	1415P	64	48.835	0.045	33.261	0	0.482	0.009	0.04	16.441	2.345	0.020	0.003	101.498	6.620	0.000	5.310	0	0.050	0.000	0.000	2.380	0.610	0.000	0.000	15.0229	79.355
345-47	Opx- Ol gabbro	1415P	64	48.203	0.024	32.846	0.002	0.439	0	0.058	16.605	2.189	0.030	0	100.398	6.610	0.002	5.310	0.000	0.050	0	0.010	2.440	0.580	0.000	0	15.0209	80.590
345-47	Opx- Ol gabbro	1415P	64	47.439	0.027	32.736	0	0.415	0	0.023	17.027	2.042	0.020	0	99.729	6.560	0.002	5.330	0	0.040	0	0.000	2.520	0.540	0.000	0	15.0378	82.063
345-47	Opx- Ol gabbro	1415P	64	47.502	0.044	32.823	0	0.414	0.026	0.081	16.975	2.002	0.010	0.004	99.882	6.560	0.003	5.340	0	0.040	0.000	0.010	2.510	0.530	0.000	0.000	15.0303	82.353
345-47	Opx- Ol gabbro	1415P	64	47.886	0.037	32.792	0.007	0.413	0	0.032	16.942	2.089	0.030	0	100.231	6.580	0.003	5.310	0.000	0.040	0	0.000	2.490	0.550	0.000	0	15.0285	81.602
345-47	Opx- Ol gabbro	1415P	64	47.779	0.039	33.366	0.001	0.398	0	0.039	16.765	2.225	0.010	0	100.631	6.540	0.004	5.380	0.000	0.040	0	0.000	2.460	0.590	0.000	0	15.0509	80.547
345-47	Opx- Ol gabbro	1415P	64	48.183	0.039	33.056	0.002	0.389	0.013	0.037	16.671	2.286	0.010	0	100.695	6.590	0.004	5.330	0.000	0.040	0.000	0.000	2.440	0.600	0.000	0	15.0401	80.028
345-47	Opx- Ol gabbro	1415P	64	48.369	0.028	33.024	0.002	0.377	0	0.03	16.499	2.294	0.010	0.004	100.655	6.610	0.003	5.320	0.000	0.040	0	0.000	2.410	0.600	0.000	0.000	15.0246	79.808
345-47	Opx- Ol gabbro	1415P	64	48.391	0.039	33.317	0.01	0.43	0	0.135	16.479	2.276	0.030	0.006	101.127	6.590	0.004	5.340	0.000	0.040	0	0.020	2.400	0.600	0.000	0.000	15.0341	79.849
345-47	Opx- Ol gabbro	1415P	64	48.527	0.029	33.329	0.005	0.397	0	0.024	16.589	2.31	0.010	0.006	101.246	6.600	0.003	5.340	0.000	0.040	0	0.000	2.410	0.600	0.000	0.000	15.0298	79.821
345-47	Opx- Ol gabbro	1415P	64	47.16	0.013	32.717	0.01	1.372	0.013	1.401	15.611	2.121	0.000	0.009	100.445	6.490	0.001	5.310	0.000	0.150	0.000	0.280	2.300	0.560	0.000	0.000	15.1307	80.224
345-47	Opx- Ol gabbro	1415P	64	48.006	0.042	33.554	0.03	0.437	0	0.037	16.898	2.112	0.010	0	101.128	6.540	0.003	5.390	0.000	0.040	0	0.000	2.460	0.550	0.000	0	15.0324	81.500
345-47	Opx- Ol gabbro	1415P	64	47.581	0	33.024	0.024	0.408	0.022	0.038	16.658	2.109	0.010	0.007	99.8900	6.560	0	5.370	0.000	0.040	0.000	0.000	2.460	0.560	0.000	0.000	15.0302	81.275
345-47	Opx- Ol gabbro	1415P	64	46.518	0.015	31.856	0	2.243	0.049	2.911	14.536	1.811	0.020	0.001	99.9640	6.450	0.003	5.200	0	0.260	0.000	0.600	2.160	0.480	0.000	0	15.1857	81.467
345-47	Opx- Ol gabbro	1415P	64	47.986	0.026	33.402	0	0.394	0	0.025	17.038	2.034	0.020	0	100.925	6.550	0.002	5.370	0	0.040	0	0.000	2.490	0.530	0.000	0	15.0234	82.142
345-47	Opx- Ol gabbro	1415P	64	48.027	0.04	33.164	0	0.38	0.005	0.025	16.843	2.158	0.020	0	100.661	6.570	0.003	5.350	0.000	0.040	0.000	0.000	2.470	0.570	0.000	0	15.0313	81.080
345-47	Opx- Ol gabbro	1415P	64	47.707	0.027	33.363	0	0.444	0	0.036	17.276	2.019	0.020	0	100.896	6.520	0.002	5.380	0	0.050	0	0.000	2.530	0.530	0.000	0	15.0466	82.428

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-47	Opx- Ol gabbro	1415P	64	48.01 6	0.012	33.39 2	0.005	0.453	0	0.024	17.10 9	1.989	0.02 1	0.01 8	101.039	6.55 52	0.00 12	5.37 33	0.00 06	0.05 17	0	0.00 5	2.50 27	0.52 65	0.00 36	0.00 2	15.0218	82.521 2
345-47	Opx- Ol gabbro	1415P	64	48.53 8	0.02	33.26 3	0	0.423	0.017	0.029	16.71 8	2.26	0.01 4	0.01	101.292	6.60 19	0.00 21	5.33 27	0	0.04 81	0.00 2	0.00 59	2.43 65	0.59 6	0.00 24	0.00 11	15.0287	80.282 1
345-47	Opx- Ol gabbro	1415P	64	47.81 6	0.01	33.70 4	0.008	0.476	0.009	0.044	17.29 3	1.927	0.02 1	0	101.308 01	6.51 56	0.00 1	5.41 34	0.00 08	0.05 42	0.00 1	0.00 89	2.52 49	0.50 91	0.00 37	0	15.0326	83.118 6
345-47	Opx- Ol gabbro	1415P	64	48.49 9	0.02	33.06 9	0	0.42	0	0.034	16.58	2.355	0.03	0	100.998	6.61 42	0.00 2	5.31 69	0	0.04 79	0	0.00 69	2.42 33	0.62 28	0.00 53	0	15.0393	79.416 5
345-47	Opx- Ol gabbro	1415P	64	47.19 1	0.025	32.30 1	0	1.416	0.029	1.751	15.85 3	2.029	0.02 5	0	100.619	6.49 72	0.00 26	5.24 19	0	0.16 3	0.00 34	0.35 93	2.33 88	0.54 18	0.00 43	0	15.1523	81.070 1
345-47	Opx- Ol gabbro	1415P	64	48.87 2	0.02	32.87	0.001	0.425	0	0.037	16.35 7	2.481	0.02 5	0.01 3	101.101 01	6.65 46	0.00 2	5.27 54	0.00 01	0.04 84	0	0.00 75	2.38 64	0.65 51	0.00 44	0.00 14	15.0353	78.347 3
345-47	Opx- Ol gabbro	1415P	64	49.27 3	0.022	32.60 9	0.006	0.397	0.015	0.033	16.21 9	2.551	0.02 8	0	101.153	6.69 99	0.00 23	5.22 63	0.00 06	0.04 51	0.00 17	0.00 66	2.36 31	0.67 25	0.00 48	0	15.0229	77.723 5
345-47	Opx- Ol gabbro	1415P	64	48.33 7	0.02	32.95 7	0.002	0.391	0	0.064	16.71 3	2.219	0.02 6	0.01 7	100.746	6.61 06	0.00 21	5.31 28	0.00 02	0.04 47	0	0.01 29	2.44 92	0.58 83	0.00 46	0.00 19	15.0273	80.510 3
345-47	Opx- Ol gabbro	1415P	64	49.02 3	0.027	32.95 1	0	0.427	0	0.051	16.47 6	2.507	0.03 3	0	101.495	6.65 15	0.00 28	5.26 98	0	0.04 85	0	0.01 04	2.39 53	0.65 96	0.00 57	0	15.0436	78.262
345-47	Opx- Ol gabbro	1415P	64	48.78 5	0.038	33.14	0.011	0.405	0	0.051	16.56 3	2.394	0.03 4	0.00 8	101.428 99	6.62 45	0.00 39	5.30 42	0.00 12	0.04 6	0	0.01 03	2.40 99	0.63 03	0.00 59	0.00 09	15.0371	79.114 7
345-47	Opx- Ol gabbro	1415P	64	47.96 5	0.042	33.42 4	0	0.415	0.007	0.048	17.08 8	2.084	0.02 4	0	101.097	6.54 59	0.00 43	5.37 66	0	0.04 74	0.00 08	0.00 98	2.49 88	0.55 14	0.00 43	0	15.0393	81.807 9
345-47	Opx- Ol gabbro	1415P	64	47.93 3	0.023	33.41 1	0	0.408	0	0.047	17.14 9	1.985	0.02 6	0.03 8	101.02	6.54 64	0.00 23	5.37 85	0	0.04 66	0	0.00 95	2.50 96	0.52 55	0.00 45	0.00 42	15.0271	82.563
345-47	Opx- Ol gabbro	1415P	64	47.86 4	0.04	33.33 8	0.008	0.43	0.011	0.038	17.20 7	1.945	0.02 9	0	100.910 01	6.54 53	0.00 42	5.37 35	0.00 09	0.04 91	0.00 13	0.00 77	2.52 12	0.51 57	0.00 5	0	15.0239	82.882 9
345-47	Opx- Ol gabbro	1415P	64	47.98 4	0.025	33.45	0	0.432	0.015	0.061	16.89 7	2.076	0.01 8	0	100.957 99	6.55 3	0.00 25	5.38 44	0	0.04 93	0.00 17	0.01 24	2.47 25	0.54 96	0.00 32	0	15.0286	81.727 1
345-47	Opx- Ol gabbro	1415P	64	43.78 3	0.016	30.63 4	0	7.572	0.193	5.149	11.74 5	1.713	0.02 5	0	100.83	6.17 44	0.00 17	5.09 21	0	0.89 3	0.02 3	1.08 25	1.77 47	0.46 83	0.00 44	0	15.5141	78.966 6
345-47	Opx- Ol gabbro	1415P	64	49.02 2	0.015	33.00 9	0.018	0.438	0	0.037	16.47 5	2.4	0.02 2	0.00 8	101.444 01	6.65 19	0.00 15	5.27 94	0.00 19	0.04 97	0	0.00 74	2.39 54	0.63 15	0.00 39	0.00 09	15.0235	79.035 8
345-47	Opx- Ol gabbro	1415P	64	48.54 2	0.025	33.19 4	0	0.429	0.004	0.036	16.67 5	2.228	0.02 6	0.03	101.189	6.60 82	0.00 26	5.32 64	0	0.04 89	0.00 04	0.00 73	2.43 24	0.58 82	0.00 46	0.00 33	15.0223	80.404 1
345-47	Opx- Ol gabbro	1415P	64	42.72 3	0	29.72 2	0	7.35	0.288	5.759	11.33 2	1.653	0.03 1	0	98.858	6.14 96	0	5.04 27	0	0.88 48	0.03 51	1.23 57	1.74 77	0.46 13	0.00 56	0	15.5625	78.917 5
345-47	Opx- Ol gabbro	1415P	64	48.49 7	0.035	32.91 7	0	0.489	0	0.045	16.58 1	2.383	0.02 7	0.01 2	100.979	6.61 93	0.00 36	5.29 64	0	0.05 58	0	0.00 92	2.42 53	0.63 09	0.00 47	0.00 13	15.0465	79.234 5
345-47	Opx- Ol gabbro	1415P	64	47.45 9	0.045	32.87 9	0	0.538	0.011	0.297	16.82 5	2.126	0.01 1	0.00 2	100.193	6.54 17	0.00 46	5.34 18	0	0.06 21	0.00 13	0.06 11	2.48 49	0.56 83	0.00 19	0.00 02	15.0679	81.336 6
345-47	Opx- Ol gabbro	1415P	64	48.08 2	0.034	33.34 4	0	0.394	0.015	0.044	16.96 6	2.121	0.02 2	0.01 3	101.035	6.56 27	0.00 35	5.36 44	0	0.04 5	0.00 18	0.00 9	2.48 12	0.56 14	0.00 39	0.00 14	15.0343	81.444 0
345-47	Opx- Ol gabbro	1415P	64	45.35 6	0.033	30.98 6	0.021	4.845	0.081	2.889	13.10 5	1.973	0.02 7	0	99.3100 1	6.40 38	0.00 36	5.15 74	0.00 23	0.57 22	0.00 96	0.60 82	1.98 29	0.54 02	0.00 5	0	15.2852	78.434 7
345-47	Opx- Ol gabbro	1415P	64	48.07 4	0.03	33.34 2	0.005	0.373	0.004	0.037	16.87 2	2.138	0.02 4	0.01 6	100.915	6.56 68	0.00 3	5.36 84	0.00 05	0.04 26	0.00 05	0.00 76	2.46 95	0.56 62	0.00 41	0.00 17	15.0309	81.238
345-47	Opx- Ol gabbro	1415P	64	47.52 3	0.037	33.03 6	0.005	0.398	0.004	0.046	17.25 8	2.013	0.02 3	0.01 7	100.359 99	6.54 01	0.00 38	5.35 88	0.00 05	0.04 58	0.00 04	0.00 95	2.54 49	0.53 73	0.00 4	0.00 19	15.047	82.460
345-47	Opx- Ol gabbro	1415P	64	47.43 1	0.024	33.40 2	0	0.42	0	0.037	17.34 6	1.915	0.02 7	0.01 3	100.615	6.51 11	0.00 25	5.40 47	0	0.04 83	0	0.00 75	2.55 14	0.50 98	0.00 48	0.00 14	15.0415	83.215
345-47	Opx- Ol gabbro	1415P	64	46.61 2	0.016	34.66 5	0.005	0.122	0.005	0.001	18.06 9	1.307	0.02 8	0.02 7	100.856 99	6.38 09	0.00 16	5.59 34	0.00 05	0.01 4	0.00 06	0.00 01	2.65 04	0.34 69	0.00 49	0.00 3	14.9963	88.281 6
345-47	Opx- Ol gabbro	1415P	64	48.68 4	0.038	32.96 5	0.011	0.444	0	0.039	16.57 4	2.391	0.02 5	0	101.171	6.62 95	0.00 39	5.29 12	0.00 12	0.05 05	0	0.00 78	2.41 84	0.63 14	0.00 44	0	15.0383	79.182 4
345-47	Opx- Ol gabbro	1415P	64	49.59 2	0.036	32.17 8	0	0.418	0.012	0.058	15.74 3	2.82	0.04 1	0.01 1	100.909	6.75 43	0.00 37	5.16 57	0	0.04 76	0.00 13	0.01 19	2.29 75	0.74 48	0.00 72	0.00 13	15.0353	75.340 9
345-47	Opx- Ol gabbro	1415P	64	48.08 1	0.036	32.44 6	0.012	0.465	0	0.042	16.42 3	2.395	0.03 1	0.00 9	99.94	6.63 21	0.00 37	5.27 52	0.00 13	0.05 36	0	0.00 86	2.42 73	0.64 07	0.00 54	0.00 1	15.0489	78.977 9
345-47	Opx- Ol gabbro	1415P	64	48.49 4	0.011	32.87 4	0.007	0.349	0.007	0.023	16.55	2.331	0.02 4	0	100.670 01	6.63 26	0.00 12	5.29 96	0.00 07	0.03 99	0.00 08	0.00 47	2.42 55	0.61 81	0.00 42	0	15.0273	79.581 3
345-47	Opx- Ol gabbro	1415P	64	48.11 3	0.051	33.13 7	0	0.401	0.005	0.021	17.07 8	2.062	0.02 2	0	100.89	6.57 68	0.00 53	5.33 91	0	0.04 58	0.00 06	0.00 43	2.50 14	0.54 66	0.00 39	0	15.0238	81.962 6
345-47	Opx- Ol gabbro	1415P	64	47.79 6	0.026	32.58 9	0	0.399	0.018	0.029	16.81	2.209	0.03 9	0	99.915	6.59 93	0.00 27	5.30 38	0	0.04 61	0.00 21	0.00 59	2.48 7	0.59 15	0.00 68	0	15.0452	80.608
345-29	Opx- Ol gabbro	1415P	12.2	46.47 8	0.028	32.34 4	0	0.509	0.012	0.036	17.72 9	1.743	0.02 2	0.00 4	98.9050 1	6.50 89	0.00 29	5.33 9	0	0.05 97	0.00 14	0.00 75	2.66 03	0.47 33	0.00 4	0.00 05	15.0575	84.787 5

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-29	Opx- Ol gabbro	1415P	12.2	47.577	0.038	31.659	0	0.435	0	0.035	16.791	2.335	0.028	0.003	98.901	6.64345	0.004	5.2106	0	0.0508	0	0.0073	2.5122	0.6322	0.005	0.004	15.0659	79.767
345-29	Opx- Ol gabbro	1415P	12.2	47.582	0.063	31.775	0.012	0.429	0.014	0.054	16.813	2.347	0.04	0	99.1290	6.63509	0.006	5.2194	0.001	0.05	0.001	0.0112	2.5105	0.6341	0.0072	0	15.073	79.652
345-29	Opx- Ol gabbro	1415P	12.2	49.049	0.061	31.518	0.007	0.489	0.021	0.052	15.888	2.825	0.03	0.01	99.9600	6.75663	0.006	5.1175	0.000	0.0508	0.002	0.0134	2.3475	0.7546	0.0046	0.001	15.0584	75.487
345-29	Opx- Ol gabbro	1415P	12.2	48.073	0.068	31.156	0	0.392	0.011	0.04	16.225	2.692	0.03	0	98.691	6.71078	0.007	5.1372	0	0.0458	0.001	0.0083	2.4294	0.7217	0.0046	0	15.0769	76.763
345-29	Opx- Ol gabbro	1415P	12.2	48.113	0.072	31.402	0.01	0.429	0	0.059	16.271	2.541	0.02	0.01	98.938	6.70041	0.007	5.1574	0.001	0.0505	0	0.0123	2.4294	0.6843	0.0043	0.001	15.0545	77.860
345-29	Opx- Ol gabbro	1415P	12.2	48.678	0.056	31.431	0.017	0.51	0.006	0.048	15.936	2.671	0.02	0	99.3729	6.74048	0.005	5.1333	0.002	0.0592	0.001	0.0099	2.3651	0.7176	0.0046	0	15.0428	76.607
345-29	Opx- Ol gabbro	1415P	12.2	48.147	0.04	31.123	0.013	0.433	0.009	0.044	16.009	2.656	0.03	0	98.509	6.73045	0.004	5.1314	0.001	0.0506	0.001	0.0092	2.3993	0.7202	0.0063	0	15.0581	76.757
345-29	Opx- Ol gabbro	1415P	12.2	48.505	0.049	31.27	0	0.455	0	0.043	15.955	2.731	0.029	0.007	99.0390	6.74055	0.005	5.1257	0	0.0529	0	0.0096	2.3767	0.7365	0.0052	0.006	15.0574	76.215
345-29	Opx- Ol gabbro	1415P	12.2	48.077	0.04	31.073	0	0.703	0.01	0.322	15.874	2.59	0.03	0.014	98.7370	6.71007	0.004	5.1142	0	0.0821	0.001	0.0662	2.3762	0.7017	0.0063	0.001	15.0744	77.044
345-29	Opx- Ol gabbro	1415P	12.2	47.851	0.045	31.792	0	0.48	0.02	0.048	16.708	2.317	0.03	0.013	99.304	6.65518	0.005	5.2092	0	0.0558	0.002	0.0099	2.4824	0.6247	0.0046	0.006	15.0541	79.796
345-29	Opx- Ol gabbro	1415P	12.2	47.995	0.052	30.988	0	0.516	0.015	0.603	16.283	2.503	0.03	0.009	98.9959	6.69354	0.005	5.0936	0	0.0596	0.002	0.1249	2.4346	0.6739	0.0058	0.009	15.096	78.094
345-29	Opx- Ol gabbro	1415P	12.2	48.377	0.049	31.506	0.015	0.396	0.003	0.031	16.106	2.694	0.03	0	99.207	6.71082	0.005	5.1536	0.002	0.0404	0.000	0.0065	2.3967	0.7254	0.0054	0	15.0627	76.633
345-29	Opx- Ol gabbro	1415P	12.2	47.402	0.035	32.382	0.002	0.362	0.02	0.053	17.226	2.064	0.02	0.01	99.584	6.57062	0.004	5.2903	0.000	0.0403	0.002	0.0108	2.5653	0.5546	0.0046	0.006	15.0525	82.058
345-29	Opx- Ol gabbro	1415P	12.2	46.589	0.021	33.055	0.013	0.322	0	0.022	17.611	1.696	0.03	0	99.3640	6.48018	0.002	5.4205	0.001	0.0375	0	0.0046	2.6252	0.4503	0.0046	0	15.0371	84.985
345-29	Opx- Ol gabbro	1415P	12.2	46.816	0.016	32.962	0.01	0.324	0.013	0.03	17.676	1.753	0.01	0	99.62	6.49074	0.002	5.3922	0.001	0.0376	0.002	0.0062	2.6249	0.4677	0.0029	0	15.0416	84.699
345-29	Opx- Ol gabbro	1415P	12.2	47.092	0.023	32.848	0.009	0.408	0	0.168	17.231	1.906	0.01	0	99.697	6.52249	0.002	5.3624	0.001	0.0473	0	0.0035	2.5502	0.5112	0.0046	0	15.0472	83.260
345-29	Opx- Ol gabbro	1415P	12.2	47.323	0.046	32.9	0.004	0.348	0	0.055	17.219	1.922	0.01	0.02	99.848	6.54023	0.005	5.3602	0.000	0.0404	0	0.0071	2.5502	0.5112	0.0029	0.002	15.0307	83.139
345-29	Opx- Ol gabbro	1415P	12.2	47.097	0.016	31.871	0	0.367	0.01	0.034	16.832	2.262	0.16	0	98.647	6.6	0.002	5.2645	0	0.0404	0.000	0.0052	2.5202	0.6117	0.0215	0	15.0879	79.709
345-29	Opx- Ol gabbro	1415P	12.2	47.271	0.025	31.844	0	0.38	0	0.017	16.991	2.187	0.03	0.03	98.7899	6.61014	0.003	5.2448	0	0.0404	0	0.0035	2.5402	0.5946	0.0046	0	15.0613	80.933
345-29	Opx- Ol gabbro	1415P	12.2	48.722	0.05	31.788	0	0.422	0	0.046	16.133	2.597	0.02	0	99.783	6.72017	0.005	5.1692	0	0.0404	0	0.0046	2.3802	0.6946	0.0043	0	15.038	77.333
345-29	Opx- Ol gabbro	1415P	12.2	47.419	0.046	33.139	0.012	0.354	0	0.029	17.394	1.941	0.02	0.02	100.379 01	6.52055	0.005	5.3747	0.001	0.0408	0	0.0062	2.5602	0.5112	0.0046	0.002	15.0425	83.088
345-29	Opx- Ol gabbro	1415P	12.2	47.366	0.036	33.003	0	0.35	0.002	0.03	17.346	1.973	0.03	0	100.135 99	6.53035	0.004	5.3658	0	0.0404	0.000	0.0061	2.5602	0.5246	0.0072	0	15.0464	82.794
345-29	Opx- Ol gabbro	1415P	12.2	46.886	0.041	32.827	0	0.408	0	0.013	17.393	1.867	0.02	0	99.4579	6.51059	0.005	5.3743	0	0.0404	0	0.0027	2.5902	0.5045	0.0046	0	15.0449	83.621
345-29	Opx- Ol gabbro	1415P	12.2	48.417	0.072	31.716	0	0.411	0	0.045	16.252	2.631	0.03	0.009	99.583	6.70005	0.007	5.1736	0	0.0404	0	0.0041	2.4102	0.7002	0.0058	0.001	15.0609	77.206
345-29	Opx- Ol gabbro	1415P	12.2	48.101	0.044	31.553	0	0.442	0	0.051	16.475	2.494	0.03	0.011	99.201	6.68085	0.005	5.1746	0	0.0505	0	0.0105	2.4502	0.6724	0.0046	0.001	15.0601	78.364
345-29	Opx- Ol gabbro	1415P	12.2	47.123	0.057	32.822	0	0.413	0	0.026	17.382	1.968	0.03	0.01	99.832	6.52057	0.006	5.3574	0.000	0.0404	0	0.0054	2.5702	0.5246	0.0046	0.001	15.0569	82.844
345-29	Opx- Ol gabbro	1415P	12.2	49.885	0.053	30.301	0	0.413	0	0.041	14.919	3.335	0.03	0.002	98.988	6.91075	0.005	4.9527	0	0.0404	0	0.0084	2.2102	0.8967	0.0029	0	15.0525	71.041
345-29	Opx- Ol gabbro	1415P	12.2	48.747	0.077	31.489	0	0.394	0	0.039	16.159	2.739	0.03	0.004	99.682	6.73066	0.008	5.1292	0	0.0404	0	0.0084	2.3902	0.7346	0.0046	0.001	15.0606	76.378
345-29	Opx- Ol gabbro	1415P	12.2	47.426	0.041	32.923	0.009	0.414	0	0.041	17.283	2.054	0.02	0.011	100.222 01	6.53088	0.004	5.3504	0.001	0.0404	0	0.0077	2.5502	0.5412	0.0058	0.002	15.0576	82.207
345-29	Opx- Ol gabbro	1415P	12.2	46.952	0.028	32.322	0	0.383	0.012	0.043	17.423	2.014	0.02	0	99.2030 1	6.54065	0.003	5.3122	0	0.0404	0.000	0.0046	2.6002	0.5412	0.0046	0	15.0694	82.564
345-29	Opx- Ol gabbro	1415P	12.2	47.286	0.02	32.471	0.018	0.436	0.002	0.061	17.341	1.943	0.01	0.016	99.6119 8	6.56077	0.002	5.3102	0.000	0.0505	0.000	0.0126	2.5702	0.5246	0.0046	0.000	15.0442	83.054
345-29	Opx- Ol gabbro	1415P	12.2	47.091	0.044	32.828	0.015	0.413	0	0.031	17.465	1.911	0.02	0	99.825	6.52021	0.005	5.3591	0.000	0.0404	0	0.0063	2.5902	0.5112	0.0046	0	15.0517	83.338
345-29	Opx- Ol gabbro	1415P	12.2	48.723	0.07	31.488	0.001	0.421	0.009	0.054	16.128	2.69	0.03	0.01	99.633	6.73064	0.007	5.1314	0.000	0.0404	0.000	0.0121	2.3802	0.7202	0.0058	0.001	15.0546	76.643

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-29	Opx- Ol gabbro	1415P	12.2	49.121	0.04	31.593	0	0.394	0	0.053	15.863	2.768	0.026	0.022	99.877	6.7645	0.0042	5.1276	0	0.0454	0	0.0109	2.3407	0.7392	0.0046	0.0024	15.0395	75.885 1
345-29	Opx- Ol gabbro	1415P	12.2	48.557	0.058	32.086	0	0.467	0	0.057	16.346	2.525	0.032	0	100.128	6.6825	0.006	5.2049	0	0.0537	0	0.0117	2.4104	0.6749	0.0037	0	15.0485	78.014 6
345-29	Opx- Ol gabbro	1415P	12.2	48.163	0.075	31.191	0.007	0.386	0	0.073	16.301	2.585	0.032	0.016	98.8320	6.7178	0.0078	5.1289	0.0008	0.0449	0	0.0151	2.4367	0.6993	0.0061	0.0018	15.0608	77.550 6
345-29	Opx- Ol gabbro	1415P	12.2	48.294	0.038	31.596	0.001	0.444	0	0.106	16.389	2.478	0.022	0	99.3739	6.6989	0.0041	5.1659	0.0001	0.0515	0	0.0217	2.4359	0.6615	0.0005	0	15.0499	78.387 1
345-29	Opx- Ol gabbro	1415P	12.2	47.054	0.061	32.107	0.005	0.396	0	0.022	17.265	1.957	0.022	0.005	98.895	6.5751	0.0065	5.2882	0.0006	0.0463	0	0.0045	2.5851	0.5303	0.0041	0.0005	15.0411	82.871
345-29	Opx- Ol gabbro	1415P	12.2	46.829	0.052	31.97	0	0.42	0	0.037	17.253	1.993	0.022	0.003	98.577	6.5686	0.0055	5.2886	0	0.0492	0	0.0076	2.5922	0.5403	0.0041	0.0004	15.0561	82.611 8
345-29	Opx- Ol gabbro	1415P	12.2	46.981	0.058	32.181	0	0.392	0.008	0.035	17.332	1.947	0.022	0.005	98.9579	6.5627	0.0061	5.2988	0	0.0427	0.0009	0.0072	2.5942	0.5203	0.0042	0.0006	15.0473	83.009 7
345-29	Opx- Ol gabbro	1415P	12.2	47.472	0.038	32.103	0.002	0.381	0	0.036	16.835	2.238	0.015	0.012	99.132	6.6104	0.004	5.2644	0.0002	0.0444	0	0.0074	2.5118	0.6042	0.0042	0.0013	15.0549	80.539 8
345-29	Opx- Ol gabbro	1415P	12.2	47.617	0.043	31.632	0.003	0.418	0.011	0.034	16.746	2.309	0.022	0.026	98.865	6.6498	0.0045	5.2045	0.0003	0.0488	0.0013	0.007	2.5059	0.6245	0.0052	0.0029	15.0571	79.915 0
345-29	Opx- Ol gabbro	1415P	12.2	48.522	0.059	31.169	0.011	0.414	0	0.047	15.978	2.736	0.033	0.006	98.979	6.7502	0.0062	5.1122	0.0012	0.0482	0	0.0097	2.3824	0.7307	0.0083	0.0007	15.0575	76.180 0
345-29	Opx- Ol gabbro	1415P	12.2	48.297	0.077	31.198	0	0.408	0.019	0.049	16.195	2.568	0.022	0	98.84	6.7328	0.0081	5.1263	0	0.0476	0.0022	0.0102	2.4191	0.6941	0.0041	0	15.0456	77.575 8
345-29	Opx- Ol gabbro	1415P	12.2	47.496	0.038	32.048	0.008	0.472	0.004	0.057	17.042	2.204	0.041	0.022	99.43	6.6004	0.004	5.2513	0.0009	0.0549	0.0004	0.0118	2.5385	0.5904	0.0074	0.0022	15.0682	80.846 3
345-29	Opx- Ol gabbro	1415P	12.2	46.904	0.057	32.602	0.006	0.415	0.01	0.041	17.577	1.843	0.013	0.006	99.474	6.5204	0.006	5.3402	0.0006	0.0484	0.0011	0.0086	2.6107	0.4907	0.0042	0.0007	15.0493	83.990
345-29	Opx- Ol gabbro	1415P	12.2	46.678	0.045	32.822	0.009	0.402	0	0.042	17.758	1.757	0.014	0.011	99.543	6.4949	0.0047	5.3706	0.0009	0.0468	0	0.0087	2.6356	0.4707	0.0038	0.0025	15.0536	84.743 5
345-29	Opx- Ol gabbro	1415P	12.2	46.542	0.046	32.644	0	0.388	0.004	0.028	17.467	1.859	0.022	0	99.0010	6.5004	0.0048	5.3706	0	0.0452	0.0004	0.0087	2.6129	0.5004	0.0053	0	15.0582	83.739 2
345-29	Opx- Ol gabbro	1415P	12.2	46.425	0.047	32.356	0.014	0.402	0.017	0.037	17.526	1.845	0.023	0	98.701	6.5106	0.0049	5.3483	0.0015	0.0472	0.0017	0.0078	2.6349	0.5035	0.0049	0	15.0632	83.848 4
345-29	Opx- Ol gabbro	1415P	12.2	46.685	0.022	32.277	0.003	0.405	0.013	0.044	17.485	1.883	0.023	0.003	98.852	6.5342	0.0023	5.3204	0.0003	0.0474	0.0013	0.0091	2.6227	0.5124	0.0051	0.0004	15.059	83.546 4
345-29	Opx- Ol gabbro	1415P	12.2	47.146	0.045	31.995	0	0.42	0.034	0.041	17.125	2.009	0.017	0	98.823	6.5921	0.0047	5.2723	0	0.0491	0.0036	0.0085	2.5623	0.5435	0.0047	0	15.0411	82.445 5
345-29	Opx- Ol gabbro	1415P	12.2	47.113	0.053	31.861	0	0.44	0	0.054	17.102	2.089	0.022	0	98.735	6.5923	0.0056	5.2536	0	0.0514	0	0.0117	2.5676	0.5607	0.0074	0	15.0568	81.793 7
345-29	Opx- Ol gabbro	1415P	12.2	48.215	0.036	31.004	0.004	0.449	0	0.059	16.238	2.619	0.033	0.008	98.669	6.7338	0.0038	5.1044	0.0004	0.0524	0	0.0124	2.4315	0.7009	0.0065	0.0009	15.0625	77.249 2
345-29	Opx- Ol gabbro	1415P	12.2	48.474	0.062	31.147	0	0.443	0.007	0.061	16.036	2.751	0.022	0.014	99.0229	6.7401	0.0065	5.1019	0	0.0516	0.0009	0.0127	2.3923	0.7409	0.0074	0.0015	15.0666	76.189 2
345-29	Opx- Ol gabbro	1415P	12.2	47.749	0.044	31.278	0.004	0.499	0.017	0.062	16.471	2.467	0.022	0	98.619	6.6839	0.0047	5.1607	0.0005	0.0584	0.0022	0.0103	2.4704	0.6596	0.0041	0	15.0683	78.550 9
345-29	Opx- Ol gabbro	1415P	12.2	47.698	0.077	31.122	0	0.746	0.005	0.438	16.042	2.586	0.022	0.011	98.7500	6.6735	0.0081	5.1324	0	0.0871	0.0005	0.0914	2.4015	0.7005	0.0074	0.0015	15.1052	77.308 7
345-29	Opx- Ol gabbro	1415P	12.2	47.814	0.069	31.836	0.017	0.463	0	0.051	16.835	2.299	0.011	0	99.398	6.6464	0.0072	5.2126	0.0019	0.0537	0	0.0105	2.5057	0.6126	0.0037	0	15.0547	80.125
345-29	Opx- Ol gabbro	1415P	12.2	47.044	0.032	32.123	0.01	0.336	0	0.033	17.369	1.949	0.033	0.035	98.9610	6.5716	0.0034	5.2894	0.0011	0.0393	0	0.0072	2.5957	0.5203	0.0087	0.0008	15.0473	82.979 8
345-29	Opx- Ol gabbro	1415P	12.2	49.201	0.054	31.414	0.019	0.37	0.001	0.041	15.971	2.914	0.033	0	100.018	6.7703	0.0056	5.0948	0.0021	0.0426	0.0004	0.0083	2.3553	0.7703	0.0074	0	15.0653	75.040 1
345-30	Opx- Ol gabbro	1415P	13	47.935	0.037	33.825	0.002	0.418	0	0.037	17.216	1.947	0.022	0	101.441	6.5138	0.0038	5.4249	0.0002	0.0475	0	0.0074	2.5018	0.5107	0.0035	0	15.0255	82.893 2
345-30	Opx- Ol gabbro	1415P	13	47.773	0.06	33.601	0.004	0.366	0	0.038	16.957	2.043	0.022	0.002	100.869	6.5302	0.0062	5.4138	0.0004	0.0418	0	0.0077	2.4834	0.5403	0.0047	0.0002	15.0298	81.973 3
345-30	Opx- Ol gabbro	1415P	13	46.883	0.031	32.475	0	0.413	0.014	0.451	16.741	1.895	0.045	0	99.3529	6.5297	0.0032	5.3312	0	0.0404	0.0016	0.0936	2.4981	0.5107	0.0083	0	15.0974	80.844 0
345-30	Opx- Ol gabbro	1415P	13	47.837	0.039	33.507	0.006	0.391	0.014	0.046	16.863	2.045	0.022	0.003	100.807	6.5424	0.004	5.4007	0.0006	0.0447	0.0016	0.0093	2.4712	0.5403	0.0054	0.0004	15.0258	81.890 1
345-30	Opx- Ol gabbro	1415P	13	47.711	0.036	33.674	0	0.394	0	0.048	17.016	1.953	0.022	0.009	100.868	6.5202	0.0037	5.4258	0	0.0459	0	0.0099	2.4925	0.5107	0.0047	0.0009	15.0223	82.675 7
345-30	Opx- Ol gabbro	1415P	13	47.974	0.035	33.611	0.003	0.39	0.007	0.05	17.007	2.135	0.022	0.008	101.257	6.5359	0.0036	5.3974	0.0003	0.0444	0.0008	0.0101	2.4827	0.5607	0.0039	0.0002	15.0457	81.367 6
345-30	Opx- Ol gabbro	1415P	13	47.261	0.039	33.636	0	0.524	0.004	0.065	17.226	1.877	0.022	0.005	100.666	6.4858	0.004	5.4399	0	0.0601	0.0004	0.0134	2.5312	0.4907	0.0047	0.0017	15.0421	83.413 1

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-30	Opx- Ol gabbro	1415P	13	47.069	0.019	33.994	0	0.387	0.018	0.021	17.45	1.709	0.012	0.006	100.685	6.455	0.000	5.497	0	0.044	0.000	0.000	2.566	0.450	0.000	0.000	15.024	84.887
345-30	Opx- Ol gabbro	1415P	13	46.924	0.028	34.075	0	0.386	0.025	0.04	17.53	1.743	0.036	0.007	100.794	6.435	0.000	5.505	0	0.042	0.000	0.000	2.577	0.463	0.000	0.000	15.0449	84.572
345-30	Opx- Ol gabbro	1415P	13	47.014	0.022	33.939	0.006	0.346	0.021	0.033	17.55	1.757	0.018	0.022	100.726	6.440	0.000	5.488	0.000	0.037	0.000	0.000	2.577	0.460	0.000	0.000	15.04	84.573
345-30	Opx- Ol gabbro	1415P	13	47.209	0.046	34.433	0.007	0.366	0	0.033	17.72	1.747	0.023	0	101.585	6.422	0.000	5.526	0.000	0.042	0.000	0.000	2.586	0.460	0.000	0	15.0447	84.745
345-30	Opx- Ol gabbro	1415P	13	47.877	0.029	34.033	0.001	0.415	0	0.047	17.22	1.832	0.024	0	101.478	6.500	0.000	5.455	0.000	0.040	0	0.000	2.500	0.480	0.000	0	15.0096	83.740
345-30	Opx- Ol gabbro	1415P	13	48.039	0.036	33.692	0	0.377	0.01	0.035	17.075	1.955	0.026	0.009	101.254	6.536	0.000	5.405	0	0.040	0.000	0.000	2.491	0.510	0.000	0.000	15.0136	82.712
345-30	Opx- Ol gabbro	1415P	13	48.341	0.052	33.784	0	0.353	0	0.035	17.068	2.086	0.023	0	101.741	6.546	0.000	5.394	0	0.040	0	0.000	2.477	0.543	0.000	0	15.0249	81.781
345-30	Opx- Ol gabbro	1415P	13	47.941	0.067	33.811	0.015	0.383	0.018	0.06	17.091	1.919	0.017	0.013	101.333	6.520	0.000	5.422	0.000	0.044	0.000	0.010	2.491	0.500	0.000	0.000	15.0133	83.031
345-30	Opx- Ol gabbro	1415P	13	48.541	0.058	33.048	0.029	0.344	0	0.049	16.512	2.302	0.029	0	100.912	6.626	0.000	5.315	0.000	0.033	0	0.000	2.410	0.600	0.000	0	15.0211	79.721
345-30	Opx- Ol gabbro	1415P	13	48.584	0.064	33.291	0.008	0.369	0.004	0.054	16.538	2.264	0.030	0.004	101.206	6.600	0.000	5.330	0.000	0.040	0.000	0.010	2.412	0.590	0.000	0.000	15.0181	80.009
345-30	Opx- Ol gabbro	1415P	13	47.798	0.018	33.567	0.006	0.381	0	0.029	17.104	1.945	0.023	0	100.871	6.534	0.000	5.405	0.000	0.040	0	0.000	2.502	0.510	0.000	0	15.0194	82.825
345-30	Opx- Ol gabbro	1415P	13	47.602	0.041	33.594	0.014	0.432	0.019	0.029	17.224	1.869	0.015	0	100.835	6.516	0.000	5.415	0.000	0.040	0.000	0.000	2.524	0.490	0.000	0	15.0202	83.515
345-30	Opx- Ol gabbro	1415P	13	47.731	0.039	33.555	0.02	0.41	0	0.063	17.257	1.904	0.015	0	100.989	6.526	0.000	5.405	0.000	0.040	0	0.010	2.526	0.500	0.000	0	15.025	83.284
345-30	Opx- Ol gabbro	1415P	13	47.815	0.021	34.055	0.011	0.359	0.001	0.034	17.198	1.922	0.022	0	101.433	6.496	0.000	5.455	0.000	0.040	0.000	0.000	2.502	0.500	0.000	0	15.0239	83.071
345-30	Opx- Ol gabbro	1415P	13	47.556	0.037	33.943	0	0.321	0.011	0.036	17.446	1.804	0.021	0.001	101.187	6.486	0.000	5.455	0	0.033	0.000	0.000	2.542	0.470	0.000	0.000	15.0226	84.135
345-30	Opx- Ol gabbro	1415P	13	47.654	0.047	33.993	0	0.339	0.006	0.044	17.129	1.945	0.027	0	101.183	6.496	0.000	5.465	0	0.033	0.000	0.000	2.502	0.510	0.000	0	15.029	82.825
345-30	Opx- Ol gabbro	1415P	13	47.787	0.024	33.517	0	0.359	0.017	0.038	16.837	2.187	0.029	0	100.785	6.536	0.000	5.405	0	0.040	0.000	0.000	2.466	0.580	0.000	0	15.0494	80.827
345-30	Opx- Ol gabbro	1415P	13	48.846	0.056	33.297	0.003	0.405	0.003	0.04	16.357	2.343	0.041	0	101.391	6.626	0.000	5.325	0.000	0.040	0.000	0.000	2.377	0.610	0.000	0	15.0156	79.222
345-30	Opx- Ol gabbro	1415P	13	47.926	0.057	33.545	0.01	0.346	0.004	0.024	16.962	2.135	0.020	0.004	101.039	6.540	0.000	5.390	0.000	0.033	0.000	0.000	2.480	0.560	0.000	0.000	15.0391	81.350
345-30	Opx- Ol gabbro	1415P	13	45.124	0.027	32.001	0	0.303	0.004	0.087	18.639	1.198	1.241	0	98.6259	6.400	0.000	5.350	0	0.033	0.000	0.010	2.832	0.320	0.220	0	15.1976	83.631
345-31	Opx- Ol gabbro	1415P	13.5	47.661	0.024	32.327	0	0.524	0.005	0.06	16.867	2.167	0.022	0	99.6499	6.600	0.000	5.270	0	0.060	0.000	0.010	2.500	0.580	0.000	0	15.0476	81.028
345-31	Opx- Ol gabbro	1415P	13.5	47.761	0.066	32.499	0	0.535	0	0.06	16.858	2.239	0.031	0.001	100.060	6.590	0.000	5.285	0	0.060	0	0.010	2.492	0.590	0.000	0.000	15.0596	80.480
345-31	Opx- Ol gabbro	1415P	13.5	48.557	0.027	32.192	0	0.442	0.017	0.05	16.447	2.494	0.027	0.004	100.255	6.670	0.000	5.215	0	0.050	0.000	0.010	2.422	0.660	0.000	0.000	15.0492	78.345
345-31	Opx- Ol gabbro	1415P	13.5	48.063	0.044	32.851	0.003	0.488	0.007	0.053	17.062	2.123	0.031	0	100.725	6.580	0.000	5.300	0.000	0.050	0.000	0.010	2.502	0.560	0.000	0	15.0402	81.478
345-31	Opx- Ol gabbro	1415P	13.5	47.635	0.034	32.303	0	0.375	0	0.06	17.141	2.121	0.031	0	99.708	6.590	0.000	5.270	0	0.040	0	0.010	2.542	0.560	0.000	0	15.0506	81.521
345-31	Opx- Ol gabbro	1415P	13.5	47.652	0.022	32.813	0.022	0.386	0.017	0.041	17.312	2.04	0.022	0.002	100.353	6.550	0.000	5.320	0.000	0.040	0.000	0.000	2.550	0.540	0.000	0.000	15.0487	82.321
345-31	Opx- Ol gabbro	1415P	13.5	47.266	0.036	32.623	0.013	0.425	0.01	0.022	17.247	1.895	0.029	0.002	99.5930	6.550	0.000	5.330	0.000	0.040	0.000	0.000	2.560	0.500	0.000	0.000	15.0306	83.275
345-31	Opx- Ol gabbro	1415P	13.5	47.322	0.033	32.977	0	0.357	0	0.04	17.249	1.83	0.024	0	99.8320	6.540	0.000	5.370	0	0.040	0	0.000	2.550	0.490	0.000	0	15.0163	83.777
345-31	Opx- Ol gabbro	1415P	13.5	47.155	0.051	32.966	0	0.388	0.009	0.021	17.426	1.941	0.010	0	99.9630	6.510	0.000	5.370	0	0.040	0.000	0.000	2.580	0.520	0.000	0	15.0506	83.167
345-31	Opx- Ol gabbro	1415P	13.5	47.476	0.027	32.976	0.008	0.387	0.014	0.018	17.339	1.978	0.004	0.001	100.245	6.540	0.000	5.350	0.000	0.040	0.000	0.000	2.550	0.520	0.000	0.000	15.0421	82.866
345-31	Opx- Ol gabbro	1415P	13.5	47.533	0.024	32.856	0.018	0.381	0.018	0.04	17.222	2.023	0.031	0.002	100.168	6.550	0.000	5.330	0.000	0.040	0.000	0.000	2.540	0.540	0.000	0.000	15.0459	82.327
345-31	Opx- Ol gabbro	1415P	13.5	46.734	0.063	31.642	0	0.375	0	0.092	17.891	1.817	0.010	0	98.631	6.560	0.000	5.230	0	0.040	0	0.010	2.690	0.490	0.000	0	15.0604	84.394
345-31	Opx- Ol gabbro	1415P	13.5	46.772	0.047	32.283	0	0.402	0.027	0.036	17.375	1.867	0.013	0	98.8220	6.540	0.000	5.320	0.000	0.040	0.000	0.000	2.600	0.500	0.000	0	15.0438	83.658

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-31	Opx- Ol gabbro	1415P	13.5	47.223	0.057	32.398	0	0.425	0.013	0.037	17.245	1.96	0.023	0	99.381	6.5653	0.0059	5.3092	0.0001	0.0494	0.0015	0.0077	2.5699	0.5201	0.0041	0	15.0405	82.8339
345-31	Opx- Ol gabbro	1415P	13.5	48.629	0.053	31.788	0	0.399	0	0.055	16.339	2.543	0.053	0	99.856	6.7009	0.0055	5.1660	0	0.0461	0.0004	0.0113	2.4154	0.6802	0.0087	0	15.0455	77.8081
345-31	Opx- Ol gabbro	1415P	13.5	47.727	0.041	32.327	0.025	0.419	0	0.06	16.885	2.15	0.012	0.027	99.676	6.6077	0.0043	5.2754	0.0028	0.0486	0	0.0123	2.5049	0.5726	0.0023	0.0033	15.0388	81.2046
345-31	Opx- Ol gabbro	1415P	13.5	48.101	0.044	31.77	0	0.356	0.001	0.049	16.526	2.45	0.032	0	99.259	6.6811	0.0046	5.1899	0	0.0411	0.0001	0.0101	2.4545	0.6577	0.0057	0	15.0521	78.7
345-31	Opx- Ol gabbro	1415P	13.5	47.309	0.03	32.038	0	0.45	0.019	0.053	16.922	2.194	0.022	0.013	99.05	6.5988	0.0031	5.2674	0	0.0525	0.0023	0.0111	2.5291	0.5939	0.0039	0.0015	15.0632	80.8921
345-31	Opx- Ol gabbro	1415P	13.5	48.096	0.048	31.6	0	0.351	0.022	0.059	16.453	2.442	0.038	0	99.109	6.6895	0.0050	5.1805	0	0.0408	0.0026	0.0122	2.4521	0.6577	0.0067	0	15.048	78.6587
345-31	Opx- Ol gabbro	1415P	13.5	48.837	0.058	31.036	0.031	0.359	0	0.072	15.907	2.882	0.029	0.014	99.2249	6.7771	0.0061	5.0764	0.0034	0.0417	0	0.0149	2.3652	0.7755	0.0051	0.0016	15.0671	75.1852
345-31	Opx- Ol gabbro	1415P	13.5	46.968	0.017	32.307	0.03	0.911	0	0.998	16.421	1.992	0.027	0.022	99.6909	6.5186	0.0018	5.2833	0.0033	0.1057	0	0.2065	2.4426	0.5349	0.0006	0.0022	15.106	81.8669
345-31	Opx- Ol gabbro	1415P	13.5	50.032	0.009	31.408	0.054	0.42	0	0.056	15.355	3.123	0.046	0	100.503	6.8375	0.0009	5.0593	0.0058	0.0480	0	0.0114	2.2485	0.8232	0.0074	0	15.0468	72.9109
345-31	Opx- Ol gabbro	1415P	13.5	50.075	0.059	31.281	0.041	0.405	0	0.116	15.301	3.189	0.057	0.017	100.538	6.8400	0.0060	5.0361	0.0044	0.0462	0	0.0237	2.2463	0.8401	0.0093	0.0019	15.0574	72.3937
345-31	Opx- Ol gabbro	1415P	13.5	51.072	0.019	30.253	0.035	0.366	0	0.077	14.388	3.788	0.088	0	100.078	6.9936	0.0019	4.8836	0.0038	0.0419	0	0.0157	2.1157	1.0058	0.0119	0	15.0708	67.4276
345-31	Opx- Ol gabbro	1415P	13.5	50.642	0.02	30.392	0.048	0.336	0.011	0.064	14.701	3.641	0.067	0	99.922	6.9525	0.0020	4.9102	0.0052	0.0385	0.0013	0.0131	2.1626	0.9677	0.0108	0	15.0742	68.7958
345-31	Opx- Ol gabbro	1415P	13.5	48.347	0.002	32.027	0.309	0.489	0.008	0.05	16.605	2.507	0.032	0.022	100.396	6.6502	0.0002	5.1903	0.0335	0.0563	0.0009	0.0102	2.4406	0.6636	0.0063	0.0022	15.0721	78.3842
345-31	Opx- Ol gabbro	1415P	13.5	47.065	0	33.581	0.173	0.523	0.002	0.083	17.527	1.755	0.029	0	100.737	6.4603	0	5.4391	0.0188	0.0601	0.0003	0.0071	2.5788	0.4668	0.0051	0	15.0459	84.5204
345-31	Opx- Ol gabbro	1415P	13.5	47.379	0	32.621	0.207	0.401	0.006	0.026	17.247	2.073	0.017	0	99.972	6.5519	0	5.3171	0.0225	0.0464	0.0007	0.0054	2.5548	0.5508	0.0026	0	15.0578	82.0503
345-31	Opx- Ol gabbro	1415P	13.5	45.369	0	34.623	0.148	0.308	0.016	0.05	18.939	0.941	0.012	0.031	100.428	6.2685	0	5.6386	0.0161	0.0355	0.0018	0.0102	2.8025	0.2508	0.0022	0.0035	15.0312	91.6773
345-31	Opx- Ol gabbro	1415P	13.5	47.041	0	33.438	0.017	0.318	0	0.04	17.725	1.707	0.042	0	100.326	6.4802	0	5.4206	0.0018	0.0367	0	0.0026	2.6102	0.4561	0.0061	0	15.0357	84.9614
345-31	Opx- Ol gabbro	1415P	13.5	47.854	0.006	32.848	0.006	0.304	0.004	0.049	17.181	2.128	0.031	0	100.411	6.5769	0.0006	5.3207	0.0007	0.0349	0.0005	0.0101	2.5356	0.5607	0.0049	0	15.0478	81.5488
345-31	Opx- Ol gabbro	1415P	13.5	47.852	0	32.462	0	0.259	0.017	0.04	16.962	2.177	0.021	0.018	99.818	6.6112	0	5.2858	0	0.0300	0.0020	0.0083	2.5108	0.5833	0.0032	0.0024	15.0395	81.0338
345-31	Opx- Ol gabbro	1415P	13.5	47.605	0.003	32.637	0.014	0.319	0.004	0.04	17.263	2.022	0.033	0.015	99.952	6.5703	0.0003	5.3103	0.0015	0.0369	0.0005	0.0055	2.5485	0.5417	0.0045	0.0017	15.04	82.3716
345-31	Opx- Ol gabbro	1415P	13.5	50.368	0.027	31.578	0.014	0.358	0.008	0.23	14.791	3.179	0.097	0	100.650	6.8500	0.0027	5.0627	0.0015	0.0408	0.0009	0.0468	2.1527	0.8319	0.0109	0	15.0329	71.5923
345-31	Opx- Ol gabbro	1415P	13.5	51.099	0.036	31.706	0.009	0.305	0.002	0.048	14.672	3.481	0.114	0	101.471	6.8936	0.0036	5.0412	0.0009	0.0341	0.0003	0.0097	2.1219	0.9144	0.0119	0	15.0423	69.5133
345-31	Opx- Ol gabbro	1415P	13.5	48.986	0.004	32.993	0.012	0.264	0	0.025	16.182	2.587	0.075	0.008	101.136	6.6600	0.0004	5.2894	0.0013	0.0300	0	0.0051	2.3579	0.6801	0.0084	0.0031	15.0406	77.2320
345-31	Opx- Ol gabbro	1415P	13.5	48.435	0.047	32.741	0	0.463	0.008	0.055	16.247	2.51	0.037	0.006	100.549	6.6358	0.0048	5.2841	0	0.0531	0.0009	0.0112	2.3851	0.6609	0.0065	0.0007	15.0525	77.9821
345-31	Opx- Ol gabbro	1415P	13.5	46.98	0.04	33.826	0	0.45	0.003	0.042	17.379	1.808	0.024	0.033	100.581	6.4551	0.0041	5.4756	0	0.0518	0.0003	0.0086	2.5538	0.4807	0.0033	0.0037	15.0451	84.0367
345-31	Opx- Ol gabbro	1415P	13.5	43.805	0.039	31.085	0.022	5.156	0.179	3.55	13.294	1.705	0.044	0	98.883	6.2400	0.0042	5.2237	0.0025	0.6137	0.0174	0.7539	2.0338	0.4702	0.0088	0	15.3776	80.8764
345-31	Opx- Ol gabbro	1415P	13.5	46.834	0.05	33.411	0.004	0.467	0.005	0.033	17.113	1.968	0.025	0	99.91	6.4776	0.0052	5.4467	0.0004	0.0540	0.0006	0.0069	2.5361	0.5227	0.0045	0	15.0597	82.6540
345-31	Opx- Ol gabbro	1415P	13.5	46.921	0.05	33.092	0	0.474	0.014	0.047	17.026	2.073	0.037	0.015	99.749	6.5002	0.0052	5.4051	0	0.0552	0.0016	0.0098	2.5216	0.5527	0.0065	0.0017	15.0719	81.7756
345-31	Opx- Ol gabbro	1415P	13.5	44.686	0	34.811	0.003	0.347	0	0.015	18.891	0.944	0	0	99.697	6.2201	0	5.7104	0.0003	0.0404	0	0.0031	2.8108	0.2508	0	0	15.0501	91.7044
345-31	Opx- Ol gabbro	1415P	13.5	44.538	0.002	34.676	0	0.355	0	0.036	18.878	0.992	0.022	0	99.503	6.2101	0.0002	5.7005	0	0.0414	0	0.0074	2.8234	0.2685	0.0046	0	15.0671	91.1804
345-31	Opx- Ol gabbro	1415P	13.5	48.642	0.03	32.714	0.008	0.39	0.006	0.043	16.149	2.644	0.051	0	100.677	6.6529	0.0031	5.2739	0.0009	0.0446	0.0007	0.0088	2.3667	0.7046	0.0135	0	15.0619	76.9154
345-31	Opx- Ol gabbro	1415P	13.5	43.854	0.007	35.175	0.001	0.403	0	0.188	19.265	0.589	0.007	0.013	99.498	6.1274	0.0007	5.7937	0.0002	0.0471	0	0.0039	2.8845	0.1597	0.0015	0.0015	15.0555	94.7131
345-31	Opx- Ol gabbro	1415P	13.5	45.928	0.041	32.452	0.022	1.375	0	3.367	15.244	1.64	0.036	0	100.103	6.3556	0.0043	5.2943	0.0024	0.1592	0	0.6903	2.2603	0.4401	0.0064	0	15.2158	83.5047

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-32	Opx- Ol gabbro	1415P	19	45.613	0	33.867	0	0.425	0	0.006	18.4	1.305	0.027	0	99.643	6.3474	0	5.595	0	0.0495	0	0.0013	2.7436	0.352	0.0048	0	15.0536	88.491
345-32	Opx- Ol gabbro	1415P	19	46.876	0.011	33.419	0	0.384	0.018	0.016	17.459	1.764	0.022	0.003	99.972	6.4787	0.0011	5.4442	0	0.0422	0.0022	0.0032	2.5856	0.4726	0.0039	0.0003	15.0362	84.438
345-32	Opx- Ol gabbro	1415P	19	47.136	0.061	33.009	0	0.356	0	0.024	17.346	1.909	0.027	0	99.868	6.5198	0.0064	5.3817	0	0.0412	0	0.0049	2.5708	0.5119	0.0048	0	15.0415	83.264
345-32	Opx- Ol gabbro	1415P	19	48.162	0.042	32.586	0	0.343	0	0.055	16.538	2.36	0.026	0	100.147	6.6271	0.0043	5.2852	0	0.0397	0	0.0112	2.4384	0.6299	0.0031	0	15.0463	79.191
345-32	Opx- Ol gabbro	1415P	19	45.653	0.038	32.411	0	0.526	0.019	0.085	19.983	1.376	0.027	0	100.164	6.3685	0.004	5.3293	0	0.0614	0.0022	0.0177	2.9857	0.3722	0.0048	0	15.1554	88.577
345-32	Opx- Ol gabbro	1415P	19	49.481	0.034	31.367	0.009	0.436	0.005	0.076	15.543	3.044	0.059	0.006	100.058	6.8009	0.0035	5.0818	0.0009	0.0501	0.0005	0.0155	2.2855	0.8102	0.0102	0.0006	15.065	73.584
345-32	Opx- Ol gabbro	1415P	19	47.793	0.041	32.687	0	0.402	0.002	0.052	16.849	2.236	0.038	0	100.1	6.5883	0.0042	5.3111	0	0.0464	0.0003	0.0107	2.4877	0.5977	0.0066	0	15.054	80.462
345-32	Opx- Ol gabbro	1415P	19	48.255	0.034	32.676	0	0.44	0	0.048	16.699	2.287	0.041	0	100.48	6.6212	0.0035	5.2848	0	0.0504	0	0.0099	2.4552	0.6085	0.0048	0	15.0407	79.950
345-32	Opx- Ol gabbro	1415P	19	47.464	0.053	32.941	0.018	0.408	0.006	0.03	17.029	2.176	0.034	0.003	100.164	6.5454	0.0055	5.3542	0.0019	0.0471	0.0006	0.0061	2.5162	0.5823	0.0042	0.0003	15.0655	81.050
345-32	Opx- Ol gabbro	1415P	19	48.401	0.061	32.311	0	0.388	0	0.027	16.462	2.525	0.042	0	100.223	6.6547	0.0063	5.2317	0	0.0447	0	0.0055	2.4206	0.6727	0.0074	0	15.0589	78.061
345-32	Opx- Ol gabbro	1415P	19	46.721	0.044	33.836	0.016	0.401	0.006	0.036	17.766	1.711	0.024	0.001	100.573	6.4203	0.0045	5.4808	0.0017	0.0461	0.0007	0.0062	2.6145	0.4559	0.0029	0.0013	15.0545	85.051
345-32	Opx- Ol gabbro	1415P	19	46.861	0.019	33.449	0	0.375	0.02	0.058	17.649	1.698	0.033	0.002	100.181	6.4603	0.002	5.4405	0	0.0435	0.0023	0.0097	2.6049	0.4539	0.0058	0.0028	15.0402	85.010
345-32	Opx- Ol gabbro	1415P	19	46.701	0.011	33.594	0	0.385	0	0.043	17.771	1.736	0.041	0	100.293	6.4401	0.0011	5.4628	0	0.0445	0	0.0089	2.6201	0.4645	0.0071	0	15.0605	84.785
345-32	Opx- Ol gabbro	1415P	19	46.749	0.037	33.386	0	0.411	0.006	0.029	17.611	1.79	0.026	0	100.045	6.4628	0.0039	5.4338	0	0.0475	0.0006	0.0062	2.6048	0.4797	0.0046	0	15.0557	84.313
345-32	Opx- Ol gabbro	1415P	19	46.165	0.07	33.663	0	0.366	0.013	0.019	18.082	1.573	0.029	0.001	99.9979	6.3949	0.0073	5.4971	0	0.0423	0.0013	0.0039	2.6849	0.4206	0.0062	0.0013	15.0626	86.225
345-32	Opx- Ol gabbro	1415P	19	47.329	0	32.694	0	0.283	0.013	0.158	17.119	2.061	0.026	0	99.6899	6.5527	0	5.3346	0	0.0328	0.0013	0.0327	2.5406	0.5527	0.0046	0	15.057	81.959
345-32	Opx- Ol gabbro	1415P	19	46.894	0.025	32.724	0	0.354	0.003	0.024	17.468	1.878	0.029	0	99.4029	6.5209	0.0026	5.3648	0	0.0411	0.0003	0.0049	2.6028	0.5044	0.0053	0	15.0496	83.570
345-32	Opx- Ol gabbro	1415P	19	46.946	0.024	32.719	0	0.419	0.017	0.036	17.527	1.856	0.022	0.001	99.572	6.5227	0.0025	5.3547	0	0.0487	0.0019	0.0074	2.6048	0.4997	0.004	0.0013	15.0513	83.770
345-32	Opx- Ol gabbro	1415P	19	46.925	0.027	33.605	0	0.406	0	0.035	17.561	1.846	0.024	0.001	100.437	6.4604	0.0028	5.4539	0	0.0472	0	0.0072	2.5939	0.4939	0.0042	0.0003	15.0591	83.890
345-32	Opx- Ol gabbro	1415P	19	46.908	0.026	33.434	0	0.411	0.006	0.053	17.631	1.809	0.019	0	100.300	6.4627	0.0027	5.4338	0	0.0474	0.0006	0.0108	2.6048	0.4839	0.0036	0	15.0557	84.268
345-32	Opx- Ol gabbro	1415P	19	47.248	0.018	33.406	0	0.397	0.003	0.04	17.763	1.793	0.022	0	100.697	6.4818	0.0019	5.4072	0	0.0455	0.0003	0.0081	2.6136	0.4747	0.0042	0	15.0475	84.415
345-32	Opx- Ol gabbro	1415P	19	46.848	0.022	33.131	0.031	0.402	0.001	0.042	17.663	1.752	0.027	0.001	99.942	6.4841	0.0023	5.4051	0.0034	0.0465	0.0001	0.0086	2.6095	0.4701	0.0048	0.0015	15.0479	84.603
345-32	Opx- Ol gabbro	1415P	19	46.858	0.015	33.01	0	0.42	0	0.04	17.569	1.755	0.022	0	99.6919	6.4949	0.0015	5.3961	0	0.0487	0	0.0087	2.6148	0.4704	0.0029	0	15.0403	84.552
345-32	Opx- Ol gabbro	1415P	19	46.729	0.017	33.369	0	0.381	0.015	0.022	17.803	1.712	0.022	0.001	100.076	6.4602	0.0018	5.4377	0	0.0441	0.0018	0.0045	2.6372	0.4539	0.0042	0	15.0511	85.046
345-32	Opx- Ol gabbro	1415P	19	47.362	0.018	33.325	0	0.473	0.021	0.036	17.131	1.952	0.022	0.001	100.350	6.5102	0.0019	5.4027	0	0.0544	0.0024	0.0074	2.5206	0.5206	0.0042	0.0001	15.0411	82.770
345-32	Opx- Ol gabbro	1415P	19	47.052	0.043	33.801	0	0.389	0.016	0.033	17.539	1.851	0.019	0.001	100.743	6.4572	0.0045	5.4648	0	0.0446	0.0018	0.0067	2.5708	0.4939	0.0036	0.0003	15.0545	83.870
345-32	Opx- Ol gabbro	1415P	19	46.834	0.079	34.129	0.007	0.427	0	0.034	17.717	1.71	0.022	0.001	100.977	6.4151	0.0083	5.5102	0.0008	0.0493	0	0.0074	2.6048	0.4527	0.0042	0.0017	15.0505	85.016
345-32	Opx- Ol gabbro	1415P	19	47.052	0.038	33.744	0.031	0.396	0.007	0.023	17.469	1.943	0.027	0.001	100.751	6.4545	0.004	5.4539	0.0034	0.0455	0.0008	0.0097	2.5629	0.5127	0.0048	0.0015	15.0687	83.080
345-32	Opx- Ol gabbro	1415P	19	48.843	0.059	32.422	0.004	0.358	0.006	0.019	16.087	2.588	0.003	0.001	100.402	6.6912	0.0061	5.2348	0.0004	0.0408	0.0006	0.0013	2.3607	0.6818	0.0007	0.0011	15.0295	77.412
345-32	Opx- Ol gabbro	1415P	19	46.645	0.036	34.025	0	0.438	0.003	0.079	17.663	1.669	0.024	0	100.584	6.4103	0.0037	5.5145	0	0.0504	0.0003	0.0107	2.6048	0.4439	0.0045	0	15.051	85.268
345-32	Opx- Ol gabbro	1415P	19	46.783	0.047	33.771	0.006	0.5	0.006	0.03	17.495	1.908	0.022	0	100.574	6.4303	0.0049	5.4739	0.0006	0.0575	0.0006	0.0075	2.5729	0.5048	0.0042	0	15.0768	83.374
345-32	Opx- Ol gabbro	1415P	19	47.422	0.042	33.338	0.012	0.503	0.011	0.054	16.971	2.201	0.025	0	100.606	6.5139	0.0043	5.3975	0.0013	0.0577	0.0011	0.0124	2.4907	0.5848	0.0029	0	15.08	80.755
345-32	Opx- Ol gabbro	1415P	19	48.019	0.07	32.961	0	0.461	0.004	0.047	16.786	2.32	0.029	0	100.706	6.5802	0.0072	5.3204	0	0.0529	0.0004	0.0095	2.4648	0.6164	0.0068	0	15.0622	79.818

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-32	Opx- Ol gabbro	1415P	19	44.785	0.043	30.995	0.005	3.371	0.059	3.414	14.465	1.68	0.029	0	98.8459	6.33 95	0.00 46	5.17 15	0.00 06	0.39 9	0.00 71	0.72 03	2.19 41	0.46 12	0.00 53	0	15.3032	82.466 0
345-32	Opx- Ol gabbro	1415P	19	47.164	0.053	33.463	0.007	0.551	0	0.036	17.456	1.896	0.028	0	100.654 02	6.48 1	0.00 55	5.41 99	0.00 07	0.06 33	0	0.00 75	2.57 02	0.50 51	0.00 48	0	15.058	83.445 2
345-32	Opx- Ol gabbro	1415P	19	47.037	0.039	33.487	0.014	0.599	0.018	0.046	17.439	1.92	0.026	0.01 7	100.642	6.46 86	0.00 4	5.42 82	0.00 15	0.06 89	0.00 21	0.00 93	2.56 97	0.51 2	0.00 46	0.00 19	15.0708	83.261 0
345-32	Opx- Ol gabbro	1415P	19	51.114	0.036	30.588	0.011	0.474	0	0.071	14.429	3.652	0.083	0	100.458 28	6.97 36	0.00 84	4.91 12	0.00 41	0.05	0	0.01 45	2.10 91	0.96 59	0.01 44	0	15.054	68.268 9
345-32	Opx- Ol gabbro	1415P	19	48.949	0.022	32.659	0	0.46	0.002	0.061	16.365	2.49	0.051	0.02 1	101.069 99	6.66 86	0.00 23	5.24 54	0	0.05 25	0.00 03	0.01 24	2.38 93	0.65 79	0.00 89	0.00 22	15.0398	78.181 2
345-32	Opx- Ol gabbro	1415P	19	46.282	0.028	29.741	0.006	3.695	0.05	4.002	12.524	2.643	0.024	0	98.995	6.52 28	0.00 29	4.94 05	0.00 07	0.43 55	0.00 6	0.84 08	1.89 12	0.72 23	0.00 43	0	15.367	72.243
345-32	Opx- Ol gabbro	1415P	19	48.959	0.047	32.347	0.01	0.497	0	0.049	16.111	2.665	0.058	0.02 3	100.766 01	6.69 21	0.00 48	5.21 15	0.00 11	0.05 69	0	0.01	2.35 96	0.70 63	0.01 02	0.00 25	15.055	76.707 9
345-32	Opx- Ol gabbro	1415P	19	46.625	0.031	33.281	0	0.442	0.001	0.059	17.567	1.726	0.024	0	99.756	6.46 42	0.00 32	5.43 87	0	0.05 12	0.00 01	0.01 21	2.60 96	0.46 4	0.00 43	0	15.0474	84.785 0
345-32	Opx- Ol gabbro	1415P	19	46.469	0.05	33.271	0	0.397	0.003	0.019	17.975	1.591	0.025	0	99.8	6.44 58	0.00 52	5.43 98	0	0.04 6	0.00 04	0.00 39	2.67 17	0.42 79	0.00 45	0	15.0452	86.070
345-32	Opx- Ol gabbro	1415P	19	46.513	0.06	33.837	0	0.37	0.002	0.019	17.914	1.59	0.025	0	100.33	6.41 44	0.00 62	5.50 01	0	0.04 26	0.00 03	0.00 39	2.64 71	0.42 51	0.00 44	0	15.0441	86.039 4
345-32	Opx- Ol gabbro	1415P	19	46.907	0.049	33.593	0.002	0.42	0	0.032	17.755	1.696	0.011	0.01 1	100.474 99	6.45 62	0.00 51	5.45	0.00 03	0.04 84	0	0.00 66	2.61 85	0.45 26	0.00 19	0.00 12	15.0408	85.209 2
345-32	Opx- Ol gabbro	1415P	19	46.835	0.042	33.565	0.014	0.423	0	0.043	17.765	1.743	0.02	0.01	100.454 99	6.45 01	0.00 44	5.44 91	0.00 16	0.04 87	0	0.00 88	2.62 18	0.46 56	0.00 35	0.00 11	15.0547	84.823 0
345-36	Opx- Ol gabbro	1415P	28	60.977	0	23.548	0.003	0.004	0	0	5.929	8.688	0.014	0.02 8	99.191	8.20 3	0	3.73 4	0.00 04	0.00 04	0	0	0.85 47	2.26 63	0.00 24	0.00 3	15.0642	27.364 0
345-36	Opx- Ol gabbro	1415P	28	47.866	0.032	33.791	0.086	0.523	0.003	0.026	17.214	2.061	0.027	0.00 1	101.63	6.50 63	0.00 32	5.41 39	0.00 92	0.05 94	0.00 03	0.00 53	2.50 71	0.54 33	0.00 46	0.00 01	15.0527	82.065 6
345-36	Opx- Ol gabbro	1415P	28	47.837	0.067	33.716	0.02	0.402	0.005	0.034	17.133	1.9	0.011	0.01 5	101.139 99	6.52 24	0.00 69	5.41 86	0.00 21	0.04 58	0.00 06	0.00 69	2.50 31	0.50 23	0.00 18	0.00 17	15.0122	83.236 8
345-36	Opx- Ol gabbro	1415P	28	47.636	0.01	33.921	0.032	0.41	0.017	0.047	17.378	1.821	0.01	0	101.282	6.49 15	0.00 1	5.44 86	0.00 34	0.04 68	0.00 19	0.00 95	2.53 74	0.48 13	0.00 17	0	15.0231	84.008 0
345-36	Opx- Ol gabbro	1415P	28	47.285	0.008	33.313	0.011	0.372	0	0.042	16.87	1.295	1.052	0.00 2	100.249 01	6.52 68	0.00 09	5.42	0.00 12	0.04 29	0	0.00 87	2.49 51	0.34 65	0.18 51	0.00 02	15.0274	82.436 6
345-36	Opx- Ol gabbro	1415P	28	47.597	0.02	34.214	0.016	0.373	0.004	0.039	17.435	1.798	0.016	0.00 8	101.52	6.47 02	0.00 21	5.48 22	0.00 17	0.04 24	0.00 04	0.00 79	2.53 95	0.47 38	0.00 28	0.00 09	15.0239	84.198 6
345-36	Opx- Ol gabbro	1415P	28	47.501	0.013	34.047	0	0.368	0.011	0.021	17.489	1.801	0.019	0.00 3	101.273	6.47 5	0.00 14	5.47 04	0	0.04 2	0.00 12	0.00 42	2.55 44	0.47 61	0.00 32	0.00 03	15.0282	84.200 0
345-36	Opx- Ol gabbro	1415P	28	47.534	0.013	33.817	0	0.359	0.008	0.031	17.273	1.866	0.01	0	100.904	6.49 83	0.00 14	5.44 91	0	0.04 11	0.00 09	0.00 64	2.53 03	0.49 48	0.00 18	0	15.0241	83.593 5
345-36	Opx- Ol gabbro	1415P	28	47.456	0.014	33.711	0.003	0.358	0	0.036	17.319	1.932	0.037	0.00 2	100.868	6.49 54	0.00 14	5.43 86	0.00 03	0.04 1	0	0.00 73	2.54	0.51 28	0.00 64	0.00 02	15.0434	83.028 2
345-36	Opx- Ol gabbro	1415P	28	47.003	0.019	31.917	0.003	0.27	0.016	0.03	19.118	1.66	0.022	0	100.058	6.52 59	0.00 19	5.22 32	0.00 03	0.03 13	0.00 19	0.00 62	2.84 42	0.44 68	0.00 38	0	15.0855	86.323 4
345-36	Opx- Ol gabbro	1415P	28	47.164	0.035	33.625	0.011	0.358	0.027	0.019	17.593	1.808	0.05	0	100.690 01	6.47 45	0.00 37	5.44 07	0.00 12	0.04 11	0.00 31	0.00 38	2.58 78	0.48 14	0.00 87	0	15.046	84.076 5
345-36	Opx- Ol gabbro	1415P	28	46.783	0.058	32.893	0	0.374	0.008	0.046	17.381	1.606	0.895	0.01 4	100.055 01	6.49 14	0.00 61	5.38	0	0.04 34	0.00 09	0.00 95	2.58 44	0.43 22	0.15 85	0.00 15	15.1079	81.395 1
345-36	Opx- Ol gabbro	1415P	28	48.117	0.042	33.475	0.009	0.388	0	0.037	17.044	1.993	0.021	0	101.126 01	6.55 84	0.00 43	5.37 8	0.00 1	0.04 43	0	0.00 74	2.48 92	0.52 67	0.00 36	0	15.0129	82.437 9
345-36	Opx- Ol gabbro	1415P	28	47.031	0.028	31.552	0	0.364	0	0.041	18.386	1.949	0.147	0.00 8	99.506	6.56 45	0.00 29	5.19 1	0	0.04 25	0	0.00 85	2.74 98	0.52 75	0.02 62	0.00 09	15.1138	83.238 8
345-36	Opx- Ol gabbro	1415P	28	47.241	0.046	31.262	0	0.349	0.009	0.042	19.605	1.891	0.032	0.02 6	100.503	6.55 12	0.00 48	5.10 99	0	0.04 05	0.00 1	0.00 87	2.91 32	0.50 84	0.00 56	0.00 29	15.1462	85.002 4
345-36	Opx- Ol gabbro	1415P	28	48.203	0.033	33.468	0	0.41	0.006	0.03	16.844	2.031	0.054	0.00 8	101.087 02	6.57 34	0.00 7	5.37	0	0.04 67	0.00 06	0.00 61	2.46	0.53 67	0.00 95	0.00 09	15.0111	81.830 2
345-36	Opx- Ol gabbro	1415P	28	47.281	0.034	33.693	0.008	0.351	0	0.025	17.498	1.881	0.044	0.01 8	100.832 99	6.47 91	0.00 35	5.44 21	0.00 09	0.04 03	0	0.00 51	2.56 92	0.49 98	0.00 77	0.00 2	15.0497	83.505 4
345-36	Opx- Ol gabbro	1415P	28	46.918	0.013	33.081	0.017	0.377	0	0.029	18.018	1.733	0.035	0	100.221	6.48 14	0.00 13	5.38 65	0.00 19	0.04 36	0	0.00 6	2.66 71	0.46 41	0.00 61	0	15.058	85.012 0
345-36	Opx- Ol gabbro	1415P	28	47.455	0.035	33.96	0	0.411	0.019	0.044	16.989	1.736	0.375	0	101.023 99	6.48 74	0.00 36	5.47 22	0	0.04 7	0.00 22	0.00 89	2.48 86	0.46 03	0.06 54	0	15.0356	82.559 8
345-36	Opx- Ol gabbro	1415P	28	47.176	0.021	32.315	0	2.167	0.06	1.603	15.158	2.189	0.041	0	100.729 99	6.50 1	0.00 22	5.24 88	0	0.24 98	0.00 7	0.32 94	2.23 82	0.58 48	0.00 72	0	15.1684	79.082 0
345-36	Opx- Ol gabbro	1415P	28	48.646	0.055	32.719	0	1.042	0.017	0.734	15.766	2.42	0.029	0.01 1	101.439	6.61 58	0.00 57	5.24 5	0	0.11 85	0.00 2	0.14 88	2.29 75	0.63 83	0.00 51	0.00 12	15.0779	78.122

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-36	Opx- Ol gabbro	1415P	28	49.271	0.059	32.746	0	0.489	0	0.051	15.972	2.611	0.035	0.004	101.238	6.6929	0.006	5.246	0	0.055	0	0.013	2.3247	0.6876	0.006	0.004	15.0264	77.0175
345-36	Opx- Ol gabbro	1415P	28	49.095	0.034	32.715	0	0.465	0	0.041	16.038	2.635	0.038	0	101.061	6.6835	0.003	5.249	0.001	0.053	0	0.008	2.3394	0.6955	0.003	0	15.0394	76.9193
345-36	Opx- Ol gabbro	1415P	28	48.699	0.033	32.876	0	0.653	0	0.254	15.986	2.472	0.031	0	100.998	6.6396	0.003	5.284	0	0.074	0	0.051	2.3365	0.6534	0.003	0	15.0453	77.9996
345-36	Opx- Ol gabbro	1415P	28	48.726	0.033	33.393	0.019	0.46	0.006	0.037	16.711	2.301	0.021	0.002	101.713	6.6008	0.003	5.3322	0.002	0.0521	0.0007	0.0075	2.4257	0.6044	0.0044	0.0003	15.0332	79.9376
345-36	Opx- Ol gabbro	1415P	28	47.376	0.016	34.271	0.01	0.407	0.023	0.041	17.517	1.671	0.022	0	101.355	6.4528	0.0016	5.5002	0.0011	0.0464	0.0027	0.0084	2.5565	0.4414	0.0014	0	15.0169	85.1620
345-36	Opx- Ol gabbro	1415P	28	46.668	0.025	32.268	0.014	1.573	0.029	2.163	15.125	1.937	0.029	0.001	99.8459	6.4696	0.0026	5.2716	0.0016	0.1824	0.0034	0.0447	2.2467	0.5207	0.0029	0.0006	15.1534	81.0350
345-36	Opx- Ol gabbro	1415P	28	47.513	0.034	32.943	0.001	0.54	0	0.387	16.761	2.004	0.033	0.006	100.217	6.5429	0.0035	5.3474	0.0001	0.0622	0	0.0797	2.4732	0.5351	0.0032	0.0007	15.0501	82.0599
345-36	Opx- Ol gabbro	1415P	28	47.438	0.036	32.289	0	0.918	0.041	1.801	15.123	2.223	0.025	0.005	99.9190	6.5401	0.0037	5.2509	0	0.1059	0.0048	0.3706	2.2363	0.5948	0.0048	0.0004	15.1226	78.8674
345-36	Opx- Ol gabbro	1415P	28	48.111	0.045	32.081	0.001	0.913	0.016	0.838	15.282	2.62	0.047	0.001	99.965	6.6363	0.0047	5.2159	0.0002	0.1052	0.0019	0.1723	2.2587	0.7002	0.0059	0.0013	15.1055	76.1127
345-36	Opx- Ol gabbro	1415P	28	49.215	0.056	32.685	0.001	0.534	0.011	0.042	15.854	2.698	0.034	0.004	101.125	6.6938	0.0057	5.2404	0.0001	0.0604	0.0013	0.0853	2.3178	0.7117	0.0054	0.0009	15.0387	76.3199
345-36	Opx- Ol gabbro	1415P	28	49.005	0.021	33.211	0	0.512	0	0.055	16.268	2.528	0.038	0	101.637	6.6363	0.0021	5.3025	0	0.0582	0	0.0113	2.3613	0.6639	0.0039	0	15.0437	77.8845
345-36	Opx- Ol gabbro	1415P	28	47.594	0.034	33.232	0	0.544	0	0.205	16.872	1.992	0.016	0.001	100.502	6.5321	0.0035	5.3782	0	0.0624	0	0.0402	2.4825	0.5309	0.0029	0.0017	15.0386	82.3184
345-36	Opx- Ol gabbro	1415P	28	47.842	0.064	33.612	0	0.443	0.004	0.029	17.095	2.026	0.035	0.005	101.145	6.5242	0.0066	5.4048	0	0.0506	0.0005	0.0058	2.4982	0.5358	0.0035	0.0006	15.0349	82.1966
345-36	Opx- Ol gabbro	1415P	28	48.419	0.07	33.416	0.014	0.46	0	0.082	16.786	2.154	0.034	0.009	101.442	6.5783	0.0071	5.3512	0.0015	0.0522	0	0.0166	2.4436	0.5674	0.0039	0.0004	15.0247	80.9994
345-36	Opx- Ol gabbro	1415P	28	48.103	0.055	33.896	0.003	0.467	0	0.042	17.052	2.047	0.032	0	101.7	6.5241	0.0056	5.4187	0.0003	0.0541	0	0.0086	2.4786	0.5383	0.0032	0	15.0328	82.0076
345-36	Opx- Ol gabbro	1415P	28	48.838	0.062	33.123	0.009	0.425	0.018	0.047	16.421	2.399	0.036	0	101.391	6.6319	0.0063	5.3017	0.0009	0.0483	0.0021	0.0963	2.3903	0.6317	0.0047	0	15.03	78.9082
345-36	Opx- Ol gabbro	1415P	28	48.415	0.045	33.033	0.009	0.422	0	0.048	16.542	2.283	0.032	0	100.830	6.6119	0.0046	5.3126	0.0009	0.0479	0	0.0096	2.4249	0.6042	0.0039	0	15.0273	79.8812
345-36	Opx- Ol gabbro	1415P	28	48.693	0.05	32.923	0	0.387	0.006	0.047	16.397	2.423	0.036	0.004	100.970	6.6394	0.0051	5.2949	0	0.0441	0.0007	0.0096	2.3957	0.6417	0.0047	0.0004	15.0341	78.7040
345-36	Opx- Ol gabbro	1415P	28	47.754	0.047	33.012	0.026	0.438	0	0.059	16.542	2.318	0.031	0.003	100.243	6.5702	0.0048	5.3533	0.0028	0.0504	0	0.0122	2.4348	0.6126	0.0033	0.0003	15.0571	79.7190
345-36	Opx- Ol gabbro	1415P	28	48.308	0.028	32.654	0	0.484	0.005	0.08	16.118	2.56	0.033	0	100.275	6.6366	0.0029	5.2849	0	0.0556	0.0005	0.0163	2.3726	0.6827	0.0043	0	15.061	77.5031
345-36	Opx- Ol gabbro	1415P	28	46.813	0.054	33.541	0.011	0.435	0.01	0.043	17.205	1.838	0.022	0	99.9740	6.4638	0.0056	5.4648	0.0012	0.0502	0.001	0.0092	2.5417	0.4918	0.0029	0	15.0422	83.6882
345-36	Opx- Ol gabbro	1415P	28	46.741	0.034	33.844	0.013	0.391	0.012	0.031	17.537	1.766	0.024	0	100.393	6.4335	0.0035	5.4904	0.0014	0.0451	0.0012	0.0058	2.5764	0.4727	0.0032	0	15.0507	84.4687
345-36	Opx- Ol gabbro	1415P	28	46.829	0.019	33.679	0.006	0.42	0.016	0.033	17.346	1.768	0.024	0	100.142	6.4636	0.002	5.4764	0.0007	0.0484	0.0019	0.0068	2.5674	0.4729	0.0029	0	15.0381	84.2978
345-36	Opx- Ol gabbro	1415P	28	47.345	0.038	33.666	0	0.438	0	0.038	17.171	1.907	0.025	0.003	100.651	6.4941	0.0039	5.4421	0	0.0503	0	0.0078	2.5237	0.5041	0.0034	0	15.0364	83.1581
345-36	Opx- Ol gabbro	1415P	28	46.387	0.008	34.027	0	0.383	0.023	0.039	17.605	1.64	0.016	0.001	100.132	6.4009	0.0008	5.5346	0	0.0442	0.0027	0.0081	2.6048	0.4346	0.0014	0.0001	15.0463	85.4926
345-36	Opx- Ol gabbro	1415P	28	47.599	0.052	33.037	0.011	0.463	0.007	0.059	16.413	2.314	0.017	0	99.972	6.5645	0.0054	5.3705	0.0012	0.0535	0.0009	0.0121	2.4254	0.6088	0.0032	0	15.0553	79.5941
345-36	Opx- Ol gabbro	1415P	28	46.961	0.004	33.906	0	0.438	0.004	0.034	17.512	1.797	0.024	0.001	100.689	6.4401	0.0004	5.4825	0	0.0503	0.0005	0.0069	2.5742	0.4703	0.0043	0.0002	15.0507	84.2392
345-36	Opx- Ol gabbro	1415P	28	47.068	0.015	33.771	0.019	0.584	0.009	0.267	17.352	1.804	0.022	0	100.912	6.4404	0.0015	5.4538	0.0021	0.0669	0.0011	0.0546	2.5374	0.4741	0.0029	0	15.0621	84.0441
345-36	Opx- Ol gabbro	1415P	28	47.511	0.044	33.694	0.004	0.406	0.002	0.048	17.241	1.921	0.023	0.001	100.901	6.4939	0.0045	5.4346	0.0004	0.0464	0.0003	0.0098	2.5237	0.5033	0.0034	0.0006	15.0357	83.1373
345-36	Opx- Ol gabbro	1415P	28	47.046	0.026	33.842	0	0.42	0	0.04	17.479	1.826	0.021	0	100.698	6.4525	0.0027	5.4736	0	0.0478	0	0.0082	2.5702	0.4829	0.0027	0	15.0488	84.0019
345-36	Opx- Ol gabbro	1415P	28	47.039	0.009	33.806	0.008	0.414	0	0.046	17.352	1.741	0.018	0.001	100.442	6.4649	0.0009	5.4741	0.0008	0.0476	0	0.0094	2.5502	0.4632	0.0032	0.0001	15.0272	84.5402
345-36	Opx- Ol gabbro	1415P	28	47.835	0.054	33.353	0	0.531	0.014	0.051	16.902	1.991	0.019	0	100.74	6.5406	0.0056	5.3756	0	0.0608	0.0015	0.0104	2.4696	0.5247	0.0025	0	15.0201	82.3594
345-36	Opx- Ol gabbro	1415P	28	48.326	0.046	33.142	0	0.466	0.021	0.041	16.562	2.283	0.032	0	100.918	6.5988	0.0047	5.3341	0	0.0532	0.0022	0.0084	2.4229	0.6044	0.0034	0	15.0346	79.8841

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-36	Opx- Ol gabbro	1415P	28	47.91 7	0.027	33.94 7	0	0.53	0.02	0.044	17.21 5	1.858	0.01 6	0	101.574	6.50 9	0.00 28	5.43 54	0	0.06 03	0.00 23	0.00 89	2.50 56	0.48 93	0.00 28	0	15.0164	83.584 1
345-36	Opx- Ol gabbro	1415P	28	46.55 6	0.03	34.44 6	0	0.439	0	0.025	18.06 7	1.422	0.00 1	0	100.98	6.37 71	0.00 31	5.56 22	0.00 01	0.05 03	0	0.00 51	2.65 2	0.37 77	0.00 02	0	15.0278	87.527 1
345-36	Opx- Ol gabbro	1415P	28	47.3 6	0.038	33.70 6	0.004	0.405	0.012	0.045	17.20 8	1.894	0.01 3	0.02	100.644 99	6.48 79	0.00 39	5.44 95	0.00 05	0.04 65	0.00 14	0.00 93	2.52 91	0.50 36	0.00 22	0.00 22	15.0361	83.333
345-36	Opx- Ol gabbro	1415P	28	47.27 2	0.033	33.54 4	0.006	0.463	0	0.043	17.04 8	1.992	0.03	0	100.430 99	6.49 87	0.00 34	5.43 56	0.00 07	0.05 32	0	0.00 88	2.51 13	0.53 09	0.00 53	0	15.0479	82.405 0
345-36	Opx- Ol gabbro	1415P	28	47.29 7	0.016	34.00 7	0.011	0.429	0	0.032	17.39 4	1.798	0.00 8	0.02	101.011 99	6.46 56	0.00 16	5.47 95	0.00 12	0.04 91	0	0.00 65	2.54 79	0.47 65	0.00 14	0.00 22	15.0315	84.205 9
345-36	Opx- Ol gabbro	1415P	28	48.79 6	0.053	32.79 1	0.012	0.457	0.001	0.065	16.38 4	2.544	0.04 1	0	101.144	6.64 69	0.00 54	5.26 49	0.00 12	0.05 2	0.00 01	0.01 32	2.39 14	0.67 21	0.00 71	0	15.0543	77.880 4
345-36	Opx- Ol gabbro	1415P	28	49.04 6	0.025	32.85 9	0	0.474	0	0.051	16.15 4	2.535	0.03 9	0.00 6	101.189 01	6.66 94	0.00 25	5.26 66	0	0.05 39	0	0.01 03	2.35 38	0.66 84	0.00 68	0.00 07	15.0324	77.708 4
345-36	Opx- Ol gabbro	1415P	28	47.83 4	0.056	33.71 6	0.005	0.434	0.018	0.059	17.14 3	1.955	0.01	0	101.23	6.51 88	0.00 58	5.41 59	0.00 05	0.04 95	0.00 2	0.01 21	2.50 34	0.51 66	0.00 17	0	15.0263	82.847 3
345-38	Opx- Ol gabbro	1415P	33	46.03 2	0.026	34.70 9	0.002	0.379	0	0.003	18.56 4	1.17	0.00 7	0	100.892	6.31 94	0.00 27	5.61 63	0.00 02	0.04 35	0	0.00 06	2.73 06	0.31 15	0.00 13	0	15.0261	89.722 1
345-38	Opx- Ol gabbro	1415P	33	48.24 9	0.083	32.67 5	0.005	0.423	0	0.065	16.69 1	2.272	0.02 4	0.00 5	100.492	6.61 86	0.00 85	5.28 32	0.00 05	0.04 85	0	0.01 34	2.45 33	0.60 43	0.00 42	0.00 05	15.035	80.126 9
345-38	Opx- Ol gabbro	1415P	33	46.95 1	0.033	33.79 1	0	0.465	0	0.029	17.76 7	1.57	0.01 7	0	100.621 99	6.45	0.00 34	5.47 18	0.00 01	0.05 34	0	0.00 6	2.61 53	0.41 83	0.00 3	0	15.0213	86.125 0
345-38	Opx- Ol gabbro	1415P	33	45.06 6	0	34.78	0.001	0.434	0	0.015	19.10 9	0.795	0.00 3	0	100.203	6.24 26	0	5.67 87	0.00 01	0.05 03	0	0.00 3	2.83 62	0.21 36	0.00 05	0	15.025	92.981 8
345-38	Opx- Ol gabbro	1415P	33	46.47 6	0.031	33.48 9	0.006	0.579	0.001	0.023	17.50 6	1.672	0.01 5	0.00 8	99.8060 1	6.44 27	0.00 32	5.47 19	0.00 07	0.06 71	0.00 02	0.00 47	2.60 03	0.44 95	0.00 27	0.00 09	15.0439	85.185 3
345-38	Opx- Ol gabbro	1415P	33	48.03 8	0.043	33.11 4	0	0.483	0	0.049	16.73 7	2.206	0.02 3	0.01 7	100.71	6.57 81	0.00 44	5.34 47	0	0.05 54	0	0.01	2.45 58	0.58 58	0.00 4	0.00 18	15.04	80.634 7
345-38	Opx- Ol gabbro	1415P	33	47.62 5	0.043	33.38 5	0	0.487	0.005	0.038	17.15 5	1.953	0.01 9	0	100.704 99	6.52 75	0.00 44	5.39 4	0	0.05 58	0.00 06	0.00 78	2.51 97	0.51 91	0.00 34	0	15.0323	82.824 9
345-38	Opx- Ol gabbro	1415P	33	47.83 1	0.04	33.69 5	0.005	0.537	0.006	0.04	17.13	2.027	0.01 6	0.01 6	101.342 99	6.51 65	0.00 41	5.41 09	0.00 06	0.06 12	0.00 07	0.00 81	2.50 07	0.53 55	0.00 28	0.00 18	15.0429	82.286 6
345-38	Opx- Ol gabbro	1415P	33	47.71 6	0.053	33.59 4	0.01	0.535	0.002	0.043	17.07 2	1.984	0.02 7	0	101.036 01	6.51 91	0.00 55	5.40 99	0.00 1	0.06 11	0.00 02	0.00 88	2.49 92	0.52 57	0.00 47	0	15.0352	82.492 8
345-38	Opx- Ol gabbro	1415P	33	49.13 6	0.025	32.4	0	0.374	0.013	0.04	15.91 4	2.809	0.01 9	0	100.73	6.70 93	0.00 26	5.21 47	0	0.04 28	0.00 15	0.00 81	2.32 84	0.74 36	0.00 33	0	15.0543	75.712 8
345-38	Opx- Ol gabbro	1415P	33	48.48 2	0.07	32.85 3	0.017	0.485	0.005	0.051	16.71 2	2.238	0.03 2	0.02 4	100.968 99	6.61 95	0.00 71	5.28 73	0.00 18	0.05 54	0.00 06	0.01 03	2.44 5	0.59 24	0.00 57	0.00 26	15.0277	80.345 0
345-38	Opx- Ol gabbro	1415P	33	48.46 3	0.048	32.81 3	0.002	0.49	0	0.068	16.45 3	2.345	0.02 4	0.00 4	100.703	6.62 94	0.00 49	5.29 1	0.00 02	0.05 61	0	0.01 38	2.41 12	0.62 21	0.00 4	0.00 04	15.0331	79.386 7
345-38	Opx- Ol gabbro	1415P	33	48.65 4	0.058	32.27 9	0	0.521	0	0.07	16.37 4	2.458	0.02 7	0	100.441	6.67 45	0.00 6	5.21 93	0	0.05 98	0	0.01 44	2.40 68	0.65 37	0.00 47	0	15.0392	78.520 1
345-38	Opx- Ol gabbro	1415P	33	48.27 7	0.043	33.47 5	0	0.537	0.002	0.068	17.02	2.079	0.02 5	0	101.526	6.55 99	0.00 44	5.36 15	0	0.06 1	0.00 02	0.01 38	2.47 8	0.54 77	0.00 44	0	15.0309	81.779 9
345-38	Opx- Ol gabbro	1415P	33	48.21 5	0.023	33.37 7	0.02	0.456	0	0.043	16.97 4	2.03	0.03 5	0	101.173	6.57 02	0.00 24	5.36 1	0.00 22	0.05 19	0	0.00 87	2.47 84	0.53 65	0.00 61	0	15.0174	82.039 9
345-38	Opx- Ol gabbro	1415P	33	47.20 9	0.009	33.71 8	0	0.441	0.005	0.043	17.68 9	1.654	0.01 2	0	100.78	6.47 25	0.00 1	5.44 89	0	0.05 06	0.00 06	0.00 89	2.59 86	0.43 98	0.00 2	0	15.0229	85.469 7
345-38	Opx- Ol gabbro	1415P	33	49.14 1	0.049	32.30 5	0.006	0.439	0.009	0.081	16.22 2	2.568	0.01 7	0	100.837	6.70 66	0.00 5	5.19 66	0.00 06	0.05 01	0.00 1	0.01 64	2.37 22	0.67 95	0.00 3	0	15.031	77.657 0
345-38	Opx- Ol gabbro	1415P	33	49.00 5	0.053	32.37 1	0	0.483	0.012	0.064	16.11 7	2.513	0.03 9	0	100.657 01	6.69 91	0.00 54	5.21 6	0.00 01	0.05 52	0.00 13	0.01 31	2.36 08	0.66 62	0.00 67	0	15.0239	77.819 4
345-38	Opx- Ol gabbro	1415P	33	47.51 2	0.031	33.27 4	0	0.573	0.011	0.063	17.30 9	1.892	0.01	0.01 9	100.694	6.52 02	0.00 32	5.38 23	0	0.06 57	0.00 12	0.01 29	2.54 52	0.50 35	0.00 17	0.00 21	15.038	83.438 7
345-38	Opx- Ol gabbro	1415P	33	48.60 3	0.004	33.18 8	0.01	0.447	0.005	0.045	16.79 8	2.27	0.03 5	0.00 9	101.413 99	6.60 6	0.00 04	5.31 69	0.00 1	0.05 09	0.00 06	0.00 91	2.44 64	0.59 81	0.00 61	0.00 1	15.0365	80.194 0
345-38	Opx- Ol gabbro	1415P	33	47.79 4	0.073	33.01 1	0.005	0.496	0.007	0.086	17	2.003	0.02 9	0.00 7	100.511 01	6.56 22	0.00 75	5.34 24	0.00 06	0.05 7	0.00 08	0.01 75	2.50 1	0.53 34	0.00 5	0.00 08	15.0282	82.285
345-38	Opx- Ol gabbro	1415P	33	48.12	0.045	32.77	0	0.464	0	0.042	16.85 2	2.1	0.02 7	0.01	100.429 99	6.60 63	0.00 46	5.30 29	0	0.05 33	0	0.00 86	2.47 9	0.55 9	0.00 47	0.00 11	15.0195	81.473 1
345-38	Opx- Ol gabbro	1415P	33	47.32 6	0.012	33.16 5	0	0.504	0.013	0.043	17.17 9	1.928	0.02 1	0.00 3	100.194 01	6.52 41	0.00 12	5.38 9	0	0.05 81	0.00 15	0.00 89	2.53 76	0.51 52	0.00 36	0.00 03	15.0395	83.025 1
345-38	Opx- Ol gabbro	1415P	33	45.56 1	0	34.29 6	0.004	0.341	0.008	0	18.68 3	1.075	0.00 6	0.00 1	99.975	6.31 62	0	5.60 41	0.00 04	0.03 95	0.00 1	0	2.77 52	0.28 88	0.00 11	0.00 01	15.0264	90.541 7
345-38	Opx- Ol gabbro	1415P	33	47.63 2	0.008	33.41 6	0.014	0.461	0	0.031	17.20 6	1.95	0.02 4	0.02 1	100.763	6.52 63	0.00 08	5.39 66	0.00 15	0.05 28	0	0.00 63	2.52 6	0.51 81	0.00 41	0.00 24	15.0349	82.868 8

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-38	Opx- Ol gabbro	1415P	33	48.427	0.028	32.799	0.018	0.466	0	0.074	16.65	2.189	0.014	0	100.665	6.627	0.002	5.295	0.001	0.053	0	0.015	2.441	0.580	0.002	0	15.0154	80.715
345-38	Opx- Ol gabbro	1415P	33	47.706	0.019	33.364	0.003	0.46	0	0.044	17.355	1.867	0.017	0.011	100.846	6.531	0.002	5.387	0.000	0.052	0	0.009	2.547	0.495	0.000	0.000	15.0242	83.627
345-38	Opx- Ol gabbro	1415P	33	47.321	0.037	33.153	0	0.347	0.001	0.045	17.099	2.005	0.007	0	100.015	6.523	0.003	5.391	0	0.040	0.000	0.009	2.528	0.530	0.000	0	15.0399	82.460
345-38	Opx- Ol gabbro	1415P	33	48.136	0.026	33.261	0	0.43	0	0.044	16.947	2.124	0.013	0	100.981	6.576	0.002	5.351	0	0.040	0	0.009	2.470	0.563	0.000	0	15.0305	81.452
345-38	Opx- Ol gabbro	1415P	33	48.686	0.033	32.989	0	0.473	0.011	0.088	16.381	2.334	0.033	0.013	101.037	6.630	0.003	5.295	0	0.050	0.000	0.017	2.391	0.610	0.000	0.000	15.0242	79.361
345-38	Opx- Ol gabbro	1415P	33	48.222	0.023	33.415	0	0.401	0	0.048	16.911	2.113	0.027	0	101.159	6.570	0.002	5.365	0	0.040	0	0.000	2.465	0.550	0.000	0	15.0259	81.429
345-38	Opx- Ol gabbro	1415P	33	48.231	0.03	33.452	0	0.391	0.013	0.026	16.915	2.114	0.028	0.018	101.209	6.560	0.003	5.365	0	0.040	0.000	0.000	2.465	0.550	0.000	0.000	15.0245	81.462
345-38	Opx- Ol gabbro	1415P	33	48.497	0.047	32.984	0.003	0.477	0.007	0.056	16.571	2.311	0.029	0	100.981	6.613	0.005	5.304	0.000	0.050	0.000	0.011	2.424	0.610	0.000	0	15.0334	79.716
345-38	Opx- Ol gabbro	1415P	33	47.349	0.059	33.491	0	0.457	0.001	0.049	17.124	1.962	0.015	0.007	100.514	6.506	0.006	5.422	0	0.050	0.000	0.010	2.520	0.520	0.000	0.000	15.0416	82.752
345-38	Opx- Ol gabbro	1415P	33	47.967	0.046	33.683	0	0.574	0	0.048	16.931	2.084	0.008	0	101.341	6.537	0.004	5.405	0	0.060	0	0.000	2.470	0.550	0.000	0	15.0376	81.744
345-38	Opx- Ol gabbro	1415P	33	47.758	0.039	33.316	0.013	0.41	0.006	0.036	17.178	1.952	0.038	0.001	100.739	6.540	0.004	5.374	0.001	0.040	0.000	0.000	2.520	0.510	0.000	0.000	15.0261	82.798
345-38	Opx- Ol gabbro	1415P	33	48.48	0.035	32.346	0.002	0.423	0.003	0.052	16.497	2.419	0.029	0	100.286	6.666	0.003	5.236	0.000	0.040	0.000	0.010	2.424	0.640	0.000	0	15.041	78.897
345-38	Opx- Ol gabbro	1415P	33	48.564	0.031	32.737	0.015	0.446	0.005	0.03	16.552	2.357	0.022	0	100.759	6.640	0.001	5.270	0.000	0.050	0.000	0.000	2.420	0.620	0.000	0	15.0322	79.408
345-38	Opx- Ol gabbro	1415P	33	48.004	0.027	33.146	0	0.444	0.01	0.046	16.919	2.184	0.028	0.001	100.809	6.566	0.002	5.348	0	0.050	0.000	0.000	2.480	0.570	0.000	0.000	15.0464	80.938
345-38	Opx- Ol gabbro	1415P	33	48.089	0.039	33.265	0	0.426	0	0.033	16.859	2.189	0.007	0	100.970	6.566	0.003	5.351	0	0.040	0	0.000	2.466	0.570	0.001	0	15.0446	80.651
345-38	Opx- Ol gabbro	1415P	33	48.025	0.072	32.692	0	0.765	0.02	0.159	16.588	2.226	0.018	0.005	100.569	6.590	0.003	5.297	0	0.080	0.000	0.003	2.447	0.590	0.000	0.000	15.0512	80.378
345-38	Opx- Ol gabbro	1415P	33	48.346	0.068	32.792	0.028	0.511	0.008	0.045	16.741	2.278	0.028	0.002	100.863	6.610	0.002	5.285	0.000	0.050	0.000	0.000	2.455	0.600	0.000	0.000	15.0411	80.110
345-38	Opx- Ol gabbro	1415P	33	48.913	0.057	32.299	0.006	0.541	0.009	0.061	16.003	2.615	0.022	0	100.517	6.696	0.000	5.217	0.000	0.060	0.000	0.010	2.342	0.690	0.000	0	15.0388	77.078
345-38	Opx- Ol gabbro	1415P	33	48.034	0.025	33.121	0.006	0.522	0.01	0.043	16.957	2.12	0.030	0	100.877	6.577	0.000	5.340	0.000	0.050	0.000	0.000	2.480	0.560	0.000	0	15.0399	81.370
345-41	Opx- Ol gabbro	1415P	38	47.371	0.033	32.267	0	0.485	0	0.045	16.788	2.124	0.030	0.001	99.145	6.596	0.003	5.295	0	0.050	0	0.000	2.500	0.570	0.000	0.000	15.0431	81.227
345-41	Opx- Ol gabbro	1415P	38	47.797	0.036	32.564	0	0.375	0.003	0.045	16.892	2.121	0.030	0.000	99.878	6.606	0.003	5.306	0	0.040	0.000	0.000	2.5	0.560	0.000	0.000	15.0328	81.308
345-41	Opx- Ol gabbro	1415P	38	48.797	0.046	32.537	0.019	0.404	0	0.067	16.337	2.599	0.025	0.014	100.831	6.666	0.003	5.237	0.000	0.040	0	0.011	2.392	0.680	0.000	0.000	15.0559	77.529
345-41	Opx- Ol gabbro	1415P	38	48.043	0.051	33.277	0.015	0.443	0.008	0.041	17.086	2.14	0.022	0	101.126	6.550	0.003	5.350	0.000	0.050	0.000	0.000	2.490	0.560	0.000	0	15.0455	81.419
345-41	Opx- Ol gabbro	1415P	38	48.076	0.057	32.794	0.001	0.433	0.017	0.049	16.968	2.205	0.016	0.013	100.629	6.593	0.003	5.305	0.000	0.040	0.000	0.010	2.490	0.580	0.000	0.000	15.0453	80.885
345-41	Opx- Ol gabbro	1415P	38	48.344	0.05	32.587	0	0.421	0	0.052	16.613	2.366	0.034	0	100.473	6.633	0.003	5.267	0	0.040	0	0.010	2.442	0.620	0.000	0	15.0455	79.313
345-41	Opx- Ol gabbro	1415P	38	47.781	0.026	32.289	0	0.7	0.01	0.556	16.546	2.205	0.027	0	100.14	6.590	0.003	5.245	0	0.080	0.000	0.110	2.440	0.580	0.000	0	15.0792	80.444
345-41	Opx- Ol gabbro	1415P	38	48.628	0.056	32.508	0	0.454	0	0.056	16.581	2.452	0.023	0.002	100.760	6.650	0.003	5.245	0	0.050	0	0.010	2.430	0.650	0.000	0.000	15.0484	78.781
345-41	Opx- Ol gabbro	1415P	38	48.557	0.082	32.727	0.018	0.445	0.008	0.041	16.675	2.352	0.033	0.013	100.941	6.630	0.007	5.260	0.000	0.050	0.000	0.000	2.440	0.620	0.000	0.000	15.0396	79.527
345-41	Opx- Ol gabbro	1415P	38	47.337	0.037	32.187	0	1.665	0.061	0.881	16.045	2.2	0.035	0.005	100.453	6.530	0.003	5.245	0	0.190	0.000	0.180	2.370	0.580	0.000	0.000	15.1347	79.953
345-41	Opx- Ol gabbro	1415P	38	48.242	0.037	33.189	0	0.532	0.02	0.044	17.045	2.179	0.025	0.006	101.304	6.570	0.003	5.325	0	0.060	0.000	0.009	2.481	0.570	0.000	0.000	15.0478	81.090
345-41	Opx- Ol gabbro	1415P	38	49.284	0.046	31.987	0	0.408	0.003	0.059	15.984	2.712	0.034	0	100.512	6.746	0.003	5.153	0	0.040	0.000	0.010	2.340	0.710	0.000	0	15.0351	76.361
345-41	Opx- Ol gabbro	1415P	38	48.062	0.035	33.021	0.004	0.421	0	0.067	17.014	2.177	0.019	0.017	100.83	6.577	0.003	5.325	0.000	0.040	0	0.010	2.490	0.570	0.000	0.000	15.0466	81.104
345-41	Opx- Ol gabbro	1415P	38	47.496	0.025	33.331	0.001	0.384	0.012	0.042	17.254	1.944	0.022	0.012	100.523	6.520	0.003	5.390	0.000	0.040	0.000	0.000	2.530	0.510	0.000	0.000	15.0371	82.963

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-41	Opx- Ol gabbro	1415P	38	48.432	0.016	33.028	0.013	0.42	0	0.055	16.987	2.251	0.045	0.001	101.247	6.59	0.00	5.30	0.00	0.04	0	0.01	2.48	0.59	0.00	0.00	15.0478	80.451
345-41	Opx- Ol gabbro	1415P	38	47.513	0.001	33.618	0.002	0.408	0	0.027	17.569	1.874	0.024	0	101.027	6.49	0.00	5.41	0.00	0.04	0	0.00	2.57	0.49	0.00	0	15.044	83.704
345-41	Opx- Ol gabbro	1415P	38	48.434	0	33.202	0.015	0.418	0	0.061	16.896	2.231	0.033	0	101.288	6.59	0	5.32	0.00	0.04	0	0.01	2.46	0.58	0.00	0	15.0401	80.570
345-41	Opx- Ol gabbro	1415P	38	48.307	0.051	33.072	0.021	0.491	0.005	0.069	16.932	2.199	0.034	0	101.178	6.58	0.00	5.31	0.00	0.05	0.00	0.01	2.47	0.58	0.00	0	15.0421	80.813
345-41	Opx- Ol gabbro	1415P	38	51.468	0.084	30.967	0.012	0.416	0.005	0.071	14.339	3.744	0.055	0.012	101.173	6.96	0.00	4.94	0.00	0.04	0.00	0.01	2.07	0.98	0.00	0.00	15.0505	67.704
345-41	Opx- Ol gabbro	1415P	38	51.421	0.048	31.028	0.016	0.382	0.006	0.139	14.382	3.649	0.055	0	101.122	6.96	0.00	4.95	0.00	0.04	0.00	0.02	2.08	0.95	0.00	0	15.042	68.339
345-41	Opx- Ol gabbro	1415P	38	47.957	0.055	33.148	0	0.407	0.006	0.04	17.073	2.056	0.028	0.009	100.779	6.56	0.00	5.34	0	0.04	0.00	0.00	2.50	0.54	0.00	0.00	15.0305	81.973
345-41	Opx- Ol gabbro	1415P	38	48.505	0.042	32.975	0.003	0.498	0.022	0.147	16.611	2.378	0.031	0.001	101.212	6.60	0.00	5.29	0.00	0.05	0.00	0.02	2.42	0.62	0.00	0.00	15.0561	79.289
345-41	Opx- Ol gabbro	1415P	38	47.712	0.026	33.737	0.006	0.408	0	0.02	17.319	1.92	0.018	0	101.165	6.50	0.00	5.42	0.00	0.04	0	0.00	2.53	0.50	0.00	0	15.0308	83.207
345-41	Opx- Ol gabbro	1415P	38	44.912	0	35.648	0.006	0.454	0	0.036	19.408	0.724	0.000	0.01	101.206	6.16	0	5.76	0.00	0.05	0	0.00	2.85	0.19	0.00	0.00	15.0459	93.634
345-41	Opx- Ol gabbro	1415P	38	48.493	0.047	33.115	0.011	0.377	0.001	0.039	16.716	2.306	0.020	0.003	101.135	6.60	0.00	5.31	0.00	0.04	0.00	0.00	2.44	0.60	0.00	0.00	15.036	79.896
345-41	Opx- Ol gabbro	1415P	38	48.133	0.043	33.149	0	0.433	0	0.047	16.986	2.208	0.020	0	101.024	6.57	0.00	5.33	0	0.04	0	0.00	2.48	0.58	0.00	0	15.0485	80.835
345-41	Opx- Ol gabbro	1415P	38	48.153	0.035	33.264	0.021	0.458	0	0.059	16.559	2.337	0.018	0.016	100.917	6.57	0.00	5.35	0.00	0.05	0	0.01	2.42	0.61	0.00	0.00	15.051	79.578
345-41	Opx- Ol gabbro	1415P	38	48.298	0.047	32.992	0.012	0.467	0.011	0.05	16.802	2.291	0.020	0	100.992	6.59	0.00	5.31	0.00	0.05	0.00	0.01	2.45	0.60	0.00	0	15.048	80.091
345-41	Opx- Ol gabbro	1415P	38	47.731	0.03	31.764	0	0.408	0.017	0.067	18.381	2.103	0.020	0	100.528	6.58	0.00	5.16	0	0.04	0.00	0.01	2.71	0.56	0.00	0	15.1085	82.722
345-41	Opx- Ol gabbro	1415P	38	48.473	0.038	32.945	0	0.429	0	0.048	16.783	2.404	0.020	0	101.144	6.60	0.00	5.29	0	0.04	0	0.00	2.45	0.63	0.00	0	15.0591	79.301
345-41	Opx- Ol gabbro	1415P	38	44.155	0.024	31.204	0	0.363	0.025	0.059	22.841	0.51	0.022	0	99.2039	6.27	0.00	5.22	0	0.04	0.00	0.01	3.47	0.14	0.00	0	15.1829	96.010
345-41	Opx- Ol gabbro	1415P	38	48.461	0.04	32.896	0	0.389	0	0.071	16.885	2.307	0.066	0	101.111	6.61	0.00	5.28	0	0.04	0	0.01	2.46	0.61	0.01	0	15.0514	79.896
345-42	Opx- Ol gabbro	1415P	38.5	48.623	0.041	32.893	0	0.415	0.012	0.031	16.356	2.384	0.035	0.021	100.808	6.64	0.00	5.29	0	0.04	0.00	0.00	2.39	0.63	0.00	0.00	15.027	78.971
345-42	Opx- Ol gabbro	1415P	38.5	48.458	0.036	33.132	0.02	0.415	0	0.037	16.701	2.239	0.017	0	101.052	6.60	0.00	5.32	0.00	0.04	0	0.00	2.43	0.59	0.00	0	15.0247	80.398
345-42	Opx- Ol gabbro	1415P	38.5	47.675	0.013	32.717	0	0.422	0	0.058	16.133	2.146	0.579	0	99.7429	6.59	0.00	5.33	0	0.04	0	0.01	2.39	0.57	0.10	0	15.0699	77.915
345-42	Opx- Ol gabbro	1415P	38.5	47.382	0.017	33.667	0	0.376	0	0.034	17.349	1.862	0.044	0	100.726	6.49	0.00	5.43	0	0.04	0	0.00	2.54	0.49	0.00	0	15.0351	83.549
345-42	Opx- Ol gabbro	1415P	38.5	47.637	0.068	32.702	0	0.525	0.01	0.052	17.061	2.13	0.020	0.005	100.218	6.56	0.00	5.31	0	0.06	0.00	0.01	2.52	0.56	0.00	0.00	15.0558	81.441
345-42	Opx- Ol gabbro	1415P	38.5	48.875	0.048	31.771	0.001	0.487	0	0.045	16.062	2.67	0.020	0.004	99.9899	6.73	0.00	5.15	0.00	0.05	0	0.00	2.36	0.71	0.00	0.00	15.0456	76.747
345-42	Opx- Ol gabbro	1415P	38.5	49.387	0.033	31.865	0	0.497	0.015	0.032	15.655	2.8	0.045	0.015	100.344	6.76	0.00	5.14	0	0.05	0.00	0.00	2.29	0.74	0.00	0.00	15.0331	75.348
345-42	Opx- Ol gabbro	1415P	38.5	48.566	0.047	32.186	0	0.522	0.014	0.042	16.277	2.445	0.032	0	100.131	6.68	0.00	5.21	0	0.06	0.00	0.00	2.39	0.65	0.00	0	15.0331	78.481
345-42	Opx- Ol gabbro	1415P	38.5	47.527	0.091	32.323	0.006	0.936	0.028	0.48	16.303	2.18	0.030	0.005	99.911	6.57	0.00	5.27	0.00	0.10	0.00	0.09	2.41	0.58	0.00	0.00	15.0746	80.366
345-42	Opx- Ol gabbro	1415P	38.5	47.46	0.036	33.536	0	0.426	0.016	0.053	17.413	1.848	0.020	0	100.815	6.50	0.00	5.41	0	0.04	0.00	0.01	2.55	0.49	0.00	0	15.0344	83.760
345-42	Opx- Ol gabbro	1415P	38.5	47.426	0.027	33.502	0	0.423	0	0.037	17.438	1.814	0.020	0	100.693	6.50	0.00	5.41	0	0.04	0	0.00	2.56	0.48	0.00	0	15.0286	84.027
345-42	Opx- Ol gabbro	1415P	38.5	47.437	0.02	33.496	0	0.417	0	0.032	17.389	1.877	0.020	0.002	100.691	6.50	0.00	5.41	0	0.04	0	0.00	2.55	0.49	0.00	0.00	15.036	83.554
345-42	Opx- Ol gabbro	1415P	38.5	47.757	0.013	33.298	0	0.426	0	0.049	17.267	1.92	0.013	0.004	100.747	6.54	0.00	5.37	0	0.04	0	0.00	2.53	0.50	0.00	0.00	15.0248	83.190
345-42	Opx- Ol gabbro	1415P	38.5	48.433	0.052	32.397	0	0.433	0	0.048	16.526	2.406	0.025	0.018	100.331	6.65	0.00	5.24	0.00	0.04	0	0.00	2.43	0.64	0.00	0.00	15.0418	79.028
345-42	Opx- Ol gabbro	1415P	38.5	47.993	0.057	33.094	0	0.429	0	0.033	16.953	2.02	0.024	0	100.602	6.57	0.00	5.34	0	0.04	0	0.00	2.48	0.53	0.00	0	15.0148	82.144

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-42	Opx- Ol gabbro	1415P	38.5	47.476	0.024	33.279	0	0.357	0	0.028	17.479	1.91	0.018	0.023	100.585 01	6.51 91	0.00 25	5.38 64	0	0.04 11	0	0.00 57	2.57 2	0.50 86	0.00 32	0.00 26	15.0412	83.403 2
345-42	Opx- Ol gabbro	1415P	38.5	48.425	0.024	32.7	0	0.396	0	0.044	16.595	2.317	0.014	0.024	100.539 01	6.63 53	0.00 25	5.28 13	0	0.04 53	0	0.00 89	2.43 65	0.61 56	0.00 25	0.00 26	15.0305	79.764 4
345-42	Opx- Ol gabbro	1415P	38.5	48.686	0.028	32.798	0.012	0.377	0.016	0.041	16.508	2.419	0.029	0.003	100.917 42	6.64 29	0.00 58	5.27 13	0.00	0.04 3	0.00 19	0.00 84	2.41 39	0.64 01	0.00 51	0.00 04	15.037	78.908 9
345-42	Opx- Ol gabbro	1415P	38.5	48.294	0.03	33.894	0.007	0.497	0	0.037	17.044	1.997	0.026	0.006	101.831 02	6.53 84	0.00 31	5.40 92	0.00 07	0.05 63	0	0.00 76	2.47 28	0.52 44	0.00 44	0.00 1	15.0179	82.382 9
345-42	Opx- Ol gabbro	1415P	38.5	46.673	0.041	33.308	0	0.415	0.02	0.051	17.538	1.722	0.016	0.012	99.7960 1	6.46 67	0.00 43	5.43 96	0	0.04 81	0.00 23	0.01 05	2.60 36	0.46 26	0.00 28	0.00 13	15.0418	84.835 1
345-42	Opx- Ol gabbro	1415P	38.5	47.165	0.032	33.083	0	0.411	0	0.14	17.476	2.046	0.025	0.008	100.42 89	6.49 33	0.00 32	5.37 74	0	0.04 88	0	0.02 02	2.58 02	0.54 66	0.01 02	0.00 1	15.0896	82.250 7
345-42	Opx- Ol gabbro	1415P	38.5	48.105	0.052	33.178	0	0.381	0.006	0.038	16.901	2.142	0.029	0	100.842 7	6.57 53	0.00 68	5.34 35	0	0.04 06	0.00	0.00 77	2.47 61	0.56 78	0.00 68	0	15.0316	81.164 8
345-42	Opx- Ol gabbro	1415P	38.5	47.265	0.004	33.753	0.019	0.417	0	0.034	17.492	1.727	0.02	0	100.730 99	6.47 97	0.00 04	5.45 42	0.00 21	0.04 78	0	0.00 69	2.56 96	0.45 9	0.00 35	0	15.0232	84.746
345-42	Opx- Ol gabbro	1415P	38.5	48.313	0.067	32.355	0.003	0.444	0	0.033	16.347	2.392	0.029	0.001	99.9839 9	6.65 58	0.00 7	5.25 39	0.00 03	0.05 11	0	0.00 67	2.41 3	0.63 9	0.00 52	0.00 01	15.0321	78.928 1
345-42	Opx- Ol gabbro	1415P	38.5	47.412	0.004	33.213	0.016	0.412	0.013	0.07	17.429	1.883	0.027	0.01	100.491 86	6.51 05	0.00 25	5.38 17	0.00	0.04 74	0.00 15	0.01 43	2.56 76	0.50 19	0.00 47	0.00 14	15.0421	83.520 6
345-42	Opx- Ol gabbro	1415P	38.5	47.349	0.013	33.23	0.02	0.36	0	0.013	17.455	0.919	0.028	0.005	99.3869 9	6.55 25	0.00 14	5.42 04	0.00 22	0.04 17	0	0.00 27	2.58 75	0.24 66	0.00 5	0.00 06	14.8606	91.138
345-42	Opx- Ol gabbro	1415P	38.5	48	0.091	33.096	0.023	0.464	0.022	0.048	17.121	2.025	0.014	0.011	100.915 47	6.56 94	0.00 53	5.33 53	0.00 25	0.05 3	0.00 25	0.00 98	2.50 9	0.53 69	0.00 25	0.00 12	15.0268	82.305 1
345-42	Opx- Ol gabbro	1415P	38.5	47.391	0.018	33.771	0	0.385	0.013	0.023	17.477	1.76	0.034	0	100.872 68	6.48 19	0.00 85	5.44	0	0.04 4	0.00 15	0.00 46	2.56 33	0.46 71	0.00 59	0	15.0236	84.421
345-42	Opx- Ol gabbro	1415P	38.5	47.854	0.025	33.336	0	0.373	0	0.051	17.18	1.941	0.01	0	100.77 9	6.54 26	0.00 74	5.37	0	0.04 27	0	0.01 05	2.51 93	0.51 5	0.00 17	0	15.0182	82.980 5
345-42	Opx- Ol gabbro	1415P	38.5	48.907	0.012	32.509	0	0.388	0.008	0.049	16.318	2.437	0.038	0.007	100.673 01	6.68 47	0.00 13	5.23 74	0	0.04 43	0.00 09	0.01	2.38 99	0.64 57	0.00 66	0.00 07	15.0215	78.558 0
345-42	Opx- Ol gabbro	1415P	38.5	48.478	0.057	32.976	0.014	0.394	0.017	0.031	16.671	2.346	0.032	0.013	101.028 99	6.61 37	0.00 58	5.30 27	0.00 15	0.04 5	0.00 2	0.00 63	2.43 69	0.62 05	0.00 56	0.00 14	15.0414	79.559 5
345-42	Opx- Ol gabbro	1415P	38.5	49.986	0.048	31.823	0	0.506	0.027	0.043	15.455	2.955	0.054	0	100.897 54	6.80 49	0.00 69	5.10	0	0.05 76	0.00 32	0.00 87	2.25 47	0.78	0.00 95	0	15.0309	74.065 5
345-42	Opx- Ol gabbro	1415P	38.5	47.49	0.024	33.729	0	0.434	0	0.034	17.382	1.858	0.032	0.002	100.982 99	6.49 4	0.00 25	5.43 65	0	0.04 96	0	0.00 7	2.54 65	0.49 25	0.00 56	0.00 02	15.0344	83.639 7
345-42	Opx- Ol gabbro	1415P	38.5	47.446	0.028	33.707	0	0.447	0.027	0.019	17.467	1.811	0.025	0	100.976 99	6.49 04	0.00 29	5.43 5	0	0.05 12	0.00 31	0.00 39	2.56 03	0.48 03	0.00 43	0	15.0314	84.084 3
345-44	Opx- Ol gabbro	1415P	45.7	47.388	0.034	33.798	0	0.429	0.012	0.029	17.234	1.945	0.012	0	100.881 57	6.48 35	0.00 24	5.45 91	0	0.04 14	0.00 6	0.00 74	2.52 74	0.51 62	0.00 21	0	15.0438	82.982 5
345-44	Opx- Ol gabbro	1415P	45.7	48.709	0.027	33.081	0.002	0.512	0.013	0.046	16.253	2.478	0.039	0.01	101.17 05	6.63 28	0.00 79	5.30 02	0.00 83	0.05 15	0.00 93	0.00 07	2.37 41	0.65 69	0.00 11	0.00	15.0433	78.197 1
345-44	Opx- Ol gabbro	1415P	45.7	48.263	0.031	33.337	0	0.369	0	0.021	16.712	2.281	0.033	0.006	101.052 99	6.58 14	0.00 32	5.35 83	0	0.04 21	0	0.00 42	2.44 19	0.60 32	0.00 57	0.00 07	15.0407	80.041 0
345-44	Opx- Ol gabbro	1415P	45.7	48.533	0.027	33.534	0	0.395	0.016	0.027	16.631	2.242	0.023	0.014	101.441 99	6.58 82	0.00 27	5.36 55	0	0.04 49	0.00 18	0.00 54	2.41 9	0.59 02	0.00 4	0.00 16	15.0233	80.280 0
345-44	Opx- Ol gabbro	1415P	45.7	48.059	0.028	33.837	0.024	0.385	0	0.026	16.994	2.018	0.016	0	101.383 33	6.53 29	0.00 18	5.42 26	0.00	0.04 38	0	0.00 52	2.47 48	0.53 19	0.00 28	0	15.0191	82.232 9
345-44	Opx- Ol gabbro	1415P	45.7	48.075	0.027	33.706	0.012	0.379	0	0.043	17.014	2.007	0.031	0	101.294 17	6.54 28	0.00 61	5.40 13	0.00 31	0.04	0	0.00 88	2.48 07	0.52 95	0.00 53	0	15.0193	82.264 4
345-44	Opx- Ol gabbro	1415P	45.7	47.905	0.016	33.545	0.001	0.508	0	0.551	16.567	2.084	0.044	0	101.221 54	6.52 17	0.00 58	5.38 01	0.00 79	0.05	0	0.11 19	2.41 8	0.55 05	0.00 77	0	15.059	81.244 0
345-44	Opx- Ol gabbro	1415P	45.7	48.516	0.051	33.387	0	0.389	0.013	0.082	16.46	2.31	0.036	0.005	101.248 99	6.59 71	0.00 52	5.35 11	0	0.04 43	0.00 15	0.01 65	2.39 82	0.60 9	0.00 62	0.00 06	15.0297	79.584 2
345-44	Opx- Ol gabbro	1415P	45.7	48.346	0.052	33.338	0	0.36	0	0.048	16.496	2.204	0.024	0.027	100.895 51	6.59 53	0.00 04	5.36	0	0.04 1	0	0.00 97	2.41 12	0.58 29	0.00 42	0.00 3	15.0128	80.418 4
345-44	Opx- Ol gabbro	1415P	45.7	48.383	0.021	33.621	0.018	0.4	0	0.055	16.6	2.255	0.036	0	101.388 99	6.57 24	0.00 21	5.38 33	0.00 19	0.04 55	0	0.01 12	2.41 63	0.59 41	0.00 62	0	15.033	80.100 2
345-44	Opx- Ol gabbro	1415P	45.7	47.692	0.02	34.019	0	0.426	0.02	0.14	17.406	1.822	0.012	0.023	101.58 19	6.48 2	0.00 98	5.44	0	0.04 84	0.00 23	0.02 83	2.53 49	0.48 02	0.00 2	0.00 25	15.0323	84.017
345-44	Opx- Ol gabbro	1415P	45.7	48.011	0.006	33.903	0.001	0.511	0.012	0.174	17.207	1.933	0.005	0.016	101.779 06	6.51	0.00 85	5.41 02	0.00	0.05 8	0.00 14	0.03 52	2.49 99	0.50 82	0.00 09	0.00 17	15.0346	83.080 7
345-44	Opx- Ol gabbro	1415P	45.7	50.566	0.058	31.989	0	0.488	0.011	0.048	15.019	3.221	0.041	0	101.440 99	6.83 68	0.00 59	5.09 8	0	0.05 52	0.00 12	0.00 97	2.17 59	0.84 43	0.00 71	0	15.0341	71.875 9
345-44	Opx- Ol gabbro	1415P	45.7	49.067	0.069	32.68	0	0.477	0.014	0.039	15.877	2.647	0.024	0.02	100.914 73	6.68	0.00 71	5.24 99	0	0.05 44	0.00 16	0.00 79	2.31 85	0.69 96	0.00 42	0.00 22	15.0327	76.713

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-44	Opx- Ol gabbro	1415P	45.7	49.076	0.069	32.731	0.001	0.477	0.005	0.049	16.025	2.622	0.035	0	101.09	6.6793	0.007	5.2509	0.002	0.0543	0.005	0.0106	2.3377	0.6921	0.0061	0	15.0374	76.9963
345-44	Opx- Ol gabbro	1415P	45.7	49.432	0.052	32.382	0	0.443	0.008	0.048	15.736	2.661	0.022	0	100.782	6.7372	0.005	5.2017	0	0.0505	0.009	0.0097	2.2988	0.7031	0.0039	0	15.0103	76.4725
345-44	Opx- Ol gabbro	1415P	45.7	48.065	0.046	33.153	0.009	0.422	0	0.029	16.495	2.382	0.038	0.008	100.641	6.5833	0.004	5.3521	0.001	0.0483	0	0.0059	2.4206	0.6326	0.0056	0.0009	15.0548	79.1358
345-44	Opx- Ol gabbro	1415P	45.7	50.073	0.052	32.443	0.005	0.443	0.01	0.046	15.493	2.973	0.053	0.017	101.606	6.7679	0.005	5.1652	0.001	0.0505	0.0012	0.0094	2.2434	0.7709	0.0091	0.0018	15.0364	73.9986
345-44	Opx- Ol gabbro	1415P	45.7	49.749	0.027	32.488	0.031	0.489	0	0.035	15.666	2.837	0.042	0.012	101.376	6.7437	0.003	5.1901	0.003	0.0554	0	0.0091	2.2754	0.7456	0.0073	0.0013	15.0328	75.1376
345-44	Opx- Ol gabbro	1415P	45.7	49.952	0.009	32.382	0	0.45	0.012	0.043	15.432	2.951	0.042	0.021	101.292	6.7701	0.0009	5.1733	0	0.0505	0.0014	0.0088	2.2413	0.7732	0.0056	0.0023	15.0329	74.1121
345-44	Opx- Ol gabbro	1415P	45.7	51.225	0.051	31.675	0	0.465	0.02	0.045	14.472	3.558	0.056	0.002	101.568	6.9069	0.0052	5.0344	0	0.0525	0.0023	0.0091	2.0908	0.9302	0.0096	0.0002	15.0408	68.9899
345-44	Opx- Ol gabbro	1415P	45.7	51.164	0.041	31.668	0	0.468	0	0.057	14.608	3.5	0.052	0.011	101.569	6.9007	0.0041	5.0345	0	0.0528	0	0.0115	2.1115	0.9152	0.0092	0.0012	15.0401	69.5514
345-44	Opx- Ol gabbro	1415P	45.7	50.219	0.054	32.492	0	0.434	0.018	0.039	15.309	3.046	0.049	0	101.64	6.7791	0.0055	5.1704	0	0.0491	0.0021	0.0078	2.2134	0.7974	0.0085	0	15.0332	73.3082
345-44	Opx- Ol gabbro	1415P	45.7	47.923	0.025	33.868	0.006	0.564	0	0.032	17.046	1.957	0.026	0.003	101.448	6.5126	0.0026	5.4291	0.0006	0.0641	0	0.0066	2.4841	0.5107	0.0042	0.0003	15.0253	82.6848
345-44	Opx- Ol gabbro	1415P	45.7	48.603	0.022	32.662	0	0.565	0.003	0.053	15.933	2.577	0.035	0.006	100.469	6.6601	0.0023	5.2753	0	0.0648	0.0003	0.0108	2.3394	0.6846	0.0061	0.0017	15.0453	77.2052
345-44	Opx- Ol gabbro	1415P	45.7	50.907	0.054	32.011	0.025	0.446	0.015	0.041	14.756	3.359	0.043	0	101.66	6.8613	0.0055	5.0848	0.0027	0.0502	0.0018	0.0083	2.1311	0.8702	0.0078	0	15.0321	70.6416
345-44	Opx- Ol gabbro	1415P	45.7	47.535	0.026	33.964	0	0.411	0.01	0.033	17.222	1.893	0.021	0	101.115	6.4837	0.0026	5.4636	0	0.0469	0.0011	0.0067	2.5109	0.5033	0.0036	0	15.0308	83.3076
345-44	Opx- Ol gabbro	1415P	45.7	47.6	0.015	33.489	0	0.408	0.007	0.061	16.797	2.126	0.014	0.009	100.539	6.5216	0.0016	5.4148	0	0.0469	0.0008	0.0025	2.4649	0.5619	0.0054	0.0021	15.0459	81.2814
345-44	Opx- Ol gabbro	1415P	45.7	47.718	0.016	33.485	0	0.408	0	0.045	17.005	2.041	0.024	0.004	100.748	6.5337	0.0016	5.4035	0	0.0468	0	0.0049	2.4937	0.5402	0.0045	0.0005	15.0362	82.0523
345-44	Opx- Ol gabbro	1415P	45.7	47.427	0.013	33.794	0.004	0.436	0.009	0.052	17.234	1.949	0.032	0	100.945	6.4837	0.0014	5.4488	0.0004	0.0499	0.0009	0.0106	2.5271	0.5107	0.0076	0	15.0477	82.8546
345-44	Opx- Ol gabbro	1415P	45.7	47.726	0.036	33.524	0	0.459	0	0.035	16.904	2.091	0.024	0	100.801	6.5337	0.0037	5.4035	0	0.0524	0	0.0074	2.4737	0.5547	0.0048	0	15.0402	81.6164
345-44	Opx- Ol gabbro	1415P	45.7	49.296	0.037	32.922	0	0.449	0.01	0.027	15.995	2.704	0.031	0	101.471	6.6837	0.0037	5.2599	0	0.0509	0.0012	0.0054	2.3218	0.7108	0.0053	0	15.0423	76.4373
345-44	Opx- Ol gabbro	1415P	45.7	47.751	0.031	32.798	0.027	0.551	0.013	0.427	16.021	2.128	0.043	0.007	99.8020	6.5837	0.0032	5.3321	0.0027	0.0639	0.0013	0.0836	2.3639	0.5619	0.0093	0.0007	15.0283	80.4282
345-44	Opx- Ol gabbro	1415P	45.7	48.962	0.026	33.283	0	0.448	0	0.035	16.472	2.456	0.032	0	101.716	6.6237	0.0027	5.3107	0	0.0507	0	0.0074	2.3893	0.6446	0.0058	0	15.0389	78.6037
345-44	Opx- Ol gabbro	1415P	45.7	50.567	0.039	32.304	0.001	0.449	0.005	0.046	15.062	3.246	0.062	0	101.779	6.8137	0.0039	5.1349	0.0001	0.0505	0.0005	0.0093	2.1749	0.8402	0.0106	0	15.0447	71.6976
345-44	Opx- Ol gabbro	1415P	45.7	45.759	0.012	34.975	0.018	0.472	0	0.31	18.437	1.17	0.022	0	101.177	6.2637	0.0012	5.6487	0.0019	0.0541	0	0.0627	2.7099	0.3079	0.0042	0	15.0612	89.5764
345-44	Opx- Ol gabbro	1415P	45.7	47.883	0.021	33.649	0.005	0.383	0	0.027	16.765	2.12	0.024	0.011	100.884	6.5437	0.0021	5.4188	0.0005	0.0438	0	0.0055	2.4539	0.5619	0.0078	0.0012	15.0306	81.2843
345-44	Opx- Ol gabbro	1415P	45.7	48.919	0.04	33.199	0.009	0.53	0.011	0.038	16.234	2.498	0.033	0	101.506	6.6337	0.0041	5.3009	0.0009	0.0601	0.0013	0.0078	2.3594	0.6539	0.0064	0	15.0385	78.0562
345-45	Opx- Ol gabbro	1415P	51	48.214	0.038	32.671	0.016	0.478	0.013	0.036	16.62	2.384	0.041	0	100.510	6.6168	0.0039	5.2817	0.0017	0.0548	0.0016	0.0075	2.4447	0.6364	0.0077	0	15.0568	79.2111
345-45	Opx- Ol gabbro	1415P	51	48.2	0.021	32.497	0	0.602	0	0.102	16.616	2.336	0.014	0.009	100.400	6.6237	0.0022	5.2643	0	0.0692	0	0.0082	2.4468	0.6232	0.0031	0.0001	15.0542	79.6387
345-45	Opx- Ol gabbro	1415P	51	47.647	0.033	32.828	0.013	0.558	0.001	0.219	16.781	2.092	0.034	0	100.198	6.5637	0.0034	5.3307	0.0014	0.0643	0.0001	0.0049	2.4771	0.5547	0.0057	0	15.0496	81.4381
345-45	Opx- Ol gabbro	1415P	51	48.079	0.051	32.809	0	0.424	0	0.032	16.845	2.224	0.042	0	100.510	6.5937	0.0052	5.3072	0	0.0486	0	0.0066	2.4747	0.5907	0.0082	0	15.0429	80.4971
345-45	Opx- Ol gabbro	1415P	51	47.939	0.053	32.53	0	0.398	0	0.038	16.741	2.319	0.022	0.002	100.04	6.6037	0.0055	5.2837	0	0.0459	0	0.0078	2.4734	0.6139	0.0035	0.0002	15.0529	79.8692
345-45	Opx- Ol gabbro	1415P	51	47.794	0.045	32.695	0	0.415	0	0.043	16.919	2.244	0.022	0	100.177	6.5837	0.0046	5.3035	0	0.0478	0	0.0089	2.4934	0.5907	0.0035	0	15.0571	80.5452
345-45	Opx- Ol gabbro	1415P	51	47.625	0.034	32.657	0	0.425	0.005	0.054	17.037	2.165	0.022	0.005	100.018	6.5737	0.0036	5.3107	0	0.0491	0.0006	0.0124	2.5134	0.5747	0.0039	0.0005	15.0565	81.1977
345-45	Opx- Ol gabbro	1415P	51	48.867	0.02	31.613	0.011	1.324	0.039	3.049	14.407	2.393	0.029	0	101.752	6.6237	0.0021	5.0488	0.0012	0.1501	0.0045	0.0061	2.0948	0.6232	0.0088	0	15.1689	76.7513
345-45	Opx- Ol gabbro	1415P	51	47.566	0.029	32.445	0	0.395	0.003	0.053	16.853	2.24	0.023	0	99.604	6.5937	0.0031	5.2943	0	0.0458	0	0.0104	2.5019	0.6014	0.0041	0	15.059	80.4983

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-45	Opx- Ol gabbro	1415P	51	49.014	0.054	31.822	0.012	0.416	0	0.03	16.041	2.666	0.034	0.018	100.106	6.73	0.00	5.15	0.00	0.04	0	0.00	2.36	0.71	0.00	0.00	15.0362	76.729
345-45	Opx- Ol gabbro	1415P	51	48.089	0.058	32.435	0.009	0.401	0	0.042	16.732	2.34	0.037	0.003	100.146	6.62	0.00	5.26	0.00	0.04	0	0.00	2.46	0.62	0.00	0.00	15.0527	79.634
345-45	Opx- Ol gabbro	1415P	51	47.907	0.03	32.692	0	0.374	0	0.039	16.839	2.276	0.017	0.006	100.179	6.59	0.00	5.30	0	0.04	0	0.00	2.48	0.60	0.00	0.00	15.0527	80.269
345-45	Opx- Ol gabbro	1415P	51	47.804	0.019	32.341	0	0.467	0	0.032	16.823	2.258	0.035	0	99.7790	6.61	0.00	5.27	0	0.05	0	0.00	2.49	0.60	0.00	0	15.0542	80.302
345-45	Opx- Ol gabbro	1415P	51	47.715	0.02	32.804	0	0.494	0.005	0.031	17.024	2.082	0.028	0.009	100.212	6.57	0.00	5.32	0	0.05	0.00	0.00	2.51	0.55	0.00	0.00	15.0415	81.744
345-45	Opx- Ol gabbro	1415P	51	47.982	0.049	32.347	0	0.436	0	0.071	16.721	2.338	0.032	0	99.9759	6.62	0.00	5.26	0	0.05	0	0.01	2.47	0.62	0.00	0	15.0576	79.666
345-45	Opx- Ol gabbro	1415P	51	47.373	0.023	32.973	0.004	0.364	0.003	0.021	17.189	1.975	0.014	0.004	99.9429	6.54	0.00	5.36	0.00	0.04	0.00	0.00	2.54	0.52	0.00	0.00	15.0361	82.719
345-45	Opx- Ol gabbro	1415P	51	47.663	0.052	32.444	0	0.411	0.008	0.042	16.906	2.21	0.024	0.022	99.784	6.59	0.00	5.29	0	0.04	0.00	0.00	2.50	0.59	0.00	0.00	15.0536	80.755
345-45	Opx- Ol gabbro	1415P	51	48.411	0.049	32.28	0	0.469	0.004	0.031	16.537	2.474	0.029	0	100.284	6.65	0.00	5.23	0	0.05	0.00	0.00	2.43	0.65	0.00	0	15.0551	78.565
345-45	Opx- Ol gabbro	1415P	51	48.79	0.056	31.33	0.001	0.432	0.009	0.039	15.907	2.699	0.027	0	99.29	6.76	0.00	5.11	0.00	0.05	0.00	0.00	2.36	0.72	0.00	0	15.0378	76.392
345-45	Opx- Ol gabbro	1415P	51	48.264	0.031	31.725	0	0.417	0.001	0.06	16.319	2.492	0.018	0.009	99.3329	6.69	0.00	5.18	0	0.04	0.00	0.01	2.42	0.67	0.00	0.00	15.0454	78.271
345-45	Opx- Ol gabbro	1415P	51	48.578	0.06	31.888	0	0.436	0	0.122	16.258	2.533	0.039	0	99.906	6.69	0.00	5.18	0	0.05	0	0.02	2.40	0.67	0.00	0	15.0468	77.837
345-45	Opx- Ol gabbro	1415P	51	48.853	0.046	32.378	0.004	0.48	0.001	0.049	16.319	2.579	0.032	0.001	100.742	6.68	0.00	5.21	0.00	0.05	0.00	0.01	2.39	0.68	0.00	0.00	15.0499	77.623
345-45	Opx- Ol gabbro	1415P	51	48.784	0.077	31.762	0	0.473	0.006	0.05	16.058	2.634	0.141	0.007	99.992	6.72	0.00	5.15	0	0.05	0.00	0.01	2.37	0.70	0.02	0.00	15.0547	76.492
345-45	Opx- Ol gabbro	1415P	51	49.056	0.06	31.572	0	0.408	0.017	0.044	15.926	2.802	0.036	0	99.922	6.75	0.00	5.12	0	0.04	0.00	0.00	2.35	0.74	0.00	0	15.0517	75.703
345-45	Opx- Ol gabbro	1415P	51	48.391	0.048	32.272	0.009	0.452	0.007	0.049	16.442	2.426	0.043	0.038	100.184	6.65	0.00	5.23	0.00	0.05	0.00	0.01	2.42	0.64	0.00	0.00	15.0465	78.728
345-45	Opx- Ol gabbro	1415P	51	49.184	0.046	31.838	0.014	0.427	0.009	0.073	16.004	2.76	0.036	0.006	100.395	6.74	0.00	5.14	0.00	0.04	0.00	0.01	2.35	0.73	0.00	0.00	15.0495	76.058
345-45	Opx- Ol gabbro	1415P	51	48.587	0.033	31.697	0	0.397	0	0.034	16.258	2.526	0.033	0	99.5580	6.71	0.00	5.16	0	0.04	0	0.00	2.40	0.67	0.00	0	15.0351	77.908
345-45	Opx- Ol gabbro	1415P	51	47.156	0.062	32.333	0	0.39	0	0.023	17.374	1.964	0.022	0	99.324	6.56	0.00	5.30	0	0.04	0	0.00	2.59	0.53	0.00	0	15.0465	82.909
345-45	Opx- Ol gabbro	1415P	51	47.706	0.012	32.777	0	0.377	0	0.026	17.095	2.082	0.029	0.017	100.121	6.57	0.00	5.32	0	0.04	0	0.00	2.52	0.55	0.00	0.00	15.0406	81.802
345-45	Opx- Ol gabbro	1415P	51	48.626	0.056	31.593	0	0.393	0.015	0.07	15.974	2.65	0.043	0	99.42	6.73	0.00	5.15	0	0.04	0.00	0.01	2.36	0.71	0.00	0	15.0437	76.724
345-45	Opx- Ol gabbro	1415P	51	48.103	0.038	32.194	0	0.394	0.008	0.039	16.603	2.346	0.021	0	99.746	6.64	0.00	5.24	0	0.04	0.00	0.00	2.45	0.62	0.00	0	15.042	79.538
345-45	Opx- Ol gabbro	1415P	51	48.954	0.061	31.877	0	0.429	0	0.039	16.126	2.686	0.03	0	100.202	6.72	0.00	5.16	0	0.04	0	0.00	2.37	0.71	0.00	0	15.0468	76.706
345-45	Opx- Ol gabbro	1415P	51	49.139	0.043	31.866	0.016	0.363	0.005	0.041	16.029	2.771	0.033	0	100.304	6.74	0.00	5.15	0.00	0.04	0.00	0.00	2.35	0.73	0.00	0	15.0494	76.013
345-45	Opx- Ol gabbro	1415P	51	49.298	0.057	31.356	0	0.369	0.007	0.048	15.634	2.838	0.044	0	99.651	6.79	0.00	5.09	0	0.04	0.00	0.00	2.31	0.75	0.00	0	15.031	75.083
345-45	Opx- Ol gabbro	1415P	51	46.922	0.06	32.524	0	0.417	0.013	0.019	17.368	1.91	0.000	0	99.2400	6.53	0.00	5.34	0	0.04	0.00	0.00	2.59	0.51	0.00	0	15.0463	83.370
345-45	Opx- Ol gabbro	1415P	51	48.158	0.056	32.514	0	0.433	0.004	0.047	16.67	2.345	0.017	0	100.243	6.62	0.00	5.27	0	0.04	0.00	0.00	2.45	0.62	0.00	0	15.0478	79.631
345-45	Opx- Ol gabbro	1415P	51	49.507	0.05	32.358	0	0.472	0.002	0.042	16.406	2.639	0.033	0	101.511	6.71	0.00	5.17	0	0.05	0.00	0.00	2.38	0.69	0.00	0	15.0421	77.303
345-45	Opx- Ol gabbro	1415P	51	47.691	0.023	32.711	0	0.45	0	0.045	16.987	2.177	0.027	0.003	100.114	6.57	0.00	5.31	0	0.05	0	0.00	2.51	0.58	0.00	0.00	15.0554	81.047
345-45	Opx- Ol gabbro	1415P	51	48.941	0.066	31.891	0.01	0.495	0.004	0.062	16.342	2.633	0.027	0.001	100.481	6.71	0.00	5.15	0.00	0.05	0.00	0.01	2.40	0.70	0.00	0.00	15.0546	77.302
345-45	Opx- Ol gabbro	1415P	51	47.665	0.052	32.415	0.002	0.378	0.005	0.031	16.889	2.193	0.021	0.002	99.671	6.59	0.00	5.29	0.00	0.04	0.00	0.00	2.50	0.58	0.00	0.00	15.0463	80.875
345-45	Opx- Ol gabbro	1415P	51	47.472	0.038	32.727	0	0.408	0.013	0.022	17.291	2.038	0.024	0.002	100.035	6.55	0.00	5.32	0	0.04	0.00	0.00	2.55	0.54	0.00	0.00	15.0506	82.309
345-45	Opx- Ol gabbro	1415P	51	47.308	0.055	32.669	0	0.348	0	0.03	17.231	1.983	0.026	0	99.65	6.55	0.00	5.33	0	0.04	0	0.00	2.55	0.53	0.00	0	15.0396	82.643

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-45	Opx- Ol gabbro	1415P	51	48.459	0.053	31.183	0.016	1.134	0.047	1.427	15.013	2.656	0.045	0	100.03	6.6847	0.0055	5.0722	0.0017	0.1309	0.0054	0.2935	2.2195	0.7104	0.0079	0	15.1317	75.549
345-45	Opx- Ol gabbro	1415P	51	48.168	0.021	32.731	0.003	0.431	0	0.044	16.941	2.287	0.026	0.018	100.67	6.6055	0.0021	5.2822	0.0003	0.0409	0	0.0089	2.4885	0.6079	0.0045	0.0002	15.056	80.250
345-45	Opx- Ol gabbro	1415P	51	48.757	0.066	32.118	0	0.476	0	0.075	16.294	2.627	0.034	0.007	100.45	6.6891	0.0068	5.1937	0	0.0546	0	0.0154	2.3946	0.6988	0.0059	0.0008	15.0597	77.262
345-45	Opx- Ol gabbro	1415P	51	48.277	0.063	31.729	0.007	0.456	0	0.069	16.414	2.547	0.079	0	99.6410	6.6839	0.0065	5.1739	0.0008	0.0528	0	0.0143	2.4335	0.6881	0.0101	0	15.069	77.728
345-45	Opx- Ol gabbro	1415P	51	48.629	0.051	32.017	0.017	0.45	0	0.071	16.454	2.54	0.044	0.008	100.277	6.6856	0.0053	5.1884	0.0019	0.0517	0	0.0146	2.4233	0.6707	0.0059	0.0009	15.0565	77.964
345-45	Opx- Ol gabbro	1415P	51	48.225	0.07	31.587	0	0.577	0.029	0.311	16.233	2.584	0.033	0	99.6459	6.6709	0.0073	5.1564	0	0.0668	0.0033	0.0642	2.4085	0.6939	0.0058	0	15.0853	77.488
345-46	Opx- Ol gabbro	1415P	59.2	48.278	0.023	33.226	0	0.435	0.002	0.021	16.516	2.203	0.038	0	100.742	6.5924	0.0024	5.3503	0	0.0497	0.0002	0.0042	2.4189	0.5866	0.0066	0	15.0178	80.375
345-46	Opx- Ol gabbro	1415P	59.2	49.034	0.037	32.566	0.003	0.448	0	0.019	15.695	2.652	0.041	0.012	100.507	6.7042	0.0038	5.2461	0.0003	0.0513	0	0.0039	2.2994	0.7003	0.0072	0.0013	15.0227	76.402
345-46	Opx- Ol gabbro	1415P	59.2	48.992	0.054	33.012	0	0.391	0.023	0.035	16.015	2.497	0.039	0	101.056	6.6604	0.0055	5.2923	0	0.0445	0.0027	0.0071	2.3343	0.6548	0.0069	0	15.0166	77.815
345-46	Opx- Ol gabbro	1415P	59.2	48.675	0.058	33.166	0.021	0.412	0	0.031	16.273	2.32	0.038	0.012	101.007	6.6206	0.0059	5.3202	0.0023	0.0469	0	0.0063	2.3749	0.6149	0.0066	0.0014	15.011	79.316
345-46	Opx- Ol gabbro	1415P	59.2	48.318	0.074	32.964	0.009	0.417	0	0.037	16.423	2.355	0.029	0	100.614	6.6139	0.0076	5.3148	0.001	0.0477	0	0.0075	2.4045	0.6242	0.0058	0	15.033	79.303
345-46	Opx- Ol gabbro	1415P	59.2	39.203	0.001	22.296	0.013	0.693	1.373	0.146	35.635	0.055	0	0.026	99.441	5.9526	0.0001	3.9907	0.0015	0.0879	0.1766	0.0329	5.7917	0.0107	0	0.0032	16.0597	99.719
345-46	Opx- Ol gabbro	1415P	59.2	47.167	0.043	32.545	0.019	1.639	0.037	0.383	15.315	2.357	0.026	0	99.5260	6.5571	0.0045	5.3319	0.0021	0.1907	0.0045	0.0795	2.2837	0.6346	0.0021	0	15.0914	78.092
345-46	Opx- Ol gabbro	1415P	59.2	48.031	0.034	33.446	0.011	0.404	0.005	0.023	16.478	2.249	0.029	0.012	100.722	6.5635	0.0035	5.3911	0.0012	0.0482	0.0006	0.0048	2.4145	0.5948	0.0064	0.0013	15.0328	80.059
345-46	Opx- Ol gabbro	1415P	59.2	47.398	0.066	33.386	0	0.39	0.019	0.025	16.712	2.095	0.024	0.014	100.125	6.5205	0.0068	5.4177	0	0.0404	0.0022	0.0049	2.4655	0.5522	0.0055	0.0013	15.0373	81.404
345-46	Opx- Ol gabbro	1415P	59.2	47.978	0.043	32.936	0	0.344	0.003	0.025	16.073	2.417	0.025	0	99.841	6.6117	0.0045	5.3493	0	0.0397	0.0003	0.0052	2.3734	0.6447	0.0066	0	15.0343	78.495
345-46	Opx- Ol gabbro	1415P	59.2	47.235	0.049	32.375	0	0.476	0.009	0.031	15.931	2.469	0.024	0	98.603	6.6016	0.0051	5.3339	0	0.0556	0.001	0.0065	2.3829	0.6662	0.0045	0	15.063	77.984
345-46	Opx- Ol gabbro	1415P	59.2	47.783	0.047	32.111	0	0.414	0.011	0.041	15.448	2.706	0.024	0	98.589	6.6645	0.0049	5.2801	0	0.0484	0.0013	0.0086	2.3006	0.7305	0.0052	0	15.0568	75.805
345-46	Opx- Ol gabbro	1415P	59.2	47.995	0.057	32.09	0	0.458	0.004	0.044	15.531	2.708	0.032	0.005	98.9299	6.6705	0.0059	5.2604	0	0.0533	0.0005	0.0091	2.3145	0.7302	0.0067	0.0006	15.0569	75.850
345-46	Opx- Ol gabbro	1415P	59.2	47.316	0.004	32.832	0	0.414	0.006	0.027	16.281	2.275	0.026	0	99.1840	6.5737	0.0004	5.3704	0	0.0481	0.0007	0.0056	2.4235	0.6127	0.0035	0	15.0467	79.678
345-46	Opx- Ol gabbro	1415P	59.2	47.118	0.011	33.218	0.011	0.394	0	0.052	16.599	2.088	0.021	0	99.5040	6.5204	0.0011	5.4206	0.0012	0.0457	0	0.0107	2.4636	0.5607	0.0038	0	15.0404	81.357
345-46	Opx- Ol gabbro	1415P	59.2	47.081	0.033	33.693	0	0.397	0	0.019	16.811	1.925	0.014	0	99.9770	6.4927	0.0035	5.4767	0	0.0427	0	0.0039	2.4841	0.5132	0.0032	0	15.0246	82.745
345-46	Opx- Ol gabbro	1415P	59.2	48.086	0.019	33.329	0	0.451	0.008	0.043	16.442	2.212	0.026	0.017	100.64	6.5807	0.0019	5.3707	0	0.0516	0.0008	0.0087	2.4107	0.5871	0.0046	0.0019	15.0258	80.255
345-46	Opx- Ol gabbro	1415P	59.2	48.847	0.013	32.954	0	0.462	0	0.044	15.889	2.487	0.029	0	100.726	6.6653	0.0013	5.3002	0	0.0527	0	0.0089	2.3251	0.6516	0.0052	0	15.0152	77.784
345-46	Opx- Ol gabbro	1415P	59.2	46.769	0.078	33.394	0.012	0.349	0.013	0.019	16.738	2.043	0.026	0	99.4409	6.4837	0.0081	5.4619	0.0013	0.0404	0.0015	0.0044	2.4846	0.5417	0.0045	0	15.0489	81.764
345-46	Opx- Ol gabbro	1415P	59.2	49.124	0.038	32.211	0	0.363	0	0.025	15.479	2.901	0.036	0.008	100.196	6.7304	0.0039	5.2006	0	0.0416	0	0.0085	2.2743	0.7722	0.0082	0.0009	15.0472	74.476
345-46	Opx- Ol gabbro	1415P	59.2	49.197	0.045	32.788	0	0.363	0	0.032	15.729	2.69	0.024	0.005	100.905	6.6923	0.0046	5.2604	0	0.0414	0	0.0064	2.2945	0.7102	0.0045	0.0007	15.0245	76.246
345-46	Opx- Ol gabbro	1415P	59.2	48.855	0.043	32.938	0.01	0.271	0	0.037	15.914	2.584	0.035	0.005	100.736	6.6602	0.0044	5.2941	0.0011	0.0309	0	0.0074	2.3236	0.6836	0.0045	0.0002	15.0277	77.068
345-46	Opx- Ol gabbro	1415P	59.2	48.3	0.053	33.108	0	0.314	0	0.043	16.322	2.277	0.024	0	100.438	6.6127	0.0055	5.3437	0	0.0359	0	0.0088	2.3951	0.6004	0.0048	0	15.0129	79.711
345-46	Opx- Ol gabbro	1415P	59.2	47.966	0.042	33.176	0	0.442	0.004	0.046	16.284	2.286	0.031	0.006	100.286	6.5858	0.0043	5.3586	0	0.0505	0.0005	0.0094	2.3926	0.6037	0.0053	0.0018	15.0319	79.601
345-46	Opx- Ol gabbro	1415P	59.2	45.846	0.028	33.423	0.002	0.401	0	0.02	17.038	1.696	0.024	0.013	98.491	6.4303	0.003	5.5253	0.0002	0.0474	0	0.0041	2.5605	0.4615	0.0043	0.0015	15.0371	84.616
345-46	Opx- Ol gabbro	1415P	59.2	48.222	0.055	33.117	0.007	0.439	0	0.018	16.036	2.396	0.029	0.009	100.334	6.6127	0.0057	5.3529	0	0.0503	0	0.0036	2.3538	0.6317	0.0056	0.0021	15.0263	78.560
345-46	Opx- Ol gabbro	1415P	59.2	49.114	0.052	32.447	0	0.472	0	0.037	15.378	2.72	0.034	0	100.253	6.7156	0.0054	5.2343	0	0.0541	0	0.0076	2.2546	0.7216	0.0045	0	15.0144	75.603

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-46	Opx- Ol gabbro	1415P	59.2	49.249	0.077	32.434	0	0.45	0	0.048	15.549	2.769	0.035	0	100.610	6.72451	0.00791	5.21498	0	0.05133	0	0.00987	2.27496	0.73140	0.00616	0	15.0273	75.477
345-46	Opx- Ol gabbro	1415P	59.2	48.495	0.05	32.788	0	0.37	0.01	0.029	15.834	2.502	0.022	0.015	100.115	6.65078	0.00524	5.30257	0	0.04125	0.00	0.00	2.32593	0.66	0.00	0.00	15.019	77.666
345-46	Opx- Ol gabbro	1415P	59.2	46.078	0.021	33.585	0.004	0.395	0.007	0.027	17.045	1.77	0.03	0.018	98.9799	6.43090	0.00222	5.52495	0.00	0.04610	0.00	0.00	2.54959	0.47	0.00	0.00	15.0464	84.033
345-46	Opx- Ol gabbro	1415P	59.2	46.571	0.014	33.177	0	0.415	0.001	0.036	16.635	2.019	0.010	0	98.883	6.49077	0.00147	5.45561	0	0.04845	0.00	0.00	2.48754	0.54	0.00	0	15.0473	81.914
345-46	Opx- Ol gabbro	1415P	59.2	47.039	0.046	32.573	0	0.447	0.003	0.056	16.158	2.216	0.03	0.017	98.5880	6.57534	0.00493	5.36467	0	0.05230	0.00	0.01	2.42016	0.60	0.00	0.00	15.0396	79.963
345-46	Opx- Ol gabbro	1415P	59.2	49.098	0.1	31.955	0	0.44	0.014	0.058	15.221	2.884	0.040	0	99.818	6.75048	0.01048	5.18519	0	0.05048	0.00	0.01	2.24706	0.76	0.00	0	15.0329	74.258
345-53	Opx- Ol gabbro	1415P	72	48.443	0.052	33.291	0.005	0.592	0	0.024	16.702	2.255	0.03	0	101.393	6.58485	0.00536	5.33069	0.00	0.06073	0	0.00	2.43049	0.59	0.00	0	15.0376	80.221
345-53	Opx- Ol gabbro	1415P	72	47.562	0.027	33.838	0.005	0.473	0	0.016	17.205	1.949	0.018	0	101.092	6.49028	0.00277	5.44865	0.00	0.05404	0	0.00	2.51741	0.51	0.00	0	15.0385	82.901
345-53	Opx- Ol gabbro	1415P	72	47.976	0.043	33.301	0	0.549	0.007	0.016	16.775	2.067	0.020	0.001	100.759	6.56453	0.00445	5.37015	0	0.06298	0.00	0.00	2.45833	0.54	0.00	0.00	15.0208	81.655
345-53	Opx- Ol gabbro	1415P	72	48.146	0.047	33.296	0.008	0.393	0	0.071	16.696	2.143	0.034	0.004	100.838	6.57499	0.00483	5.36017	0.00	0.04490	0	0.01	2.44744	0.56	0.00	0.00	15.0229	80.996
345-53	Opx- Ol gabbro	1415P	72	48.584	0.048	32.826	0	0.408	0.015	0.037	16.326	2.406	0.030	0.024	100.709	6.64002	0.00493	5.28966	0	0.04661	0.00	0.00	2.39963	0.63	0.00	0.00	15.0306	78.766
345-53	Opx- Ol gabbro	1415P	72	48.988	0.079	33.033	0	0.392	0	0.05	16.259	2.485	0.021	0	101.307	6.65128	0.00813	5.28971	0	0.04501	0	0.01	2.36957	0.65	0.00	0	15.0253	78.241
345-53	Opx- Ol gabbro	1415P	72	49.249	0.045	32.542	0	0.353	0	0.047	15.965	2.704	0.050	0	100.955	6.70022	0.00460	5.22035	0	0.04802	0	0.00	2.32971	0.71	0.00	0	15.0379	76.311
345-53	Opx- Ol gabbro	1415P	72	48.137	0.057	33.338	0.007	0.455	0.006	0.044	17.011	2.119	0.020	0.016	101.217	6.56138	0.00583	5.35062	0.00	0.05197	0.00	0.00	2.48907	0.56	0.00	0.00	15.0366	81.477
345-53	Opx- Ol gabbro	1415P	72	48.556	0.074	32.988	0.014	0.421	0.005	0.05	16.472	2.372	0.050	0	101	6.62230	0.00759	5.30029	0.00	0.04807	0.00	0.01	2.40268	0.62	0.00	0	15.0357	79.103
345-53	Opx- Ol gabbro	1415P	72	47.515	0.04	33.195	0	0.654	0.007	0.037	16.846	2.122	0.027	0.015	100.453	6.53441	0.00	5.38	0	0.07526	0.00	0.00	2.48576	0.56	0.00	0.00	15.0567	81.310
345-53	Opx- Ol gabbro	1415P	72	47.614	0.031	33.629	0.009	0.401	0.009	0.042	17.136	2.041	0.028	0.011	100.944	6.51411	0.00	5.42032	0.00	0.04611	0.00	0.00	2.51454	0.54	0.00	0.00	15.048	82.136
345-53	Opx- Ol gabbro	1415P	72	48.032	0.074	33.441	0.002	0.463	0.005	0.049	16.936	2.143	0.034	0	101.178	6.54094	0.00	5.37047	0.00	0.05289	0.00	0.00	2.47936	0.56	0.00	0	15.0422	81.184
345-53	Opx- Ol gabbro	1415P	72	46.766	0.047	33.667	0	0.392	0	0.038	17.578	1.754	0.020	0.006	100.275	6.44476	0.00487	5.47014	0	0.04599	0	0.00	2.59068	0.46	0.00	0.00	15.0486	84.567
345-53	Opx- Ol gabbro	1415P	72	48.258	0.044	33.511	0	0.473	0.003	0.049	16.792	2.137	0.030	0	101.3	6.56178	0.00450	5.37045	0	0.05382	0.00	0.00	2.44982	0.56	0.00	0	15.0268	81.128
345-53	Opx- Ol gabbro	1415P	72	47.798	0.062	33.481	0.023	0.422	0.006	0.049	17.312	1.935	0.034	0.013	101.135	6.52052	0.00636	5.38075	0.00	0.04881	0.00	0.01	2.53023	0.51	0.00	0.00	15.0326	82.996
345-53	Opx- Ol gabbro	1415P	72	47.618	0.059	33.918	0	0.471	0.011	0.039	17.306	1.847	0.030	0.018	101.312	6.48484	0.00608	5.44837	0	0.05371	0.00	0.00	2.52371	0.48	0.00	0.00	15.0281	83.656
345-53	Opx- Ol gabbro	1415P	72	47.708	0.042	33.711	0.01	0.485	0.006	0.044	17.091	1.927	0.010	0.026	101.071	6.51355	0.00431	5.42115	0.00	0.05535	0.00	0.00	2.50909	0.51	0.00	0.00	15.0257	82.976
345-53	Opx- Ol gabbro	1415P	72	47.532	0.059	33.166	0.003	0.407	0	0.027	17.012	2.023	0.026	0	100.253	6.54195	0.00612	5.38003	0.00	0.04685	0	0.00	2.50853	0.53	0.00	0	15.0339	82.167
345-53	Opx- Ol gabbro	1415P	72	48.113	0.061	33.3	0	0.471	0	0.048	16.781	2.161	0.035	0.002	100.971	6.56199	0.00625	5.35809	0	0.05373	0	0.00	2.45297	0.57	0.00	0.00	15.033	80.936
345-53	Opx- Ol gabbro	1415P	72	48.057	0.056	33.513	0.003	0.471	0.011	0.038	16.974	2.075	0.035	0	101.233	6.54082	0.00572	5.38023	0.00	0.05371	0.00	0.00	2.47782	0.54	0.00	0	15.0317	81.724
345-53	Opx- Ol gabbro	1415P	72	48.117	0.032	33.459	0.016	0.525	0	0.035	16.904	2.1	0.025	0	101.213	6.55171	0.00324	5.37047	0.00	0.05911	0.00	0.00	2.46994	0.55	0.00	0	15.031	81.526
345-53	Opx- Ol gabbro	1415P	72	46.837	0.004	33.903	0	0.462	0	0.041	17.316	1.861	0.023	0.032	100.477	6.44703	0.00041	5.49972	0	0.05323	0	0.00	2.55824	0.49	0.00	0.00	15.0581	83.619
345-53	Opx- Ol gabbro	1415P	72	48.233	0.077	33.079	0	0.382	0.016	0.06	16.672	2.246	0.031	0.021	100.817	6.59034	0.00793	5.33	0	0.04436	0.00	0.01	2.44259	0.59	0.00	0.00	15.034	80.257
345-53	Opx- Ol gabbro	1415P	72	47.974	0.035	33.282	0.017	0.502	0.023	0.022	16.792	2.066	0.026	0.011	100.749	6.56058	0.00359	5.36291	0.00	0.05748	0.00	0.00	2.46845	0.54	0.00	0.00	15.0215	81.664
345-53	Opx- Ol gabbro	1415P	72	47.915	0.04	33.232	0	0.446	0	0.049	16.739	2.092	0.040	0	100.553	6.56842	0.00412	5.36095	0	0.05112	0	0.01	2.45869	0.55	0.00	0	15.0245	81.367
345-53	Opx- Ol gabbro	1415P	72	48.71	0.024	32.762	0.014	0.447	0	0.044	16.284	2.375	0.030	0	100.703	6.65825	0.00247	5.27825	0.00	0.05107	0	0.00	2.38465	0.62	0.00	0	15.019	78.949
345-53	Opx- Ol gabbro	1415P	72	48.882	0	32.812	0	0.361	0.008	0.036	16.256	2.471	0.040	0.051	100.915	6.66048	0	5.27034	0	0.04119	0.00	0.00	2.37465	0.65	0.00	0.00	15.0286	78.243

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-53	Opx- Ol gabbro	1415P	72	48.875	0.029	33.032	0.008	0.435	0.005	0.037	16.446	2.333	0.039	0	101.23901	6.64545	0.00291	5.31408	0.00095	0.04956	0.00675	0.00757	2.39557	0.61567	0.00067	0	15.0163	79.3968
345-53	Opx- Ol gabbro	1415P	72	48.664	0.023	32.868	0	0.428	0.01	0.042	16.338	2.311	0.03	0	100.714	6.64084	0.00224	5.29028	0	0.04912	0.00116	0.00875	2.39716	0.61022	0.00052	0	15.0115	79.4815
345-53	Opx- Ol gabbro	1415P	72	48.047	0.02	33.517	0	0.377	0.009	0.023	16.919	2.052	0.025	0.001	100.983	6.55061	0.00205	5.39014	0	0.04301	0.00104	0.00473	2.47541	0.54029	0.00044	0.00001	15.0197	81.8850
345-53	Opx- Ol gabbro	1415P	72	48.463	0.057	33.073	0	0.422	0	0.033	16.238	2.43	0.029	0	100.745	6.62512	0.00586	5.32759	0	0.04812	0	0.00682	2.37641	0.64038	0.00051	0	15.0342	78.5567
345-53	Opx- Ol gabbro	1415P	72	47.922	0.017	33.431	0.012	0.473	0.002	0.036	16.719	2.198	0.035	0.015	100.86	6.55027	0.00175	5.38178	0.00126	0.05413	0.00021	0.00738	2.44096	0.58027	0.00061	0.00016	15.0454	80.6219
345-53	Opx- Ol gabbro	1415P	72	48.583	0.034	33.515	0	0.456	0	0.029	16.597	2.226	0.034	0.004	101.479	6.59025	0.00347	5.36106	0	0.05218	0	0.00592	2.41259	0.58218	0.00064	0.00004	15.0196	80.3066
345-53	Opx- Ol gabbro	1415P	72	47.957	0.059	33.185	0	0.443	0	0.062	16.629	2.204	0.032	0.007	100.597	6.57019	0.00609	5.36202	0	0.05408	0	0.01027	2.44917	0.58457	0.00054	0.00007	15.0373	80.5099
345-53	Opx- Ol gabbro	1415P	72	47.981	0.061	33.011	0.001	0.463	0	0.042	16.589	2.096	0.038	0	100.281	6.59014	0.00631	5.34463	0.00014	0.05301	0	0.00855	2.44219	0.55083	0.00067	0	15.012	81.2093
345-53	Opx- Ol gabbro	1415P	72	48.114	0.043	33.337	0.008	0.43	0.015	0.028	16.864	2.047	0.033	0	100.916	6.57001	0.00441	5.36544	0.00086	0.04991	0.00156	0.00581	2.46078	0.54021	0.00052	0	15.0146	81.8481
345-53	Opx- Ol gabbro	1415P	72	47.997	0.046	33.128	0.011	0.365	0.012	0.031	16.966	2.065	0.033	0	100.654	6.57044	0.00474	5.34787	0.00121	0.04181	0.00123	0.00644	2.49864	0.54084	0.00058	0	15.0228	81.7948
345-53	Opx- Ol gabbro	1415P	72	48.103	0.05	33.431	0.007	0.383	0	0.04	16.791	2.148	0.033	0	100.992	6.56041	0.00513	5.37201	0.00076	0.04372	0	0.00837	2.45681	0.56384	0.00063	0	15.0292	81.0341
345-53	Opx- Ol gabbro	1415P	72	48.848	0.045	32.825	0	0.444	0.01	0.056	16.103	2.533	0.034	0.004	100.906	6.66011	0.00461	5.27146	0	0.05067	0.00106	0.01148	2.35466	0.66984	0.00059	0.00042	15.0344	77.6702
345-53	Opx- Ol gabbro	1415P	72	47.5	0.061	33.482	0.008	0.489	0.007	0.06	16.891	2.108	0.041	0	100.65	6.51052	0.00631	5.41032	0.00083	0.05608	0.00072	0.01022	2.48225	0.56007	0.00077	0	15.0556	81.3691
345-53	Opx- Ol gabbro	1415P	72	47.768	0.042	33.796	0.007	0.406	0	0.031	16.979	1.98	0.024	0.001	101.037	6.51083	0.00431	5.43758	0.00076	0.04631	0	0.00849	2.48264	0.52163	0.00042	0.00009	15.023	82.4569
345-53	Opx- Ol gabbro	1415P	72	48.434	0.066	33.312	0	0.46	0	0.044	16.713	2.147	0.039	0.008	101.223	6.59002	0.00676	5.34041	0	0.05232	0	0.00892	2.43974	0.56002	0.00069	0.00008	15.0159	80.9529
345-53	Opx- Ol gabbro	1415P	72	48.115	0.045	33.382	0	0.466	0.021	0.021	16.877	2.056	0.031	0	100.995	6.56041	0.00461	5.37201	0	0.05324	0.00245	0.00442	2.46783	0.54242	0.00025	0	15.0168	81.8670
345-53	Opx- Ol gabbro	1415P	72	49.072	0.047	33.102	0	0.435	0.011	0.015	16.341	2.51	0.044	0.005	101.576	6.64096	0.00479	5.28173	0	0.04932	0.00113	0.00313	2.37731	0.65005	0.00079	0.00005	15.0353	78.0689
345-53	Opx- Ol gabbro	1415P	72	47.768	0.07	33.678	0.004	0.426	0.01	0.04	17.024	2.007	0.027	0.001	101.068	6.52072	0.00719	5.41084	0.00041	0.04861	0.00123	0.00812	2.48253	0.53042	0.00042	0.00019	15.0311	82.2997
345-53	Opx- Ol gabbro	1415P	72	47.788	0.075	33.662	0	0.418	0.011	0.046	16.947	2.07	0.029	0	101.036	6.52037	0.00771	5.41065	0	0.04768	0.00125	0.00937	2.47541	0.54002	0.00047	0	15.0367	81.7656
345-81	Opx- Ol gabbro	1415P	32	48.366	0.038	33.143	0.013	0.461	0.001	0.035	16.093	2.316	0.038	0.001	100.525	6.61091	0.00391	5.34458	0.00141	0.05271	0.00014	0.00714	2.35999	0.61045	0.00076	0.00002	15.0144	79.1382
345-81	Opx- Ol gabbro	1415P	32	48.5	0.032	32.334	0.029	0.469	0.01	0.053	16.241	2.491	0.056	0	100.224	6.66071	0.00330	5.23391	0.00314	0.05391	0.00113	0.01008	2.39521	0.66001	0.01004	0	15.0461	77.9797
345-81	Opx- Ol gabbro	1415P	32	49.168	0.076	32.385	0	0.494	0	0.043	15.545	2.621	0.045	0	100.382	6.72071	0.00781	5.22027	0	0.05065	0	0.00876	2.27489	0.69053	0.00087	0	15.0058	76.3986
345-81	Opx- Ol gabbro	1415P	32	47.456	0.057	33.643	0	0.385	0.001	0.02	17.198	1.902	0.025	0.001	100.708	6.50032	0.00591	5.43741	0	0.04241	0.00013	0.00411	2.52541	0.50052	0.00046	0.00012	15.0294	83.1586
345-81	Opx- Ol gabbro	1415P	32	49.052	0.062	32.265	0.009	0.44	0.001	0.039	15.812	2.634	0.046	0.001	100.387	6.71083	0.00647	5.20964	0.00091	0.05041	0.00013	0.00796	2.32069	0.69001	0.00115	0.00001	15.026	76.5442
345-81	Opx- Ol gabbro	1415P	32	49.672	0.18	31.478	0.002	0.519	0.004	0.086	14.877	3.046	0.046	0	99.928	6.82101	0.01864	5.09551	0.00027	0.05962	0.00049	0.01776	2.18981	0.81002	0.00126	0	15.0238	72.6926
345-81	Opx- Ol gabbro	1415P	32	49.119	0.064	31.826	0.014	0.475	0	0.059	15.017	2.915	0.047	0.001	99.56	6.77024	0.00665	5.17766	0.00192	0.05481	0	0.01021	2.21585	0.77023	0.00112	0.00001	15.0297	73.7048
345-81	Opx- Ol gabbro	1415P	32	49.313	0.017	32.062	0	0.383	0.018	0.042	15.288	2.765	0.044	0	99.935	6.76095	0.00176	5.18828	0	0.04421	0.00217	0.00861	2.24686	0.73002	0.00064	0	15.0069	75.1344
345-81	Opx- Ol gabbro	1415P	32	49.383	0.08	31.937	0	0.547	0.01	0.085	15.011	2.772	0.042	0	99.867	6.78024	0.00832	5.17701	0	0.06029	0.00129	0.01274	2.20974	0.73083	0.00074	0	14.997	74.7623
345-64	Opx- Ol gabbro	1415P	12.8	47.086	0	33.438	0	0.454	0.01	0.022	16.974	1.68	0.026	0	99.69	6.51016	0	5.45505	0	0.05225	0.00111	0.00452	2.51745	0.45047	0.00047	0	14.9906	84.6754
345-64	Opx- Ol gabbro	1415P	12.8	42.907	0.029	30.015	0	3.944	0.105	5.603	12.224	1.426	0.044	0	96.297	6.23044	0.00316	5.14006	0	0.47892	0.01144	1.21792	1.90832	0.40044	0.00032	0	15.3972	82.2792
345-64	Opx- Ol gabbro	1415P	12.8	47.096	0.02	33.352	0.018	0.403	0.027	0.03	16.935	1.785	0.041	0	99.707	6.51039	0.00211	5.43732	0.00201	0.04763	0.00001	0.00631	2.50984	0.47001	0.00073	0	15.0075	83.7741
345-64	Opx- Ol gabbro	1415P	12.8	46.775	0	34.01	0.002	0.361	0.023	0.041	17.037	1.503	0.033	0	99.782	6.45093	0	5.53057	0.00026	0.04173	0.00026	0.00841	2.52124	0.40053	0.00024	0	14.9767	86.0797
345-64	Opx- Ol gabbro	1415P	12.8	47.082	0.001	33.957	0.015	0.403	0.003	0.049	17.28	1.536	0.039	0.005	100.37	6.46093	0.00001	5.49696	0.00016	0.04763	0.00003	0.01042	2.54742	0.40093	0.00068	0.00005	14.9881	85.9432

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-64	Opx- Ol gabbro	1415P	12.8	46.153	0	34.007	0	0.378	0.002	0.025	17.289	1.564	0.004	0	99.422	6.409	0	5.561	0	0.039	0.002	0.053	2.574	0.411	0.007	0	15.0187	85.912
345-64	Opx- Ol gabbro	1415P	12.8	46.964	0.02	33.795	0.021	0.408	0.003	0.033	17.351	1.709	0.041	0	100.344	6.463	0.002	5.482	0.002	0.047	0.004	0.007	2.553	0.455	0.006	0	15.0247	84.667
345-64	Opx- Ol gabbro	1415P	12.8	48.329	0.015	32.897	0.005	0.357	0	0.03	15.976	2.339	0.014	0	99.962	6.643	0.001	5.334	0.000	0.041	0	0.006	2.352	0.623	0.000	0	15.0024	78.990
345-64	Opx- Ol gabbro	1415P	12.8	46.971	0.07	34.187	0.008	0.357	0.001	0.033	18.045	1.45	0.011	0	101.126	6.420	0.007	5.502	0.000	0.040	0.000	0.006	2.642	0.384	0.000	0	15.0118	87.253
345-64	Opx- Ol gabbro	1415P	12.8	46.606	0.018	33.972	0	0.405	0.002	0.018	17.698	1.542	0.004	0	100.302	6.426	0.001	5.516	0	0.045	0.000	0.005	2.612	0.412	0.000	0	15.0258	86.179
345-64	Opx- Ol gabbro	1415P	12.8	45.551	0.006	32.544	0	0.392	0.019	0.034	16.957	1.754	0.045	0	97.302	6.471	0.000	5.449	0	0.044	0.000	0.006	2.582	0.482	0.000	0	15.0494	84.011
345-64	Opx- Ol gabbro	1415P	12.8	47.525	0.05	33.176	0.029	0.406	0.014	0.063	16.381	1.992	0.043	0.013	99.692	6.566	0.005	5.405	0.003	0.047	0.001	0.010	2.423	0.536	0.000	0.000	15.0003	81.751
345-64	Opx- Ol gabbro	1415P	12.8	50.987	0.088	30.440	0	0.342	0	0.058	13.569	3.705	0.098	0	99.287	7.010	0.009	4.931	0	0.037	0	0.011	1.999	0.988	0.001	0	15.013	66.551
345-64	Opx- Ol gabbro	1415P	12.8	50.176	0.011	31.375	0.005	0.337	0.001	0.036	14.212	3.239	0.066	0	99.448	6.897	0.001	5.085	0.000	0.038	0.000	0.000	2.092	0.868	0.001	0	14.9964	70.547
345-64	Opx- Ol gabbro	1415P	12.8	46.845	0.048	34.145	0.026	0.329	0.005	0.033	17.507	1.606	0	0	100.544	6.435	0.005	5.527	0.000	0.039	0.000	0.000	2.577	0.424	0	0	15.0132	85.758
345-64	Opx- Ol gabbro	1415P	12.8	49.588	0.051	32.162	0.001	0.447	0	0.05	14.994	2.878	0.044	0	100.219	6.780	0.005	5.185	0.000	0.050	0	0.011	2.197	0.760	0.000	0	15.0048	74.011
345-64	Opx- Ol gabbro	1415P	12.8	46.671	0.029	33.448	0.018	0.369	0.013	0.015	17.488	1.771	0.02	0.003	99.845	6.466	0.003	5.455	0.002	0.042	0.000	0.000	2.592	0.473	0.000	0.000	15.0451	84.419
345-64	Opx- Ol gabbro	1415P	12.8	46.692	0.02	33.647	0.01	0.392	0.038	0.045	17.707	1.741	0.013	0	100.291	6.440	0.002	5.460	0.001	0.044	0.000	0.009	2.612	0.466	0.000	0	15.0561	84.828
345-64	Opx- Ol gabbro	1415P	12.8	48.872	0	32.492	0.014	0.36	0.013	0.026	15.429	2.585	0.014	0.006	99.811	6.710	0	5.260	0.001	0.041	0.000	0.000	2.272	0.685	0.000	0.000	14.9956	76.671
345-64	Opx- Ol gabbro	1415P	12.8	46.777	0.073	33.503	0.023	0.394	0.032	0.052	16.968	1.73	0.048	0.008	99.608	6.476	0.008	5.470	0.003	0.045	0.000	0.010	2.512	0.463	0.000	0.000	15.0132	84.183
345-64	Opx- Ol gabbro	1415P	12.8	47.204	0.043	33.039	0.001	0.447	0	0.041	16.555	2.013	0.033	0	99.377	6.542	0.004	5.400	0.000	0.050	0	0.009	2.464	0.540	0.000	0	15.0215	81.800
345-64	Opx- Ol gabbro	1415P	12.8	46.739	0.061	33.722	0.003	0.401	0.001	0.064	17.602	1.727	0.034	0	100.352	6.446	0.006	5.472	0.000	0.044	0.000	0.011	2.596	0.467	0.000	0	15.0487	84.763
345-64	Opx- Ol gabbro	1415P	12.8	46.623	0.008	33.665	0.015	0.373	0.01	0.062	17.058	1.661	0.025	0	99.501	6.466	0.000	5.502	0.000	0.044	0.000	0.011	2.534	0.447	0.000	0	15.0097	84.884
345-64	Opx- Ol gabbro	1415P	12.8	46.743	0.058	33.513	0.032	0.495	0.003	0.159	16.843	1.869	0.027	0	99.744	6.466	0.006	5.460	0.000	0.055	0.000	0.033	2.494	0.507	0.000	0	15.0419	83.144
345-87	Opx- Ol gabbro	1415P	42.1	49.532	0.034	32.348	0	0.437	0	0.029	15.569	2.824	0.033	0	100.812	6.748	0.003	5.195	0	0.049	0	0.006	2.272	0.746	0.000	0.001	15.0275	75.121
345-87	Opx- Ol gabbro	1415P	43.1	46.114	0.042	29.945	0.002	1.449	0.146	0.453	18.102	1.381	0.041	0	97.675	6.580	0.004	5.040	0.000	0.170	0.017	0.097	2.775	0.380	0.000	0	15.0821	87.660
345-87	Opx- Ol gabbro	1415P	44.1	44.145	0.007	29.705	0.028	6.892	0.165	4.913	11.835	1.805	0.040	0.005	99.542	6.280	0.001	4.980	0.003	0.082	0.018	1.048	1.802	0.490	0.000	0.000	15.4719	78.108
345-87	Opx- Ol gabbro	1415P	45.1	48.221	0.045	32.984	0.005	0.382	0.001	0.067	16.174	2.174	0.028	0	100.081	6.626	0.005	5.341	0.000	0.041	0.000	0.010	2.387	0.570	0.000	0	14.9924	80.304
345-87	Opx- Ol gabbro	1415P	46.1	45.961	0.024	32.091	0	0.961	0.039	1.417	17.253	1.489	0.026	0.007	99.268	6.423	0.002	5.293	0	0.110	0.005	0.029	2.587	0.400	0.000	0.000	15.1284	86.356
345-87	Opx- Ol gabbro	1415P	47.1	49.285	0.046	32.226	0	0.381	0.012	0.036	15.579	2.722	0.024	0.011	100.323	6.741	0.005	5.193	0	0.044	0.000	0.000	2.283	0.724	0.000	0.000	15.0137	75.870
345-87	Opx- Ol gabbro	1415P	48.1	49.242	0.04	31.823	0	0.443	0	0.06	14.925	2.553	0.044	0	99.133	6.800	0.004	5.183	0	0.050	0	0.011	2.203	0.682	0.000	0	14.9504	76.144
345-87	Opx- Ol gabbro	1415P	49.1	48.795	0.085	32.706	0	0.457	0	0.063	16.083	2.385	0.033	0	100.605	6.666	0.009	5.263	0	0.052	0	0.010	2.353	0.631	0.000	0	15.0057	78.700
345-87	Opx- Ol gabbro	1415P	50.1	48.455	0.024	32.831	0.002	0.406	0	0.041	16.394	2.147	0.027	0.013	100.34	6.642	0.002	5.300	0.000	0.040	0	0.008	2.402	0.570	0.000	0.000	14.9901	80.711
345-87	Opx- Ol gabbro	1415P	51.1	48.276	0.011	32.934	0.019	0.436	0.035	0.042	16.307	2.109	0.005	0.004	100.176	6.626	0.001	5.324	0.000	0.050	0.004	0.007	2.392	0.560	0.000	0.000	14.9857	81.017
345-87	Opx- Ol gabbro	1415P	52.1	48.154	0.055	33.294	0.004	0.448	0	0.049	16.151	2.058	0.038	0.011	100.258	6.600	0.006	5.380	0.000	0.050	0	0.009	2.372	0.540	0.000	0.000	14.9783	81.080
345-87	Opx- Ol gabbro	1415P	53.1	47.777	0	32.559	0.012	0.571	0	0.13	16.179	2.096	0.02	0.007	99.361	6.622	0	5.319	0.000	0.063	0	0.020	2.402	0.562	0.000	0.000	15.0034	80.908
345-87	Opx- Ol gabbro	1415P	54.1	47.826	0.066	33.537	0.002	0.397	0.015	0.007	16.811	1.932	0.022	0.004	100.619	6.540	0.006	5.411	0.000	0.040	0.000	0.008	2.469	0.510	0.000	0.000	14.9983	82.673
345-87	Opx- Ol gabbro	1415P	55.1	49.633	0.048	31.985	0	0.514	0.003	0.072	14.877	2.924	0.037	0.012	100.097	6.790	0.005	5.161	0	0.058	0.000	0.010	2.183	0.770	0.000	0.000	15.0074	73.598

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-87	Opx- Ol gabbro	1415P	56.1	47.504	0.026	33.089	0.006	0.35	0	0.073	16.458	1.985	0.034	0.003	99.528	6.5696	0.0027	5.3938	0.0006	0.0405	0	0.0151	2.4388	0.5322	0.0006	0.0004	14.9997	81.921
345-87	Opx- Ol gabbro	1415P	57.1	46.894	0.025	33.954	0	0.42	0.014	0.04	17.157	1.746	0.025	0.011	100.286	6.4504	0.0026	5.5081	0	0.0483	0.0016	0.0082	2.5301	0.4659	0.0044	0.0012	15.0245	84.325
345-87	Opx- Ol gabbro	1415P	58.1	47.306	0.013	33.164	0.011	0.388	0	0.024	16.651	1.907	0.026	0	99.49	6.5494	0.0014	5.4122	0.0012	0.0449	0	0.0049	2.4702	0.5172	0.0002	0	15.0008	82.701
345-87	Opx- Ol gabbro	1415P	59.1	47.866	0.072	32.902	0.014	0.424	0.014	0.033	16.042	2.132	0.039	0	99.534	6.6122	0.0075	5.3581	0.0015	0.0409	0.0016	0.0069	2.3748	0.5712	0.0048	0	14.9896	80.425
345-87	Opx- Ol gabbro	1415P	60.1	47.301	0.062	33.331	0	0.444	0.006	0.032	17.008	1.885	0.028	0	100.097	6.5197	0.0065	5.4152	0	0.0512	0.0007	0.0066	2.5102	0.5037	0.0037	0	15.0207	83.159
345-87	Opx- Ol gabbro	1415P	61.1	47.745	0.017	33.074	0	0.408	0	0.08	16.302	2.11	0.054	0.001	99.787	6.5856	0.0018	5.3772	0	0.0407	0	0.0126	2.4094	0.5637	0.0043	0.0001	15.0104	80.787
345-89	Opx- Ol gabbro	1415P	46.15	50.018	0.048	31.526	0	0.392	0.031	0.043	14.658	3.064	0.063	0.003	99.833	6.8601	0.0049	5.0964	0	0.0445	0.0036	0.0088	2.1545	0.8145	0.0112	0.0003	14.9998	72.281
345-89	Opx- Ol gabbro	1415P	46.15	48.162	0.026	32.713	0	0.395	0.011	0.037	16.259	2.325	0.074	0.004	100.02	6.6304	0.0027	5.3082	0	0.0454	0.0013	0.0076	2.3984	0.6207	0.0084	0.0016	15.0301	79.079
345-89	Opx- Ol gabbro	1415P	46.15	47.844	0.053	32.734	0	0.485	0.014	0.087	16.494	2.236	0.033	0	99.976	6.5907	0.0055	5.3206	0	0.0559	0.0016	0.0178	2.4307	0.5977	0.0004	0	15.0391	80.148
345-89	Opx- Ol gabbro	1415P	46.15	49.811	0.034	32.023	0	0.366	0	0.047	15.173	3.052	0.032	0	100.533	6.7962	0.0035	5.1535	0	0.0418	0	0.0096	2.2178	0.8004	0.0053	0	15.0317	73.180
345-89	Opx- Ol gabbro	1415P	46.15	47.754	0.074	32.924	0.004	0.349	0.009	0.016	16.441	2.109	0.031	0.001	99.715	6.5926	0.0077	5.3526	0.0004	0.0403	0.0009	0.0034	2.4326	0.5636	0.0041	0.0001	15.0056	81.018
345-89	Opx- Ol gabbro	1415P	46.15	47.514	0.042	33.611	0.019	0.445	0.001	0.032	16.731	1.944	0.024	0	100.359	6.5244	0.0044	5.4401	0.0021	0.0511	0.0001	0.0066	2.4617	0.5107	0.0026	0	15.0118	82.510
345-89	Opx- Ol gabbro	1415P	46.15	47.562	0.011	33.253	0	0.414	0	0.048	16.599	1.973	0.046	0	99.911	6.5505	0.0012	5.4036	0	0.0478	0	0.0099	2.4521	0.5275	0.0075	0	15.0083	82.048
345-89	Opx- Ol gabbro	1415P	46.15	48.57	0.031	32.9	0	0.369	0.016	0.046	16.76	2.157	0.028	0	100.881	6.6301	0.0032	5.2936	0	0.0421	0.0018	0.0094	2.4514	0.5709	0.0055	0	15.008	80.963
345-89	Opx- Ol gabbro	1415P	46.15	47.133	0.052	33.171	0.014	0.365	0	0.025	16.618	1.798	0.014	0.004	99.198	6.5419	0.0054	5.4232	0.0015	0.0424	0	0.0052	2.4715	0.4823	0.0032	0.0005	14.9823	83.538
345-89	Opx- Ol gabbro	1415P	46.15	47.964	0.076	31.014	0.006	0.881	0	1.076	14.509	2.728	0.023	0.006	98.283	6.7148	0.0079	5.1146	0.0006	0.1029	0	0.2206	2.1749	0.7403	0.0026	0.0008	15.0904	74.503
345-89	Opx- Ol gabbro	1415P	46.15	48.613	0.018	32.393	0.019	0.395	0	0.047	15.944	2.556	0.024	0.002	100.019	6.6847	0.0019	5.2516	0.0021	0.0454	0	0.0095	2.3449	0.6805	0.0031	0.0003	15.0304	77.383
345-89	Opx- Ol gabbro	1415P	46.15	47.884	0.015	33.19	0.01	0.389	0	0.037	16.584	2.074	0.026	0.001	100.229	6.5707	0.0015	5.3705	0.0011	0.0447	0	0.0076	2.4419	0.5502	0.0025	0.0016	15.0103	81.407
345-89	Opx- Ol gabbro	1415P	46.15	47.538	0.007	33.348	0.002	0.355	0.001	0.026	16.594	2.087	0.028	0	99.985	6.5409	0.0007	5.4071	0.0002	0.0409	0.0001	0.0054	2.4429	0.5509	0.0027	0	15.024	81.302
345-89	Opx- Ol gabbro	1415P	46.15	47.608	0.041	33.609	0	0.434	0.006	0.052	16.941	1.824	0.024	0.001	100.557	6.5207	0.0043	5.4199	0	0.0499	0.0006	0.0107	2.4768	0.4739	0.0044	0.0019	14.9999	83.570
345-89	Opx- Ol gabbro	1415P	46.15	47.408	0.016	32.742	0	0.468	0	0.033	16.861	2.051	0.033	0	99.616	6.5606	0.0017	5.3402	0	0.0542	0	0.0068	2.4962	0.5502	0.0042	0	15.0366	81.779
345-89	Opx- Ol gabbro	1415P	46.15	46.831	0	33.188	0	0.409	0.008	0.041	16.664	1.846	0.022	0	99.008	6.5191	0	5.4454	0	0.0476	0.0001	0.0086	2.4856	0.4937	0.0037	0	15.0094	83.197
345-89	Opx- Ol gabbro	1415P	46.15	48.026	0.017	33.117	0	0.385	0.013	0.016	16.814	2.061	0.032	0	100.484	6.5855	0.0017	5.3527	0	0.0421	0.0015	0.0032	2.4741	0.5401	0.0042	0	15.0133	81.699
345-89	Opx- Ol gabbro	1415P	46.15	47.115	0.034	33.571	0	0.369	0	0.013	17.378	1.845	0.026	0	100.359	6.4837	0.0035	5.4448	0	0.0424	0	0.0026	2.5648	0.4937	0.0033	0	15.0388	83.720
345-89	Opx- Ol gabbro	1415P	46.15	47.163	0.052	33.031	0	0.388	0.012	0.041	16.771	2.1	0.028	0	99.587	6.5337	0.0054	5.3949	0	0.0444	0.0014	0.0084	2.4849	0.5569	0.0042	0	15.0476	81.388
345-89	Opx- Ol gabbro	1415P	46.15	47.099	0.04	33.608	0	0.425	0	0.033	17.138	1.839	0.023	0.001	100.215	6.4837	0.0042	5.4556	0	0.0489	0	0.0069	2.5292	0.4911	0.0032	0.0011	15.0284	83.629
345-89	Opx- Ol gabbro	1415P	46.15	48.478	0.045	32.786	0	0.425	0.025	0.046	16.166	2.307	0.026	0.001	100.33	6.6407	0.0047	5.2989	0	0.0487	0.0029	0.0095	2.3751	0.6134	0.0034	0.0015	15.0087	79.296
345-89	Opx- Ol gabbro	1415P	46.15	48.127	0.04	31.907	0	1.262	0.041	0.726	15.102	2.567	0.037	0	99.815	6.6537	0.0042	5.1949	0	0.1459	0.0047	0.1495	2.2348	0.6827	0.0032	0.0003	15.0901	76.289
345-89	Opx- Ol gabbro	1415P	46.15	48.385	0.04	32.734	0.032	0.383	0.006	0.047	16.272	2.326	0.014	0.006	100.257	6.6413	0.0041	5.2949	0.0035	0.0407	0.0007	0.0096	2.3928	0.6141	0.0031	0.0018	15.016	79.360
345-89	Opx- Ol gabbro	1415P	46.15	48.859	0.056	31.771	0	0.455	0.001	0.038	14.872	2.567	0.046	0	98.687	6.7827	0.0059	5.1941	0	0.0529	0.0001	0.0079	2.2131	0.6899	0.0031	0.0008	14.9628	75.944
345-89	Opx- Ol gabbro	1415P	46.15	47.283	0.03	32.173	0.004	0.442	0	0.024	15.834	2.155	0.027	0	97.982	6.6368	0.0032	5.3236	0.0004	0.0465	0	0.0051	2.3847	0.5824	0.0029	0	14.9947	80.063
345-89	Opx- Ol gabbro	1415P	46.15	47.915	0.004	33.228	0	0.395	0	0.019	16.815	2.122	0.036	0.002	100.559	6.5606	0.0004	5.3648	0	0.0456	0	0.0039	2.4747	0.5636	0.0048	0.0001	15.0313	81.227
345-89	Opx- Ol gabbro	1415P	46.15	47.779	0.023	32.977	0	0.419	0.043	0.02	16.664	2.105	0.036	0	100.07	6.5813	0.0024	5.3541	0	0.0483	0.0041	0.0041	2.4595	0.5636	0.0023	0	15.0241	81.201

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-89	Opx- Ol gabbro	1415P	46.15	48.859	0.06	32.645	0	0.457	0	0.059	15.863	2.602	0.04	0	100.585	6.68	0.00 61	5.26 08	0	0.05 23	0	0.01 2	2.32 38	0.68 99	0.00 69	0	15.0318	76.931 5
345-89	Opx- Ol gabbro	1415P	46.15	48.961	0.043	32.336	0.016	0.425	0.019	0.048	15.366	2.628	0.03 9	0	99.875	6.72 82	0.00 44	5.23 67	0.00 18	0.04 89	0.00 23	0.00 98	2.26 25	0.70 03	0.00 69	0	15.0018	76.186 6
345-89	Opx- Ol gabbro	1415P	46.15	48.022	0.046	32.436	0.021	0.356	0	0.019	16.084	2.53	0.02 8	0	99.542	6.64 22	0.00 48	5.28 8	0.00 23	0.04 12	0	0.00 39	2.38 38	0.67 86	0.00 5	0	15.0498	77.714 4
345-89	Opx- Ol gabbro	1415P	46.15	48.493	0.018	32.649	0.01	0.423	0.001	0.021	15.733	2.352	0.05 8	0	99.758	6.67 68	0.00 18	5.29 86	0.00 11	0.04 87	0.00 01	0.00 44	2.32 12	0.62 79	0.01 02	0	14.9908	78.437 8
345-89	Opx- Ol gabbro	1415P	46.15	48.123	0.042	33.072	0	0.5	0.013	0.01	16.002	2.381	0.02 9	0.00	100.172	6.61 11	0.00 43	5.35 53	0	0.05 74	0.00 15	0.00 2	2.35 55	0.63 41	0.00 35	0.00 1	15.0258	78.697 1
345-89	Opx- Ol gabbro	1415P	46.15	48.019	0.009	33.109	0.015	0.443	0	0.051	16.346	2.227	0.01 1	0.01 1	100.241	6.59 51	0.00 1	5.35 99	0.00 16	0.05 09	0	0.01 05	2.40 55	0.59 32	0.00 19	0.00 12	15.0208	80.167 9
345-89	Opx- Ol gabbro	1415P	46.15	47.442	0.043	32.602	0	0.456	0.021	0.043	16.828	2.044	0.01 3	0.01 3	99.503	6.57 82	0.00 45	5.32 85	0	0.05 29	0.00 24	0.00 88	2.50 02	0.54 96	0.00 23	0.00 15	15.0289	81.917 8
345-89	Opx- Ol gabbro	1415P	46.15	48.431	0.05	32.391	0	0.433	0.009	0.062	15.897	2.517	0.03 1	0.02 3	99.844	6.67 33	0.00 51	5.26 07	0	0.04 99	0.00 11	0.01 27	2.34 7	0.67 24	0.00 55	0.00 26	15.0303	77.589
345-89	Opx- Ol gabbro	1415P	46.15	48.981	0.049	32.624	0	0.364	0	0.037	15.908	2.501	0.03 2	0.01	100.506	6.69 54	0.00 5	5.25 65	0	0.04 16	0	0.00 76	2.33 01	0.66 28	0.00 55	0.00 11	15.0056	77.711
345-89	Opx- Ol gabbro	1415P	46.15	47.762	0	33.223	0	0.479	0.003	0.04	16.865	1.974	0.02 4	0.02	100.39	6.55 98	0	5.37 84	0	0.05 5	0.00 03	0.00 82	2.48 2	0.52 58	0.00 42	0.00 22	15.016	82.403 8
345-89	Opx- Ol gabbro	1415P	46.15	47.713	0.028	33.261	0.001	0.428	0	0.03	16.308	2.054	0.03 9	0.01 9	99.872	6.57 44	0.00 29	5.40 19	0.00 01	0.04 93	0	0.00 62	2.40 78	0.54 87	0.00 53	0.00 21	14.9987	81.295 8
345-89	Opx- Ol gabbro	1415P	46.15	50.137	0.047	31.956	0.004	0.379	0	0.034	14.742	3.085	0.03 4	0	100.418	6.83 58	0.00 48	5.13 56	0.00 04	0.04 32	0	0.00 7	2.15 37	0.81 56	0.00 59	0	15.002	72.388 0
345-89	Opx- Ol gabbro	1415P	46.15	48.886	0.066	31.923	0.013	0.403	0	0.054	15.752	2.667	0.02 9	0	99.788	6.73 43	0.00 69	5.18 29	0.00 14	0.04 65	0	0.01 11	2.32 49	0.71 23	0.00 51	0	15.0254	76.419 6
345-89	Opx- Ol gabbro	1415P	46.15	49.463	0.042	32.114	0.01	0.398	0.015	0.02	15.292	2.736	0.04 7	0	100.137	6.77 48	0.00 43	5.18 47	0.00 11	0.04 56	0.00 17	0.00 41	2.24 43	0.72 66	0.00 83	0	14.9955	75.332 3
345-89	Opx- Ol gabbro	1415P	46.15	41.774	0.043	28.053	0	8.743	0.126	10.075	8.255	1.763	0.05	0	98.882	6.03 11	0.00 46	4.77 39	0	1.05 57	0.01 54	2.16 83	1.27 71	0.49 34	0.00 91	0	15.8286	71.763
345-89	Opx- Ol gabbro	1415P	46.15	47.781	0.016	33.191	0	0.42	0	0.032	16.614	2.204	0.04 1	0.00 5	100.304	6.56 64	0.00 17	5.37 65	0	0.04 82	0	0.00 66	2.44 65	0.58 73	0.00 72	0.00 05	15.0409	80.450
345-89	Opx- Ol gabbro	1415P	46.15	47.583	0.009	33.561	0.007	0.422	0.005	0.024	16.877	1.788	0.03 9	0	100.315	6.53 46	0.00 1	5.43 26	0.00 08	0.04 85	0.00 05	0.00 49	2.48 35	0.47 6	0.00 69	0	14.9893	83.721 8
345-89	Opx- Ol gabbro	1415P	46.15	47.144	0.001	33.525	0	0.435	0.003	0.029	17.331	1.795	0.02 1	0.00 9	100.293	6.49 13	0.00 01	5.44 1	0	0.05 01	0.00 04	0.00 59	2.55 69	0.47 93	0.00 36	0.00 1	15.0296	84.114 6
345-89	Opx- Ol gabbro	1415P	46.15	48.568	0.039	32.727	0.002	0.44	0.003	0.036	15.602	2.343	0.05 7	0.03	99.847	6.67 86	0.00 4	5.30 44	0.00 03	0.05 06	0.00 03	0.00 74	2.29 88	0.62 46	0.01 01	0.00 33	14.9825	78.363 9
345-89	Opx- Ol gabbro	1415P	46.15	49.094	0.025	32.539	0	0.381	0.019	0.039	15.722	2.706	0.05 3	0	100.578	6.70 79	0.00 26	5.24 04	0	0.04 36	0.00 22	0.00 79	2.30 17	0.71 69	0.00 92	0	15.0325	76.018
345-89	Opx- Ol gabbro	1415P	46.15	47.897	0.024	33.182	0.021	0.364	0.014	0.021	16.209	2.063	0.05 3	0	99.848	6.59 62	0.00 25	5.38 62	0.00 23	0.04 2	0.00 16	0.00 44	2.39 18	0.55 1	0.00 93	0	14.9873	81.020 0
345-89	Opx- Ol gabbro	1415P	46.15	48.974	0.049	32.133	0	0.435	0.025	0.017	15.655	2.825	0.04 5	0	100.158	6.72 46	0.00 51	5.20 07	0	0.04 99	0.00 29	0.00 35	2.30 33	0.75 21	0.00 78	0	15.0499	75.192 9
345-89	Opx- Ol gabbro	1415P	46.15	47.74	0.028	33.046	0.028	0.353	0.006	0.054	16.807	2.046	0.02 9	0.00 5	100.142	6.57 05	0.00 29	5.36 09	0.00 31	0.04 06	0.00 07	0.01 11	2.47 86	0.54 6	0.00 51	0.00 06	15.0201	81.810 0
345-99	Opx- Ol gabbro	1415P	60.02	47.876	0.027	33.952	0.004	0.477	0.052	0.051	16.936	1.84	0.03 2	0	101.247	6.51 76	0.00 27	5.44 79	0.00 04	0.05 43	0.00 6	0.01 04	2.47 04	0.48 58	0.00 55	0	15.001	83.411 4
345-99	Opx- Ol gabbro	1415P	60.02	48.968	0.054	32.253	0	0.402	0.015	0.052	15.754	2.616	0.03 5	0.00 4	100.153	6.71 91	0.00 55	5.21 63	0	0.04 61	0.00 17	0.01 06	2.31 62	0.69 61	0.00 61	0.00 05	15.0182	76.736 9
345-99	Opx- Ol gabbro	1415P	60.02	48.078	0.031	32.561	0.018	0.503	0.01	0.04	16.372	2.389	0.04 5	0.00 2	100.049	6.62 5	0.00 32	5.28 85	0.00 19	0.05 79	0.00 11	0.00 81	2.41 73	0.63 84	0.00 79	0.00 02	15.0496	78.903
345-99	Opx- Ol gabbro	1415P	60.02	46.916	0.047	33.676	0	0.414	0.008	0.052	16.813	1.777	0.04 9	0	99.752	6.48 44	0.00 49	5.48 63	0	0.04 79	0.00 09	0.01 07	2.48 99	0.47 63	0.00 87	0	15.01	83.696 0
345-99	Opx- Ol gabbro	1415P	60.02	47.302	0.025	33.785	0.009	0.388	0.026	0.04	17.267	1.713	0.01 8	0	100.573	6.48 85	0.00 26	5.46 24	0.00 1	0.04 45	0.00 3	0.00 82	2.53 79	0.45 56	0.00 31	0	15.0069	84.692 1
345-99	Opx- Ol gabbro	1415P	60.02	48.031	0.059	32.549	0.007	0.55	0.004	0.154	15.803	2.298	0.05 3	0.01 7	99.525	6.64 62	0.00 37	5.30 08	0.00 36	0.06 05	0.00 17	0.03 08	2.34 59	0.61 94	0.00 19	0.00	15.0145	78.918
345-99	Opx- Ol gabbro	1415P	60.02	48.868	0.061	32.821	0.001	0.415	0	0.03	16.214	2.209	0.05 2	0	100.67	6.67 15	0.00 63	5.28 13	0.00 01	0.04 74	0	0.00 62	2.37 18	0.58 47	0.00 9	0	14.9784	79.979 7
345-99	Opx- Ol gabbro	1415P	60.02	47.938	0.047	32.656	0	0.435	0	0.058	16.769	1.942	0.02 7	0	99.872	6.61 2	0.00 49	5.30 91	0	0.05 02	0	0.01 2	2.47 83	0.51 94	0.00 48	0	14.9908	82.541 5
345-99	Opx- Ol gabbro	1415P	60.02	48.601	0.05	32.538	0.013	0.443	0.008	0.046	15.719	2.458	0.04 3	0.01 9	99.938	6.68 3	0.00 52	5.27 37	0.00 14	0.05 1	0.00 1	0.00 93	2.31 61	0.65 53	0.00 76	0.00 21	15.0058	77.747
345-99	Opx- Ol gabbro	1415P	60.02	44.889	0.059	31.209	0.016	3.788	0.098	3.23	13.845	1.688	0.01 7	0.00 1	98.831	6.35 1	0.00 63	5.20 57	0.00 18	0.44 83	0.01 17	0.68 15	2.09 93	0.46 31	0.00 31	0.00 01	15.2719	81.828 3

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-99	Opx- Ol gabbro	1415P	60.02	45.812	0.005	34.192	0.013	0.966	0.015	0.614	17.129	1.339	0.023	0	100.106	6.33069	0.00 05	5.57 49	0.00 14	0.11 17	0.00 18	0.12 67	2.53 89	0.35 93	0.00 4	0	15.0561	87.481 0
345-99	Opx- Ol gabbro	1415P	60.02	49.436	0.067	32.271	0.04	0.473	0.027	0.054	15.204	2.688	0.052	0	100.312	6.7602	0.00 69	5.20 15	0.00 44	0.05 41	0.00 31	0.01 11	2.22 78	0.71 27	0.00 91	0	14.9909	75.528 5
345-99	Opx- Ol gabbro	1415P	60.02	48.162	0.066	32.374	0	0.459	0.003	0.03	15.713	2.587	0.037	0.009	99.44	6.6634	0.00 68	5.27 95	0	0.05 31	0.00 04	0.00 62	2.32 94	0.69 41	0.00 66	0.00 1	15.0406	76.875 0
345-99	Opx- Ol gabbro	1415P	60.02	48.702	0.053	32.489	0.024	0.398	0.01	0.047	16.123	2.6	0.05	0.002	100.498	6.6716	0.00 55	5.24 59	0.00 26	0.04 56	0.00 12	0.00 96	2.36 66	0.69 06	0.00 87	0.00 02	15.0482	77.191 6
345-99	Opx- Ol gabbro	1415P	60.02	46.414	0.088	31.026	0.01	2.337	0.033	3.213	13.607	2.082	0.036	0	98.846	6.5057	0.00 93	5.12 6	0.00 12	0.27 4	0.00 4	0.67 14	2.04 36	0.56 59	0.00 64	0	15.2076	78.122 2
345-99	Opx- Ol gabbro	1415P	60.02	47.745	0.045	33.14	0	0.453	0	0.055	16.641	2.237	0.042	0.005	100.363	6.5613	0.00 47	5.36 8	0	0.05 21	0	0.01 14	2.45 04	0.59 61	0.00 74	0.00 06	15.052	80.238 3
345-99	Opx- Ol gabbro	1415P	60.02	48.583	0.063	32.678	0	0.461	0	0.026	16.482	2.284	0.031	0.013	100.621	6.6489	0.00 65	5.27 13	0	0.05 28	0	0.00 53	2.41 7	0.60 62	0.00 54	0.00 14	15.0148	79.805 0
345-99	Opx- Ol gabbro	1415P	60.02	48.381	0.059	32.958	0.006	0.461	0.019	0.05	16.182	2.205	0.025	0.005	100.351	6.6312	0.00 61	5.32 45	0.00 07	0.05 29	0.00 22	0.01 02	2.37 66	0.58 6	0.00 43	0.00 05	14.9952	80.103 2
345-99	Opx- Ol gabbro	1415P	60.02	48.972	0.083	32.625	0	0.448	0.032	0.041	16.147	2.471	0.04	0	100.859	6.6804	0.00 86	5.24 57	0	0.05 11	0.00 36	0.00 83	2.36 02	0.65 35	0.00 69	0	15.0183	78.136 4
345-99	Opx- Ol gabbro	1415P	60.02	48.65	0.063	32.5	0	0.437	0	0.036	16.246	2.563	0.05	0.002	100.547	6.6643	0.00 65	5.24 76	0	0.05	0	0.00 74	2.38 46	0.68 08	0.00 88	0.00 02	15.0502	77.568 7
345-99	Opx- Ol gabbro	1415P	60.02	43.028	0.01	31.374	0	3.697	0.063	5.242	13.793	1.011	0.015	0	98.233	6.137	0.00 11	5.27 44	0	0.44 1	0.00 76	1.11 45	2.10 8	0.27 96	0.00 28	0	15.366	88.186 7
345-99	Opx- Ol gabbro	1415P	60.02	49.693	0.096	31.678	0.003	0.434	0	0.107	15.063	2.856	0.053	0	99.98	6.8149	0.00 99	5.12 06	0.00 03	0.04 98	0	0.02 18	2.21 31	0.75 94	0.00 92	0	14.9991	74.222 8
345-99	Opx- Ol gabbro	1415P	60.02	48.344	0.051	32.727	0	0.416	0	0.131	16.145	2.21	0.023	0	100.047	6.6442	0.00 53	5.30 16	0	0.04 78	0	0.02 67	2.37 76	0.58 9	0.00 41	0	14.9963	80.035 8
345-99	Opx- Ol gabbro	1415P	60.02	47.751	0.028	33.279	0	0.399	0	0.054	17.065	1.949	0.027	0	100.551	6.549	0.00 29	5.38	0	0.04 58	0	0.01 1	2.50 79	0.51 83	0.00 47	0	15.0196	82.744 9
345-99	Opx- Ol gabbro	1415P	60.02	48.539	0.062	32.553	0.036	0.431	0.013	0.042	16.217	2.282	0.035	0.025	100.235	6.6663	0.00 64	5.26 72	0.00 39	0.04 95	0.00 15	0.00 86	2.38 53	0.60 75	0.00 62	0.00 27	15.0018	79.536 2
345-99	Opx- Ol gabbro	1415P	60.02	47.321	0.055	32.199	0.035	0.795	0.021	0.823	15.655	2.074	0.05	0	99.028	6.5868	0.00 58	5.28 28	0.00 39	0.09 25	0.00 24	0.17 07	2.33 49	0.55 99	0.00 88	0	15.0485	80.413 8
345-99	Opx- Ol gabbro	1415P	60.02	45.905	0.04	31.099	0.011	1.993	0.074	2.88	14.358	1.909	0.057	0.007	98.331	6.4743	0.00 42	5.17	0.00 13	0.23 51	0.00 89	0.60 55	2.16 98	0.52 21	0.01	0.00 08	15.2021	80.306 1
345-99	Opx- Ol gabbro	1415P	60.02	45.963	0.017	34.147	0.024	0.372	0	0.075	17.701	1.5	0.022	0	99.819	6.3687	0.00 18	5.57 69	0.00 27	0.04 31	0	0.01 55	2.62 8	0.40 29	0.00 35	0	15.0431	86.606 7
345-99	Opx- Ol gabbro	1415P	60.02	46.454	0.049	31.353	0.011	2.798	0.072	2.217	13.973	1.879	0.039	0	98.845	6.5217	0.00 52	5.18 82	0.00 12	0.32 85	0.00 86	0.46 39	2.10 19	0.51 14	0.00 7	0	15.1376	80.216
345-99	Opx- Ol gabbro	1415P	60.02	47.427	0.054	32.289	0.06	0.443	0.022	0.04	16.448	2.156	0.056	0.012	99.007	6.6061	0.00 57	5.30 11	0.00 66	0.05 16	0.00 26	0.00 83	2.45 48	0.58 22	0.01	0.00 13	15.0303	80.564 9
345-99	Opx- Ol gabbro	1415P	60.02	48.753	0.046	32.185	0	0.468	0.009	0.04	15.901	2.42	0.062	0.002	99.886	6.7105	0.00 48	5.22 18	0	0.05 38	0.00 1	0.00 81	2.34 52	0.64 59	0.01 08	0.00 02	15.0021	78.123 4
345-99	Opx- Ol gabbro	1415P	60.02	47.531	0.149	33.071	0.057	0.394	0.003	0.058	16.307	1.978	0.033	0.013	99.593	6.5685	0.01 55	5.38 71	0.00 62	0.04 55	0.00 04	0.01 2	2.41 47	0.53 01	0.00 59	0.00 14	14.9873	81.834 8
345-99	Opx- Ol gabbro	1415P	60.02	47.931	0.058	32.659	0	0.371	0	0.014	16.305	2.395	0.028	0.014	99.775	6.6172	0.00 6	5.31 44	0	0.04 28	0	0.00 29	2.41 19	0.64 1	0.00 5	0.00 15	15.0428	78.874 0
345-99	Opx- Ol gabbro	1415P	60.02	47.498	0	33.434	0.023	0.32	0.018	0.033	17.441	1.853	0.023	0	100.643	6.510 52	0	5.40 56	0.00 25	0.03 67	0.00 21	0.00 67	2.56 35	0.49 3	0.00 41	0	15.0294	83.758 6
345-99	Opx- Ol gabbro	1415P	60.02	49.572	0.019	32.572	0.009	0.291	0.023	0.04	15.389	2.611	0.031	0	100.555	6.7546	0.00 19	5.23 15	0.00 1	0.03 31	0.00 26	0.00 8	2.24 69	0.68 99	0.00 54	0	14.975	76.368 3
345-99	Opx- Ol gabbro	1415P	60.02	48.237	0.068	33.066	0.019	0.435	0	0.022	16.218	2.007	0.044	0	100.116	6.6226	0.00 7	5.35 1	0.00 2	0.04 99	0	0.00 45	2.38 58	0.53 42	0.00 78	0	14.9648	81.487 6
345-99	Opx- Ol gabbro	1415P	60.02	48.815	0.033	32.522	0.009	0.431	0.034	0.026	15.955	2.578	0.055	0	100.458	6.6851	0.00 34	5.24 97	0.00 1	0.04 94	0.00 4	0.00 54	2.34 13	0.68 46	0.00 96	0	15.0335	77.130 0
345-99	Opx- Ol gabbro	1415P	60.02	48.434	0.057	32.598	0	0.4	0	0.032	15.715	2.356	0.047	0	99.634	6.676	0.00 59	5.29 62	0	0.04 61	0	0.00 66	2.32 02	0.62 96	0.00 82	0	14.9888	78.438 3
345-99	Opx- Ol gabbro	1415P	60.02	47.545	0.047	33.252	0.019	0.423	0	0.022	16.595	1.924	0.034	0	99.861	6.5568	0.00 49	5.40 51	0.00 21	0.04 88	0	0.00 46	2.45 22	0.51 44	0.00 6	0	14.9949	82.493 0
345-99	Opx- Ol gabbro	1415P	60.02	45.451	0.044	31.856	0.005	1.696	0.023	1.736	16.028	1.501	0.047	0	98.387	6.4173	0.00 47	5.30 16	0.00 05	0.20 02	0.00 28	0.36 54	2.42 48	0.41 08	0.00 85	0	15.1367	85.257 9
345-69	Opx- Ol gabbro	1415P	14.17	46.967	0.01	33.23	0.006	0.409	0.019	0.038	16.938	1.955	0.025	0.008	99.605	6.5085	0.00 1	5.42 77	0.00 07	0.04 74	0.00 22	0.00 79	2.51 5	0.52 53	0.00 44	0.00 09	15.0411	82.602 5
345-69	Opx- Ol gabbro	1415P	14.17	46.996	0.02	32.892	0	0.364	0.002	0.046	16.658	1.826	0.027	0	98.831	6.5503	0.00 21	5.40 38	0	0.04 25	0.00 02	0.00 96	2.48 79	0.49 34	0.00 49	0	14.9947	83.313 0
345-69	Opx- Ol gabbro	1415P	14.17	42.865	0.007	30.565	0.012	4.387	0.113	6.542	12.12	1.57	0.017	0	98.198	6.1297	0.00 07	5.15 19	0.00 14	0.52 47	0.01 37	1.39 47	1.85 7	0.43 52	0.00 31	0	15.5121	80.904 6

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-69	Opx- Ol gabbro	1415P	14.17	48.815	0.049	32.381	0.013	0.357	0.006	0.054	15.696	2.55	0.037	0.02	99.978	6.70675	0.00512	5.24138	0.00147	0.04117	0.00107	0.01194	2.31707	0.67965	0.00022	0.00	15.0086	77.1105
345-69	Opx- Ol gabbro	1415P	14.17	46.474	0.057	33.063	0.004	0.331	0	0.053	16.691	2.016	0.036	0	98.725	6.49956	0.00606	5.44837	0.00047	0.03887	0	0.01196	2.49963	0.54611	0.00	0	15.051	81.8956
345-68	Opx- Ol gabbro	1415P	13.7	46.816	0.03	33.298	0	0.299	0	0.029	17.418	1.905	0.038	0.006	99.831	6.48707	0.00316	5.43831	0	0.03046	0	0.00596	2.58246	0.51468	0.00	0.00	15.0588	83.2875
345-68	Opx- Ol gabbro	1415P	13.7	46.247	0.044	31.903	0.001	0.365	0.006	0.018	16.456	2.015	0.021	0.003	97.079	6.57313	0.00479	5.34732	0.00011	0.04333	0.00071	0.00388	2.50554	0.55538	0.00	0.00	15.0321	81.7558
345-68	Opx- Ol gabbro	1415P	13.7	48.189	0.005	33.013	0.021	0.319	0	0.041	16.576	2.304	0.024	0.004	100.496	6.60042	0.00051	5.33029	0.00227	0.03651	0	0.00838	2.43741	0.61422	0.00	0.00	15.0357	79.7936
345-68	Opx- Ol gabbro	1415P	13.7	47.197	0	33.147	0.02	0.32	0	0.017	17.106	1.881	0.021	0	99.709	6.52093	0	5.40051	0.00218	0.03707	0	0.00351	2.53758	0.50227	0.00	0	15.0213	83.3025
345-68	Opx- Ol gabbro	1415P	13.7	47.019	0	33.525	0.002	0.293	0.014	0.038	17.215	1.78	0.022	0.006	99.912	6.49922	0	5.45062	0.00036	0.03387	0.00162	0.00783	2.54769	0.47638	0.00	0.00	15.0196	84.1391
345-68	Opx- Ol gabbro	1415P	13.7	47.489	0.029	33.189	0.022	0.35	0.013	0.034	16.919	2.118	0.029	0.009	100.192	6.53397	0.00301	5.38972	0.00243	0.04015	0.00151	0.00711	2.49971	0.56551	0.00	0.00	15.048	81.3871
345-68	Opx- Ol gabbro	1415P	13.7	48.581	0.037	32.271	0.002	0.354	0.008	0.065	16.038	2.514	0.029	0.005	99.898	6.68871	0.00383	5.23871	0.00022	0.04087	0.00093	0.01338	2.36533	0.67511	0.00	0.00	15.0269	77.7671
345-68	Opx- Ol gabbro	1415P	13.7	47.482	0.024	32.954	0	0.341	0.016	0.044	16.506	2.011	0.018	0.001	99.405	6.57099	0.00254	5.37825	0	0.03992	0.00185	0.00992	2.44797	0.54232	0.00	0.00	15.0031	81.8509
345-68	Opx- Ol gabbro	1415P	13.7	47.607	0.02	33.215	0.023	0.38	0.006	0.062	16.9	2.017	0.017	0	100.24	6.54083	0.00206	5.38252	0.00259	0.04377	0.00074	0.01027	2.49708	0.53179	0.00	0	15.0255	82.1939
345-68	Opx- Ol gabbro	1415P	13.7	47.234	0.033	33.342	0.009	0.423	0.011	0.024	16.788	1.909	0.025	0	99.808	6.52348	0.00343	5.42889	0.00103	0.04894	0.00113	0.00496	2.48149	0.51462	0.00	0	15.0156	82.7612
345-68	Opx- Ol gabbro	1415P	13.7	47.559	0.032	33.339	0	0.426	0	0.049	16.658	1.902	0.026	0	100.001	6.55902	0.00331	5.41822	0	0.04919	0	0.01084	2.45584	0.50991	0.00	0	14.9977	82.6999
345-68	Opx- Ol gabbro	1415P	13.7	47.982	0.009	33.324	0.006	0.386	0	0.064	16.908	2.128	0.014	0	100.826	6.56011	0.00092	5.37141	0.00073	0.04417	0	0.01031	2.47373	0.56843	0.00	0	15.0359	81.3561
345-68	Opx- Ol gabbro	1415P	13.7	47.238	0.011	33.148	0.009	0.38	0	0.021	16.797	1.97	0.024	0	99.595	6.53128	0.00114	5.40888	0.00098	0.04402	0	0.00431	2.49743	0.52822	0.00	0	15.0229	82.3526
345-68	Opx- Ol gabbro	1415P	13.7	45.683	0	32.878	0	1.326	0.102	0.452	16.629	1.779	0.026	0.005	98.877	6.41048	0	5.44603	0	0.15558	0.01214	0.09503	2.50246	0.48006	0.00	0.00	15.1099	83.6316
345-68	Opx- Ol gabbro	1415P	13.7	48.054	0.044	32.882	0	0.365	0.016	0.044	16.052	2.136	0.026	0	99.629	6.62486	0.00456	5.34863	0	0.04206	0.00185	0.00963	2.37629	0.57163	0.00	0	14.9822	80.4423
345-68	Opx- Ol gabbro	1415P	13.7	47.692	0.032	33.168	0.005	0.379	0.021	0.072	16.543	2.073	0.011	0.01	100.016	6.56876	0.00331	5.38822	0.00054	0.04371	0.00218	0.01484	2.44555	0.55034	0.00	0.00	15.0152	81.4269
345-68	Opx- Ol gabbro	1415P	13.7	47.286	0.012	33.606	0.013	0.452	0.039	0.057	16.856	1.882	0.023	0	100.226	6.50034	0.00124	5.45106	0.00141	0.05206	0.00406	0.01206	2.48616	0.50034	0.00	0	15.0192	83.0903
345-68	Opx- Ol gabbro	1415P	13.7	47.723	0.002	33.898	0.012	0.421	0.009	0.038	17.247	1.884	0.022	0.007	101.27	6.50241	0.00020	5.44241	0.00131	0.04802	0.00097	0.00761	2.51768	0.49777	0.00	0.00	15.0261	83.3582
345-68	Opx- Ol gabbro	1415P	13.7	47.597	0	33.527	0	0.364	0.012	0.033	17.038	1.782	0.004	0.006	100.366	6.53044	0	5.42049	0	0.04181	0.00155	0.00671	2.50862	0.47408	0.00	0.00	14.9913	84.0550
345-68	Opx- Ol gabbro	1415P	13.7	47.958	0.016	33.588	0.021	0.365	0.017	0.033	16.749	2.098	0.021	0.011	100.869	6.54096	0.00163	5.40077	0.00231	0.04171	0.00231	0.00671	2.45714	0.55738	0.00	0.00	15.0238	81.4200
345-68	Opx- Ol gabbro	1415P	13.7	47.062	0.027	33.679	0.006	0.379	0	0.03	17.479	1.759	0.018	0.004	100.438	6.47518	0.00279	5.45928	0.00069	0.04359	0	0.00618	2.57436	0.46909	0.00	0.00	15.0314	84.5294
345-68	Opx- Ol gabbro	1415P	13.7	47.163	0.04	33.553	0	0.385	0.002	0.052	17.451	1.78	0.023	0	100.457	6.48046	0.00413	5.43077	0	0.04302	0.00027	0.00706	2.57096	0.47546	0.00	0	15.0326	84.2645
345-68	Opx- Ol gabbro	1415P	13.7	47.177	0.023	33.579	0	0.376	0.025	0.04	16.989	1.795	0.022	0.008	100.034	6.50028	0.00238	5.45555	0	0.04333	0.00346	0.00814	2.50992	0.47098	0.00	0.00	15.0088	83.8387
345-68	Opx- Ol gabbro	1415P	13.7	47.272	0.029	32.952	0	0.353	0.017	0.042	16.695	1.957	0.026	0.006	99.354	6.55068	0.00302	5.38973	0	0.04092	0.00235	0.00888	2.48012	0.52464	0.00	0.00	15.0127	82.3441
345-68	Opx- Ol gabbro	1415P	13.7	48.064	0.045	32.613	0.011	0.381	0	0.034	16.537	2.276	0.022	0	99.983	6.62603	0.00466	5.29983	0.00119	0.04397	0	0.00702	2.44015	0.60838	0.00	0	15.0296	79.9623
345-68	Opx- Ol gabbro	1415P	13.7	46.808	0	33.334	0	0.358	0	0.037	17.091	2.051	0.024	0.009	99.708	6.48051	0	5.44636	0	0.04151	0	0.00763	2.53727	0.55099	0.00	0.00	15.0704	82.0677
345-68	Opx- Ol gabbro	1415P	13.7	45.7	0.059	32.789	0	0.355	0.004	0.027	16.656	1.766	0.016	0	97.372	6.47576	0.00630	5.47464	0	0.04212	0.00058	0.00528	2.52958	0.48028	0.00	0	15.0238	83.8241
345-68	Opx- Ol gabbro	1415P	13.7	45.92	0.015	32.734	0	0.325	0	0.028	17.074	1.57	0.035	0.003	98.429	6.46093	0.00158	5.43583	0	0.03783	0	0.00592	2.57474	0.42888	0.00	0.00	15.094	82.0097
345-68	Opx- Ol gabbro	1415P	13.7	47.769	0.01	32.966	0.018	0.404	0	0.061	16.401	2.165	0.042	0.005	99.841	6.58192	0.00101	5.35498	0.00192	0.04767	0	0.01264	2.42404	0.57306	0.00	0.00	15.022	80.5260
345-68	Opx- Ol gabbro	1415P	13.7	48.614	0.049	32.624	0.004	0.402	0.002	0.041	16.466	2.344	0.028	0	100.564	6.65053	0.00504	5.26038	0.00040	0.04602	0.00022	0.00858	2.41846	0.62248	0.00	0	15.0209	79.3859
345-70	Opx- Ol gabbro	1415P	18	47.537	0.057	33.089	0	0.398	0.003	0.038	16.959	1.919	0.038	0	100.029	6.55033	0.00590	5.37052	0	0.04592	0.00034	0.00782	2.50585	0.51628	0.00	0	15.013	82.8237

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-70	Opx- Ol gabbro	1415P	18	46.678	0.012	33.986	0	0.412	0	0.03	17.139	1.545	0.037	0	99.839	6.448	0.001	5.537	0	0.047	0	0.006	2.539	0.414	0.006	0	14.9944	85.7789
345-70	Opx- Ol gabbro	1415P	18	46.662	0.029	33.516	0.002	0.436	0.002	0.02	17.124	1.552	0.021	0.01	99.377	6.477	0.003	5.485	0.000	0.050	0.000	0.004	2.542	0.419	0.004	0.000	14.9888	85.7977
345-70	Opx- Ol gabbro	1415P	18	46.627	0.034	33.666	0	0.408	0.005	0.029	17.478	1.57	0.030	0	99.853	6.450	0.003	5.486	0	0.047	0.000	0.006	2.592	0.423	0.005	0	15.0151	85.8382
345-70	Opx- Ol gabbro	1415P	18	46.427	0.028	33.819	0.012	0.402	0	0.046	17.895	1.47	0.050	0	100.154	6.410	0.003	5.502	0.000	0.046	0	0.009	2.642	0.394	0.008	0	15.0318	86.7855
345-70	Opx- Ol gabbro	1415P	18	47.036	0.011	33.721	0.005	0.405	0	0.068	17.535	1.687	0.030	0.01	100.516	6.466	0.001	5.465	0.000	0.047	0	0.014	2.587	0.447	0.005	0.000	15.0302	84.9871
345-70	Opx- Ol gabbro	1415P	18	46.951	0.032	33.562	0.028	0.475	0.012	0.039	17.459	1.689	0.050	0	100.302	6.466	0.003	5.455	0.000	0.054	0.000	0.008	2.577	0.455	0.008	0	15.0304	84.8328
345-70	Opx- Ol gabbro	1415P	18	49.187	0.046	32.192	0	0.496	0	0.061	15.371	2.667	0.070	0	100.099	6.746	0.004	5.205	0	0.056	0	0.011	2.251	0.709	0.013	0	15.0076	75.7529
345-70	Opx- Ol gabbro	1415P	18	46.938	0.004	33.369	0.008	0.459	0	0.051	16.953	1.818	0.040	0	99.648	6.501	0.000	5.445	0.000	0.053	0	0.010	2.512	0.486	0.008	0	15.0241	83.5101
345-70	Opx- Ol gabbro	1415P	18	46.497	0.017	33.776	0	0.385	0.002	0.053	17.082	1.678	0.040	0.004	99.541	6.446	0.002	5.515	0	0.044	0.000	0.011	2.536	0.451	0.005	0.000	15.0215	84.6681
345-70	Opx- Ol gabbro	1415P	18	46.641	0.007	33.776	0	0.424	0	0.036	17.156	1.627	0.040	0	99.702	6.450	0.000	5.502	0	0.049	0	0.007	2.545	0.436	0.007	0	15.011	85.1409
345-70	Opx- Ol gabbro	1415P	18	47.091	0.052	33.322	0	0.416	0	0.036	17.373	1.933	0.040	0.011	100.282	6.496	0.005	5.415	0	0.048	0	0.007	2.561	0.517	0.008	0.000	15.0587	83.0268
345-70	Opx- Ol gabbro	1415P	18	47.103	0.002	33.539	0.01	0.43	0	0.045	17.401	1.779	0.030	0	100.348	6.482	0.000	5.445	0.000	0.048	0	0.009	2.562	0.479	0.005	0	15.035	84.1986
345-70	Opx- Ol gabbro	1415P	18	47.174	0.051	32.736	0.006	0.544	0.012	0.019	16.797	1.95	0.050	0.013	99.354	6.556	0.005	5.360	0.000	0.063	0.000	0.004	2.500	0.524	0.009	0.000	15.0269	82.3757
345-70	Opx- Ol gabbro	1415P	18	46.874	0.026	33.371	0.001	0.433	0	0.018	17.258	1.739	0.040	0	99.767	6.480	0.003	5.440	0.000	0.050	0	0.003	2.559	0.463	0.007	0	15.0243	84.3475
345-70	Opx- Ol gabbro	1415P	18	47.183	0.032	33.201	0.012	0.452	0.007	0.052	16.626	1.926	0.040	0.008	99.547	6.535	0.003	5.420	0.000	0.052	0.000	0.010	2.462	0.517	0.007	0.000	15.0152	82.4502
345-70	Opx- Ol gabbro	1415P	18	48.271	0.047	32.896	0.011	0.472	0	0.025	16.162	2.242	0.047	0.011	100.183	6.624	0.005	5.324	0.000	0.054	0	0.005	2.379	0.597	0.008	0.000	15.0052	79.7116
345-70	Opx- Ol gabbro	1415P	18	47.1	0.041	32.886	0	0.478	0	0.006	16.436	1.935	0.040	0.007	98.931	6.556	0.004	5.390	0	0.057	0	0.001	2.456	0.526	0.007	0.000	15.0017	82.2466
345-70	Opx- Ol gabbro	1415P	18	46.365	0.043	33.546	0.016	0.452	0	0.021	17.475	1.591	0.040	0.002	99.554	6.436	0.004	5.490	0.000	0.052	0	0.004	2.600	0.428	0.007	0.000	15.0289	85.6361
345-70	Opx- Ol gabbro	1415P	18	46.385	0	33.997	0.012	0.439	0.007	0.064	17.391	1.518	0.030	0.001	99.862	6.410	0.000	5.540	0.000	0.050	0.000	0.013	2.577	0.407	0.006	0.000	15.0178	86.2037
345-70	Opx- Ol gabbro	1415P	18	47.074	0.067	32.601	0	0.618	0	0.426	16.302	1.957	0.020	0	99.07	6.550	0.007	5.344	0	0.071	0	0.008	2.432	0.528	0.004	0	15.0326	82.0315
345-70	Opx- Ol gabbro	1415P	18	46.625	0.017	33.439	0	0.422	0.007	0.023	17.151	1.632	0.040	0	99.36	6.470	0.002	5.475	0	0.049	0.000	0.004	2.559	0.433	0.007	0	15.0077	85.1127
345-70	Opx- Ol gabbro	1415P	18	46.814	0.027	33.782	0.024	0.407	0.005	0.043	17.594	1.655	0.040	0	100.392	6.446	0.003	5.482	0.000	0.049	0.000	0.009	2.597	0.441	0.007	0	15.0338	85.2523
345-70	Opx- Ol gabbro	1415P	18	45.093	0.006	34.686	0.077	0.359	0.011	0.015	18.22	0.958	0.010	0.005	99.442	6.271	0.001	5.690	0.000	0.041	0.000	0.003	2.711	0.256	0.002	0.000	15.0028	91.2436
345-70	Opx- Ol gabbro	1415P	18	48.352	0.084	32.368	0.024	0.496	0	0.053	15.845	2.423	0.060	0	99.712	6.670	0.009	5.260	0.000	0.057	0	0.011	2.341	0.640	0.011	0	15.0169	78.0204
345-70	Opx- Ol gabbro	1415P	18	47.352	0.06	33.229	0.001	0.482	0.009	0.039	16.738	1.897	0.040	0	99.848	6.530	0.006	5.400	0.000	0.055	0.000	0.008	2.470	0.500	0.008	0	15.0092	82.7759
345-70	Opx- Ol gabbro	1415P	18	47.602	0.052	33.238	0	0.459	0	0.019	16.808	2.052	0.050	0.022	100.31	6.546	0.005	5.380	0	0.055	0	0.004	2.476	0.541	0.009	0.000	15.0328	81.6345
345-70	Opx- Ol gabbro	1415P	18	46.616	0.024	33.705	0.007	0.44	0.025	0.046	17.442	1.663	0.030	0	100.002	6.440	0.003	5.490	0.000	0.055	0.000	0.000	2.582	0.440	0.005	0	15.0348	85.1122
345-70	Opx- Ol gabbro	1415P	18	46.843	0.036	33.864	0.01	0.44	0.007	0	17.478	1.605	0.040	0	100.33	6.446	0.004	5.496	0.000	0.050	0.000	0.000	2.577	0.426	0.008	0	15.0168	85.5176
345-70	Opx- Ol gabbro	1415P	18	47.862	0.047	33.247	0.002	0.455	0.01	0.038	16.561	2.085	0.040	0.007	100.361	6.570	0.005	5.370	0.000	0.052	0.000	0.000	2.435	0.550	0.007	0.000	15.0164	81.2227
345-70	Opx- Ol gabbro	1415P	18	47.682	0.063	32.867	0	0.44	0.016	0.037	16.817	2.135	0.050	0.011	100.123	6.570	0.005	5.330	0	0.050	0.000	0.000	2.482	0.570	0.009	0.000	15.0425	81.0561
345-70	Opx- Ol gabbro	1415P	18	47.536	0.052	30.036	0.018	0.631	0.008	1.798	14.104	2.648	0.070	0	96.907	6.746	0.005	5.020	0.000	0.070	0.000	0.380	2.142	0.724	0.010	0	15.1119	74.2862
345-70	Opx- Ol gabbro	1415P	18	47.755	0.019	32.698	0.014	0.364	0.005	0.029	16.263	2.178	0.050	0	99.376	6.610	0.002	5.330	0.000	0.042	0.000	0.002	2.412	0.580	0.000	0	15.0112	80.2546
345-70	Opx- Ol gabbro	1415P	18	47.665	0.052	32.245	0.004	0.483	0	0.035	16.379	2.269	0.060	0.01	99.204	6.622	0.005	5.285	0.000	0.055	0	0.000	2.432	0.610	0.010	0.000	15.0394	79.6688

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-70	Opx- Ol gabbro	1415P	18	48.055	0.051	32.749	0.017	0.444	0	0.063	16.875	2.068	0.025	0	100.347	6.6026	0.0052	5.3037	0.0019	0.0511	0	0.0128	2.4844	0.551	0.0045	0	15.0172	81.726 2
345-70	Opx- Ol gabbro	1415P	18	46.304	0.023	33.833	0.026	0.439	0	0.052	17.725	1.575	0.031	0	100.003	6.4063	0.0024	5.5174	0.0028	0.0508	0	0.0106	2.6269	0.4224	0.0054	0	15.045	85.995 1
345-70	Opx- Ol gabbro	1415P	18	46.748	0	33.678	0.031	0.404	0.001	0.005	17.422	1.601	0.041	0.012	99.943	6.4599	0	5.4855	0.0034	0.0467	0.0009	0.0096	2.5796	0.4239	0.0072	0.0013	15.0137	85.536 6
345-70	Opx- Ol gabbro	1415P	18	46.983	0.016	33.773	0.022	0.436	0.004	0.019	16.875	1.67	0.049	0	99.844	6.4855	0.0016	5.4955	0.0024	0.0503	0.0005	0.0049	2.4962	0.4407	0.0087	0	14.9917	84.562 5
345-70	Opx- Ol gabbro	1415P	18	46.801	0.034	33.576	0	0.394	0	0.038	16.999	1.74	0.055	0	99.632	6.4836	0.0036	5.4796	0	0.0404	0	0.0079	2.5219	0.4671	0.0088	0	15.0145	84.125 5
345-70	Opx- Ol gabbro	1415P	18	46.925	0.051	33.464	0	0.428	0.004	0.044	17.309	1.791	0.049	0	100.065	6.4786	0.0053	5.4457	0	0.0409	0.0004	0.0095	2.5606	0.4795	0.0087	0	15.0373	83.987 2
345-70	Opx- Ol gabbro	1415P	18	47.476	0.029	32.821	0.007	0.411	0	0.034	16.711	1.973	0.056	0.005	99.522	6.5755	0.003	5.3578	0.0007	0.0476	0	0.007	2.4897	0.5299	0.0099	0.0005	15.0119	82.130 3
345-70	Opx- Ol gabbro	1415P	18	47.084	0.01	33.619	0	0.455	0.017	0.046	17.337	1.675	0.036	0.011	100.29	6.4824	0.001	5.4558	0	0.0524	0.0022	0.0095	2.5576	0.4473	0.0076	0.0012	15.0155	84.936 8
345-70	Opx- Ol gabbro	1415P	18	46.307	0.039	33.238	0.002	0.449	0.01	0.054	17.337	1.777	0.042	0.003	99.258	6.4526	0.0041	5.4508	0.0002	0.0524	0.0012	0.0124	2.5886	0.4802	0.0075	0.0004	15.0576	84.146 9
345-70	Opx- Ol gabbro	1415P	18	47.704	0.044	32.913	0	0.397	0.007	0.031	16.879	2.031	0.074	0.007	100.083	6.5745	0.0046	5.3462	0	0.0458	0.0008	0.0063	2.4924	0.5427	0.0131	0.0007	15.0258	81.785 9
345-70	Opx- Ol gabbro	1415P	18	48.325	0.024	32.803	0	0.429	0.029	0.023	15.998	2.16	0.076	0.006	99.869	6.6507	0.0025	5.3212	0	0.0493	0.0034	0.0048	2.3592	0.5726	0.0134	0.0006	14.9808	80.018
345-70	Opx- Ol gabbro	1415P	18	46.827	0.059	33.538	0.01	0.36	0	0.027	17.231	1.574	0.046	0	99.672	6.4809	0.0062	5.4711	0.0011	0.0417	0	0.0055	2.5553	0.4224	0.0081	0	14.9923	85.581 3
345-70	Opx- Ol gabbro	1415P	18	48.619	0.082	31.855	0	0.46	0.016	0.048	15.907	2.632	0.067	0.007	99.698	6.7137	0.0085	5.1849	0	0.0532	0.0019	0.0099	2.3537	0.7037	0.0147	0.0007	15.0433	76.685 7
345-70	Opx- Ol gabbro	1415P	18	46.756	0.006	33.686	0.014	0.378	0.013	0	17.496	1.656	0.029	0	100.036	6.4506	0.0006	5.4831	0.0015	0.0437	0.0016	0	2.5837	0.4402	0.0052	0	15.0247	85.241 2
345-70	Opx- Ol gabbro	1415P	18	47.131	0.023	33.758	0.005	0.429	0	0.029	17.376	1.798	0.044	0	100.597	6.4677	0.0024	5.4637	0.0005	0.0494	0	0.0049	2.5509	0.4747	0.0087	0	15.0368	84.015 3
345-70	Opx- Ol gabbro	1415P	18	46.834	0.03	34.066	0.03	0.399	0	0.009	17.816	1.657	0.033	0	100.876	6.4213	0.0031	5.5048	0.0033	0.0457	0	0.0018	2.6148	0.4406	0.0058	0	15.0445	85.431 4
345-70	Opx- Ol gabbro	1415P	18	46.569	0	34.015	0	0.38	0	0.03	17.429	1.586	0.055	0	100.06	6.4175	0	5.5337	0	0.0438	0	0.0061	2.5746	0.4245	0.0097	0	15.0224	85.603 7
345-70	Opx- Ol gabbro	1415P	18	47.244	0.038	32.984	0	0.412	0	0.057	16.469	1.897	0.048	0.008	99.157	6.5611	0.004	5.3934	0	0.0477	0	0.0079	2.4508	0.5109	0.0085	0.0009	14.9952	82.512 2
345-70	Opx- Ol gabbro	1415P	18	47.321	0.044	33.921	0.004	0.406	0.029	0.031	17.293	1.673	0.029	0.004	100.765	6.4695	0.0046	5.4659	0.0004	0.0465	0.0033	0.0063	2.5371	0.4412	0.0077	0.0004	15.0031	84.957 4
345-70	Opx- Ol gabbro	1415P	18	47.286	0.027	33.693	0.002	0.449	0.016	0.049	17.093	1.739	0.061	0	100.418	6.4928	0.0028	5.4557	0.0002	0.0514	0.0019	0.0072	2.5132	0.4607	0.0101	0	15.0098	84.156 0
345-70	Opx- Ol gabbro	1415P	18	45.159	0.04	30.554	0	0.286	0.011	0.031	22.153	0.739	0.113	0.011	99.093	6.4046	0.0043	5.1042	0	0.0339	0.0013	0.0066	3.3565	0.2032	0.0024	0.0012	15.1491	93.782 0
345-71	Opx- Ol gabbro	1415P	18.9	46.963	0.048	33.825	0	0.412	0.022	0.027	16.971	1.902	0.032	0	100.202	6.4582	0.005	5.4912	0	0.0474	0.0026	0.0055	2.5046	0.5007	0.0079	0	15.038	82.985 4
345-71	Opx- Ol gabbro	1415P	18.9	47.289	0.05	33.471	0.005	0.445	0	0.027	16.691	1.723	0.046	0	99.76	6.5209	0.0052	5.4448	0.0005	0.0513	0	0.0056	2.4706	0.4611	0.0092	0	14.978	84.005 7
345-71	Opx- Ol gabbro	1415P	18.9	46.687	0.062	33.487	0	0.417	0	0.016	17.423	1.654	0.037	0	99.786	6.4636	0.0065	5.4649	0	0.0483	0	0.0033	2.5848	0.4417	0.0071	0	15.0228	85.138 9
345-71	Opx- Ol gabbro	1415P	18.9	48.997	0.058	32.497	0.012	0.486	0.002	0.059	15.867	2.568	0.071	0.008	100.618	6.6973	0.0059	5.2306	0.0013	0.0557	0.0002	0.0192	2.3206	0.6811	0.0136	0.0008	15.0248	77.022 6
345-71	Opx- Ol gabbro	1415P	18.9	47.886	0.007	32.882	0	0.358	0.004	0.039	16.178	2.253	0.044	0.003	99.65	6.6116	0.0007	5.3512	0	0.0414	0.0004	0.0081	2.3935	0.6007	0.0099	0.0003	15.0173	79.687 8
345-71	Opx- Ol gabbro	1415P	18.9	48.211	0.11	32.866	0	0.451	0	0.04	16.543	2.284	0.068	0	100.573	6.6013	0.0113	5.3046	0	0.0516	0	0.0082	2.4206	0.6065	0.0119	0	15.0361	79.696 0
345-71	Opx- Ol gabbro	1415P	18.9	47.026	0.019	33.601	0.002	0.465	0.004	0.032	17.585	1.626	0.025	0	100.383	6.4722	0.002	5.4539	0.0002	0.0535	0.0004	0.0065	2.5937	0.4312	0.0039	0	15.0193	85.524 0
345-71	Opx- Ol gabbro	1415P	18.9	46.141	0.017	33.816	0.005	0.458	0.038	0.046	17.205	1.571	0.043	0.001	99.341	6.4124	0.0018	5.5403	0.0005	0.0532	0.0045	0.0096	2.5638	0.4232	0.0077	0.0001	15.0251	85.596 5
345-71	Opx- Ol gabbro	1415P	18.9	46.823	0.046	33.679	0.023	0.488	0.003	0.025	17.516	1.729	0.034	0.003	100.372	6.4507	0.0048	5.4609	0.0025	0.0562	0.0004	0.0051	2.5857	0.4636	0.0066	0.0003	15.0432	84.660 7
345-71	Opx- Ol gabbro	1415P	18.9	49.367	0.058	31.435	0	0.476	0.024	0.067	15.055	2.866	0.096	0	99.444	6.8136	0.006	5.1139	0	0.0549	0.0028	0.0137	2.2264	0.7614	0.0171	0	15.0155	73.954 2
345-71	Opx- Ol gabbro	1415P	18.9	48.455	0.034	32.302	0.04	0.389	0	0.06	15.719	2.358	0.076	0.006	99.442	6.6943	0.0035	5.2601	0.0043	0.0445	0	0.0069	2.3223	0.6316	0.0139	0.0007	14.9926	78.283 1
345-71	Opx- Ol gabbro	1415P	18.9	48.325	0.04	32.287	0.011	0.408	0	0.047	16.036	2.356	0.068	0.008	99.588	6.6756	0.0042	5.2537	0.0012	0.0472	0	0.0096	2.3736	0.6316	0.0112	0.0011	15.0125	78.684 1

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-71	Opx- Ol gabbro	1415P	18.9	46.595	0.015	33.618	0	0.405	0	0.027	17.262	1.479	0.052	0	99.453	6.46	0.00	5.49	0	0.04	0	0.00	2.56	0.39	0.00	0	14.989	86.310
345-71	Opx- Ol gabbro	1415P	18.9	47.248	0.027	33.578	0	0.401	0.011	0.066	17.357	1.741	0.061	0.008	100.49	6.49	0.00	5.43	0	0.04	0.00	0.01	2.55	0.46	0.01	0.00	15.0242	84.340
345-74	Opx- Ol gabbro	1415P	74.9	46.444	0.015	33.6	0	0.347	0	0.041	17.369	1.672	0.025	0	99.513	6.44	0.00	5.49	0	0.04	0	0.00	2.58	0.44	0.00	0	15.0309	85.046
345-74	Opx- Ol gabbro	1415P	74.9	46.677	0.015	33.679	0.027	0.352	0.003	0.031	17.428	1.697	0.027	0.008	99.944	6.45	0.00	5.48	0.003	0.04	0.00	0.00	2.58	0.45	0.00	0.00	15.0318	84.887
345-74	Opx- Ol gabbro	1415P	74.9	46.615	0.042	33.681	0.021	0.394	0	0.029	17.396	1.686	0.018	0.008	99.89	6.44	0.00	5.49	0.002	0.04	0	0.00	2.57	0.45	0.00	0.00	15.0301	84.983
345-74	Opx- Ol gabbro	1415P	74.9	46.225	0.026	33.049	0	0.421	0.006	0.054	16.859	1.857	0.031	0	98.528	6.47	0.00	5.45	0	0.04	0.00	0.01	2.53	0.50	0.00	0	15.0442	83.230
345-74	Opx- Ol gabbro	1415P	74.9	50.466	0.086	31.119	0.007	0.414	0.002	0.079	14.438	3.506	0.071	0.006	100.186	6.90	0.00	5.01	0.001	0.04	0.00	0.01	2.11	0.92	0.01	0.00	15.0521	69.165
345-74	Opx- Ol gabbro	1415P	74.9	49.412	0.054	31.688	0.004	0.382	0.003	0.071	15.102	2.947	0.065	0.005	99.733	6.79	0.00	5.13	0.000	0.04	0.00	0.01	2.22	0.78	0.01	0.00	15.0256	73.627
345-84	Opx- Ol gabbro	1415P	37	48.899	0.033	32.081	0	0.378	0	0.024	15.119	2.607	0.051	0	99.192	6.75	0.00	5.22	0	0.04	0	0.00	2.23	0.69	0.00	0	14.9806	75.985
345-84	Opx- Ol gabbro	1415P	37	49.155	0.048	31.949	0.005	0.384	0	0.049	15.235	2.721	0.058	0	99.601	6.76	0.00	5.18	0.000	0.04	0	0.01	2.24	0.72	0.01	0	15.0002	75.312
345-84	Opx- Ol gabbro	1415P	37	48.371	0.067	32.333	0.002	0.407	0.011	0.05	15.793	2.369	0.030	0.003	99.437	6.68	0.00	5.26	0.000	0.04	0.00	0.01	2.33	0.63	0.00	0.00	14.9957	78.504
345-84	Opx- Ol gabbro	1415P	37	49.385	0.034	32.181	0	0.448	0	0.047	15.427	2.754	0.046	0	100.322	6.75	0.00	5.19	0	0.05	0	0.00	2.26	0.73	0.00	0	15.013	75.379
345-84	Opx- Ol gabbro	1415P	37	49.465	0.028	31.757	0	0.338	0.003	0.04	14.919	2.756	0.036	0	99.343	6.81	0.00	5.15	0	0.03	0.00	0.00	2.20	0.73	0.00	0	14.9722	74.780
345-84	Opx- Ol gabbro	1415P	37	46.879	0.042	33.487	0.004	0.348	0	0.036	16.843	1.77	0.015	0.028	99.452	6.49	0.00	5.47	0.000	0.04	0	0.00	2.50	0.47	0.00	0.00	15.0027	83.940
345-84	Opx- Ol gabbro	1415P	37	47.586	0.04	33.038	0	0.379	0.001	0.026	16.293	2.09	0.024	0.002	99.479	6.58	0.00	5.38	0	0.04	0.00	0.00	2.41	0.56	0.00	0.00	15.0024	81.047
345-84	Opx- Ol gabbro	1415P	37	49.593	0.065	31.665	0	0.379	0	0.061	14.768	2.878	0.033	0	99.442	6.82	0.00	5.13	0	0.04	0	0.01	2.17	0.76	0.00	0	14.9826	73.786
345-84	Opx- Ol gabbro	1415P	37	47.467	0.031	32.676	0	0.336	0	0.039	16.148	2.026	0.022	0	98.745	6.60	0.00	5.36	0	0.03	0	0.00	2.40	0.54	0.00	0	14.9819	81.388
345-84	Opx- Ol gabbro	1415P	37	46.982	0.005	33.456	0	0.357	0.018	0.041	17.061	1.754	0.008	0	99.681	6.49	0.00	5.45	0	0.04	0.00	0.00	2.52	0.47	0.00	0	15.0081	84.273
345-84	Opx- Ol gabbro	1415P	37	48.263	0.027	32.281	0	0.393	0.003	0.036	15.553	2.411	0.056	0.013	99.036	6.69	0.00	5.27	0	0.04	0.00	0.00	2.31	0.64	0.01	0.00	14.9955	77.829
345-84	Opx- Ol gabbro	1415P	37	48.667	0.029	32.167	0	0.414	0.01	0.068	15.646	2.464	0.034	0	99.499	6.71	0.00	5.23	0	0.04	0.00	0.01	2.31	0.65	0.00	0	14.9958	77.665

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Olivine (ODP Leg 147)																												
147-01	Opx-ol gabbro	894G	0.000	36.658	0.021	0.000	0.001	30.247	0.418	32.707	0.038	0.000	0.008	0.078	100.176	5.950	0.003	0.000	0.000	4.106	0.058	7.914	0.007	0.000	0.002	0.010	18.048	65.8
147-01	Opx-ol gabbro	894G	0.000	36.867	0.016	0.000	0.000	30.244	0.391	32.546	0.026	0.000	0.005	0.060	100.155	5.979	0.002	0.000	0.000	4.102	0.054	7.869	0.005	0.000	0.001	0.008	18.019	65.7
147-01	Opx-ol gabbro	894G	0.000	36.590	0.022	0.000	0.022	31.368	0.449	31.984	0.000	0.010	0.000	0.062	100.507	5.950	0.003	0.000	0.003	4.266	0.062	7.753	0.000	0.000	0.003	0.008	18.048	64.5
147-01	Opx-ol gabbro	894G	0.000	36.798	0.011	0.017	0.000	31.126	0.425	32.076	0.019	0.011	0.000	0.080	100.564	5.969	0.001	0.003	0.000	4.223	0.058	7.757	0.003	0.000	0.004	0.010	18.029	64.7
147-01	Opx-ol gabbro	894G	0.000	36.630	0.018	0.000	0.000	30.529	0.452	32.702	0.016	0.006	0.000	0.059	100.411	5.939	0.002	0.000	0.000	4.140	0.062	7.904	0.003	0.000	0.002	0.008	18.060	65.6
147-01	Opx-ol gabbro	894G	0.000	36.702	0.019	0.033	0.013	31.317	0.438	31.586	0.230	0.000	0.000	0.102	100.439	5.973	0.002	0.006	0.002	4.262	0.060	7.662	0.004	0.000	0.000	0.013	18.021	64.2
147-01	Opx-ol gabbro	894G	0.000	36.736	0.000	0.010	0.000	31.085	0.420	31.512	0.249	0.011	0.000	0.093	100.115	5.991	0.000	0.002	0.000	4.240	0.058	7.660	0.004	0.000	0.000	0.012	18.010	64.3
147-01	Opx-ol gabbro	894G	0.000	36.540	0.034	0.112	0.034	31.721	0.394	30.259	1.447	0.023	0.000	0.073	100.637	5.967	0.004	0.022	0.004	4.332	0.055	7.366	0.253	0.008	0.000	0.010	18.020	62.9
147-01	Opx-ol gabbro	894G	0.000	36.716	0.044	0.017	0.000	30.052	0.431	32.577	0.070	0.015	0.000	0.074	99.996	5.965	0.005	0.003	0.000	4.083	0.059	7.889	0.012	0.005	0.000	0.010	18.031	65.8
147-01	Opx-ol gabbro	894G	0.000	36.650	0.026	0.000	0.000	30.003	0.383	32.861	0.029	0.015	0.000	0.055	100.023	5.950	0.003	0.000	0.000	4.074	0.053	7.953	0.005	0.005	0.000	0.007	18.049	66.1
147-01	Opx-ol gabbro	894G	0.000	36.625	0.012	0.000	0.000	30.361	0.428	32.391	0.033	0.006	0.000	0.072	99.927	5.963	0.002	0.000	0.000	4.134	0.059	7.862	0.006	0.002	0.000	0.009	18.037	65.5
147-01	Opx-ol gabbro	894G	0.000	36.969	0.018	0.000	0.000	31.050	0.451	32.073	0.000	0.006	0.000	0.076	100.643	5.987	0.002	0.000	0.000	4.206	0.062	7.743	0.000	0.000	0.002	0.010	18.012	64.8
147-01	Opx-ol gabbro	894G	0.000	36.755	0.019	0.000	0.002	30.319	0.402	32.919	0.000	0.000	0.000	0.021	100.438	5.947	0.002	0.000	0.000	4.103	0.055	7.940	0.000	0.000	0.000	0.003	18.050	65.9
147-04	Opx-ol gabbro	894G	0.000	37.747	0.024	0.000	0.000	29.943	0.424	34.284	0.026	0.013	0.000	0.055	102.516	5.955	0.003	0.000	0.000	3.951	0.057	8.063	0.000	0.000	0.000	0.007	18.044	67.1
147-04	Opx-ol gabbro	894G	0.000	37.624	0.016	0.000	0.000	29.668	0.411	34.462	0.035	0.016	0.000	0.086	102.318	5.943	0.002	0.000	0.000	3.920	0.055	8.115	0.000	0.000	0.000	0.011	18.057	67.4
147-04	Opx-ol gabbro	894G	0.000	38.181	0.013	0.024	0.000	28.532	0.414	34.012	0.938	0.000	0.004	0.051	102.169	6.013	0.002	0.005	0.000	3.758	0.057	7.985	0.150	0.000	0.000	0.006	17.983	67.9
147-04	Opx-ol gabbro	894G	0.000	37.667	0.009	0.006	0.011	29.948	0.416	34.311	0.063	0.000	0.006	0.073	102.510	5.946	0.001	0.001	0.001	3.953	0.056	8.073	0.011	0.000	0.001	0.009	18.053	67.1
147-04	Opx-ol gabbro	894G	0.000	37.585	0.004	0.007	0.000	29.421	0.436	34.392	0.069	0.006	0.002	0.062	101.984	5.952	0.000	0.001	0.000	3.896	0.056	8.113	0.010	0.000	0.000	0.008	18.049	67.5
147-04	Opx-ol gabbro	894G	0.000	37.843	0.013	0.000	0.000	29.750	0.413	34.252	0.025	0.001	0.000	0.062	102.359	5.972	0.002	0.000	0.000	3.927	0.055	8.054	0.000	0.000	0.000	0.008	18.026	67.2
147-04	Opx-ol gabbro	894G	0.000	37.821	0.030	0.019	0.005	29.514	0.430	34.618	0.066	0.015	0.000	0.023	102.541	5.953	0.004	0.004	0.001	3.885	0.057	8.122	0.010	0.000	0.000	0.003	18.044	67.6
147-04	Opx-ol gabbro	894G	0.000	37.510	0.008	0.005	0.000	30.083	0.413	34.195	0.044	0.000	0.000	0.077	102.335	5.937	0.001	0.001	0.000	3.982	0.055	8.068	0.000	0.000	0.000	0.010	18.062	66.9
147-04	Opx-ol gabbro	894G	0.000	37.519	0.038	0.007	0.014	29.956	0.402	34.213	0.003	0.011	0.017	0.076	102.256	5.940	0.005	0.001	0.002	3.966	0.054	8.074	0.001	0.004	0.003	0.010	18.058	67.0
147-06	Opx-ol gabbro	894G	0.000	37.529	0.012	0.000	0.000	30.539	0.427	33.777	0.000	0.000	0.000	0.065	102.349	5.950	0.001	0.000	0.000	4.049	0.057	7.983	0.000	0.000	0.000	0.008	18.049	66.3
147-06	Opx-ol gabbro	894G	0.000	37.516	0.035	0.000	0.010	30.929	0.450	33.633	0.031	0.000	0.000	0.076	102.680	5.940	0.004	0.000	0.001	4.096	0.060	7.930	0.000	0.000	0.000	0.010	18.055	65.9
147-06	Opx-ol gabbro	894G	0.000	37.425	0.020	0.000	0.001	30.866	0.407	33.605	0.000	0.000	0.000	0.057	102.381	5.941	0.002	0.000	0.000	4.094	0.055	7.953	0.000	0.000	0.000	0.007	18.056	65.9
147-06	Opx-ol gabbro	894G	0.000	37.379	0.019	0.008	0.000	31.021	0.455	33.370	0.000	0.000	0.000	0.059	102.311	5.944	0.002	0.001	0.000	4.126	0.061	7.911	0.000	0.000	0.000	0.008	18.053	65.7
147-06	Opx-ol gabbro	894G	0.000	37.242	0.019	0.009	0.005	31.444	0.442	33.226	0.015	0.000	0.005	0.066	102.473	5.927	0.002	0.002	0.001	4.185	0.060	7.882	0.000	0.000	0.000	0.008	18.070	65.3
147-06	Opx-ol gabbro	894G	0.000	37.511	0.001	0.012	0.017	31.525	0.478	33.230	0.000	0.002	0.000	0.075	102.851	5.945	0.000	0.002	0.002	4.179	0.061	7.851	0.000	0.000	0.001	0.010	18.053	65.2
147-06	Opx-ol gabbro	894G	0.000	37.395	0.000	0.002	0.015	30.956	0.417	33.066	0.004	0.003	0.009	0.079	101.946	5.967	0.000	0.000	0.002	4.131	0.056	7.865	0.001	0.001	0.002	0.010	18.034	65.5
147-06	Opx-ol gabbro	894G	0.000	37.489	0.003	0.000	0.016	31.052	0.429	33.140	0.003	0.000	0.001	0.081	102.213	5.966	0.000	0.000	0.002	4.133	0.058	7.862	0.001	0.000	0.000	0.010	18.033	65.5
147-06	Opx-ol gabbro	894G	0.000	37.406	0.000	0.007	0.015	31.114	0.448	33.033	0.005	0.000	0.000	0.058	102.086	5.964	0.000	0.001	0.002	4.149	0.061	7.851	0.001	0.000	0.000	0.008	18.035	65.4
147-06	Opx-ol gabbro	894G	0.000	37.593	0.023	0.000	0.016	31.071	0.438	33.306	0.053	0.012	0.002	0.088	102.602	5.960	0.003	0.000	0.002	4.120	0.059	7.871	0.009	0.004	0.000	0.011	18.039	65.6

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-06	Opx-ol gabbro	894G	0.000	37.700	0.021	0.005	0.021	31.216	0.442	32.991	0.044	0.020	0.000	0.058	102.518	5.983	0.003	0.001	0.003	4.143	0.059	7.804	0.008	0.006	0.000	0.007	18.016	65.3
147-06	Opx-ol gabbro	894G	0.000	37.038	0.013	0.010	0.002	30.934	0.424	33.028	0.009	0.017	0.003	0.077	101.555	5.939	0.002	0.002	0.000	4.148	0.058	7.895	0.002	0.005	0.001	0.010	18.061	65.5
Appendix 1:Mineral chemistry of Olivine (Rubbles Exp. 345)																												
345-28	Ol-gabbro	Hole P	0.000	38.659	0.000	0.000	0.000	17.821	0.285	42.532	0.000	0.000	0.000	0.116	99.413	5.949	0.000	0.000	0.000	2.294	0.037	9.757	0.000	0.000	0.000	0.014	18.051	80.9
345-28	Ol-gabbro	Hole P	0.000	38.546	0.000	0.012	0.001	17.963	0.267	42.409	0.027	0.000	0.000	0.106	99.331	5.942	0.000	0.002	0.000	2.316	0.035	9.745	0.004	0.000	0.000	0.013	18.057	80.7
345-28	Ol-gabbro	Hole P	0.000	38.683	0.009	0.000	0.013	18.060	0.269	42.340	0.022	0.014	0.000	0.078	99.487	5.953	0.001	0.000	0.002	2.325	0.035	9.715	0.004	0.004	0.000	0.010	18.047	80.6
345-28	Ol-gabbro	Hole P	0.000	38.615	0.000	0.000	0.000	18.186	0.279	42.268	0.009	0.000	0.000	0.109	99.466	5.949	0.000	0.000	0.000	2.343	0.036	9.707	0.001	0.000	0.000	0.014	18.051	80.5
345-28	Ol-gabbro	Hole P	0.000	38.608	0.010	0.003	0.000	18.178	0.295	42.353	0.033	0.000	0.000	0.093	99.573	5.942	0.001	0.001	0.000	2.340	0.039	9.717	0.000	0.000	0.000	0.012	18.057	80.5
345-28	Ol-gabbro	Hole P	0.000	38.494	0.000	0.000	0.008	18.204	0.275	42.365	0.016	0.000	0.005	0.128	99.494	5.932	0.000	0.000	0.001	2.346	0.036	9.733	0.000	0.000	0.001	0.016	18.068	80.5
345-28	Ol-gabbro	Hole P	0.000	38.710	0.024	0.007	0.000	18.305	0.273	42.502	0.022	0.000	0.001	0.101	99.945	5.937	0.000	0.001	0.000	2.348	0.036	9.711	0.000	0.000	0.000	0.013	18.059	80.5
345-28	Ol-gabbro	Hole P	0.000	38.574	0.000	0.000	0.001	18.323	0.278	42.506	0.008	0.000	0.000	0.105	99.795	5.928	0.000	0.000	0.000	2.355	0.036	9.738	0.000	0.000	0.000	0.013	18.072	80.5
345-28	Ol-gabbro	Hole P	0.000	38.804	0.000	0.005	0.000	18.252	0.270	42.467	0.000	0.000	0.000	0.085	99.883	5.951	0.000	0.001	0.000	2.340	0.035	9.709	0.000	0.000	0.000	0.011	18.048	80.5
345-28	Ol-gabbro	Hole P	0.000	38.531	0.000	0.000	0.000	18.265	0.264	42.028	0.030	0.002	0.000	0.113	99.233	5.953	0.000	0.000	0.000	2.360	0.035	9.680	0.000	0.000	0.000	0.014	18.047	80.3
345-28	Ol-gabbro	Hole P	0.000	38.782	0.000	0.004	0.000	18.207	0.272	42.350	0.018	0.010	0.000	0.127	99.769	5.950	0.000	0.001	0.000	2.338	0.035	9.694	0.000	0.000	0.000	0.016	18.046	80.5
345-28	Ol-gabbro	Hole P	0.000	38.792	0.000	0.009	0.011	18.308	0.268	42.236	0.009	0.005	0.004	0.106	99.747	5.960	0.000	0.002	0.001	2.352	0.035	9.673	0.000	0.000	0.000	0.013	18.040	80.4
345-28	Ol-gabbro	Hole P	0.000	38.849	0.009	0.000	0.006	18.161	0.283	42.411	0.009	0.000	0.000	0.093	99.821	5.960	0.001	0.000	0.000	2.330	0.037	9.698	0.000	0.000	0.000	0.012	18.039	80.6
345-28	Ol-gabbro	Hole P	0.000	38.868	0.000	0.000	0.007	18.156	0.292	42.862	0.014	0.006	0.000	0.105	100.309	5.935	0.000	0.000	0.001	2.319	0.038	9.752	0.000	0.000	0.000	0.013	18.065	80.7
345-28	Ol-gabbro	Hole P	0.000	38.711	0.006	0.005	0.017	18.091	0.284	42.574	0.018	0.019	0.000	0.112	99.837	5.931	0.001	0.001	0.002	2.321	0.037	9.732	0.000	0.000	0.000	0.014	18.061	80.7
345-28	Ol-gabbro	Hole P	0.000	38.766	0.000	0.017	0.002	18.179	0.285	42.333	0.000	0.002	0.000	0.114	99.697	5.956	0.000	0.003	0.000	2.336	0.037	9.696	0.000	0.001	0.000	0.014	18.043	80.5
345-28	Ol-gabbro	Hole P	0.000	38.688	0.000	0.000	0.010	18.184	0.290	42.435	0.012	0.008	0.001	0.105	99.732	5.944	0.000	0.000	0.001	2.337	0.038	9.712	0.000	0.000	0.000	0.013	18.056	80.6
345-28	Ol-gabbro	Hole P	0.000	38.990	0.000	0.000	0.006	18.021	0.288	42.622	0.000	0.008	0.000	0.089	100.023	5.963	0.000	0.000	0.001	2.305	0.037	9.719	0.000	0.002	0.000	0.011	18.038	80.8
345-28	Ol-gabbro	Hole P	0.000	39.432	0.001	0.000	0.007	18.700	0.274	43.340	0.028	0.000	0.000	0.088	101.870	5.935	0.000	0.000	0.001	2.354	0.037	9.724	0.000	0.000	0.000	0.011	18.064	80.5
345-28	Ol-gabbro	Hole P	0.000	38.271	0.001	0.000	0.007	18.149	0.266	42.064	0.027	0.000	0.000	0.085	98.870	5.935	0.000	0.000	0.001	2.354	0.037	9.724	0.000	0.000	0.000	0.011	18.064	80.5
345-28	Ol-gabbro	Hole P	0.000	38.546	0.000	0.003	0.008	18.276	0.280	42.305	0.013	0.000	0.005	0.096	99.531	5.938	0.000	0.001	0.001	2.355	0.036	9.716	0.000	0.000	0.000	0.012	18.061	80.4
345-28	Ol-gabbro	Hole P	0.000	38.349	0.000	0.006	0.000	18.274	0.283	42.178	0.016	0.000	0.000	0.121	99.226	5.930	0.000	0.000	0.000	2.362	0.037	9.724	0.000	0.000	0.000	0.015	18.070	80.4
345-28	Ol-gabbro	Hole P	0.000	39.525	0.009	0.000	0.000	18.559	0.249	43.348	0.009	0.002	0.000	0.097	101.798	5.947	0.001	0.000	0.000	2.335	0.032	9.723	0.000	0.000	0.000	0.012	18.052	80.6
345-28	Ol-gabbro	Hole P	0.000	38.878	0.032	0.004	0.000	18.001	0.306	42.250	0.010	0.007	0.000	0.106	99.593	5.973	0.004	0.001	0.000	2.313	0.040	9.677	0.000	0.000	0.000	0.013	18.024	80.7
345-28	Ol-gabbro	Hole P	0.000	38.889	0.015	0.000	0.011	18.390	0.264	42.919	0.029	0.006	0.000	0.119	100.641	5.925	0.002	0.000	0.001	2.343	0.034	9.747	0.000	0.000	0.000	0.015	18.074	80.6
345-28	Ol-gabbro	Hole P	0.000	38.855	0.008	0.000	0.000	18.269	0.243	42.485	0.020	0.011	0.000	0.084	99.975	5.953	0.001	0.000	0.000	2.341	0.034	9.704	0.000	0.000	0.000	0.011	18.047	80.5
345-28	Ol-gabbro	Hole P	0.000	38.570	0.015	0.000	0.005	18.172	0.249	42.364	0.026	0.006	0.000	0.104	99.511	5.940	0.002	0.000	0.001	2.340	0.033	9.725	0.000	0.000	0.000	0.013	18.059	80.6
345-02	Opx-ol gabbro	Hole G	0.000	38.064	0.000	0.000	0.000	21.784	0.315	39.288	0.010	0.008	0.000	0.106	99.574	5.960	0.000	0.000	0.000	2.853	0.042	9.170	0.002	0.002	0.000	0.013	18.041	76.2

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-02	Opx-ol gabbro	Hole G	0.000	38.171	0.000	0.000	0.009	21.778	0.339	39.260	0.000	0.000	0.000	0.116	99.673	5.969	0.000	0.000	0.001	2.848	0.045	9.152	0.000	0.000	0.000	0.015	18.030	76.2
345-02	Opx-ol gabbro	Hole G	0.000	38.829	0.000	0.000	0.005	22.147	0.307	40.207	0.028	0.008	0.008	0.120	101.659	5.954	0.000	0.000	0.000	2.840	0.040	9.190	0.000	0.000	0.000	0.015	18.048	76.3
345-02	Opx-ol gabbro	Hole G	0.000	38.049	0.000	0.011	0.000	21.787	0.310	39.323	0.040	0.000	0.000	0.110	99.629	5.955	0.000	0.002	0.000	2.852	0.041	9.174	0.000	0.000	0.000	0.014	18.044	76.2
345-02	Opx-ol gabbro	Hole G	0.000	37.849	0.028	0.000	0.000	21.278	0.308	39.495	0.026	0.000	0.000	0.115	99.099	5.945	0.003	0.000	0.000	2.795	0.041	9.248	0.000	0.000	0.000	0.015	18.052	76.7
345-02	Opx-ol gabbro	Hole G	0.000	37.790	0.007	0.000	0.000	21.760	0.313	39.402	0.034	0.036	0.000	0.147	99.488	5.929	0.001	0.000	0.000	2.855	0.042	9.215	0.006	0.011	0.000	0.019	18.076	76.3

Appendix 1:Mineral chemistry of Olivine (Exp. 345 U1415 J)																												
345-16	Ol-gabbro	1415J	45.000	38.532	0.000	0.000	0.000	18.834	0.283	41.692	0.004	0.000	0.000	0.118	99.464	5.955	0.000	0.000	0.000	2.434	0.037	9.604	0.000	0.000	0.000	0.015	18.046	79.7
345-16	Ol-gabbro	1415J	45.000	38.757	0.000	0.000	0.000	18.859	0.268	41.889	0.015	0.003	0.001	0.115	99.906	5.960	0.000	0.000	0.000	2.425	0.035	9.603	0.000	0.000	0.000	0.014	18.041	79.8
345-16	Ol-gabbro	1415J	45.000	38.716	0.004	0.000	0.021	18.903	0.279	42.080	0.019	0.014	0.000	0.136	100.172	5.942	0.000	0.000	0.003	2.426	0.036	9.627	0.003	0.004	0.000	0.017	18.058	79.8
345-16	Ol-gabbro	1415J	45.000	38.752	0.012	0.000	0.000	18.834	0.298	41.977	0.012	0.000	0.009	0.135	100.028	5.953	0.001	0.000	0.000	2.420	0.039	9.613	0.002	0.000	0.002	0.017	18.046	79.8
345-16	Ol-gabbro	1415J	45.000	38.652	0.004	0.000	0.009	18.767	0.271	42.048	0.018	0.000	0.002	0.110	99.881	5.945	0.000	0.000	0.001	2.414	0.035	9.641	0.003	0.000	0.000	0.014	18.054	79.9
345-16	Ol-gabbro	1415J	45.000	38.811	0.021	0.000	0.013	18.874	0.275	41.849	0.023	0.000	0.000	0.165	100.031	5.962	0.003	0.000	0.002	2.425	0.036	9.584	0.004	0.000	0.000	0.020	18.035	79.8
345-16	Ol-gabbro	1415J	45.000	38.506	0.000	0.002	0.008	19.161	0.281	41.562	0.017	0.006	0.000	0.119	99.662	5.948	0.000	0.000	0.001	2.476	0.037	9.571	0.003	0.002	0.000	0.015	18.052	79.4
345-16	Ol-gabbro	1415J	45.000	38.550	0.000	0.000	0.000	19.101	0.296	41.770	0.011	0.001	0.000	0.142	99.871	5.942	0.000	0.000	0.000	2.462	0.039	9.597	0.002	0.000	0.000	0.018	18.059	79.5
345-16	Ol-gabbro	1415J	45.000	38.734	0.004	0.014	0.011	19.419	0.274	41.571	0.009	0.000	0.000	0.127	100.162	5.957	0.001	0.002	0.001	2.498	0.036	9.530	0.002	0.000	0.000	0.016	18.041	79.2
345-16	Ol-gabbro	1415J	45.000	38.478	0.024	0.000	0.000	19.337	0.269	41.049	0.000	0.017	0.001	0.118	99.301	5.969	0.003	0.000	0.000	2.509	0.035	9.495	0.000	0.005	0.002	0.015	18.032	79.0
345-16	Ol-gabbro	1415J	45.000	38.813	0.000	0.000	0.011	19.671	0.248	41.398	0.023	0.000	0.000	0.129	100.292	5.966	0.000	0.000	0.001	2.529	0.032	9.486	0.000	0.000	0.000	0.016	18.034	78.9
345-16	Ol-gabbro	1415J	45.000	38.654	0.000	0.000	0.018	19.656	0.293	40.969	0.013	0.006	0.004	0.165	99.778	5.976	0.000	0.000	0.002	2.541	0.038	9.442	0.000	0.000	0.000	0.021	18.024	78.7
345-16	Ol-gabbro	1415J	45.000	38.656	0.007	0.000	0.000	19.191	0.300	41.630	0.018	0.000	0.003	0.123	99.929	5.955	0.001	0.000	0.000	2.472	0.039	9.559	0.000	0.000	0.001	0.015	18.045	79.4
345-16	Ol-gabbro	1415J	45.000	38.873	0.013	0.000	0.000	19.370	0.273	41.545	0.018	0.003	0.000	0.133	100.229	5.971	0.002	0.000	0.000	2.488	0.036	9.512	0.000	0.000	0.000	0.017	18.028	79.2
345-16	Ol-gabbro	1415J	45.000	39.727	0.000	0.009	0.000	19.730	0.309	42.037	0.033	0.005	0.000	0.143	101.993	5.995	0.000	0.002	0.000	2.490	0.040	9.456	0.000	0.000	0.000	0.017	18.005	79.1
345-16	Ol-gabbro	1415J	45.000	38.558	0.000	0.009	0.000	19.150	0.300	40.801	0.032	0.005	0.000	0.139	98.993	5.995	0.000	0.002	0.000	2.490	0.040	9.456	0.000	0.000	0.000	0.017	18.005	79.1
345-16	Ol-gabbro	1415J	45.000	38.440	0.000	0.000	0.006	19.117	0.284	41.494	0.000	0.000	0.000	0.119	99.461	5.949	0.000	0.000	0.001	2.475	0.037	9.574	0.000	0.000	0.000	0.015	18.050	79.4
345-16	Ol-gabbro	1415J	45.000	38.509	0.000	0.010	0.012	19.178	0.276	41.450	0.017	0.000	0.000	0.135	99.586	5.954	0.000	0.002	0.002	2.480	0.036	9.553	0.000	0.000	0.000	0.017	18.045	79.3
345-117	Ol-gabbro	1415J	37.000	39.657	0.000	0.000	0.002	16.296	0.284	44.360	0.008	0.022	0.000	0.100	100.729	5.970	0.000	0.000	0.000	2.052	0.036	9.955	0.000	0.000	0.000	0.012	18.033	82.9
345-117	Ol-gabbro	1415J	37.000	39.707	0.001	0.025	0.008	16.287	0.264	44.635	0.000	0.000	0.002	0.118	101.047	5.958	0.000	0.004	0.001	2.044	0.034	9.984	0.000	0.000	0.000	0.014	18.039	83.0
345-117	Ol-gabbro	1415J	37.000	39.726	0.016	0.000	0.021	16.179	0.200	44.595	0.025	0.019	0.004	0.135	100.920	5.965	0.002	0.000	0.003	2.032	0.025	9.984	0.000	0.000	0.000	0.016	18.035	83.0
345-117	Ol-gabbro	1415J	37.000	39.610	0.004	0.000	0.002	16.203	0.220	44.261	0.000	0.003	0.000	0.159	100.462	5.976	0.000	0.000	0.000	2.048	0.028	9.955	0.000	0.001	0.000	0.019	18.024	82.9
345-117	Ol-gabbro	1415J	37.000	39.136	0.000	0.000	0.001	16.726	0.250	43.702	0.005	0.022	0.006	0.133	99.981	5.954	0.000	0.000	0.000	2.128	0.032	9.911	0.000	0.000	0.000	0.016	18.050	82.3
345-117	Ol-gabbro	1415J	37.000	39.967	0.016	0.000	0.046	16.378	0.226	44.191	0.018	0.000	0.000	0.115	100.957	5.999	0.002	0.000	0.005	2.056	0.029	9.888	0.000	0.000	0.000	0.014	17.996	82.7
345-117	Ol-gabbro	1415J	37.000	39.810	0.000	0.000	0.019	16.292	0.276	44.238	0.000	0.000	0.003	0.118	100.756	5.989	0.000	0.000	0.002	2.050	0.035	9.920	0.000	0.000	0.001	0.014	18.011	82.8

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-117	Ol-gabbro	1415J	37.000	39.638	0.008	0.006	0.000	16.269	0.262	44.240	0.000	0.021	0.002	0.133	100.579	5.976	0.001	0.001	0.000	2.051	0.033	9.942	0.000	0.006	0.000	0.016	18.026	82.8
345-117	Ol-gabbro	1415J	37.000	39.899	0.011	0.001	0.035	16.615	0.260	44.351	0.013	0.026	0.001	0.140	101.352	5.976	0.001	0.000	0.004	2.082	0.033	9.902	0.000	0.008	0.000	0.017	18.025	82.6
345-117	Ol-gabbro	1415J	37.000	39.519	0.023	0.005	0.027	16.412	0.249	44.375	0.001	0.000	0.004	0.130	100.745	5.954	0.003	0.001	0.003	2.068	0.032	9.966	0.000	0.000	0.001	0.016	18.042	82.8
345-07	Oik-ol gabbro	1415J	26.000	38.266	0.004	0.003	0.027	18.920	0.256	41.983	0.001	0.007	0.008	0.137	99.611	5.913	0.001	0.001	0.003	2.445	0.033	9.674	0.000	0.002	0.002	0.017	18.087	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.123	0.000	0.003	0.000	18.986	0.289	42.049	0.016	0.015	0.000	0.138	99.618	5.895	0.000	0.001	0.000	2.456	0.038	9.693	0.000	0.004	0.000	0.017	18.107	79.7
345-07	Oik-ol gabbro	1415J	26.000	38.429	0.007	0.002	0.000	19.008	0.284	41.773	0.006	0.000	0.013	0.129	99.651	5.935	0.001	0.000	0.000	2.455	0.037	9.617	0.000	0.000	0.002	0.016	18.065	79.6
345-07	Oik-ol gabbro	1415J	26.000	38.518	0.000	0.000	0.013	18.878	0.269	41.951	0.014	0.002	0.000	0.150	99.794	5.936	0.000	0.000	0.002	2.433	0.035	9.637	0.000	0.001	0.000	0.019	18.064	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.381	0.005	0.000	0.000	18.943	0.326	41.621	0.008	0.000	0.003	0.133	99.417	5.941	0.001	0.000	0.000	2.452	0.042	9.604	0.000	0.001	0.000	0.017	18.058	79.6
345-07	Oik-ol gabbro	1415J	26.000	38.508	0.004	0.000	0.000	18.938	0.294	41.816	0.007	0.000	0.000	0.115	99.681	5.942	0.001	0.000	0.000	2.444	0.039	9.618	0.000	0.000	0.000	0.014	18.058	79.7
345-07	Oik-ol gabbro	1415J	26.000	38.595	0.000	0.000	0.000	18.808	0.305	41.924	0.009	0.009	0.000	0.113	99.763	5.946	0.000	0.000	0.000	2.423	0.040	9.628	0.000	0.000	0.000	0.014	18.055	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.859	0.010	0.003	0.000	19.027	0.267	41.778	0.015	0.008	0.000	0.140	100.106	5.967	0.001	0.001	0.000	2.444	0.033	9.564	0.000	0.000	0.000	0.017	18.033	79.6
345-07	Oik-ol gabbro	1415J	26.000	38.878	0.000	0.000	0.004	18.800	0.289	41.891	0.018	0.013	0.000	0.141	100.034	5.969	0.000	0.000	0.000	2.414	0.038	9.588	0.000	0.000	0.000	0.017	18.033	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.442	0.007	0.000	0.000	18.971	0.289	41.562	0.007	0.000	0.007	0.127	99.411	5.950	0.001	0.000	0.000	2.455	0.038	9.589	0.000	0.001	0.001	0.016	18.050	79.6
345-07	Oik-ol gabbro	1415J	26.000	38.182	0.007	0.014	0.000	19.092	0.269	41.571	0.026	0.004	0.000	0.124	99.289	5.924	0.001	0.002	0.000	2.477	0.039	9.614	0.000	0.000	0.000	0.016	18.075	79.5
345-07	Oik-ol gabbro	1415J	26.000	38.519	0.000	0.000	0.000	19.023	0.293	41.848	0.000	0.013	0.005	0.124	99.826	5.938	0.000	0.000	0.000	2.452	0.038	9.616	0.000	0.004	0.001	0.015	18.065	79.6
345-07	Oik-ol gabbro	1415J	26.000	38.643	0.000	0.029	0.000	18.951	0.286	41.765	0.003	0.004	0.000	0.113	99.795	5.953	0.000	0.005	0.000	2.442	0.037	9.591	0.000	0.000	0.000	0.014	18.045	79.7
345-07	Oik-ol gabbro	1415J	26.000	38.870	0.001	0.003	0.015	18.973	0.292	42.217	0.019	0.000	0.000	0.132	100.522	5.944	0.000	0.001	0.002	2.427	0.038	9.624	0.000	0.000	0.000	0.016	18.055	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.220	0.015	0.000	0.000	18.779	0.275	41.641	0.017	0.005	0.000	0.134	99.085	5.933	0.002	0.000	0.000	2.438	0.036	9.636	0.000	0.000	0.000	0.017	18.066	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.826	0.010	0.000	0.001	19.099	0.288	42.479	0.019	0.003	0.000	0.135	100.861	5.922	0.001	0.000	0.000	2.437	0.037	9.659	0.000	0.000	0.000	0.017	18.077	79.8
345-07	Oik-ol gabbro	1415J	26.000	38.735	0.011	0.000	0.000	19.194	0.292	41.889	0.010	0.013	0.007	0.116	100.265	5.946	0.001	0.000	0.000	2.464	0.038	9.585	0.000	0.000	0.000	0.014	18.055	79.5
345-07	Oik-ol gabbro	1415J	26.000	38.706	0.033	0.000	0.005	19.404	0.288	41.824	0.013	0.000	0.000	0.143	100.416	5.939	0.004	0.000	0.001	2.490	0.038	9.569	0.000	0.000	0.000	0.016	18.057	79.3
345-07	Oik-ol gabbro	1415J	26.000	38.850	0.003	0.000	0.005	19.336	0.306	42.000	0.000	0.013	0.000	0.133	100.645	5.944	0.000	0.000	0.001	2.474	0.040	9.577	0.000	0.004	0.000	0.016	18.057	79.4
345-09	Opx-ol gabbro	1415J	28.000	39.024	0.009	0.007	0.015	18.910	0.305	42.497	0.030	0.025	0.000	0.130	100.952	5.940	0.001	0.001	0.002	2.407	0.033	9.643	0.000	0.000	0.000	0.016	18.062	80.0
345-09	Opx-ol gabbro	1415J	28.000	39.293	0.000	0.000	0.000	19.011	0.253	42.337	0.023	0.000	0.004	0.133	101.054	5.971	0.000	0.000	0.000	2.416	0.033	9.590	0.000	0.000	0.001	0.016	18.030	79.8
345-09	Opx-ol gabbro	1415J	28.000	39.508	0.009	0.000	0.000	19.052	0.300	42.491	0.021	0.000	0.000	0.132	101.513	5.975	0.001	0.000	0.000	2.410	0.033	9.580	0.000	0.000	0.000	0.016	18.024	79.9
345-09	Opx-ol gabbro	1415J	28.000	39.166	0.005	0.000	0.000	19.215	0.284	42.467	0.004	0.002	0.000	0.131	101.274	5.947	0.001	0.000	0.000	2.440	0.037	9.612	0.000	0.000	0.000	0.016	18.053	79.7
345-09	Opx-ol gabbro	1415J	28.000	39.355	0.000	0.000	0.016	19.159	0.281	42.482	0.025	0.000	0.000	0.122	101.440	5.961	0.000	0.000	0.000	2.427	0.036	9.593	0.000	0.000	0.000	0.015	18.038	79.8
345-09	Opx-ol gabbro	1415J	28.000	39.363	0.020	0.009	0.001	19.056	0.290	43.124	0.018	0.020	0.001	0.148	102.050	5.927	0.002	0.002	0.000	2.407	0.037	9.679	0.000	0.000	0.000	0.018	18.073	80.1
345-09	Opx-ol gabbro	1415J	28.000	39.222	0.000	0.000	0.000	19.069	0.268	42.435	0.019	0.009	0.005	0.141	101.168	5.957	0.000	0.000	0.000	2.427	0.035	9.607	0.000	0.000	0.001	0.017	18.045	79.8
345-09	Opx-ol gabbro	1415J	28.000	39.289	0.000	0.000	0.019	18.987	0.304	42.535	0.013	0.000	0.000	0.141	101.288	5.958	0.000	0.000	0.002	2.408	0.039	9.615	0.000	0.000	0.000	0.017	18.041	79.9
345-09	Opx-ol gabbro	1415J	28.000	39.306	0.000	0.000	0.000	19.210	0.293	42.430	0.006	0.000	0.000	0.139	101.384	5.960	0.000	0.000	0.000	2.436	0.038	9.590	0.000	0.000	0.000	0.017	18.041	79.7
345-09	Opx-ol gabbro	1415J	28.000	39.285	0.000	0.000	0.005	19.004	0.276	42.742	0.014	0.000	0.012	0.150	101.488	5.946	0.000	0.000	0.001	2.406	0.035	9.644	0.000	0.000	0.002	0.018	18.055	80.0
345-09	Opx-ol gabbro	1415J	28.000	39.338	0.028	0.000	0.011	19.106	0.266	42.730	0.018	0.008	0.006	0.153	101.664	5.946	0.003	0.000	0.001	2.415	0.034	9.628	0.000	0.002	0.001	0.019	18.052	79.9

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-09	Opx-ol gabbro	1415J	28.000	39.349	0.000	0.002	0.000	19.159	0.311	42.814	0.000	0.003	0.004	0.136	101.778	5.942	0.000	0.000	0.000	2.420	0.040	9.638	0.000	0.001	0.001	0.017	18.058	79.9
345-22	Opx-ol gabbro	1415J	74.000	38.978	0.019	0.003	0.015	16.452	0.259	43.192	0.019	0.000	0.000	0.139	99.076	5.977	0.002	0.001	0.002	2.110	0.034	9.874	0.003	0.000	0.000	0.017	18.019	82.3
345-22	Opx-ol gabbro	1415J	74.000	39.074	0.000	0.000	0.012	16.439	0.243	43.327	0.004	0.000	0.000	0.118	99.216	5.981	0.000	0.000	0.002	2.104	0.032	9.886	0.001	0.000	0.000	0.015	18.019	82.4
345-22	Opx-ol gabbro	1415J	74.000	39.299	0.007	0.000	0.000	16.386	0.284	43.652	0.016	0.001	0.000	0.130	99.775	5.979	0.001	0.000	0.000	2.085	0.037	9.907	0.003	0.000	0.000	0.016	18.020	82.6
345-22	Opx-ol gabbro	1415J	74.000	39.093	0.017	0.000	0.000	16.404	0.251	43.484	0.008	0.000	0.000	0.155	99.412	5.972	0.002	0.000	0.000	2.096	0.033	9.903	0.001	0.000	0.000	0.019	18.026	82.5
345-22	Opx-ol gabbro	1415J	74.000	39.143	0.000	0.009	0.000	16.306	0.233	43.582	0.017	0.000	0.000	0.131	99.421	5.975	0.000	0.002	0.000	2.082	0.030	9.917	0.000	0.000	0.000	0.016	18.024	82.6
345-22	Opx-ol gabbro	1415J	74.000	39.304	0.019	0.009	0.012	16.309	0.229	43.259	0.027	0.000	0.000	0.141	99.309	6.003	0.002	0.002	0.001	2.083	0.030	9.850	0.000	0.000	0.000	0.017	17.993	82.5
345-22	Opx-ol gabbro	1415J	74.000	39.273	0.011	0.000	0.015	16.611	0.250	43.653	0.025	0.000	0.000	0.132	99.970	5.970	0.001	0.000	0.002	2.112	0.032	9.891	0.000	0.000	0.000	0.016	18.028	82.4
345-22	Opx-ol gabbro	1415J	74.000	39.337	0.001	0.000	0.000	16.426	0.249	43.610	0.031	0.020	0.000	0.144	99.818	5.983	0.000	0.000	0.000	2.089	0.032	9.887	0.000	0.000	0.000	0.018	18.020	82.5
345-22	Opx-ol gabbro	1415J	74.000	39.349	0.012	0.005	0.009	16.617	0.240	43.538	0.009	0.000	0.000	0.173	99.951	5.981	0.001	0.001	0.000	2.113	0.032	9.866	0.000	0.000	0.000	0.021	18.016	82.3
345-108	Opx-ol gabbro	1415J	27.000	39.694	0.009	0.010	0.007	18.990	0.310	42.566	0.001	0.054	0.003	0.152	101.796	5.984	0.001	0.002	0.001	2.394	0.040	9.566	0.000	0.010	0.000	0.019	18.022	79.9
345-108	Opx-ol gabbro	1415J	27.000	39.564	0.021	0.000	0.019	19.053	0.292	43.144	0.000	0.050	0.014	0.143	102.300	5.940	0.002	0.000	0.002	2.392	0.037	9.656	0.000	0.014	0.003	0.017	18.065	80.1
345-108	Opx-ol gabbro	1415J	27.000	39.224	0.000	0.000	0.001	18.920	0.313	42.973	0.000	0.001	0.000	0.119	101.551	5.932	0.000	0.000	0.000	2.393	0.040	9.688	0.000	0.000	0.000	0.015	18.068	80.1
345-108	Opx-ol gabbro	1415J	27.000	39.287	0.000	0.000	0.008	18.990	0.265	43.315	0.007	0.000	0.000	0.138	102.010	5.916	0.000	0.000	0.000	2.393	0.037	9.726	0.000	0.000	0.000	0.017	18.084	80.2
345-108	Opx-ol gabbro	1415J	27.000	39.676	0.017	0.007	0.008	18.491	0.312	43.029	0.000	0.027	0.005	0.147	101.719	5.973	0.002	0.001	0.001	2.328	0.040	9.657	0.000	0.000	0.000	0.018	18.029	80.5
345-109	Opx-ol gabbro	1415J	28.000	39.439	0.000	0.004	0.007	18.888	0.274	42.455	0.007	0.022	0.000	0.123	101.219	5.978	0.000	0.001	0.001	2.394	0.035	9.593	0.000	0.000	0.000	0.015	18.024	80.0
345-109	Opx-ol gabbro	1415J	28.000	39.434	0.000	0.015	0.020	19.022	0.282	42.590	0.000	0.032	0.002	0.131	101.546	5.963	0.000	0.003	0.002	2.406	0.036	9.601	0.000	0.000	0.000	0.016	18.041	79.9
345-109	Opx-ol gabbro	1415J	28.000	39.376	0.000	0.000	0.029	18.886	0.303	42.534	0.000	0.000	0.000	0.139	101.267	5.968	0.000	0.000	0.003	2.394	0.039	9.610	0.000	0.000	0.000	0.017	18.031	80.0
345-109	Opx-ol gabbro	1415J	28.000	39.089	0.000	0.000	0.000	18.927	0.291	42.085	0.021	0.000	0.000	0.132	100.545	5.971	0.000	0.000	0.000	2.418	0.038	9.583	0.000	0.000	0.000	0.016	18.029	79.8
345-109	Opx-ol gabbro	1415J	28.000	39.175	0.013	0.000	0.011	18.945	0.288	42.718	0.002	0.010	0.001	0.140	101.303	5.940	0.002	0.000	0.001	2.403	0.037	9.656	0.000	0.000	0.000	0.017	18.059	80.0
345-109	Opx-ol gabbro	1415J	28.000	39.170	0.000	0.000	0.000	19.026	0.292	42.771	0.007	0.000	0.000	0.127	101.393	5.936	0.000	0.000	0.000	2.413	0.038	9.662	0.000	0.000	0.000	0.016	18.064	80.0
345-109	Opx-ol gabbro	1415J	28.000	39.401	0.000	0.014	0.013	18.725	0.287	42.542	0.004	0.000	0.021	0.128	101.135	5.974	0.000	0.003	0.002	2.375	0.037	9.615	0.000	0.000	0.000	0.016	18.026	80.1
345-109	Opx-ol gabbro	1415J	28.000	39.528	0.017	0.000	0.000	18.808	0.281	42.700	0.000	0.003	0.000	0.144	101.481	5.973	0.002	0.000	0.000	2.377	0.036	9.619	0.000	0.000	0.000	0.018	18.025	80.1
345-109	Opx-ol gabbro	1415J	28.000	39.240	0.000	0.008	0.007	18.874	0.284	42.501	0.001	0.003	0.004	0.122	101.044	5.961	0.000	0.001	0.001	2.398	0.037	9.625	0.000	0.001	0.001	0.015	18.039	80.0
345-113	Opx-ol gabbro	1415J	37.000	39.812	0.000	0.000	0.000	14.400	0.243	46.010	0.023	0.000	0.000	0.085	100.573	5.951	0.000	0.000	0.000	1.803	0.031	10.253	0.000	0.000	0.000	0.010	18.049	85.0
345-113	Opx-ol gabbro	1415J	37.000	39.957	0.003	0.000	0.016	14.499	0.199	45.757	0.000	0.007	0.003	0.121	100.562	5.973	0.000	0.000	0.002	1.813	0.025	10.197	0.000	0.000	0.000	0.015	18.027	84.9
345-113	Opx-ol gabbro	1415J	37.000	40.030	0.000	0.018	0.003	14.456	0.220	45.882	0.006	0.000	0.000	0.130	100.745	5.972	0.000	0.000	0.000	1.802	0.024	10.203	0.000	0.000	0.000	0.016	18.027	84.9
345-113	Opx-ol gabbro	1415J	37.000	39.795	0.014	0.026	0.007	14.352	0.252	45.892	0.014	0.023	0.000	0.129	100.504	5.953	0.002	0.005	0.001	1.796	0.032	10.234	0.002	0.007	0.000	0.016	18.046	85.0
345-113	Opx-ol gabbro	1415J	37.000	39.861	0.000	0.011	0.003	14.380	0.212	45.308	0.001	0.000	0.000	0.144	99.920	5.994	0.000	0.002	0.000	1.808	0.027	10.156	0.000	0.000	0.000	0.018	18.005	84.8
345-113	Opx-ol gabbro	1415J	37.000	39.911	0.000	0.009	0.001	14.522	0.218	46.142	0.009	0.017	0.000	0.132	100.961	5.946	0.000	0.002	0.000	1.810	0.028	10.248	0.002	0.005	0.000	0.016	18.055	84.9
345-113	Opx-ol gabbro	1415J	37.000	39.870	0.020	0.005	0.001	14.647	0.210	46.105	0.000	0.000	0.000	0.118	100.976	5.942	0.002	0.001	0.000	1.826	0.027	10.243	0.000	0.000	0.000	0.014	18.055	84.8
345-113	Opx-ol gabbro	1415J	37.000	39.697	0.000	0.006	0.001	14.135	0.226	46.082	0.002	0.000	0.000	0.128	100.277	5.946	0.000	0.001	0.000	1.771	0.029	10.290	0.000	0.000	0.000	0.015	18.053	85.3
345-113	Opx-ol gabbro	1415J	37.000	39.693	0.000	0.013	0.000	14.431	0.235	45.797	0.019	0.000	0.000	0.133	100.321	5.951	0.000	0.002	0.000	1.810	0.030	10.236	0.000	0.000	0.000	0.016	18.048	84.9

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-113	Opx-ol gabbro	1415J	37.000	39.965	0.013	0.000	0.000	14.206	0.223	45.887	0.019	0.000	0.000	0.125	100.438	5.974	0.002	0.000	0.000	1.776	0.028	10.226	0.003	0.000	0.000	0.015	18.024	85.2
345-113	Opx-ol gabbro	1415J	37.000	39.669	0.011	0.024	0.000	14.257	0.247	45.104	0.014	0.000	0.000	0.131	99.457	5.992	0.001	0.004	0.000	1.801	0.032	10.156	0.002	0.000	0.000	0.016	18.005	84.9
345-113	Opx-ol gabbro	1415J	37.000	39.734	0.001	0.005	0.000	14.583	0.221	45.687	0.004	0.000	0.000	0.122	100.357	5.958	0.000	0.001	0.000	1.829	0.028	10.211	0.001	0.000	0.000	0.015	18.042	84.8
345-113	Opx-ol gabbro	1415J	37.000	39.949	0.001	0.000	0.000	14.588	0.240	46.047	0.000	0.000	0.000	0.119	100.944	5.954	0.000	0.000	0.000	1.818	0.030	10.230	0.000	0.000	0.000	0.014	18.046	84.9
345-113	Opx-ol gabbro	1415J	37.000	39.742	0.000	0.001	0.000	14.153	0.249	45.066	0.014	0.016	0.000	0.116	99.357	6.005	0.000	0.000	0.000	1.789	0.032	10.151	0.002	0.005	0.000	0.014	17.997	85.0
345-113	Opx-ol gabbro	1415J	37.000	39.732	0.000	0.000	0.016	14.607	0.206	45.768	0.001	0.000	0.000	0.125	100.455	5.952	0.000	0.000	0.000	1.832	0.026	10.221	0.000	0.000	0.000	0.015	18.047	84.8
345-113	Opx-ol gabbro	1415J	37.000	39.781	0.004	0.000	0.011	14.254	0.213	45.527	0.008	0.005	0.000	0.135	99.938	5.980	0.000	0.000	0.000	1.792	0.027	10.201	0.000	0.001	0.000	0.016	18.020	85.0
345-113	Opx-ol gabbro	1415J	37.000	39.980	0.000	0.005	0.007	14.565	0.201	45.486	0.000	0.001	0.000	0.139	100.384	5.988	0.000	0.001	0.000	1.824	0.025	10.155	0.000	0.000	0.000	0.017	18.012	84.7
345-113	Opx-ol gabbro	1415J	37.000	39.512	0.000	0.009	0.000	14.602	0.219	45.529	0.016	0.000	0.000	0.123	100.010	5.948	0.000	0.002	0.000	1.839	0.028	10.217	0.000	0.000	0.000	0.015	18.051	84.7
345-113	Opx-ol gabbro	1415J	37.000	39.550	0.001	0.009	0.019	14.604	0.243	45.439	0.000	0.000	0.000	0.136	100.001	5.955	0.000	0.002	0.000	1.839	0.031	10.198	0.000	0.000	0.000	0.017	18.043	84.7
345-113	Opx-ol gabbro	1415J	37.000	39.843	0.000	0.037	0.038	14.687	0.213	45.694	0.009	0.000	0.000	0.142	100.663	5.958	0.000	0.007	0.005	1.837	0.027	10.185	0.001	0.000	0.000	0.017	18.037	84.7
345-113	Opx-ol gabbro	1415J	37.000	39.870	0.030	0.024	0.005	14.437	0.232	45.922	0.000	0.027	0.000	0.130	100.677	5.955	0.003	0.004	0.001	1.803	0.029	10.224	0.000	0.008	0.000	0.016	18.043	85.0
345-113	Opx-ol gabbro	1415J	37.000	39.607	0.000	0.000	0.000	14.498	0.258	45.652	0.006	0.017	0.005	0.106	100.149	5.951	0.000	0.000	0.000	1.823	0.033	10.226	0.001	0.005	0.001	0.013	18.052	84.8
345-113	Opx-ol gabbro	1415J	37.000	39.708	0.017	0.031	0.009	14.695	0.236	45.682	0.018	0.000	0.000	0.130	100.526	5.948	0.002	0.006	0.001	1.841	0.030	10.201	0.000	0.000	0.000	0.016	18.047	84.7
345-113	Opx-ol gabbro	1415J	37.000	39.788	0.004	0.000	0.008	14.670	0.242	45.872	0.000	0.000	0.006	0.120	100.710	5.948	0.000	0.000	0.001	1.834	0.031	10.222	0.000	0.000	0.001	0.014	18.052	84.7
345-113	Opx-ol gabbro	1415J	37.000	40.037	0.013	0.000	0.002	14.634	0.227	45.351	0.013	0.000	0.002	0.129	100.408	5.996	0.001	0.000	0.000	1.833	0.029	10.125	0.002	0.000	0.000	0.016	18.002	84.6
345-113	Opx-ol gabbro	1415J	37.000	39.792	0.000	0.006	0.009	14.517	0.219	45.893	0.013	0.002	0.000	0.119	100.570	5.952	0.000	0.001	0.001	1.816	0.028	10.233	0.002	0.001	0.000	0.014	18.048	84.9

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Olivine (Exp. 345 U1415 P)																												
345-33	Ol-gabbro	1415P	19.500	39.260	0.000	0.000	0.000	13.928	0.218	45.711	0.017	0.000	0.000	0.161	99.295	5.939	0.000	0.000	0.000	1.762	0.028	10.309	0.003	0.000	0.000	0.000	18.061	85.4
345-33	Ol-gabbro	1415P	19.500	40.417	0.007	0.003	0.030	14.660	0.212	46.227	0.025	0.006	0.003	0.171	101.761	5.973	0.001	0.001	0.004	1.812	0.027	10.183	0.004	0.002	0.001	0.000	18.026	84.8
345-33	Ol-gabbro	1415P	19.500	39.385	0.011	0.000	0.011	14.582	0.225	45.367	0.013	0.027	0.004	0.142	99.765	5.946	0.001	0.000	0.001	1.841	0.029	10.210	0.002	0.000	0.000	0.001	18.057	84.7
345-33	Ol-gabbro	1415P	19.500	39.334	0.000	0.000	0.019	14.735	0.226	45.070	0.009	0.004	0.003	0.164	99.564	5.955	0.000	0.000	0.002	1.866	0.029	10.171	0.001	0.001	0.001	0.002	18.045	84.5
345-33	Ol-gabbro	1415P	19.500	39.460	0.000	0.010	0.000	14.622	0.240	45.519	0.012	0.000	0.000	0.150	100.012	5.943	0.000	0.000	0.000	1.841	0.031	10.219	0.000	0.000	0.000	0.001	18.056	84.7
345-33	Ol-gabbro	1415P	19.500	39.403	0.000	0.000	0.001	14.158	0.230	45.664	0.019	0.005	0.000	0.153	99.633	5.945	0.000	0.000	0.000	1.787	0.029	10.271	0.000	0.000	0.000	0.001	18.056	85.1
345-33	Ol-gabbro	1415P	19.500	39.308	0.015	0.000	0.010	14.406	0.190	45.608	0.023	0.015	0.000	0.159	99.733	5.933	0.002	0.000	0.001	1.818	0.024	10.262	0.004	0.004	0.000	0.001	18.067	84.9
345-33	Ol-gabbro	1415P	19.500	39.443	0.000	0.000	0.001	14.375	0.211	45.718	0.022	0.000	0.000	0.143	99.913	5.940	0.000	0.000	0.000	1.810	0.027	10.263	0.004	0.000	0.000	0.001	18.060	85.0
345-33	Ol-gabbro	1415P	19.500	39.265	0.000	0.000	0.025	13.909	0.163	45.825	0.001	0.009	0.000	0.160	99.357	5.935	0.000	0.000	0.000	1.758	0.022	10.325	0.000	0.000	0.000	0.001	18.065	85.4
345-33	Ol-gabbro	1415P	19.500	39.441	0.000	0.008	0.000	13.514	0.195	46.482	0.000	0.008	0.000	0.162	99.809	5.924	0.000	0.000	0.000	1.694	0.022	10.407	0.000	0.000	0.000	0.002	18.077	85.9
345-33	Ol-gabbro	1415P	19.500	39.981	0.005	0.000	0.005	14.043	0.230	47.194	0.023	0.000	0.000	0.157	101.641	5.908	0.001	0.000	0.000	1.735	0.029	10.396	0.004	0.000	0.001	0.001	18.092	85.6
345-33	Ol-gabbro	1415P	19.500	39.063	0.007	0.007	0.000	13.698	0.247	46.172	0.030	0.000	0.000	0.189	99.421	5.903	0.001	0.001	0.000	1.732	0.032	10.400	0.005	0.000	0.002	0.003	18.097	85.7
345-33	Ol-gabbro	1415P	19.500	39.501	0.000	0.000	0.015	13.718	0.197	46.425	0.015	0.000	0.000	0.169	100.039	5.925	0.000	0.000	0.002	1.721	0.028	10.380	0.002	0.000	0.000	0.002	18.075	85.7
345-33	Ol-gabbro	1415P	19.500	40.541	0.000	0.000	0.000	13.903	0.192	45.781	0.058	0.015	0.024	0.168	100.682	6.030	0.000	0.000	0.000	1.730	0.024	10.101	0.000	0.000	0.000	0.002	17.974	85.4
345-33	Ol-gabbro	1415P	19.500	39.926	0.017	0.000	0.004	14.042	0.233	47.373	0.028	0.001	0.000	0.142	101.766	5.894	0.002	0.000	0.000	1.734	0.029	10.424	0.000	0.000	0.000	0.001	18.104	85.7
345-47	Ol-gabbro	1415P	64.000	39.482	0.000	0.000	0.022	15.405	0.209	44.852	0.015	0.005	0.015	0.160	100.164	5.957	0.000	0.000	0.003	1.944	0.027	10.047	0.000	0.000	0.000	0.001	18.044	83.8
345-47	Ol-gabbro	1415P	64.000	39.413	0.000	0.010	0.000	15.633	0.250	44.843	0.012	0.000	0.005	0.144	100.309	5.945	0.000	0.000	0.000	1.972	0.033	10.083	0.000	0.000	0.000	0.001	18.054	83.6
345-47	Ol-gabbro	1415P	64.000	40.070	0.022	0.000	0.000	15.888	0.241	45.073	0.022	0.004	0.001	0.143	101.464	5.973	0.003	0.000	0.000	1.983	0.033	10.016	0.000	0.000	0.000	0.001	18.025	83.4
345-47	Ol-gabbro	1415P	64.000	40.230	0.000	0.000	0.006	16.020	0.254	45.320	0.009	0.003	0.000	0.161	102.003	5.968	0.000	0.000	0.001	1.988	0.033	10.022	0.001	0.001	0.000	0.001	18.032	83.4
345-47	Ol-gabbro	1415P	64.000	39.047	0.000	0.000	0.006	15.549	0.247	43.987	0.009	0.003	0.000	0.156	99.003	5.968	0.000	0.000	0.001	1.988	0.033	10.022	0.001	0.001	0.000	0.001	18.032	83.4
345-47	Ol-gabbro	1415P	64.000	39.331	0.006	0.000	0.000	15.475	0.250	44.382	0.014	0.000	0.000	0.151	99.610	5.970	0.001	0.000	0.000	1.964	0.032	10.042	0.002	0.000	0.000	0.001	18.030	83.6
345-47	Ol-gabbro	1415P	64.000	39.235	0.000	0.000	0.000	15.509	0.232	44.002	0.021	0.000	0.000	0.151	99.150	5.983	0.000	0.000	0.000	1.978	0.033	10.003	0.004	0.000	0.000	0.001	18.017	83.4
345-47	Ol-gabbro	1415P	64.000	39.036	0.000	0.000	0.000	15.550	0.244	44.279	0.010	0.000	0.000	0.145	99.263	5.952	0.000	0.000	0.000	1.983	0.033	10.063	0.002	0.000	0.000	0.001	18.049	83.5
345-47	Ol-gabbro	1415P	64.000	40.276	0.001	0.000	0.000	16.131	0.251	45.194	0.002	0.008	0.006	0.145	102.014	5.976	0.000	0.000	0.000	2.002	0.033	9.996	0.000	0.000	0.002	0.001	18.026	83.3
345-47	Ol-gabbro	1415P	64.000	39.092	0.001	0.000	0.000	15.657	0.244	43.865	0.002	0.008	0.006	0.141	99.014	5.976	0.000	0.000	0.000	2.002	0.033	9.996	0.000	0.000	0.002	0.001	18.026	83.3
345-47	Ol-gabbro	1415P	64.000	39.238	0.000	0.000	0.004	15.492	0.222	44.002	0.013	0.010	0.000	0.121	99.102	5.985	0.000	0.000	0.000	1.976	0.029	10.006	0.002	0.003	0.000	0.005	18.016	83.5
345-47	Ol-gabbro	1415P	64.000	38.947	0.000	0.010	0.000	15.520	0.276	44.215	0.020	0.007	0.000	0.143	99.138	5.947	0.000	0.002	0.000	1.982	0.036	10.064	0.003	0.002	0.000	0.008	18.053	83.5
345-47	Ol-gabbro	1415P	64.000	39.034	0.000	0.000	0.002	15.490	0.226	44.232	0.007	0.000	0.000	0.154	99.145	5.956	0.000	0.000	0.000	1.977	0.029	10.061	0.001	0.000	0.000	0.009	18.044	83.5
345-47	Ol-gabbro	1415P	64.000	39.217	0.020	0.016	0.005	15.466	0.210	44.064	0.009	0.006	0.000	0.116	99.128	5.980	0.002	0.003	0.001	1.972	0.027	10.015	0.002	0.002	0.000	0.004	18.017	83.5
345-47	Ol-gabbro	1415P	64.000	39.249	0.009	0.000	0.000	15.653	0.243	44.238	0.000	0.017	0.009	0.131	99.549	5.966	0.001	0.000	0.000	1.990	0.031	10.025	0.000	0.000	0.000	0.001	18.036	83.4
345-47	Ol-gabbro	1415P	64.000	40.205	0.009	0.000	0.000	15.848	0.252	45.336	0.020	0.004	0.000	0.153	101.827	5.970	0.001	0.000	0.000	1.963	0.031	10.036	0.003	0.001	0.000	0.008	18.029	83.6
345-47	Ol-gabbro	1415P	64.000	40.398	0.000	0.006	0.013	16.028	0.241	45.121	0.007	0.008	0.003	0.170	101.995	5.991	0.000	0.001	0.002	1.988	0.030	9.974	0.001	0.002	0.001	0.010	18.010	83.3

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-47	Ol-gabbro	1415P	64.000	39.210	0.000	0.006	0.013	15.557	0.234	43.794	0.007	0.008	0.003	0.165	98.995	5.991	0.000	0.001	0.002	1.988	0.030	9.974	0.001	0.002	0.001	0.010	18.010	83.3
345-47	Ol-gabbro	1415P	64.000	39.205	0.011	0.006	0.000	15.562	0.234	43.950	0.008	0.000	0.000	0.175	99.150	5.981	0.001	0.001	0.000	1.986	0.036	9.995	0.001	0.000	0.000	0.022	18.017	83.4
345-90	Ol-gabbro	1415P	46.920	39.785	0.000	0.021	0.009	15.779	0.228	44.531	0.000	0.022	0.000	0.147	100.522	5.985	0.000	0.004	0.001	1.985	0.029	9.987	0.000	0.007	0.000	0.018	18.016	83.4
345-90	Ol-gabbro	1415P	46.920	39.964	0.000	0.025	0.000	16.222	0.253	45.226	0.000	0.000	0.000	0.151	101.841	5.947	0.000	0.005	0.000	2.019	0.032	10.032	0.000	0.000	0.000	0.018	18.051	83.2
345-90	Ol-gabbro	1415P	46.920	39.715	0.001	0.003	0.004	16.037	0.286	45.009	0.000	0.022	0.012	0.162	101.251	5.944	0.000	0.001	0.000	2.007	0.036	10.042	0.000	0.006	0.002	0.020	18.059	83.3
345-90	Ol-gabbro	1415P	46.920	39.949	0.002	0.000	0.025	16.220	0.243	44.913	0.000	0.024	0.000	0.173	101.549	5.962	0.000	0.000	0.003	2.023	0.035	9.992	0.000	0.007	0.000	0.021	18.040	83.1
345-90	Ol-gabbro	1415P	46.920	39.593	0.000	0.016	0.000	16.049	0.248	44.698	0.015	0.000	0.005	0.124	100.748	5.954	0.000	0.003	0.000	2.018	0.032	10.020	0.002	0.000	0.001	0.015	18.045	83.2
345-90	Ol-gabbro	1415P	46.920	39.678	0.006	0.027	0.023	16.190	0.291	45.084	0.008	0.016	0.002	0.151	101.476	5.930	0.001	0.005	0.003	2.024	0.037	10.045	0.001	0.005	0.000	0.018	18.068	83.2
345-78	Ol-gabbro	1415P	28.350	39.896	0.015	0.005	0.002	15.176	0.205	44.919	0.019	0.000	0.004	0.145	100.386	5.992	0.002	0.001	0.000	1.906	0.026	10.057	0.003	0.000	0.001	0.018	18.006	84.0
345-78	Ol-gabbro	1415P	28.350	39.833	0.043	0.000	0.000	16.028	0.262	45.482	0.021	0.000	0.000	0.132	101.801	5.927	0.005	0.000	0.000	1.995	0.033	10.089	0.003	0.000	0.000	0.016	18.068	83.4
345-78	Ol-gabbro	1415P	28.350	39.608	0.006	0.003	0.011	15.895	0.251	45.073	0.009	0.024	0.003	0.146	101.029	5.938	0.001	0.001	0.001	1.993	0.032	10.073	0.001	0.007	0.001	0.018	18.064	83.4
345-78	Ol-gabbro	1415P	28.350	39.759	0.004	0.000	0.043	15.819	0.254	45.376	0.011	0.053	0.000	0.166	101.485	5.932	0.000	0.000	0.005	1.974	0.032	10.092	0.000	0.010	0.000	0.020	18.073	83.6
345-78	Ol-gabbro	1415P	28.350	39.880	0.000	0.007	0.001	15.316	0.278	45.010	0.018	0.000	0.000	0.140	100.660	5.980	0.000	0.001	0.000	1.921	0.033	10.061	0.000	0.000	0.002	0.017	18.020	83.9
345-78	Ol-gabbro	1415P	28.350	39.913	0.009	0.000	0.040	15.351	0.226	45.684	0.026	0.000	0.009	0.155	101.413	5.943	0.001	0.000	0.005	1.912	0.029	10.141	0.000	0.000	0.002	0.019	18.054	84.1
345-78	Ol-gabbro	1415P	28.350	39.938	0.000	0.020	0.000	15.671	0.239	45.150	0.000	0.026	0.000	0.147	101.191	5.966	0.000	0.004	0.000	1.958	0.030	10.054	0.000	0.008	0.000	0.018	18.036	83.7
345-78	Ol-gabbro	1415P	28.350	40.080	0.022	0.000	0.011	15.799	0.241	45.500	0.000	0.000	0.006	0.123	101.792	5.954	0.003	0.000	0.001	1.963	0.030	10.076	0.000	0.000	0.003	0.015	18.045	83.6
345-78	Ol-gabbro	1415P	28.350	39.653	0.011	0.000	0.034	15.873	0.236	45.135	0.000	0.000	0.007	0.145	101.104	5.939	0.001	0.000	0.004	1.988	0.030	10.077	0.000	0.000	0.003	0.018	18.060	83.5
345-78	Ol-gabbro	1415P	28.350	40.103	0.000	0.019	0.008	16.211	0.252	45.100	0.000	0.000	0.000	0.136	101.829	5.965	0.000	0.003	0.001	2.017	0.032	9.999	0.000	0.000	0.000	0.016	18.033	83.2
345-78	Ol-gabbro	1415P	28.350	39.329	0.000	0.000	0.000	16.149	0.247	45.106	0.000	0.000	0.000	0.135	100.966	5.910	0.000	0.000	0.000	2.029	0.032	10.104	0.000	0.000	0.000	0.016	18.091	83.2
345-78	Ol-gabbro	1415P	28.350	39.928	0.000	0.003	0.029	15.748	0.235	45.090	0.014	0.013	0.000	0.147	101.207	5.966	0.000	0.001	0.003	1.968	0.030	10.043	0.002	0.004	0.000	0.018	18.034	83.6
345-78	Ol-gabbro	1415P	28.350	39.570	0.027	0.039	0.000	16.027	0.246	44.727	0.000	0.000	0.001	0.137	100.774	5.949	0.003	0.007	0.000	2.015	0.033	10.023	0.000	0.000	0.000	0.017	18.045	83.2
345-78	Ol-gabbro	1415P	28.350	39.860	0.000	0.000	0.000	15.909	0.265	45.321	0.011	0.025	0.012	0.162	101.565	5.943	0.000	0.000	0.000	1.983	0.033	10.072	0.002	0.007	0.002	0.019	18.062	83.5
345-78	Ol-gabbro	1415P	28.350	39.839	0.003	0.005	0.000	16.137	0.280	45.124	0.011	0.030	0.000	0.161	101.590	5.944	0.000	0.000	0.000	2.014	0.033	10.036	0.002	0.009	0.000	0.019	18.060	83.2
345-78	Ol-gabbro	1415P	28.350	39.352	0.023	0.000	0.015	16.275	0.227	45.525	0.015	0.018	0.000	0.135	101.585	5.882	0.000	0.000	0.002	2.034	0.029	10.144	0.000	0.000	0.000	0.016	18.117	83.2
345-78	Ol-gabbro	1415P	28.350	39.720	0.000	0.007	0.000	16.017	0.227	44.586	0.004	0.000	0.000	0.139	100.700	5.972	0.000	0.000	0.000	2.014	0.029	9.993	0.000	0.000	0.000	0.017	18.027	83.2
345-78	Ol-gabbro	1415P	28.350	39.095	0.000	0.016	0.146	15.689	0.269	43.865	0.000	0.041	0.000	0.151	99.272	5.965	0.000	0.003	0.018	2.002	0.035	9.977	0.000	0.012	0.000	0.019	18.031	83.2
345-78	Ol-gabbro	1415P	28.350	40.058	0.000	0.007	0.000	16.233	0.252	45.324	0.016	0.000	0.000	0.144	102.034	5.940	0.000	0.001	0.000	2.016	0.033	10.047	0.000	0.000	0.000	0.017	18.051	83.2
345-69	Ol-gabbro	1415P	14.200	40.036	0.000	0.000	0.000	14.222	0.250	45.565	0.022	0.000	0.000	0.159	100.254	5.996	0.000	0.000	0.000	1.781	0.032	10.173	0.000	0.000	0.000	0.019	18.004	85.0
345-69	Ol-gabbro	1415P	14.200	39.837	0.000	0.000	0.018	14.689	0.261	45.415	0.012	0.000	0.000	0.134	100.366	5.970	0.000	0.000	0.002	1.842	0.033	10.154	0.000	0.000	0.000	0.016	18.024	84.6
345-69	Ol-gabbro	1415P	14.200	39.516	0.004	0.015	0.010	14.694	0.218	45.432	0.006	0.000	0.000	0.161	100.056	5.949	0.001	0.003	0.001	1.850	0.028	10.196	0.001	0.000	0.000	0.020	18.048	84.6
345-69	Ol-gabbro	1415P	14.200	39.681	0.065	0.000	0.008	14.718	0.262	45.331	0.000	0.031	0.000	0.177	100.273	5.962	0.007	0.000	0.001	1.849	0.033	10.152	0.000	0.009	0.000	0.021	18.035	84.5
345-69	Ol-gabbro	1415P	14.200	39.565	0.012	0.000	0.006	14.612	0.225	45.647	0.002	0.000	0.000	0.138	100.207	5.945	0.001	0.000	0.001	1.836	0.029	10.225	0.000	0.000	0.000	0.017	18.053	84.7
345-69	Ol-gabbro	1415P	14.200	39.892	0.000	0.010	0.015	14.085	0.216	45.773	0.000	0.000	0.009	0.140	100.140	5.979	0.000	0.002	0.002	1.766	0.028	10.227	0.000	0.000	0.002	0.017	18.020	85.2

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-69	Ol-gabbro	1415P	14.200	39.880	0.000	0.024	0.010	15.353	0.255	44.999	0.016	0.000	0.008	0.167	100.712	5.978	0.000	0.004	0.001	1.925	0.032	10.055	0.003	0.000	0.002	0.020	18.020	83.9
345-69	Ol-gabbro	1415P	14.200	39.861	0.014	0.010	0.000	15.411	0.242	45.099	0.002	0.029	0.000	0.145	100.813	5.971	0.002	0.002	0.000	1.931	0.031	10.070	0.000	0.009	0.000	0.018	18.031	83.9
345-69	Ol-gabbro	1415P	14.200	39.799	0.007	0.012	0.018	15.092	0.231	44.947	0.021	0.000	0.001	0.117	100.245	5.985	0.001	0.002	0.002	1.898	0.029	10.076	0.003	0.000	0.000	0.014	18.012	84.1
345-68	Ol-gabbro	1415P	13.800	39.893	0.000	0.003	0.000	14.766	0.283	45.739	0.010	0.000	0.001	0.147	100.852	5.958	0.000	0.000	0.000	1.844	0.036	10.183	0.002	0.000	0.002	0.018	18.043	84.6
345-68	Ol-gabbro	1415P	13.800	39.727	0.002	0.019	0.011	15.265	0.221	45.943	0.008	0.000	0.000	0.161	101.357	5.919	0.000	0.003	0.001	1.902	0.028	10.204	0.001	0.000	0.000	0.019	18.078	84.2
345-68	Ol-gabbro	1415P	13.800	39.841	0.000	0.015	0.007	15.170	0.229	45.539	0.016	0.008	0.015	0.137	100.977	5.953	0.000	0.003	0.001	1.896	0.029	10.143	0.003	0.002	0.003	0.017	18.048	84.2
345-68	Ol-gabbro	1415P	13.800	39.748	0.003	0.000	0.001	15.321	0.240	45.617	0.017	0.000	0.000	0.138	101.085	5.938	0.000	0.000	0.000	1.914	0.030	10.159	0.003	0.000	0.000	0.017	18.061	84.1
345-68	Ol-gabbro	1415P	13.800	39.873	0.000	0.000	0.000	15.321	0.257	45.611	0.001	0.009	0.001	0.131	101.203	5.948	0.000	0.000	0.000	1.918	0.032	10.143	0.000	0.003	0.000	0.016	18.053	84.1
345-68	Ol-gabbro	1415P	13.800	40.085	0.000	0.002	0.004	14.990	0.247	45.798	0.016	0.015	0.000	0.158	101.315	5.962	0.000	0.000	0.000	1.865	0.031	10.155	0.003	0.004	0.000	0.019	18.039	84.4
345-68	Ol-gabbro	1415P	13.800	39.996	0.000	0.000	0.000	15.458	0.229	44.991	0.045	0.008	0.000	0.135	100.862	5.987	0.000	0.000	0.000	1.935	0.029	10.039	0.007	0.002	0.000	0.016	18.015	83.8
345-68	Ol-gabbro	1415P	13.800	39.988	0.021	0.020	0.017	15.302	0.223	45.406	0.019	0.000	0.000	0.160	101.156	5.965	0.000	0.004	0.002	1.909	0.028	10.097	0.003	0.000	0.000	0.019	18.030	84.1
345-68	Ol-gabbro	1415P	13.800	40.138	0.034	0.033	0.003	15.312	0.216	45.726	0.021	0.023	0.000	0.118	101.624	5.958	0.004	0.006	0.000	1.901	0.027	10.118	0.003	0.007	0.000	0.014	18.038	84.1
345-68	Ol-gabbro	1415P	13.800	39.609	0.007	0.000	0.015	15.151	0.249	44.557	0.008	0.000	0.016	0.140	99.752	5.991	0.001	0.000	0.002	1.916	0.032	10.046	0.001	0.000	0.003	0.017	18.009	83.9
345-68	Ol-gabbro	1415P	13.800	39.833	0.000	0.003	0.000	15.244	0.268	45.969	0.018	0.000	0.000	0.131	101.466	5.927	0.000	0.000	0.000	1.897	0.030	10.136	0.003	0.000	0.000	0.016	18.073	84.3
345-68	Ol-gabbro	1415P	13.800	40.370	0.000	0.000	0.010	15.247	0.257	45.436	0.000	0.009	0.000	0.140	101.469	5.997	0.000	0.000	0.001	1.894	0.033	10.061	0.000	0.003	0.000	0.017	18.004	84.1
345-68	Ol-gabbro	1415P	13.800	39.857	0.031	0.050	0.006	15.090	0.190	45.832	0.000	0.000	0.000	0.160	101.216	5.938	0.003	0.009	0.001	1.880	0.024	10.179	0.000	0.000	0.000	0.019	18.054	84.4
345-68	Ol-gabbro	1415P	13.800	39.791	0.002	0.020	0.013	15.186	0.251	45.856	0.045	0.000	0.000	0.147	101.311	5.929	0.000	0.004	0.002	1.892	0.033	10.185	0.007	0.000	0.000	0.018	18.068	84.3
345-29	Opx-ol gabbro	1415P	12.200	39.127	0.011	0.001	0.012	16.234	0.288	44.437	0.012	0.005	0.004	0.132	100.263	5.926	0.001	0.000	0.001	2.056	0.037	10.032	0.002	0.002	0.001	0.016	18.073	82.9
345-29	Opx-ol gabbro	1415P	12.200	39.618	0.006	0.000	0.000	16.434	0.257	45.200	0.021	0.010	0.000	0.145	101.691	5.916	0.001	0.000	0.000	2.056	0.033	10.061	0.003	0.003	0.000	0.017	18.085	83.0
345-29	Opx-ol gabbro	1415P	12.200	39.874	0.021	0.000	0.017	16.396	0.261	45.095	0.034	0.000	0.000	0.150	101.848	5.940	0.002	0.000	0.002	2.043	0.033	10.014	0.005	0.000	0.000	0.018	18.057	83.0
345-29	Opx-ol gabbro	1415P	12.200	39.681	0.000	0.002	0.000	16.518	0.270	45.179	0.038	0.008	0.007	0.142	101.845	5.918	0.000	0.000	0.000	2.063	0.034	10.044	0.006	0.002	0.001	0.017	18.084	82.9
345-29	Opx-ol gabbro	1415P	12.200	39.652	0.022	0.000	0.017	16.394	0.250	45.149	0.019	0.000	0.006	0.172	101.681	5.920	0.003	0.000	0.002	2.047	0.032	10.049	0.003	0.000	0.001	0.021	18.077	83.0
345-29	Opx-ol gabbro	1415P	12.200	39.818	0.000	0.000	0.002	16.070	0.282	44.810	0.020	0.000	0.000	0.118	101.120	5.964	0.000	0.000	0.000	2.013	0.036	10.056	0.003	0.000	0.000	0.014	18.036	83.2
345-29	Opx-ol gabbro	1415P	12.200	39.796	0.004	0.000	0.018	16.354	0.280	45.161	0.018	0.004	0.000	0.172	101.807	5.932	0.000	0.000	0.000	2.039	0.035	10.035	0.003	0.001	0.000	0.021	18.067	83.1
345-29	Opx-ol gabbro	1415P	12.200	39.963	0.000	0.000	0.015	16.271	0.250	44.946	0.014	0.007	0.000	0.135	101.601	5.961	0.000	0.000	0.000	2.032	0.034	9.994	0.002	0.002	0.000	0.016	18.039	83.1
345-29	Opx-ol gabbro	1415P	12.200	39.662	0.023	0.000	0.008	16.117	0.279	45.117	0.039	0.001	0.000	0.147	101.393	5.931	0.003	0.000	0.001	2.016	0.035	10.057	0.006	0.000	0.000	0.018	18.066	83.3
345-29	Opx-ol gabbro	1415P	12.200	39.780	0.006	0.001	0.000	16.420	0.268	45.012	0.021	0.000	0.013	0.144	101.665	5.938	0.001	0.000	0.000	2.054	0.034	10.016	0.003	0.000	0.002	0.017	18.062	83.0
345-29	Opx-ol gabbro	1415P	12.200	39.760	0.000	0.002	0.000	16.349	0.265	45.254	0.019	0.000	0.005	0.126	101.780	5.927	0.000	0.000	0.000	2.038	0.033	10.056	0.003	0.000	0.001	0.015	18.074	83.1
345-29	Opx-ol gabbro	1415P	12.200	39.304	0.001	0.000	0.037	16.399	0.261	45.040	0.023	0.000	0.002	0.169	101.236	5.900	0.000	0.000	0.000	2.059	0.033	10.078	0.004	0.000	0.000	0.020	18.098	83.0
345-29	Opx-ol gabbro	1415P	12.200	40.028	0.000	0.000	0.008	16.433	0.245	44.914	0.022	0.001	0.000	0.149	101.800	5.963	0.000	0.000	0.000	2.047	0.031	9.974	0.004	0.000	0.000	0.018	18.037	82.9
345-29	Opx-ol gabbro	1415P	12.200	40.045	0.000	0.001	0.000	16.477	0.282	45.197	0.017	0.014	0.000	0.154	102.187	5.946	0.000	0.000	0.000	2.046	0.034	10.043	0.003	0.004	0.000	0.018	18.056	83.0
345-30	Opx-ol gabbro	1415P	13.000	39.384	0.011	0.012	0.002	15.386	0.230	45.596	0.034	0.007	0.000	0.153	100.815	5.907	0.001	0.002	0.000	1.930	0.029	10.195	0.005	0.002	0.000	0.018	18.091	84.0
345-30	Opx-ol gabbro	1415P	13.000	39.902	0.000	0.000	0.000	15.218	0.225	46.195	0.023	0.014	0.000	0.184	101.761	5.920	0.000	0.000	0.000	1.888	0.028	10.216	0.004	0.004	0.000	0.022	18.082	84.4

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-30	Opx-ol gabbro	1415P	13.000	39.077	0.000	0.000	0.000	14.774	0.272	45.150	0.036	0.009	0.004	0.165	99.486	5.927	0.000	0.000	0.000	1.874	0.035	10.209	0.006	0.003	0.001	0.020	18.075	84.4
345-30	Opx-ol gabbro	1415P	13.000	39.176	0.013	0.000	0.007	15.020	0.243	44.798	0.017	0.000	0.000	0.173	99.446	5.948	0.001	0.000	0.001	1.907	0.031	10.138	0.003	0.000	0.000	0.021	18.051	84.1
345-30	Opx-ol gabbro	1415P	13.000	39.277	0.000	0.006	0.026	14.968	0.235	45.174	0.036	0.000	0.000	0.146	99.868	5.936	0.000	0.001	0.003	1.892	0.030	10.177	0.006	0.000	0.000	0.018	18.062	84.3
345-30	Opx-ol gabbro	1415P	13.000	39.408	0.006	0.000	0.008	14.905	0.238	45.080	0.029	0.000	0.000	0.138	99.811	5.954	0.001	0.000	0.001	1.883	0.030	10.153	0.005	0.000	0.000	0.017	18.045	84.3
345-30	Opx-ol gabbro	1415P	13.000	39.155	0.054	0.005	0.000	14.686	0.211	45.082	0.044	0.000	0.005	0.143	99.384	5.939	0.006	0.001	0.000	1.863	0.027	10.193	0.007	0.000	0.001	0.017	18.055	84.5
345-30	Opx-ol gabbro	1415P	13.000	39.530	0.016	0.004	0.007	14.783	0.228	45.247	0.025	0.008	0.000	0.140	99.988	5.957	0.002	0.001	0.001	1.863	0.029	10.165	0.004	0.002	0.000	0.017	18.041	84.5
345-30	Opx-ol gabbro	1415P	13.000	39.411	0.000	0.000	0.017	14.594	0.227	45.516	0.018	0.000	0.000	0.146	99.928	5.940	0.000	0.000	0.002	1.840	0.029	10.227	0.003	0.000	0.000	0.018	18.059	84.7
345-30	Opx-ol gabbro	1415P	13.000	39.620	0.000	0.050	0.005	14.536	0.226	45.438	0.017	0.000	0.001	0.172	100.065	5.959	0.000	0.009	0.001	1.828	0.029	10.187	0.003	0.000	0.000	0.021	18.036	84.7
345-30	Opx-ol gabbro	1415P	13.000	39.549	0.039	0.011	0.000	14.522	0.209	45.647	0.012	0.016	0.002	0.175	100.180	5.943	0.004	0.002	0.000	1.825	0.027	10.225	0.002	0.004	0.000	0.021	18.054	84.8
345-30	Opx-ol gabbro	1415P	13.000	39.306	0.000	0.000	0.000	14.542	0.248	45.413	0.024	0.000	0.003	0.152	99.689	5.939	0.000	0.000	0.000	1.838	0.032	10.229	0.004	0.000	0.001	0.019	18.061	84.7
345-30	Opx-ol gabbro	1415P	13.000	39.143	0.013	0.050	0.012	14.100	0.233	45.782	0.045	0.017	0.000	0.150	99.544	5.915	0.002	0.009	0.001	1.782	0.033	10.313	0.007	0.005	0.000	0.018	18.081	85.2
345-30	Opx-ol gabbro	1415P	13.000	39.041	0.006	0.000	0.000	14.190	0.233	45.720	0.016	0.000	0.000	0.155	99.360	5.913	0.001	0.000	0.000	1.798	0.033	10.323	0.003	0.000	0.000	0.019	18.086	85.1
345-30	Opx-ol gabbro	1415P	13.000	39.410	0.000	0.000	0.012	14.083	0.212	45.908	0.017	0.000	0.000	0.149	99.789	5.935	0.000	0.000	0.001	1.774	0.027	10.306	0.003	0.000	0.000	0.018	18.064	85.3
345-31	Opx-ol gabbro	1415P	13.500	39.895	0.017	0.000	0.000	15.678	0.244	45.527	0.019	0.012	0.000	0.168	101.560	5.941	0.002	0.000	0.000	1.953	0.033	10.106	0.003	0.000	0.000	0.020	18.059	83.8
345-31	Opx-ol gabbro	1415P	13.500	39.960	0.003	0.000	0.011	15.752	0.293	45.343	0.012	0.010	0.000	0.133	101.517	5.954	0.000	0.000	0.000	1.963	0.037	10.071	0.002	0.003	0.000	0.016	18.047	83.6
345-31	Opx-ol gabbro	1415P	13.500	40.233	0.003	0.000	0.008	15.803	0.279	45.859	0.020	0.012	0.000	0.126	102.343	5.945	0.000	0.000	0.000	1.953	0.035	10.101	0.003	0.003	0.000	0.015	18.056	83.7
345-31	Opx-ol gabbro	1415P	13.500	40.219	0.000	0.003	0.016	15.884	0.257	45.577	0.000	0.000	0.000	0.171	102.127	5.957	0.000	0.000	0.002	1.968	0.033	10.063	0.000	0.000	0.000	0.020	18.042	83.6
345-31	Opx-ol gabbro	1415P	13.500	39.887	0.061	0.000	0.016	14.568	0.226	46.139	0.021	0.000	0.001	0.160	101.079	5.939	0.007	0.000	0.002	1.814	0.029	10.241	0.003	0.000	0.000	0.019	18.054	84.9
345-31	Opx-ol gabbro	1415P	13.500	39.854	0.008	0.000	0.005	14.680	0.224	46.247	0.000	0.000	0.000	0.145	101.163	5.932	0.001	0.000	0.001	1.827	0.028	10.261	0.000	0.000	0.000	0.017	18.067	84.8
345-31	Opx-ol gabbro	1415P	13.500	39.683	0.009	0.000	0.000	14.787	0.228	46.495	0.024	0.019	0.000	0.178	101.423	5.900	0.001	0.000	0.000	1.839	0.029	10.304	0.004	0.005	0.000	0.021	18.102	84.8
345-31	Opx-ol gabbro	1415P	13.500	39.592	0.000	0.000	0.000	15.743	0.247	45.771	0.005	0.015	0.000	0.156	101.529	5.904	0.000	0.000	0.000	1.964	0.033	10.175	0.001	0.004	0.000	0.019	18.098	83.8
345-31	Opx-ol gabbro	1415P	13.500	39.202	0.000	0.000	0.000	15.730	0.261	46.013	0.017	0.005	0.000	0.114	101.342	5.862	0.000	0.000	0.000	1.962	0.033	10.258	0.003	0.002	0.000	0.014	18.138	83.9
345-31	Opx-ol gabbro	1415P	13.500	39.666	0.000	0.000	0.015	15.576	0.244	46.227	0.020	0.000	0.000	0.158	101.906	5.889	0.000	0.000	0.002	1.932	0.033	10.232	0.003	0.000	0.000	0.019	18.110	84.1
345-31	Opx-ol gabbro	1415P	13.500	39.691	0.020	0.000	0.000	15.666	0.241	45.979	0.027	0.009	0.011	0.165	101.809	5.901	0.002	0.000	0.000	1.941	0.033	10.190	0.004	0.003	0.002	0.020	18.100	83.9
345-31	Opx-ol gabbro	1415P	13.500	39.441	0.000	0.001	0.000	15.632	0.234	45.890	0.010	0.000	0.000	0.168	101.376	5.890	0.000	0.000	0.000	1.952	0.030	10.216	0.002	0.000	0.000	0.020	18.110	83.9
345-31	Opx-ol gabbro	1415P	13.500	39.116	0.023	0.000	0.000	15.694	0.237	46.109	0.022	0.003	0.000	0.174	101.378	5.849	0.003	0.000	0.000	1.963	0.030	10.279	0.004	0.001	0.000	0.021	18.149	83.9
345-32	Opx-ol gabbro	1415P	19.000	40.202	0.017	0.002	0.025	15.431	0.255	45.576	0.021	0.000	0.003	0.155	101.687	5.968	0.002	0.000	0.003	1.916	0.036	10.085	0.003	0.000	0.001	0.019	18.029	84.0
345-32	Opx-ol gabbro	1415P	19.000	40.097	0.000	0.000	0.000	15.615	0.270	44.916	0.010	0.000	0.000	0.168	101.076	5.993	0.000	0.000	0.000	1.952	0.034	10.007	0.002	0.000	0.000	0.020	18.007	83.6
345-32	Opx-ol gabbro	1415P	19.000	40.053	0.000	0.000	0.000	15.896	0.250	45.401	0.015	0.003	0.000	0.133	101.751	5.955	0.000	0.000	0.000	1.977	0.032	10.063	0.002	0.001	0.000	0.016	18.045	83.5
345-32	Opx-ol gabbro	1415P	19.000	40.217	0.000	0.004	0.004	15.981	0.262	45.099	0.020	0.008	0.002	0.160	101.757	5.979	0.000	0.001	0.001	1.987	0.033	9.995	0.003	0.002	0.001	0.019	18.022	83.4
345-32	Opx-ol gabbro	1415P	19.000	40.112	0.008	0.003	0.000	16.166	0.238	45.531	0.026	0.003	0.000	0.161	102.248	5.943	0.001	0.001	0.000	2.003	0.033	10.056	0.004	0.001	0.000	0.019	18.057	83.3
345-32	Opx-ol gabbro	1415P	19.000	39.976	0.000	0.003	0.015	16.169	0.250	45.386	0.024	0.009	0.000	0.151	101.983	5.940	0.000	0.000	0.002	2.009	0.032	10.053	0.004	0.003	0.000	0.018	18.060	83.3
345-32	Opx-ol gabbro	1415P	19.000	39.998	0.002	0.007	0.016	15.946	0.254	45.474	0.039	0.000	0.000	0.164	101.900	5.942	0.000	0.001	0.002	1.981	0.032	10.071	0.006	0.000	0.000	0.020	18.056	83.5

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-32	Opx-ol gabbro	1415P	19.000	39.765	0.000	0.000	0.017	16.094	0.256	45.219	0.041	0.018	0.007	0.132	101.549	5.935	0.000	0.000	0.002	2.009	0.032	10.060	0.007	0.005	0.001	0.016	18.068	83.3
345-32	Opx-ol gabbro	1415P	19.000	39.851	0.016	0.009	0.007	16.071	0.263	44.985	0.046	0.003	0.000	0.172	101.423	5.953	0.002	0.002	0.001	2.008	0.033	10.017	0.007	0.001	0.000	0.021	18.044	83.3
345-36	Opx-ol gabbro	1415P	28.000	38.925	0.000	0.000	0.009	16.181	0.267	44.137	0.005	0.008	0.003	0.153	99.687	5.929	0.000	0.000	0.001	2.062	0.034	10.023	0.001	0.002	0.000	0.019	18.071	82.9
345-36	Opx-ol gabbro	1415P	28.000	38.916	0.004	0.005	0.007	16.236	0.271	44.014	0.007	0.000	0.000	0.130	99.589	5.934	0.000	0.000	0.001	2.071	0.035	10.005	0.001	0.000	0.000	0.016	18.064	82.8
345-36	Opx-ol gabbro	1415P	28.000	39.414	0.000	0.000	0.002	15.626	0.234	44.619	0.000	0.009	0.000	0.155	100.059	5.959	0.000	0.000	0.000	1.976	0.030	10.056	0.000	0.003	0.000	0.019	18.042	83.5
345-36	Opx-ol gabbro	1415P	28.000	38.916	0.011	0.000	0.000	16.159	0.243	44.029	0.021	0.008	0.000	0.155	99.542	5.935	0.001	0.000	0.000	2.061	0.031	10.010	0.004	0.002	0.000	0.019	18.064	82.9
345-36	Opx-ol gabbro	1415P	28.000	38.951	0.000	0.000	0.004	16.003	0.275	44.321	0.008	0.000	0.000	0.145	99.707	5.927	0.000	0.000	0.000	2.037	0.035	10.054	0.001	0.000	0.000	0.018	18.073	83.1
345-36	Opx-ol gabbro	1415P	28.000	38.619	0.017	0.000	0.000	16.029	0.242	44.130	0.028	0.000	0.000	0.168	99.233	5.910	0.002	0.000	0.000	2.052	0.031	10.026	0.005	0.000	0.000	0.021	18.088	83.0
345-36	Opx-ol gabbro	1415P	28.000	39.970	0.001	0.007	0.009	16.817	0.244	44.708	0.013	0.000	0.005	0.178	101.952	5.957	0.000	0.001	0.001	2.096	0.031	9.932	0.002	0.000	0.001	0.021	18.043	82.5
345-36	Opx-ol gabbro	1415P	28.000	38.794	0.001	0.007	0.009	16.322	0.237	43.392	0.013	0.000	0.005	0.173	98.952	5.957	0.000	0.001	0.001	2.096	0.031	9.932	0.002	0.002	0.001	0.021	18.043	82.5
345-36	Opx-ol gabbro	1415P	28.000	38.893	0.004	0.000	0.000	16.256	0.254	43.504	0.000	0.000	0.000	0.143	99.054	5.962	0.000	0.000	0.000	2.084	0.033	9.941	0.000	0.000	0.000	0.018	18.038	82.6
345-36	Opx-ol gabbro	1415P	28.000	40.008	0.001	0.002	0.000	16.341	0.244	44.905	0.055	0.000	0.012	0.159	101.727	5.963	0.000	0.000	0.000	2.037	0.033	9.977	0.000	0.000	0.000	0.019	18.038	83.0
345-36	Opx-ol gabbro	1415P	28.000	39.015	0.000	0.000	0.000	15.700	0.239	44.294	0.061	0.000	0.000	0.176	99.485	5.942	0.000	0.000	0.000	1.991	0.033	10.055	0.001	0.000	0.000	0.022	18.059	83.4
345-36	Opx-ol gabbro	1415P	28.000	39.663	0.000	0.000	0.000	16.721	0.270	44.405	0.022	0.005	0.002	0.175	101.263	5.953	0.000	0.000	0.000	2.099	0.034	9.935	0.000	0.000	0.000	0.021	18.048	82.5
345-36	Opx-ol gabbro	1415P	28.000	39.776	0.020	0.000	0.000	16.697	0.273	44.462	0.026	0.003	0.000	0.171	101.428	5.958	0.002	0.000	0.000	2.092	0.034	9.924	0.000	0.000	0.000	0.021	18.040	82.5
345-36	Opx-ol gabbro	1415P	28.000	39.019	0.000	0.000	0.002	16.147	0.277	43.445	0.015	0.014	0.000	0.153	99.072	5.976	0.000	0.000	0.000	2.068	0.034	9.920	0.000	0.000	0.000	0.019	18.026	82.7
345-36	Opx-ol gabbro	1415P	28.000	38.803	0.015	0.005	0.000	16.506	0.238	43.542	0.017	0.010	0.000	0.136	99.271	5.944	0.000	0.000	0.000	2.110	0.033	9.941	0.000	0.000	0.000	0.017	18.056	82.4
345-36	Opx-ol gabbro	1415P	28.000	39.886	0.000	0.000	0.019	16.979	0.234	44.570	0.007	0.007	0.000	0.146	101.848	5.954	0.000	0.000	0.000	2.120	0.033	9.910	0.000	0.000	0.000	0.018	18.045	82.3
345-36	Opx-ol gabbro	1415P	28.000	38.711	0.000	0.000	0.018	16.479	0.227	43.257	0.007	0.007	0.000	0.142	98.848	5.954	0.000	0.000	0.000	2.120	0.033	9.910	0.000	0.000	0.000	0.018	18.045	82.3
345-36	Opx-ol gabbro	1415P	28.000	38.975	0.000	0.000	0.008	16.406	0.252	43.688	0.027	0.014	0.006	0.156	99.532	5.951	0.000	0.000	0.000	2.095	0.033	9.944	0.000	0.000	0.000	0.019	18.051	82.5
345-36	Opx-ol gabbro	1415P	28.000	39.465	0.010	0.000	0.027	16.351	0.256	44.107	0.032	0.000	0.000	0.137	100.385	5.966	0.001	0.000	0.003	2.067	0.033	9.940	0.000	0.000	0.000	0.017	18.032	82.7
345-38	Opx-ol gabbro	1415P	33.000	39.079	0.000	0.000	0.000	16.243	0.238	43.783	0.003	0.000	0.005	0.128	99.479	5.962	0.000	0.000	0.000	2.071	0.031	9.957	0.000	0.000	0.001	0.016	18.039	82.7
345-38	Opx-ol gabbro	1415P	33.000	39.196	0.004	0.000	0.011	16.270	0.265	43.598	0.028	0.005	0.000	0.136	99.513	5.977	0.001	0.000	0.001	2.075	0.034	9.915	0.000	0.000	0.000	0.017	18.022	82.6
345-38	Opx-ol gabbro	1415P	33.000	39.026	0.022	0.000	0.000	16.367	0.250	43.434	0.047	0.000	0.000	0.118	99.265	5.970	0.003	0.000	0.000	2.094	0.033	9.905	0.000	0.000	0.000	0.015	18.027	82.5
345-38	Opx-ol gabbro	1415P	33.000	38.911	0.006	0.000	0.007	16.257	0.279	43.512	0.030	0.000	0.000	0.136	99.137	5.960	0.001	0.000	0.001	2.083	0.036	9.935	0.000	0.000	0.000	0.017	18.039	82.6
345-38	Opx-ol gabbro	1415P	33.000	38.920	0.000	0.001	0.002	16.274	0.253	43.813	0.002	0.007	0.000	0.151	99.423	5.945	0.000	0.000	0.000	2.079	0.033	9.977	0.000	0.000	0.000	0.019	18.056	82.7
345-38	Opx-ol gabbro	1415P	33.000	39.036	0.000	0.013	0.006	16.225	0.286	43.289	0.018	0.013	0.002	0.147	99.034	5.983	0.000	0.002	0.001	2.083	0.037	9.895	0.000	0.000	0.001	0.018	18.018	82.6
345-38	Opx-ol gabbro	1415P	33.000	38.809	0.005	0.001	0.014	15.979	0.251	43.805	0.022	0.004	0.000	0.137	99.027	5.946	0.001	0.000	0.002	2.047	0.033	10.040	0.000	0.000	0.000	0.017	18.053	83.0
345-38	Opx-ol gabbro	1415P	33.000	39.127	0.013	0.000	0.014	16.193	0.286	43.705	0.019	0.000	0.000	0.167	99.523	5.967	0.002	0.000	0.002	2.065	0.037	9.935	0.000	0.000	0.000	0.021	18.031	82.7
345-38	Opx-ol gabbro	1415P	33.000	40.242	0.000	0.000	0.000	16.588	0.259	44.750	0.019	0.000	0.012	0.136	102.006	5.983	0.000	0.000	0.000	2.063	0.033	9.918	0.000	0.000	0.002	0.016	18.018	82.7
345-38	Opx-ol gabbro	1415P	33.000	39.058	0.000	0.000	0.000	16.100	0.251	43.434	0.018	0.000	0.012	0.132	99.006	5.983	0.000	0.000	0.000	2.063	0.033	9.918	0.000	0.000	0.002	0.016	18.018	82.7
345-38	Opx-ol gabbro	1415P	33.000	39.178	0.000	0.000	0.000	16.204	0.243	43.717	0.048	0.000	0.000	0.147	99.536	5.972	0.000	0.000	0.000	2.066	0.033	9.934	0.000	0.000	0.000	0.018	18.028	82.7
345-38	Opx-ol gabbro	1415P	33.000	39.275	0.000	0.000	0.000	16.239	0.268	43.611	0.024	0.005	0.000	0.158	99.580	5.984	0.000	0.000	0.000	2.069	0.035	9.905	0.000	0.000	0.000	0.019	18.017	82.7

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-38	Opx-ol gabbro	1415P	33.000	39.095	0.000	0.000	0.001	16.263	0.261	43.385	0.004	0.000	0.004	0.171	99.184	5.983	0.000	0.000	0.000	2.081	0.034	9.897	0.001	0.000	0.000	0.021	18.018	82.6
345-41	Opx-ol gabbro	1415P	38.000	39.872	0.014	0.000	0.008	15.421	0.229	45.516	0.022	0.000	0.000	0.167	101.249	5.948	0.002	0.000	0.001	1.924	0.024	10.122	0.004	0.000	0.000	0.020	18.050	84.0
345-41	Opx-ol gabbro	1415P	38.000	40.404	0.009	0.000	0.000	15.302	0.228	45.523	0.027	0.000	0.000	0.138	101.631	5.993	0.001	0.000	0.000	1.898	0.029	10.065	0.004	0.000	0.000	0.017	18.006	84.1
345-41	Opx-ol gabbro	1415P	38.000	40.200	0.000	0.000	0.000	15.373	0.265	45.372	0.038	0.003	0.000	0.145	101.396	5.982	0.000	0.000	0.000	1.913	0.033	10.065	0.006	0.001	0.000	0.017	18.018	84.0
345-41	Opx-ol gabbro	1415P	38.000	40.435	0.023	0.012	0.000	15.287	0.259	45.426	0.012	0.016	0.006	0.153	101.629	5.998	0.003	0.002	0.000	1.896	0.033	10.044	0.002	0.005	0.001	0.018	18.002	84.1
345-41	Opx-ol gabbro	1415P	38.000	40.577	0.016	0.000	0.000	15.529	0.262	45.570	0.004	0.014	0.006	0.125	102.103	5.995	0.002	0.000	0.000	1.919	0.033	10.037	0.001	0.004	0.001	0.015	18.006	83.9
345-41	Opx-ol gabbro	1415P	38.000	40.083	0.037	0.003	0.005	15.414	0.250	45.771	0.010	0.007	0.000	0.138	101.718	5.950	0.004	0.000	0.001	1.913	0.032	10.127	0.002	0.002	0.000	0.017	18.047	84.1
345-41	Opx-ol gabbro	1415P	38.000	40.101	0.000	0.000	0.000	15.363	0.240	45.566	0.008	0.000	0.000	0.138	101.416	5.967	0.000	0.000	0.000	1.912	0.030	10.107	0.001	0.000	0.000	0.017	18.033	84.0
345-41	Opx-ol gabbro	1415P	38.000	40.298	0.000	0.000	0.000	15.316	0.215	45.543	0.024	0.000	0.000	0.177	101.573	5.983	0.000	0.000	0.000	1.902	0.027	10.080	0.004	0.000	0.000	0.021	18.017	84.1
345-41	Opx-ol gabbro	1415P	38.000	40.267	0.007	0.000	0.000	15.399	0.253	45.173	0.015	0.004	0.000	0.134	101.252	5.999	0.001	0.000	0.000	1.919	0.032	10.032	0.002	0.001	0.000	0.016	18.001	83.9
345-41	Opx-ol gabbro	1415P	38.000	40.649	0.007	0.005	0.000	15.335	0.246	45.596	0.019	0.000	0.000	0.137	101.994	6.005	0.001	0.001	0.000	1.895	0.031	10.042	0.003	0.000	0.000	0.016	17.993	84.1
345-41	Opx-ol gabbro	1415P	38.000	40.402	0.022	0.004	0.002	15.534	0.260	45.567	0.014	0.004	0.000	0.173	101.982	5.980	0.002	0.001	0.000	1.923	0.033	10.054	0.002	0.001	0.000	0.021	18.017	83.9
345-41	Opx-ol gabbro	1415P	38.000	40.509	0.000	0.000	0.007	15.622	0.243	45.715	0.025	0.005	0.000	0.140	102.273	5.980	0.000	0.000	0.000	1.923	0.033	10.059	0.004	0.001	0.001	0.017	18.022	83.9
345-41	Opx-ol gabbro	1415P	38.000	40.245	0.000	0.000	0.000	15.482	0.291	45.467	0.013	0.007	0.000	0.171	101.683	5.976	0.000	0.000	0.000	1.923	0.033	10.065	0.002	0.002	0.001	0.020	18.026	83.9
345-41	Opx-ol gabbro	1415P	38.000	40.598	0.008	0.000	0.009	15.559	0.273	45.421	0.035	0.001	0.000	0.140	102.045	6.003	0.001	0.000	0.000	1.924	0.033	10.011	0.006	0.000	0.000	0.017	17.996	83.8
345-42	Opx-ol gabbro	1415P	38.500	40.004	0.000	0.005	0.000	15.964	0.252	45.439	0.023	0.016	0.005	0.142	101.850	5.946	0.000	0.001	0.000	1.984	0.032	10.068	0.004	0.005	0.001	0.017	18.056	83.5
345-42	Opx-ol gabbro	1415P	38.500	38.826	0.000	0.005	0.000	15.494	0.245	44.101	0.022	0.016	0.005	0.138	98.850	5.946	0.000	0.001	0.000	1.984	0.032	10.068	0.004	0.005	0.001	0.017	18.056	83.5
345-42	Opx-ol gabbro	1415P	38.500	40.155	0.000	0.000	0.000	15.921	0.275	45.155	0.023	0.000	0.000	0.151	101.680	5.974	0.000	0.000	0.000	1.981	0.035	10.015	0.004	0.000	0.000	0.018	18.026	83.4
345-42	Opx-ol gabbro	1415P	38.500	41.668	0.018	0.000	0.007	13.979	0.214	42.559	0.857	0.018	0.000	0.144	99.464	6.260	0.002	0.000	0.001	1.757	0.027	9.532	0.138	0.000	0.000	0.017	17.740	84.4
345-42	Opx-ol gabbro	1415P	38.500	40.243	0.000	0.000	0.000	15.726	0.251	45.435	0.013	0.000	0.000	0.155	101.823	5.972	0.000	0.000	0.000	1.952	0.033	10.051	0.002	0.000	0.000	0.019	18.028	83.7
345-42	Opx-ol gabbro	1415P	38.500	39.329	0.000	0.000	0.010	15.553	0.256	44.181	0.000	0.000	0.007	0.129	99.465	5.979	0.000	0.000	0.001	1.978	0.033	10.013	0.000	0.000	0.001	0.016	18.021	83.5
345-42	Opx-ol gabbro	1415P	38.500	40.089	0.021	0.010	0.012	15.712	0.250	45.272	0.024	0.019	0.000	0.159	101.568	5.967	0.002	0.002	0.001	1.956	0.032	10.045	0.004	0.006	0.000	0.019	18.032	83.7
345-42	Opx-ol gabbro	1415P	38.500	39.258	0.000	0.008	0.012	15.433	0.233	44.295	0.017	0.025	0.007	0.191	99.478	5.968	0.000	0.000	0.001	1.962	0.030	10.038	0.003	0.007	0.001	0.023	18.035	83.6
345-42	Opx-ol gabbro	1415P	38.500	40.106	0.000	0.000	0.000	15.933	0.261	45.510	0.020	0.000	0.000	0.173	102.003	5.950	0.000	0.000	0.000	1.977	0.033	10.066	0.003	0.000	0.000	0.021	18.050	83.5
345-42	Opx-ol gabbro	1415P	38.500	38.926	0.000	0.000	0.000	15.464	0.253	44.172	0.019	0.000	0.000	0.168	99.003	5.950	0.000	0.000	0.000	1.977	0.033	10.066	0.003	0.000	0.000	0.021	18.050	83.5
345-42	Opx-ol gabbro	1415P	38.500	39.251	0.029	0.000	0.015	15.307	0.256	44.363	0.015	0.011	0.000	0.147	99.393	5.968	0.003	0.000	0.002	1.946	0.033	10.054	0.002	0.003	0.000	0.018	18.030	83.7
345-42	Opx-ol gabbro	1415P	38.500	40.355	0.012	0.005	0.019	15.829	0.265	45.364	0.004	0.003	0.000	0.157	102.013	5.979	0.001	0.001	0.002	1.962	0.033	10.020	0.001	0.001	0.000	0.019	18.018	83.6
345-42	Opx-ol gabbro	1415P	38.500	39.168	0.012	0.005	0.018	15.364	0.257	44.030	0.004	0.003	0.000	0.152	99.013	5.979	0.001	0.001	0.002	1.962	0.033	10.020	0.001	0.001	0.000	0.019	18.018	83.6
345-42	Opx-ol gabbro	1415P	38.500	40.029	0.026	0.000	0.010	15.674	0.256	45.607	0.027	0.000	0.000	0.145	101.783	5.946	0.003	0.000	0.001	1.947	0.033	10.099	0.004	0.000	0.002	0.017	18.052	83.8
345-42	Opx-ol gabbro	1415P	38.500	39.299	0.000	0.000	0.000	15.250	0.251	44.224	0.011	0.009	0.000	0.149	99.194	5.984	0.000	0.000	0.000	1.942	0.033	10.038	0.002	0.003	0.000	0.018	18.018	83.7
345-42	Opx-ol gabbro	1415P	38.500	39.225	0.000	0.008	0.000	15.284	0.211	44.259	0.012	0.000	0.000	0.122	99.121	5.977	0.000	0.000	0.000	1.948	0.027	10.053	0.002	0.000	0.000	0.015	18.023	83.7
345-42	Opx-ol gabbro	1415P	38.500	39.089	0.006	0.007	0.006	15.478	0.248	44.365	0.020	0.000	0.000	0.153	99.371	5.951	0.001	0.001	0.001	1.971	0.032	10.069	0.003	0.000	0.000	0.019	18.047	83.6
345-42	Opx-ol gabbro	1415P	38.500	39.153	0.002	0.000	0.008	15.436	0.215	44.240	0.034	0.000	0.000	0.137	99.225	5.966	0.000	0.000	0.001	1.967	0.028	10.049	0.006	0.000	0.000	0.017	18.033	83.6

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-42	Opx-ol gabbro	1415P	38.500	40.141	0.001	0.000	0.007	15.714	0.279	45.271	0.032	0.000	0.001	0.181	101.627	5.971	0.000	0.000	0.001	1.955	0.035	10.039	0.005	0.000	0.000	0.002	18.028	83.7
345-42	Opx-ol gabbro	1415P	38.500	39.174	0.017	0.002	0.004	15.429	0.242	44.364	0.019	0.000	0.000	0.149	99.399	5.960	0.002	0.000	0.000	1.963	0.031	10.061	0.003	0.000	0.000	0.018	18.038	83.6
345-44	Opx-ol gabbro	1415P	45.700	38.921	0.000	0.000	0.000	16.183	0.229	44.154	0.017	0.001	0.002	0.147	99.654	5.930	0.000	0.000	0.000	2.062	0.030	10.028	0.003	0.000	0.000	0.018	18.071	82.9
345-44	Opx-ol gabbro	1415P	45.700	38.601	0.054	0.000	0.025	16.196	0.259	44.003	0.019	0.011	0.000	0.133	99.301	5.908	0.006	0.000	0.003	2.073	0.033	10.039	0.003	0.003	0.000	0.016	18.086	82.8
345-44	Opx-ol gabbro	1415P	45.700	39.820	0.001	0.000	0.007	16.529	0.263	44.953	0.029	0.000	0.000	0.157	101.759	5.941	0.000	0.000	0.001	2.063	0.033	9.998	0.005	0.000	0.000	0.019	18.059	82.8
345-44	Opx-ol gabbro	1415P	45.700	38.893	0.010	0.000	0.008	16.183	0.238	44.226	0.006	0.007	0.000	0.165	99.735	5.922	0.001	0.000	0.001	2.061	0.031	10.001	0.001	0.002	0.000	0.020	18.077	82.9
345-44	Opx-ol gabbro	1415P	45.700	38.831	0.003	0.000	0.000	15.929	0.262	44.416	0.017	0.000	0.000	0.149	99.608	5.915	0.000	0.000	0.000	2.029	0.034	10.004	0.003	0.000	0.000	0.018	18.085	83.2
345-44	Opx-ol gabbro	1415P	45.700	39.605	0.013	0.006	0.004	16.470	0.257	45.139	0.027	0.001	0.000	0.159	101.681	5.916	0.001	0.001	0.001	2.057	0.033	10.005	0.004	0.000	0.000	0.019	18.083	83.0
345-44	Opx-ol gabbro	1415P	45.700	38.022	0.014	0.058	0.000	16.237	0.276	45.723	0.042	0.072	0.018	0.140	100.602	5.762	0.002	0.010	0.000	2.058	0.036	10.307	0.000	0.024	0.000	0.017	18.244	83.3
345-44	Opx-ol gabbro	1415P	45.700	38.920	0.014	0.000	0.000	16.023	0.267	43.947	0.017	0.002	0.000	0.139	99.327	5.945	0.002	0.000	0.000	2.047	0.035	10.006	0.003	0.001	0.000	0.017	18.054	83.0
345-44	Opx-ol gabbro	1415P	45.700	38.578	0.012	0.000	0.005	16.065	0.256	44.196	0.019	0.000	0.000	0.134	99.266	5.903	0.001	0.000	0.001	2.056	0.033	10.006	0.000	0.000	0.000	0.017	18.095	83.0
345-44	Opx-ol gabbro	1415P	45.700	38.559	0.018	0.001	0.013	16.330	0.253	43.760	0.020	0.000	0.001	0.173	99.128	5.916	0.002	0.000	0.000	2.095	0.033	10.008	0.000	0.000	0.000	0.021	18.081	82.6
345-44	Opx-ol gabbro	1415P	45.700	39.228	0.000	0.006	0.022	16.940	0.267	45.140	0.023	0.006	0.000	0.159	101.791	5.872	0.000	0.000	0.000	2.123	0.033	10.007	0.000	0.000	0.000	0.011	18.127	82.6
345-44	Opx-ol gabbro	1415P	45.700	39.022	0.008	0.000	0.033	16.169	0.245	44.142	0.007	0.000	0.000	0.139	99.763	5.937	0.001	0.000	0.000	2.057	0.032	10.007	0.000	0.000	0.000	0.017	18.060	82.9
345-44	Opx-ol gabbro	1415P	45.700	38.683	0.017	0.000	0.000	16.414	0.267	43.827	0.017	0.006	0.000	0.136	99.367	5.921	0.002	0.000	0.000	2.101	0.033	9.996	0.000	0.000	0.000	0.017	18.078	82.6
345-44	Opx-ol gabbro	1415P	45.700	39.149	0.000	0.000	0.000	16.150	0.252	44.227	0.032	0.023	0.000	0.164	99.998	5.942	0.000	0.000	0.000	2.050	0.033	10.006	0.005	0.007	0.000	0.020	18.062	82.9
345-44	Opx-ol gabbro	1415P	45.700	39.159	0.010	0.000	0.015	16.054	0.273	44.202	0.012	0.008	0.006	0.155	99.892	5.946	0.001	0.000	0.002	2.039	0.033	10.006	0.002	0.002	0.001	0.019	18.053	83.0
345-45	Opx-ol gabbro	1415P	51.000	40.105	0.000	0.000	0.001	16.126	0.243	45.279	0.016	0.008	0.000	0.160	101.938	5.958	0.000	0.000	0.000	2.004	0.031	10.027	0.003	0.002	0.000	0.019	18.043	83.3
345-45	Opx-ol gabbro	1415P	51.000	40.059	0.023	0.000	0.003	15.965	0.257	45.070	0.014	0.000	0.002	0.167	101.560	5.969	0.003	0.000	0.000	1.990	0.033	10.011	0.002	0.000	0.000	0.020	18.028	83.4
345-45	Opx-ol gabbro	1415P	51.000	39.892	0.025	0.010	0.012	15.987	0.243	45.381	0.018	0.000	0.000	0.146	101.714	5.939	0.003	0.002	0.001	1.990	0.031	10.071	0.003	0.000	0.000	0.018	18.057	83.4
345-45	Opx-ol gabbro	1415P	51.000	40.039	0.000	0.000	0.000	16.062	0.252	45.019	0.021	0.001	0.000	0.145	101.539	5.970	0.000	0.000	0.000	2.003	0.032	10.006	0.003	0.000	0.000	0.017	18.031	83.3
345-45	Opx-ol gabbro	1415P	51.000	40.139	0.000	0.007	0.000	16.013	0.246	45.079	0.016	0.005	0.000	0.152	101.657	5.975	0.000	0.001	0.000	1.993	0.031	10.003	0.003	0.002	0.000	0.018	18.025	83.3
345-45	Opx-ol gabbro	1415P	51.000	40.177	0.011	0.000	0.000	16.184	0.263	45.119	0.010	0.013	0.000	0.144	101.921	5.970	0.001	0.000	0.000	2.011	0.033	9.996	0.000	0.000	0.000	0.017	18.031	83.2
345-45	Opx-ol gabbro	1415P	51.000	39.682	0.005	0.000	0.004	16.045	0.247	44.885	0.025	0.013	0.000	0.126	101.032	5.950	0.001	0.000	0.000	2.012	0.033	10.004	0.000	0.000	0.000	0.015	18.051	83.2
345-45	Opx-ol gabbro	1415P	51.000	40.243	0.001	0.000	0.015	16.051	0.265	46.088	0.027	0.000	0.000	0.156	102.846	5.920	0.000	0.000	0.000	1.972	0.033	10.103	0.000	0.000	0.000	0.019	18.074	83.6
345-45	Opx-ol gabbro	1415P	51.000	39.960	0.000	0.000	0.018	15.908	0.244	45.111	0.005	0.000	0.000	0.150	101.396	5.963	0.000	0.000	0.002	1.985	0.031	10.003	0.000	0.000	0.000	0.018	18.036	83.4
345-45	Opx-ol gabbro	1415P	51.000	39.823	0.019	0.010	0.003	16.290	0.273	45.103	0.031	0.020	0.000	0.161	101.733	5.938	0.002	0.002	0.000	2.031	0.034	10.004	0.000	0.000	0.000	0.019	18.062	83.1
345-46	Opx-ol gabbro	1415P	59.200	40.104	0.002	0.000	0.000	16.557	0.260	45.505	0.026	0.000	0.000	0.170	102.624	5.931	0.000	0.000	0.000	2.048	0.033	10.003	0.000	0.000	0.000	0.020	18.069	83.0
345-46	Opx-ol gabbro	1415P	59.200	39.887	0.005	0.000	0.000	16.861	0.256	45.171	0.005	0.000	0.000	0.161	102.346	5.925	0.001	0.000	0.000	2.095	0.033	10.002	0.000	0.000	0.000	0.019	18.075	82.6
345-46	Opx-ol gabbro	1415P	59.200	40.341	0.026	0.007	0.007	16.846	0.272	45.107	0.034	0.007	0.000	0.147	102.794	5.959	0.003	0.001	0.001	2.081	0.034	9.933	0.000	0.000	0.000	0.018	18.038	82.6
345-46	Opx-ol gabbro	1415P	59.200	39.712	0.007	0.000	0.011	16.614	0.286	44.836	0.020	0.000	0.000	0.134	101.620	5.936	0.001	0.000	0.000	2.077	0.033	9.996	0.000	0.000	0.000	0.016	18.062	82.7
345-46	Opx-ol gabbro	1415P	59.200	39.757	0.020	0.000	0.013	16.745	0.254	44.870	0.016	0.000	0.000	0.134	101.809	5.934	0.002	0.000	0.002	2.090	0.032	9.984	0.000	0.000	0.000	0.016	18.063	82.6
345-46	Opx-ol gabbro	1415P	59.200	39.544	0.036	0.007	0.000	16.668	0.238	45.161	0.032	0.005	0.009	0.127	101.827	5.903	0.004	0.001	0.000	2.081	0.030	10.005	0.005	0.001	0.002	0.015	18.093	82.8

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-46	Opx-ol gabbro	1415P	59.200	39.820	0.000	0.000	0.017	16.586	0.262	44.781	0.029	0.000	0.000	0.140	101.635	5.949	0.000	0.000	0.002	2.072	0.033	9.972	0.005	0.000	0.000	0.017	18.050	82.7
345-46	Opx-ol gabbro	1415P	59.200	40.184	0.013	0.000	0.012	16.478	0.259	45.200	0.015	0.013	0.000	0.163	102.337	5.955	0.000	0.000	0.001	2.043	0.033	9.986	0.003	0.000	0.000	0.019	18.044	83.0
345-46	Opx-ol gabbro	1415P	59.200	40.113	0.016	0.000	0.000	16.523	0.264	44.537	0.015	0.003	0.000	0.132	101.603	5.987	0.002	0.000	0.000	2.062	0.033	9.903	0.002	0.000	0.000	0.016	18.012	82.7
345-46	Opx-ol gabbro	1415P	59.200	40.086	0.004	0.000	0.004	16.517	0.266	44.977	0.004	0.000	0.000	0.127	101.985	5.962	0.001	0.000	0.000	2.054	0.033	9.970	0.001	0.000	0.000	0.015	18.038	82.9
345-46	Opx-ol gabbro	1415P	59.200	39.721	0.009	0.008	0.006	16.469	0.248	44.419	0.009	0.004	0.007	0.158	101.058	5.965	0.001	0.001	0.000	2.068	0.032	9.944	0.001	0.001	0.001	0.019	18.034	82.7
345-53	Opx-ol gabbro	1415P	72.000	39.057	0.026	0.003	0.007	16.034	0.259	44.461	0.016	0.024	0.004	0.169	100.060	5.923	0.003	0.000	0.001	2.034	0.033	10.052	0.003	0.007	0.001	0.021	18.077	83.1
345-53	Opx-ol gabbro	1415P	72.000	39.068	0.038	0.009	0.027	15.780	0.232	44.105	0.017	0.005	0.000	0.162	99.443	5.952	0.004	0.002	0.003	2.011	0.030	10.016	0.003	0.002	0.000	0.020	18.042	83.2
345-53	Opx-ol gabbro	1415P	72.000	39.009	0.012	0.013	0.000	16.225	0.233	44.231	0.015	0.008	0.004	0.174	99.922	5.928	0.001	0.002	0.000	2.062	0.030	10.020	0.002	0.002	0.001	0.021	18.071	82.9
345-53	Opx-ol gabbro	1415P	72.000	40.155	0.013	0.000	0.021	15.720	0.249	42.381	0.072	0.001	0.010	0.147	98.769	6.135	0.002	0.000	0.003	2.009	0.032	9.652	0.012	0.000	0.002	0.018	17.864	82.7
345-53	Opx-ol gabbro	1415P	72.000	39.087	0.031	0.000	0.007	16.253	0.232	44.242	0.017	0.012	0.000	0.175	100.056	5.932	0.004	0.000	0.001	2.063	0.030	10.009	0.003	0.004	0.000	0.021	18.066	82.9
345-53	Opx-ol gabbro	1415P	72.000	39.309	0.012	0.000	0.000	16.230	0.251	44.337	0.021	0.004	0.000	0.159	100.323	5.946	0.001	0.000	0.000	2.053	0.032	9.997	0.004	0.001	0.000	0.019	18.054	82.9
345-53	Opx-ol gabbro	1415P	72.000	39.330	0.025	0.004	0.014	17.348	0.266	43.463	0.001	0.000	0.000	0.132	100.583	5.961	0.003	0.001	0.002	2.199	0.034	9.820	0.000	0.000	0.000	0.016	18.035	81.7
345-53	Opx-ol gabbro	1415P	72.000	39.041	0.018	0.000	0.000	16.161	0.247	43.893	0.018	0.007	0.000	0.149	99.534	5.952	0.002	0.000	0.000	2.061	0.032	9.976	0.003	0.002	0.000	0.018	18.047	82.8
345-53	Opx-ol gabbro	1415P	72.000	39.111	0.016	0.009	0.015	16.083	0.249	44.360	0.022	0.006	0.000	0.157	100.026	5.933	0.002	0.002	0.002	2.040	0.030	10.031	0.004	0.002	0.000	0.019	18.065	83.0
345-53	Opx-ol gabbro	1415P	72.000	39.006	0.005	0.008	0.003	16.193	0.251	44.158	0.017	0.009	0.000	0.132	99.783	5.934	0.001	0.002	0.000	2.062	0.032	10.015	0.003	0.003	0.000	0.016	18.066	82.9
345-53	Opx-ol gabbro	1415P	72.000	38.951	0.005	0.000	0.004	15.951	0.262	44.157	0.008	0.012	0.000	0.125	99.475	5.938	0.001	0.000	0.001	2.034	0.033	10.036	0.001	0.003	0.000	0.015	18.063	83.1
345-53	Opx-ol gabbro	1415P	72.000	39.044	0.020	0.014	0.000	15.955	0.239	44.371	0.019	0.000	0.000	0.146	99.809	5.932	0.002	0.003	0.000	2.027	0.033	10.049	0.003	0.000	0.000	0.018	18.065	83.2
345-53	Opx-ol gabbro	1415P	72.000	39.164	0.006	0.000	0.000	16.026	0.257	44.534	0.029	0.001	0.011	0.143	100.171	5.930	0.001	0.000	0.000	2.030	0.033	10.052	0.005	0.000	0.002	0.017	18.070	83.2
345-53	Opx-ol gabbro	1415P	72.000	39.178	0.022	0.000	0.009	15.883	0.244	44.399	0.012	0.011	0.000	0.137	99.894	5.943	0.003	0.000	0.001	2.015	0.033	10.040	0.002	0.003	0.000	0.017	18.055	83.2
345-53	Opx-ol gabbro	1415P	72.000	39.068	0.035	0.018	0.004	16.045	0.246	44.340	0.032	0.008	0.000	0.145	99.941	5.930	0.004	0.003	0.001	2.037	0.033	10.052	0.005	0.002	0.000	0.018	18.065	83.1
345-53	Opx-ol gabbro	1415P	72.000	39.152	0.012	0.000	0.003	16.143	0.241	44.101	0.019	0.000	0.007	0.155	99.833	5.950	0.001	0.000	0.000	2.052	0.033	9.991	0.000	0.000	0.001	0.019	18.049	82.9
345-53	Opx-ol gabbro	1415P	72.000	39.255	0.007	0.001	0.005	15.859	0.278	44.311	0.029	0.005	0.000	0.138	99.887	5.954	0.001	0.000	0.001	2.012	0.036	10.019	0.005	0.001	0.000	0.017	18.045	83.2
345-53	Opx-ol gabbro	1415P	72.000	38.897	0.021	0.010	0.000	15.925	0.266	44.000	0.027	0.016	0.000	0.132	99.293	5.941	0.003	0.002	0.000	2.034	0.034	10.018	0.004	0.005	0.000	0.016	18.058	83.1
345-53	Opx-ol gabbro	1415P	72.000	39.728	0.000	0.000	0.006	16.404	0.258	45.311	0.013	0.006	0.000	0.163	101.889	5.919	0.000	0.000	0.001	2.044	0.033	10.063	0.002	0.002	0.000	0.020	18.082	83.1
345-53	Opx-ol gabbro	1415P	72.000	38.558	0.000	0.000	0.006	15.921	0.250	43.977	0.013	0.006	0.000	0.158	98.889	5.919	0.000	0.000	0.000	2.044	0.033	10.063	0.002	0.002	0.000	0.020	18.082	83.1
345-64	Opx-ol gabbro	1415P	12.880	40.110	0.017	0.018	0.021	15.753	0.280	45.830	0.022	0.018	0.000	0.160	102.229	5.935	0.002	0.003	0.003	1.949	0.033	10.109	0.003	0.005	0.000	0.019	18.063	83.8
345-64	Opx-ol gabbro	1415P	12.880	39.718	0.000	0.000	0.000	15.622	0.203	45.018	0.012	0.000	0.000	0.151	100.724	5.961	0.000	0.000	0.000	1.961	0.026	10.072	0.002	0.000	0.000	0.018	18.039	83.7
345-64	Opx-ol gabbro	1415P	12.880	39.630	0.000	0.020	0.024	15.588	0.219	45.180	0.045	0.000	0.002	0.146	100.854	5.942	0.000	0.004	0.003	1.955	0.028	10.099	0.007	0.000	0.000	0.018	18.055	83.7
345-64	Opx-ol gabbro	1415P	12.880	40.386	0.005	0.000	0.006	15.643	0.255	45.245	0.000	0.000	0.003	0.149	101.692	5.996	0.001	0.000	0.001	1.942	0.032	10.014	0.000	0.000	0.001	0.018	18.003	83.7
345-64	Opx-ol gabbro	1415P	12.880	39.875	0.001	0.008	0.000	15.995	0.278	45.157	0.012	0.000	0.000	0.153	101.479	5.950	0.000	0.001	0.000	1.996	0.035	10.045	0.002	0.000	0.000	0.018	18.049	83.4
345-64	Opx-ol gabbro	1415P	12.880	39.914	0.007	0.020	0.000	15.931	0.262	45.270	0.019	0.017	0.000	0.153	101.593	5.948	0.001	0.004	0.000	1.985	0.033	10.056	0.003	0.005	0.000	0.018	18.052	83.5
345-64	Opx-ol gabbro	1415P	12.880	39.892	0.000	0.013	0.002	15.906	0.267	45.094	0.005	0.008	0.000	0.159	101.346	5.958	0.000	0.002	0.000	1.987	0.034	10.039	0.001	0.002	0.000	0.019	18.042	83.4
345-87	Opx-ol gabbro	1415P	42.100	40.065	0.000	0.006	0.020	16.047	0.279	45.193	0.013	0.000	0.000	0.131	101.754	5.961	0.000	0.001	0.002	1.997	0.035	10.023	0.002	0.000	0.000	0.016	18.037	83.3

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-87	Opx-ol gabbro	1415P	42.100	40.096	0.003	0.014	0.000	16.267	0.286	45.228	0.007	0.000	0.000	0.165	102.066	5.954	0.000	0.003	0.000	2.020	0.036	10.011	0.001	0.000	0.000	0.020	18.045	83.2
345-87	Opx-ol gabbro	1415P	42.100	39.860	0.000	0.032	0.008	16.146	0.246	44.649	0.017	0.015	0.000	0.151	101.124	5.971	0.000	0.006	0.001	2.023	0.031	9.971	0.003	0.000	0.000	0.018	18.028	83.1
345-87	Opx-ol gabbro	1415P	42.100	40.048	0.002	0.003	0.002	16.263	0.258	45.126	0.012	0.000	0.000	0.157	101.871	5.958	0.000	0.001	0.000	2.023	0.033	10.007	0.002	0.000	0.000	0.019	18.042	83.1
345-87	Opx-ol gabbro	1415P	42.100	40.211	0.004	0.000	0.000	16.327	0.241	45.161	0.000	0.029	0.000	0.152	102.125	5.966	0.000	0.000	0.000	2.026	0.030	9.988	0.000	0.000	0.000	0.018	18.038	83.1
345-87	Opx-ol gabbro	1415P	42.100	40.272	0.000	0.000	0.002	16.237	0.250	45.417	0.002	0.000	0.000	0.145	102.325	5.960	0.000	0.000	0.000	2.010	0.031	10.020	0.000	0.000	0.000	0.017	18.040	83.2
345-87	Opx-ol gabbro	1415P	42.100	40.033	0.011	0.010	0.015	16.160	0.247	45.575	0.002	0.026	0.000	0.142	102.221	5.934	0.000	0.002	0.000	2.003	0.031	10.017	0.000	0.000	0.000	0.017	18.067	83.4
345-87	Opx-ol gabbro	1415P	42.100	40.224	0.033	0.003	0.000	16.383	0.295	45.221	0.026	0.000	0.015	0.148	102.348	5.958	0.004	0.001	0.000	2.030	0.037	9.986	0.004	0.000	0.003	0.018	18.039	83.1
345-87	Opx-ol gabbro	1415P	42.100	39.616	0.000	0.013	0.008	16.241	0.257	45.292	0.003	0.009	0.000	0.144	101.583	5.916	0.000	0.002	0.001	2.029	0.033	10.007	0.001	0.000	0.000	0.017	18.084	83.2
345-87	Opx-ol gabbro	1415P	42.100	40.133	0.020	0.001	0.032	16.339	0.263	45.048	0.007	0.000	0.007	0.140	101.990	5.964	0.002	0.000	0.004	2.031	0.033	9.979	0.001	0.000	0.001	0.017	18.032	83.0
345-87	Opx-ol gabbro	1415P	42.100	39.649	0.025	0.026	0.000	16.066	0.264	44.885	0.000	0.000	0.010	0.151	101.076	5.944	0.003	0.005	0.000	2.014	0.034	10.032	0.000	0.000	0.002	0.018	18.052	83.2
345-87	Opx-ol gabbro	1415P	42.100	40.157	0.005	0.000	0.000	16.582	0.259	45.259	0.013	0.000	0.000	0.140	102.415	5.949	0.001	0.000	0.000	2.055	0.033	9.995	0.002	0.000	0.000	0.017	18.051	82.9
345-87	Opx-ol gabbro	1415P	42.100	40.303	0.016	0.028	0.000	16.333	0.262	45.243	0.000	0.007	0.007	0.172	102.371	5.965	0.002	0.005	0.000	2.023	0.032	9.982	0.000	0.000	0.002	0.021	18.032	83.1
345-87	Opx-ol gabbro	1415P	42.100	40.002	0.007	0.006	0.000	16.364	0.240	44.373	0.006	0.000	0.013	0.146	101.157	5.993	0.001	0.001	0.000	2.050	0.031	9.910	0.001	0.000	0.003	0.018	18.007	82.8
345-87	Opx-ol gabbro	1415P	42.100	39.782	0.006	0.043	0.000	16.350	0.246	44.634	0.011	0.000	0.000	0.159	101.231	5.960	0.001	0.008	0.000	2.040	0.031	9.962	0.000	0.000	0.000	0.019	18.036	82.9
345-87	Opx-ol gabbro	1415P	42.100	39.524	0.000	0.024	0.000	16.260	0.271	44.833	0.010	0.042	0.000	0.158	101.122	5.931	0.000	0.004	0.000	2.041	0.034	10.029	0.000	0.010	0.000	0.019	18.073	83.0
345-87	Opx-ol gabbro	1415P	42.100	40.008	0.012	0.000	0.021	16.342	0.225	44.611	0.013	0.025	0.000	0.166	101.423	5.979	0.001	0.000	0.003	2.043	0.029	9.939	0.002	0.000	0.000	0.020	18.022	82.9
345-87	Opx-ol gabbro	1415P	42.100	39.998	0.000	0.000	0.011	16.334	0.288	44.828	0.000	0.000	0.002	0.171	101.632	5.967	0.000	0.000	0.001	2.038	0.036	9.969	0.000	0.000	0.000	0.021	18.032	83.0
345-87	Opx-ol gabbro	1415P	42.100	39.920	0.042	0.035	0.000	16.159	0.216	44.606	0.008	0.038	0.000	0.139	101.163	5.976	0.005	0.006	0.000	2.023	0.027	9.955	0.001	0.011	0.000	0.017	18.022	83.1
345-87	Opx-ol gabbro	1415P	42.100	40.003	0.038	0.016	0.000	16.218	0.244	44.633	0.021	0.013	0.003	0.164	101.353	5.979	0.004	0.003	0.000	2.027	0.031	9.944	0.000	0.000	0.000	0.020	18.017	83.0
345-87	Opx-ol gabbro	1415P	42.100	41.473	0.000	0.007	0.000	15.282	0.220	44.888	0.043	0.000	0.000	0.157	102.070	6.106	0.000	0.001	0.000	1.882	0.027	9.852	0.000	0.000	0.000	0.019	17.893	83.9
345-87	Opx-ol gabbro	1415P	42.100	40.124	0.014	0.000	0.008	16.493	0.250	45.024	0.025	0.000	0.000	0.154	102.092	5.961	0.002	0.000	0.001	2.049	0.032	9.971	0.000	0.000	0.000	0.018	18.037	82.9
345-87	Opx-ol gabbro	1415P	42.100	39.909	0.016	0.010	0.009	16.127	0.242	45.156	0.000	0.000	0.000	0.156	101.625	5.949	0.002	0.002	0.001	2.011	0.031	10.034	0.000	0.000	0.000	0.019	18.048	83.3
345-87	Opx-ol gabbro	1415P	42.100	39.562	0.000	0.019	0.000	16.434	0.233	45.368	0.015	0.022	0.000	0.147	101.800	5.902	0.000	0.003	0.000	2.050	0.030	10.089	0.002	0.007	0.000	0.018	18.100	83.1
345-87	Opx-ol gabbro	1415P	42.100	40.177	0.002	0.000	0.005	16.409	0.257	45.290	0.012	0.000	0.000	0.156	102.308	5.954	0.000	0.000	0.001	2.034	0.032	10.005	0.002	0.000	0.000	0.019	18.046	83.1
345-87	Opx-ol gabbro	1415P	42.100	39.795	0.043	0.000	0.000	15.968	0.241	44.887	0.007	0.000	0.000	0.188	101.129	5.959	0.005	0.000	0.000	2.000	0.031	10.019	0.001	0.000	0.000	0.023	18.037	83.3
345-87	Opx-ol gabbro	1415P	42.100	40.369	0.000	0.000	0.011	16.177	0.241	45.974	0.006	0.000	0.000	0.125	102.903	5.939	0.000	0.000	0.001	1.991	0.031	10.083	0.001	0.000	0.000	0.015	18.060	83.5
345-87	Opx-ol gabbro	1415P	42.100	40.539	0.000	0.005	0.000	14.965	0.254	44.234	0.030	0.000	0.000	0.141	100.168	6.085	0.000	0.001	0.000	1.870	0.033	9.892	0.000	0.000	0.000	0.017	17.915	84.0
345-87	Opx-ol gabbro	1415P	42.100	39.815	0.001	0.011	0.000	15.867	0.261	45.053	0.018	0.000	0.012	0.138	101.176	5.956	0.000	0.002	0.000	1.985	0.033	10.046	0.000	0.000	0.002	0.017	18.044	83.5
345-87	Opx-ol gabbro	1415P	42.100	40.511	0.000	0.000	0.000	16.008	0.223	45.510	0.016	0.000	0.000	0.153	102.421	5.980	0.000	0.000	0.000	1.976	0.028	10.015	0.000	0.000	0.000	0.018	18.020	83.5
345-87	Opx-ol gabbro	1415P	42.100	40.112	0.003	0.000	0.002	16.182	0.275	45.510	0.000	0.004	0.000	0.154	102.242	5.944	0.000	0.000	0.000	2.005	0.035	10.053	0.000	0.001	0.000	0.018	18.057	83.3
345-87	Opx-ol gabbro	1415P	42.100	40.235	0.002	0.016	0.000	16.436	0.270	45.254	0.000	0.000	0.000	0.165	102.378	5.958	0.000	0.003	0.000	2.036	0.034	9.990	0.000	0.000	0.000	0.020	18.040	83.0
345-87	Opx-ol gabbro	1415P	42.100	39.595	0.012	0.018	0.026	16.369	0.267	45.134	0.003	0.000	0.000	0.153	101.577	5.917	0.001	0.003	0.003	2.046	0.034	10.055	0.000	0.000	0.000	0.018	18.078	83.0
345-87	Opx-ol gabbro	1415P	42.100	40.079	0.031	0.000	0.000	16.331	0.234	45.036	0.014	0.000	0.000	0.159	101.884	5.962	0.004	0.000	0.000	2.032	0.030	9.987	0.002	0.000	0.000	0.019	18.035	83.0

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-87	Opx-ol gabbro	1415P	42.100	40.180	0.020	0.027	0.000	16.137	0.251	45.329	0.000	0.000	0.000	0.119	102.063	5.959	0.002	0.005	0.000	2.002	0.032	10.022	0.000	0.000	0.000	0.014	18.036	83.3
345-87	Opx-ol gabbro	1415P	42.100	40.007	0.025	0.009	0.017	16.396	0.261	44.888	0.000	0.046	0.000	0.143	101.792	5.960	0.003	0.002	0.002	2.043	0.033	9.969	0.000	0.010	0.000	0.017	18.042	82.9
345-87	Opx-ol gabbro	1415P	42.100	39.303	0.001	0.000	0.141	15.845	0.272	43.690	0.007	0.026	0.001	0.149	99.435	5.988	0.000	0.000	0.017	2.019	0.035	9.922	0.001	0.008	0.000	0.018	18.008	83.0
345-87	Opx-ol gabbro	1415P	42.100	39.851	0.000	0.013	0.007	16.546	0.245	45.163	0.000	0.000	0.004	0.137	101.966	5.933	0.000	0.002	0.001	2.060	0.030	10.022	0.000	0.000	0.001	0.017	18.066	82.9
345-89	Opx-ol gabbro	1415P	46.150	40.237	0.000	0.019	0.012	15.797	0.251	45.755	0.023	0.001	0.008	0.132	102.235	5.950	0.000	0.003	0.001	1.954	0.031	10.087	0.004	0.000	0.001	0.016	18.048	83.7
345-89	Opx-ol gabbro	1415P	46.150	40.085	0.032	0.006	0.026	15.592	0.220	45.392	0.015	0.000	0.005	0.158	101.531	5.964	0.004	0.001	0.003	1.940	0.028	10.068	0.002	0.000	0.001	0.019	18.030	83.8
345-89	Opx-ol gabbro	1415P	46.150	39.987	0.000	0.000	0.000	15.749	0.241	45.618	0.002	0.000	0.000	0.155	101.752	5.943	0.000	0.000	0.000	1.958	0.030	10.107	0.000	0.000	0.000	0.019	18.057	83.7
345-89	Opx-ol gabbro	1415P	46.150	39.939	0.004	0.050	0.023	15.624	0.224	45.285	0.002	0.013	0.008	0.161	101.333	5.957	0.000	0.009	0.003	1.949	0.028	10.069	0.000	0.000	0.001	0.019	18.040	83.7
345-89	Opx-ol gabbro	1415P	46.150	40.043	0.007	0.024	0.023	15.863	0.272	45.641	0.022	0.000	0.011	0.159	102.065	5.938	0.001	0.004	0.003	1.967	0.034	10.089	0.004	0.000	0.002	0.019	18.060	83.6
345-89	Opx-ol gabbro	1415P	46.150	40.175	0.030	0.000	0.032	15.611	0.253	45.370	0.009	0.000	0.000	0.161	101.641	5.971	0.003	0.000	0.004	1.941	0.032	10.052	0.001	0.000	0.000	0.019	18.024	83.8
345-89	Opx-ol gabbro	1415P	46.150	40.269	0.003	0.046	0.003	15.539	0.210	44.264	0.006	0.000	0.005	0.117	100.462	6.045	0.000	0.008	0.000	1.951	0.027	9.905	0.001	0.000	0.001	0.014	17.951	83.5
345-89	Opx-ol gabbro	1415P	46.150	39.907	0.031	0.000	0.000	15.861	0.295	45.307	0.000	0.000	0.004	0.150	101.555	5.948	0.003	0.000	0.000	1.977	0.037	10.066	0.000	0.000	0.001	0.018	18.050	83.5
345-89	Opx-ol gabbro	1415P	46.150	40.113	0.000	0.000	0.000	15.962	0.267	45.555	0.018	0.011	0.012	0.129	102.077	5.948	0.000	0.000	0.000	1.979	0.034	10.069	0.003	0.003	0.002	0.017	18.055	83.5
345-89	Opx-ol gabbro	1415P	46.150	39.757	0.000	0.003	0.034	16.009	0.285	45.195	0.000	0.000	0.000	0.164	101.447	5.938	0.000	0.000	0.000	2.001	0.036	10.062	0.000	0.000	0.000	0.020	18.060	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.983	0.000	0.022	0.023	16.020	0.268	45.279	0.000	0.018	0.005	0.157	101.775	5.949	0.000	0.004	0.003	1.994	0.034	10.043	0.000	0.005	0.001	0.019	18.051	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.739	0.000	0.015	0.003	15.526	0.235	45.101	0.009	0.000	0.001	0.141	100.770	5.959	0.000	0.003	0.000	1.947	0.030	10.082	0.001	0.000	0.000	0.017	18.040	83.8
345-89	Opx-ol gabbro	1415P	46.150	39.853	0.000	0.021	0.011	16.251	0.244	45.512	0.000	0.004	0.001	0.143	102.040	5.922	0.000	0.004	0.001	2.017	0.033	10.081	0.000	0.001	0.000	0.017	18.076	83.3
345-89	Opx-ol gabbro	1415P	46.150	39.979	0.003	0.000	0.001	16.030	0.251	45.336	0.011	0.011	0.007	0.143	101.772	5.948	0.000	0.000	0.000	1.994	0.033	10.055	0.000	0.000	0.000	0.017	18.054	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.692	0.000	0.023	0.008	16.272	0.248	44.991	0.000	0.000	0.006	0.142	101.382	5.933	0.000	0.004	0.001	2.033	0.033	10.033	0.000	0.000	0.001	0.017	18.061	83.1
345-89	Opx-ol gabbro	1415P	46.150	40.109	0.000	0.006	0.003	16.103	0.231	45.411	0.000	0.042	0.006	0.162	102.073	5.951	0.000	0.001	0.000	1.998	0.029	10.043	0.000	0.012	0.001	0.019	18.055	83.4
345-89	Opx-ol gabbro	1415P	46.150	40.212	0.008	0.038	0.011	16.041	0.244	45.424	0.010	0.000	0.007	0.151	102.146	5.958	0.001	0.007	0.001	1.988	0.031	10.032	0.000	0.000	0.001	0.018	18.038	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.622	0.000	0.028	0.014	15.917	0.271	44.989	0.000	0.000	0.000	0.142	100.983	5.942	0.000	0.005	0.002	1.996	0.035	10.058	0.000	0.000	0.000	0.017	18.055	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.668	0.051	0.000	0.000	15.954	0.271	44.736	0.000	0.000	0.000	0.150	100.830	5.958	0.006	0.000	0.000	2.004	0.034	10.016	0.000	0.000	0.000	0.018	18.036	83.3
345-89	Opx-ol gabbro	1415P	46.150	39.796	0.000	0.017	0.000	16.092	0.256	44.933	0.013	0.028	0.001	0.147	101.283	5.953	0.000	0.003	0.000	2.013	0.033	10.020	0.002	0.008	0.000	0.018	18.049	83.2
345-89	Opx-ol gabbro	1415P	46.150	39.999	0.000	0.005	0.014	15.330	0.208	45.007	0.015	0.000	0.000	0.135	100.713	5.991	0.000	0.001	0.002	1.920	0.026	10.049	0.002	0.000	0.000	0.016	18.008	83.9
345-89	Opx-ol gabbro	1415P	46.150	40.298	0.005	0.001	0.031	15.778	0.259	45.154	0.011	0.000	0.005	0.159	101.701	5.988	0.001	0.000	0.004	1.961	0.033	10.002	0.002	0.000	0.001	0.019	18.010	83.6
345-89	Opx-ol gabbro	1415P	46.150	39.726	0.000	0.000	0.000	15.731	0.249	45.027	0.012	0.000	0.000	0.144	100.889	5.956	0.000	0.000	0.000	1.973	0.033	10.064	0.002	0.000	0.000	0.017	18.044	83.6
345-89	Opx-ol gabbro	1415P	46.150	39.966	0.021	0.000	0.000	15.701	0.265	45.021	0.006	0.000	0.027	0.145	101.152	5.974	0.002	0.000	0.000	1.963	0.034	10.031	0.001	0.000	0.005	0.017	18.027	83.6
345-89	Opx-ol gabbro	1415P	46.150	40.023	0.007	0.001	0.000	15.724	0.272	45.085	0.018	0.000	0.007	0.141	101.278	5.974	0.001	0.000	0.000	1.963	0.034	10.032	0.003	0.000	0.001	0.017	18.026	83.6
345-89	Opx-ol gabbro	1415P	46.150	39.671	0.000	0.030	0.000	14.997	0.258	43.648	0.046	0.000	0.004	0.136	98.790	6.050	0.000	0.005	0.000	1.913	0.033	9.922	0.008	0.000	0.001	0.017	17.948	83.8
345-89	Opx-ol gabbro	1415P	46.150	40.261	0.000	0.008	0.004	16.005	0.217	45.376	0.000	0.016	0.000	0.138	102.025	5.969	0.000	0.001	0.000	1.985	0.027	10.029	0.000	0.005	0.000	0.017	18.032	83.4
345-89	Opx-ol gabbro	1415P	46.150	40.076	0.005	0.000	0.002	15.911	0.263	45.346	0.012	0.000	0.000	0.119	101.734	5.959	0.001	0.000	0.000	1.979	0.033	10.052	0.002	0.000	0.000	0.014	18.040	83.5
345-89	Opx-ol gabbro	1415P	46.150	39.934	0.034	0.040	0.002	15.646	0.246	45.268	0.000	0.005	0.000	0.119	101.294	5.958	0.004	0.007	0.000	1.952	0.031	10.067	0.000	0.002	0.000	0.014	18.035	83.7

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-89	Opx-ol gabbro	1415P	46.150	39.356	0.000	0.000	0.023	16.227	0.256	45.446	0.000	0.008	0.004	0.179	101.499	5.888	0.000	0.000	0.003	2.030	0.033	10.135	0.000	0.002	0.001	0.022	18.113	83.3
345-89	Opx-ol gabbro	1415P	46.150	40.135	0.030	0.013	0.028	15.928	0.270	45.288	0.000	0.000	0.011	0.158	101.861	5.962	0.003	0.002	0.003	1.979	0.034	10.028	0.000	0.000	0.002	0.019	18.033	83.5
345-89	Opx-ol gabbro	1415P	46.150	40.107	0.000	0.017	0.000	15.949	0.267	45.900	0.000	0.000	0.000	0.161	102.401	5.929	0.000	0.003	0.000	1.972	0.033	10.149	0.000	0.000	0.000	0.019	18.070	83.6
345-89	Opx-ol gabbro	1415P	46.150	40.132	0.015	0.000	0.023	15.630	0.214	45.081	0.017	0.000	0.000	0.137	101.249	5.986	0.002	0.000	0.003	1.950	0.027	10.024	0.000	0.000	0.000	0.017	18.011	83.7
345-89	Opx-ol gabbro	1415P	46.150	40.110	0.000	0.021	0.000	16.071	0.255	45.334	0.000	0.000	0.000	0.133	101.924	5.957	0.000	0.004	0.000	1.996	0.032	10.036	0.000	0.000	0.000	0.016	18.041	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.865	0.000	0.000	0.000	16.048	0.217	45.312	0.000	0.000	0.004	0.157	101.603	5.942	0.000	0.000	0.000	2.001	0.027	10.068	0.000	0.000	0.001	0.019	18.058	83.4
345-89	Opx-ol gabbro	1415P	46.150	41.041	0.000	0.000	0.015	15.578	0.238	45.561	0.017	0.000	0.008	0.148	102.606	6.029	0.000	0.000	0.002	1.914	0.030	9.976	0.000	0.000	0.002	0.018	17.972	83.9
345-89	Opx-ol gabbro	1415P	46.150	39.996	0.000	0.007	0.000	16.057	0.212	45.345	0.020	0.000	0.000	0.129	101.766	5.950	0.000	0.001	0.000	1.998	0.027	10.056	0.000	0.000	0.000	0.015	18.050	83.4
345-89	Opx-ol gabbro	1415P	46.150	40.079	0.040	0.000	0.022	16.165	0.253	45.276	0.010	0.016	0.000	0.149	102.010	5.952	0.005	0.000	0.003	2.008	0.032	10.023	0.002	0.005	0.000	0.018	18.045	83.3
345-89	Opx-ol gabbro	1415P	46.150	40.128	0.037	0.000	0.001	16.164	0.272	45.538	0.002	0.005	0.000	0.152	102.299	5.942	0.004	0.000	0.000	2.002	0.034	10.052	0.000	0.002	0.000	0.018	18.054	83.3
345-89	Opx-ol gabbro	1415P	46.150	39.764	0.026	0.027	0.000	15.900	0.240	45.070	0.033	0.001	0.003	0.169	101.233	5.947	0.003	0.005	0.000	1.989	0.030	10.048	0.005	0.000	0.001	0.020	18.048	83.4
345-89	Opx-ol gabbro	1415P	46.150	39.790	0.022	0.016	0.017	16.091	0.260	45.159	0.000	0.009	0.000	0.154	101.518	5.939	0.002	0.003	0.002	2.009	0.033	10.048	0.000	0.000	0.000	0.019	18.057	83.3
345-89	Opx-ol gabbro	1415P	46.150	39.870	0.000	0.004	0.005	15.918	0.238	45.355	0.009	0.038	0.034	0.137	101.608	5.941	0.000	0.001	0.001	1.984	0.030	10.075	0.001	0.001	0.006	0.017	18.067	83.5
345-89	Opx-ol gabbro	1415P	46.150	40.020	0.017	0.000	0.000	15.996	0.277	45.545	0.020	0.001	0.000	0.143	102.019	5.940	0.002	0.000	0.000	1.986	0.036	10.076	0.000	0.000	0.000	0.017	18.059	83.5
345-89	Opx-ol gabbro	1415P	46.150	47.164	0.042	33.273	0.000	0.421	0.000	0.041	16.894	2.014	0.042	0.016	99.907	6.516	0.004	5.418	0.000	0.049	0.000	0.008	2.501	0.540	0.007	0.002	15.045	14.7
345-89	Opx-ol gabbro	1415P	46.150	40.245	0.015	0.000	0.007	16.050	0.210	45.188	0.017	0.000	0.000	0.132	101.864	5.977	0.002	0.000	0.001	1.994	0.026	10.046	0.003	0.000	0.000	0.016	18.021	83.3
345-89	Opx-ol gabbro	1415P	46.150	40.012	0.000	0.020	0.004	15.969	0.272	45.268	0.011	0.028	0.004	0.141	101.729	5.954	0.000	0.004	0.000	1.987	0.034	10.041	0.002	0.008	0.001	0.017	18.048	83.4
345-99	Opx-ol gabbro	1415P	60.020	39.952	0.031	0.014	0.008	16.696	0.250	44.794	0.000	0.013	0.000	0.154	101.912	5.953	0.004	0.003	0.001	2.081	0.034	9.950	0.000	0.000	0.000	0.018	18.044	82.7
345-99	Opx-ol gabbro	1415P	60.020	40.213	0.000	0.000	0.008	16.549	0.287	44.954	0.000	0.000	0.000	0.146	102.157	5.970	0.000	0.000	0.001	2.055	0.036	9.944	0.000	0.000	0.000	0.018	18.029	82.8
345-99	Opx-ol gabbro	1415P	60.020	40.268	0.009	0.000	0.032	16.568	0.246	44.949	0.000	0.001	0.000	0.148	102.221	5.974	0.001	0.000	0.004	2.056	0.031	9.940	0.000	0.000	0.000	0.018	18.024	82.8
345-99	Opx-ol gabbro	1415P	60.020	40.255	0.000	0.007	0.012	16.479	0.281	44.912	0.023	0.021	0.000	0.141	102.131	5.976	0.000	0.001	0.001	2.046	0.036	9.934	0.000	0.000	0.000	0.017	18.026	82.9
345-99	Opx-ol gabbro	1415P	60.020	39.957	0.001	0.007	0.000	16.123	0.271	44.819	0.020	0.015	0.006	0.165	101.384	5.970	0.000	0.001	0.000	2.015	0.034	9.983	0.004	0.000	0.000	0.020	18.032	83.2
345-99	Opx-ol gabbro	1415P	60.020	39.612	0.000	0.003	0.020	16.669	0.250	44.427	0.000	0.000	0.009	0.139	101.129	5.951	0.000	0.000	0.000	2.094	0.034	9.950	0.000	0.000	0.000	0.017	18.048	82.6
345-99	Opx-ol gabbro	1415P	60.020	39.897	0.000	0.000	0.024	16.639	0.254	44.825	0.002	0.008	0.017	0.143	101.809	5.951	0.000	0.000	0.000	2.076	0.034	9.960	0.000	0.000	0.000	0.017	18.051	82.7
345-99	Opx-ol gabbro	1415P	60.020	39.894	0.015	0.000	0.000	16.811	0.260	44.711	0.001	0.003	0.004	0.164	101.899	5.951	0.002	0.000	0.000	2.097	0.033	9.941	0.000	0.000	0.001	0.020	18.052	82.5
345-99	Opx-ol gabbro	1415P	60.020	39.906	0.020	0.000	0.000	16.655	0.238	44.712	0.000	0.054	0.002	0.156	101.743	5.956	0.002	0.000	0.000	2.079	0.033	9.948	0.000	0.010	0.000	0.019	18.050	82.7
345-99	Opx-ol gabbro	1415P	60.020	39.999	0.024	0.000	0.010	16.697	0.204	44.957	0.002	0.000	0.006	0.173	102.072	5.950	0.003	0.000	0.001	2.077	0.025	9.960	0.000	0.000	0.000	0.021	18.047	82.7
345-99	Opx-ol gabbro	1415P	60.020	39.564	0.023	0.000	0.013	16.727	0.230	44.612	0.000	0.007	0.008	0.156	101.340	5.935	0.003	0.000	0.002	2.098	0.029	9.975	0.000	0.000	0.000	0.019	18.064	82.6
345-99	Opx-ol gabbro	1415P	60.020	39.814	0.004	0.018	0.015	16.164	0.248	44.785	0.000	0.009	0.002	0.158	101.217	5.961	0.001	0.003	0.002	2.024	0.033	9.995	0.000	0.000	0.000	0.019	18.038	83.1
345-70	Opx-ol gabbro	1415P	18.180	39.701	0.000	0.021	0.000	17.025	0.272	44.249	0.002	0.018	0.000	0.172	101.460	5.954	0.000	0.004	0.000	2.135	0.034	9.893	0.000	0.000	0.000	0.021	18.047	82.2
345-70	Opx-ol gabbro	1415P	18.180	39.437	0.000	0.000	0.011	17.295	0.269	44.426	0.017	0.011	0.003	0.153	101.622	5.917	0.000	0.000	0.001	2.170	0.034	9.936	0.000	0.000	0.000	0.018	18.084	82.0
345-70	Opx-ol gabbro	1415P	18.180	39.258	0.000	0.007	0.000	16.967	0.254	43.891	0.000	0.000	0.000	0.158	100.535	5.945	0.000	0.001	0.000	2.149	0.033	9.908	0.000	0.000	0.000	0.019	18.054	82.1
345-70	Opx-ol gabbro	1415P	18.180	39.426	0.056	0.003	0.030	16.883	0.271	44.622	0.000	0.000	0.006	0.163	101.460	5.915	0.006	0.001	0.004	2.118	0.035	9.979	0.000	0.000	0.001	0.020	18.078	82.4

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-70	Opx-ol gabbro	1415P	18.180	39.544	0.003	0.009	0.000	16.959	0.247	44.732	0.023	0.001	0.001	0.168	101.687	5.919	0.000	0.002	0.000	2.123	0.031	9.981	0.004	0.000	0.000	0.020	18.080	82.4
345-70	Opx-ol gabbro	1415P	18.180	39.593	0.016	0.000	0.000	16.685	0.267	44.422	0.000	0.000	0.000	0.171	101.154	5.948	0.002	0.000	0.000	2.096	0.034	9.949	0.000	0.000	0.000	0.021	18.050	82.5
345-70	Opx-ol gabbro	1415P	18.180	39.794	0.000	0.008	0.015	16.693	0.238	44.177	0.000	0.000	0.006	0.163	101.094	5.978	0.000	0.002	0.002	2.097	0.030	9.892	0.000	0.000	0.001	0.020	18.021	82.5
345-70	Opx-ol gabbro	1415P	18.180	39.875	0.012	0.001	0.000	17.208	0.279	44.188	0.000	0.000	0.000	0.154	101.717	5.967	0.001	0.000	0.000	2.154	0.034	9.857	0.000	0.000	0.000	0.019	18.032	82.0
345-70	Opx-ol gabbro	1415P	18.180	40.178	0.010	0.028	0.000	17.092	0.291	44.263	0.000	0.000	0.000	0.145	102.007	5.987	0.001	0.005	0.000	2.130	0.037	9.832	0.000	0.000	0.000	0.017	18.010	82.1
345-70	Opx-ol gabbro	1415P	18.180	40.145	0.016	0.000	0.000	16.892	0.251	44.381	0.000	0.000	0.007	0.148	101.840	5.987	0.002	0.000	0.000	2.107	0.036	9.866	0.000	0.000	0.001	0.018	18.012	82.4
345-70	Opx-ol gabbro	1415P	18.180	39.802	0.000	0.012	0.000	17.000	0.299	44.265	0.000	0.000	0.003	0.149	101.530	5.963	0.000	0.002	0.000	2.130	0.038	9.885	0.000	0.000	0.001	0.018	18.037	82.2
345-70	Opx-ol gabbro	1415P	18.180	39.855	0.000	0.000	0.019	17.010	0.268	43.853	0.002	0.030	0.005	0.145	101.187	5.989	0.000	0.000	0.002	2.138	0.034	9.824	0.000	0.009	0.001	0.018	18.015	82.1
345-70	Opx-ol gabbro	1415P	18.180	39.941	0.000	0.024	0.032	17.143	0.275	44.221	0.010	0.000	0.000	0.150	101.796	5.969	0.000	0.004	0.004	2.143	0.035	9.852	0.002	0.000	0.000	0.018	18.027	82.1
345-70	Opx-ol gabbro	1415P	18.180	39.782	0.007	0.000	0.000	17.144	0.299	43.939	0.000	0.003	0.000	0.146	101.320	5.975	0.001	0.000	0.000	2.154	0.038	9.838	0.000	0.001	0.000	0.018	18.025	82.0
345-70	Opx-ol gabbro	1415P	18.180	39.614	0.004	0.036	0.015	16.931	0.285	44.235	0.012	0.000	0.000	0.162	101.294	5.950	0.000	0.006	0.002	2.127	0.036	9.904	0.000	0.000	0.000	0.020	18.046	82.3
345-70	Opx-ol gabbro	1415P	18.180	39.653	0.041	0.027	0.013	16.451	0.280	44.971	0.000	0.000	0.006	0.131	101.573	5.927	0.005	0.005	0.002	2.056	0.036	10.020	0.000	0.000	0.001	0.016	18.066	82.9
345-70	Opx-ol gabbro	1415P	18.180	39.667	0.020	0.000	0.004	16.535	0.263	44.326	0.000	0.000	0.000	0.149	100.964	5.964	0.002	0.000	0.000	2.079	0.034	9.935	0.000	0.000	0.000	0.018	18.033	82.6
345-70	Opx-ol gabbro	1415P	18.180	39.738	0.007	0.025	0.000	16.101	0.252	44.267	0.004	0.003	0.004	0.151	100.552	5.986	0.001	0.004	0.000	2.028	0.038	9.940	0.000	0.001	0.001	0.018	18.012	83.0
345-70	Opx-ol gabbro	1415P	18.180	39.898	0.000	0.040	0.000	16.794	0.255	44.419	0.010	0.026	0.000	0.157	101.599	5.966	0.000	0.007	0.000	2.100	0.032	9.901	0.000	0.000	0.000	0.019	18.034	82.5
345-81	Opx-ol gabbro	1415P	32.100	39.641	0.000	0.000	0.000	17.549	0.279	43.876	0.030	0.019	0.000	0.157	101.551	5.954	0.000	0.000	0.000	2.205	0.036	9.825	0.000	0.000	0.000	0.019	18.049	81.6
345-81	Opx-ol gabbro	1415P	32.100	39.607	0.000	0.011	0.010	17.126	0.274	44.373	0.027	0.000	0.009	0.167	101.604	5.937	0.000	0.002	0.001	2.147	0.035	9.915	0.000	0.000	0.000	0.020	18.063	82.2
345-81	Opx-ol gabbro	1415P	32.100	39.819	0.017	0.001	0.002	16.993	0.245	44.738	0.000	0.030	0.000	0.137	101.982	5.939	0.002	0.000	0.000	2.120	0.031	9.947	0.000	0.000	0.000	0.017	18.064	82.4
345-81	Opx-ol gabbro	1415P	32.100	40.034	0.000	0.000	0.000	16.819	0.212	44.767	0.014	0.019	0.000	0.141	102.006	5.961	0.000	0.000	0.000	2.094	0.027	9.936	0.000	0.000	0.000	0.017	18.042	82.5
345-74	Opx-ol gabbro	1415P	23.990	39.766	0.012	0.039	0.000	14.895	0.233	45.611	0.008	0.000	0.000	0.167	100.731	5.950	0.001	0.007	0.000	1.864	0.034	10.173	0.001	0.000	0.000	0.020	18.046	84.5
345-74	Opx-ol gabbro	1415P	23.990	40.083	0.018	0.000	0.000	14.804	0.238	45.848	0.003	0.000	0.007	0.164	101.165	5.966	0.002	0.000	0.000	1.843	0.033	10.172	0.001	0.000	0.001	0.020	18.033	84.6
345-84	Opx-ol gabbro	1415P	37.200	39.768	0.130	0.000	0.000	15.143	0.238	45.404	0.006	0.010	0.000	0.176	100.875	5.949	0.015	0.000	0.000	1.894	0.034	10.125	0.001	0.003	0.000	0.021	18.038	84.2
345-84	Opx-ol gabbro	1415P	37.200	40.019	0.034	0.005	0.017	14.947	0.237	46.096	0.000	0.000	0.008	0.139	101.502	5.942	0.004	0.001	0.002	1.856	0.033	10.202	0.000	0.000	0.000	0.017	18.054	84.6
345-84	Opx-ol gabbro	1415P	37.200	40.031	0.000	0.002	0.011	15.236	0.248	45.614	0.014	0.000	0.004	0.157	101.317	5.961	0.000	0.000	0.001	1.898	0.031	10.125	0.002	0.000	0.001	0.019	18.039	84.2
345-84	Opx-ol gabbro	1415P	37.200	40.067	0.010	0.013	0.000	14.857	0.253	45.496	0.015	0.000	0.000	0.153	100.864	5.981	0.001	0.002	0.000	1.855	0.032	10.124	0.000	0.000	0.000	0.018	18.017	84.5
345-84	Opx-ol gabbro	1415P	37.200	40.067	0.021	0.000	0.000	15.104	0.250	45.779	0.008	0.007	0.009	0.160	101.405	5.958	0.002	0.000	0.000	1.878	0.032	10.147	0.001	0.002	0.002	0.019	18.042	84.3
345-84	Opx-ol gabbro	1415P	37.200	40.045	0.000	0.000	0.012	15.196	0.234	45.388	0.013	0.016	0.000	0.144	101.048	5.976	0.000	0.000	0.000	1.897	0.033	10.098	0.002	0.005	0.000	0.017	18.026	84.1
345-84	Opx-ol gabbro	1415P	37.200	39.873	0.000	0.010	0.001	14.960	0.262	44.914	0.006	0.033	0.000	0.161	100.220	5.995	0.000	0.002	0.000	1.881	0.033	10.067	0.001	0.000	0.000	0.019	18.009	84.2
345-84	Opx-ol gabbro	1415P	37.200	39.894	0.000	0.022	0.021	15.265	0.239	45.531	0.001	0.021	0.014	0.139	101.147	5.953	0.000	0.004	0.003	1.905	0.033	10.128	0.000	0.006	0.003	0.017	18.048	84.1
345-84	Opx-ol gabbro	1415P	37.200	40.014	0.000	0.014	0.000	15.042	0.241	45.398	0.011	0.000	0.000	0.153	100.873	5.978	0.000	0.003	0.000	1.879	0.031	10.102	0.000	0.000	0.000	0.018	18.021	84.3
345-84	Opx-ol gabbro	1415P	37.200	39.915	0.007	0.011	0.000	15.340	0.259	45.236	0.006	0.000	0.002	0.176	100.952	5.969	0.001	0.002	0.000	1.919	0.033	10.084	0.001	0.000	0.000	0.021	18.030	84.0
345-84	Opx-ol gabbro	1415P	37.200	39.799	0.008	0.016	0.000	15.300	0.229	45.439	0.021	0.007	0.000	0.156	100.975	5.951	0.001	0.003	0.000	1.913	0.029	10.128	0.000	0.000	0.000	0.019	18.048	84.1
345-84	Opx-ol gabbro	1415P	37.200	40.004	0.025	0.011	0.000	15.346	0.258	45.661	0.017	0.000	0.000	0.145	101.467	5.952	0.003	0.002	0.000	1.910	0.033	10.127	0.000	0.000	0.000	0.017	18.045	84.1

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-84	Opx-ol gabbro	1415P	37.200	39.931	0.030	0.020	0.000	15.206	0.247	45.613	0.000	0.000	0.000	0.173	101.220	5.952	0.003	0.003	0.000	1.896	0.031	10.136	0.000	0.000	0.000	0.021	18.042	84.2
345-84	Opx-ol gabbro	1415P	37.200	39.397	0.000	0.011	0.000	14.788	0.236	45.008	0.006	0.000	0.001	0.164	99.611	5.961	0.000	0.002	0.000	1.871	0.030	10.152	0.001	0.000	0.000	0.020	18.038	84.4
345-84	Opx-ol gabbro	1415P	37.200	39.914	0.018	0.002	0.013	15.017	0.227	45.224	0.000	0.003	0.002	0.146	100.566	5.981	0.002	0.000	0.002	1.882	0.029	10.102	0.000	0.001	0.000	0.018	18.017	84.2

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Clinopyroxene (ODP Leg 147)																												
147-03	Gabbronorite	894G	0.00	51.81	0.65	1.61	0.02	10.67	0.25	14.51	19.55	0.31	0.00	0.00	99.37	7.80	0.07	0.29	0.00	1.34	0.03	3.25	3.15	0.09	0.00	0.00	16.03	70.
147-03	Gabbronorite	894G	0.00	52.02	0.64	1.69	0.05	10.75	0.28	14.72	19.89	0.34	0.01	0.01	100.39	7.76	0.07	0.30	0.01	1.34	0.04	3.27	3.18	0.10	0.00	0.00	16.07	70.
147-03	Gabbronorite	894G	0.00	51.94	0.61	1.59	0.05	10.51	0.29	14.53	20.25	0.36	0.00	0.02	100.14	7.77	0.07	0.28	0.01	1.32	0.04	3.24	3.25	0.10	0.00	0.00	16.07	71.
147-03	Gabbronorite	894G	0.00	52.54	0.32	1.15	0.00	9.09	0.29	14.43	21.58	0.26	0.00	0.01	99.67	7.86	0.04	0.20	0.00	1.14	0.04	3.22	3.46	0.07	0.00	0.00	16.03	73.
147-03	Gabbronorite	894G	0.00	52.36	0.50	1.44	0.05	9.31	0.28	14.19	21.94	0.29	0.00	0.01	100.37	7.80	0.06	0.25	0.01	1.16	0.04	3.15	3.50	0.08	0.00	0.00	16.06	73.
147-03	Gabbronorite	894G	0.00	51.78	0.72	1.76	0.04	10.96	0.32	14.71	19.61	0.36	0.00	0.01	100.26	7.74	0.08	0.31	0.01	1.37	0.04	3.28	3.14	0.10	0.00	0.00	16.07	70.
147-03	Gabbronorite	894G	0.00	51.28	0.75	1.70	0.07	10.28	0.29	14.31	20.45	0.33	0.00	0.02	99.48	7.73	0.08	0.30	0.01	1.30	0.04	3.22	3.30	0.10	0.00	0.00	16.08	71.
147-03	Gabbronorite	894G	0.00	51.62	0.65	1.72	0.08	10.21	0.27	14.70	20.32	0.32	0.00	0.03	99.90	7.74	0.07	0.30	0.01	1.28	0.03	3.28	3.26	0.09	0.00	0.00	16.08	71.
147-03	Gabbronorite	894G	0.00	51.90	0.74	1.89	0.07	10.05	0.26	14.53	20.56	0.34	0.00	0.02	100.36	7.74	0.08	0.33	0.01	1.25	0.03	3.23	3.28	0.10	0.00	0.00	16.06	72.
147-03	Gabbronorite	894G	0.00	51.60	0.85	2.02	0.02	10.68	0.27	14.85	19.71	0.32	0.01	0.02	100.36	7.70	0.10	0.36	0.00	1.33	0.03	3.30	3.15	0.09	0.00	0.00	16.07	71.
147-03	Gabbronorite	894G	0.00	51.79	0.71	1.81	0.03	10.07	0.27	14.76	20.20	0.31	0.00	0.03	99.98	7.74	0.08	0.32	0.00	1.26	0.03	3.29	3.24	0.09	0.00	0.00	16.06	72.
147-03	Gabbronorite	894G	0.00	51.86	0.58	1.60	0.09	9.48	0.26	14.83	20.88	0.31	0.00	0.01	99.89	7.76	0.06	0.28	0.01	1.19	0.03	3.31	3.35	0.09	0.00	0.00	16.08	73.
147-03	Gabbronorite	894G	0.00	51.61	0.77	1.74	0.07	10.20	0.28	14.81	20.20	0.34	0.00	0.00	100.00	7.73	0.09	0.31	0.01	1.28	0.04	3.30	3.24	0.10	0.00	0.00	16.08	72.
147-03	Gabbronorite	894G	0.00	51.72	0.76	1.82	0.09	10.76	0.27	14.59	19.73	0.32	0.00	0.02	100.09	7.74	0.09	0.32	0.01	1.35	0.03	3.25	3.16	0.09	0.00	0.00	16.06	70.
147-03	Gabbronorite	894G	0.00	52.06	0.63	1.70	0.08	10.74	0.27	14.74	19.75	0.31	0.00	0.00	100.29	7.77	0.07	0.30	0.01	1.34	0.03	3.28	3.16	0.09	0.00	0.00	16.05	70.
147-03	Gabbronorite	894G	0.00	51.53	0.67	1.75	0.09	10.60	0.27	14.58	20.28	0.32	0.00	0.00	100.09	7.72	0.08	0.31	0.01	1.33	0.03	3.26	3.26	0.09	0.00	0.00	16.09	71.
147-03	Gabbronorite	894G	0.00	51.90	0.61	1.63	0.04	10.81	0.24	14.86	19.75	0.28	0.01	0.02	100.14	7.76	0.07	0.29	0.00	1.35	0.03	3.31	3.17	0.08	0.00	0.00	16.07	71.
147-03	Gabbronorite	894G	0.00	51.55	0.67	1.69	0.07	10.68	0.28	14.50	19.58	0.34	0.00	0.01	99.36	7.77	0.08	0.30	0.01	1.35	0.04	3.26	3.16	0.10	0.00	0.00	16.05	70.
147-03	Gabbronorite	894G	0.00	51.90	0.76	1.89	0.11	10.69	0.28	14.77	19.88	0.34	0.01	0.02	100.64	7.72	0.08	0.33	0.01	1.33	0.04	3.28	3.17	0.10	0.00	0.00	16.07	71.
147-03	Gabbronorite	894G	0.00	51.89	0.72	1.74	0.05	11.12	0.32	14.75	19.61	0.32	0.00	0.04	100.54	7.74	0.08	0.31	0.01	1.39	0.04	3.28	3.13	0.09	0.00	0.00	16.07	70.
147-01	Opx-ol gabbro	894G	0.00	52.54	0.82	2.28	0.07	9.49	0.24	15.27	20.23	0.36	0.00	0.01	101.31	7.72	0.09	0.40	0.01	1.17	0.03	3.34	3.18	0.10	0.00	0.00	16.04	74.
147-01	Opx-ol gabbro	894G	0.00	52.47	0.83	2.26	0.12	9.82	0.25	15.18	20.29	0.36	0.00	0.00	101.57	7.70	0.09	0.39	0.01	1.21	0.03	3.32	3.19	0.10	0.00	0.00	16.05	73.
147-01	Opx-ol gabbro	894G	0.00	52.12	0.83	2.24	0.13	9.20	0.27	14.89	20.54	0.35	0.01	0.01	100.58	7.72	0.09	0.39	0.02	1.14	0.03	3.29	3.26	0.10	0.00	0.00	16.04	74.
147-01	Opx-ol gabbro	894G	0.00	52.58	0.92	2.18	0.10	9.05	0.29	14.40	21.58	0.37	0.00	0.02	101.49	7.73	0.10	0.38	0.01	1.11	0.04	3.16	3.40	0.10	0.00	0.00	16.03	73.
147-01	Opx-ol gabbro	894G	0.00	52.54	0.89	2.27	0.11	9.76	0.28	15.10	19.99	0.33	0.00	0.02	101.28	7.73	0.10	0.39	0.01	1.20	0.03	3.31	3.15	0.09	0.00	0.00	16.02	73.
147-01	Opx-ol gabbro	894G	0.00	52.55	0.80	2.10	0.10	9.92	0.28	15.70	19.30	0.35	0.00	0.03	101.12	7.73	0.09	0.36	0.01	1.22	0.03	3.44	3.04	0.10	0.00	0.00	16.04	73.
147-01	Opx-ol gabbro	894G	0.00	52.03	0.83	2.27	0.11	9.68	0.25	15.15	19.92	0.31	0.00	0.04	100.59	7.71	0.09	0.40	0.01	1.20	0.03	3.34	3.16	0.09	0.00	0.01	16.04	73.
147-01	Opx-ol gabbro	894G	0.00	52.40	0.80	2.08	0.12	9.36	0.25	15.10	20.51	0.36	0.00	0.04	101.00	7.73	0.09	0.36	0.01	1.15	0.03	3.32	3.24	0.10	0.00	0.00	16.05	74.
147-01	Opx-ol gabbro	894G	0.00	52.64	0.25	4.80	0.02	12.93	0.30	18.53	9.48	0.90	0.09	0.02	99.96	7.71	0.03	0.83	0.00	1.58	0.04	4.04	1.49	0.26	0.02	0.00	15.99	71.
147-01	Opx-ol gabbro	894G	0.00	52.74	0.69	2.14	0.13	9.50	0.25	15.13	20.10	0.36	0.00	0.01	101.04	7.76	0.08	0.37	0.02	1.17	0.03	3.32	3.17	0.10	0.00	0.00	16.02	73.
147-01	Opx-ol gabbro	894G	0.00	52.87	0.72	2.09	0.15	9.58	0.26	15.28	20.32	0.35	0.00	0.01	101.61	7.75	0.08	0.36	0.02	1.17	0.03	3.34	3.19	0.10	0.00	0.00	16.04	73.
147-01	Opx-ol gabbro	894G	0.00	52.61	0.73	2.20	0.15	9.75	0.25	15.57	19.84	0.34	0.01	0.00	101.44	7.72	0.08	0.38	0.02	1.20	0.03	3.41	3.12	0.10	0.00	0.00	16.05	74.
147-01	Opx-ol gabbro	894G	0.00	52.71	0.87	2.14	0.11	9.07	0.23	15.19	20.75	0.36	0.00	0.00	101.43	7.73	0.10	0.37	0.01	1.11	0.03	3.32	3.26	0.10	0.00	0.00	16.03	74.
147-01	Opx-ol gabbro	894G	0.00	52.26	0.90	2.23	0.14	9.11	0.25	14.96	20.67	0.34	0.00	0.03	100.90	7.71	0.10	0.39	0.02	1.12	0.03	3.29	3.27	0.10	0.00	0.00	16.03	74.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-01	Opx-ol gabbro	894G	0.00	52.39	0.85	2.06	0.14	9.06	0.24	14.95	20.64	0.33	0.00	0.00	100.64	7.75	0.09	0.36	0.02	1.12	0.03	3.29	3.27	0.09	0.00	0.00	16.02	74.
147-01	Opx-ol gabbro	894G	0.00	52.65	0.74	1.98	0.17	9.35	0.24	15.22	20.43	0.39	0.01	0.04	101.19	7.75	0.08	0.34	0.02	1.15	0.03	3.34	3.22	0.11	0.00	0.00	16.05	74.
147-01	Opx-ol gabbro	894G	0.00	52.63	0.64	2.16	0.18	9.35	0.27	15.35	20.32	0.37	0.00	0.00	101.26	7.73	0.07	0.37	0.02	1.15	0.03	3.36	3.20	0.10	0.00	0.00	16.05	74.
147-01	Opx-ol gabbro	894G	0.00	52.62	0.67	2.31	0.19	9.33	0.24	15.25	20.52	0.36	0.00	0.01	101.48	7.72	0.07	0.40	0.02	1.14	0.03	3.34	3.22	0.10	0.00	0.00	16.05	74.
147-01	Opx-ol gabbro	894G	0.00	52.35	0.90	2.38	0.15	9.78	0.24	15.28	19.17	0.36	0.00	0.00	100.61	7.73	0.10	0.41	0.02	1.21	0.03	3.37	3.03	0.10	0.00	0.00	16.01	73.
147-01	Opx-ol gabbro	894G	0.00	52.62	0.82	2.23	0.12	9.64	0.28	15.27	20.07	0.34	0.00	0.01	101.40	7.73	0.09	0.39	0.01	1.18	0.03	3.34	3.16	0.10	0.00	0.00	16.03	73.
147-01	Opx-ol gabbro	894G	0.00	52.84	0.81	2.15	0.11	9.29	0.26	15.10	20.46	0.35	0.00	0.04	101.41	7.75	0.09	0.37	0.01	1.14	0.03	3.30	3.22	0.10	0.00	0.00	16.02	74.
147-01	Opx-ol gabbro	894G	0.00	52.31	0.97	2.23	0.08	10.22	0.29	15.65	19.35	0.34	0.00	0.01	101.45	7.69	0.11	0.39	0.01	1.26	0.04	3.43	3.05	0.10	0.00	0.00	16.06	73.
147-01	Opx-ol gabbro	894G	0.00	51.98	0.71	2.54	0.13	9.54	0.27	15.52	19.63	0.33	0.02	0.00	100.66	7.68	0.08	0.44	0.01	1.18	0.03	3.42	3.11	0.09	0.00	0.00	16.06	74.
147-04	Opx-ol gabbro	894G	0.00	52.41	0.61	2.12	0.20	8.45	0.23	15.55	20.40	0.36	0.00	0.00	100.32	7.75	0.07	0.37	0.02	1.04	0.03	3.43	3.23	0.10	0.00	0.00	16.04	76.
147-04	Opx-ol gabbro	894G	0.00	52.32	0.66	2.04	0.22	8.22	0.21	15.57	20.69	0.33	0.00	0.03	100.28	7.74	0.07	0.36	0.03	1.02	0.03	3.43	3.28	0.10	0.00	0.00	16.05	77.
147-04	Opx-ol gabbro	894G	0.00	51.75	0.43	2.55	0.17	8.39	0.23	15.76	19.72	0.35	0.01	0.00	99.37	7.71	0.05	0.45	0.02	1.05	0.03	3.50	3.15	0.10	0.00	0.00	16.06	76.
147-04	Opx-ol gabbro	894G	0.00	52.17	0.70	2.29	0.24	8.51	0.24	15.23	20.51	0.37	0.01	0.01	100.27	7.72	0.08	0.40	0.03	1.05	0.03	3.36	3.25	0.11	0.00	0.00	16.04	76.
147-04	Opx-ol gabbro	894G	0.00	52.07	0.80	2.18	0.22	9.23	0.26	15.43	19.85	0.37	0.00	0.00	100.42	7.71	0.09	0.38	0.03	1.14	0.03	3.41	3.15	0.11	0.00	0.00	16.05	74.
147-04	Opx-ol gabbro	894G	0.00	51.68	0.83	2.25	0.16	8.89	0.22	14.97	20.45	0.38	0.00	0.03	99.87	7.70	0.09	0.40	0.02	1.11	0.03	3.32	3.27	0.11	0.00	0.00	16.05	74.
147-04	Opx-ol gabbro	894G	0.00	51.66	1.33	2.02	0.11	9.41	0.29	14.97	20.62	0.32	0.01	0.01	100.75	7.66	0.15	0.35	0.01	1.17	0.04	3.31	3.28	0.09	0.00	0.00	16.06	73.
147-04	Opx-ol gabbro	894G	0.00	52.21	0.76	2.20	0.09	9.30	0.27	15.53	20.19	0.36	0.00	0.02	100.93	7.70	0.08	0.38	0.01	1.15	0.03	3.41	3.19	0.10	0.00	0.00	16.07	74.
147-04	Opx-ol gabbro	894G	0.00	52.31	0.76	2.10	0.12	9.40	0.23	15.40	19.67	0.34	0.00	0.03	100.35	7.75	0.08	0.37	0.01	1.16	0.03	3.40	3.12	0.10	0.00	0.00	16.03	74.
147-04	Opx-ol gabbro	894G	0.00	52.31	0.64	2.15	0.11	9.06	0.23	15.60	20.00	0.36	0.01	0.01	100.48	7.73	0.07	0.37	0.01	1.12	0.03	3.44	3.17	0.10	0.00	0.00	16.05	75.
147-04	Opx-ol gabbro	894G	0.00	53.18	0.51	1.73	0.13	13.31	0.31	18.87	13.10	0.25	0.01	0.02	101.42	7.77	0.06	0.30	0.02	1.63	0.04	4.11	2.05	0.07	0.00	0.00	16.05	71.
147-04	Opx-ol gabbro	894G	0.00	52.55	0.49	1.94	0.19	8.27	0.24	15.82	20.24	0.34	0.00	0.01	100.11	7.77	0.06	0.34	0.02	1.02	0.03	3.49	3.21	0.10	0.00	0.00	16.04	77.
147-04	Opx-ol gabbro	894G	0.00	52.29	0.51	1.89	0.08	8.65	0.24	15.58	20.70	0.35	0.01	0.03	100.31	7.75	0.06	0.33	0.01	1.07	0.03	3.44	3.29	0.10	0.00	0.00	16.08	76.
147-04	Opx-ol gabbro	894G	0.00	52.87	0.50	1.90	0.37	8.40	0.24	15.79	20.27	0.36	0.00	0.00	100.70	7.78	0.06	0.33	0.04	1.03	0.03	3.46	3.20	0.10	0.00	0.00	16.03	77.
147-04	Opx-ol gabbro	894G	0.00	52.62	0.50	1.93	0.35	8.32	0.23	15.79	20.18	0.36	0.00	0.00	100.27	7.77	0.06	0.34	0.04	1.03	0.03	3.48	3.19	0.10	0.00	0.00	16.04	77.
147-04	Opx-ol gabbro	894G	0.00	52.04	0.58	2.29	0.54	8.23	0.22	15.62	19.93	0.34	0.00	0.01	99.79	7.73	0.06	0.40	0.06	1.02	0.03	3.46	3.17	0.10	0.00	0.00	16.03	77.
147-04	Opx-ol gabbro	894G	0.00	51.47	0.67	3.14	0.60	8.67	0.24	15.30	19.84	0.40	0.00	0.02	100.37	7.62	0.07	0.55	0.07	1.07	0.03	3.38	3.15	0.12	0.00	0.00	16.06	75.
147-04	Opx-ol gabbro	894G	0.00	51.77	0.88	2.28	0.11	8.96	0.24	15.40	20.25	0.37	0.00	0.02	100.29	7.68	0.10	0.40	0.01	1.11	0.03	3.41	3.22	0.11	0.00	0.00	16.07	75.
147-04	Opx-ol gabbro	894G	0.00	51.67	0.90	2.28	0.12	8.74	0.24	15.09	20.47	0.37	0.00	0.02	99.90	7.69	0.10	0.40	0.01	1.09	0.03	3.35	3.27	0.11	0.00	0.00	16.05	75.
147-04	Opx-ol gabbro	894G	0.00	52.74	0.59	2.08	0.18	7.80	0.20	16.05	20.48	0.33	0.00	0.01	100.46	7.76	0.07	0.36	0.02	0.96	0.03	3.52	3.23	0.09	0.00	0.00	16.03	78.
147-04	Opx-ol gabbro	894G	0.00	52.39	0.63	2.23	0.16	7.86	0.20	15.81	20.72	0.33	0.01	0.00	100.33	7.73	0.07	0.39	0.02	0.97	0.03	3.48	3.28	0.09	0.00	0.00	16.05	78.
147-04	Opx-ol gabbro	894G	0.00	52.60	0.58	1.75	0.25	10.94	0.26	17.89	15.82	0.28	0.00	0.00	100.37	7.76	0.06	0.30	0.03	1.35	0.03	3.93	2.50	0.08	0.00	0.00	16.05	74.
147-04	Opx-ol gabbro	894G	0.00	52.27	0.69	2.01	0.26	8.78	0.24	15.46	20.48	0.34	0.00	0.02	100.54	7.73	0.08	0.35	0.03	1.09	0.03	3.41	3.25	0.10	0.00	0.00	16.05	75.
147-04	Opx-ol gabbro	894G	0.00	51.83	0.78	2.52	0.10	8.88	0.22	15.34	19.53	0.45	0.02	0.02	99.67	7.71	0.09	0.44	0.01	1.11	0.03	3.40	3.11	0.13	0.00	0.00	16.04	75.
147-04	Opx-ol gabbro	894G	0.00	51.75	0.87	2.21	0.09	8.98	0.23	15.09	20.52	0.36	0.00	0.02	100.10	7.70	0.10	0.39	0.01	1.12	0.03	3.35	3.27	0.10	0.00	0.00	16.06	74.
147-04	Opx-ol gabbro	894G	0.00	51.56	0.82	2.23	0.08	8.80	0.25	14.83	20.60	0.34	0.01	0.02	99.52	7.71	0.09	0.39	0.01	1.10	0.03	3.31	3.30	0.10	0.00	0.00	16.05	75.
147-04	Opx-ol gabbro	894G	0.00	51.66	0.91	2.38	0.08	8.77	0.19	15.18	20.41	0.36	0.00	0.02	99.94	7.69	0.10	0.42	0.01	1.09	0.02	3.37	3.25	0.10	0.00	0.00	16.05	75.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-04	Opx-ol gabbro	894G	0.00	52.00	0.84	2.49	0.09	10.49	0.27	16.15	16.23	0.37	0.00	0.03	98.97	7.77	0.09	0.44	0.01	1.31	0.03	3.60	2.60	0.11	0.00	0.00	15.97	73.
147-04	Opx-ol gabbro	894G	0.00	52.62	0.45	1.95	0.58	8.82	0.19	17.19	17.92	0.31	0.00	0.01	100.03	7.76	0.05	0.34	0.07	1.09	0.02	3.78	2.83	0.09	0.00	0.00	16.03	77.
147-04	Opx-ol gabbro	894G	0.00	52.47	0.44	2.18	0.68	8.02	0.23	15.79	20.33	0.39	0.00	0.00	100.51	7.73	0.05	0.38	0.08	0.99	0.03	3.47	3.21	0.11	0.00	0.00	16.05	77.
147-04	Opx-ol gabbro	894G	0.00	52.64	0.46	2.02	0.68	6.72	0.19	16.07	21.16	0.38	0.00	0.02	100.32	7.75	0.05	0.35	0.08	0.83	0.02	3.52	3.34	0.11	0.00	0.00	16.04	81.
147-04	Opx-ol gabbro	894G	0.00	52.14	0.65	2.00	0.14	9.12	0.28	15.35	20.17	0.36	0.00	0.00	100.21	7.74	0.07	0.35	0.02	1.13	0.03	3.40	3.21	0.10	0.00	0.00	16.06	74.
147-04	Opx-ol gabbro	894G	0.00	50.94	0.75	4.16	0.27	9.12	0.21	15.47	17.41	0.72	0.06	0.00	99.11	7.60	0.08	0.73	0.03	1.14	0.03	3.44	2.78	0.21	0.01	0.00	16.05	75.
147-04	Opx-ol gabbro	894G	0.00	51.15	0.62	2.67	0.39	8.18	0.21	15.86	20.20	0.36	0.00	0.01	99.66	7.62	0.07	0.47	0.05	1.02	0.03	3.52	3.22	0.10	0.00	0.00	16.10	77.
147-04	Opx-ol gabbro	894G	0.00	51.96	0.67	2.98	0.47	7.03	0.16	15.96	20.61	0.36	0.00	0.01	100.21	7.65	0.07	0.52	0.05	0.87	0.02	3.50	3.25	0.10	0.00	0.00	16.04	80.
147-04	Opx-ol gabbro	894G	0.00	53.20	0.48	1.92	0.31	8.44	0.22	16.05	20.08	0.33	0.00	0.03	101.07	7.79	0.05	0.33	0.04	1.03	0.03	3.50	3.15	0.09	0.00	0.00	16.02	77.
147-04	Opx-ol gabbro	894G	0.00	52.47	0.56	2.26	0.22	8.51	0.23	15.66	20.31	0.35	0.00	0.04	100.61	7.73	0.06	0.39	0.03	1.05	0.03	3.44	3.21	0.10	0.00	0.00	16.04	76.
147-06	Opx-ol gabbro	894G	0.00	52.30	0.80	1.97	0.05	9.79	0.26	14.91	20.09	0.30	0.00	0.00	100.47	7.76	0.09	0.34	0.01	1.21	0.03	3.30	3.19	0.09	0.00	0.00	16.02	73.
147-06	Opx-ol gabbro	894G	0.00	52.15	0.77	1.91	0.06	9.68	0.26	15.14	20.05	0.32	0.00	0.01	100.35	7.75	0.09	0.33	0.01	1.20	0.03	3.35	3.19	0.09	0.00	0.00	16.04	73.
147-06	Opx-ol gabbro	894G	0.00	51.67	0.87	2.36	0.10	9.60	0.23	14.83	20.18	0.34	0.00	0.00	100.18	7.69	0.10	0.41	0.01	1.20	0.03	3.29	3.22	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	51.74	0.83	2.24	0.06	9.57	0.26	14.89	20.32	0.33	0.00	0.01	100.24	7.70	0.09	0.39	0.01	1.19	0.03	3.30	3.24	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	52.58	0.72	1.97	0.16	8.85	0.23	14.72	21.43	0.38	0.00	0.02	101.04	7.75	0.08	0.34	0.02	1.09	0.03	3.24	3.38	0.11	0.00	0.00	16.04	74.
147-06	Opx-ol gabbro	894G	0.00	52.82	0.56	2.13	0.12	9.54	0.21	16.19	17.19	0.36	0.01	0.03	99.18	7.85	0.06	0.37	0.01	1.19	0.03	3.59	2.74	0.10	0.00	0.00	15.95	75.
147-06	Opx-ol gabbro	894G	0.00	50.80	0.73	2.17	0.20	8.94	0.31	14.59	20.65	0.38	0.02	0.01	98.80	7.68	0.08	0.39	0.02	1.13	0.04	3.29	3.34	0.11	0.00	0.00	16.09	74.
147-06	Opx-ol gabbro	894G	0.00	52.26	0.57	2.07	0.23	8.40	0.23	15.32	20.90	0.27	0.00	0.00	100.25	7.74	0.06	0.36	0.03	1.04	0.03	3.38	3.32	0.08	0.00	0.00	16.04	76.
147-06	Opx-ol gabbro	894G	0.00	52.42	0.57	2.23	0.26	8.52	0.22	15.57	20.55	0.31	0.00	0.04	100.67	7.73	0.06	0.39	0.03	1.05	0.03	3.42	3.25	0.09	0.00	0.00	16.04	76.
147-06	Opx-ol gabbro	894G	0.00	52.26	0.57	2.18	0.32	8.44	0.25	15.67	20.28	0.30	0.00	0.00	100.27	7.73	0.06	0.38	0.04	1.04	0.03	3.45	3.21	0.09	0.00	0.00	16.04	76.
147-06	Opx-ol gabbro	894G	0.00	51.43	0.77	2.68	0.17	10.61	0.23	14.73	18.60	0.54	0.02	0.02	99.79	7.69	0.09	0.47	0.02	1.33	0.03	3.28	2.98	0.16	0.00	0.00	16.05	71.
147-06	Opx-ol gabbro	894G	0.00	51.93	0.76	2.04	0.13	9.49	0.25	14.85	20.44	0.34	0.01	0.02	100.26	7.73	0.09	0.36	0.02	1.18	0.03	3.29	3.26	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	51.90	0.83	2.08	0.18	10.09	0.27	15.04	19.68	0.33	0.00	0.00	100.39	7.72	0.09	0.36	0.02	1.26	0.03	3.33	3.14	0.10	0.00	0.00	16.05	72.
147-06	Opx-ol gabbro	894G	0.00	52.01	0.64	2.01	0.13	8.74	0.29	14.55	21.19	0.36	0.01	0.01	99.92	7.75	0.07	0.35	0.02	1.09	0.04	3.23	3.39	0.10	0.00	0.00	16.04	74.
147-06	Opx-ol gabbro	894G	0.00	51.32	0.91	2.00	0.21	10.78	0.24	14.77	19.79	0.31	0.00	0.03	100.35	7.67	0.10	0.35	0.02	1.35	0.03	3.29	3.17	0.09	0.00	0.00	16.08	70.
147-06	Opx-ol gabbro	894G	0.00	52.12	0.75	2.08	0.16	9.61	0.27	15.08	20.18	0.33	0.01	0.00	100.58	7.73	0.08	0.36	0.02	1.19	0.03	3.33	3.20	0.09	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	51.98	0.77	2.08	0.15	9.97	0.25	15.25	19.63	0.34	0.00	0.01	100.44	7.72	0.09	0.36	0.02	1.24	0.03	3.38	3.12	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	52.16	0.77	2.28	0.19	8.80	0.25	15.03	20.18	0.37	0.00	0.02	100.04	7.74	0.09	0.40	0.02	1.09	0.03	3.33	3.21	0.11	0.00	0.00	16.01	75.
147-06	Opx-ol gabbro	894G	0.00	52.27	0.75	2.38	0.16	8.90	0.26	15.70	18.62	0.41	0.00	0.02	99.46	7.77	0.08	0.42	0.02	1.11	0.03	3.48	2.97	0.12	0.00	0.00	15.99	75.
147-06	Opx-ol gabbro	894G	0.00	51.63	0.83	2.21	0.15	9.91	0.24	15.07	19.87	0.38	0.00	0.01	100.30	7.69	0.09	0.39	0.02	1.23	0.03	3.34	3.17	0.11	0.00	0.00	16.07	73.
147-06	Opx-ol gabbro	894G	0.00	51.14	0.84	2.50	0.14	9.29	0.25	14.56	20.14	0.35	0.01	0.03	99.25	7.68	0.09	0.44	0.02	1.17	0.03	3.26	3.24	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	51.67	0.90	2.45	0.14	9.16	0.28	14.47	19.88	0.35	0.00	0.02	99.32	7.73	0.10	0.43	0.02	1.15	0.04	3.23	3.19	0.10	0.00	0.00	15.99	73.
147-06	Opx-ol gabbro	894G	0.00	51.89	0.79	2.21	0.15	9.38	0.29	14.80	20.55	0.34	0.00	0.03	100.45	7.71	0.09	0.39	0.02	1.17	0.04	3.28	3.27	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	52.27	0.76	2.10	0.13	9.66	0.23	15.09	20.19	0.35	0.00	0.02	100.80	7.73	0.08	0.37	0.02	1.19	0.03	3.33	3.20	0.10	0.00	0.00	16.05	73.
147-06	Opx-ol gabbro	894G	0.00	53.26	0.35	1.55	0.10	7.87	0.22	16.00	20.52	0.25	0.01	0.01	100.13	7.85	0.04	0.27	0.01	0.97	0.03	3.52	3.24	0.07	0.00	0.00	16.00	78.
147-06	Opx-ol gabbro	894G	0.00	52.65	0.53	1.67	0.09	7.76	0.22	15.00	20.82	0.25	0.00	0.01	98.99	7.86	0.06	0.29	0.01	0.97	0.03	3.34	3.33	0.07	0.00	0.00	15.96	77.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-06	Opx-ol gabbro	894G	0.00	51.83	0.74	1.79	0.15	9.36	0.27	14.47	21.43	0.28	0.00	0.01	100.33	7.73	0.08	0.32	0.02	1.17	0.03	3.22	3.42	0.08	0.00	0.00	16.06	73.
147-06	Opx-ol gabbro	894G	0.00	52.17	0.47	2.17	0.20	12.75	0.30	16.92	14.53	0.28	0.01	0.04	99.84	7.77	0.05	0.38	0.02	1.59	0.04	3.76	2.32	0.08	0.00	0.00	16.02	70.
147-06	Opx-ol gabbro	894G	0.00	52.09	0.66	2.18	0.20	9.59	0.24	15.02	19.95	0.33	0.00	0.00	100.24	7.74	0.07	0.38	0.02	1.19	0.03	3.33	3.18	0.09	0.00	0.00	16.03	73.
147-06	Opx-ol gabbro	894G	0.00	52.29	0.61	2.15	0.19	9.33	0.26	14.83	20.56	0.34	0.01	0.01	100.58	7.75	0.07	0.37	0.02	1.16	0.03	3.27	3.26	0.10	0.00	0.00	16.04	73.
147-06	Opx-ol gabbro	894G	0.00	52.36	0.65	1.63	0.16	8.33	0.26	14.90	21.74	0.34	0.01	0.01	100.40	7.77	0.07	0.29	0.02	1.03	0.03	3.30	3.45	0.10	0.00	0.00	16.06	76.
147-06	Opx-ol gabbro	894G	0.00	51.44	0.64	2.51	0.25	8.82	0.29	14.47	20.44	0.41	0.02	0.00	99.29	7.71	0.07	0.44	0.03	1.11	0.04	3.23	3.28	0.12	0.00	0.00	16.04	74.

Appendix 1:Mineral chemistry of Clinopyroxene (Rubbles Exp.345)

345-06	Gabbro	1415J	0.00	52.18	0.48	2.16	0.17	5.73	0.16	16.75	20.99	0.22	0.00	0.03	98.87	7.74	0.05	0.38	0.02	0.71	0.02	3.70	3.34	0.06	0.00	0.00	16.04	83.
345-06	Gabbro	1415J	0.00	53.77	0.49	2.23	0.18	5.90	0.17	17.26	21.63	0.23	0.00	0.03	101.87	7.74	0.05	0.38	0.02	0.71	0.02	3.70	3.34	0.06	0.00	0.00	16.04	83.
345-06	Gabbro	1415J	0.00	53.09	0.44	2.21	0.19	6.40	0.19	17.98	20.34	0.23	0.00	0.01	101.08	7.71	0.05	0.38	0.02	0.78	0.02	3.89	3.16	0.07	0.00	0.00	16.08	83.
345-06	Gabbro	1415J	0.00	53.68	0.43	2.36	0.17	6.81	0.28	16.19	20.84	0.32	0.00	0.00	101.07	7.80	0.05	0.40	0.02	0.83	0.03	3.51	3.25	0.09	0.00	0.00	15.98	80.
345-06	Gabbro	1415J	0.00	52.77	0.48	1.97	0.16	6.98	0.21	18.24	17.91	0.20	0.00	0.04	98.97	7.79	0.05	0.34	0.02	0.86	0.03	4.01	2.83	0.06	0.00	0.00	16.00	82.
345-06	Gabbro	1415J	0.00	54.37	0.49	2.03	0.16	7.19	0.22	18.79	18.45	0.21	0.00	0.04	101.97	7.79	0.05	0.34	0.02	0.86	0.03	4.01	2.83	0.06	0.00	0.00	16.00	82.
345-06	Gabbro	1415J	0.00	53.97	0.31	2.12	0.17	6.55	0.15	18.16	19.61	0.25	0.00	0.03	101.32	7.79	0.03	0.36	0.02	0.79	0.02	3.91	3.03	0.07	0.00	0.00	16.02	83.
345-06	Gabbro	1415J	0.00	53.62	0.34	2.13	0.17	6.42	0.17	18.39	19.60	0.23	0.00	0.02	101.08	7.76	0.04	0.36	0.02	0.78	0.02	3.97	3.04	0.07	0.00	0.00	16.05	83.
345-06	Gabbro	1415J	0.00	52.80	0.46	1.93	0.14	8.60	0.21	21.63	13.23	0.13	0.00	0.03	99.15	7.74	0.05	0.33	0.02	1.05	0.03	4.72	2.08	0.04	0.00	0.00	16.06	81.
345-06	Gabbro	1415J	0.00	53.33	0.54	1.94	0.13	5.21	0.16	16.71	22.25	0.19	0.00	0.01	100.47	7.78	0.06	0.33	0.02	0.64	0.02	3.63	3.48	0.05	0.00	0.00	16.01	85.
345-06	Gabbro	1415J	0.00	52.43	0.57	2.06	0.13	5.88	0.17	17.71	19.72	0.17	0.01	0.03	98.89	7.75	0.06	0.36	0.02	0.73	0.02	3.90	3.13	0.05	0.00	0.00	16.02	84.
345-06	Gabbro	1415J	0.00	54.02	0.59	2.12	0.14	6.06	0.18	18.24	20.32	0.17	0.01	0.03	101.89	7.75	0.06	0.36	0.02	0.73	0.02	3.90	3.13	0.05	0.00	0.00	16.02	84.
345-06	Gabbro	1415J	0.00	53.77	0.61	1.82	0.25	4.97	0.15	16.77	22.90	0.20	0.00	0.02	101.44	7.77	0.07	0.31	0.03	0.60	0.02	3.62	3.55	0.06	0.00	0.00	16.02	85.
345-06	Gabbro	1415J	0.00	54.20	0.42	1.50	0.17	4.87	0.15	16.93	23.29	0.17	0.01	0.06	101.76	7.81	0.05	0.25	0.02	0.59	0.02	3.64	3.60	0.05	0.00	0.01	16.03	86.
345-06	Gabbro	1415J	0.00	53.79	0.57	2.08	0.18	5.37	0.17	17.14	22.09	0.21	0.00	0.00	101.60	7.76	0.06	0.35	0.02	0.65	0.02	3.69	3.41	0.06	0.00	0.00	16.02	85.
345-01	Gabbronorite	1415E	-1.00	54.02	0.53	2.15	0.14	6.35	0.21	18.34	19.18	0.21	0.00	0.00	101.13	7.79	0.06	0.37	0.02	0.77	0.03	3.94	2.96	0.06	0.00	0.00	15.99	83.
345-01	Gabbronorite	1415E	-1.00	53.58	0.60	2.13	0.14	5.96	0.18	17.74	20.21	0.20	0.00	0.02	100.75	7.77	0.07	0.36	0.02	0.72	0.02	3.84	3.14	0.06	0.00	0.00	16.00	84.
345-01	Gabbronorite	1415E	-1.00	53.68	0.43	2.12	0.20	6.62	0.21	18.21	19.88	0.22	0.00	0.03	101.59	7.74	0.05	0.36	0.02	0.80	0.03	3.92	3.07	0.06	0.00	0.00	16.05	83.
345-01	Gabbronorite	1415E	-1.00	54.94	0.51	2.06	0.14	9.46	0.21	22.71	11.52	0.10	0.00	0.00	101.64	7.81	0.05	0.34	0.02	1.12	0.03	4.81	1.76	0.03	0.00	0.00	15.97	81.
345-01	Gabbronorite	1415E	-1.00	53.77	0.48	2.12	0.18	5.74	0.19	17.02	21.53	0.27	0.01	0.02	101.32	7.78	0.05	0.36	0.02	0.69	0.02	3.67	3.34	0.07	0.00	0.00	16.02	84.
345-01	Gabbronorite	1415E	-1.00	52.69	0.64	1.91	0.14	8.39	0.22	16.00	20.62	0.29	0.00	0.02	100.92	7.74	0.07	0.33	0.02	1.03	0.03	3.50	3.25	0.08	0.00	0.00	16.05	77.
345-01	Gabbronorite	1415E	-1.00	52.85	0.67	1.94	0.13	8.44	0.22	16.12	20.51	0.26	0.00	0.03	101.16	7.74	0.07	0.33	0.02	1.03	0.03	3.52	3.22	0.07	0.00	0.00	16.04	77.
345-01	Gabbronorite	1415E	-1.00	52.70	0.67	1.99	0.15	8.47	0.21	16.05	20.49	0.29	0.00	0.02	101.03	7.73	0.07	0.34	0.02	1.04	0.03	3.51	3.22	0.08	0.00	0.00	16.05	77.
345-01	Gabbronorite	1415E	-1.00	52.64	0.66	1.90	0.14	8.35	0.19	16.12	20.54	0.29	0.00	0.00	100.81	7.74	0.07	0.33	0.02	1.03	0.02	3.53	3.24	0.08	0.00	0.00	16.06	77.
345-01	Gabbronorite	1415E	-1.00	52.55	0.63	1.93	0.16	8.43	0.21	16.03	20.38	0.30	0.01	0.04	100.67	7.74	0.07	0.34	0.02	1.04	0.03	3.52	3.22	0.08	0.00	0.01	16.06	77.
345-01	Gabbronorite	1415E	-1.00	51.30	0.18	2.34	0.07	8.99	0.29	14.82	20.73	0.14	0.00	0.06	98.94	7.73	0.02	0.42	0.01	1.13	0.04	3.33	3.35	0.04	0.00	0.01	16.06	74.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-01	Gabbronorite	1415E	-1.00	53.55	0.35	1.92	0.07	8.35	0.20	17.43	18.98	0.22	0.00	0.02	101.09	7.80	0.04	0.33	0.01	1.02	0.02	3.78	2.96	0.06	0.00	0.00	16.03	78.
345-01	Gabbronorite	1415E	-1.00	52.15	0.40	3.55	0.24	6.94	0.22	16.36	20.46	0.25	0.01	0.02	100.59	7.63	0.04	0.61	0.03	0.85	0.03	3.57	3.21	0.07	0.00	0.00	16.04	80.
345-01	Gabbronorite	1415E	-1.00	51.85	0.36	2.65	0.15	8.53	0.24	16.48	19.15	0.28	0.00	0.01	99.71	7.69	0.04	0.46	0.02	1.06	0.03	3.64	3.04	0.08	0.00	0.00	16.07	77.
345-01	Gabbronorite	1415E	-1.00	52.68	0.46	2.75	0.41	7.58	0.16	16.24	19.59	0.31	0.00	0.00	100.19	7.74	0.05	0.48	0.05	0.93	0.02	3.56	3.08	0.09	0.00	0.00	15.99	79.
345-01	Gabbronorite	1415E	-1.00	51.75	0.65	2.47	0.22	8.21	0.22	15.34	20.64	0.31	0.01	0.00	99.81	7.69	0.07	0.43	0.03	1.02	0.03	3.40	3.29	0.09	0.00	0.00	16.05	76.
345-01	Gabbronorite	1415E	-1.00	52.85	0.70	2.08	0.12	9.08	0.19	16.56	19.46	0.25	0.00	0.03	101.32	7.73	0.08	0.36	0.01	1.11	0.02	3.61	3.05	0.07	0.00	0.00	16.05	76.
345-01	Gabbronorite	1415E	-1.00	52.69	0.47	1.86	0.05	8.94	0.20	16.80	18.89	0.28	0.00	0.01	100.19	7.78	0.05	0.32	0.01	1.10	0.02	3.70	2.99	0.08	0.00	0.00	16.05	77.
345-01	Gabbronorite	1415E	-1.00	54.05	0.33	1.93	0.07	7.41	0.19	17.71	19.39	0.19	0.00	0.02	101.29	7.82	0.04	0.33	0.01	0.90	0.02	3.82	3.01	0.05	0.00	0.00	16.00	81.
345-01	Gabbronorite	1415E	-1.00	54.18	0.28	2.11	0.23	6.27	0.16	17.73	20.44	0.22	0.00	0.00	101.62	7.80	0.03	0.36	0.03	0.76	0.02	3.80	3.15	0.06	0.00	0.00	16.01	83.
345-28	Ol-gabbro	1415P	-1.00	53.83	0.30	2.01	0.11	7.60	0.17	17.18	20.10	0.25	0.00	0.01	101.55	7.80	0.03	0.34	0.01	0.92	0.02	3.71	3.12	0.07	0.00	0.00	16.03	80.
345-28	Ol-gabbro	1415P	-1.00	52.90	0.54	2.35	0.12	8.92	0.26	16.56	19.48	0.32	0.00	0.02	101.45	7.72	0.06	0.40	0.01	1.09	0.03	3.60	3.05	0.09	0.00	0.00	16.06	76.
345-28	Ol-gabbro	1415P	-1.00	52.59	0.53	2.45	0.31	8.08	0.25	15.13	21.21	0.32	0.00	0.02	100.88	7.73	0.06	0.42	0.04	0.99	0.03	3.32	3.34	0.09	0.00	0.00	16.03	76.
345-28	Ol-gabbro	1415P	-1.00	54.85	0.08	0.87	0.05	5.95	0.20	16.51	22.51	0.15	0.00	0.03	101.20	7.96	0.01	0.15	0.01	0.72	0.02	3.57	3.50	0.04	0.00	0.00	15.98	83.
345-28	Ol-gabbro	1415P	-1.00	51.90	0.94	2.63	0.09	9.48	0.26	14.97	20.59	0.37	0.00	0.00	101.22	7.65	0.10	0.46	0.01	1.17	0.03	3.29	3.25	0.11	0.00	0.00	16.07	73.
345-28	Ol-gabbro	1415P	-1.00	51.33	0.72	2.57	0.24	5.63	0.20	15.50	22.48	0.32	0.00	0.05	99.04	7.65	0.08	0.45	0.03	0.70	0.03	3.45	3.59	0.09	0.00	0.01	16.07	83.
345-28	Ol-gabbro	1415P	-1.00	52.05	0.81	2.43	0.21	5.72	0.18	15.67	22.48	0.33	0.01	0.02	99.91	7.68	0.09	0.42	0.02	0.71	0.02	3.45	3.56	0.09	0.00	0.00	16.05	83.
345-28	Ol-gabbro	1415P	-1.00	52.30	0.61	2.52	0.31	5.83	0.19	15.99	21.49	0.32	0.00	0.02	99.58	7.72	0.07	0.44	0.04	0.72	0.02	3.52	3.40	0.09	0.00	0.00	16.02	83.
345-28	Ol-gabbro	1415P	-1.00	53.27	0.59	2.30	0.25	5.82	0.17	16.55	21.87	0.29	0.00	0.03	101.14	7.74	0.06	0.39	0.03	0.71	0.02	3.58	3.40	0.08	0.00	0.00	16.03	83.
345-28	Ol-gabbro	1415P	-1.00	51.58	0.65	2.31	0.22	5.81	0.20	16.30	22.11	0.25	0.00	0.03	99.47	7.65	0.07	0.40	0.03	0.72	0.02	3.61	3.51	0.07	0.00	0.00	16.10	83.
345-28	Ol-gabbro	1415P	-1.00	51.75	0.61	2.74	0.23	5.80	0.19	15.91	21.93	0.26	0.00	0.03	99.44	7.67	0.07	0.48	0.03	0.72	0.02	3.51	3.48	0.07	0.00	0.00	16.05	83.
345-28	Ol-gabbro	1415P	-1.00	52.21	0.64	2.54	0.22	5.73	0.17	16.22	22.19	0.23	0.00	0.01	100.14	7.68	0.07	0.44	0.03	0.70	0.02	3.55	3.50	0.07	0.00	0.00	16.05	83.
345-28	Ol-gabbro	1415P	-1.00	52.01	0.77	2.92	0.24	5.92	0.17	16.19	21.25	0.26	0.00	0.00	99.73	7.66	0.09	0.51	0.03	0.73	0.02	3.56	3.36	0.07	0.00	0.00	16.02	82.
345-28	Ol-gabbro	1415P	-1.00	53.39	0.49	2.10	0.23	5.70	0.19	16.42	22.33	0.31	0.00	0.03	101.19	7.76	0.05	0.36	0.03	0.69	0.02	3.56	3.48	0.09	0.00	0.00	16.04	83.
345-28	Ol-gabbro	1415P	-1.00	52.86	0.60	2.42	0.23	5.65	0.20	16.41	22.11	0.31	0.00	0.02	100.79	7.71	0.07	0.42	0.03	0.69	0.02	3.57	3.46	0.09	0.00	0.00	16.05	83.
345-28	Ol-gabbro	1415P	-1.00	51.83	0.60	2.41	0.32	5.80	0.17	16.14	21.64	0.31	0.01	0.00	99.22	7.69	0.07	0.42	0.04	0.72	0.02	3.57	3.44	0.09	0.00	0.00	16.06	83.
345-28	Ol-gabbro	1415P	-1.00	53.16	0.70	2.24	0.25	5.90	0.18	16.45	22.07	0.29	0.00	0.04	101.27	7.72	0.08	0.38	0.03	0.72	0.02	3.56	3.44	0.08	0.00	0.00	16.03	83.
345-28	Ol-gabbro	1415P	-1.00	52.88	0.48	2.47	0.29	6.43	0.18	17.05	20.64	0.24	0.01	0.01	100.66	7.72	0.05	0.42	0.03	0.78	0.02	3.71	3.23	0.07	0.00	0.00	16.04	82.
345-28	Ol-gabbro	1415P	-1.00	52.32	0.49	2.48	0.21	5.95	0.19	16.43	20.70	0.27	0.00	0.03	99.07	7.75	0.05	0.43	0.02	0.74	0.02	3.63	3.28	0.08	0.00	0.00	16.01	83.
345-28	Ol-gabbro	1415P	-1.00	52.62	0.54	2.55	0.30	6.11	0.19	16.16	21.71	0.25	0.00	0.02	100.43	7.71	0.06	0.44	0.03	0.75	0.02	3.53	3.41	0.07	0.00	0.00	16.03	82.
345-02	Ol-gabbro	1415E	-1.00	52.08	0.46	2.99	0.40	6.15	0.18	16.29	21.69	0.28	0.00	0.00	100.50	7.64	0.05	0.52	0.05	0.75	0.02	3.56	3.41	0.08	0.00	0.00	16.07	82.
345-02	Ol-gabbro	1415E	-1.00	53.10	0.41	2.53	0.47	7.05	0.18	17.81	19.07	0.27	0.00	0.01	100.89	7.72	0.04	0.43	0.05	0.86	0.02	3.86	2.97	0.08	0.00	0.00	16.03	81.
345-02	Ol-gabbro	1415E	-1.00	51.65	0.42	3.37	0.48	6.91	0.18	17.35	19.22	0.28	0.01	0.05	99.92	7.60	0.05	0.58	0.06	0.85	0.02	3.80	3.03	0.08	0.00	0.01	16.08	81.
345-02	Ol-gabbro	1415E	-1.00	54.05	0.28	0.98	0.26	4.87	0.11	16.68	23.46	0.21	0.00	0.03	100.93	7.86	0.03	0.17	0.03	0.59	0.01	3.62	3.66	0.06	0.00	0.00	16.04	85.
345-02	Ol-gabbro	1415E	-1.00	53.97	0.29	0.97	0.24	4.79	0.16	16.67	23.38	0.21	0.01	0.02	100.71	7.87	0.03	0.17	0.03	0.58	0.02	3.62	3.65	0.06	0.00	0.00	16.03	86.
345-02	Ol-gabbro	1415E	-1.00	53.12	0.53	2.10	0.19	5.50	0.16	16.10	22.93	0.31	0.00	0.03	100.96	7.75	0.06	0.36	0.02	0.67	0.02	3.50	3.58	0.09	0.00	0.00	16.05	83.
345-02	Ol-gabbro	1415E	-1.00	52.45	0.73	2.67	0.22	6.02	0.15	16.15	22.32	0.28	0.00	0.01	101.00	7.66	0.08	0.46	0.02	0.74	0.02	3.52	3.49	0.08	0.00	0.00	16.06	82.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-02	Ol-gabbro	1415E	-1.00	53.20	0.48	2.17	0.32	6.92	0.18	16.28	21.26	0.28	0.00	0.03	101.12	7.76	0.05	0.37	0.04	0.84	0.02	3.54	3.32	0.08	0.00	0.00	16.03	80.
345-02	Ol-gabbro	1415E	-1.00	52.74	0.55	2.28	0.27	6.77	0.19	16.17	21.23	0.30	0.01	0.02	100.54	7.73	0.06	0.39	0.03	0.83	0.02	3.54	3.34	0.08	0.00	0.00	16.04	80.
345-02	Ol-gabbro	1415E	-1.00	52.74	0.54	2.27	0.30	6.97	0.19	16.11	20.95	0.32	0.00	0.03	100.41	7.74	0.06	0.39	0.03	0.86	0.02	3.53	3.30	0.09	0.00	0.00	16.03	80.
345-02	Ol-gabbro	1415E	-1.00	53.26	0.26	2.20	0.40	6.52	0.15	16.45	21.41	0.30	0.00	0.04	100.99	7.76	0.03	0.38	0.05	0.79	0.02	3.58	3.34	0.08	0.00	0.00	16.04	81.
345-02	Ol-gabbro	1415E	-1.00	52.84	0.37	2.69	0.50	6.26	0.19	16.59	20.98	0.30	0.01	0.00	100.72	7.71	0.04	0.46	0.06	0.76	0.02	3.61	3.28	0.09	0.00	0.00	16.03	82.
345-02	Ol-gabbro	1415E	-1.00	52.14	0.36	2.99	0.57	6.65	0.17	17.33	19.94	0.27	0.00	0.02	100.43	7.63	0.04	0.52	0.07	0.81	0.02	3.78	3.13	0.08	0.00	0.00	16.08	82.
345-02	Ol-gabbro	1415E	-1.00	53.16	0.44	2.09	0.42	6.57	0.16	17.51	20.03	0.23	0.00	0.00	100.60	7.75	0.05	0.36	0.05	0.80	0.02	3.81	3.13	0.06	0.00	0.00	16.03	82.
345-02	Ol-gabbro	1415E	-1.00	52.94	0.43	2.97	0.51	6.15	0.20	16.43	21.36	0.31	0.00	0.02	101.31	7.68	0.05	0.51	0.06	0.75	0.02	3.55	3.32	0.09	0.00	0.00	16.03	82.
345-04	Opx-ol gabbro	1415I	-1.00	53.32	0.41	2.32	0.38	6.15	0.17	16.88	21.23	0.25	0.00	0.03	101.14	7.74	0.05	0.40	0.04	0.75	0.02	3.65	3.30	0.07	0.00	0.00	16.03	83.
345-04	Opx-ol gabbro	1415I	-1.00	53.26	0.39	2.20	0.35	6.42	0.15	17.04	20.63	0.22	0.00	0.02	100.68	7.76	0.04	0.38	0.04	0.78	0.02	3.70	3.22	0.06	0.00	0.00	16.01	82.
345-04	Opx-ol gabbro	1415I	-1.00	52.80	0.50	2.76	0.63	6.49	0.17	16.49	20.99	0.30	0.00	0.04	101.17	7.68	0.05	0.47	0.07	0.79	0.02	3.58	3.27	0.09	0.00	0.01	16.03	81.
345-04	Opx-ol gabbro	1415I	-1.00	52.80	0.51	2.45	0.47	6.07	0.18	16.25	21.84	0.29	0.00	0.01	100.85	7.71	0.06	0.42	0.05	0.74	0.02	3.54	3.42	0.08	0.00	0.00	16.04	82.
345-04	Opx-ol gabbro	1415I	-1.00	53.44	0.44	2.46	0.45	8.61	0.24	19.22	16.12	0.22	0.00	0.04	101.24	7.73	0.05	0.42	0.05	1.04	0.03	4.14	2.50	0.06	0.00	0.00	16.02	79.
345-04	Opx-ol gabbro	1415I	-1.00	52.42	0.55	2.03	0.20	6.70	0.19	17.26	20.42	0.24	0.01	0.00	100.00	7.71	0.06	0.35	0.02	0.82	0.02	3.79	3.22	0.07	0.00	0.00	16.07	82.
345-04	Opx-ol gabbro	1415I	-1.00	52.56	0.56	2.13	0.20	7.30	0.18	18.22	19.07	0.23	0.00	0.01	100.46	7.69	0.06	0.37	0.02	0.89	0.02	3.97	2.99	0.07	0.00	0.00	16.09	81.
345-04	Opx-ol gabbro	1415I	-1.00	53.24	0.42	2.05	0.29	6.69	0.18	17.12	20.17	0.26	0.00	0.03	100.44	7.78	0.05	0.35	0.03	0.82	0.02	3.73	3.16	0.07	0.00	0.00	16.02	82.
345-04	Opx-ol gabbro	1415I	-1.00	53.00	0.43	2.06	0.36	6.48	0.19	16.97	20.84	0.24	0.00	0.00	100.55	7.75	0.05	0.35	0.04	0.79	0.02	3.70	3.26	0.07	0.00	0.00	16.04	82.
345-04	Opx-ol gabbro	1415I	-1.00	52.79	0.58	2.19	0.32	7.28	0.22	17.07	19.80	0.26	0.00	0.03	100.53	7.73	0.06	0.38	0.04	0.89	0.03	3.73	3.11	0.07	0.00	0.00	16.04	80.
345-04	Opx-ol gabbro	1415I	-1.00	52.42	0.72	2.25	0.29	6.53	0.17	16.03	21.85	0.25	0.00	0.02	100.53	7.70	0.08	0.39	0.03	0.80	0.02	3.51	3.44	0.07	0.00	0.00	16.05	81.
345-04	Opx-ol gabbro	1415I	-1.00	53.25	0.52	2.30	0.32	8.35	0.20	17.58	18.65	0.25	0.00	0.03	101.45	7.73	0.06	0.39	0.04	1.01	0.02	3.80	2.90	0.07	0.00	0.00	16.03	78.
345-04	Opx-ol gabbro	1415I	-1.00	52.13	0.27	2.25	0.47	7.05	0.20	16.07	20.10	0.26	0.00	0.04	98.83	7.77	0.03	0.40	0.06	0.88	0.02	3.57	3.21	0.08	0.00	0.01	16.01	80.
345-04	Opx-ol gabbro	1415I	-1.00	53.71	0.28	2.32	0.49	7.26	0.20	16.55	20.71	0.27	0.00	0.05	101.83	7.77	0.03	0.40	0.06	0.88	0.02	3.57	3.21	0.08	0.00	0.01	16.01	80.
345-04	Opx-ol gabbro	1415I	-1.00	53.27	0.32	2.23	0.42	8.53	0.23	17.97	17.96	0.25	0.00	0.02	101.19	7.74	0.04	0.38	0.05	1.04	0.03	3.89	2.80	0.07	0.00	0.00	16.04	78.
345-04	Opx-ol gabbro	1415I	-1.00	52.75	0.56	2.15	0.17	6.75	0.20	16.56	21.53	0.25	0.00	0.03	100.94	7.71	0.06	0.37	0.02	0.82	0.02	3.61	3.37	0.07	0.00	0.00	16.07	81.
345-04	Opx-ol gabbro	1415I	-1.00	52.49	0.59	2.35	0.15	7.22	0.22	16.45	21.01	0.28	0.00	0.04	100.81	7.69	0.06	0.41	0.02	0.89	0.03	3.59	3.30	0.08	0.00	0.01	16.07	80.
345-04	Opx-ol gabbro	1415I	-1.00	53.26	0.53	2.19	0.23	7.07	0.24	16.44	21.07	0.31	0.00	0.05	101.38	7.75	0.06	0.37	0.03	0.86	0.03	3.57	3.28	0.09	0.00	0.01	16.04	80.
345-04	Opx-ol gabbro	1415I	-1.00	51.88	0.56	2.15	0.20	6.03	0.17	16.38	21.30	0.25	0.00	0.03	98.95	7.72	0.06	0.38	0.02	0.75	0.02	3.63	3.39	0.07	0.00	0.00	16.06	82.
345-04	Opx-ol gabbro	1415I	-1.00	53.46	0.58	2.21	0.21	6.21	0.18	16.88	21.94	0.26	0.00	0.03	101.95	7.72	0.06	0.38	0.02	0.75	0.02	3.63	3.39	0.07	0.00	0.00	16.06	82.
345-04	Opx-ol gabbro	1415I	-1.00	52.15	0.60	2.47	0.16	7.49	0.20	17.42	19.23	0.28	0.00	0.02	100.02	7.68	0.07	0.43	0.02	0.92	0.03	3.82	3.03	0.08	0.00	0.00	16.07	80.
345-04	Opx-ol gabbro	1415I	-1.00	53.03	0.58	2.31	0.17	6.52	0.22	15.99	22.04	0.28	0.00	0.02	101.16	7.73	0.06	0.40	0.02	0.80	0.03	3.48	3.44	0.08	0.00	0.00	16.03	81.
345-04	Opx-ol gabbro	1415I	-1.00	52.91	0.47	2.31	0.35	6.37	0.20	15.61	22.44	0.31	0.00	0.00	100.98	7.74	0.05	0.40	0.04	0.78	0.03	3.40	3.52	0.09	0.00	0.00	16.04	81.
345-04	Opx-ol gabbro	1415I	-1.00	52.66	0.52	2.37	0.32	6.44	0.21	15.47	22.48	0.29	0.00	0.00	100.77	7.72	0.06	0.41	0.04	0.79	0.03	3.38	3.53	0.08	0.00	0.00	16.04	81.
345-04	Opx-ol gabbro	1415I	-1.00	52.82	0.63	2.45	0.16	6.60	0.21	15.66	22.40	0.26	0.00	0.02	101.20	7.71	0.07	0.42	0.02	0.81	0.03	3.41	3.50	0.07	0.00	0.00	16.04	80.
345-04	Opx-ol gabbro	1415I	-1.00	52.64	0.64	2.31	0.16	6.37	0.20	15.71	22.36	0.25	0.00	0.03	100.66	7.72	0.07	0.40	0.02	0.78	0.03	3.43	3.51	0.07	0.00	0.00	16.04	81.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Clinopyroxene (Exp.345 U1415J)																												
345-16	Ol-gabbro	1415J	45.00	53.60	0.51	2.27	0.18	5.77	0.18	16.22	22.14	0.23	0.00	0.02	101.13	7.78	0.06	0.39	0.02	0.70	0.02	3.51	3.44	0.06	0.00	0.00	15.99	83.
345-16	Ol-gabbro	1415J	45.00	53.38	0.67	2.54	0.17	5.84	0.15	16.45	22.10	0.25	0.00	0.03	101.59	7.72	0.07	0.43	0.02	0.71	0.02	3.55	3.42	0.07	0.00	0.00	16.02	83.
345-16	Ol-gabbro	1415J	45.00	53.84	0.43	2.11	0.16	5.81	0.15	16.61	22.02	0.22	0.00	0.02	101.38	7.79	0.05	0.36	0.02	0.70	0.02	3.58	3.42	0.06	0.00	0.00	16.00	83.
345-16	Ol-gabbro	1415J	45.00	53.78	0.31	2.54	0.40	5.75	0.15	16.32	21.96	0.26	0.00	0.05	101.51	7.77	0.03	0.43	0.05	0.69	0.02	3.52	3.40	0.07	0.00	0.01	15.99	83.
345-16	Ol-gabbro	1415J	45.00	53.57	0.28	2.74	0.68	6.45	0.18	17.65	19.88	0.25	0.00	0.04	101.72	7.71	0.03	0.47	0.08	0.78	0.02	3.79	3.07	0.07	0.00	0.00	16.02	82.
345-16	Ol-gabbro	1415J	45.00	53.41	0.43	2.25	0.17	5.62	0.14	16.95	22.10	0.21	0.00	0.03	101.32	7.74	0.05	0.38	0.02	0.68	0.02	3.66	3.43	0.06	0.00	0.00	16.04	84.
345-16	Ol-gabbro	1415J	45.00	54.03	0.40	2.29	0.15	6.17	0.17	17.37	20.78	0.22	0.00	0.03	101.61	7.78	0.04	0.39	0.02	0.74	0.02	3.73	3.21	0.06	0.00	0.00	16.00	83.
345-16	Ol-gabbro	1415J	45.00	53.13	0.40	2.30	0.29	5.50	0.16	16.42	22.53	0.25	0.00	0.03	101.01	7.73	0.04	0.39	0.03	0.67	0.02	3.56	3.51	0.07	0.00	0.00	16.04	84.
345-16	Ol-gabbro	1415J	45.00	53.15	0.38	1.80	0.15	9.32	0.23	23.10	12.44	0.07	0.00	0.04	100.66	7.68	0.04	0.31	0.02	1.13	0.03	4.98	1.93	0.02	0.00	0.00	16.13	81.
345-16	Ol-gabbro	1415J	45.00	54.42	0.42	1.98	0.15	7.76	0.24	19.32	16.19	0.18	0.00	0.00	100.65	7.86	0.05	0.34	0.02	0.94	0.03	4.16	2.51	0.05	0.00	0.00	15.94	81.
345-16	Ol-gabbro	1415J	45.00	53.81	0.44	2.25	0.20	6.05	0.20	17.09	21.42	0.24	0.00	0.01	101.71	7.76	0.05	0.38	0.02	0.73	0.02	3.67	3.31	0.07	0.00	0.00	16.02	83.
345-16	Ol-gabbro	1415J	45.00	52.63	0.42	3.19	0.91	5.73	0.19	15.87	22.24	0.33	0.01	0.04	101.55	7.64	0.05	0.54	0.10	0.70	0.02	3.43	3.46	0.09	0.00	0.00	16.04	83.
345-16	Ol-gabbro	1415J	45.00	51.43	0.40	3.19	0.90	5.82	0.17	16.08	20.94	0.30	0.00	0.02	99.26	7.62	0.05	0.56	0.11	0.72	0.02	3.55	3.33	0.09	0.00	0.00	16.04	83.
345-16	Ol-gabbro	1415J	45.00	52.94	0.43	3.17	0.78	6.30	0.17	16.79	20.54	0.27	0.00	0.03	101.40	7.66	0.05	0.54	0.09	0.76	0.02	3.62	3.19	0.08	0.00	0.00	16.01	82.
345-16	Ol-gabbro	1415J	45.00	53.15	0.45	2.67	0.57	5.82	0.19	16.23	21.73	0.28	0.00	0.01	101.09	7.72	0.05	0.46	0.07	0.71	0.02	3.52	3.38	0.08	0.00	0.00	16.01	83.
345-16	Ol-gabbro	1415J	45.00	53.51	0.31	2.29	0.41	9.31	0.25	21.49	13.03	0.17	0.00	0.00	100.76	7.73	0.03	0.39	0.05	1.12	0.03	4.63	2.02	0.05	0.00	0.00	16.04	80.
345-16	Ol-gabbro	1415J	45.00	53.92	0.42	1.95	0.39	5.37	0.17	16.68	22.21	0.21	0.00	0.02	101.33	7.80	0.05	0.33	0.05	0.65	0.02	3.60	3.44	0.06	0.00	0.00	15.99	84.
345-16	Ol-gabbro	1415J	45.00	53.75	0.42	2.06	0.38	5.63	0.16	16.67	22.12	0.23	0.00	0.02	101.44	7.78	0.05	0.35	0.04	0.68	0.02	3.60	3.43	0.06	0.00	0.00	16.01	84.
345-16	Ol-gabbro	1415J	45.00	52.86	0.43	2.75	0.41	6.37	0.19	17.39	20.06	0.22	0.00	0.03	100.70	7.70	0.05	0.47	0.05	0.78	0.02	3.77	3.13	0.06	0.00	0.00	16.03	82.
345-16	Ol-gabbro	1415J	45.00	53.64	0.42	2.30	0.51	5.95	0.17	17.01	21.34	0.23	0.00	0.02	101.58	7.75	0.05	0.39	0.06	0.72	0.02	3.66	3.30	0.06	0.00	0.00	16.01	83.
345-16	Ol-gabbro	1415J	45.00	53.40	0.49	2.60	0.53	5.81	0.19	16.45	21.45	0.25	0.00	0.01	101.17	7.74	0.05	0.44	0.06	0.71	0.02	3.55	3.33	0.07	0.00	0.00	15.99	83.
345-16	Ol-gabbro	1415J	45.00	53.26	0.45	2.69	0.60	6.03	0.19	16.66	20.98	0.25	0.00	0.03	101.14	7.73	0.05	0.46	0.07	0.73	0.02	3.60	3.26	0.07	0.00	0.00	16.00	83.
345-16	Ol-gabbro	1415J	45.00	53.64	0.44	2.73	0.56	7.81	0.20	19.15	17.05	0.21	0.00	0.04	101.82	7.70	0.05	0.46	0.06	0.94	0.02	4.10	2.62	0.06	0.00	0.01	16.02	81.
345-16	Ol-gabbro	1415J	45.00	54.03	0.39	2.36	0.49	8.28	0.22	19.81	15.60	0.17	0.00	0.02	101.37	7.77	0.04	0.40	0.06	1.00	0.03	4.24	2.40	0.05	0.00	0.00	15.99	81.
345-16	Ol-gabbro	1415J	45.00	53.72	0.42	2.31	0.46	6.92	0.19	18.19	18.91	0.21	0.00	0.04	101.35	7.76	0.05	0.39	0.05	0.84	0.02	3.91	2.92	0.06	0.00	0.00	16.01	82.
345-16	Ol-gabbro	1415J	45.00	53.42	0.39	2.11	0.45	5.45	0.16	16.55	22.33	0.26	0.00	0.01	101.12	7.76	0.04	0.36	0.05	0.66	0.02	3.58	3.48	0.07	0.00	0.00	16.03	84.
345-16	Ol-gabbro	1415J	45.00	53.93	0.34	2.24	0.44	8.13	0.21	20.46	15.78	0.17	0.00	0.01	101.70	7.73	0.04	0.38	0.05	0.98	0.03	4.37	2.42	0.05	0.00	0.00	16.04	81.
345-16	Ol-gabbro	1415J	45.00	53.50	0.35	2.46	0.52	5.87	0.17	16.37	21.82	0.27	0.00	0.00	101.34	7.75	0.04	0.42	0.06	0.71	0.02	3.54	3.39	0.08	0.00	0.00	16.01	83.
345-16	Ol-gabbro	1415J	45.00	53.52	0.40	2.50	0.55	5.93	0.18	16.55	21.63	0.26	0.00	0.01	101.52	7.74	0.04	0.43	0.06	0.72	0.02	3.57	3.35	0.07	0.00	0.00	16.01	83.
345-16	Ol-gabbro	1415J	45.00	53.55	0.66	2.32	0.14	5.42	0.18	16.88	22.38	0.22	0.00	0.06	101.80	7.72	0.07	0.39	0.02	0.65	0.02	3.63	3.46	0.06	0.00	0.01	16.03	84.
345-16	Ol-gabbro	1415J	45.00	54.44	0.46	2.16	0.11	8.48	0.22	21.60	13.36	0.16	0.00	0.04	101.03	7.80	0.05	0.36	0.01	1.02	0.03	4.61	2.05	0.04	0.00	0.00	15.98	81.
345-107	Ol-gabbro	1415J	27.00	52.51	0.32	2.80	0.61	5.49	0.17	15.72	22.56	0.26	0.00	0.02	100.46	7.69	0.04	0.48	0.07	0.67	0.02	3.43	3.54	0.07	0.00	0.00	16.03	83.
345-107	Ol-gabbro	1415J	27.00	52.34	0.30	2.77	0.75	5.75	0.17	15.96	21.77	0.29	0.00	0.01	100.12	7.69	0.03	0.48	0.09	0.71	0.02	3.50	3.43	0.08	0.00	0.00	16.03	83.
345-107	Ol-gabbro	1415J	27.00	53.02	0.35	2.58	0.59	6.21	0.16	16.39	20.92	0.31	0.00	0.03	100.56	7.74	0.04	0.44	0.07	0.76	0.02	3.57	3.27	0.09	0.00	0.00	16.01	82.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-107	Ol-gabbro	1415J	27.00	53.68	0.34	2.24	0.28	7.89	0.20	19.74	16.29	0.16	0.01	0.02	100.83	7.76	0.04	0.38	0.03	0.95	0.02	4.25	2.52	0.04	0.00	0.00	16.02	81.
345-107	Ol-gabbro	1415J	27.00	53.83	0.23	2.09	0.35	9.28	0.25	21.30	13.40	0.11	0.00	0.00	100.84	7.77	0.03	0.35	0.04	1.12	0.03	4.58	2.07	0.03	0.00	0.00	16.03	80.
345-107	Ol-gabbro	1415J	27.00	52.65	0.35	2.66	0.45	6.97	0.17	17.40	18.28	0.23	0.00	0.01	99.15	7.76	0.04	0.46	0.05	0.86	0.02	3.82	2.89	0.06	0.00	0.00	15.97	81.
345-107	Ol-gabbro	1415J	27.00	53.26	0.39	2.22	0.21	5.71	0.22	16.39	21.95	0.22	0.00	0.03	100.59	7.77	0.04	0.38	0.02	0.70	0.03	3.57	3.43	0.06	0.00	0.00	16.01	83.
345-107	Ol-gabbro	1415J	27.00	52.56	0.30	2.84	0.77	6.01	0.14	17.02	20.74	0.28	0.00	0.02	100.67	7.67	0.03	0.49	0.09	0.73	0.02	3.70	3.24	0.08	0.00	0.00	16.05	83.
345-107	Ol-gabbro	1415J	27.00	53.56	0.28	2.53	0.50	8.01	0.17	19.45	16.05	0.16	0.02	0.01	100.74	7.75	0.03	0.43	0.06	0.97	0.02	4.20	2.49	0.04	0.00	0.00	16.00	81.
345-107	Ol-gabbro	1415J	27.00	53.03	0.35	2.51	0.36	5.58	0.18	15.77	21.97	0.28	0.00	0.02	100.06	7.78	0.04	0.43	0.04	0.68	0.02	3.45	3.45	0.08	0.00	0.00	15.98	83.
345-107	Ol-gabbro	1415J	27.00	53.17	0.37	2.16	0.13	5.59	0.15	16.48	21.77	0.19	0.01	0.02	100.05	7.79	0.04	0.37	0.02	0.69	0.02	3.60	3.42	0.05	0.00	0.00	16.00	84.
345-107	Ol-gabbro	1415J	27.00	54.61	0.27	1.86	0.15	9.20	0.24	21.54	13.53	0.11	0.00	0.02	101.52	7.81	0.03	0.31	0.02	1.10	0.03	4.60	2.08	0.03	0.00	0.00	16.01	80.
345-107	Ol-gabbro	1415J	27.00	53.35	0.31	2.20	0.24	5.36	0.22	16.29	21.56	0.18	0.00	0.00	99.70	7.83	0.03	0.38	0.03	0.66	0.03	3.56	3.39	0.05	0.00	0.00	15.96	84.
345-107	Ol-gabbro	1415J	27.00	53.82	0.37	2.40	0.34	7.21	0.20	18.67	18.35	0.13	0.00	0.03	101.50	7.75	0.04	0.41	0.04	0.87	0.02	4.01	2.83	0.04	0.00	0.00	16.01	82.
345-107	Ol-gabbro	1415J	27.00	52.25	0.37	2.66	0.44	5.69	0.17	15.45	21.88	0.28	0.00	0.03	99.22	7.74	0.04	0.46	0.05	0.71	0.02	3.41	3.47	0.08	0.00	0.00	16.00	82.
345-107	Ol-gabbro	1415J	27.00	52.49	0.29	2.88	0.68	5.61	0.19	15.71	22.08	0.23	0.00	0.02	100.18	7.71	0.03	0.50	0.08	0.69	0.02	3.44	3.47	0.07	0.00	0.00	16.01	83.
345-107	Ol-gabbro	1415J	27.00	51.99	0.33	2.40	0.39	6.50	0.16	16.73	20.14	0.23	0.00	0.01	98.87	7.73	0.04	0.42	0.05	0.81	0.02	3.71	3.21	0.07	0.00	0.00	16.04	82.
345-107	Ol-gabbro	1415J	27.00	52.92	0.42	2.55	0.47	5.73	0.14	16.29	21.09	0.26	0.01	0.03	99.90	7.76	0.05	0.44	0.05	0.70	0.02	3.56	3.32	0.07	0.00	0.00	15.98	83.
345-107	Ol-gabbro	1415J	27.00	52.58	0.37	2.23	0.13	5.97	0.16	16.78	21.23	0.18	0.00	0.04	99.66	7.75	0.04	0.39	0.01	0.74	0.02	3.68	3.35	0.05	0.00	0.00	16.04	83.
345-107	Ol-gabbro	1415J	27.00	52.75	0.47	2.33	0.19	5.68	0.17	16.56	21.90	0.21	0.00	0.03	100.28	7.73	0.05	0.40	0.02	0.70	0.02	3.62	3.44	0.06	0.00	0.00	16.04	83.
345-107	Ol-gabbro	1415J	27.00	52.92	0.43	2.38	0.20	5.44	0.17	16.71	21.92	0.23	0.02	0.03	100.44	7.73	0.05	0.41	0.02	0.66	0.02	3.64	3.43	0.06	0.00	0.00	16.04	84.
345-107	Ol-gabbro	1415J	27.00	53.41	0.40	2.20	0.20	5.82	0.17	16.45	20.93	0.24	0.02	0.01	99.84	7.83	0.04	0.38	0.02	0.71	0.02	3.60	3.29	0.07	0.00	0.00	15.96	83.
345-107	Ol-gabbro	1415J	27.00	52.90	0.34	2.56	0.54	5.98	0.17	16.41	21.22	0.24	0.01	0.00	100.37	7.74	0.04	0.44	0.06	0.73	0.02	3.58	3.33	0.07	0.00	0.00	16.01	83.
345-107	Ol-gabbro	1415J	27.00	53.10	0.30	2.28	0.32	5.87	0.17	16.26	21.37	0.29	0.00	0.02	99.97	7.79	0.03	0.39	0.04	0.72	0.02	3.56	3.36	0.08	0.00	0.00	16.00	83.
345-107	Ol-gabbro	1415J	27.00	53.50	0.37	2.14	0.12	6.49	0.19	17.64	20.14	0.18	0.00	0.04	100.82	7.77	0.04	0.37	0.01	0.79	0.02	3.82	3.14	0.05	0.00	0.00	16.02	82.
345-107	Ol-gabbro	1415J	27.00	53.06	0.35	2.10	0.18	5.80	0.18	16.67	21.44	0.16	0.01	0.00	99.94	7.79	0.04	0.36	0.02	0.71	0.02	3.65	3.37	0.05	0.00	0.00	16.01	83.
345-107	Ol-gabbro	1415J	27.00	52.21	0.27	2.44	0.61	6.11	0.15	16.38	20.87	0.27	0.00	0.03	99.33	7.73	0.03	0.43	0.07	0.76	0.02	3.61	3.31	0.08	0.00	0.00	16.03	82.
345-107	Ol-gabbro	1415J	27.00	52.73	0.31	2.57	0.46	6.61	0.17	16.90	19.60	0.19	0.00	0.03	99.58	7.76	0.03	0.45	0.05	0.81	0.02	3.71	3.09	0.05	0.00	0.00	15.98	82.
345-107	Ol-gabbro	1415J	27.00	51.17	0.28	2.76	0.77	6.62	0.18	16.54	19.93	0.26	0.00	0.00	98.51	7.65	0.03	0.49	0.09	0.83	0.02	3.69	3.19	0.08	0.00	0.00	16.07	81.
345-107	Ol-gabbro	1415J	27.00	52.55	0.40	2.89	0.72	6.33	0.17	17.21	20.61	0.26	0.00	0.04	101.18	7.64	0.04	0.49	0.08	0.77	0.02	3.73	3.21	0.07	0.00	0.00	16.07	82.
345-107	Ol-gabbro	1415J	27.00	52.63	0.34	2.91	0.82	5.87	0.17	16.23	20.73	0.31	0.00	0.01	100.00	7.72	0.04	0.50	0.09	0.72	0.02	3.55	3.26	0.09	0.00	0.00	15.99	83.
345-107	Ol-gabbro	1415J	27.00	53.32	0.29	2.41	0.44	7.06	0.19	18.07	18.54	0.22	0.00	0.03	100.57	7.76	0.03	0.41	0.05	0.86	0.02	3.92	2.89	0.06	0.00	0.00	16.01	82.
345-117	Ol-gabbro	1415J	37.00	52.84	0.44	2.02	0.30	5.09	0.15	16.99	21.42	0.21	0.01	0.03	99.49	7.77	0.05	0.35	0.04	0.63	0.02	3.73	3.38	0.06	0.00	0.00	16.02	85.
345-117	Ol-gabbro	1415J	37.00	52.70	0.34	2.36	0.36	5.02	0.17	17.13	20.74	0.25	0.01	0.02	99.10	7.77	0.04	0.41	0.04	0.62	0.02	3.76	3.28	0.07	0.00	0.00	16.01	85.
345-117	Ol-gabbro	1415J	37.00	52.51	0.44	2.33	0.31	4.95	0.19	16.84	21.77	0.23	0.01	0.04	99.62	7.72	0.05	0.40	0.04	0.61	0.02	3.69	3.43	0.07	0.00	0.00	16.04	85.
345-117	Ol-gabbro	1415J	37.00	53.28	0.33	2.07	0.26	6.84	0.20	20.09	16.86	0.14	0.00	0.00	100.06	7.75	0.04	0.35	0.03	0.83	0.02	4.35	2.63	0.04	0.00	0.00	16.04	83.
345-117	Ol-gabbro	1415J	37.00	52.93	0.23	2.49	0.34	6.35	0.20	18.79	17.67	0.22	0.00	0.03	99.24	7.76	0.03	0.43	0.04	0.78	0.02	4.11	2.78	0.06	0.00	0.00	16.01	84.
345-117	Ol-gabbro	1415J	37.00	52.98	0.31	2.31	0.22	5.23	0.19	16.96	21.27	0.27	0.00	0.05	99.78	7.77	0.03	0.40	0.03	0.64	0.02	3.71	3.34	0.08	0.00	0.01	16.02	85.
345-117	Ol-gabbro	1415J	37.00	52.80	0.36	2.19	0.21	5.55	0.16	17.58	20.49	0.36	0.00	0.00	99.70	7.75	0.04	0.38	0.02	0.68	0.02	3.85	3.22	0.10	0.00	0.00	16.06	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-117	Ol-gabbro	1415J	37.00	52.67	0.36	2.22	0.20	5.95	0.19	17.74	19.59	0.21	0.00	0.01	99.14	7.76	0.04	0.39	0.02	0.73	0.02	3.90	3.09	0.06	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	52.91	0.39	2.29	0.20	5.04	0.17	16.72	21.53	0.25	0.00	0.04	99.52	7.78	0.04	0.40	0.02	0.62	0.02	3.66	3.39	0.07	0.00	0.00	16.01	85.
345-117	Ol-gabbro	1415J	37.00	52.80	0.25	2.58	0.37	5.83	0.16	18.12	19.55	0.23	0.00	0.02	99.90	7.72	0.03	0.45	0.04	0.71	0.02	3.95	3.06	0.07	0.00	0.00	16.04	84.
345-117	Ol-gabbro	1415J	37.00	52.65	0.38	2.20	0.19	5.13	0.16	16.43	22.07	0.24	0.01	0.03	99.48	7.76	0.04	0.38	0.02	0.63	0.02	3.61	3.49	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	53.09	0.37	2.22	0.29	5.39	0.17	18.29	19.92	0.21	0.02	0.02	99.98	7.75	0.04	0.38	0.03	0.66	0.02	3.98	3.11	0.06	0.00	0.00	16.04	85.
345-117	Ol-gabbro	1415J	37.00	53.21	0.25	2.47	0.45	7.86	0.20	21.70	13.62	0.14	0.00	0.03	99.92	7.71	0.03	0.42	0.05	0.95	0.02	4.69	2.12	0.04	0.00	0.00	16.04	83.
345-117	Ol-gabbro	1415J	37.00	52.47	0.31	2.77	0.58	5.45	0.16	16.98	20.53	0.25	0.01	0.03	99.53	7.71	0.03	0.48	0.07	0.67	0.02	3.72	3.23	0.07	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	52.13	0.28	2.75	0.62	5.04	0.14	16.67	21.21	0.28	0.00	0.03	99.15	7.70	0.03	0.48	0.07	0.62	0.02	3.67	3.36	0.08	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	51.94	0.28	2.77	0.60	6.06	0.14	18.57	18.41	0.17	0.00	0.02	98.97	7.66	0.03	0.48	0.07	0.75	0.02	4.08	2.91	0.05	0.00	0.00	16.06	84.
345-117	Ol-gabbro	1415J	37.00	52.84	0.30	2.59	0.46	5.48	0.15	17.39	19.98	0.24	0.01	0.04	99.46	7.75	0.03	0.45	0.05	0.67	0.02	3.80	3.14	0.07	0.00	0.01	16.00	84.
345-117	Ol-gabbro	1415J	37.00	52.78	0.34	2.30	0.24	4.85	0.17	16.43	21.92	0.24	0.00	0.04	99.31	7.78	0.04	0.40	0.03	0.60	0.02	3.61	3.46	0.07	0.00	0.00	16.01	85.
345-117	Ol-gabbro	1415J	37.00	52.89	0.41	2.20	0.32	4.57	0.15	16.68	21.45	0.19	0.00	0.04	98.90	7.80	0.05	0.38	0.04	0.56	0.02	3.67	3.39	0.06	0.00	0.00	15.97	86.
345-117	Ol-gabbro	1415J	37.00	52.46	0.30	2.45	0.50	5.89	0.18	17.98	19.02	0.21	0.00	0.03	99.03	7.73	0.03	0.43	0.06	0.73	0.02	3.95	3.00	0.06	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	52.27	0.36	2.80	0.60	5.30	0.16	17.01	20.86	0.23	0.01	0.02	99.62	7.68	0.04	0.49	0.07	0.65	0.02	3.73	3.29	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.56	0.26	2.26	0.52	5.42	0.16	17.33	19.40	0.20	0.00	0.03	98.14	7.80	0.03	0.39	0.06	0.67	0.02	3.84	3.09	0.06	0.00	0.00	15.97	85.
345-117	Ol-gabbro	1415J	37.00	52.60	0.24	2.22	0.53	5.07	0.17	16.60	21.22	0.24	0.00	0.02	98.91	7.78	0.03	0.39	0.06	0.63	0.02	3.66	3.36	0.07	0.00	0.00	16.00	85.
345-117	Ol-gabbro	1415J	37.00	52.53	0.27	2.22	0.57	5.46	0.15	17.30	20.19	0.25	0.01	0.04	98.98	7.76	0.03	0.39	0.07	0.67	0.02	3.81	3.20	0.07	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	52.65	0.32	2.39	0.53	5.62	0.17	17.51	19.80	0.21	0.00	0.01	99.20	7.75	0.04	0.42	0.06	0.69	0.02	3.84	3.12	0.06	0.00	0.00	16.00	84.
345-117	Ol-gabbro	1415J	37.00	52.35	0.44	2.07	0.39	5.79	0.17	18.20	19.42	0.18	0.00	0.03	99.03	7.73	0.05	0.36	0.05	0.72	0.02	4.01	3.07	0.05	0.00	0.00	16.05	84.
345-117	Ol-gabbro	1415J	37.00	48.11	0.03	32.37	0.00	0.36	0.00	0.02	15.73	2.35	0.02	0.02	99.02	6.67	0.00	5.29	0.00	0.04	0.00	0.00	2.34	0.63	0.00	0.00	14.99	9.
345-117	Ol-gabbro	1415J	37.00	48.58	0.02	32.51	0.00	0.39	0.00	0.06	15.40	2.42	0.01	0.01	99.40	6.70	0.00	5.29	0.00	0.05	0.00	0.01	2.28	0.65	0.00	0.00	14.98	21.
345-117	Ol-gabbro	1415J	37.00	48.47	0.03	32.09	0.00	0.34	0.02	0.05	15.91	2.44	0.00	0.00	99.35	6.70	0.00	5.23	0.00	0.04	0.00	0.01	2.36	0.65	0.00	0.00	15.00	21.
345-117	Ol-gabbro	1415J	37.00	52.56	0.45	2.31	0.36	5.37	0.20	17.39	20.54	0.24	0.00	0.01	99.42	7.73	0.05	0.40	0.04	0.66	0.02	3.81	3.24	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.36	0.43	2.09	0.49	4.74	0.13	16.31	22.37	0.25	0.00	0.00	99.18	7.75	0.05	0.36	0.06	0.59	0.02	3.60	3.55	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.92	0.30	2.34	0.57	6.14	0.16	18.45	18.61	0.21	0.00	0.04	99.74	7.74	0.03	0.40	0.07	0.75	0.02	4.02	2.92	0.06	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	52.93	0.29	2.31	0.56	6.07	0.18	18.56	18.73	0.20	0.00	0.01	99.83	7.74	0.03	0.40	0.06	0.74	0.02	4.04	2.93	0.06	0.00	0.00	16.03	84.
345-117	Ol-gabbro	1415J	37.00	52.43	0.31	2.52	0.65	5.16	0.19	16.95	21.07	0.23	0.00	0.00	99.51	7.72	0.03	0.44	0.08	0.63	0.02	3.72	3.32	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.64	0.36	2.35	0.43	5.61	0.16	17.75	19.84	0.20	0.00	0.02	99.36	7.74	0.04	0.41	0.05	0.69	0.02	3.89	3.13	0.06	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	52.45	0.35	2.40	0.53	5.28	0.16	17.28	20.54	0.22	0.01	0.02	99.23	7.73	0.04	0.42	0.06	0.65	0.02	3.80	3.24	0.06	0.00	0.00	16.02	85.
345-117	Ol-gabbro	1415J	37.00	52.95	0.30	2.25	0.47	5.94	0.21	18.32	19.06	0.25	0.00	0.04	99.78	7.75	0.03	0.39	0.05	0.73	0.03	4.00	2.99	0.07	0.00	0.00	16.03	84.
345-117	Ol-gabbro	1415J	37.00	52.10	0.31	2.44	0.47	5.44	0.15	17.57	19.30	0.22	0.01	0.02	98.04	7.75	0.03	0.43	0.06	0.68	0.02	3.90	3.08	0.06	0.00	0.00	16.01	85.
345-117	Ol-gabbro	1415J	37.00	53.12	0.37	2.30	0.39	5.76	0.18	18.86	18.26	0.18	0.00	0.00	99.42	7.77	0.04	0.40	0.04	0.70	0.02	4.11	2.86	0.05	0.00	0.00	16.00	85.
345-117	Ol-gabbro	1415J	37.00	52.49	0.76	2.34	0.26	4.66	0.18	16.83	21.28	0.29	0.00	0.00	99.09	7.74	0.08	0.41	0.03	0.57	0.02	3.70	3.36	0.08	0.00	0.00	16.00	86.
345-117	Ol-gabbro	1415J	37.00	52.52	0.74	2.16	0.31	4.96	0.19	17.28	20.66	0.23	0.00	0.01	99.06	7.74	0.08	0.38	0.04	0.61	0.02	3.80	3.26	0.07	0.00	0.00	16.00	86.
345-117	Ol-gabbro	1415J	37.00	52.61	0.49	1.73	0.27	4.76	0.14	17.21	21.24	0.20	0.00	0.02	98.68	7.79	0.06	0.30	0.03	0.59	0.02	3.80	3.37	0.06	0.00	0.00	16.02	86.
345-117	Ol-gabbro	1415J	37.00	52.49	0.26	2.57	0.39	4.98	0.14	16.70	21.53	0.24	0.00	0.01	99.31	7.74	0.03	0.45	0.05	0.61	0.02	3.67	3.40	0.07	0.00	0.00	16.03	85.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-117	Ol-gabbro	1415J	37.00	52.89	0.51	2.08	0.28	4.56	0.15	16.72	21.94	0.21	0.00	0.03	99.36	7.78	0.06	0.36	0.03	0.56	0.02	3.67	3.46	0.06	0.00	0.00	16.00	86.
345-117	Ol-gabbro	1415J	37.00	52.82	0.29	2.35	0.29	5.59	0.15	18.24	19.38	0.25	0.00	0.02	99.36	7.75	0.03	0.41	0.03	0.69	0.02	3.99	3.05	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	51.07	0.23	3.11	0.42	5.65	0.15	17.63	19.21	0.20	0.01	0.03	97.73	7.64	0.03	0.55	0.05	0.71	0.02	3.93	3.08	0.06	0.00	0.00	16.07	84.
345-117	Ol-gabbro	1415J	37.00	52.55	0.32	2.68	0.53	5.04	0.16	17.21	21.29	0.26	0.00	0.00	100.03	7.69	0.03	0.46	0.06	0.62	0.02	3.75	3.34	0.07	0.00	0.00	16.05	85.
345-117	Ol-gabbro	1415J	37.00	52.77	0.25	2.39	0.53	4.80	0.16	17.00	21.57	0.27	0.00	0.02	99.75	7.74	0.03	0.41	0.06	0.59	0.02	3.72	3.39	0.08	0.00	0.00	16.03	86.
345-117	Ol-gabbro	1415J	37.00	52.75	0.29	2.38	0.58	5.54	0.15	17.86	19.81	0.24	0.00	0.03	99.62	7.73	0.03	0.41	0.07	0.68	0.02	3.90	3.11	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.60	0.33	2.42	0.51	5.38	0.18	17.57	20.12	0.27	0.01	0.02	99.39	7.73	0.04	0.42	0.06	0.66	0.02	3.85	3.17	0.08	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	53.29	0.42	1.82	0.38	6.52	0.18	19.99	16.45	0.21	0.00	0.03	99.28	7.79	0.05	0.31	0.04	0.80	0.02	4.36	2.58	0.06	0.00	0.00	16.01	84.
345-117	Ol-gabbro	1415J	37.00	52.84	0.30	2.19	0.50	5.54	0.18	17.75	20.03	0.25	0.01	0.01	99.58	7.75	0.03	0.38	0.06	0.68	0.02	3.88	3.15	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.86	0.28	2.17	0.48	5.54	0.15	17.52	20.01	0.23	0.01	0.01	99.25	7.78	0.03	0.38	0.06	0.68	0.02	3.84	3.15	0.07	0.00	0.00	16.01	84.
345-117	Ol-gabbro	1415J	37.00	51.70	0.28	2.97	0.46	5.89	0.17	17.98	18.38	0.21	0.01	0.03	98.08	7.69	0.03	0.52	0.05	0.73	0.02	3.99	2.93	0.06	0.00	0.00	16.03	84.
345-117	Ol-gabbro	1415J	37.00	51.82	0.33	3.12	0.51	6.00	0.17	18.44	17.52	0.23	0.00	0.02	98.15	7.68	0.04	0.55	0.06	0.74	0.02	4.07	2.78	0.07	0.00	0.00	16.01	84.
345-117	Ol-gabbro	1415J	37.00	52.87	0.28	2.46	0.29	4.90	0.15	17.09	21.25	0.20	0.00	0.01	99.50	7.76	0.03	0.43	0.03	0.60	0.02	3.74	3.34	0.06	0.00	0.00	16.01	86.
345-117	Ol-gabbro	1415J	37.00	53.30	0.33	2.19	0.21	5.05	0.15	17.24	20.66	0.30	0.00	0.02	99.45	7.81	0.04	0.38	0.02	0.62	0.02	3.77	3.25	0.08	0.00	0.00	15.99	85.
345-117	Ol-gabbro	1415J	37.00	53.09	0.31	2.25	0.22	5.22	0.16	17.29	20.98	0.21	0.00	0.01	99.73	7.78	0.03	0.39	0.02	0.64	0.02	3.78	3.29	0.06	0.00	0.00	16.01	85.
345-117	Ol-gabbro	1415J	37.00	52.73	0.31	2.64	0.52	5.50	0.14	16.78	20.58	0.27	0.00	0.02	99.49	7.75	0.03	0.46	0.06	0.68	0.02	3.68	3.24	0.08	0.00	0.00	15.99	84.
345-117	Ol-gabbro	1415J	37.00	48.01	0.02	32.75	0.00	0.37	0.00	0.05	16.18	2.48	0.02	0.00	99.88	6.62	0.00	5.32	0.00	0.04	0.00	0.01	2.39	0.66	0.00	0.00	15.05	17.
345-117	Ol-gabbro	1415J	37.00	48.81	0.04	32.25	0.00	0.35	0.00	0.04	15.52	2.74	0.02	0.01	99.78	6.72	0.00	5.23	0.00	0.04	0.00	0.01	2.29	0.73	0.00	0.00	15.03	17.
345-117	Ol-gabbro	1415J	37.00	52.70	0.40	2.61	0.47	5.11	0.12	17.07	21.27	0.28	0.00	0.00	100.03	7.71	0.04	0.45	0.05	0.62	0.01	3.72	3.33	0.08	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.36	0.38	3.10	0.58	5.64	0.13	17.43	19.81	0.24	0.01	0.01	99.70	7.67	0.04	0.54	0.07	0.69	0.02	3.81	3.11	0.07	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	53.99	0.35	2.25	0.33	6.84	0.21	19.76	16.32	0.14	0.00	0.02	100.22	7.81	0.04	0.38	0.04	0.83	0.03	4.26	2.53	0.04	0.00	0.00	15.96	83.
345-117	Ol-gabbro	1415J	37.00	52.88	0.33	2.51	0.39	5.05	0.16	16.99	21.31	0.28	0.00	0.01	99.92	7.74	0.04	0.43	0.05	0.62	0.02	3.71	3.34	0.08	0.00	0.00	16.02	85.
345-117	Ol-gabbro	1415J	37.00	53.93	0.33	2.32	0.36	6.93	0.22	20.43	15.05	0.20	0.00	0.03	99.81	7.81	0.04	0.40	0.04	0.84	0.03	4.41	2.34	0.06	0.00	0.00	15.96	84.
345-117	Ol-gabbro	1415J	37.00	52.98	0.40	2.54	0.50	6.30	0.23	18.72	18.12	0.20	0.00	0.01	100.00	7.72	0.04	0.44	0.06	0.77	0.03	4.07	2.83	0.06	0.00	0.00	16.02	84.
345-117	Ol-gabbro	1415J	37.00	53.10	0.30	2.56	0.48	5.18	0.16	16.79	21.75	0.29	0.00	0.04	100.65	7.73	0.03	0.44	0.06	0.63	0.02	3.64	3.39	0.08	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	53.21	0.45	2.70	0.62	5.48	0.21	17.43	20.04	0.25	0.02	0.01	100.41	7.74	0.05	0.46	0.07	0.67	0.03	3.78	3.12	0.07	0.00	0.00	15.98	85.
345-117	Ol-gabbro	1415J	37.00	52.94	0.47	2.21	0.36	5.12	0.21	17.26	21.21	0.26	0.00	0.02	100.05	7.74	0.05	0.38	0.04	0.63	0.03	3.76	3.32	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	52.47	0.39	2.51	0.37	6.00	0.16	18.71	18.49	0.23	0.00	0.03	99.36	7.70	0.04	0.43	0.04	0.74	0.02	4.09	2.91	0.07	0.00	0.00	16.05	84.
345-117	Ol-gabbro	1415J	37.00	48.97	0.01	32.47	0.02	0.35	0.00	0.03	15.87	2.65	0.02	0.00	100.38	6.70	0.00	5.24	0.00	0.04	0.00	0.01	2.33	0.70	0.00	0.00	15.03	13.
345-117	Ol-gabbro	1415J	37.00	52.28	0.49	2.86	0.59	5.75	0.16	17.52	19.98	0.25	0.00	0.01	99.87	7.66	0.05	0.49	0.07	0.70	0.02	3.83	3.14	0.07	0.00	0.00	16.04	84.
345-117	Ol-gabbro	1415J	37.00	52.91	0.45	2.58	0.48	5.61	0.19	17.27	19.19	0.29	0.01	0.03	99.02	7.79	0.05	0.45	0.06	0.69	0.02	3.79	3.03	0.08	0.00	0.00	15.96	84.
345-117	Ol-gabbro	1415J	37.00	52.01	0.53	3.00	0.92	5.13	0.13	16.67	20.84	0.32	0.00	0.05	99.59	7.65	0.06	0.52	0.11	0.63	0.02	3.66	3.29	0.09	0.00	0.01	16.02	85.
345-117	Ol-gabbro	1415J	37.00	51.78	0.58	3.18	0.73	5.48	0.21	17.62	19.42	0.36	0.00	0.03	99.37	7.62	0.06	0.55	0.09	0.67	0.03	3.86	3.06	0.10	0.00	0.00	16.05	85.
345-117	Ol-gabbro	1415J	37.00	53.41	0.40	2.64	0.56	7.69	0.20	21.35	13.82	0.16	0.00	0.03	100.26	7.71	0.04	0.45	0.06	0.93	0.02	4.60	2.14	0.04	0.00	0.00	16.01	83.
345-117	Ol-gabbro	1415J	37.00	52.47	0.41	2.56	0.50	5.29	0.13	17.19	20.76	0.24	0.01	0.03	99.58	7.71	0.05	0.44	0.06	0.65	0.02	3.77	3.27	0.07	0.00	0.00	16.03	85.
345-117	Ol-gabbro	1415J	37.00	53.20	0.43	2.52	0.48	6.17	0.18	18.59	18.08	0.20	0.00	0.03	99.89	7.75	0.05	0.43	0.06	0.75	0.02	4.04	2.82	0.06	0.00	0.00	15.98	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-117	Ol-gabbro	1415J	37.00	53.22	0.46	2.17	0.34	5.88	0.19	18.44	18.68	0.20	0.00	0.02	99.61	7.78	0.05	0.37	0.04	0.72	0.02	4.02	2.93	0.06	0.00	0.00	15.99	84.
345-117	Ol-gabbro	1415J	37.00	53.06	0.45	2.17	0.30	5.17	0.16	17.43	21.22	0.25	0.00	0.02	100.22	7.74	0.05	0.37	0.03	0.63	0.02	3.79	3.32	0.07	0.00	0.00	16.04	85.
345-117	Ol-gabbro	1415J	37.00	53.37	0.41	2.11	0.35	5.65	0.15	18.05	19.70	0.18	0.01	0.00	99.97	7.78	0.04	0.36	0.04	0.69	0.02	3.92	3.08	0.05	0.00	0.00	16.00	85.
345-117	Ol-gabbro	1415J	37.00	53.46	0.44	2.37	0.49	6.50	0.16	19.08	17.66	0.28	0.00	0.05	100.49	7.75	0.05	0.40	0.06	0.79	0.02	4.12	2.74	0.08	0.00	0.01	16.01	83.
345-09	Opx-Ol-gabbro	1415J	28.00	52.83	0.26	2.63	0.56	6.44	0.16	17.67	19.36	0.26	0.00	0.03	100.21	7.72	0.03	0.45	0.06	0.79	0.02	3.85	3.03	0.07	0.00	0.00	16.03	83.
345-09	Opx-Ol-gabbro	1415J	28.00	53.36	0.42	1.98	0.19	5.55	0.20	16.92	21.49	0.20	0.00	0.01	100.31	7.79	0.05	0.34	0.02	0.68	0.02	3.68	3.36	0.06	0.00	0.00	16.01	84.
345-09	Opx-Ol-gabbro	1415J	28.00	52.92	0.43	2.12	0.19	5.29	0.17	16.29	22.25	0.21	0.01	0.04	99.91	7.77	0.05	0.37	0.02	0.65	0.02	3.57	3.50	0.06	0.00	0.00	16.01	84.
345-09	Opx-Ol-gabbro	1415J	28.00	52.50	0.39	2.47	0.17	6.12	0.19	17.11	20.29	0.20	0.01	0.03	99.48	7.73	0.04	0.43	0.02	0.75	0.02	3.76	3.20	0.06	0.00	0.00	16.03	83.
345-09	Opx-Ol-gabbro	1415J	28.00	53.43	0.33	1.91	0.16	7.39	0.21	19.73	16.69	0.13	0.00	0.03	100.01	7.78	0.04	0.33	0.02	0.90	0.03	4.29	2.61	0.04	0.00	0.00	16.03	82.
345-09	Opx-Ol-gabbro	1415J	28.00	52.61	0.29	2.39	0.32	5.90	0.21	16.47	21.22	0.26	0.00	0.05	99.72	7.75	0.03	0.41	0.04	0.73	0.03	3.62	3.35	0.08	0.00	0.01	16.03	83.
345-09	Opx-Ol-gabbro	1415J	28.00	53.29	0.22	2.36	0.48	7.97	0.21	19.55	15.92	0.18	0.00	0.04	100.21	7.76	0.02	0.40	0.06	0.97	0.03	4.24	2.48	0.05	0.00	0.00	16.01	81.
345-09	Opx-Ol-gabbro	1415J	28.00	52.66	0.28	2.36	0.41	5.59	0.18	16.30	21.45	0.27	0.01	0.04	99.54	7.76	0.03	0.41	0.05	0.69	0.02	3.58	3.39	0.08	0.00	0.00	16.01	83.
345-09	Opx-Ol-gabbro	1415J	28.00	53.18	0.39	2.03	0.28	5.29	0.18	16.61	22.03	0.22	0.00	0.00	100.21	7.78	0.04	0.35	0.03	0.65	0.02	3.62	3.45	0.06	0.00	0.00	16.02	84.
345-09	Opx-Ol-gabbro	1415J	28.00	53.45	0.45	2.32	0.36	6.47	0.19	17.74	19.75	0.20	0.01	0.02	100.96	7.75	0.05	0.40	0.04	0.79	0.02	3.83	3.07	0.06	0.00	0.00	16.01	83.
345-09	Opx-Ol-gabbro	1415J	28.00	53.29	0.40	2.43	0.46	7.98	0.21	19.33	16.39	0.22	0.00	0.01	100.70	7.73	0.04	0.42	0.05	0.97	0.03	4.18	2.55	0.06	0.00	0.00	16.02	81.
345-09	Opx-Ol-gabbro	1415J	28.00	52.06	0.41	2.96	0.68	5.54	0.18	15.72	21.72	0.27	0.00	0.02	99.56	7.69	0.05	0.51	0.08	0.68	0.02	3.46	3.44	0.08	0.00	0.00	16.01	83.
345-09	Opx-Ol-gabbro	1415J	28.00	52.24	0.32	2.92	0.78	6.12	0.20	16.55	20.37	0.29	0.00	0.04	99.84	7.69	0.04	0.51	0.09	0.75	0.03	3.63	3.21	0.08	0.00	0.00	16.02	82.
345-09	Opx-Ol-gabbro	1415J	28.00	52.92	0.28	2.27	0.30	6.74	0.21	17.81	18.84	0.24	0.01	0.00	99.62	7.77	0.03	0.39	0.04	0.83	0.03	3.90	2.96	0.07	0.00	0.00	16.02	82.
345-09	Opx-Ol-gabbro	1415J	28.00	53.06	0.34	2.09	0.18	5.38	0.20	16.08	22.25	0.24	0.00	0.02	99.83	7.80	0.04	0.36	0.02	0.66	0.02	3.52	3.51	0.07	0.00	0.00	16.00	84.
345-09	Opx-Ol-gabbro	1415J	28.00	53.28	0.29	2.45	0.51	6.93	0.18	18.80	17.91	0.21	0.00	0.04	100.58	7.73	0.03	0.42	0.06	0.84	0.02	4.07	2.79	0.06	0.00	0.00	16.02	82.
345-09	Opx-Ol-gabbro	1415J	28.00	51.11	0.51	4.35	0.71	6.11	0.16	16.06	20.50	0.29	0.00	0.01	99.80	7.53	0.06	0.75	0.08	0.75	0.02	3.53	3.24	0.08	0.00	0.00	16.04	82.
345-09	Opx-Ol-gabbro	1415J	28.00	52.82	0.46	2.12	0.21	5.57	0.16	16.78	21.52	0.21	0.00	0.01	99.86	7.76	0.05	0.37	0.02	0.68	0.02	3.67	3.39	0.06	0.00	0.00	16.03	84.
345-09	Opx-Ol-gabbro	1415J	28.00	53.04	0.29	2.20	0.26	7.09	0.18	18.49	18.17	0.20	0.01	0.02	99.95	7.76	0.03	0.38	0.03	0.87	0.02	4.03	2.85	0.06	0.00	0.00	16.03	82.
345-09	Opx-Ol-gabbro	1415J	28.00	52.62	0.34	2.32	0.39	6.62	0.20	17.62	19.60	0.26	0.00	0.03	99.99	7.72	0.04	0.40	0.05	0.81	0.02	3.85	3.08	0.07	0.00	0.00	16.05	82.
345-09	Opx-Ol-gabbro	1415J	28.00	53.36	0.32	2.43	0.42	7.95	0.21	19.71	15.85	0.20	0.00	0.05	100.50	7.74	0.03	0.42	0.05	0.96	0.03	4.26	2.46	0.06	0.00	0.01	16.02	81.
345-09	Opx-Ol-gabbro	1415J	28.00	52.65	0.43	2.13	0.20	5.54	0.19	16.56	21.99	0.22	0.00	0.02	99.92	7.74	0.05	0.37	0.02	0.68	0.02	3.63	3.46	0.06	0.00	0.00	16.04	84.
345-09	Opx-Ol-gabbro	1415J	28.00	53.14	0.44	2.12	0.21	5.84	0.18	17.55	21.04	0.21	0.00	0.02	100.74	7.73	0.05	0.36	0.02	0.71	0.02	3.81	3.28	0.06	0.00	0.00	16.05	84.
345-09	Opx-Ol-gabbro	1415J	28.00	52.86	0.49	2.21	0.18	5.45	0.19	16.26	22.16	0.23	0.00	0.02	100.05	7.76	0.05	0.38	0.02	0.67	0.02	3.56	3.49	0.07	0.00	0.00	16.02	84.
345-09	Opx-Ol-gabbro	1415J	28.00	52.66	0.46	2.18	0.15	5.42	0.17	16.43	22.19	0.23	0.00	0.02	99.91	7.74	0.05	0.38	0.02	0.67	0.02	3.60	3.50	0.06	0.00	0.00	16.04	84.
345-09	Opx-Ol-gabbro	1415J	28.00	52.74	0.38	2.49	0.58	6.46	0.20	17.75	19.62	0.19	0.00	0.02	100.43	7.70	0.04	0.43	0.07	0.79	0.02	3.86	3.07	0.05	0.00	0.00	16.04	83.
345-09	Opx-Ol-gabbro	1415J	28.00	52.83	0.25	2.40	0.57	6.21	0.18	17.42	20.09	0.27	0.00	0.03	100.27	7.73	0.03	0.41	0.07	0.76	0.02	3.80	3.15	0.08	0.00	0.00	16.04	83.
345-09	Opx-Ol-gabbro	1415J	28.00	52.71	0.24	2.50	0.66	6.48	0.18	17.53	19.47	0.25	0.00	0.04	100.05	7.72	0.03	0.43	0.08	0.79	0.02	3.83	3.06	0.07	0.00	0.00	16.03	82.
345-22	Opx-Ol-gabbro	1415J	74.00	53.30	0.90	2.25	0.26	4.78	0.19	16.57	22.79	0.32	0.00	0.00	101.35	7.71	0.10	0.38	0.03	0.58	0.02	3.58	3.53	0.09	0.00	0.00	16.03	86.
345-22	Opx-Ol-	1415J	74.00	52.17	0.83	2.21	0.23	4.51	0.16	16.25	22.41	0.27	0.00	0.04	99.06	7.72	0.09	0.38	0.03	0.56	0.02	3.59	3.55	0.08	0.00	0.00	16.02	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
	gabbro																											
345-22	Opx-Ol-gabbro	1415J	74.00	53.67	0.47	2.04	0.17	5.13	0.15	17.66	21.33	0.27	0.00	0.06	100.95	7.77	0.05	0.35	0.02	0.62	0.02	3.81	3.31	0.07	0.00	0.01	16.03	85.
345-22	Opx-Ol-gabbro	1415J	74.00	53.03	0.54	2.18	0.17	4.68	0.14	16.53	23.13	0.25	0.00	0.05	100.69	7.73	0.06	0.37	0.02	0.57	0.02	3.59	3.61	0.07	0.00	0.01	16.05	86.
345-22	Opx-Ol-gabbro	1415J	74.00	54.35	0.46	1.88	0.14	7.46	0.20	22.82	13.05	0.14	0.00	0.01	100.50	7.79	0.05	0.32	0.02	0.89	0.02	4.88	2.00	0.04	0.00	0.00	16.01	84.
345-22	Opx-Ol-gabbro	1415J	74.00	52.72	0.81	2.75	0.11	5.08	0.18	17.34	21.96	0.27	0.00	0.02	101.24	7.64	0.09	0.47	0.01	0.61	0.02	3.74	3.41	0.08	0.00	0.00	16.07	85.
345-22	Opx-Ol-gabbro	1415J	74.00	53.38	0.88	2.10	0.11	4.90	0.20	16.59	22.54	0.29	0.01	0.02	101.02	7.75	0.10	0.36	0.01	0.60	0.02	3.59	3.50	0.08	0.00	0.00	16.01	85.
345-22	Opx-Ol-gabbro	1415J	74.00	52.88	0.45	2.79	0.57	5.05	0.16	16.92	21.87	0.29	0.01	0.02	101.00	7.67	0.05	0.48	0.06	0.61	0.02	3.66	3.40	0.08	0.00	0.00	16.05	85.
345-22	Opx-Ol-gabbro	1415J	74.00	53.47	0.40	2.63	0.58	4.90	0.17	16.56	22.39	0.31	0.00	0.02	101.42	7.73	0.04	0.45	0.07	0.59	0.02	3.57	3.47	0.09	0.00	0.00	16.02	85.
345-22	Opx-Ol-gabbro	1415J	74.00	53.73	0.37	2.66	0.57	5.72	0.14	18.01	20.16	0.28	0.02	0.01	101.67	7.72	0.04	0.45	0.06	0.69	0.02	3.86	3.10	0.08	0.00	0.00	16.02	84.
345-22	Opx-Ol-gabbro	1415J	74.00	54.15	0.51	1.89	0.16	4.38	0.12	16.61	23.68	0.23	0.00	0.01	101.72	7.80	0.05	0.32	0.02	0.53	0.01	3.56	3.65	0.06	0.00	0.00	16.01	87.
345-22	Opx-Ol-gabbro	1415J	74.00	53.73	0.54	2.27	0.17	4.99	0.18	17.02	22.22	0.28	0.01	0.03	101.42	7.76	0.06	0.39	0.02	0.60	0.02	3.66	3.44	0.08	0.00	0.00	16.02	85.
345-22	Opx-Ol-gabbro	1415J	74.00	53.55	0.47	2.45	0.18	4.90	0.16	16.50	22.49	0.30	0.00	0.01	101.00	7.76	0.05	0.42	0.02	0.59	0.02	3.56	3.49	0.08	0.00	0.00	16.01	85.
345-22	Opx-Ol-gabbro	1415J	74.00	54.31	0.52	1.95	0.17	4.88	0.18	16.89	22.28	0.29	0.01	0.01	101.49	7.82	0.06	0.33	0.02	0.59	0.02	3.63	3.44	0.08	0.00	0.00	15.99	86.
345-22	Opx-Ol-gabbro	1415J	74.00	53.76	0.90	2.12	0.09	5.02	0.16	17.38	21.76	0.30	0.00	0.01	101.48	7.75	0.10	0.36	0.01	0.60	0.02	3.73	3.36	0.08	0.00	0.00	16.01	86.
345-22	Opx-Ol-gabbro	1415J	74.00	53.05	0.76	1.92	0.07	6.29	0.18	20.11	16.55	0.15	0.00	0.07	99.14	7.76	0.08	0.33	0.01	0.77	0.02	4.39	2.59	0.04	0.00	0.01	16.01	85.
345-22	Opx-Ol-gabbro	1415J	74.00	51.31	0.98	3.71	0.07	5.44	0.18	17.46	20.96	0.27	0.01	0.02	100.41	7.50	0.11	0.64	0.01	0.66	0.02	3.80	3.28	0.08	0.00	0.00	16.11	85.
345-22	Opx-Ol-gabbro	1415J	74.00	52.86	0.46	2.90	0.05	11.78	0.27	29.48	1.43	0.03	0.01	0.01	99.29	7.59	0.05	0.49	0.01	1.41	0.03	6.31	0.22	0.01	0.00	0.00	16.12	81.
345-108	Opx-Ol-gabbro	1415J	27.70	52.79	0.34	2.35	0.44	5.64	0.15	16.70	20.64	0.22	0.02	0.02	99.31	7.78	0.04	0.41	0.05	0.69	0.02	3.67	3.26	0.06	0.00	0.00	15.99	84.
345-108	Opx-Ol-gabbro	1415J	27.70	53.22	0.35	2.04	0.31	5.69	0.20	16.96	21.18	0.23	0.00	0.05	100.22	7.78	0.04	0.35	0.04	0.70	0.02	3.70	3.32	0.07	0.00	0.01	16.02	84.
345-108	Opx-Ol-gabbro	1415J	27.70	54.11	0.39	2.16	0.24	7.23	0.18	19.83	16.08	0.16	0.00	0.03	100.39	7.82	0.04	0.37	0.03	0.87	0.02	4.27	2.49	0.04	0.00	0.00	15.96	83.
345-108	Opx-Ol-gabbro	1415J	27.70	53.17	0.48	2.15	0.23	5.77	0.19	17.16	20.63	0.24	0.00	0.02	100.03	7.78	0.05	0.37	0.03	0.71	0.02	3.74	3.23	0.07	0.00	0.00	16.00	84.
345-108	Opx-Ol-gabbro	1415J	27.70	52.98	0.52	2.43	0.22	5.61	0.20	16.80	20.96	0.25	0.02	0.04	100.02	7.76	0.06	0.42	0.03	0.69	0.02	3.67	3.29	0.07	0.00	0.00	16.00	84.
345-108	Opx-Ol-gabbro	1415J	27.70	53.34	0.43	2.31	0.19	5.41	0.20	16.99	21.34	0.20	0.00	0.01	100.41	7.77	0.05	0.40	0.02	0.66	0.02	3.69	3.33	0.06	0.00	0.00	16.00	84.
345-108	Opx-Ol-gabbro	1415J	27.70	53.43	0.44	2.28	0.18	5.87	0.18	16.99	20.96	0.27	0.01	0.01	100.61	7.78	0.05	0.39	0.02	0.71	0.02	3.69	3.27	0.08	0.00	0.00	16.01	83.
345-108	Opx-Ol-gabbro	1415J	27.70	54.02	0.37	2.28	0.25	6.66	0.19	18.38	18.86	0.20	0.00	0.03	101.24	7.79	0.04	0.39	0.03	0.80	0.02	3.95	2.91	0.06	0.00	0.00	15.99	83.
345-108	Opx-Ol-gabbro	1415J	27.70	53.98	0.28	2.24	0.39	7.59	0.21	19.75	16.97	0.25	0.00	0.01	101.68	7.75	0.03	0.38	0.04	0.91	0.03	4.23	2.61	0.07	0.00	0.00	16.05	82.
345-108	Opx-Ol-gabbro	1415J	27.70	53.58	0.37	2.11	0.26	5.31	0.16	16.35	21.80	0.24	0.00	0.03	100.20	7.83	0.04	0.36	0.03	0.65	0.02	3.56	3.41	0.07	0.00	0.00	15.97	84.
345-108	Opx-Ol-gabbro	1415J	27.70	52.18	0.46	3.02	0.53	5.56	0.17	16.39	21.62	0.27	0.00	0.02	100.23	7.65	0.05	0.52	0.06	0.68	0.02	3.58	3.40	0.08	0.00	0.00	16.05	84.
345-108	Opx-Ol-gabbro	1415J	27.70	52.90	0.28	2.56	0.81	5.39	0.19	16.46	21.81	0.22	0.00	0.01	100.60	7.72	0.03	0.44	0.09	0.66	0.02	3.58	3.41	0.06	0.00	0.00	16.01	84.
345-108	Opx-Ol-gabbro	1415J	27.70	51.91	0.34	3.27	1.03	5.51	0.15	16.31	20.94	0.30	0.00	0.03	99.79	7.64	0.04	0.57	0.12	0.68	0.02	3.58	3.30	0.09	0.00	0.00	16.03	84.
345-108	Opx-Ol-gabbro	1415J	27.70	52.56	0.44	2.99	0.78	6.56	0.14	17.59	19.01	0.26	0.00	0.03	100.36	7.67	0.05	0.51	0.09	0.80	0.02	3.83	2.97	0.07	0.00	0.00	16.02	82.
345-108	Opx-Ol-gabbro	1415J	27.70	53.55	0.43	2.09	0.24	5.63	0.17	16.56	21.16	0.24	0.01	0.01	100.09	7.83	0.05	0.36	0.03	0.69	0.02	3.61	3.31	0.07	0.00	0.00	15.97	83.
345-108	Opx-Ol-gabbro	1415J	27.70	52.77	0.37	2.37	0.46	5.39	0.14	16.38	22.09	0.19	0.00	0.03	100.18	7.73	0.04	0.41	0.05	0.66	0.02	3.58	3.47	0.05	0.00	0.00	16.02	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-108	Opx-Ol-gabbro	1415J	27.70	52.88	0.37	2.25	0.29	5.23	0.19	16.35	22.66	0.20	0.00	0.02	100.43	7.74	0.04	0.39	0.03	0.64	0.02	3.57	3.55	0.06	0.00	0.00	16.04	84.
345-108	Opx-Ol-gabbro	1415J	27.70	52.47	0.32	2.71	0.70	6.70	0.21	18.13	19.44	0.23	0.02	0.01	100.94	7.64	0.03	0.47	0.08	0.82	0.03	3.93	3.03	0.06	0.00	0.00	16.09	82.
345-108	Opx-Ol-gabbro	1415J	27.70	53.84	0.34	2.07	0.20	8.61	0.23	20.66	14.33	0.14	0.01	0.03	100.45	7.79	0.04	0.35	0.02	1.04	0.03	4.46	2.22	0.04	0.00	0.00	16.00	81.
345-108	Opx-Ol-gabbro	1415J	27.70	52.80	0.30	2.54	0.62	5.56	0.15	16.09	21.87	0.23	0.01	0.00	100.16	7.74	0.03	0.44	0.07	0.68	0.02	3.52	3.44	0.06	0.00	0.00	16.00	83.
345-108	Opx-Ol-gabbro	1415J	27.70	53.03	0.27	2.67	0.61	5.47	0.14	16.40	22.02	0.28	0.00	0.02	100.92	7.72	0.03	0.46	0.07	0.67	0.02	3.56	3.43	0.08	0.00	0.00	16.03	84.
345-108	Opx-Ol-gabbro	1415J	27.70	53.00	0.34	2.36	0.38	5.40	0.18	16.47	21.60	0.24	0.00	0.03	100.00	7.77	0.04	0.41	0.04	0.66	0.02	3.60	3.39	0.07	0.00	0.00	16.00	84.
345-108	Opx-Ol-gabbro	1415J	27.70	53.10	0.31	2.20	0.24	5.38	0.14	16.99	21.01	0.17	0.02	0.00	99.58	7.80	0.03	0.38	0.03	0.66	0.02	3.72	3.31	0.05	0.00	0.00	15.99	84.
345-108	Opx-Ol-gabbro	1415J	27.70	54.12	0.33	2.10	0.24	5.93	0.16	18.45	18.96	0.15	0.00	0.01	100.44	7.83	0.04	0.36	0.03	0.72	0.02	3.98	2.94	0.04	0.00	0.00	15.96	84.
345-108	Opx-Ol-gabbro	1415J	27.70	54.20	0.34	1.95	0.18	6.90	0.18	19.97	16.36	0.15	0.00	0.02	100.25	7.84	0.04	0.33	0.02	0.83	0.02	4.30	2.53	0.04	0.00	0.00	15.97	83.
345-108	Opx-Ol-gabbro	1415J	27.70	53.35	0.34	2.36	0.35	5.71	0.15	16.84	20.91	0.21	0.00	0.02	100.23	7.79	0.04	0.41	0.04	0.70	0.02	3.66	3.27	0.06	0.00	0.00	15.98	84.
345-108	Opx-Ol-gabbro	1415J	27.70	52.85	0.35	2.96	0.68	5.02	0.15	16.23	21.41	0.30	0.01	0.02	99.98	7.73	0.04	0.51	0.08	0.61	0.02	3.54	3.36	0.08	0.00	0.00	15.98	85.
345-108	Opx-Ol-gabbro	1415J	27.70	52.83	0.30	3.13	0.72	5.49	0.17	17.91	19.76	0.29	0.00	0.03	100.62	7.67	0.03	0.54	0.08	0.67	0.02	3.87	3.07	0.08	0.00	0.00	16.03	85.
345-108	Opx-Ol-gabbro	1415J	27.70	52.48	0.28	2.81	0.82	5.07	0.13	17.86	20.28	0.25	0.02	0.00	100.00	7.67	0.03	0.48	0.10	0.62	0.02	3.89	3.17	0.07	0.00	0.00	16.05	86.
345-108	Opx-Ol-gabbro	1415J	27.70	52.50	0.27	2.76	0.63	4.59	0.15	16.35	21.99	0.29	0.00	0.01	99.53	7.72	0.03	0.48	0.07	0.57	0.02	3.58	3.46	0.08	0.00	0.00	16.02	86.
345-108	Opx-Ol-gabbro	1415J	27.70	52.74	0.31	2.76	0.64	5.33	0.17	16.11	21.98	0.26	0.00	0.00	100.29	7.72	0.03	0.48	0.07	0.65	0.02	3.51	3.45	0.07	0.00	0.00	16.01	84.
345-109	Opx-Ol-gabbro	1415J	28.00	52.61	0.37	1.74	0.23	6.09	0.17	17.56	19.95	0.18	0.00	0.01	98.90	7.79	0.04	0.30	0.03	0.75	0.02	3.88	3.16	0.05	0.00	0.00	16.03	83.
345-109	Opx-Ol-gabbro	1415J	28.00	53.53	0.26	2.28	0.39	8.36	0.21	20.17	14.88	0.15	0.00	0.03	100.24	7.77	0.03	0.39	0.04	1.01	0.03	4.37	2.31	0.04	0.00	0.00	16.00	81.
345-109	Opx-Ol-gabbro	1415J	28.00	53.09	0.25	2.21	0.35	5.75	0.16	17.41	20.24	0.24	0.00	0.01	99.70	7.78	0.03	0.38	0.04	0.71	0.02	3.80	3.18	0.07	0.00	0.00	16.01	84.
345-109	Opx-Ol-gabbro	1415J	28.00	52.91	0.26	2.18	0.34	5.47	0.17	16.29	21.15	0.25	0.00	0.00	99.03	7.82	0.03	0.38	0.04	0.68	0.02	3.59	3.35	0.07	0.00	0.00	15.98	84.
345-109	Opx-Ol-gabbro	1415J	28.00	53.07	0.32	2.14	0.22	7.66	0.23	18.77	15.70	0.14	0.00	0.03	98.28	7.85	0.04	0.37	0.03	0.95	0.03	4.14	2.49	0.04	0.00	0.00	15.93	81.
345-109	Opx-Ol-gabbro	1415J	28.00	52.97	0.39	2.40	0.36	5.95	0.17	16.89	20.63	0.19	0.00	0.03	99.96	7.76	0.04	0.42	0.04	0.73	0.02	3.69	3.24	0.05	0.00	0.00	15.99	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.63	0.32	2.77	0.53	6.01	0.17	16.80	20.23	0.22	0.00	0.02	99.71	7.73	0.04	0.48	0.06	0.74	0.02	3.68	3.18	0.06	0.00	0.00	16.00	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.68	0.37	2.50	0.44	5.95	0.18	17.20	20.24	0.24	0.01	0.03	99.83	7.73	0.04	0.43	0.05	0.73	0.02	3.76	3.18	0.07	0.00	0.00	16.02	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.41	0.33	2.66	0.59	5.74	0.15	16.58	21.01	0.27	0.01	0.04	99.78	7.71	0.04	0.46	0.07	0.71	0.02	3.64	3.31	0.08	0.00	0.01	16.03	83.
345-109	Opx-Ol-gabbro	1415J	28.00	53.17	0.32	2.41	0.43	6.10	0.18	17.49	19.38	0.23	0.00	0.02	99.74	7.78	0.04	0.42	0.05	0.75	0.02	3.82	3.04	0.06	0.00	0.00	15.98	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.66	0.31	2.75	0.60	6.64	0.17	17.48	19.07	0.22	0.00	0.05	99.95	7.72	0.03	0.48	0.07	0.81	0.02	3.82	2.99	0.06	0.00	0.01	16.01	82.
345-109	Opx-Ol-gabbro	1415J	28.00	54.76	0.28	1.75	0.13	9.63	0.25	22.66	11.27	0.08	0.00	0.03	100.83	7.85	0.03	0.30	0.01	1.16	0.03	4.84	1.73	0.02	0.00	0.00	15.98	80.
345-109	Opx-Ol-gabbro	1415J	28.00	52.42	0.46	2.32	0.23	5.32	0.18	16.17	22.10	0.22	0.00	0.01	99.44	7.74	0.05	0.40	0.03	0.66	0.02	3.56	3.50	0.06	0.00	0.00	16.02	84.
345-109	Opx-Ol-gabbro	1415J	28.00	52.40	0.45	2.75	0.64	6.78	0.17	17.37	19.50	0.19	0.00	0.03	100.28	7.67	0.05	0.48	0.07	0.83	0.02	3.79	3.06	0.05	0.00	0.00	16.03	82.
345-109	Opx-Ol-gabbro	1415J	28.00	52.26	0.41	2.67	0.55	5.95	0.18	16.29	21.26	0.27	0.00	0.03	99.87	7.70	0.05	0.46	0.06	0.73	0.02	3.58	3.35	0.08	0.00	0.00	16.03	82.
345-109	Opx-Ol-gabbro	1415J	28.00	52.59	0.30	2.41	0.46	5.96	0.20	16.42	21.17	0.28	0.00	0.01	99.81	7.74	0.03	0.42	0.05	0.73	0.02	3.60	3.34	0.08	0.00	0.00	16.03	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.39	0.34	2.38	0.26	7.38	0.21	18.83	17.04	0.22	0.00	0.02	99.06	7.73	0.04	0.41	0.03	0.91	0.03	4.14	2.69	0.06	0.00	0.00	16.04	81.
345-109	Opx-Ol-gabbro	1415J	28.00	52.50	0.41	2.36	0.44	5.70	0.16	16.25	21.97	0.23	0.00	0.03	100.06	7.72	0.05	0.41	0.05	0.70	0.02	3.56	3.46	0.06	0.00	0.00	16.04	83.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-109	Opx-Ol-gabbro	1415J	28.00	52.21	0.42	2.37	0.39	6.02	0.21	16.61	21.28	0.20	0.00	0.01	99.72	7.70	0.05	0.41	0.05	0.74	0.03	3.65	3.36	0.06	0.00	0.00	16.05	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.73	0.42	2.19	0.29	5.81	0.20	16.19	21.82	0.19	0.00	0.02	99.85	7.76	0.05	0.38	0.03	0.72	0.02	3.55	3.44	0.05	0.00	0.00	16.01	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.89	0.45	2.05	0.25	5.52	0.19	16.25	22.44	0.21	0.00	0.01	100.27	7.76	0.05	0.36	0.03	0.68	0.02	3.55	3.53	0.06	0.00	0.00	16.03	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.99	0.54	2.21	0.22	6.21	0.19	17.15	20.61	0.23	0.00	0.02	100.36	7.74	0.06	0.38	0.03	0.76	0.02	3.74	3.23	0.06	0.00	0.00	16.02	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.64	0.66	2.74	0.23	6.30	0.18	16.88	19.48	0.24	0.00	0.01	99.35	7.75	0.07	0.48	0.03	0.77	0.02	3.70	3.07	0.07	0.00	0.00	15.96	82.
345-109	Opx-Ol-gabbro	1415J	28.00	51.99	0.33	3.33	0.99	6.26	0.17	16.91	19.35	0.29	0.00	0.02	99.64	7.65	0.04	0.58	0.12	0.77	0.02	3.71	3.05	0.08	0.00	0.00	16.01	82.
345-109	Opx-Ol-gabbro	1415J	28.00	52.45	0.30	3.19	1.00	5.98	0.18	17.35	19.50	0.22	0.00	0.02	100.18	7.66	0.03	0.55	0.12	0.73	0.02	3.78	3.05	0.06	0.00	0.00	16.01	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.46	0.31	2.70	0.75	5.49	0.17	16.81	20.60	0.22	0.00	0.01	99.53	7.72	0.03	0.47	0.09	0.68	0.02	3.69	3.25	0.06	0.00	0.00	16.00	84.
345-109	Opx-Ol-gabbro	1415J	28.00	52.77	0.34	2.47	0.47	5.96	0.16	16.75	20.32	0.22	0.00	0.03	99.49	7.77	0.04	0.43	0.06	0.73	0.02	3.67	3.20	0.06	0.00	0.00	15.99	83.
345-109	Opx-Ol-gabbro	1415J	28.00	53.09	0.37	2.14	0.28	5.85	0.16	16.57	21.45	0.21	0.01	0.00	100.13	7.78	0.04	0.37	0.03	0.72	0.02	3.62	3.37	0.06	0.00	0.00	16.01	83.
345-109	Opx-Ol-gabbro	1415J	28.00	53.09	0.34	2.36	0.27	5.63	0.20	16.44	21.22	0.24	0.00	0.00	99.79	7.79	0.04	0.41	0.03	0.69	0.03	3.60	3.34	0.07	0.00	0.00	15.99	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.69	0.39	2.44	0.39	5.52	0.17	16.15	21.83	0.20	0.00	0.02	99.80	7.75	0.04	0.42	0.05	0.68	0.02	3.54	3.44	0.06	0.00	0.00	16.00	83.
345-109	Opx-Ol-gabbro	1415J	28.00	52.12	0.35	3.17	0.90	6.39	0.18	17.06	20.07	0.26	0.01	0.00	100.51	7.62	0.04	0.55	0.10	0.78	0.02	3.72	3.14	0.07	0.00	0.00	16.05	82.
345-109	Opx-Ol-gabbro	1415J	28.00	53.39	0.30	2.32	0.39	8.08	0.21	20.14	15.19	0.16	0.01	0.03	100.23	7.75	0.03	0.40	0.04	0.98	0.03	4.36	2.36	0.05	0.00	0.00	16.01	81.
345-109	Opx-Ol-gabbro	1415J	28.00	52.87	0.33	2.06	0.22	7.30	0.20	19.02	17.65	0.14	0.01	0.03	99.83	7.74	0.04	0.36	0.03	0.89	0.02	4.15	2.77	0.04	0.00	0.00	16.05	82.
345-109	Opx-Ol-gabbro	1415J	28.00	53.19	0.36	2.09	0.23	6.69	0.19	17.77	19.26	0.22	0.00	0.02	100.00	7.78	0.04	0.36	0.03	0.82	0.02	3.88	3.02	0.06	0.00	0.00	16.01	82.
345-113	Opx-Ol-gabbro	1415J	37.00	53.13	0.32	2.40	0.22	4.40	0.18	17.70	20.64	0.21	0.00	0.03	99.22	7.78	0.04	0.41	0.03	0.54	0.02	3.87	3.24	0.06	0.00	0.00	15.99	87.
345-113	Opx-Ol-gabbro	1415J	37.00	51.10	0.31	3.86	0.19	4.36	0.14	17.37	20.50	0.17	0.01	0.03	98.04	7.59	0.04	0.68	0.02	0.54	0.02	3.85	3.26	0.05	0.00	0.00	16.05	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.34	0.26	2.80	0.48	4.94	0.14	18.61	19.54	0.16	0.00	0.01	99.28	7.67	0.03	0.48	0.06	0.61	0.02	4.07	3.07	0.05	0.00	0.00	16.05	87.
345-113	Opx-Ol-gabbro	1415J	37.00	53.05	0.30	1.61	0.44	3.91	0.12	16.42	22.54	0.17	0.00	0.02	98.58	7.85	0.03	0.28	0.05	0.48	0.02	3.62	3.58	0.05	0.00	0.00	15.97	88.
345-113	Opx-Ol-gabbro	1415J	37.00	52.83	0.22	2.52	0.35	4.83	0.14	17.37	21.15	0.22	0.00	0.01	99.64	7.74	0.02	0.43	0.04	0.59	0.02	3.79	3.32	0.06	0.00	0.00	16.03	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.70	0.22	2.62	0.49	4.89	0.16	17.57	21.00	0.24	0.01	0.02	99.91	7.71	0.02	0.45	0.06	0.60	0.02	3.83	3.29	0.07	0.00	0.00	16.05	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.84	0.33	2.15	0.38	4.47	0.14	17.73	21.21	0.16	0.00	0.00	99.39	7.75	0.04	0.37	0.04	0.55	0.02	3.88	3.33	0.05	0.00	0.00	16.03	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.22	0.29	2.95	0.38	4.95	0.15	18.75	19.49	0.18	0.00	0.04	99.40	7.65	0.03	0.51	0.04	0.61	0.02	4.09	3.06	0.05	0.00	0.00	16.07	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.22	0.24	2.53	0.44	4.71	0.11	17.40	19.87	0.24	0.01	0.01	97.78	7.77	0.03	0.44	0.05	0.59	0.01	3.86	3.17	0.07	0.00	0.00	15.99	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.73	0.21	2.62	0.46	4.23	0.14	16.74	22.07	0.19	0.01	0.01	99.40	7.74	0.02	0.45	0.05	0.52	0.02	3.66	3.47	0.05	0.00	0.00	16.01	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.75	0.35	2.19	0.31	4.67	0.13	17.66	20.62	0.20	0.00	0.03	98.90	7.77	0.04	0.38	0.04	0.58	0.02	3.88	3.25	0.06	0.00	0.00	16.01	87.
345-113	Opx-Ol-gabbro	1415J	37.00	51.57	0.35	2.94	0.26	4.87	0.18	17.99	19.70	0.19	0.00	0.03	98.07	7.66	0.04	0.51	0.03	0.61	0.02	3.98	3.14	0.05	0.00	0.00	16.05	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.67	0.27	2.39	0.27	4.85	0.15	17.83	19.77	0.19	0.00	0.03	98.42	7.78	0.03	0.42	0.03	0.60	0.02	3.93	3.13	0.05	0.00	0.00	15.99	86.
345-113	Opx-Ol-gabbro	1415J	37.00	53.06	0.25	2.40	0.36	4.95	0.15	18.06	20.04	0.21	0.00	0.01	99.49	7.76	0.03	0.41	0.04	0.61	0.02	3.94	3.14	0.06	0.00	0.00	16.01	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.54	0.26	2.56	0.44	5.14	0.15	18.15	19.70	0.19	0.00	0.02	99.14	7.72	0.03	0.44	0.05	0.63	0.02	3.98	3.10	0.05	0.00	0.00	16.03	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.24	0.28	2.40	0.41	4.95	0.16	17.74	20.68	0.19	0.00	0.05	99.09	7.70	0.03	0.42	0.05	0.61	0.02	3.90	3.27	0.05	0.00	0.01	16.06	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.57	0.33	2.36	0.37	4.72	0.15	17.31	20.70	0.22	0.00	0.03	98.76	7.76	0.04	0.41	0.04	0.58	0.02	3.81	3.28	0.06	0.00	0.00	16.01	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-113	Opx-Ol-gabbro	1415J	37.00	51.88	0.21	3.06	0.37	4.28	0.15	17.16	20.90	0.21	0.00	0.02	98.22	7.69	0.02	0.54	0.04	0.53	0.02	3.79	3.32	0.06	0.00	0.00	16.02	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.00	0.25	2.84	0.44	4.51	0.13	17.33	20.25	0.21	0.01	0.01	97.99	7.73	0.03	0.50	0.05	0.56	0.02	3.84	3.22	0.06	0.00	0.00	16.00	87.
345-113	Opx-Ol-gabbro	1415J	37.00	53.12	0.39	1.96	0.25	4.18	0.14	17.51	21.10	0.19	0.01	0.02	98.87	7.82	0.04	0.34	0.03	0.51	0.02	3.84	3.33	0.05	0.00	0.00	15.98	88.
345-113	Opx-Ol-gabbro	1415J	37.00	53.05	0.27	2.24	0.39	5.14	0.15	18.64	18.96	0.18	0.00	0.01	99.03	7.78	0.03	0.39	0.05	0.63	0.02	4.07	2.98	0.05	0.00	0.00	16.00	86.
345-113	Opx-Ol-gabbro	1415J	37.00	53.02	0.37	2.06	0.33	4.52	0.14	18.03	20.40	0.15	0.00	0.02	99.04	7.79	0.04	0.36	0.04	0.56	0.02	3.95	3.21	0.04	0.00	0.00	16.00	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.95	0.32	2.01	0.34	4.46	0.16	18.32	20.64	0.17	0.00	0.01	99.37	7.76	0.04	0.35	0.04	0.55	0.02	4.00	3.24	0.05	0.00	0.00	16.04	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.89	0.27	2.21	0.32	4.86	0.16	18.28	19.77	0.17	0.00	0.02	98.95	7.77	0.03	0.38	0.04	0.60	0.02	4.01	3.11	0.05	0.00	0.00	16.01	87.
345-113	Opx-Ol-gabbro	1415J	37.00	53.08	0.41	1.82	0.29	4.09	0.13	17.33	22.07	0.20	0.02	0.04	99.48	7.79	0.04	0.31	0.03	0.50	0.02	3.79	3.47	0.06	0.00	0.00	16.02	88.
345-113	Opx-Ol-gabbro	1415J	37.00	52.99	0.35	1.92	0.29	4.33	0.14	17.96	20.54	0.19	0.00	0.03	98.74	7.80	0.04	0.33	0.03	0.53	0.02	3.94	3.24	0.05	0.00	0.00	16.00	88.
345-113	Opx-Ol-gabbro	1415J	37.00	52.66	0.28	2.28	0.36	4.51	0.15	17.92	20.03	0.20	0.00	0.01	98.40	7.78	0.03	0.40	0.04	0.56	0.02	3.95	3.17	0.06	0.00	0.00	16.00	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.80	0.42	2.06	0.27	3.81	0.14	16.92	22.21	0.25	0.01	0.00	98.89	7.79	0.05	0.36	0.03	0.47	0.02	3.72	3.51	0.07	0.00	0.00	16.01	88.
345-113	Opx-Ol-gabbro	1415J	37.00	52.94	0.37	2.18	0.31	4.86	0.15	18.89	19.30	0.20	0.00	0.03	99.22	7.75	0.04	0.38	0.04	0.60	0.02	4.12	3.03	0.06	0.00	0.00	16.03	87.
345-113	Opx-Ol-gabbro	1415J	37.00	52.16	0.22	2.93	0.41	4.75	0.13	17.80	20.63	0.20	0.00	0.02	99.25	7.67	0.02	0.51	0.05	0.58	0.02	3.90	3.25	0.06	0.00	0.00	16.06	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.90	0.31	2.24	0.36	4.45	0.14	17.49	21.68	0.21	0.00	0.01	99.78	7.74	0.03	0.39	0.04	0.54	0.02	3.82	3.40	0.06	0.00	0.00	16.04	87.
345-113	Opx-Ol-gabbro	1415J	37.00	53.00	0.21	2.61	0.44	4.81	0.13	17.43	20.75	0.22	0.01	0.01	99.63	7.75	0.02	0.45	0.05	0.59	0.02	3.80	3.25	0.06	0.00	0.00	16.00	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.06	0.30	2.98	0.73	4.59	0.12	17.07	20.89	0.24	0.00	0.02	98.99	7.68	0.03	0.52	0.08	0.57	0.01	3.75	3.30	0.07	0.00	0.00	16.02	86.
345-113	Opx-Ol-gabbro	1415J	37.00	52.25	0.31	3.20	0.96	4.94	0.13	17.40	20.08	0.26	0.00	0.02	99.55	7.66	0.03	0.55	0.11	0.61	0.02	3.80	3.15	0.07	0.00	0.00	16.01	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Clinopyroxene (Exp.345 U1415P)																												
345-33	Ol-gabbro	1415P	19.50	51.98	0.33	3.13	0.49	4.07	0.11	18.41	20.09	0.29	0.00	0.02	98.93	7.64	0.04	0.54	0.06	0.50	0.01	4.03	3.16	0.08	0.00	0.00	16.07	88.
345-33	Ol-gabbro	1415P	19.50	53.35	0.46	2.48	0.54	3.95	0.15	17.13	22.82	0.30	0.00	0.01	101.19	7.71	0.05	0.42	0.06	0.48	0.02	3.69	3.53	0.08	0.00	0.00	16.04	88.
345-33	Ol-gabbro	1415P	19.50	52.54	0.86	2.51	0.71	4.19	0.15	17.12	22.31	0.35	0.00	0.03	100.75	7.64	0.09	0.43	0.08	0.51	0.02	3.71	3.48	0.10	0.00	0.00	16.06	87.
345-33	Ol-gabbro	1415P	19.50	52.04	0.75	2.74	0.86	4.00	0.14	16.64	22.83	0.35	0.00	0.02	100.37	7.61	0.08	0.47	0.10	0.49	0.02	3.63	3.58	0.10	0.00	0.00	16.07	88.
345-33	Ol-gabbro	1415P	19.50	52.35	0.44	3.40	1.08	4.35	0.11	16.36	22.50	0.39	0.00	0.02	100.99	7.60	0.05	0.58	0.12	0.53	0.01	3.54	3.50	0.11	0.00	0.00	16.05	87.
345-33	Ol-gabbro	1415P	19.50	52.28	0.47	3.59	1.20	4.48	0.13	16.75	22.22	0.39	0.00	0.01	101.51	7.56	0.05	0.61	0.14	0.54	0.02	3.61	3.44	0.11	0.00	0.00	16.07	86.
345-33	Ol-gabbro	1415P	19.50	53.32	0.55	2.48	0.90	4.65	0.17	17.87	21.04	0.33	0.00	0.03	101.34	7.69	0.06	0.42	0.10	0.56	0.02	3.84	3.25	0.09	0.00	0.00	16.04	87.
345-33	Ol-gabbro	1415P	19.50	52.82	0.60	2.51	0.90	4.08	0.15	16.95	22.20	0.35	0.00	0.04	100.58	7.68	0.07	0.43	0.10	0.50	0.02	3.68	3.46	0.10	0.00	0.00	16.03	88.
345-33	Ol-gabbro	1415P	19.50	52.38	0.35	3.48	1.22	4.62	0.15	16.63	22.01	0.39	0.00	0.03	101.24	7.59	0.04	0.59	0.14	0.56	0.02	3.59	3.42	0.11	0.00	0.00	16.06	86.
345-33	Ol-gabbro	1415P	19.50	52.20	0.30	2.60	0.93	4.84	0.16	18.81	19.92	0.33	0.00	0.03	100.13	7.62	0.03	0.45	0.11	0.59	0.02	4.09	3.12	0.09	0.00	0.00	16.12	87.
345-33	Ol-gabbro	1415P	19.50	52.73	0.24	2.58	1.09	4.02	0.13	17.95	21.06	0.34	0.00	0.01	100.15	7.68	0.03	0.44	0.13	0.49	0.02	3.90	3.29	0.10	0.00	0.00	16.06	88.
345-33	Ol-gabbro	1415P	19.50	53.32	0.22	2.60	1.08	3.87	0.10	17.26	21.84	0.34	0.00	0.02	100.66	7.73	0.02	0.44	0.12	0.47	0.01	3.73	3.39	0.10	0.00	0.00	16.02	88.
345-33	Ol-gabbro	1415P	19.50	52.76	0.27	2.68	1.20	4.01	0.13	17.17	21.93	0.33	0.00	0.03	100.50	7.68	0.03	0.46	0.14	0.49	0.02	3.72	3.42	0.09	0.00	0.00	16.04	88.
345-33	Ol-gabbro	1415P	19.50	52.76	0.27	2.68	1.20	4.01	0.13	17.17	21.93	0.33	0.00	0.03	100.50	7.68	0.03	0.46	0.14	0.49	0.02	3.72	3.42	0.09	0.00	0.00	16.04	88.
345-33	Ol-gabbro	1415P	19.50	52.40	0.29	3.38	1.27	5.07	0.14	19.47	18.30	0.29	0.00	0.01	100.62	7.58	0.03	0.58	0.15	0.61	0.02	4.20	2.83	0.08	0.00	0.00	16.07	87.
345-33	Ol-gabbro	1415P	19.50	52.39	0.32	3.59	1.38	4.11	0.13	16.61	21.93	0.42	0.00	0.00	100.88	7.60	0.03	0.61	0.16	0.50	0.02	3.59	3.41	0.12	0.00	0.00	16.04	87.
345-33	Ol-gabbro	1415P	19.50	53.27	0.24	2.78	1.10	4.96	0.14	18.77	19.19	0.28	0.00	0.05	100.77	7.69	0.03	0.47	0.13	0.60	0.02	4.04	2.97	0.08	0.00	0.01	16.02	87.
345-33	Ol-gabbro	1415P	19.50	53.03	0.27	2.87	1.13	3.92	0.14	16.78	22.63	0.33	0.00	0.02	101.10	7.67	0.03	0.49	0.13	0.47	0.02	3.62	3.51	0.09	0.00	0.00	16.03	88.
345-33	Ol-gabbro	1415P	19.50	50.74	0.43	3.46	1.26	3.98	0.13	16.49	22.30	0.40	0.01	0.03	99.22	7.51	0.05	0.60	0.15	0.49	0.02	3.64	3.54	0.11	0.00	0.00	16.12	88.
345-47	Ol-gabbro	1415P	64.00	52.33	0.68	2.35	0.54	4.96	0.15	17.76	19.83	0.26	0.00	0.03	98.89	7.72	0.08	0.41	0.06	0.61	0.02	3.90	3.13	0.07	0.00	0.00	16.01	86.
345-47	Ol-gabbro	1415P	64.00	53.92	0.70	2.43	0.56	5.11	0.15	18.30	20.43	0.27	0.00	0.03	101.89	7.72	0.08	0.41	0.06	0.61	0.02	3.90	3.13	0.07	0.00	0.00	16.01	86.
345-47	Ol-gabbro	1415P	64.00	53.53	0.66	2.42	0.53	4.80	0.16	17.40	21.62	0.33	0.00	0.02	101.46	7.71	0.07	0.41	0.06	0.58	0.02	3.74	3.34	0.09	0.00	0.00	16.02	86.
345-47	Ol-gabbro	1415P	64.00	53.49	0.71	2.48	0.49	4.28	0.11	18.09	20.80	0.31	0.00	0.00	100.75	7.72	0.08	0.42	0.06	0.52	0.01	3.89	3.22	0.09	0.00	0.00	16.00	88.
345-47	Ol-gabbro	1415P	64.00	52.77	0.54	2.37	0.59	4.54	0.15	16.57	22.77	0.31	0.00	0.01	100.64	7.70	0.06	0.41	0.07	0.55	0.02	3.60	3.56	0.09	0.00	0.00	16.05	86.
345-47	Ol-gabbro	1415P	64.00	51.74	0.38	3.71	0.59	5.25	0.17	17.58	20.16	0.31	0.00	0.02	99.90	7.57	0.04	0.64	0.07	0.64	0.02	3.84	3.16	0.09	0.00	0.00	16.08	85.
345-47	Ol-gabbro	1415P	64.00	52.87	0.35	2.59	0.61	4.67	0.17	16.62	22.17	0.33	0.01	0.04	100.42	7.71	0.04	0.45	0.07	0.57	0.02	3.61	3.47	0.09	0.00	0.00	16.04	86.
345-47	Ol-gabbro	1415P	64.00	52.32	0.40	3.20	0.62	4.89	0.16	17.40	21.05	0.36	0.00	0.01	100.40	7.62	0.04	0.55	0.07	0.60	0.02	3.78	3.29	0.10	0.00	0.00	16.07	86.
345-47	Ol-gabbro	1415P	64.00	51.65	0.40	3.46	0.65	4.91	0.14	17.96	19.83	0.32	0.02	0.03	99.35	7.59	0.04	0.60	0.08	0.60	0.02	3.93	3.12	0.09	0.00	0.00	16.08	86.
345-47	Ol-gabbro	1415P	64.00	53.22	0.46	2.61	0.70	4.52	0.17	16.50	22.70	0.40	0.00	0.01	101.27	7.70	0.05	0.45	0.08	0.55	0.02	3.56	3.52	0.11	0.00	0.00	16.04	86.
345-47	Ol-gabbro	1415P	64.00	52.11	0.47	3.32	0.68	4.63	0.15	17.22	21.47	0.34	0.01	0.02	100.40	7.60	0.05	0.57	0.08	0.56	0.02	3.74	3.35	0.10	0.00	0.00	16.08	86.
345-47	Ol-gabbro	1415P	64.00	53.14	0.40	2.31	0.62	4.21	0.16	16.46	23.47	0.30	0.00	0.02	101.08	7.71	0.04	0.39	0.07	0.51	0.02	3.56	3.65	0.08	0.00	0.00	16.05	87.
345-47	Ol-gabbro	1415P	64.00	52.00	0.74	6.23	0.62	6.39	0.14	19.23	12.94	1.14	0.01	0.04	99.46	7.52	0.08	1.06	0.07	0.77	0.02	4.14	2.00	0.32	0.00	0.00	15.99	84.
345-47	Ol-gabbro	1415P	64.00	53.03	0.45	3.49	0.32	4.04	0.14	17.83	20.35	0.61	0.01	0.01	100.28	7.68	0.05	0.60	0.04	0.49	0.02	3.85	3.16	0.17	0.00	0.00	16.04	88.
345-47	Ol-gabbro	1415P	64.00	55.29	0.13	0.91	0.14	2.83	0.16	17.19	24.80	0.14	0.00	0.00	101.58	7.93	0.01	0.15	0.02	0.34	0.02	3.68	3.81	0.04	0.00	0.00	15.99	91.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-47	Ol-gabbro	1415P	64.00	52.40	0.85	5.89	0.38	6.16	0.13	19.61	12.70	1.19	0.04	0.03	99.38	7.57	0.09	1.00	0.04	0.74	0.02	4.22	1.96	0.33	0.01	0.00	15.99	85.
345-47	Ol-gabbro	1415P	64.00	51.73	1.03	7.29	0.12	6.66	0.13	19.22	12.56	1.29	0.07	0.03	100.11	7.43	0.11	1.23	0.01	0.80	0.02	4.12	1.93	0.36	0.01	0.00	16.02	83.
345-47	Ol-gabbro	1415P	64.00	51.75	0.73	5.17	0.65	5.74	0.14	18.50	15.54	1.08	0.00	0.03	99.33	7.54	0.08	0.89	0.07	0.70	0.02	4.02	2.43	0.31	0.00	0.00	16.05	85.
345-47	Ol-gabbro	1415P	64.00	52.24	0.50	3.23	0.86	4.44	0.13	16.78	22.18	0.32	0.01	0.01	100.70	7.60	0.05	0.55	0.10	0.54	0.02	3.64	3.46	0.09	0.00	0.00	16.06	87.
345-47	Ol-gabbro	1415P	64.00	53.25	0.65	2.40	0.42	4.96	0.24	15.70	23.35	0.36	0.00	0.02	101.35	7.73	0.07	0.41	0.05	0.60	0.03	3.40	3.63	0.10	0.00	0.00	16.02	84.
345-47	Ol-gabbro	1415P	64.00	52.26	0.51	2.66	0.57	4.50	0.15	17.76	20.89	0.38	0.00	0.02	99.69	7.66	0.06	0.46	0.07	0.55	0.02	3.88	3.28	0.11	0.00	0.00	16.08	87.
345-47	Ol-gabbro	1415P	64.00	53.49	0.58	2.34	0.54	4.71	0.16	17.17	22.25	0.32	0.00	0.03	101.57	7.71	0.06	0.40	0.06	0.57	0.02	3.69	3.44	0.09	0.00	0.00	16.04	86.
345-47	Ol-gabbro	1415P	64.00	53.57	0.34	2.35	0.57	4.88	0.15	17.47	21.20	0.30	0.00	0.03	100.85	7.76	0.04	0.40	0.06	0.59	0.02	3.77	3.29	0.09	0.00	0.00	16.02	86.
345-47	Ol-gabbro	1415P	64.00	52.89	0.51	2.54	0.56	4.45	0.15	17.02	22.57	0.31	0.00	0.03	101.01	7.67	0.06	0.43	0.06	0.54	0.02	3.68	3.51	0.09	0.00	0.00	16.07	87.
345-47	Ol-gabbro	1415P	64.00	52.17	0.56	3.04	0.59	5.22	0.20	16.64	21.53	0.34	0.01	0.00	100.30	7.63	0.06	0.52	0.07	0.64	0.02	3.63	3.38	0.10	0.00	0.00	16.06	85.
345-47	Ol-gabbro	1415P	64.00	53.54	0.72	2.32	0.43	4.50	0.17	16.95	22.35	0.30	0.00	0.00	101.27	7.73	0.08	0.39	0.05	0.54	0.02	3.65	3.46	0.08	0.00	0.00	16.01	87.
345-47	Ol-gabbro	1415P	64.00	53.08	0.62	2.67	0.56	4.83	0.14	17.04	22.02	0.35	0.00	0.01	101.32	7.68	0.07	0.46	0.06	0.58	0.02	3.67	3.41	0.10	0.00	0.00	16.05	86.
345-47	Ol-gabbro	1415P	64.00	52.78	0.63	2.52	0.29	4.73	0.17	17.41	21.70	0.30	0.01	0.03	100.57	7.68	0.07	0.43	0.03	0.58	0.02	3.78	3.38	0.08	0.00	0.00	16.06	86.
345-47	Ol-gabbro	1415P	64.00	54.18	0.27	2.22	0.69	5.42	0.16	18.71	19.66	0.31	0.00	0.02	101.64	7.77	0.03	0.38	0.08	0.65	0.02	4.00	3.02	0.09	0.00	0.00	16.02	86.
345-47	Ol-gabbro	1415P	64.00	53.41	0.25	2.58	0.72	4.59	0.12	16.60	22.46	0.38	0.01	0.02	101.15	7.73	0.03	0.44	0.08	0.56	0.02	3.58	3.48	0.11	0.00	0.00	16.03	86.
345-47	Ol-gabbro	1415P	64.00	52.82	0.77	2.52	0.39	4.86	0.17	15.98	22.94	0.36	0.01	0.02	100.84	7.70	0.08	0.43	0.04	0.59	0.02	3.47	3.58	0.10	0.00	0.00	16.03	85.
345-47	Ol-gabbro	1415P	64.00	53.80	0.69	2.17	0.34	4.48	0.17	16.69	22.56	0.28	0.00	0.02	101.19	7.77	0.07	0.37	0.04	0.54	0.02	3.59	3.49	0.08	0.00	0.00	15.99	86.
345-90	Ol-gabbro	1415P	46.00	50.46	0.41	4.14	1.16	4.55	0.12	16.34	21.25	0.35	0.00	0.01	98.78	7.49	0.05	0.72	0.14	0.57	0.02	3.62	3.38	0.10	0.00	0.00	16.08	86.
345-90	Ol-gabbro	1415P	46.00	51.97	0.33	3.44	1.09	4.09	0.13	16.35	21.85	0.34	0.00	0.02	99.60	7.63	0.04	0.59	0.13	0.50	0.02	3.58	3.44	0.10	0.00	0.00	16.02	87.
345-90	Ol-gabbro	1415P	46.00	51.36	0.37	3.76	1.16	4.39	0.11	16.33	21.53	0.36	0.00	0.03	99.38	7.57	0.04	0.65	0.14	0.54	0.01	3.59	3.40	0.10	0.00	0.00	16.05	86.
345-90	Ol-gabbro	1415P	46.00	50.13	0.36	4.58	1.07	4.76	0.13	17.39	19.21	0.35	0.00	0.02	98.00	7.47	0.04	0.80	0.13	0.59	0.02	3.86	3.07	0.10	0.00	0.00	16.08	86.
345-90	Ol-gabbro	1415P	46.00	50.46	0.42	3.64	1.30	5.83	0.13	18.60	18.77	0.32	0.00	0.01	99.47	7.44	0.05	0.63	0.15	0.72	0.02	4.09	2.97	0.09	0.00	0.00	16.16	85.
345-90	Ol-gabbro	1415P	46.00	52.62	0.28	3.01	0.96	5.47	0.12	19.40	17.40	0.19	0.00	0.04	99.49	7.67	0.03	0.52	0.11	0.67	0.02	4.22	2.72	0.05	0.00	0.00	16.01	86.
345-90	Ol-gabbro	1415P	46.00	50.22	0.31	3.27	1.04	5.15	0.13	19.04	18.35	0.25	0.00	0.03	97.79	7.50	0.03	0.58	0.12	0.64	0.02	4.24	2.94	0.07	0.00	0.00	16.15	86.
345-90	Ol-gabbro	1415P	46.00	51.80	0.32	3.30	1.16	4.03	0.15	17.16	21.78	0.27	0.00	0.01	99.97	7.58	0.03	0.57	0.13	0.49	0.02	3.75	3.42	0.08	0.00	0.00	16.07	88.
345-90	Ol-gabbro	1415P	46.00	52.10	0.33	3.64	1.34	3.67	0.14	16.43	22.36	0.32	0.02	0.05	100.40	7.59	0.04	0.63	0.15	0.45	0.02	3.57	3.49	0.09	0.00	0.01	16.03	88.
345-90	Ol-gabbro	1415P	46.00	53.09	0.23	2.60	0.99	4.46	0.11	18.48	19.69	0.27	0.01	0.01	99.94	7.72	0.02	0.45	0.11	0.54	0.01	4.01	3.07	0.08	0.00	0.00	16.01	88.
345-90	Ol-gabbro	1415P	46.00	52.73	0.23	2.64	1.01	3.84	0.11	16.62	21.91	0.37	0.01	0.05	99.51	7.73	0.03	0.46	0.12	0.47	0.01	3.63	3.44	0.11	0.00	0.01	16.01	88.
345-90	Ol-gabbro	1415P	46.00	52.71	0.31	2.96	0.98	4.39	0.13	17.90	20.77	0.25	0.00	0.03	100.43	7.66	0.03	0.51	0.11	0.53	0.02	3.87	3.23	0.07	0.00	0.00	16.04	87.
345-90	Ol-gabbro	1415P	46.00	52.51	0.30	2.65	0.90	4.23	0.13	17.91	21.20	0.27	0.00	0.04	100.14	7.66	0.03	0.46	0.10	0.52	0.02	3.89	3.31	0.08	0.00	0.00	16.07	88.
345-90	Ol-gabbro	1415P	46.00	52.62	0.31	3.02	0.93	4.31	0.13	17.87	21.12	0.31	0.00	0.00	100.62	7.63	0.03	0.52	0.11	0.52	0.02	3.86	3.28	0.09	0.00	0.00	16.06	88.
345-90	Ol-gabbro	1415P	46.00	53.04	0.34	3.00	0.94	4.19	0.12	18.15	19.75	0.27	0.00	0.02	99.81	7.71	0.04	0.51	0.11	0.51	0.01	3.93	3.08	0.08	0.00	0.00	15.98	88.
345-90	Ol-gabbro	1415P	46.00	53.08	0.30	2.80	0.81	5.91	0.13	19.70	17.25	0.28	0.00	0.02	100.27	7.69	0.03	0.48	0.09	0.72	0.02	4.25	2.68	0.08	0.00	0.00	16.03	85.
345-78	Ol-gabbro	1415P	28.35	52.01	0.30	3.89	1.38	4.25	0.14	16.72	21.51	0.35	0.00	0.02	100.58	7.57	0.03	0.67	0.16	0.52	0.02	3.63	3.35	0.10	0.00	0.00	16.04	87.
345-78	Ol-gabbro	1415P	28.35	52.25	0.33	3.67	1.20	4.72	0.14	17.66	19.73	0.33	0.02	0.01	100.06	7.61	0.04	0.63	0.14	0.57	0.02	3.83	3.08	0.09	0.00	0.00	16.02	86.
345-78	Ol-gabbro	1415P	28.35	51.13	0.37	3.77	1.37	4.22	0.10	17.52	20.76	0.37	0.00	0.04	99.66	7.51	0.04	0.65	0.16	0.52	0.01	3.83	3.27	0.11	0.00	0.00	16.10	88.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-78	Ol-gabbro	1415P	28.35	50.95	0.33	4.05	1.33	4.25	0.10	16.78	21.09	0.30	0.00	0.01	99.20	7.52	0.04	0.70	0.16	0.52	0.01	3.69	3.33	0.09	0.00	0.00	16.06	87.
345-78	Ol-gabbro	1415P	28.35	53.27	0.23	2.49	1.01	4.23	0.11	17.00	22.14	0.34	0.01	0.00	100.82	7.72	0.03	0.42	0.12	0.51	0.01	3.67	3.44	0.09	0.00	0.00	16.03	87.
345-78	Ol-gabbro	1415P	28.35	53.17	0.20	2.40	0.98	4.53	0.15	17.68	20.90	0.27	0.01	0.04	100.33	7.73	0.02	0.41	0.11	0.55	0.02	3.83	3.26	0.08	0.00	0.01	16.02	87.
345-78	Ol-gabbro	1415P	28.35	52.96	0.47	2.25	0.30	5.64	0.15	18.56	18.50	0.20	0.00	0.02	99.05	7.77	0.05	0.39	0.04	0.69	0.02	4.06	2.91	0.06	0.00	0.00	15.99	85.
345-78	Ol-gabbro	1415P	28.35	53.27	0.49	2.31	0.36	5.17	0.17	18.08	19.59	0.24	0.00	0.03	99.71	7.77	0.05	0.40	0.04	0.63	0.02	3.93	3.06	0.07	0.00	0.00	15.99	86.
345-78	Ol-gabbro	1415P	28.35	47.94	0.02	33.20	0.01	0.43	0.00	0.03	16.75	2.22	0.03	0.00	100.62	6.57	0.00	5.36	0.00	0.05	0.00	0.01	2.46	0.59	0.00	0.00	15.04	10.
345-78	Ol-gabbro	1415P	28.35	52.51	0.35	2.93	0.92	5.07	0.18	17.48	20.35	0.29	0.00	0.00	100.08	7.67	0.04	0.51	0.11	0.62	0.02	3.81	3.18	0.08	0.00	0.00	16.03	86.
345-78	Ol-gabbro	1415P	28.35	52.00	0.31	2.99	0.99	4.90	0.15	17.29	20.74	0.29	0.00	0.02	99.68	7.64	0.03	0.52	0.11	0.60	0.02	3.78	3.26	0.08	0.00	0.00	16.06	86.
345-78	Ol-gabbro	1415P	28.35	52.46	0.31	3.11	0.88	5.08	0.14	17.34	20.77	0.31	0.00	0.03	100.42	7.64	0.03	0.53	0.10	0.62	0.02	3.77	3.24	0.09	0.00	0.00	16.05	85.
345-78	Ol-gabbro	1415P	28.35	52.26	0.27	3.12	0.88	4.67	0.14	17.13	20.49	0.22	0.00	0.03	99.21	7.68	0.03	0.54	0.10	0.57	0.02	3.75	3.23	0.06	0.00	0.00	16.00	86.
345-78	Ol-gabbro	1415P	28.35	52.17	0.31	2.94	0.83	5.04	0.12	16.56	21.71	0.28	0.01	0.01	99.97	7.66	0.03	0.51	0.10	0.62	0.02	3.62	3.41	0.08	0.00	0.00	16.05	85.
345-78	Ol-gabbro	1415P	28.35	52.21	0.56	2.88	0.78	4.77	0.14	17.60	20.26	0.31	0.01	0.00	99.52	7.66	0.06	0.50	0.09	0.59	0.02	3.85	3.18	0.09	0.00	0.00	16.03	86.
345-78	Ol-gabbro	1415P	28.35	52.24	0.49	2.87	1.29	5.61	0.12	17.22	20.75	0.30	0.00	0.02	100.92	7.61	0.05	0.49	0.15	0.68	0.02	3.74	3.24	0.09	0.00	0.00	16.06	84.
345-78	Ol-gabbro	1415P	28.35	52.41	0.30	3.07	1.00	4.95	0.16	16.66	21.50	0.31	0.00	0.02	100.37	7.65	0.03	0.53	0.12	0.60	0.02	3.63	3.36	0.09	0.00	0.00	16.03	85.
345-78	Ol-gabbro	1415P	28.35	50.66	0.63	2.69	0.72	4.55	0.17	15.23	22.20	0.35	0.02	0.00	97.20	7.66	0.07	0.48	0.09	0.58	0.02	3.43	3.60	0.10	0.00	0.00	16.03	85.
345-78	Ol-gabbro	1415P	28.35	52.04	0.28	2.98	1.23	4.98	0.19	16.29	22.23	0.31	0.00	0.01	100.53	7.62	0.03	0.51	0.14	0.61	0.02	3.55	3.49	0.09	0.00	0.00	16.07	85.
345-78	Ol-gabbro	1415P	28.35	53.14	0.55	2.56	0.57	5.62	0.15	18.59	19.66	0.23	0.00	0.02	101.09	7.68	0.06	0.44	0.06	0.68	0.02	4.00	3.04	0.06	0.00	0.00	16.05	85.
345-78	Ol-gabbro	1415P	28.35	52.59	0.41	2.66	0.64	4.62	0.16	17.02	20.47	0.28	0.01	0.02	98.87	7.75	0.05	0.46	0.07	0.57	0.02	3.74	3.23	0.08	0.00	0.00	15.98	86.
345-78	Ol-gabbro	1415P	28.35	49.13	0.42	3.35	0.57	4.72	0.15	16.97	18.61	0.24	0.02	0.02	94.20	7.60	0.05	0.61	0.07	0.61	0.02	3.91	3.09	0.07	0.00	0.00	16.04	86.
345-78	Ol-gabbro	1415P	28.35	54.37	0.44	2.78	0.58	5.01	0.16	18.60	19.98	0.30	0.00	0.03	102.25	7.73	0.05	0.47	0.07	0.60	0.02	3.94	3.04	0.08	0.00	0.00	16.00	86.
345-78	Ol-gabbro	1415P	28.35	52.33	0.31	2.97	1.06	4.71	0.14	16.04	21.96	0.35	0.00	0.02	99.88	7.68	0.03	0.51	0.12	0.58	0.02	3.51	3.45	0.10	0.00	0.00	16.01	85.
345-78	Ol-gabbro	1415P	28.35	52.01	0.38	3.42	1.10	5.08	0.15	16.91	20.82	0.27	0.00	0.03	100.16	7.61	0.04	0.59	0.13	0.62	0.02	3.69	3.26	0.08	0.00	0.00	16.03	85.
345-78	Ol-gabbro	1415P	28.35	52.67	0.48	2.85	1.00	5.41	0.15	17.53	20.62	0.33	0.01	0.01	101.07	7.64	0.05	0.49	0.12	0.66	0.02	3.79	3.20	0.09	0.00	0.00	16.06	85.
345-78	Ol-gabbro	1415P	28.35	53.64	0.37	2.77	0.82	6.55	0.18	20.46	16.65	0.24	0.00	0.02	101.70	7.67	0.04	0.47	0.09	0.78	0.02	4.36	2.55	0.07	0.00	0.00	16.05	84.
345-78	Ol-gabbro	1415P	28.35	52.61	0.31	3.02	0.88	5.50	0.16	17.63	19.66	0.24	0.01	0.04	100.05	7.68	0.03	0.52	0.10	0.67	0.02	3.84	3.08	0.07	0.00	0.00	16.01	85.
345-78	Ol-gabbro	1415P	28.35	51.71	0.59	2.96	0.87	4.57	0.17	16.19	22.59	0.37	0.01	0.03	100.05	7.60	0.07	0.51	0.10	0.56	0.02	3.55	3.56	0.10	0.00	0.00	16.08	86.
345-78	Ol-gabbro	1415P	28.35	52.57	0.51	2.67	0.97	4.60	0.13	16.14	22.65	0.28	0.00	0.01	100.52	7.68	0.06	0.46	0.11	0.56	0.02	3.51	3.54	0.08	0.00	0.00	16.02	86.
345-78	Ol-gabbro	1415P	28.35	52.22	0.63	2.64	0.32	5.05	0.17	15.72	22.52	0.31	0.00	0.04	99.62	7.70	0.07	0.46	0.04	0.62	0.02	3.46	3.56	0.09	0.00	0.00	16.02	84.
345-78	Ol-gabbro	1415P	28.35	53.05	0.53	2.35	0.33	4.59	0.16	16.63	22.90	0.37	0.01	0.00	100.93	7.71	0.06	0.40	0.04	0.56	0.02	3.60	3.57	0.11	0.00	0.00	16.06	86.
345-78	Ol-gabbro	1415P	28.35	53.29	0.60	2.13	0.30	5.41	0.17	17.74	20.29	0.24	0.00	0.03	100.19	7.77	0.07	0.37	0.03	0.66	0.02	3.85	3.17	0.07	0.00	0.00	16.00	85.
345-78	Ol-gabbro	1415P	28.35	52.29	0.60	2.82	0.43	4.60	0.18	16.84	22.22	0.24	0.02	0.02	100.27	7.65	0.07	0.49	0.05	0.56	0.02	3.67	3.48	0.07	0.00	0.00	16.06	86.
345-78	Ol-gabbro	1415P	28.35	52.58	0.77	2.19	0.38	4.62	0.17	16.54	22.89	0.26	0.00	0.02	100.42	7.69	0.09	0.38	0.04	0.57	0.02	3.61	3.59	0.07	0.00	0.00	16.05	86.
345-78	Ol-gabbro	1415P	28.35	52.62	0.77	2.10	0.38	4.71	0.16	16.33	22.64	0.27	0.00	0.02	99.99	7.72	0.09	0.36	0.04	0.58	0.02	3.57	3.56	0.08	0.00	0.00	16.03	86.
345-78	Ol-gabbro	1415P	28.35	51.29	0.52	3.69	0.41	5.08	0.20	17.10	20.50	0.31	0.01	0.01	99.11	7.57	0.06	0.64	0.05	0.63	0.03	3.76	3.24	0.09	0.00	0.00	16.07	85.
345-78	Ol-gabbro	1415P	28.35	52.55	0.77	2.20	0.35	4.89	0.17	16.61	22.03	0.24	0.01	0.02	99.83	7.72	0.08	0.38	0.04	0.60	0.02	3.64	3.47	0.07	0.00	0.00	16.02	85.
345-69	Ol-gabbro	1415P	14.20	51.94	0.86	2.74	0.89	4.35	0.15	16.73	21.06	0.32	0.01	0.02	99.04	7.66	0.10	0.48	0.10	0.54	0.02	3.68	3.33	0.09	0.00	0.00	16.00	87.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-69	Ol-gabbro	1415P	14.20	51.62	0.86	2.58	0.75	3.92	0.13	16.25	23.07	0.25	0.00	0.03	99.46	7.62	0.10	0.45	0.09	0.48	0.02	3.58	3.65	0.07	0.00	0.00	16.05	88.
345-69	Ol-gabbro	1415P	14.20	51.36	0.90	3.14	0.81	4.58	0.16	16.69	21.62	0.27	0.00	0.04	99.57	7.57	0.10	0.54	0.09	0.56	0.02	3.67	3.41	0.08	0.00	0.00	16.05	86.
345-69	Ol-gabbro	1415P	14.20	51.16	0.91	2.97	0.82	3.94	0.13	15.99	22.15	0.30	0.00	0.02	98.39	7.62	0.10	0.52	0.10	0.49	0.02	3.55	3.53	0.09	0.00	0.00	16.02	87.
345-69	Ol-gabbro	1415P	14.20	51.75	0.84	2.89	0.92	4.18	0.16	16.41	21.91	0.32	0.00	0.02	99.39	7.63	0.09	0.50	0.11	0.51	0.02	3.60	3.46	0.09	0.00	0.00	16.02	87.
345-69	Ol-gabbro	1415P	14.20	51.98	0.89	2.67	0.72	4.42	0.16	16.70	21.92	0.29	0.00	0.00	99.76	7.64	0.10	0.46	0.08	0.54	0.02	3.66	3.45	0.08	0.00	0.00	16.03	87.
345-68	Ol-gabbro	1415P	13.80	52.14	0.83	2.64	0.95	4.16	0.15	16.19	22.85	0.24	0.00	0.02	100.16	7.64	0.09	0.46	0.11	0.51	0.02	3.54	3.59	0.07	0.00	0.00	16.02	87.
345-68	Ol-gabbro	1415P	13.80	49.51	0.78	2.72	0.80	4.24	0.18	15.17	25.30	0.34	0.00	0.04	99.08	7.44	0.09	0.48	0.09	0.53	0.02	3.40	4.07	0.10	0.00	0.00	16.23	86.
345-68	Ol-gabbro	1415P	13.80	52.30	0.74	3.09	0.92	4.92	0.25	15.77	21.89	0.37	0.00	0.02	100.25	7.66	0.08	0.53	0.11	0.60	0.03	3.44	3.44	0.11	0.00	0.00	15.99	85.
345-68	Ol-gabbro	1415P	13.80	52.49	0.77	2.71	0.70	4.48	0.22	15.83	23.27	0.32	0.00	0.00	100.78	7.66	0.08	0.47	0.08	0.55	0.03	3.44	3.64	0.09	0.00	0.00	16.03	86.
345-68	Ol-gabbro	1415P	13.80	52.22	0.88	2.70	0.86	4.24	0.18	16.40	22.01	0.33	0.00	0.02	99.83	7.66	0.10	0.47	0.10	0.52	0.02	3.59	3.46	0.09	0.00	0.00	16.01	87.
345-68	Ol-gabbro	1415P	13.80	52.26	0.83	2.83	1.08	4.46	0.17	16.11	22.09	0.42	0.01	0.01	100.28	7.65	0.09	0.49	0.13	0.55	0.02	3.51	3.46	0.12	0.00	0.00	16.02	86.
345-68	Ol-gabbro	1415P	13.80	52.25	0.94	2.74	0.91	4.40	0.18	16.19	22.13	0.36	0.00	0.03	100.15	7.65	0.10	0.47	0.11	0.54	0.02	3.53	3.47	0.10	0.00	0.00	16.01	86.
345-68	Ol-gabbro	1415P	13.80	51.92	0.86	2.79	0.70	4.36	0.16	15.80	22.54	0.35	0.02	0.01	99.50	7.66	0.10	0.49	0.08	0.54	0.02	3.47	3.56	0.10	0.00	0.00	16.01	86.
345-68	Ol-gabbro	1415P	13.80	52.34	0.71	2.60	0.91	4.45	0.17	16.37	22.13	0.36	0.00	0.02	100.04	7.67	0.08	0.45	0.10	0.55	0.02	3.58	3.48	0.10	0.00	0.00	16.02	86.
345-68	Ol-gabbro	1415P	13.80	51.81	0.68	3.07	0.86	4.52	0.19	16.48	22.04	0.36	0.00	0.02	100.03	7.60	0.08	0.53	0.10	0.56	0.02	3.60	3.46	0.10	0.00	0.00	16.06	86.
345-68	Ol-gabbro	1415P	13.80	52.76	0.56	2.83	1.08	4.62	0.14	16.64	21.50	0.35	0.00	0.02	100.47	7.68	0.06	0.49	0.12	0.56	0.02	3.61	3.36	0.10	0.00	0.00	16.00	86.
345-68	Ol-gabbro	1415P	13.80	51.81	0.33	3.41	1.10	4.79	0.23	16.14	21.91	0.28	0.00	0.01	100.01	7.61	0.04	0.59	0.13	0.59	0.03	3.53	3.45	0.08	0.00	0.00	16.04	85.
345-68	Ol-gabbro	1415P	13.80	52.86	0.24	2.51	0.97	3.93	0.09	17.12	22.10	0.29	0.00	0.03	100.14	7.71	0.03	0.43	0.11	0.48	0.01	3.72	3.45	0.08	0.00	0.00	16.03	88.
345-68	Ol-gabbro	1415P	13.80	53.15	0.27	2.48	0.94	4.03	0.12	17.07	22.02	0.35	0.00	0.03	100.44	7.73	0.03	0.43	0.11	0.49	0.01	3.70	3.43	0.10	0.00	0.00	16.03	88.
345-68	Ol-gabbro	1415P	13.80	51.97	0.29	3.66	1.24	4.45	0.19	15.40	22.73	0.44	0.01	0.01	100.38	7.61	0.03	0.63	0.14	0.55	0.02	3.36	3.56	0.12	0.00	0.00	16.04	86.
345-68	Ol-gabbro	1415P	13.80	51.32	0.53	3.21	1.24	4.32	0.14	15.51	23.06	0.33	0.01	0.02	99.70	7.58	0.06	0.56	0.14	0.53	0.02	3.42	3.65	0.09	0.00	0.00	16.06	86.
345-68	Ol-gabbro	1415P	13.80	52.31	0.24	2.77	0.91	4.51	0.14	16.16	22.34	0.32	0.00	0.02	99.70	7.69	0.03	0.48	0.11	0.55	0.02	3.54	3.52	0.09	0.00	0.00	16.03	86.
345-68	Ol-gabbro	1415P	13.80	53.20	0.28	2.62	0.90	4.17	0.10	16.47	22.54	0.35	0.01	0.01	100.64	7.73	0.03	0.45	0.10	0.51	0.01	3.57	3.51	0.10	0.00	0.00	16.01	87.
345-68	Ol-gabbro	1415P	13.80	51.84	0.86	3.07	0.83	4.35	0.12	16.02	22.44	0.32	0.00	0.03	99.89	7.61	0.10	0.53	0.10	0.53	0.01	3.51	3.53	0.09	0.00	0.00	16.02	86.
345-68	Ol-gabbro	1415P	13.80	52.99	0.27	2.54	0.95	3.90	0.16	16.32	22.51	0.27	0.00	0.02	99.91	7.75	0.03	0.44	0.11	0.48	0.02	3.56	3.53	0.08	0.00	0.00	15.99	88.
345-68	Ol-gabbro	1415P	13.80	52.17	0.81	2.41	0.83	4.46	0.16	16.27	22.43	0.36	0.01	0.01	99.91	7.67	0.09	0.42	0.10	0.55	0.02	3.56	3.53	0.10	0.00	0.00	16.04	86.
345-68	Ol-gabbro	1415P	13.80	51.75	0.72	2.80	1.03	5.04	0.20	16.32	22.21	0.34	0.01	0.01	100.43	7.59	0.08	0.48	0.12	0.62	0.02	3.57	3.49	0.10	0.00	0.00	16.08	85.
345-68	Ol-gabbro	1415P	13.80	52.13	0.84	2.64	0.77	3.92	0.18	16.54	21.45	0.33	0.00	0.01	98.80	7.70	0.09	0.46	0.09	0.48	0.02	3.64	3.40	0.10	0.00	0.00	15.98	88.
345-68	Ol-gabbro	1415P	13.80	51.67	0.45	3.67	0.78	6.79	0.83	13.34	21.98	0.51	0.00	0.01	100.03	7.67	0.05	0.64	0.09	0.84	0.10	2.95	3.49	0.15	0.00	0.00	15.99	77.
345-68	Ol-gabbro	1415P	13.80	51.67	0.61	3.65	0.81	4.13	0.14	15.69	22.12	0.34	0.01	0.02	99.19	7.62	0.07	0.63	0.09	0.51	0.02	3.45	3.50	0.10	0.00	0.00	15.99	87.
345-68	Ol-gabbro	1415P	13.80	51.86	0.75	3.25	0.70	4.82	0.20	15.39	22.15	0.39	0.02	0.05	99.58	7.65	0.08	0.57	0.08	0.59	0.02	3.38	3.50	0.11	0.00	0.01	16.00	85.
345-68	Ol-gabbro	1415P	13.80	51.86	0.82	2.95	0.72	4.63	0.18	16.02	22.36	0.39	0.00	0.01	99.94	7.62	0.09	0.51	0.08	0.57	0.02	3.51	3.52	0.11	0.00	0.00	16.04	86.
345-68	Ol-gabbro	1415P	13.80	52.52	0.72	3.03	0.67	5.02	0.30	16.23	21.18	0.41	0.00	0.01	100.08	7.69	0.08	0.52	0.08	0.61	0.04	3.54	3.32	0.11	0.00	0.00	15.99	85.
345-68	Ol-gabbro	1415P	13.80	51.81	0.65	2.85	0.77	4.63	0.24	15.58	22.01	0.40	0.02	0.03	98.98	7.68	0.07	0.50	0.09	0.57	0.03	3.44	3.50	0.12	0.00	0.00	16.01	85.
345-53	Opx-ol-gabbro	1415P	72.00	52.85	0.76	2.58	0.10	5.00	0.17	17.08	21.94	0.26	0.00	0.02	100.74	7.68	0.08	0.44	0.01	0.61	0.02	3.70	3.42	0.07	0.00	0.00	16.04	85.
345-53	Opx-ol-gabbro	1415P	72.00	53.20	0.86	2.37	0.10	5.23	0.16	17.90	21.47	0.28	0.00	0.03	101.60	7.67	0.09	0.40	0.01	0.63	0.02	3.85	3.32	0.08	0.00	0.00	16.07	85.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-53	Opx-ol-gabbro	1415P	72.00	52.16	0.82	3.23	0.10	5.57	0.18	18.72	18.26	0.22	0.00	0.01	99.26	7.64	0.09	0.56	0.01	0.68	0.02	4.09	2.87	0.06	0.00	0.00	16.02	85.
345-53	Opx-ol-gabbro	1415P	72.00	50.90	0.91	3.54	0.10	5.38	0.17	17.46	20.56	0.23	0.01	0.00	99.25	7.52	0.10	0.62	0.01	0.66	0.02	3.84	3.25	0.06	0.00	0.00	16.10	85.
345-30	Opx-ol-gabbro	1415P	13.00	53.03	1.14	2.62	0.46	4.26	0.17	16.68	22.86	0.30	0.00	0.00	101.54	7.65	0.12	0.45	0.05	0.51	0.02	3.59	3.54	0.08	0.00	0.00	16.02	87.
345-30	Opx-ol-gabbro	1415P	13.00	52.48	1.01	2.90	0.35	4.53	0.16	17.29	21.91	0.26	0.00	0.04	100.93	7.61	0.11	0.50	0.04	0.55	0.02	3.74	3.41	0.07	0.00	0.01	16.05	87.
345-30	Opx-ol-gabbro	1415P	13.00	53.59	1.05	2.37	0.28	5.30	0.15	18.88	19.07	0.25	0.00	0.03	100.97	7.72	0.11	0.40	0.03	0.64	0.02	4.05	2.94	0.07	0.00	0.00	15.99	86.
345-30	Opx-ol-gabbro	1415P	13.00	51.66	1.00	2.82	0.38	4.35	0.14	17.16	21.05	0.26	0.00	0.02	98.84	7.63	0.11	0.49	0.04	0.54	0.02	3.78	3.33	0.07	0.00	0.00	16.02	87.
345-30	Opx-ol-gabbro	1415P	13.00	53.23	1.03	2.91	0.39	4.48	0.14	17.68	21.69	0.26	0.00	0.02	101.84	7.63	0.11	0.49	0.04	0.54	0.02	3.78	3.33	0.07	0.00	0.00	16.02	87.
345-30	Opx-ol-gabbro	1415P	13.00	52.43	0.42	3.49	0.30	8.23	0.28	26.06	8.07	0.19	0.01	0.06	99.53	7.54	0.05	0.59	0.03	0.99	0.03	5.59	1.24	0.05	0.00	0.01	16.13	84.
345-30	Opx-ol-gabbro	1415P	13.00	52.87	1.23	2.65	0.55	4.53	0.17	17.28	21.93	0.30	0.00	0.02	101.52	7.63	0.13	0.45	0.06	0.55	0.02	3.72	3.39	0.08	0.00	0.00	16.03	87.
345-30	Opx-ol-gabbro	1415P	13.00	53.65	0.85	2.10	0.45	4.36	0.15	17.55	22.20	0.29	0.00	0.03	101.62	7.72	0.09	0.36	0.05	0.52	0.02	3.76	3.42	0.08	0.00	0.00	16.03	87.
345-30	Opx-ol-gabbro	1415P	13.00	52.54	1.32	2.84	0.47	4.33	0.16	16.45	22.69	0.31	0.00	0.03	101.13	7.62	0.14	0.48	0.05	0.53	0.02	3.55	3.53	0.09	0.00	0.00	16.01	87.
345-30	Opx-ol-gabbro	1415P	13.00	51.67	0.47	2.88	1.06	4.10	0.14	16.18	22.06	0.34	0.01	0.03	98.94	7.65	0.05	0.50	0.12	0.51	0.02	3.57	3.50	0.10	0.00	0.00	16.03	87.
345-30	Opx-ol-gabbro	1415P	13.00	53.24	0.49	2.97	1.09	4.23	0.15	16.67	22.73	0.35	0.01	0.03	101.94	7.65	0.05	0.50	0.12	0.51	0.02	3.57	3.50	0.10	0.00	0.00	16.03	87.
345-30	Opx-ol-gabbro	1415P	13.00	53.56	0.28	2.84	0.99	5.00	0.16	18.27	20.28	0.29	0.00	0.03	101.70	7.68	0.03	0.48	0.11	0.60	0.02	3.91	3.12	0.08	0.00	0.00	16.03	86.
345-30	Opx-ol-gabbro	1415P	13.00	52.65	0.36	3.14	1.07	4.44	0.14	16.76	21.82	0.33	0.00	0.00	100.68	7.65	0.04	0.54	0.12	0.54	0.02	3.63	3.40	0.09	0.00	0.00	16.03	87.
345-30	Opx-ol-gabbro	1415P	13.00	52.17	0.39	3.37	1.14	4.67	0.15	16.77	21.85	0.30	0.01	0.01	100.83	7.59	0.04	0.58	0.13	0.57	0.02	3.64	3.41	0.09	0.00	0.00	16.06	86.
345-30	Opx-ol-gabbro	1415P	13.00	52.99	0.39	3.25	1.00	4.64	0.15	16.98	21.88	0.35	0.00	0.02	101.63	7.63	0.04	0.55	0.11	0.56	0.02	3.65	3.38	0.10	0.00	0.00	16.04	86.
345-30	Opx-ol-gabbro	1415P	13.00	52.67	0.44	3.11	0.94	4.35	0.12	16.43	22.83	0.32	0.00	0.01	101.21	7.63	0.05	0.53	0.11	0.53	0.01	3.55	3.54	0.09	0.00	0.00	16.05	87.
345-30	Opx-ol-gabbro	1415P	13.00	50.18	0.37	4.46	1.03	4.94	0.17	17.27	19.82	0.32	0.00	0.02	98.58	7.45	0.04	0.78	0.12	0.61	0.02	3.82	3.15	0.09	0.00	0.00	16.10	86.
345-29	Opx-ol-gabbro	1415P	12.20	52.22	1.23	2.72	0.33	4.48	0.13	16.30	23.37	0.33	0.00	0.02	101.13	7.59	0.13	0.47	0.04	0.54	0.02	3.53	3.64	0.09	0.00	0.00	16.07	86.
345-29	Opx-ol-gabbro	1415P	12.20	51.74	1.17	2.64	0.59	4.71	0.14	16.06	22.76	0.36	0.01	0.00	100.19	7.60	0.13	0.46	0.07	0.58	0.02	3.52	3.58	0.10	0.00	0.00	16.06	85.
345-29	Opx-ol-gabbro	1415P	12.20	51.42	1.05	2.67	0.61	4.66	0.18	16.12	22.88	0.34	0.00	0.02	99.94	7.58	0.12	0.46	0.07	0.57	0.02	3.54	3.62	0.10	0.00	0.00	16.08	86.
345-29	Opx-ol-gabbro	1415P	12.20	51.61	1.02	2.53	0.54	4.68	0.18	16.13	22.63	0.38	0.00	0.01	99.71	7.62	0.11	0.44	0.06	0.58	0.02	3.55	3.58	0.11	0.00	0.00	16.07	86.
345-29	Opx-ol-gabbro	1415P	12.20	52.45	0.92	2.47	0.40	4.77	0.19	16.10	22.99	0.36	0.01	0.02	100.66	7.66	0.10	0.43	0.05	0.58	0.02	3.51	3.60	0.10	0.00	0.00	16.05	85.
345-29	Opx-ol-gabbro	1415P	12.20	51.64	0.69	2.99	0.44	4.87	0.18	16.36	22.47	0.31	0.00	0.01	99.96	7.60	0.08	0.52	0.05	0.60	0.02	3.59	3.54	0.09	0.00	0.00	16.09	85.
345-29	Opx-ol-gabbro	1415P	12.20	52.38	0.13	4.84	0.00	10.70	0.71	8.90	22.83	1.14	0.00	0.02	101.64	7.77	0.01	0.85	0.00	1.33	0.09	1.97	3.63	0.33	0.00	0.00	15.96	59.
345-29	Opx-ol-gabbro	1415P	12.20	52.94	0.55	2.33	0.36	4.76	0.16	17.03	22.74	0.29	0.00	0.02	101.18	7.68	0.06	0.40	0.04	0.58	0.02	3.68	3.54	0.08	0.00	0.00	16.08	86.
345-29	Opx-ol-gabbro	1415P	12.20	52.83	0.46	2.29	0.39	4.79	0.18	16.79	22.78	0.34	0.00	0.04	100.89	7.69	0.05	0.39	0.05	0.58	0.02	3.64	3.55	0.10	0.00	0.00	16.09	86.
345-29	Opx-ol-gabbro	1415P	12.20	52.55	0.58	2.28	0.35	4.83	0.16	17.36	21.78	0.29	0.01	0.04	100.20	7.69	0.06	0.39	0.04	0.59	0.02	3.78	3.41	0.08	0.00	0.00	16.08	86.
345-29	Opx-ol-gabbro	1415P	12.20	53.54	0.53	2.14	0.29	5.61	0.18	18.40	20.25	0.28	0.00	0.02	101.24	7.73	0.06	0.36	0.03	0.68	0.02	3.96	3.13	0.08	0.00	0.00	16.05	85.
345-29	Opx-ol-gabbro	1415P	12.20	50.65	0.54	3.91	0.25	6.16	0.55	16.64	20.04	0.40	0.00	0.01	99.16	7.52	0.06	0.68	0.03	0.77	0.07	3.68	3.19	0.12	0.00	0.00	16.12	82.
345-29	Opx-ol-gabbro	1415P	12.20	53.17	0.57	2.10	0.28	4.84	0.18	16.87	22.74	0.29	0.01	0.03	101.06	7.72	0.06	0.36	0.03	0.59	0.02	3.65	3.54	0.08	0.00	0.00	16.06	86.
345-29	Opx-ol-gabbro	1415P	12.20	53.20	0.64	2.16	0.24	4.86	0.20	16.78	22.80	0.30	0.00	0.03	101.21	7.72	0.07	0.37	0.03	0.59	0.02	3.63	3.54	0.09	0.00	0.00	16.06	86.
345-29	Opx-ol-gabbro	1415P	12.20	53.00	0.70	2.05	0.18	4.92	0.18	17.32	22.23	0.28	0.00	0.01	100.87	7.71	0.08	0.35	0.02	0.60	0.02	3.75	3.46	0.08	0.00	0.00	16.07	86.
345-29	Opx-ol-gabbro	1415P	12.20	52.60	0.94	2.46	0.21	4.79	0.21	16.93	22.64	0.30	0.01	0.01	101.09	7.64	0.10	0.42	0.02	0.58	0.03	3.67	3.52	0.09	0.00	0.00	16.08	86.
345-44	Opx-ol-gabbro	1415P	45.70	53.03	0.40	2.39	0.59	4.74	0.15	16.82	22.32	0.31	0.00	0.03	100.76	7.71	0.04	0.41	0.07	0.58	0.02	3.65	3.48	0.09	0.00	0.00	16.05	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-44	Opx-ol-gabbro	1415P	45.70	52.39	0.60	2.35	0.45	4.61	0.14	16.81	22.50	0.30	0.00	0.03	100.18	7.67	0.07	0.41	0.05	0.57	0.02	3.67	3.53	0.09	0.00	0.00	16.07	86.
345-44	Opx-ol-gabbro	1415P	45.70	53.57	0.35	2.49	0.57	4.66	0.15	16.88	22.44	0.35	0.00	0.04	101.50	7.73	0.04	0.42	0.06	0.56	0.02	3.63	3.47	0.10	0.00	0.01	16.04	86.
345-44	Opx-ol-gabbro	1415P	45.70	52.80	0.36	2.53	0.59	5.88	0.22	15.55	21.70	0.41	0.00	0.04	100.08	7.76	0.04	0.44	0.07	0.72	0.03	3.41	3.42	0.12	0.00	0.00	16.01	82.
345-44	Opx-ol-gabbro	1415P	45.70	53.04	0.50	2.77	0.65	4.73	0.17	16.34	22.73	0.38	0.00	0.00	101.31	7.68	0.05	0.47	0.07	0.57	0.02	3.53	3.53	0.11	0.00	0.00	16.04	86.
345-44	Opx-ol-gabbro	1415P	45.70	51.50	1.12	2.84	0.23	4.74	0.12	16.26	23.19	0.30	0.00	0.02	100.33	7.56	0.12	0.49	0.03	0.58	0.01	3.56	3.65	0.09	0.00	0.00	16.10	85.
345-44	Opx-ol-gabbro	1415P	45.70	54.09	0.46	1.43	0.16	9.00	0.25	27.44	6.99	0.07	0.00	0.03	99.90	7.74	0.05	0.24	0.02	1.08	0.03	5.85	1.07	0.02	0.00	0.00	16.10	84.
345-44	Opx-ol-gabbro	1415P	45.70	52.25	0.78	2.30	0.12	6.02	0.18	20.12	17.41	0.25	0.01	0.02	99.45	7.65	0.09	0.40	0.01	0.74	0.02	4.39	2.73	0.07	0.00	0.00	16.10	85.
345-44	Opx-ol-gabbro	1415P	45.70	53.68	0.76	2.08	0.15	4.67	0.14	17.04	22.45	0.31	0.00	0.02	101.29	7.75	0.08	0.35	0.02	0.56	0.02	3.67	3.47	0.09	0.00	0.00	16.02	86.
345-44	Opx-ol-gabbro	1415P	45.70	53.82	0.57	1.85	0.11	8.76	0.22	24.57	8.67	0.16	0.00	0.03	98.75	7.81	0.06	0.32	0.01	1.06	0.03	5.31	1.35	0.04	0.00	0.00	15.99	83.
345-44	Opx-ol-gabbro	1415P	45.70	52.93	0.66	2.14	0.14	5.11	0.16	17.31	21.74	0.28	0.00	0.02	100.49	7.72	0.07	0.37	0.02	0.62	0.02	3.76	3.40	0.08	0.00	0.00	16.06	85.
345-44	Opx-ol-gabbro	1415P	45.70	53.45	0.79	2.18	0.11	4.73	0.16	16.72	22.90	0.32	0.01	0.02	101.38	7.73	0.09	0.37	0.01	0.57	0.02	3.60	3.55	0.09	0.00	0.00	16.04	86.
345-44	Opx-ol-gabbro	1415P	45.70	53.61	0.64	1.69	0.10	6.97	0.17	22.76	14.39	0.14	0.00	0.02	100.49	7.72	0.07	0.29	0.01	0.84	0.02	4.88	2.22	0.04	0.00	0.00	16.09	85.
345-44	Opx-ol-gabbro	1415P	45.70	53.74	0.77	2.10	0.15	4.75	0.14	17.03	22.80	0.33	0.00	0.01	101.82	7.73	0.08	0.36	0.02	0.57	0.02	3.65	3.52	0.09	0.00	0.00	16.04	86.
345-44	Opx-ol-gabbro	1415P	45.70	53.50	0.69	2.17	0.14	4.73	0.15	16.91	22.32	0.28	0.01	0.05	100.95	7.76	0.08	0.37	0.02	0.57	0.02	3.65	3.47	0.08	0.00	0.01	16.02	86.
345-44	Opx-ol-gabbro	1415P	45.70	53.14	0.74	2.32	0.15	5.38	0.18	17.94	20.58	0.29	0.00	0.03	100.73	7.71	0.08	0.40	0.02	0.65	0.02	3.88	3.20	0.08	0.00	0.00	16.04	85.
345-44	Opx-ol-gabbro	1415P	45.70	52.76	0.86	2.36	0.15	4.81	0.16	16.75	22.47	0.33	0.00	0.04	100.69	7.69	0.09	0.40	0.02	0.59	0.02	3.64	3.51	0.09	0.00	0.00	16.06	86.
345-46	Opx-ol-gabbro	1415P	59.20	53.09	1.03	2.42	0.20	4.90	0.18	16.71	22.32	0.30	0.00	0.02	101.17	7.69	0.11	0.41	0.02	0.59	0.02	3.61	3.46	0.09	0.00	0.00	16.02	85.
345-46	Opx-ol-gabbro	1415P	59.20	52.62	1.11	2.50	0.20	4.78	0.15	16.93	21.74	0.31	0.00	0.01	100.34	7.68	0.12	0.43	0.02	0.58	0.02	3.68	3.40	0.09	0.00	0.00	16.02	86.
345-46	Opx-ol-gabbro	1415P	59.20	52.74	1.00	2.52	0.22	4.91	0.19	16.54	22.35	0.33	0.01	0.01	100.82	7.68	0.11	0.43	0.02	0.60	0.02	3.59	3.49	0.09	0.00	0.00	16.03	85.
345-46	Opx-ol-gabbro	1415P	59.20	52.99	0.90	2.31	0.38	5.02	0.17	16.85	21.71	0.35	0.01	0.01	100.69	7.71	0.10	0.40	0.04	0.61	0.02	3.66	3.38	0.10	0.00	0.00	16.02	85.
345-46	Opx-ol-gabbro	1415P	59.20	52.99	0.76	2.52	0.33	5.04	0.16	16.75	21.72	0.31	0.01	0.02	100.59	7.71	0.08	0.43	0.04	0.61	0.02	3.63	3.39	0.09	0.00	0.00	16.01	85.
345-46	Opx-ol-gabbro	1415P	59.20	53.02	0.85	2.35	0.30	4.80	0.15	16.79	22.27	0.34	0.01	0.00	100.87	7.70	0.09	0.40	0.03	0.58	0.02	3.64	3.47	0.10	0.00	0.00	16.03	86.
345-46	Opx-ol-gabbro	1415P	59.20	53.21	0.40	2.45	0.54	6.95	0.18	20.69	15.89	0.23	0.00	0.04	100.58	7.69	0.04	0.42	0.06	0.84	0.02	4.46	2.46	0.06	0.00	0.00	16.06	84.
345-46	Opx-ol-gabbro	1415P	59.20	53.16	0.49	2.57	0.58	5.78	0.17	18.64	19.34	0.29	0.01	0.01	101.04	7.68	0.05	0.44	0.07	0.70	0.02	4.01	3.00	0.08	0.00	0.00	16.05	85.
345-46	Opx-ol-gabbro	1415P	59.20	51.38	0.97	2.38	0.26	5.02	0.18	16.43	21.90	0.32	0.00	0.02	98.84	7.64	0.11	0.42	0.03	0.62	0.02	3.64	3.49	0.09	0.00	0.00	16.07	85.
345-32	Opx-ol-gabbro	1415P	19.00	53.41	0.52	1.83	0.30	4.19	0.15	16.71	23.55	0.24	0.01	0.05	100.96	7.76	0.06	0.31	0.03	0.51	0.02	3.62	3.66	0.07	0.00	0.01	16.05	87.
345-32	Opx-ol-gabbro	1415P	19.00	52.48	0.86	2.47	0.38	4.60	0.16	16.55	23.11	0.28	0.00	0.01	100.90	7.64	0.09	0.42	0.04	0.56	0.02	3.59	3.61	0.08	0.00	0.00	16.07	86.
345-32	Opx-ol-gabbro	1415P	19.00	52.65	1.03	2.46	0.41	4.70	0.18	16.57	22.80	0.31	0.01	0.02	101.14	7.65	0.11	0.42	0.05	0.57	0.02	3.59	3.55	0.09	0.00	0.00	16.05	86.
345-32	Opx-ol-gabbro	1415P	19.00	54.10	0.31	1.27	0.20	3.85	0.12	16.97	24.00	0.22	0.00	0.03	101.07	7.83	0.03	0.22	0.02	0.47	0.01	3.66	3.72	0.06	0.00	0.00	16.04	88.
345-32	Opx-ol-gabbro	1415P	19.00	55.15	0.06	0.49	0.13	3.17	0.10	17.17	25.05	0.15	0.00	0.02	101.48	7.94	0.01	0.08	0.01	0.38	0.01	3.68	3.86	0.04	0.00	0.00	16.03	90.
345-32	Opx-ol-gabbro	1415P	19.00	53.93	0.42	1.49	0.09	4.41	0.16	17.20	23.22	0.21	0.00	0.03	101.16	7.81	0.05	0.25	0.01	0.53	0.02	3.71	3.60	0.06	0.00	0.00	16.05	87.
345-32	Opx-ol-gabbro	1415P	19.00	54.75	0.33	1.19	0.04	3.84	0.14	17.06	23.98	0.19	0.00	0.02	101.54	7.88	0.04	0.20	0.00	0.46	0.02	3.66	3.70	0.05	0.00	0.00	16.01	88.
345-32	Opx-ol-gabbro	1415P	19.00	52.46	0.85	2.78	0.48	4.55	0.17	16.48	22.63	0.36	0.01	0.04	100.81	7.64	0.09	0.48	0.06	0.55	0.02	3.58	3.53	0.10	0.00	0.00	16.05	86.
345-32	Opx-ol-gabbro	1415P	19.00	51.92	1.29	3.06	0.62	5.37	0.17	15.90	22.56	0.41	0.00	0.02	101.32	7.56	0.14	0.53	0.07	0.65	0.02	3.45	3.52	0.12	0.00	0.00	16.06	84.
345-32	Opx-ol-gabbro	1415P	19.00	52.35	1.00	2.79	0.55	4.72	0.15	16.30	23.12	0.34	0.00	0.03	101.35	7.60	0.11	0.48	0.06	0.57	0.02	3.53	3.60	0.10	0.00	0.00	16.07	86.
345-32	Opx-ol-gabbro	1415P	19.00	51.17	0.97	2.87	0.55	4.81	0.19	15.52	22.62	0.35	0.00	0.01	99.05	7.61	0.11	0.50	0.06	0.60	0.02	3.44	3.60	0.10	0.00	0.00	16.05	85.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-32	Opx-ol-gabbro	1415P	19.00	51.40	1.17	3.14	0.75	5.32	0.22	15.63	23.20	0.37	0.01	0.05	101.24	7.51	0.13	0.54	0.09	0.65	0.03	3.41	3.63	0.10	0.00	0.01	16.10	83.
345-38	Opx-ol-gabbro	1415P	33.00	54.67	0.10	2.70	0.08	8.97	0.11	20.98	12.68	0.57	0.02	0.01	100.88	7.84	0.01	0.46	0.01	1.08	0.01	4.48	1.95	0.16	0.00	0.00	16.00	80.
345-38	Opx-ol-gabbro	1415P	33.00	53.53	0.88	2.29	0.29	4.60	0.17	17.07	22.29	0.67	0.01	0.03	101.82	7.70	0.10	0.39	0.03	0.55	0.02	3.66	3.44	0.19	0.00	0.00	16.08	86.
345-38	Opx-ol-gabbro	1415P	33.00	53.68	0.90	2.27	0.28	5.23	0.16	17.88	20.72	0.31	0.01	0.01	101.44	7.73	0.10	0.39	0.03	0.63	0.02	3.84	3.20	0.09	0.00	0.00	16.01	85.
345-38	Opx-ol-gabbro	1415P	33.00	53.37	0.93	2.21	0.15	4.75	0.17	17.50	21.47	0.27	0.00	0.02	100.84	7.73	0.10	0.38	0.02	0.58	0.02	3.78	3.33	0.07	0.00	0.00	16.01	86.
345-38	Opx-ol-gabbro	1415P	33.00	52.16	0.86	2.24	0.32	4.70	0.15	16.37	22.46	0.25	0.02	0.03	99.54	7.69	0.10	0.39	0.04	0.58	0.02	3.60	3.55	0.07	0.00	0.00	16.04	86.
345-38	Opx-ol-gabbro	1415P	33.00	51.90	0.61	8.14	0.08	4.25	0.17	12.59	23.32	0.25	0.00	0.00	101.31	7.46	0.07	1.38	0.01	0.51	0.02	2.70	3.59	0.07	0.00	0.00	15.81	84.
345-38	Opx-ol-gabbro	1415P	33.00	53.54	0.63	2.25	0.16	5.18	0.20	16.84	22.39	0.32	0.00	0.05	101.54	7.73	0.07	0.38	0.02	0.63	0.02	3.63	3.47	0.09	0.00	0.01	16.04	85.
345-38	Opx-ol-gabbro	1415P	33.00	53.64	0.61	2.20	0.14	5.27	0.18	16.95	21.86	0.29	0.00	0.01	101.13	7.77	0.07	0.38	0.02	0.64	0.02	3.66	3.39	0.08	0.00	0.00	16.01	85.
345-38	Opx-ol-gabbro	1415P	33.00	52.72	0.72	2.52	0.24	5.16	0.20	17.13	21.63	0.28	0.01	0.03	100.63	7.68	0.08	0.43	0.03	0.63	0.03	3.72	3.38	0.08	0.00	0.00	16.05	85.
345-38	Opx-ol-gabbro	1415P	33.00	53.52	0.76	2.00	0.27	4.94	0.18	17.24	21.97	0.27	0.00	0.01	101.14	7.75	0.08	0.34	0.03	0.60	0.02	3.72	3.41	0.07	0.00	0.00	16.02	86.
345-38	Opx-ol-gabbro	1415P	33.00	52.73	1.05	2.44	0.24	4.74	0.16	16.56	22.71	0.31	0.00	0.04	100.98	7.67	0.11	0.42	0.03	0.58	0.02	3.59	3.54	0.09	0.00	0.01	16.04	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.52	0.87	2.28	0.13	6.16	0.18	20.36	16.71	0.19	0.00	0.03	100.43	7.72	0.09	0.39	0.01	0.74	0.02	4.38	2.58	0.05	0.00	0.00	16.01	85.
345-42	Opx-ol-gabbro	1415P	38.50	53.39	0.93	2.23	0.13	4.90	0.15	17.73	21.41	0.25	0.00	0.01	101.12	7.71	0.10	0.38	0.01	0.59	0.02	3.82	3.31	0.07	0.00	0.00	16.02	86.
345-42	Opx-ol-gabbro	1415P	38.50	54.18	0.88	1.84	0.12	7.10	0.20	22.32	14.62	0.16	0.00	0.00	101.43	7.73	0.09	0.31	0.01	0.85	0.02	4.75	2.23	0.05	0.00	0.00	16.04	84.
345-42	Opx-ol-gabbro	1415P	38.50	53.36	0.64	2.43	0.22	4.67	0.15	16.46	22.78	0.31	0.00	0.01	101.02	7.74	0.07	0.42	0.03	0.57	0.02	3.56	3.54	0.09	0.00	0.00	16.02	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.29	0.61	2.35	0.26	4.72	0.17	16.75	22.61	0.32	0.00	0.03	101.11	7.72	0.07	0.40	0.03	0.57	0.02	3.62	3.51	0.09	0.00	0.00	16.04	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.48	0.59	2.29	0.25	5.00	0.16	17.34	21.66	0.30	0.00	0.01	101.07	7.74	0.06	0.39	0.03	0.61	0.02	3.74	3.36	0.08	0.00	0.00	16.03	86.
345-42	Opx-ol-gabbro	1415P	38.50	51.94	1.01	2.30	0.12	4.76	0.15	17.48	21.14	0.27	0.00	0.04	99.17	7.66	0.11	0.40	0.01	0.59	0.02	3.84	3.34	0.08	0.00	0.00	16.06	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.21	0.89	2.10	0.13	4.12	0.16	17.38	22.14	0.25	0.00	0.03	100.41	7.73	0.10	0.36	0.01	0.50	0.02	3.77	3.45	0.07	0.00	0.00	16.02	88.
345-42	Opx-ol-gabbro	1415P	38.50	52.04	0.99	2.20	0.12	5.16	0.16	17.36	21.45	0.28	0.01	0.01	99.79	7.65	0.11	0.38	0.01	0.63	0.02	3.81	3.38	0.08	0.00	0.00	16.08	85.
345-42	Opx-ol-gabbro	1415P	38.50	53.46	0.67	2.37	0.26	4.37	0.16	17.09	22.75	0.27	0.00	0.05	101.44	7.71	0.07	0.40	0.03	0.53	0.02	3.67	3.52	0.08	0.00	0.01	16.04	87.
345-42	Opx-ol-gabbro	1415P	38.50	52.95	0.50	2.29	0.18	4.68	0.24	16.98	21.78	0.26	0.01	0.02	99.91	7.75	0.06	0.40	0.02	0.57	0.03	3.71	3.42	0.07	0.00	0.00	16.02	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.74	0.56	2.15	0.20	4.78	0.24	16.57	22.92	0.26	0.00	0.04	101.45	7.77	0.06	0.37	0.02	0.58	0.03	3.57	3.55	0.07	0.00	0.01	16.02	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.96	0.51	2.06	0.22	5.04	0.19	17.76	20.63	0.29	0.00	0.00	100.66	7.81	0.06	0.35	0.03	0.61	0.02	3.83	3.20	0.08	0.00	0.00	15.99	86.
345-42	Opx-ol-gabbro	1415P	38.50	54.84	0.37	2.06	0.29	8.13	0.22	24.37	11.10	0.15	0.00	0.05	101.55	7.76	0.04	0.34	0.03	0.96	0.03	5.14	1.68	0.04	0.00	0.01	16.03	84.
345-42	Opx-ol-gabbro	1415P	38.50	53.81	0.52	2.13	0.25	5.23	0.19	18.06	19.99	0.27	0.00	0.01	100.45	7.80	0.06	0.36	0.03	0.63	0.02	3.90	3.10	0.08	0.00	0.00	15.99	86.
345-42	Opx-ol-gabbro	1415P	38.50	53.87	0.51	2.13	0.25	4.64	0.17	17.12	22.10	0.30	0.00	0.02	101.12	7.78	0.06	0.36	0.03	0.56	0.02	3.69	3.42	0.08	0.00	0.00	16.01	86.
345-36	Opx-ol-gabbro	1415P	28.00	52.47	0.88	2.49	0.22	4.78	0.17	16.76	22.71	0.27	0.00	0.02	100.75	7.65	0.10	0.43	0.02	0.58	0.02	3.64	3.55	0.08	0.00	0.00	16.07	86.
345-36	Opx-ol-gabbro	1415P	28.00	52.59	1.05	2.40	0.28	5.27	0.18	17.02	21.58	0.26	0.00	0.05	100.67	7.67	0.11	0.41	0.03	0.64	0.02	3.70	3.37	0.07	0.00	0.01	16.03	85.
345-36	Opx-ol-gabbro	1415P	28.00	51.61	0.95	2.58	0.22	4.72	0.15	16.38	22.53	0.25	0.00	0.02	99.41	7.63	0.11	0.45	0.03	0.58	0.02	3.61	3.57	0.07	0.00	0.00	16.06	86.
345-36	Opx-ol-gabbro	1415P	28.00	52.90	0.84	2.11	0.25	4.61	0.16	16.64	22.84	0.26	0.00	0.04	100.66	7.71	0.09	0.36	0.03	0.56	0.02	3.62	3.57	0.07	0.00	0.00	16.04	86.
345-36	Opx-ol-gabbro	1415P	28.00	53.30	0.86	2.27	0.25	4.93	0.16	16.98	22.39	0.27	0.00	0.01	101.41	7.70	0.09	0.39	0.03	0.60	0.02	3.66	3.47	0.07	0.00	0.00	16.03	86.
345-36	Opx-ol-gabbro	1415P	28.00	52.21	0.79	2.02	0.33	4.85	0.18	16.32	22.60	0.24	0.00	0.03	99.56	7.71	0.09	0.35	0.04	0.60	0.02	3.59	3.58	0.07	0.00	0.00	16.04	85.
345-36	Opx-ol-gabbro	1415P	28.00	53.18	0.73	2.11	0.27	5.62	0.15	17.87	20.26	0.25	0.01	0.00	100.46	7.74	0.08	0.36	0.03	0.68	0.02	3.88	3.16	0.07	0.00	0.00	16.02	85.
345-45	Opx-ol-gabbro	1415P	51.00	52.94	0.93	2.42	0.09	4.70	0.20	16.75	22.54	0.32	0.01	0.01	100.89	7.69	0.10	0.42	0.01	0.57	0.02	3.63	3.51	0.09	0.00	0.00	16.04	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-45	Opx-ol-gabbro	1415P	51.00	53.14	0.86	2.13	0.09	4.57	0.15	16.79	23.26	0.33	0.00	0.00	101.32	7.70	0.09	0.36	0.01	0.55	0.02	3.63	3.61	0.09	0.00	0.00	16.07	86.
345-45	Opx-ol-gabbro	1415P	51.00	52.71	0.81	2.38	0.10	4.75	0.18	16.77	22.86	0.33	0.00	0.04	100.92	7.67	0.09	0.41	0.01	0.58	0.02	3.64	3.56	0.09	0.00	0.00	16.08	86.
345-45	Opx-ol-gabbro	1415P	51.00	52.97	0.94	2.17	0.13	4.59	0.18	16.71	23.10	0.31	0.00	0.01	101.10	7.69	0.10	0.37	0.01	0.56	0.02	3.62	3.59	0.09	0.00	0.00	16.06	86.
345-45	Opx-ol-gabbro	1415P	51.00	53.24	0.80	1.90	0.16	4.39	0.16	16.55	23.49	0.25	0.00	0.03	100.97	7.74	0.09	0.32	0.02	0.53	0.02	3.59	3.66	0.07	0.00	0.00	16.04	87.
345-45	Opx-ol-gabbro	1415P	51.00	52.81	0.83	2.09	0.13	4.63	0.13	16.64	22.88	0.29	0.00	0.00	100.43	7.71	0.09	0.36	0.02	0.57	0.02	3.62	3.58	0.08	0.00	0.00	16.05	86.
345-45	Opx-ol-gabbro	1415P	51.00	53.00	0.85	2.00	0.14	4.48	0.15	16.65	22.94	0.31	0.00	0.02	100.53	7.73	0.09	0.34	0.02	0.55	0.02	3.62	3.58	0.09	0.00	0.00	16.04	86.
345-31	Opx-ol-gabbro	1415P	13.50	52.75	0.57	2.63	0.78	5.20	0.16	16.88	21.38	0.30	0.00	0.03	100.68	7.68	0.06	0.45	0.09	0.63	0.02	3.67	3.34	0.08	0.00	0.00	16.03	85.
345-31	Opx-ol-gabbro	1415P	13.50	52.48	0.60	2.63	0.80	4.88	0.20	16.17	22.50	0.35	0.01	0.03	100.65	7.67	0.07	0.45	0.09	0.60	0.02	3.52	3.52	0.10	0.00	0.00	16.05	85.
345-31	Opx-ol-gabbro	1415P	13.50	53.04	0.45	2.18	0.70	5.05	0.17	17.00	21.77	0.31	0.00	0.01	100.68	7.73	0.05	0.37	0.08	0.61	0.02	3.69	3.40	0.09	0.00	0.00	16.04	85.
345-31	Opx-ol-gabbro	1415P	13.50	51.84	1.06	2.64	0.58	5.12	0.19	16.54	21.93	0.33	0.00	0.02	100.24	7.61	0.12	0.46	0.07	0.63	0.02	3.62	3.45	0.09	0.00	0.00	16.06	85.
345-31	Opx-ol-gabbro	1415P	13.50	50.43	0.93	3.67	0.44	6.44	0.27	15.85	20.52	0.45	0.00	0.02	99.01	7.52	0.10	0.64	0.05	0.80	0.03	3.52	3.28	0.13	0.00	0.00	16.09	81.
345-31	Opx-ol-gabbro	1415P	13.50	54.51	0.45	1.09	0.07	3.56	0.16	17.00	24.52	0.19	0.00	0.01	101.57	7.85	0.05	0.19	0.01	0.43	0.02	3.65	3.78	0.05	0.00	0.00	16.03	89.
345-31	Opx-ol-gabbro	1415P	13.50	52.65	0.38	3.24	1.35	3.98	0.14	16.57	22.76	0.34	0.00	0.03	101.45	7.61	0.04	0.55	0.15	0.48	0.02	3.57	3.52	0.10	0.00	0.00	16.05	88.
345-31	Opx-ol-gabbro	1415P	13.50	53.46	0.30	2.81	1.11	5.56	0.15	19.82	17.76	0.25	0.00	0.03	101.25	7.67	0.03	0.48	0.13	0.67	0.02	4.24	2.73	0.07	0.00	0.00	16.03	86.
345-31	Opx-ol-gabbro	1415P	13.50	51.98	0.37	3.51	1.79	5.70	0.18	18.87	18.51	0.27	0.02	0.03	101.23	7.51	0.04	0.60	0.20	0.69	0.02	4.07	2.87	0.07	0.00	0.00	16.08	85.
345-31	Opx-ol-gabbro	1415P	13.50	52.85	0.36	2.42	0.97	3.97	0.12	17.00	22.82	0.30	0.00	0.01	100.82	7.68	0.04	0.41	0.11	0.48	0.02	3.68	3.55	0.08	0.00	0.00	16.06	88.
345-31	Opx-ol-gabbro	1415P	13.50	52.97	0.29	3.17	1.14	3.99	0.09	16.81	22.33	0.35	0.00	0.00	101.13	7.66	0.03	0.54	0.13	0.48	0.01	3.62	3.46	0.10	0.00	0.00	16.03	88.
345-31	Opx-ol-gabbro	1415P	13.50	52.78	0.29	3.34	1.14	4.47	0.13	17.74	20.86	0.32	0.00	0.05	101.13	7.62	0.03	0.57	0.13	0.54	0.02	3.82	3.23	0.09	0.00	0.01	16.05	87.
345-31	Opx-ol-gabbro	1415P	13.50	51.89	0.42	3.68	1.19	4.15	0.10	16.63	22.06	0.32	0.00	0.03	100.47	7.56	0.05	0.63	0.14	0.51	0.01	3.61	3.45	0.09	0.00	0.00	16.05	87.
345-31	Opx-ol-gabbro	1415P	13.50	52.53	0.30	3.35	1.15	3.98	0.12	17.01	22.08	0.35	0.00	0.01	100.87	7.61	0.03	0.57	0.13	0.48	0.01	3.67	3.43	0.10	0.00	0.00	16.05	88.
345-31	Opx-ol-gabbro	1415P	13.50	52.02	0.47	3.09	1.09	4.50	0.13	17.63	21.39	0.33	0.00	0.02	100.67	7.57	0.05	0.53	0.13	0.55	0.02	3.82	3.34	0.09	0.00	0.00	16.10	87.
345-31	Opx-ol-gabbro	1415P	13.50	51.23	1.03	3.03	0.85	4.31	0.13	16.95	22.18	0.32	0.01	0.00	100.05	7.52	0.11	0.53	0.10	0.53	0.02	3.71	3.49	0.09	0.00	0.00	16.10	87.
345-31	Opx-ol-gabbro	1415P	13.50	51.15	1.18	3.04	0.84	4.26	0.18	16.26	22.90	0.31	0.00	0.04	100.16	7.52	0.13	0.53	0.10	0.52	0.02	3.56	3.61	0.09	0.00	0.00	16.08	87.
345-31	Opx-ol-gabbro	1415P	13.50	51.93	1.15	2.96	0.90	4.55	0.15	16.70	22.30	0.31	0.00	0.01	100.96	7.56	0.13	0.51	0.10	0.55	0.02	3.62	3.48	0.09	0.00	0.00	16.05	86.
345-31	Opx-ol-gabbro	1415P	13.50	52.26	1.04	2.86	0.77	4.25	0.14	16.61	22.88	0.30	0.00	0.02	101.10	7.59	0.11	0.49	0.09	0.52	0.02	3.59	3.56	0.08	0.00	0.00	16.05	87.
345-31	Opx-ol-gabbro	1415P	13.50	52.14	0.84	2.67	0.64	4.23	0.15	17.01	22.11	0.31	0.01	0.00	100.10	7.63	0.09	0.46	0.07	0.52	0.02	3.71	3.47	0.09	0.00	0.00	16.06	87.
345-31	Opx-ol-gabbro	1415P	13.50	51.55	0.86	2.30	0.62	4.28	0.16	16.76	22.96	0.32	0.00	0.01	99.81	7.60	0.10	0.40	0.07	0.53	0.02	3.68	3.63	0.09	0.00	0.00	16.12	87.
345-31	Opx-ol-gabbro	1415P	13.50	52.11	0.95	2.75	0.76	4.47	0.15	16.83	22.40	0.28	0.00	0.03	100.72	7.60	0.10	0.47	0.09	0.55	0.02	3.66	3.50	0.08	0.00	0.00	16.06	87.
345-31	Opx-ol-gabbro	1415P	13.50	51.57	0.99	3.47	0.84	4.94	0.21	16.08	22.44	0.31	0.00	0.00	100.85	7.53	0.11	0.60	0.10	0.60	0.03	3.50	3.51	0.09	0.00	0.00	16.06	85.
345-31	Opx-ol-gabbro	1415P	13.50	53.69	0.78	2.43	0.68	5.07	0.14	18.38	20.17	0.27	0.00	0.04	101.64	7.70	0.08	0.41	0.08	0.61	0.02	3.93	3.10	0.07	0.00	0.00	16.01	86.
345-65	Opx-ol-gabbro	1415P	13.00	51.67	0.79	2.40	0.36	4.33	0.15	16.30	22.55	0.30	0.00	0.04	98.90	7.67	0.09	0.42	0.04	0.54	0.02	3.61	3.59	0.09	0.00	0.00	16.05	87.
345-65	Opx-ol-gabbro	1415P	13.00	51.16	1.02	2.44	0.38	4.27	0.11	15.53	22.96	0.24	0.00	0.01	98.11	7.66	0.11	0.43	0.04	0.53	0.01	3.47	3.68	0.07	0.00	0.00	16.02	86.
345-65	Opx-ol-gabbro	1415P	13.00	50.28	0.95	3.20	0.32	5.01	0.13	15.51	22.11	0.32	0.00	0.02	97.85	7.57	0.11	0.57	0.04	0.63	0.02	3.48	3.57	0.09	0.00	0.00	16.07	84.
345-65	Opx-ol-gabbro	1415P	13.00	51.43	0.60	2.41	0.34	4.47	0.12	15.87	22.57	0.34	0.00	0.03	98.18	7.69	0.07	0.43	0.04	0.56	0.02	3.54	3.62	0.10	0.00	0.00	16.06	86.
345-65	Opx-ol-gabbro	1415P	13.00	53.19	1.59	2.08	0.18	6.52	0.24	16.18	17.46	0.38	0.00	0.03	97.85	7.90	0.18	0.36	0.02	0.81	0.03	3.58	2.78	0.11	0.00	0.00	15.78	81.
345-65	Opx-ol-gabbro	1415P	13.00	53.44	1.54	2.03	0.17	6.63	0.26	16.34	17.47	0.44	0.00	0.02	98.33	7.91	0.17	0.35	0.02	0.82	0.03	3.60	2.77	0.13	0.00	0.00	15.80	81.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-75	Opx-ol-gabbro	1415P	24.00	51.10	0.42	3.49	1.49	4.09	0.16	15.78	21.84	0.37	0.00	0.02	98.76	7.59	0.05	0.61	0.17	0.51	0.02	3.49	3.48	0.11	0.00	0.00	16.02	87.
345-75	Opx-ol-gabbro	1415P	24.00	50.29	0.68	3.24	1.84	4.57	0.14	15.68	22.18	0.37	0.00	0.04	99.01	7.50	0.08	0.57	0.22	0.57	0.02	3.49	3.54	0.11	0.00	0.00	16.09	85.
345-75	Opx-ol-gabbro	1415P	24.00	51.96	0.59	2.77	1.08	3.85	0.14	15.92	22.59	0.32	0.00	0.01	99.23	7.67	0.07	0.48	0.13	0.47	0.02	3.50	3.57	0.09	0.00	0.00	16.01	88.
345-75	Opx-ol-gabbro	1415P	24.00	51.28	0.44	3.14	1.21	3.89	0.14	16.10	22.25	0.29	0.00	0.03	98.75	7.61	0.05	0.55	0.14	0.48	0.02	3.56	3.54	0.08	0.00	0.00	16.04	88.
345-75	Opx-ol-gabbro	1415P	24.00	51.55	0.66	2.93	1.07	3.98	0.12	16.07	22.01	0.36	0.00	0.04	98.78	7.64	0.07	0.51	0.13	0.49	0.02	3.55	3.50	0.10	0.00	0.00	16.02	87.
345-64	Opx-ol-gabbro	1415P	12.80	53.04	0.75	2.16	0.26	4.39	0.16	16.59	22.22	0.23	0.00	0.02	99.83	7.77	0.08	0.37	0.03	0.54	0.02	3.62	3.49	0.07	0.00	0.00	15.98	87.
345-64	Opx-ol-gabbro	1415P	12.80	52.87	0.89	2.16	0.21	4.35	0.13	16.63	22.48	0.24	0.01	0.03	99.99	7.74	0.10	0.37	0.02	0.53	0.02	3.63	3.52	0.07	0.00	0.00	16.00	87.
345-64	Opx-ol-gabbro	1415P	12.80	52.83	0.92	2.39	0.23	4.25	0.15	16.35	22.79	0.32	0.00	0.01	100.23	7.72	0.10	0.41	0.03	0.52	0.02	3.56	3.57	0.09	0.00	0.00	16.01	87.
345-64	Opx-ol-gabbro	1415P	12.80	52.65	1.03	2.44	0.21	4.44	0.18	16.49	22.66	0.23	0.01	0.03	100.37	7.69	0.11	0.42	0.02	0.54	0.02	3.59	3.54	0.06	0.00	0.00	16.01	86.
345-64	Opx-ol-gabbro	1415P	12.80	52.50	0.93	2.27	0.24	4.58	0.15	17.08	22.57	0.28	0.00	0.02	100.60	7.66	0.10	0.39	0.03	0.56	0.02	3.71	3.53	0.08	0.00	0.00	16.07	86.
345-64	Opx-ol-gabbro	1415P	12.80	52.55	1.19	2.53	0.30	4.16	0.13	16.64	23.07	0.24	0.00	0.02	100.81	7.64	0.13	0.43	0.03	0.51	0.02	3.61	3.59	0.07	0.00	0.00	16.03	87.
345-64	Opx-ol-gabbro	1415P	12.80	52.88	0.73	2.60	0.24	4.40	0.18	16.31	23.04	0.28	0.01	0.03	100.69	7.70	0.08	0.45	0.03	0.54	0.02	3.54	3.59	0.08	0.00	0.00	16.03	86.
345-64	Opx-ol-gabbro	1415P	12.80	52.85	0.67	2.25	0.23	4.32	0.18	16.49	22.89	0.26	0.00	0.02	100.16	7.73	0.07	0.39	0.03	0.53	0.02	3.59	3.59	0.07	0.00	0.00	16.03	87.
345-64	Opx-ol-gabbro	1415P	12.80	52.66	1.00	2.49	0.26	4.40	0.17	16.49	22.71	0.27	0.00	0.01	100.46	7.68	0.11	0.43	0.03	0.54	0.02	3.59	3.55	0.08	0.00	0.00	16.02	86.
345-64	Opx-ol-gabbro	1415P	12.80	51.36	0.66	5.97	0.18	3.86	0.10	13.93	23.60	0.30	0.00	0.01	99.98	7.51	0.07	1.03	0.02	0.47	0.01	3.04	3.70	0.09	0.00	0.00	15.94	86.
345-64	Opx-ol-gabbro	1415P	12.80	52.85	0.95	2.40	0.25	4.52	0.18	16.85	22.10	0.27	0.00	0.03	100.41	7.70	0.10	0.41	0.03	0.55	0.02	3.66	3.45	0.08	0.00	0.00	16.01	86.
345-64	Opx-ol-gabbro	1415P	12.80	52.32	1.02	2.73	0.27	4.45	0.23	16.28	22.21	0.27	0.00	0.02	99.78	7.68	0.11	0.47	0.03	0.55	0.03	3.56	3.49	0.08	0.00	0.00	16.00	86.
345-87	Opx-ol-gabbro	1415P	42.10	53.31	0.34	2.16	0.30	4.99	0.14	17.45	21.43	0.22	0.00	0.03	100.36	7.76	0.04	0.37	0.03	0.61	0.02	3.79	3.34	0.06	0.00	0.00	16.03	86.
345-87	Opx-ol-gabbro	1415P	42.10	52.62	0.37	2.58	0.29	4.92	0.13	17.14	21.36	0.23	0.00	0.02	99.65	7.72	0.04	0.45	0.03	0.60	0.02	3.75	3.36	0.06	0.00	0.00	16.03	86.
345-87	Opx-ol-gabbro	1415P	42.10	53.67	0.38	2.10	0.24	6.49	0.23	20.10	16.89	0.19	0.01	0.05	100.34	7.77	0.04	0.36	0.03	0.79	0.03	4.34	2.62	0.05	0.00	0.01	16.02	84.
345-87	Opx-ol-gabbro	1415P	42.10	52.93	0.71	2.12	0.22	4.61	0.14	16.98	22.41	0.27	0.00	0.02	100.41	7.72	0.08	0.37	0.03	0.56	0.02	3.69	3.50	0.08	0.00	0.00	16.04	86.
345-87	Opx-ol-gabbro	1415P	42.10	50.59	0.37	2.70	0.24	5.00	0.10	20.43	15.19	0.30	0.01	0.00	94.92	7.68	0.04	0.48	0.03	0.63	0.01	4.62	2.47	0.09	0.00	0.00	16.07	87.
345-87	Opx-ol-gabbro	1415P	42.10	52.99	0.42	2.40	0.32	5.24	0.14	17.30	21.21	0.25	0.01	0.01	100.28	7.73	0.05	0.41	0.04	0.64	0.02	3.76	3.32	0.07	0.00	0.00	16.03	85.
345-87	Opx-ol-gabbro	1415P	42.10	52.22	0.52	2.64	0.32	5.07	0.16	17.67	20.79	0.29	0.00	0.01	99.68	7.66	0.06	0.46	0.04	0.62	0.02	3.87	3.27	0.08	0.00	0.00	16.07	86.
345-87	Opx-ol-gabbro	1415P	42.10	51.13	0.66	3.50	0.29	5.26	0.16	17.60	20.18	0.30	0.00	0.01	99.09	7.55	0.07	0.61	0.03	0.65	0.02	3.87	3.19	0.09	0.00	0.00	16.10	85.
345-87	Opx-ol-gabbro	1415P	42.10	53.51	0.73	2.11	0.08	5.04	0.18	18.00	20.49	0.27	0.02	0.00	100.42	7.77	0.08	0.36	0.01	0.61	0.02	3.89	3.19	0.08	0.00	0.00	16.01	86.
345-87	Opx-ol-gabbro	1415P	42.10	46.49	0.49	7.28	0.04	6.32	0.23	20.67	12.78	0.19	0.02	0.02	94.52	7.12	0.06	1.31	0.01	0.81	0.03	4.72	2.10	0.05	0.00	0.00	16.20	85.
345-87	Opx-ol-gabbro	1415P	42.10	52.71	0.80	1.95	0.10	4.39	0.18	16.65	22.38	0.25	0.00	0.04	99.45	7.76	0.09	0.34	0.01	0.54	0.02	3.65	3.53	0.07	0.00	0.00	16.02	87.
345-87	Opx-ol-gabbro	1415P	42.10	52.69	0.81	1.98	0.12	4.49	0.14	16.90	22.19	0.28	0.00	0.01	99.60	7.74	0.09	0.34	0.01	0.55	0.02	3.70	3.49	0.08	0.00	0.00	16.03	87.
345-89	Opx-ol-gabbro	1415P	46.15	52.69	0.59	2.39	0.39	4.49	0.14	16.63	22.15	0.27	0.01	0.00	99.75	7.73	0.07	0.41	0.04	0.55	0.02	3.64	3.48	0.08	0.00	0.00	16.02	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.49	0.63	2.51	0.38	4.60	0.14	16.58	22.07	0.28	0.00	0.03	99.71	7.71	0.07	0.43	0.04	0.57	0.02	3.63	3.47	0.08	0.00	0.00	16.02	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.95	0.60	2.55	0.39	5.45	0.17	17.67	20.02	0.24	0.03	0.03	100.09	7.72	0.07	0.44	0.04	0.67	0.02	3.84	3.13	0.07	0.01	0.00	16.01	85.
345-89	Opx-ol-gabbro	1415P	46.15	53.13	0.44	2.56	0.44	5.72	0.17	18.63	18.86	0.27	0.00	0.03	100.25	7.72	0.05	0.44	0.05	0.70	0.02	4.03	2.94	0.08	0.00	0.00	16.02	85.
345-89	Opx-ol-gabbro	1415P	46.15	53.18	0.49	2.32	0.40	5.49	0.20	18.06	20.07	0.28	0.01	0.02	100.51	7.73	0.05	0.40	0.05	0.67	0.03	3.91	3.13	0.08	0.00	0.00	16.04	85.
345-89	Opx-ol-gabbro	1415P	46.15	52.58	0.63	2.47	0.27	4.68	0.15	16.71	22.15	0.31	0.00	0.04	99.99	7.70	0.07	0.43	0.03	0.57	0.02	3.65	3.48	0.09	0.00	0.01	16.04	86.
345-89	Opx-ol-gabbro	1415P	46.15	53.26	0.40	2.17	0.33	4.60	0.13	17.13	22.43	0.27	0.01	0.01	100.73	7.74	0.04	0.37	0.04	0.56	0.02	3.71	3.49	0.07	0.00	0.00	16.05	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-89	Opx-ol-gabbro	1415P	46.15	53.02	0.49	2.65	0.39	4.48	0.12	16.52	21.92	0.30	0.00	0.01	99.90	7.75	0.05	0.46	0.04	0.55	0.01	3.60	3.43	0.09	0.00	0.00	15.99	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.83	0.50	2.49	0.37	4.59	0.16	16.52	22.14	0.29	0.00	0.02	99.90	7.74	0.06	0.43	0.04	0.56	0.02	3.61	3.47	0.08	0.00	0.00	16.01	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.99	0.43	2.47	0.39	4.84	0.15	17.47	21.57	0.32	0.00	0.01	100.63	7.70	0.05	0.42	0.04	0.59	0.02	3.79	3.36	0.09	0.00	0.00	16.06	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.98	0.64	2.22	0.29	4.46	0.16	16.99	21.95	0.24	0.01	0.02	99.96	7.75	0.07	0.38	0.03	0.55	0.02	3.70	3.44	0.07	0.00	0.00	16.01	87.
345-89	Opx-ol-gabbro	1415P	46.15	52.34	0.80	2.29	0.12	4.63	0.17	16.56	21.96	0.29	0.00	0.03	99.19	7.72	0.09	0.40	0.01	0.57	0.02	3.64	3.47	0.08	0.00	0.00	16.02	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.73	0.80	2.13	0.11	4.62	0.14	17.03	21.89	0.28	0.01	0.03	99.75	7.73	0.09	0.37	0.01	0.57	0.02	3.72	3.44	0.08	0.00	0.00	16.03	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.79	0.86	2.13	0.12	4.54	0.13	16.67	22.03	0.34	0.01	0.02	99.62	7.75	0.09	0.37	0.01	0.56	0.02	3.65	3.47	0.10	0.00	0.00	16.01	86.
345-89	Opx-ol-gabbro	1415P	46.15	51.20	0.76	1.96	0.22	4.73	0.14	17.55	21.44	0.25	0.00	0.02	98.28	7.64	0.09	0.35	0.03	0.59	0.02	3.91	3.43	0.07	0.00	0.00	16.12	86.
345-89	Opx-ol-gabbro	1415P	46.15	52.28	0.75	2.42	0.13	4.98	0.13	16.92	21.73	0.32	0.01	0.00	99.68	7.69	0.08	0.42	0.02	0.61	0.02	3.71	3.42	0.09	0.00	0.00	16.06	85.
345-89	Opx-ol-gabbro	1415P	46.15	52.80	0.76	2.24	0.18	4.45	0.12	16.67	22.92	0.31	0.00	0.01	100.48	7.70	0.08	0.39	0.02	0.54	0.02	3.63	3.58	0.09	0.00	0.00	16.05	86.
345-99	Opx-ol-gabbro	1415P	60.02	51.99	0.72	3.13	0.80	4.54	0.18	15.85	22.14	0.42	0.03	0.03	99.84	7.64	0.08	0.54	0.09	0.56	0.02	3.47	3.49	0.12	0.00	0.00	16.03	86.
345-99	Opx-ol-gabbro	1415P	60.02	50.78	0.45	4.16	0.93	4.44	0.15	16.60	20.90	0.32	0.02	0.03	98.77	7.52	0.05	0.73	0.11	0.55	0.02	3.67	3.32	0.09	0.00	0.00	16.06	86.
345-99	Opx-ol-gabbro	1415P	60.02	52.21	0.37	3.37	0.79	4.58	0.14	16.34	22.30	0.31	0.02	0.02	100.43	7.62	0.04	0.58	0.09	0.56	0.02	3.56	3.49	0.09	0.00	0.00	16.05	86.
345-99	Opx-ol-gabbro	1415P	60.02	51.99	0.35	3.18	0.74	4.68	0.14	16.51	21.23	0.40	0.01	0.02	99.23	7.66	0.04	0.55	0.09	0.58	0.02	3.63	3.35	0.11	0.00	0.00	16.04	86.
345-99	Opx-ol-gabbro	1415P	60.02	51.14	0.40	3.52	0.76	4.86	0.17	17.14	20.96	0.33	0.01	0.01	99.31	7.55	0.04	0.61	0.09	0.60	0.02	3.77	3.32	0.09	0.00	0.00	16.10	86.
345-99	Opx-ol-gabbro	1415P	60.02	51.10	0.83	3.38	0.59	5.17	0.16	16.98	20.81	0.29	0.01	0.04	99.36	7.55	0.09	0.59	0.07	0.64	0.02	3.74	3.29	0.08	0.00	0.01	16.07	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.74	0.84	2.63	0.50	5.21	0.17	17.22	20.33	0.33	0.00	0.03	99.99	7.71	0.09	0.45	0.06	0.64	0.02	3.75	3.18	0.09	0.00	0.00	15.99	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.01	0.61	2.58	0.62	4.65	0.14	16.57	21.71	0.36	0.01	0.02	99.29	7.68	0.07	0.45	0.07	0.57	0.02	3.65	3.43	0.10	0.00	0.00	16.05	86.
345-99	Opx-ol-gabbro	1415P	60.02	53.04	0.45	2.42	0.68	4.74	0.17	16.98	21.15	0.30	0.00	0.02	99.93	7.75	0.05	0.42	0.08	0.58	0.02	3.70	3.31	0.08	0.00	0.00	15.99	86.
345-99	Opx-ol-gabbro	1415P	60.02	53.28	0.41	2.39	0.61	5.77	0.19	18.71	18.40	0.25	0.00	0.03	100.03	7.75	0.04	0.41	0.07	0.70	0.02	4.06	2.87	0.07	0.00	0.00	16.00	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.38	0.32	2.83	0.86	4.67	0.15	16.78	21.55	0.29	0.01	0.02	99.83	7.68	0.03	0.49	0.10	0.57	0.02	3.67	3.39	0.08	0.00	0.00	16.03	86.
345-99	Opx-ol-gabbro	1415P	60.02	52.45	0.24	2.78	0.86	4.58	0.12	16.80	21.44	0.35	0.01	0.03	99.65	7.70	0.03	0.48	0.10	0.56	0.01	3.68	3.37	0.10	0.00	0.00	16.03	86.
345-99	Opx-ol-gabbro	1415P	60.02	49.37	0.27	5.13	0.71	4.98	0.17	18.08	18.55	0.30	0.03	0.03	97.60	7.38	0.03	0.90	0.08	0.62	0.02	4.03	2.97	0.09	0.01	0.00	16.14	86.
345-99	Opx-ol-gabbro	1415P	60.02	52.06	0.40	2.82	1.36	4.93	0.16	16.02	22.05	0.38	0.00	0.01	100.18	7.64	0.04	0.49	0.16	0.61	0.02	3.51	3.47	0.11	0.00	0.00	16.04	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.08	0.36	3.26	1.02	4.84	0.17	16.62	21.10	0.41	0.01	0.03	99.90	7.64	0.04	0.56	0.12	0.59	0.02	3.63	3.31	0.12	0.00	0.00	16.04	85.
345-99	Opx-ol-gabbro	1415P	60.02	51.37	0.33	3.29	1.04	4.74	0.13	16.03	22.09	0.32	0.00	0.02	99.36	7.60	0.04	0.57	0.12	0.59	0.02	3.53	3.50	0.09	0.00	0.00	16.06	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.36	0.41	3.24	0.97	4.79	0.15	16.30	21.48	0.35	0.00	0.00	100.05	7.66	0.05	0.56	0.11	0.59	0.02	3.56	3.37	0.10	0.00	0.00	16.01	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.08	1.15	2.65	0.30	4.81	0.17	16.42	22.20	0.30	0.02	0.04	100.15	7.64	0.13	0.46	0.03	0.59	0.02	3.59	3.49	0.09	0.00	0.00	16.04	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.32	1.10	2.54	0.30	4.81	0.16	16.53	22.40	0.26	0.01	0.03	100.46	7.65	0.12	0.44	0.03	0.59	0.02	3.60	3.51	0.07	0.00	0.00	16.03	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.06	1.12	2.77	0.27	4.69	0.15	16.49	21.46	0.31	0.00	0.02	99.32	7.67	0.12	0.48	0.03	0.58	0.02	3.62	3.39	0.09	0.00	0.00	16.00	86.
345-99	Opx-ol-gabbro	1415P	60.02	52.01	1.07	2.91	0.29	5.51	0.15	17.30	19.90	0.31	0.00	0.02	99.47	7.65	0.12	0.50	0.03	0.68	0.02	3.79	3.13	0.09	0.00	0.00	16.01	84.
345-99	Opx-ol-gabbro	1415P	60.02	52.09	1.06	2.66	0.26	5.36	0.15	17.53	19.67	0.28	0.00	0.04	99.10	7.67	0.12	0.46	0.03	0.66	0.02	3.85	3.11	0.08	0.00	0.00	16.00	85.
345-99	Opx-ol-gabbro	1415P	60.02	52.33	1.01	2.40	0.24	5.02	0.14	16.77	21.87	0.30	0.02	0.02	100.12	7.67	0.11	0.41	0.03	0.62	0.02	3.66	3.43	0.09	0.00	0.00	16.04	85.
345-70	Opx-ol-gabbro	1415P	18.18	51.89	1.27	2.47	0.02	4.89	0.17	16.12	22.44	0.36	0.00	0.01	99.65	7.65	0.14	0.43	0.00	0.60	0.02	3.54	3.55	0.10	0.00	0.00	16.04	85.
345-70	Opx-ol-gabbro	1415P	18.18	51.73	1.22	2.40	0.00	4.85	0.11	16.61	22.09	0.38	0.00	0.02	99.41	7.64	0.14	0.42	0.00	0.60	0.01	3.66	3.50	0.11	0.00	0.00	16.07	85.
345-70	Opx-ol-gabbro	1415P	18.18	52.08	1.18	2.56	0.05	4.90	0.16	16.29	22.16	0.29	0.00	0.03	99.70	7.66	0.13	0.44	0.01	0.60	0.02	3.57	3.50	0.08	0.00	0.00	16.02	85.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-70	Opx-ol-gabbro	1415P	18.18	51.95	1.22	2.60	0.03	5.40	0.15	16.59	21.11	0.28	0.00	0.00	99.34	7.67	0.14	0.45	0.00	0.67	0.02	3.65	3.34	0.08	0.00	0.00	16.01	84.
345-70	Opx-ol-gabbro	1415P	18.18	52.11	1.00	2.49	0.05	4.98	0.14	16.22	22.09	0.29	0.00	0.02	99.40	7.69	0.11	0.43	0.01	0.62	0.02	3.57	3.49	0.08	0.00	0.00	16.02	85.
345-71	Opx-ol-gabbro	1415P	19.00	51.52	1.42	3.02	0.10	5.05	0.18	15.45	22.24	0.31	0.02	0.02	99.33	7.62	0.16	0.53	0.01	0.63	0.02	3.41	3.53	0.09	0.00	0.00	16.00	84.
345-71	Opx-ol-gabbro	1415P	19.00	50.37	3.19	2.91	0.16	5.50	0.17	15.76	21.60	0.35	0.00	0.01	100.01	7.43	0.35	0.51	0.02	0.68	0.02	3.47	3.42	0.10	0.00	0.00	16.00	83.
345-71	Opx-ol-gabbro	1415P	19.00	53.56	0.35	3.32	0.06	6.58	0.34	18.66	14.23	0.73	0.02	0.02	97.87	7.88	0.04	0.58	0.01	0.81	0.04	4.09	2.24	0.21	0.00	0.00	15.90	83.
345-71	Opx-ol-gabbro	1415P	19.00	48.35	0.07	32.92	0.01	0.48	0.00	0.05	16.11	2.22	0.04	0.00	100.26	6.63	0.01	5.32	0.00	0.06	0.00	0.01	2.37	0.59	0.01	0.00	15.00	15.
345-71	Opx-ol-gabbro	1415P	19.00	51.30	1.25	3.12	0.12	4.84	0.18	15.78	22.46	0.36	0.00	0.02	99.44	7.59	0.14	0.54	0.01	0.60	0.02	3.48	3.56	0.10	0.00	0.00	16.05	85.
345-71	Opx-ol-gabbro	1415P	19.00	51.46	1.14	3.57	0.05	5.14	0.22	15.88	21.95	0.33	0.00	0.02	99.74	7.58	0.13	0.62	0.01	0.63	0.03	3.49	3.46	0.09	0.00	0.00	16.03	84.
345-74	Opx-ol-gabbro	1415P	23.99	53.57	0.67	3.24	0.72	7.52	0.15	22.18	11.06	0.21	0.01	0.04	99.36	7.73	0.07	0.55	0.08	0.91	0.02	4.77	1.71	0.06	0.00	0.00	15.91	84.
345-74	Opx-ol-gabbro	1415P	23.99	52.38	0.59	2.69	0.82	4.92	0.14	17.48	20.32	0.35	0.01	0.02	99.72	7.68	0.06	0.46	0.09	0.60	0.02	3.82	3.19	0.10	0.00	0.00	16.03	86.
345-74	Opx-ol-gabbro	1415P	23.99	51.85	0.94	3.16	0.88	4.92	0.14	16.77	20.86	0.40	0.00	0.04	99.95	7.60	0.10	0.55	0.10	0.60	0.02	3.66	3.28	0.11	0.00	0.00	16.03	85.
345-74	Opx-ol-gabbro	1415P	23.99	51.47	1.34	3.21	0.76	4.85	0.15	16.53	20.68	0.37	0.01	0.03	99.39	7.58	0.15	0.56	0.09	0.60	0.02	3.63	3.26	0.11	0.00	0.00	16.00	85.
345-74	Opx-ol-gabbro	1415P	23.99	51.95	0.35	3.55	1.32	4.61	0.15	17.36	20.46	0.34	0.00	0.03	100.12	7.58	0.04	0.61	0.15	0.56	0.02	3.78	3.20	0.10	0.00	0.00	16.04	87.
345-74	Opx-ol-gabbro	1415P	23.99	50.54	0.31	3.52	1.43	4.49	0.14	16.97	20.72	0.31	0.00	0.03	98.46	7.53	0.03	0.62	0.17	0.56	0.02	3.77	3.31	0.09	0.00	0.00	16.09	87.
345-74	Opx-ol-gabbro	1415P	23.99	51.90	0.31	3.54	1.34	3.75	0.12	16.48	22.29	0.26	0.01	0.04	100.03	7.59	0.03	0.61	0.15	0.46	0.01	3.59	3.49	0.07	0.00	0.01	16.03	88.
345-84	Opx-ol-gabbro	1415P	37.20	52.71	0.71	2.18	0.16	4.49	0.15	16.96	21.43	0.24	0.00	0.03	99.06	7.77	0.08	0.38	0.02	0.55	0.02	3.72	3.38	0.07	0.00	0.00	15.99	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.64	0.84	2.14	0.14	4.33	0.16	16.75	22.45	0.32	0.01	0.01	99.79	7.72	0.09	0.37	0.02	0.53	0.02	3.66	3.53	0.09	0.00	0.00	16.04	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.84	0.85	2.22	0.20	4.29	0.15	16.79	22.33	0.26	0.00	0.06	99.98	7.73	0.09	0.38	0.02	0.52	0.02	3.66	3.50	0.07	0.00	0.01	16.01	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.92	0.75	2.07	0.17	4.27	0.19	16.99	22.39	0.27	0.01	0.02	100.06	7.74	0.08	0.36	0.02	0.52	0.02	3.70	3.51	0.08	0.00	0.00	16.03	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.66	0.87	2.23	0.23	4.40	0.16	16.86	21.62	0.26	0.01	0.03	99.31	7.74	0.10	0.39	0.03	0.54	0.02	3.70	3.41	0.07	0.00	0.00	15.99	87.
345-84	Opx-ol-gabbro	1415P	37.20	53.16	0.76	2.01	0.22	4.61	0.15	17.38	20.75	0.27	0.00	0.03	99.33	7.79	0.08	0.35	0.03	0.57	0.02	3.80	3.26	0.08	0.00	0.00	15.97	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.21	0.82	2.46	0.20	4.36	0.17	16.58	21.34	0.24	0.01	0.03	98.44	7.74	0.09	0.43	0.02	0.54	0.02	3.66	3.39	0.07	0.00	0.00	15.98	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.74	0.88	2.09	0.26	4.08	0.13	16.56	22.32	0.27	0.00	0.02	99.35	7.76	0.10	0.36	0.03	0.50	0.02	3.63	3.52	0.08	0.00	0.00	15.99	87.
345-84	Opx-ol-gabbro	1415P	37.20	52.81	0.92	2.17	0.27	4.28	0.15	16.94	22.47	0.26	0.00	0.02	100.27	7.71	0.10	0.37	0.03	0.52	0.02	3.69	3.51	0.07	0.00	0.00	16.03	87.
345-84	Opx-ol-gabbro	1415P	37.20	53.43	0.62	1.79	0.27	5.57	0.17	19.92	18.12	0.25	0.00	0.02	100.15	7.75	0.07	0.31	0.03	0.68	0.02	4.31	2.82	0.07	0.00	0.00	16.05	86.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Orhtopyroxene (ODP Leg 147)																												
147-03	Gabbronorite	894G	0.00	53.01	0.43	0.95	0.02	20.80	0.41	23.03	1.81	0.02	0.00	0.00	100.47	7.83	0.05	0.17	0.00	2.57	0.05	5.07	0.29	0.00	0.00	0.00	16.04	66.
147-03	Gabbronorite	894G	0.00	53.06	0.36	1.06	0.02	20.26	0.42	23.44	1.91	0.02	0.00	0.00	100.55	7.82	0.04	0.18	0.00	2.50	0.05	5.15	0.30	0.01	0.00	0.00	16.05	67.
147-03	Gabbronorite	894G	0.00	52.82	0.37	1.00	0.02	19.75	0.39	23.26	2.32	0.07	0.00	0.00	99.99	7.82	0.04	0.18	0.00	2.45	0.05	5.13	0.37	0.02	0.00	0.00	16.06	67.
147-03	Gabbronorite	894G	0.00	52.65	0.40	1.03	0.01	20.08	0.42	23.68	1.78	0.02	0.00	0.00	100.06	7.80	0.04	0.18	0.00	2.49	0.05	5.23	0.28	0.01	0.00	0.00	16.07	67.
147-03	Gabbronorite	894G	0.00	53.37	0.38	0.91	0.02	19.82	0.41	23.61	1.89	0.05	0.00	0.00	100.47	7.85	0.04	0.16	0.00	2.44	0.05	5.18	0.30	0.01	0.00	0.00	16.03	67.
147-03	Gabbronorite	894G	0.00	53.24	0.41	0.91	0.04	19.96	0.42	23.56	1.73	0.06	0.00	0.02	100.34	7.85	0.05	0.16	0.00	2.46	0.05	5.18	0.27	0.02	0.00	0.00	16.03	67.
147-03	Gabbronorite	894G	0.00	53.22	0.42	0.90	0.01	19.99	0.43	23.75	1.65	0.01	0.00	0.02	100.40	7.84	0.05	0.16	0.00	2.46	0.05	5.22	0.26	0.00	0.00	0.00	16.04	67.
147-01	Opx-ol gabbro	894G	0.00	54.46	0.40	1.02	0.01	18.71	0.41	25.04	1.51	0.02	0.01	0.03	101.62	7.86	0.04	0.17	0.00	2.26	0.05	5.39	0.23	0.00	0.00	0.00	16.01	70.
147-01	Opx-ol gabbro	894G	0.00	54.32	0.49	1.09	0.04	18.73	0.43	24.97	1.67	0.02	0.00	0.01	101.74	7.84	0.05	0.18	0.00	2.26	0.05	5.37	0.26	0.01	0.00	0.00	16.02	70.
147-01	Opx-ol gabbro	894G	0.00	53.11	0.38	1.07	0.03	18.11	0.40	24.67	1.45	0.02	0.00	0.00	99.25	7.84	0.04	0.19	0.00	2.24	0.05	5.43	0.23	0.01	0.00	0.00	16.02	70.
147-01	Opx-ol gabbro	894G	0.00	54.38	0.51	1.08	0.05	18.67	0.42	24.95	1.66	0.04	0.01	0.01	101.76	7.84	0.05	0.18	0.01	2.25	0.05	5.36	0.26	0.01	0.00	0.00	16.02	70.
147-01	Opx-ol gabbro	894G	0.00	53.03	0.42	1.08	0.05	17.84	0.38	24.33	1.89	0.05	0.01	0.03	99.11	7.84	0.05	0.19	0.01	2.21	0.05	5.36	0.30	0.01	0.00	0.00	16.02	70.
147-01	Opx-ol gabbro	894G	0.00	53.01	0.38	1.04	0.05	18.11	0.37	24.32	1.77	0.04	0.00	0.03	99.12	7.85	0.04	0.18	0.01	2.24	0.05	5.37	0.28	0.01	0.00	0.00	16.02	70.
147-01	Opx-ol gabbro	894G	0.00	52.83	0.39	1.04	0.07	17.99	0.40	24.34	1.83	0.04	0.00	0.00	98.94	7.83	0.04	0.18	0.01	2.23	0.05	5.38	0.29	0.01	0.00	0.00	16.03	70.
147-01	Opx-ol gabbro	894G	0.00	54.43	0.41	1.07	0.07	18.54	0.41	25.08	1.88	0.04	0.00	0.00	101.94	7.83	0.04	0.18	0.01	2.23	0.05	5.38	0.29	0.01	0.00	0.00	16.03	70.
147-01	Opx-ol gabbro	894G	0.00	54.14	0.49	1.10	0.04	18.76	0.38	24.87	1.81	0.04	0.00	0.01	101.64	7.82	0.05	0.19	0.01	2.27	0.05	5.36	0.28	0.01	0.00	0.00	16.03	70.
147-01	Opx-ol gabbro	894G	0.00	54.20	0.49	1.05	0.03	18.73	0.40	24.93	1.73	0.04	0.00	0.01	101.61	7.83	0.05	0.18	0.00	2.26	0.05	5.37	0.27	0.01	0.00	0.00	16.03	70.
147-01	Opx-ol gabbro	894G	0.00	52.67	0.50	1.09	0.06	18.36	0.40	23.98	1.83	0.03	0.01	0.02	98.96	7.83	0.06	0.19	0.01	2.28	0.05	5.31	0.29	0.01	0.00	0.00	16.03	69.
147-01	Opx-ol gabbro	894G	0.00	54.27	0.52	1.12	0.06	18.92	0.42	24.70	1.88	0.03	0.01	0.02	101.96	7.83	0.06	0.19	0.01	2.28	0.05	5.31	0.29	0.01	0.00	0.00	16.03	69.
147-01	Opx-ol gabbro	894G	0.00	54.06	0.51	1.07	0.02	18.96	0.40	24.99	1.55	0.03	0.00	0.02	101.62	7.82	0.06	0.18	0.00	2.29	0.05	5.39	0.24	0.01	0.00	0.00	16.04	70.
147-01	Opx-ol gabbro	894G	0.00	53.35	0.52	1.16	0.06	18.69	0.40	24.52	1.84	0.02	0.02	0.03	100.61	7.80	0.06	0.20	0.01	2.29	0.05	5.34	0.29	0.01	0.00	0.00	16.04	70.
147-04	Opx-ol gabbro	894G	0.00	53.92	0.39	1.13	0.01	17.93	0.40	25.36	1.61	0.03	0.00	0.04	100.82	7.83	0.04	0.19	0.00	2.18	0.05	5.49	0.25	0.01	0.00	0.01	16.04	71.
147-04	Opx-ol gabbro	894G	0.00	54.74	0.22	0.94	0.04	18.00	0.43	26.22	0.96	0.03	0.01	0.02	101.60	7.86	0.02	0.16	0.00	2.16	0.05	5.61	0.15	0.01	0.00	0.00	16.04	72.
147-04	Opx-ol gabbro	894G	0.00	54.05	0.40	1.07	0.04	17.86	0.41	25.43	1.61	0.03	0.00	0.03	100.92	7.83	0.04	0.18	0.00	2.17	0.05	5.49	0.25	0.01	0.00	0.00	16.03	71.
147-04	Opx-ol gabbro	894G	0.00	54.37	0.36	1.03	0.02	18.04	0.39	25.73	1.57	0.02	0.00	0.00	101.53	7.83	0.04	0.17	0.00	2.17	0.05	5.53	0.24	0.01	0.00	0.00	16.04	71.
147-04	Opx-ol gabbro	894G	0.00	54.07	0.39	1.07	0.04	18.52	0.48	24.63	1.78	0.04	0.00	0.01	101.03	7.85	0.04	0.18	0.01	2.25	0.06	5.33	0.28	0.01	0.00	0.00	16.01	70.
147-04	Opx-ol gabbro	894G	0.00	53.55	0.38	1.51	0.03	17.95	0.39	25.15	1.41	0.02	0.01	0.01	100.41	7.80	0.04	0.26	0.00	2.19	0.05	5.46	0.22	0.01	0.00	0.00	16.03	71.
147-04	Opx-ol gabbro	894G	0.00	53.93	0.45	1.43	0.05	17.39	0.42	24.00	2.68	0.08	0.00	0.02	100.44	7.86	0.05	0.25	0.01	2.12	0.05	5.21	0.42	0.02	0.00	0.00	15.98	71.
147-04	Opx-ol gabbro	894G	0.00	53.96	0.42	1.44	0.01	17.67	0.40	24.62	2.09	0.10	0.00	0.00	100.70	7.84	0.05	0.25	0.00	2.15	0.05	5.33	0.33	0.03	0.00	0.00	16.01	71.
147-04	Opx-ol gabbro	894G	0.00	53.75	0.44	1.18	0.04	18.31	0.44	25.15	1.48	0.03	0.00	0.00	100.81	7.81	0.05	0.20	0.00	2.23	0.05	5.45	0.23	0.01	0.00	0.00	16.04	71.
147-04	Opx-ol gabbro	894G	0.00	54.17	0.47	1.35	0.05	18.07	0.39	26.44	1.47	0.01	0.01	0.03	102.45	7.74	0.05	0.23	0.01	2.16	0.05	5.63	0.23	0.00	0.00	0.00	16.09	72.
147-04	Opx-ol gabbro	894G	0.00	54.03	0.44	1.13	0.04	17.91	0.41	25.25	1.59	0.03	0.00	0.02	100.84	7.84	0.05	0.19	0.00	2.17	0.05	5.46	0.25	0.01	0.00	0.00	16.02	71.
147-04	Opx-ol gabbro	894G	0.00	53.78	0.40	1.56	0.01	17.73	0.41	24.96	1.56	0.07	0.02	0.03	100.54	7.82	0.04	0.27	0.00	2.16	0.05	5.41	0.24	0.02	0.00	0.00	16.02	71.
147-04	Opx-ol gabbro	894G	0.00	52.77	0.10	3.23	0.00	16.27	0.40	24.87	2.27	0.24	0.01	0.01	100.17	7.67	0.01	0.55	0.00	1.98	0.05	5.39	0.35	0.07	0.00	0.00	16.08	73.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
147-04	Opx-ol gabbro	894G	0.00	54.10	0.52	1.02	0.03	18.02	0.43	25.44	1.56	0.04	0.00	0.02	101.19	7.83	0.06	0.17	0.00	2.18	0.05	5.49	0.24	0.01	0.00	0.00	16.03	71.
147-04	Opx-ol gabbro	894G	0.00	53.76	0.42	1.08	0.04	17.98	0.42	25.24	1.65	0.03	0.00	0.00	100.61	7.82	0.05	0.19	0.00	2.19	0.05	5.47	0.26	0.01	0.00	0.00	16.04	71.
147-04	Opx-ol gabbro	894G	0.00	53.98	0.43	1.06	0.02	17.98	0.40	25.54	1.56	0.02	0.00	0.03	101.02	7.82	0.05	0.18	0.00	2.18	0.05	5.51	0.24	0.01	0.00	0.00	16.04	71.
147-04	Opx-ol gabbro	894G	0.00	54.01	0.45	1.05	0.02	17.86	0.38	25.36	1.60	0.03	0.00	0.03	100.77	7.84	0.05	0.18	0.00	2.17	0.05	5.49	0.25	0.01	0.00	0.00	16.03	71.
147-04	Opx-ol gabbro	894G	0.00	54.02	0.43	1.11	0.02	17.96	0.41	25.41	1.53	0.04	0.01	0.03	100.97	7.83	0.05	0.19	0.00	2.18	0.05	5.49	0.24	0.01	0.00	0.00	16.04	71.
147-04	Opx-ol gabbro	894G	0.00	53.61	0.35	1.03	0.02	19.11	0.38	24.54	1.33	0.00	0.00	0.00	100.37	7.85	0.04	0.18	0.00	2.34	0.05	5.36	0.21	0.00	0.00	0.00	16.02	69.
147-06	Opx-ol gabbro	894G	0.00	53.63	0.42	1.12	0.02	18.23	0.37	25.36	1.53	0.02	0.00	0.02	100.72	7.80	0.05	0.19	0.00	2.22	0.05	5.50	0.24	0.01	0.00	0.00	16.06	71.
147-06	Opx-ol gabbro	894G	0.00	53.18	0.43	1.13	0.05	18.08	0.41	25.31	1.50	0.01	0.00	0.01	100.12	7.79	0.05	0.20	0.01	2.21	0.05	5.53	0.24	0.00	0.00	0.00	16.07	71.
147-06	Opx-ol gabbro	894G	0.00	53.85	0.44	1.03	0.05	18.42	0.40	24.95	1.72	0.02	0.00	0.03	100.89	7.83	0.05	0.18	0.01	2.24	0.05	5.41	0.27	0.00	0.00	0.00	16.03	70.
147-06	Opx-ol gabbro	894G	0.00	53.63	0.41	1.05	0.03	18.48	0.40	25.08	1.52	0.03	0.00	0.03	100.65	7.82	0.04	0.18	0.00	2.25	0.05	5.45	0.24	0.01	0.00	0.00	16.05	70.
147-06	Opx-ol gabbro	894G	0.00	54.07	0.34	0.93	0.02	18.33	0.42	25.35	1.55	0.03	0.01	0.03	101.09	7.84	0.04	0.16	0.00	2.22	0.05	5.48	0.24	0.01	0.00	0.00	16.05	71.
147-06	Opx-ol gabbro	894G	0.00	53.55	0.36	0.99	0.00	18.61	0.44	24.82	1.56	0.02	0.00	0.01	100.35	7.84	0.04	0.17	0.00	2.28	0.05	5.41	0.24	0.01	0.00	0.00	16.04	70.
147-06	Opx-ol gabbro	894G	0.00	53.46	0.38	1.01	0.03	18.83	0.40	24.53	1.48	0.03	0.00	0.01	100.17	7.84	0.04	0.18	0.00	2.31	0.05	5.36	0.23	0.01	0.00	0.00	16.03	69.
147-06	Opx-ol gabbro	894G	0.00	53.92	0.41	1.11	0.03	18.48	0.41	24.72	1.90	0.01	0.00	0.01	100.99	7.84	0.04	0.19	0.00	2.25	0.05	5.36	0.30	0.00	0.00	0.00	16.02	70.
147-06	Opx-ol gabbro	894G	0.00	53.73	0.39	1.08	0.03	18.37	0.41	24.92	1.86	0.01	0.00	0.00	100.79	7.82	0.04	0.19	0.00	2.24	0.05	5.41	0.29	0.00	0.00	0.00	16.04	70.
147-06	Opx-ol gabbro	894G	0.00	53.47	0.41	1.07	0.03	18.37	0.36	24.90	1.76	0.04	0.00	0.00	100.39	7.82	0.04	0.18	0.00	2.25	0.04	5.43	0.28	0.01	0.00	0.00	16.05	70.
147-06	Opx-ol gabbro	894G	0.00	53.57	0.41	1.07	0.02	18.24	0.41	24.70	2.00	0.02	0.00	0.00	100.45	7.83	0.05	0.18	0.00	2.23	0.05	5.38	0.31	0.01	0.00	0.00	16.04	70.
147-06	Opx-ol gabbro	894G	0.00	53.35	0.44	1.04	0.04	18.96	0.39	24.56	1.62	0.02	0.00	0.03	100.44	7.82	0.05	0.18	0.00	2.32	0.05	5.36	0.25	0.00	0.00	0.00	16.05	69.
147-06	Opx-ol gabbro	894G	0.00	53.68	0.41	1.08	0.03	18.64	0.39	24.55	1.93	0.02	0.00	0.03	100.75	7.83	0.04	0.19	0.00	2.27	0.05	5.34	0.30	0.01	0.00	0.00	16.03	70.
147-06	Opx-ol gabbro	894G	0.00	53.98	0.32	1.13	0.04	18.40	0.37	25.45	1.49	0.00	0.01	0.03	101.22	7.82	0.04	0.19	0.00	2.23	0.05	5.49	0.23	0.00	0.00	0.00	16.05	71.
147-06	Opx-ol gabbro	894G	0.00	53.71	0.50	1.13	0.04	18.13	0.40	25.04	1.76	0.02	0.00	0.02	100.73	7.81	0.05	0.19	0.00	2.21	0.05	5.43	0.27	0.00	0.00	0.00	16.03	71.
147-06	Opx-ol gabbro	894G	0.00	53.52	0.38	1.12	0.04	18.53	0.41	25.07	1.58	0.01	0.00	0.02	100.68	7.81	0.04	0.19	0.00	2.26	0.05	5.45	0.25	0.00	0.00	0.00	16.06	70.
147-06	Opx-ol gabbro	894G	0.00	53.84	0.40	1.08	0.05	18.29	0.41	25.06	1.72	0.01	0.00	0.02	100.87	7.83	0.04	0.18	0.01	2.22	0.05	5.43	0.27	0.00	0.00	0.00	16.04	70.
147-06	Opx-ol gabbro	894G	0.00	53.75	0.42	1.06	0.03	18.93	0.44	24.59	1.75	0.03	0.01	0.00	100.98	7.83	0.05	0.18	0.00	2.31	0.05	5.34	0.27	0.01	0.00	0.00	16.04	69.
147-06	Opx-ol gabbro	894G	0.00	53.88	0.42	1.05	0.07	18.67	0.39	24.42	1.67	0.05	0.00	0.03	100.65	7.86	0.05	0.18	0.01	2.28	0.05	5.31	0.26	0.01	0.00	0.00	16.01	69.
147-06	Opx-ol gabbro	894G	0.00	52.65	0.44	1.04	0.03	19.15	0.38	23.96	1.88	0.02	0.00	0.04	99.59	7.80	0.05	0.18	0.00	2.37	0.05	5.29	0.30	0.01	0.00	0.00	16.06	69.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Orhtopyroxene (Rubbles Exp.345)																												
345-28	Ol-gabbro	1415P	-1.00	55.96	0.24	1.10	0.09	11.94	0.29	30.98	0.69	0.00	0.00	0.04	101.33	7.83	0.03	0.18	0.01	1.40	0.03	6.46	0.10	0.00	0.00	0.00	16.05	
345-28	Ol-gabbro	1415P	-1.00	55.99	0.29	1.09	0.10	11.86	0.29	30.93	0.82	0.00	0.00	0.01	101.37	7.83	0.03	0.18	0.01	1.39	0.03	6.45	0.12	0.00	0.00	0.00	16.04	82.
345-28	Ol-gabbro	1415P	-1.00	55.68	0.28	1.15	0.10	11.95	0.29	30.86	0.72	0.00	0.01	0.03	101.07	7.82	0.03	0.19	0.01	1.40	0.03	6.46	0.11	0.00	0.00	0.00	16.06	82.
345-28	Ol-gabbro	1415P	-1.00	56.26	0.29	1.15	0.09	12.18	0.33	30.83	0.79	0.02	0.01	0.01	101.95	7.83	0.03	0.19	0.01	1.42	0.04	6.40	0.12	0.01	0.00	0.00	16.04	81.
345-28	Ol-gabbro	1415P	-1.00	56.34	0.29	1.14	0.09	12.00	0.28	30.70	0.91	0.01	0.00	0.04	101.79	7.85	0.03	0.19	0.01	1.40	0.03	6.38	0.14	0.00	0.00	0.00	16.02	82.
345-28	Ol-gabbro	1415P	-1.00	55.62	0.33	1.12	0.09	11.96	0.30	30.63	0.94	0.02	0.00	0.03	101.05	7.82	0.04	0.19	0.01	1.41	0.04	6.41	0.14	0.01	0.00	0.00	16.05	82.
345-28	Ol-gabbro	1415P	-1.00	55.55	0.35	1.28	0.10	12.06	0.30	30.27	0.91	0.01	0.00	0.01	100.84	7.82	0.04	0.21	0.01	1.42	0.04	6.35	0.14	0.00	0.00	0.00	16.03	81.
345-04	Ol-gabbro	1415J	-1.00	55.35	0.27	1.29	0.08	12.96	0.30	27.67	3.02	0.04	0.00	0.02	101.01	7.85	0.03	0.22	0.01	1.54	0.04	5.85	0.46	0.01	0.00	0.00	16.01	79.
345-04	Ol-gabbro	1415J	-1.00	55.43	0.26	1.25	0.09	13.34	0.31	28.03	2.41	0.02	0.00	0.03	101.16	7.85	0.03	0.21	0.01	1.58	0.04	5.92	0.37	0.01	0.00	0.00	16.01	78.
345-04	Ol-gabbro	1415J	-1.00	55.21	0.24	1.20	0.06	13.22	0.27	28.03	2.30	0.03	0.00	0.03	100.59	7.86	0.03	0.20	0.01	1.57	0.03	5.95	0.35	0.01	0.00	0.00	16.01	79.
345-04	Ol-gabbro	1415J	-1.00	55.26	0.21	1.24	0.06	13.67	0.31	28.02	1.97	0.01	0.00	0.04	100.78	7.86	0.02	0.21	0.01	1.63	0.04	5.94	0.30	0.00	0.00	0.00	16.01	78.
345-01	Ol-gabbro	1415E	-1.00	54.66	0.34	1.18	0.05	16.65	0.32	26.12	2.16	0.05	0.00	0.01	101.53	7.83	0.04	0.20	0.01	2.00	0.04	5.58	0.33	0.01	0.00	0.00	16.03	73.
345-01	Ol-gabbro	1415E	-1.00	55.49	0.30	1.11	0.05	14.83	0.30	27.34	2.31	0.03	0.00	0.00	101.75	7.86	0.03	0.18	0.01	1.76	0.04	5.78	0.35	0.01	0.00	0.00	16.01	76.
345-01	Ol-gabbro	1415E	-1.00	55.08	0.27	1.12	0.07	14.29	0.31	27.79	2.22	0.04	0.01	0.04	101.24	7.83	0.03	0.19	0.01	1.70	0.04	5.89	0.34	0.01	0.00	0.00	16.05	77.
345-01	Ol-gabbro	1415E	-1.00	55.58	0.24	1.16	0.05	14.34	0.30	27.82	2.25	0.02	0.00	0.00	101.76	7.86	0.03	0.19	0.01	1.70	0.04	5.86	0.34	0.01	0.00	0.00	16.02	77.
345-01	Ol-gabbro	1415E	-1.00	53.79	0.27	1.13	0.06	14.06	0.30	26.95	2.25	0.04	0.00	0.05	98.88	7.84	0.03	0.19	0.01	1.71	0.04	5.85	0.35	0.01	0.00	0.01	16.04	77.
345-01	Ol-gabbro	1415E	-1.00	55.43	0.28	1.16	0.06	14.49	0.31	27.77	2.32	0.04	0.00	0.05	101.88	7.84	0.03	0.19	0.01	1.71	0.04	5.85	0.35	0.01	0.00	0.01	16.04	77.
345-01	Ol-gabbro	1415E	-1.00	53.88	0.27	1.12	0.05	14.25	0.29	26.95	2.25	0.04	0.00	0.05	99.16	7.83	0.03	0.19	0.01	1.73	0.04	5.84	0.35	0.01	0.00	0.01	16.04	77.
345-01	Ol-gabbro	1415E	-1.00	53.53	0.30	1.11	0.06	15.84	0.30	25.77	2.17	0.05	0.00	0.01	99.15	7.84	0.03	0.19	0.01	1.94	0.04	5.63	0.34	0.01	0.00	0.00	16.03	74.
345-01	Ol-gabbro	1415E	-1.00	53.70	0.24	1.22	0.06	15.13	0.30	26.24	2.20	0.03	0.00	0.02	99.14	7.84	0.03	0.21	0.01	1.85	0.04	5.71	0.34	0.01	0.00	0.00	16.03	75.
345-01	Ol-gabbro	1415E	-1.00	55.26	0.25	1.17	0.07	15.45	0.31	26.97	2.25	0.03	0.00	0.05	101.81	7.85	0.03	0.20	0.01	1.84	0.04	5.71	0.34	0.01	0.00	0.01	16.02	75.
345-01	Ol-gabbro	1415E	-1.00	54.81	0.28	1.06	0.06	16.80	0.35	26.11	2.10	0.02	0.00	0.00	101.59	7.85	0.03	0.18	0.01	2.01	0.04	5.58	0.32	0.01	0.00	0.00	16.03	73.
345-01	Ol-gabbro	1415E	-1.00	55.09	0.34	1.18	0.02	15.09	0.31	27.34	2.26	0.05	0.00	0.03	101.69	7.83	0.04	0.20	0.00	1.79	0.04	5.79	0.34	0.01	0.00	0.00	16.04	76.
345-01	Ol-gabbro	1415E	-1.00	54.73	0.37	1.20	0.06	15.08	0.33	27.15	2.25	0.02	0.00	0.02	101.20	7.82	0.04	0.20	0.01	1.80	0.04	5.78	0.34	0.01	0.00	0.00	16.04	76.
345-01	Ol-gabbro	1415E	-1.00	55.15	0.33	1.16	0.05	15.10	0.31	27.21	2.27	0.03	0.00	0.02	101.61	7.84	0.03	0.19	0.01	1.80	0.04	5.77	0.35	0.01	0.00	0.00	16.03	76.
345-02	Opx-ol gabbro	1415G	-1.00	55.63	0.28	1.17	0.08	14.11	0.32	28.38	1.91	0.01	0.00	0.00	101.88	7.84	0.03	0.19	0.01	1.66	0.04	5.96	0.29	0.00	0.00	0.00	16.03	78.
345-02	Opx-ol gabbro	1415G	-1.00	55.38	0.29	1.13	0.09	14.13	0.32	28.59	1.77	0.01	0.00	0.04	101.74	7.82	0.03	0.19	0.01	1.67	0.04	6.02	0.27	0.00	0.00	0.00	16.05	78.
345-02	Opx-ol gabbro	1415G	-1.00	55.52	0.29	1.19	0.07	13.63	0.29	28.03	2.64	0.02	0.00	0.03	101.70	7.84	0.03	0.20	0.01	1.61	0.03	5.90	0.40	0.00	0.00	0.00	16.03	78.
345-02	Opx-ol gabbro	1415G	-1.00	55.37	0.30	1.18	0.08	14.05	0.31	28.79	1.81	0.01	0.00	0.04	101.92	7.81	0.03	0.20	0.01	1.66	0.04	6.05	0.27	0.00	0.00	0.00	16.06	78.
345-02	Opx-ol gabbro	1415G	-1.00	55.28	0.30	1.15	0.10	14.31	0.35	28.88	1.34	0.00	0.00	0.05	101.75	7.81	0.03	0.19	0.01	1.69	0.04	6.08	0.20	0.00	0.00	0.01	16.06	78.
345-02	Opx-ol gabbro	1415G	-1.00	53.93	0.30	1.22	0.11	13.53	0.32	27.45	2.12	0.03	0.00	0.02	99.03	7.82	0.03	0.21	0.01	1.64	0.04	5.94	0.33	0.01	0.00	0.00	16.04	78.
345-02	Opx-ol gabbro	1415G	-1.00	55.40	0.32	1.29	0.10	13.99	0.31	28.32	1.76	0.02	0.02	0.05	101.56	7.83	0.03	0.21	0.01	1.65	0.04	5.97	0.27	0.01	0.00	0.01	16.03	78.
345-02	Opx-ol gabbro	1415G	-1.00	54.05	0.29	1.28	0.12	13.31	0.33	27.62	2.02	0.01	0.00	0.03	99.06	7.83	0.03	0.22	0.01	1.61	0.04	5.96	0.31	0.00	0.00	0.00	16.03	78.
345-02	Opx-ol gabbro	1415G	-1.00	54.03	0.29	1.22	0.09	13.37	0.32	27.54	2.02	0.06	0.00	0.06	99.00	7.83	0.03	0.21	0.01	1.62	0.04	5.95	0.31	0.02	0.00	0.01	16.03	78.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-02	Opx-ol gabbro	1415G	-1.00	55.56	0.29	1.22	0.10	13.86	0.33	28.45	1.92	0.02	0.00	0.03	101.78	7.83	0.03	0.20	0.01	1.63	0.04	5.98	0.29	0.01	0.00	0.00	16.03	78.
345-02	Opx-ol gabbro	1415G	-1.00	54.20	0.30	1.20	0.08	13.58	0.30	28.00	1.67	0.01	0.00	0.06	99.40	7.82	0.03	0.20	0.01	1.64	0.04	6.03	0.26	0.00	0.00	0.01	16.04	78.
345-02	Opx-ol gabbro	1415G	-1.00	54.02	0.25	1.65	0.11	14.39	0.34	27.25	1.40	0.01	0.00	0.02	99.44	7.81	0.03	0.28	0.01	1.74	0.04	5.88	0.22	0.00	0.00	0.00	16.01	77.
345-02	Opx-ol gabbro	1415G	-1.00	55.50	0.30	1.20	0.09	14.16	0.32	28.62	1.62	0.03	0.00	0.04	101.87	7.82	0.03	0.20	0.01	1.67	0.04	6.02	0.24	0.01	0.00	0.00	16.04	78.
345-02	Opx-ol gabbro	1415G	-1.00	55.66	0.28	1.25	0.09	13.92	0.37	28.36	1.91	0.04	0.00	0.04	101.93	7.84	0.03	0.21	0.01	1.64	0.04	5.95	0.29	0.01	0.00	0.00	16.03	78.
345-03	Opx-ol gabbro	1415H	-1.00	53.88	0.39	1.23	0.15	13.14	0.29	28.39	1.59	0.01	0.02	0.03	99.13	7.79	0.04	0.21	0.02	1.59	0.04	6.12	0.25	0.00	0.00	0.00	16.06	79.
345-03	Opx-ol gabbro	1415H	-1.00	55.10	0.37	1.18	0.15	13.34	0.33	28.73	1.96	0.02	0.00	0.03	101.20	7.81	0.04	0.20	0.02	1.58	0.04	6.07	0.30	0.01	0.00	0.00	16.05	79.
345-03	Opx-ol gabbro	1415H	-1.00	54.07	0.36	1.41	0.16	13.08	0.30	28.58	1.70	0.00	0.00	0.05	99.70	7.77	0.04	0.24	0.02	1.57	0.04	6.12	0.26	0.00	0.00	0.01	16.06	79.
345-03	Opx-ol gabbro	1415H	-1.00	54.19	0.38	1.30	0.14	13.16	0.30	28.19	1.95	0.04	0.01	0.07	99.74	7.79	0.04	0.22	0.02	1.58	0.04	6.04	0.30	0.01	0.00	0.01	16.05	79.
345-03	Opx-ol gabbro	1415H	-1.00	54.82	0.37	1.09	0.16	13.30	0.30	29.29	1.55	0.01	0.00	0.02	100.91	7.78	0.04	0.18	0.02	1.58	0.04	6.20	0.24	0.00	0.00	0.00	16.08	79.
345-03	Opx-ol gabbro	1415H	-1.00	55.13	0.39	1.32	0.14	13.33	0.29	28.92	1.98	0.01	0.01	0.03	101.54	7.78	0.04	0.22	0.02	1.57	0.03	6.09	0.30	0.00	0.00	0.00	16.06	79.
345-03	Opx-ol gabbro	1415H	-1.00	55.50	0.36	1.30	0.15	13.20	0.33	28.97	1.80	0.01	0.01	0.04	101.65	7.81	0.04	0.22	0.02	1.55	0.04	6.08	0.27	0.00	0.00	0.00	16.03	79.
345-03	Opx-ol gabbro	1415H	-1.00	53.94	0.38	1.30	0.13	12.54	0.30	27.73	2.58	0.03	0.00	0.02	98.95	7.81	0.04	0.22	0.01	1.52	0.04	5.98	0.40	0.01	0.00	0.00	16.04	79.
345-03	Opx-ol gabbro	1415H	-1.00	55.58	0.39	1.34	0.13	12.92	0.31	28.57	2.65	0.04	0.00	0.02	101.95	7.81	0.04	0.22	0.01	1.52	0.04	5.98	0.40	0.01	0.00	0.00	16.04	79.
345-03	Opx-ol gabbro	1415H	-1.00	55.02	0.38	1.29	0.12	13.04	0.28	29.09	2.14	0.02	0.00	0.03	101.41	7.77	0.04	0.22	0.01	1.54	0.03	6.13	0.32	0.01	0.00	0.00	16.08	79.
345-03	Opx-ol gabbro	1415H	-1.00	54.93	0.34	1.30	0.13	13.19	0.30	28.93	2.28	0.02	0.00	0.05	101.46	7.77	0.04	0.22	0.01	1.56	0.04	6.10	0.35	0.01	0.00	0.01	16.08	79.
345-03	Opx-ol gabbro	1415H	-1.00	53.66	0.36	1.20	0.14	12.97	0.28	28.47	1.71	0.02	0.00	0.03	98.84	7.78	0.04	0.20	0.02	1.57	0.03	6.15	0.27	0.01	0.00	0.00	16.07	79.
345-03	Opx-ol gabbro	1415H	-1.00	55.29	0.37	1.23	0.14	13.36	0.28	29.34	1.76	0.03	0.00	0.04	101.84	7.78	0.04	0.20	0.02	1.57	0.03	6.15	0.27	0.01	0.00	0.00	16.07	79.
345-03	Opx-ol gabbro	1415H	-1.00	54.02	0.39	1.26	0.14	12.76	0.30	28.47	1.67	0.02	0.00	0.02	99.05	7.80	0.04	0.21	0.02	1.54	0.04	6.13	0.26	0.01	0.00	0.00	16.05	79.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Orhtopyroxene (Exp. 345 U1415J)																												
345-16	Ol-gabbro	1415J	45.00	55.30	0.26	1.15	0.13	12.16	0.33	29.91	0.96	0.01	0.00	0.02	100.23	7.84	0.03	0.19	0.01	1.44	0.04	6.32	0.15	0.00	0.00	0.00	16.03	81.
345-09	Opx-ol gabbro	1415J	28.00	55.14	0.21	1.43	0.13	11.41	0.27	25.50	7.10	0.04	0.00	0.00	101.23	7.84	0.02	0.24	0.01	1.36	0.03	5.41	1.08	0.01	0.00	0.00	16.01	79.
345-22	Opx-ol gabbro	1415J	74.00	55.07	0.45	1.12	0.07	10.44	0.27	30.35	1.50	0.03	0.00	0.03	99.34	7.83	0.05	0.19	0.01	1.24	0.03	6.44	0.23	0.01	0.00	0.00	16.03	83.
345-22	Opx-ol gabbro	1415J	74.00	56.35	0.51	1.15	0.08	10.72	0.25	30.98	1.59	0.00	0.00	0.02	101.66	7.83	0.05	0.19	0.01	1.25	0.03	6.42	0.24	0.00	0.00	0.00	16.02	83.
345-22	Opx-ol gabbro	1415J	74.00	54.87	0.50	1.18	0.07	10.66	0.26	30.71	1.13	0.00	0.00	0.04	99.42	7.80	0.05	0.20	0.01	1.27	0.03	6.51	0.17	0.00	0.00	0.00	16.04	83.
345-22	Opx-ol gabbro	1415J	74.00	56.31	0.44	1.27	0.09	10.41	0.25	30.16	2.66	0.02	0.00	0.02	101.61	7.84	0.05	0.21	0.01	1.21	0.03	6.26	0.40	0.00	0.00	0.00	16.01	83.
345-22	Opx-ol gabbro	1415J	74.00	56.59	0.36	1.15	0.05	10.50	0.27	30.75	1.99	0.02	0.00	0.01	101.69	7.86	0.04	0.19	0.01	1.22	0.03	6.37	0.30	0.01	0.00	0.00	16.01	83.
345-22	Opx-ol gabbro	1415J	74.00	56.41	0.35	1.25	0.05	10.61	0.26	30.60	2.33	0.01	0.00	0.02	101.89	7.83	0.04	0.20	0.01	1.23	0.03	6.33	0.35	0.00	0.00	0.00	16.03	83.
345-108	Opx-ol gabbro	1415J	27.70	56.05	0.15	1.04	0.09	11.99	0.31	29.81	1.96	0.02	0.00	0.03	101.44	7.86	0.02	0.17	0.01	1.41	0.04	6.23	0.29	0.01	0.00	0.00	16.04	81.
345-108	Opx-ol gabbro	1415J	27.70	56.28	0.19	1.21	0.13	11.57	0.28	29.73	2.15	0.00	0.00	0.04	101.57	7.87	0.02	0.20	0.01	1.35	0.03	6.19	0.32	0.00	0.00	0.00	16.01	82.
345-108	Opx-ol gabbro	1415J	27.70	55.00	0.16	1.21	0.08	10.88	0.32	27.05	5.15	0.06	0.02	0.04	99.96	7.87	0.02	0.20	0.01	1.30	0.04	5.77	0.79	0.02	0.00	0.00	16.02	81.
345-108	Opx-ol gabbro	1415J	27.70	56.17	0.19	1.16	0.14	11.85	0.27	30.05	1.94	0.03	0.00	0.04	101.85	7.84	0.02	0.19	0.02	1.38	0.03	6.25	0.29	0.01	0.00	0.00	16.04	81.
345-108	Opx-ol gabbro	1415J	27.70	56.13	0.15	1.01	0.11	11.35	0.27	29.61	2.67	0.02	0.01	0.02	101.35	7.87	0.02	0.17	0.01	1.33	0.03	6.19	0.40	0.01	0.00	0.00	16.03	82.
345-108	Opx-ol gabbro	1415J	27.70	55.95	0.23	1.19	0.13	12.04	0.28	29.80	1.29	0.02	0.01	0.02	100.96	7.87	0.02	0.20	0.01	1.42	0.03	6.25	0.19	0.00	0.00	0.00	16.01	81.
345-108	Opx-ol gabbro	1415J	27.70	56.20	0.19	1.16	0.14	11.97	0.33	30.08	1.16	0.00	0.01	0.03	101.26	7.87	0.02	0.19	0.02	1.40	0.04	6.28	0.17	0.00	0.00	0.00	16.00	81.
345-108	Opx-ol gabbro	1415J	27.70	55.62	0.21	1.18	0.11	11.92	0.29	29.86	2.00	0.01	0.00	0.04	101.22	7.82	0.02	0.20	0.01	1.40	0.03	6.26	0.30	0.00	0.00	0.00	16.05	81.
345-108	Opx-ol gabbro	1415J	27.70	56.26	0.20	1.26	0.12	11.94	0.30	29.89	2.08	0.02	0.01	0.05	102.13	7.84	0.02	0.21	0.01	1.39	0.04	6.21	0.31	0.00	0.00	0.01	16.03	81.
345-108	Opx-ol gabbro	1415J	27.70	56.22	0.19	1.29	0.06	12.12	0.25	29.60	1.87	0.04	0.02	0.03	101.68	7.86	0.02	0.21	0.01	1.42	0.03	6.17	0.28	0.01	0.00	0.00	16.02	81.
345-108	Opx-ol gabbro	1415J	27.70	55.75	0.20	1.17	0.10	11.90	0.27	30.03	1.93	0.00	0.00	0.05	101.40	7.82	0.02	0.19	0.01	1.40	0.03	6.28	0.29	0.00	0.00	0.01	16.05	81.
345-108	Opx-ol gabbro	1415J	27.70	56.14	0.22	1.03	0.14	12.27	0.28	30.01	1.18	0.02	0.01	0.02	101.31	7.87	0.02	0.17	0.02	1.44	0.03	6.27	0.18	0.00	0.00	0.00	16.01	81.
345-108	Opx-ol gabbro	1415J	27.70	55.25	0.21	1.28	0.09	11.88	0.26	30.08	2.01	0.02	0.00	0.06	101.14	7.78	0.02	0.21	0.01	1.40	0.03	6.32	0.30	0.01	0.00	0.01	16.09	81.
345-108	Opx-ol gabbro	1415J	27.70	56.16	0.25	1.33	0.08	11.58	0.28	29.31	2.58	0.00	0.00	0.02	101.58	7.86	0.03	0.22	0.01	1.36	0.03	6.11	0.39	0.00	0.00	0.00	16.00	81.
345-108	Opx-ol gabbro	1415J	27.70	56.00	0.24	1.27	0.12	11.94	0.29	29.67	1.75	0.04	0.01	0.02	101.36	7.85	0.03	0.21	0.01	1.40	0.03	6.20	0.26	0.01	0.00	0.00	16.02	81.
345-108	Opx-ol gabbro	1415J	27.70	56.17	0.20	1.22	0.11	11.57	0.33	29.50	2.34	0.01	0.00	0.04	101.48	7.87	0.02	0.20	0.01	1.36	0.04	6.16	0.35	0.00	0.00	0.00	16.01	81.
345-108	Opx-ol gabbro	1415J	27.70	54.23	0.17	2.15	0.12	11.25	0.28	29.07	2.66	0.09	0.01	0.03	100.05	7.72	0.02	0.36	0.01	1.34	0.03	6.17	0.41	0.02	0.00	0.00	16.09	82.
345-108	Opx-ol gabbro	1415J	27.70	55.93	0.20	1.19	0.10	11.58	0.27	29.39	2.17	0.02	0.00	0.02	100.86	7.87	0.02	0.20	0.01	1.36	0.03	6.17	0.33	0.00	0.00	0.00	16.00	81.
345-108	Opx-ol gabbro	1415J	27.70	55.63	0.18	1.19	0.13	11.49	0.28	29.57	2.12	0.01	0.00	0.03	100.64	7.85	0.02	0.20	0.01	1.36	0.03	6.22	0.32	0.00	0.00	0.00	16.02	82.
345-108	Opx-ol gabbro	1415J	27.70	55.93	0.19	1.29	0.07	11.56	0.29	29.60	1.98	0.01	0.00	0.05	100.98	7.86	0.02	0.21	0.01	1.36	0.04	6.20	0.30	0.00	0.00	0.01	16.01	82.
345-108	Opx-ol gabbro	1415J	27.70	55.86	0.18	1.15	0.10	11.87	0.29	29.74	2.30	0.03	0.01	0.03	101.55	7.83	0.02	0.19	0.01	1.39	0.03	6.22	0.35	0.01	0.00	0.00	16.05	81.
345-108	Opx-ol gabbro	1415J	27.70	54.85	0.22	1.27	0.08	11.47	0.26	29.31	2.66	0.01	0.00	0.05	100.19	7.80	0.02	0.21	0.01	1.36	0.03	6.21	0.40	0.00	0.00	0.01	16.07	82.
345-108	Opx-ol gabbro	1415J	27.70	55.82	0.22	1.24	0.09	11.20	0.29	29.63	2.53	0.01	0.00	0.04	101.06	7.84	0.02	0.21	0.01	1.32	0.03	6.21	0.38	0.00	0.00	0.00	16.03	82.
345-108	Opx-ol gabbro	1415J	27.70	56.09	0.24	1.28	0.09	11.55	0.26	29.64	2.41	0.02	0.02	0.05	101.64	7.84	0.03	0.21	0.01	1.35	0.03	6.18	0.36	0.01	0.00	0.01	16.03	82.
345-108	Opx-ol gabbro	1415J	27.70	56.00	0.23	1.41	0.08	11.60	0.23	30.15	1.55	0.00	0.00	0.04	101.29	7.84	0.02	0.23	0.01	1.36	0.03	6.29	0.23	0.00	0.00	0.00	16.02	82.
345-108	Opx-ol gabbro	1415J	27.70	55.65	0.24	1.56	0.13	11.59	0.26	29.10	2.91	0.01	0.00	0.04	101.50	7.81	0.03	0.26	0.01	1.36	0.03	6.09	0.44	0.00	0.00	0.00	16.03	81.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-108	Opx-ol gabbro	1415J	27.70	56.08	0.17	1.19	0.16	11.91	0.28	30.49	0.78	0.03	0.00	0.02	101.11	7.86	0.02	0.20	0.02	1.40	0.03	6.37	0.12	0.01	0.00	0.00	16.02	82.
345-108	Opx-ol gabbro	1415J	27.70	55.60	0.18	1.31	0.12	12.00	0.26	29.97	1.35	0.00	0.00	0.04	100.83	7.83	0.02	0.22	0.01	1.41	0.03	6.29	0.20	0.00	0.00	0.00	16.03	81.
345-108	Opx-ol gabbro	1415J	27.70	55.86	0.23	1.22	0.07	11.20	0.23	29.64	2.36	0.03	0.02	0.03	100.89	7.86	0.02	0.20	0.01	1.32	0.03	6.21	0.36	0.01	0.00	0.00	16.02	82.
345-108	Opx-ol gabbro	1415J	27.70	55.76	0.21	1.17	0.12	11.56	0.26	29.07	2.18	0.00	0.02	0.04	100.38	7.89	0.02	0.19	0.01	1.37	0.03	6.13	0.33	0.00	0.00	0.00	15.99	81.
345-108	Opx-ol gabbro	1415J	27.70	56.15	0.20	1.07	0.11	11.56	0.30	30.34	1.39	0.00	0.00	0.02	101.15	7.87	0.02	0.18	0.01	1.35	0.04	6.34	0.21	0.00	0.00	0.00	16.02	82.
345-108	Opx-ol gabbro	1415J	27.70	55.89	0.17	1.11	0.12	11.81	0.28	30.46	1.33	0.01	0.01	0.03	101.21	7.84	0.02	0.18	0.01	1.38	0.03	6.37	0.20	0.00	0.00	0.00	16.05	82.
345-109	Opx-ol gabbro	1415J	28.20	55.31	0.24	1.29	0.13	11.50	0.30	29.13	2.18	0.02	0.01	0.03	100.12	7.85	0.03	0.22	0.01	1.36	0.04	6.16	0.33	0.01	0.00	0.00	16.01	81.
345-109	Opx-ol gabbro	1415J	28.20	55.49	0.26	1.32	0.12	11.86	0.30	29.54	2.01	0.02	0.00	0.03	100.95	7.82	0.03	0.22	0.01	1.40	0.04	6.21	0.30	0.01	0.00	0.00	16.04	81.
345-109	Opx-ol gabbro	1415J	28.20	55.58	0.29	1.29	0.10	11.03	0.29	28.99	2.71	0.05	0.00	0.04	100.34	7.86	0.03	0.22	0.01	1.30	0.04	6.11	0.41	0.01	0.00	0.00	16.00	82.
345-109	Opx-ol gabbro	1415J	28.20	55.69	0.27	1.23	0.13	11.58	0.28	29.20	2.52	0.02	0.01	0.04	100.96	7.85	0.03	0.20	0.01	1.36	0.03	6.13	0.38	0.01	0.00	0.00	16.02	81.
345-109	Opx-ol gabbro	1415J	28.20	55.52	0.26	1.22	0.10	11.83	0.26	29.30	2.25	0.02	0.00	0.04	100.81	7.84	0.03	0.20	0.01	1.40	0.03	6.17	0.34	0.01	0.00	0.00	16.03	81.
345-109	Opx-ol gabbro	1415J	28.20	55.27	0.24	1.21	0.11	11.69	0.28	29.39	2.24	0.00	0.00	0.03	100.47	7.83	0.03	0.20	0.01	1.39	0.03	6.21	0.34	0.00	0.00	0.00	16.04	81.
345-109	Opx-ol gabbro	1415J	28.20	54.96	0.21	1.53	0.11	11.52	0.29	29.08	2.00	0.01	0.01	0.05	99.75	7.83	0.02	0.26	0.01	1.37	0.04	6.17	0.30	0.00	0.00	0.01	16.02	81.
345-113	Opx-ol gabbro	1415J	37.00	56.23	0.28	1.06	0.09	9.27	0.28	31.88	1.16	0.00	0.00	0.05	100.29	7.86	0.03	0.18	0.01	1.08	0.03	6.64	0.17	0.00	0.00	0.01	16.02	85.
345-113	Opx-ol gabbro	1415J	37.00	55.89	0.28	1.08	0.12	9.43	0.27	31.63	1.12	0.01	0.00	0.02	99.85	7.86	0.03	0.18	0.01	1.11	0.03	6.63	0.17	0.00	0.00	0.00	16.02	85.
345-113	Opx-ol gabbro	1415J	37.00	54.96	0.27	1.20	0.11	9.43	0.23	31.37	0.77	0.02	0.00	0.05	98.42	7.84	0.03	0.20	0.01	1.13	0.03	6.67	0.12	0.01	0.00	0.01	16.03	85.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
Appendix 1:Mineral chemistry of Orhtopyroxene (Exp. 345 U1415P)																												
345-33	Ol-gabbro	1415P	19.50	55.13	0.02	0.05	0.01	15.02	0.01	31.18	0.00	0.03	0.00	0.07	101.52	7.80	0.00	0.01	0.00	1.78	0.00	6.58	0.00	0.01	0.00	0.01	16.19	78.
345-33	Ol-gabbro	1415P	19.50	55.55	0.28	1.60	0.42	9.34	0.21	32.62	0.88	0.02	0.00	0.03	100.95	7.73	0.03	0.26	0.05	1.09	0.02	6.77	0.13	0.01	0.00	0.00	16.09	86.
345-29	Opx-ol gabbro	1415P	12.20	55.56	0.37	1.46	0.16	10.19	0.28	30.09	2.95	0.05	0.00	0.04	101.16	7.78	0.04	0.24	0.02	1.19	0.03	6.28	0.44	0.01	0.00	0.01	16.05	84.
345-29	Opx-ol gabbro	1415P	12.20	55.98	0.36	1.25	0.15	10.52	0.26	31.25	1.35	0.00	0.00	0.03	101.16	7.81	0.04	0.21	0.02	1.23	0.03	6.50	0.20	0.00	0.00	0.00	16.04	84.
345-29	Opx-ol gabbro	1415P	12.20	55.73	0.46	1.24	0.17	10.70	0.28	31.24	0.95	0.01	0.01	0.06	100.83	7.81	0.05	0.20	0.02	1.25	0.03	6.52	0.14	0.00	0.00	0.01	16.04	83.
345-29	Opx-ol gabbro	1415P	12.20	55.34	0.51	1.29	0.16	10.48	0.21	31.13	1.28	0.03	0.00	0.05	100.49	7.78	0.05	0.21	0.02	1.23	0.03	6.52	0.19	0.01	0.00	0.01	16.05	84.
345-29	Opx-ol gabbro	1415P	12.20	55.50	0.50	1.25	0.19	10.30	0.25	31.11	1.54	0.03	0.00	0.04	100.70	7.79	0.05	0.21	0.02	1.21	0.03	6.50	0.23	0.01	0.00	0.00	16.05	84.
345-29	Opx-ol gabbro	1415P	12.20	55.09	0.53	1.25	0.19	10.46	0.25	31.09	1.36	0.02	0.00	0.08	100.30	7.77	0.06	0.21	0.02	1.23	0.03	6.53	0.21	0.00	0.00	0.01	16.07	84.
345-30	Opx-ol gabbro	1415P	13.00	54.64	0.52	1.29	0.23	9.74	0.23	30.94	1.39	0.02	0.00	0.03	99.04	7.78	0.06	0.22	0.03	1.16	0.03	6.56	0.21	0.01	0.00	0.00	16.05	84.
345-30	Opx-ol gabbro	1415P	13.00	55.92	0.54	1.40	0.28	9.98	0.27	31.70	1.59	0.02	0.01	0.02	101.72	7.76	0.06	0.23	0.03	1.16	0.03	6.55	0.24	0.01	0.00	0.00	16.06	84.
345-30	Opx-ol gabbro	1415P	13.00	56.09	0.58	1.35	0.26	9.80	0.23	31.55	1.61	0.02	0.00	0.04	101.53	7.78	0.06	0.22	0.03	1.14	0.03	6.53	0.24	0.00	0.00	0.00	16.03	85.
345-30	Opx-ol gabbro	1415P	13.00	55.02	0.52	1.41	0.24	9.66	0.25	30.82	1.44	0.03	0.00	0.03	99.41	7.79	0.06	0.24	0.03	1.15	0.03	6.51	0.22	0.01	0.00	0.00	16.02	85.
345-30	Opx-ol gabbro	1415P	13.00	56.22	0.54	1.35	0.25	9.74	0.26	31.50	1.46	0.02	0.00	0.02	101.37	7.81	0.06	0.22	0.03	1.13	0.03	6.52	0.22	0.01	0.00	0.00	16.02	85.
345-30	Opx-ol gabbro	1415P	13.00	56.19	0.48	1.29	0.25	10.17	0.27	32.20	0.73	0.01	0.00	0.03	101.60	7.79	0.05	0.21	0.03	1.18	0.03	6.65	0.11	0.00	0.00	0.00	16.05	84.
345-30	Opx-ol gabbro	1415P	13.00	56.15	0.44	1.35	0.26	9.53	0.28	31.22	2.34	0.04	0.01	0.04	101.63	7.79	0.05	0.22	0.03	1.11	0.03	6.46	0.35	0.01	0.00	0.00	16.04	85.
345-30	Opx-ol gabbro	1415P	13.00	55.00	0.58	1.25	0.25	9.49	0.24	30.96	1.51	0.03	0.00	0.04	99.35	7.79	0.06	0.21	0.03	1.12	0.03	6.54	0.23	0.01	0.00	0.01	16.03	85.
345-30	Opx-ol gabbro	1415P	13.00	55.90	0.53	1.54	0.26	9.41	0.26	31.79	1.23	0.01	0.00	0.02	100.96	7.78	0.06	0.25	0.03	1.10	0.03	6.60	0.18	0.00	0.00	0.00	16.03	85.
345-30	Opx-ol gabbro	1415P	13.00	54.97	0.52	1.13	0.25	9.53	0.25	30.98	1.50	0.03	0.00	0.03	99.18	7.80	0.06	0.19	0.03	1.13	0.03	6.56	0.23	0.01	0.00	0.00	16.04	85.
345-30	Opx-ol gabbro	1415P	13.00	54.61	0.56	1.18	0.24	9.71	0.25	30.88	1.44	0.00	0.00	0.04	98.91	7.78	0.06	0.20	0.03	1.16	0.03	6.56	0.22	0.00	0.00	0.00	16.04	85.
345-30	Opx-ol gabbro	1415P	13.00	56.26	0.58	1.22	0.25	10.01	0.26	31.81	1.49	0.00	0.00	0.04	101.91	7.78	0.06	0.20	0.03	1.16	0.03	6.56	0.22	0.00	0.00	0.00	16.04	85.
345-31	Opx-ol gabbro	1415P	13.50	54.58	0.28	1.95	0.43	9.44	0.33	24.45	9.31	0.20	0.01	0.00	100.98	7.78	0.03	0.33	0.05	1.13	0.04	5.20	1.42	0.06	0.00	0.00	16.03	82.
345-31	Opx-ol gabbro	1415P	13.50	56.40	0.19	1.43	0.42	8.93	0.24	31.87	1.66	0.03	0.01	0.01	101.19	7.82	0.02	0.23	0.05	1.04	0.03	6.59	0.25	0.01	0.00	0.00	16.03	86.
345-31	Opx-ol gabbro	1415P	13.50	56.60	0.19	1.51	0.45	9.27	0.22	32.31	1.39	0.01	0.00	0.03	101.98	7.79	0.02	0.25	0.05	1.07	0.03	6.63	0.20	0.00	0.00	0.00	16.04	86.
345-31	Opx-ol gabbro	1415P	13.50	55.58	0.17	1.57	0.50	9.22	0.23	31.43	1.77	0.02	0.00	0.04	100.53	7.78	0.02	0.26	0.06	1.08	0.03	6.56	0.27	0.01	0.00	0.00	16.05	85.
345-31	Opx-ol gabbro	1415P	13.50	55.71	0.20	1.57	0.48	9.15	0.23	31.31	2.09	0.03	0.00	0.02	100.78	7.78	0.02	0.26	0.05	1.07	0.03	6.52	0.31	0.01	0.00	0.00	16.05	85.
345-31	Opx-ol gabbro	1415P	13.50	57.02	0.14	1.48	0.62	8.95	0.20	33.30	0.63	0.00	0.00	0.04	102.38	7.79	0.01	0.24	0.07	1.02	0.02	6.78	0.09	0.00	0.00	0.00	16.04	86.
345-31	Opx-ol gabbro	1415P	13.50	56.19	0.47	1.48	0.39	10.03	0.23	31.54	1.20	0.01	0.00	0.05	101.60	7.79	0.05	0.24	0.04	1.16	0.03	6.52	0.18	0.00	0.00	0.01	16.02	84.
345-31	Opx-ol gabbro	1415P	13.50	55.40	0.47	1.50	0.40	9.99	0.25	31.32	1.44	0.01	0.00	0.03	100.81	7.75	0.05	0.25	0.04	1.17	0.03	6.54	0.22	0.00	0.00	0.00	16.05	84.
345-31	Opx-ol gabbro	1415P	13.50	55.95	0.46	1.47	0.39	9.87	0.24	31.52	1.41	0.01	0.00	0.04	101.36	7.78	0.05	0.24	0.04	1.15	0.03	6.53	0.21	0.00	0.00	0.00	16.03	85.
345-32	Opx-ol gabbro	1415P	19.00	55.97	0.53	1.47	0.21	10.09	0.27	30.71	2.55	0.05	0.00	0.03	101.87	7.77	0.05	0.24	0.02	1.17	0.03	6.36	0.38	0.01	0.00	0.00	16.05	84.
345-32	Opx-ol gabbro	1415P	19.00	55.91	0.47	1.27	0.19	10.35	0.26	31.50	1.38	0.01	0.01	0.04	101.38	7.79	0.05	0.21	0.02	1.21	0.03	6.54	0.21	0.00	0.00	0.00	16.05	84.
345-32	Opx-ol gabbro	1415P	19.00	55.72	0.55	1.34	0.18	10.51	0.27	31.53	1.25	0.00	0.00	0.03	101.40	7.76	0.06	0.22	0.02	1.23	0.03	6.55	0.19	0.00	0.00	0.00	16.06	84.
345-32	Opx-ol gabbro	1415P	19.00	55.88	0.53	1.49	0.19	10.52	0.29	31.31	1.23	0.01	0.01	0.03	101.48	7.78	0.06	0.24	0.02	1.22	0.03	6.49	0.18	0.00	0.00	0.00	16.04	84.
345-32	Opx-ol gabbro	1415P	19.00	55.93	0.43	1.30	0.21	10.35	0.28	30.98	1.74	0.02	0.00	0.05	101.29	7.80	0.05	0.21	0.02	1.21	0.03	6.44	0.26	0.01	0.00	0.01	16.04	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-32	Opx-ol gabbro	1415P	19.00	56.11	0.51	1.37	0.24	10.30	0.27	30.81	1.94	0.01	0.00	0.03	101.59	7.80	0.05	0.22	0.03	1.20	0.03	6.39	0.29	0.00	0.00	0.00	16.02	84.
345-32	Opx-ol gabbro	1415P	19.00	55.82	0.43	1.43	0.25	10.10	0.25	30.52	2.69	0.03	0.00	0.02	101.54	7.78	0.05	0.23	0.03	1.18	0.03	6.34	0.40	0.01	0.00	0.00	16.05	84.
345-32	Opx-ol gabbro	1415P	19.00	55.92	0.47	1.37	0.22	10.18	0.28	30.76	2.03	0.01	0.00	0.04	101.28	7.80	0.05	0.23	0.02	1.19	0.03	6.40	0.30	0.00	0.00	0.00	16.03	84.
345-32	Opx-ol gabbro	1415P	19.00	55.92	0.45	1.29	0.23	10.46	0.26	31.36	1.34	0.00	0.00	0.03	101.32	7.79	0.05	0.21	0.03	1.22	0.03	6.51	0.20	0.00	0.00	0.00	16.04	84.
345-36	Opx-ol gabbro	1415P	28.00	55.05	0.44	1.17	0.14	10.45	0.27	31.00	1.04	0.01	0.00	0.04	99.62	7.80	0.05	0.20	0.02	1.24	0.03	6.55	0.16	0.00	0.00	0.00	16.05	84.
345-36	Opx-ol gabbro	1415P	28.00	56.25	0.43	1.24	0.13	10.57	0.27	31.12	1.61	0.00	0.01	0.00	101.63	7.82	0.05	0.20	0.01	1.23	0.03	6.45	0.24	0.00	0.00	0.00	16.03	83.
345-36	Opx-ol gabbro	1415P	28.00	55.78	0.42	1.24	0.12	10.76	0.27	31.37	1.19	0.01	0.01	0.04	101.20	7.79	0.04	0.20	0.01	1.26	0.03	6.53	0.18	0.00	0.00	0.00	16.06	83.
345-36	Opx-ol gabbro	1415P	28.00	55.98	0.42	1.16	0.12	10.69	0.28	31.28	1.54	0.01	0.00	0.04	101.49	7.80	0.04	0.19	0.01	1.25	0.03	6.50	0.23	0.00	0.00	0.00	16.06	83.
345-36	Opx-ol gabbro	1415P	28.00	56.41	0.42	1.24	0.10	10.42	0.26	31.30	1.24	0.03	0.00	0.04	101.45	7.84	0.04	0.20	0.01	1.21	0.03	6.48	0.19	0.01	0.00	0.00	16.02	84.
345-36	Opx-ol gabbro	1415P	28.00	55.84	0.45	1.35	0.15	10.51	0.25	30.80	2.00	0.01	0.00	0.03	101.39	7.79	0.05	0.22	0.02	1.23	0.03	6.41	0.30	0.00	0.00	0.00	16.04	83.
345-36	Opx-ol gabbro	1415P	28.00	55.87	0.42	1.33	0.12	9.65	0.26	28.24	4.02	0.06	0.00	0.03	100.01	7.90	0.05	0.22	0.01	1.14	0.03	5.95	0.61	0.02	0.00	0.00	15.94	83.
345-38	Opx-ol gabbro	1415P	33.00	55.11	0.35	1.12	0.06	10.40	0.26	30.76	0.96	0.00	0.01	0.01	99.04	7.84	0.04	0.19	0.01	1.24	0.03	6.53	0.15	0.00	0.00	0.00	16.02	84.
345-38	Opx-ol gabbro	1415P	33.00	56.71	0.32	1.10	0.04	10.61	0.27	31.41	0.94	0.01	0.01	0.05	101.46	7.87	0.03	0.18	0.00	1.23	0.03	6.50	0.14	0.00	0.00	0.01	16.00	84.
345-38	Opx-ol gabbro	1415P	33.00	56.84	0.31	1.02	0.05	10.60	0.30	31.43	0.87	0.01	0.00	0.03	101.46	7.89	0.03	0.17	0.01	1.23	0.03	6.50	0.13	0.00	0.00	0.00	16.00	84.
345-38	Opx-ol gabbro	1415P	33.00	56.41	0.24	1.06	0.00	10.65	0.25	31.61	0.62	0.00	0.00	0.04	100.87	7.87	0.02	0.17	0.00	1.24	0.03	6.58	0.09	0.00	0.00	0.00	16.02	84.
345-38	Opx-ol gabbro	1415P	33.00	56.66	0.25	1.20	0.02	10.75	0.29	31.55	0.77	0.00	0.00	0.04	101.51	7.86	0.03	0.20	0.00	1.25	0.03	6.53	0.11	0.00	0.00	0.00	16.01	83.
345-41	Opx-ol gabbro	1415P	38.00	56.17	0.44	1.08	0.07	9.90	0.27	31.61	1.22	0.00	0.00	0.02	100.77	7.84	0.05	0.18	0.01	1.16	0.03	6.58	0.18	0.00	0.00	0.00	16.02	85.
345-41	Opx-ol gabbro	1415P	38.00	56.16	0.48	1.18	0.08	9.85	0.27	31.60	1.15	0.03	0.00	0.04	100.84	7.83	0.05	0.19	0.01	1.15	0.03	6.57	0.17	0.01	0.00	0.00	16.02	85.
345-41	Opx-ol gabbro	1415P	38.00	56.08	0.46	1.14	0.07	9.94	0.25	31.36	1.17	0.02	0.00	0.05	100.55	7.85	0.05	0.19	0.01	1.16	0.03	6.54	0.18	0.01	0.00	0.01	16.01	84.
345-41	Opx-ol gabbro	1415P	38.00	56.80	0.35	1.17	0.08	10.08	0.26	31.93	0.94	0.00	0.00	0.04	101.64	7.85	0.04	0.19	0.01	1.17	0.03	6.58	0.14	0.00	0.00	0.00	16.01	84.
345-41	Opx-ol gabbro	1415P	38.00	56.18	0.40	1.27	0.09	9.61	0.23	30.72	2.57	0.01	0.01	0.05	101.13	7.83	0.04	0.21	0.01	1.12	0.03	6.38	0.38	0.00	0.00	0.01	16.02	85.
345-41	Opx-ol gabbro	1415P	38.00	56.53	0.40	1.23	0.09	9.97	0.27	31.04	1.46	0.01	0.00	0.04	101.04	7.87	0.04	0.20	0.01	1.16	0.03	6.44	0.22	0.00	0.00	0.00	15.98	84.
345-41	Opx-ol gabbro	1415P	38.00	56.62	0.38	1.07	0.09	9.76	0.22	31.56	1.40	0.01	0.00	0.05	101.15	7.87	0.04	0.18	0.01	1.13	0.03	6.54	0.21	0.00	0.00	0.01	16.00	85.
345-41	Opx-ol gabbro	1415P	38.00	55.99	0.52	1.18	0.10	9.52	0.28	31.57	1.28	0.04	0.01	0.03	100.53	7.83	0.05	0.20	0.01	1.11	0.03	6.58	0.19	0.01	0.00	0.00	16.02	85.
345-41	Opx-ol gabbro	1415P	38.00	56.42	0.52	1.17	0.08	10.09	0.25	31.48	1.13	0.02	0.01	0.03	101.19	7.84	0.05	0.19	0.01	1.17	0.03	6.53	0.17	0.00	0.00	0.00	16.00	84.
345-41	Opx-ol gabbro	1415P	38.00	56.61	0.46	1.16	0.08	9.91	0.28	31.58	1.42	0.01	0.00	0.01	101.50	7.85	0.05	0.19	0.01	1.15	0.03	6.52	0.21	0.00	0.00	0.00	16.01	85.
345-41	Opx-ol gabbro	1415P	38.00	55.51	0.50	1.21	0.07	9.82	0.26	30.92	1.91	0.01	0.01	0.04	100.24	7.81	0.05	0.20	0.01	1.16	0.03	6.48	0.29	0.00	0.00	0.00	16.04	84.
345-41	Opx-ol gabbro	1415P	38.00	56.11	0.37	1.69	0.12	10.41	0.27	31.19	0.56	0.01	0.00	0.04	100.76	7.83	0.04	0.28	0.01	1.21	0.03	6.49	0.08	0.00	0.00	0.00	15.99	84.
345-41	Opx-ol gabbro	1415P	38.00	56.51	0.39	1.46	0.09	10.57	0.24	31.05	1.07	0.03	0.00	0.03	101.45	7.85	0.04	0.24	0.01	1.23	0.03	6.43	0.16	0.01	0.00	0.00	15.99	83.
345-41	Opx-ol gabbro	1415P	38.00	55.97	0.37	2.14	0.10	10.77	0.28	31.03	0.96	0.01	0.00	0.02	101.64	7.77	0.04	0.35	0.01	1.25	0.03	6.42	0.14	0.00	0.00	0.00	16.01	83.
345-41	Opx-ol gabbro	1415P	38.00	56.23	0.42	1.60	0.12	9.88	0.24	31.08	1.66	0.01	0.00	0.03	101.25	7.82	0.04	0.26	0.01	1.15	0.03	6.44	0.25	0.00	0.00	0.00	16.01	84.
345-41	Opx-ol gabbro	1415P	38.00	56.46	0.40	1.35	0.14	9.97	0.25	31.35	1.34	0.01	0.00	0.03	101.28	7.84	0.04	0.22	0.01	1.16	0.03	6.49	0.20	0.00	0.00	0.00	16.00	84.
345-41	Opx-ol gabbro	1415P	38.00	56.48	0.43	1.34	0.11	9.95	0.24	31.07	1.58	0.01	0.00	0.04	101.24	7.85	0.04	0.22	0.01	1.16	0.03	6.44	0.24	0.00	0.00	0.00	15.99	84.
345-41	Opx-ol gabbro	1415P	38.00	57.28	0.41	1.55	0.11	9.05	0.22	29.93	4.00	0.06	0.00	0.04	102.65	7.86	0.04	0.25	0.01	1.04	0.03	6.13	0.59	0.02	0.00	0.00	15.97	85.
345-41	Opx-ol gabbro	1415P	38.00	55.90	0.40	1.33	0.07	9.80	0.27	31.69	1.12	0.06	0.02	0.01	100.67	7.81	0.04	0.22	0.01	1.15	0.03	6.60	0.17	0.02	0.00	0.00	16.04	85.
345-41	Opx-ol gabbro	1415P	38.00	56.60	0.53	1.20	0.07	10.09	0.26	31.40	1.60	0.03	0.00	0.01	101.79	7.83	0.06	0.20	0.01	1.17	0.03	6.48	0.24	0.01	0.00	0.00	16.01	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-41	Opx-ol gabbro	1415P	38.00	56.66	0.47	1.09	0.08	10.00	0.27	31.50	1.31	0.00	0.00	0.04	101.43	7.86	0.05	0.18	0.01	1.16	0.03	6.51	0.19	0.00	0.00	0.00	16.00	84.
345-41	Opx-ol gabbro	1415P	38.00	56.28	0.48	1.20	0.07	10.15	0.22	31.56	1.07	0.02	0.00	0.04	101.10	7.83	0.05	0.20	0.01	1.18	0.03	6.55	0.16	0.00	0.00	0.00	16.02	84.
345-42	Opx-ol gabbro	1415P	38.50	56.05	0.56	1.24	0.08	9.90	0.27	30.62	2.28	0.04	0.01	0.02	101.06	7.83	0.06	0.20	0.01	1.16	0.03	6.37	0.34	0.01	0.00	0.00	16.01	84.
345-42	Opx-ol gabbro	1415P	38.50	56.60	0.49	1.07	0.06	9.86	0.26	31.22	1.88	0.03	0.00	0.02	101.49	7.85	0.05	0.18	0.01	1.14	0.03	6.46	0.28	0.01	0.00	0.00	16.01	84.
345-42	Opx-ol gabbro	1415P	38.50	56.48	0.47	1.13	0.05	10.09	0.29	31.34	1.25	0.03	0.00	0.04	101.17	7.86	0.05	0.19	0.01	1.17	0.03	6.50	0.19	0.01	0.00	0.00	16.00	84.
345-42	Opx-ol gabbro	1415P	38.50	56.58	0.56	1.09	0.08	10.33	0.30	31.65	1.07	0.00	0.00	0.05	101.70	7.84	0.06	0.18	0.01	1.20	0.03	6.53	0.16	0.00	0.00	0.01	16.01	84.
345-42	Opx-ol gabbro	1415P	38.50	56.69	0.60	1.18	0.07	9.90	0.25	31.26	1.82	0.01	0.00	0.03	101.79	7.84	0.06	0.19	0.01	1.14	0.03	6.45	0.27	0.00	0.00	0.00	16.00	84.
345-42	Opx-ol gabbro	1415P	38.50	54.76	0.56	1.23	0.07	9.80	0.25	30.36	1.88	0.02	0.00	0.04	98.97	7.81	0.06	0.21	0.01	1.17	0.03	6.45	0.29	0.00	0.00	0.00	16.03	84.
345-42	Opx-ol gabbro	1415P	38.50	56.42	0.58	1.26	0.07	10.10	0.26	31.28	1.94	0.02	0.00	0.04	101.97	7.81	0.06	0.21	0.01	1.17	0.03	6.45	0.29	0.00	0.00	0.00	16.03	84.
345-42	Opx-ol gabbro	1415P	38.50	56.22	0.53	1.31	0.07	9.36	0.26	29.80	3.67	0.04	0.01	0.06	101.33	7.84	0.06	0.22	0.01	1.09	0.03	6.19	0.55	0.01	0.00	0.01	16.00	85.
345-42	Opx-ol gabbro	1415P	38.50	56.65	0.43	1.14	0.07	10.31	0.25	31.65	1.19	0.00	0.00	0.02	101.71	7.84	0.05	0.19	0.01	1.19	0.03	6.53	0.18	0.00	0.00	0.00	16.01	84.
345-42	Opx-ol gabbro	1415P	38.50	56.51	0.50	1.24	0.08	9.97	0.24	31.53	1.10	0.02	0.00	0.01	101.21	7.85	0.05	0.20	0.01	1.16	0.03	6.53	0.16	0.00	0.00	0.00	16.00	84.
345-42	Opx-ol gabbro	1415P	38.50	56.07	0.52	1.10	0.07	10.13	0.28	31.57	1.04	0.00	0.00	0.04	100.82	7.83	0.05	0.18	0.01	1.18	0.03	6.57	0.16	0.00	0.00	0.00	16.02	84.
345-44	Opx-ol gabbro	1415P	45.70	55.95	0.41	1.21	0.05	10.81	0.27	31.37	1.64	0.01	0.00	0.04	101.76	7.78	0.04	0.20	0.01	1.26	0.03	6.50	0.24	0.00	0.00	0.00	16.07	83.
345-44	Opx-ol gabbro	1415P	45.70	55.10	0.42	1.13	0.04	10.60	0.28	30.90	1.06	0.00	0.00	0.04	99.57	7.82	0.04	0.19	0.00	1.26	0.03	6.53	0.16	0.00	0.00	0.00	16.04	83.
345-44	Opx-ol gabbro	1415P	45.70	54.90	0.45	1.22	0.06	10.59	0.28	30.56	1.39	0.03	0.00	0.01	99.46	7.80	0.05	0.20	0.01	1.26	0.03	6.47	0.21	0.01	0.00	0.00	16.05	83.
345-44	Opx-ol gabbro	1415P	45.70	54.83	0.39	1.06	0.03	10.50	0.27	30.43	1.47	0.00	0.00	0.04	99.02	7.83	0.04	0.18	0.00	1.25	0.03	6.48	0.22	0.00	0.00	0.00	16.04	83.
345-44	Opx-ol gabbro	1415P	45.70	56.49	0.40	1.09	0.04	10.82	0.28	31.35	1.51	0.00	0.00	0.04	102.02	7.83	0.04	0.18	0.00	1.25	0.03	6.48	0.22	0.00	0.00	0.00	16.04	83.
345-44	Opx-ol gabbro	1415P	45.70	56.25	0.43	1.16	0.05	10.70	0.26	31.31	1.51	0.03	0.00	0.03	101.73	7.81	0.04	0.19	0.01	1.24	0.03	6.48	0.23	0.01	0.00	0.00	16.05	83.
345-44	Opx-ol gabbro	1415P	45.70	56.29	0.45	1.11	0.07	10.88	0.29	31.56	0.85	0.02	0.00	0.04	101.56	7.82	0.05	0.18	0.01	1.26	0.03	6.54	0.13	0.00	0.00	0.00	16.04	83.
345-44	Opx-ol gabbro	1415P	45.70	54.66	0.39	1.10	0.07	10.65	0.24	30.74	1.00	0.00	0.00	0.03	98.86	7.81	0.04	0.18	0.01	1.27	0.03	6.55	0.15	0.00	0.00	0.00	16.05	83.
345-44	Opx-ol gabbro	1415P	45.70	56.32	0.40	1.13	0.07	10.97	0.25	31.67	1.03	0.00	0.00	0.03	101.86	7.81	0.04	0.18	0.01	1.27	0.03	6.55	0.15	0.00	0.00	0.00	16.05	83.
345-44	Opx-ol gabbro	1415P	45.70	56.15	0.39	1.21	0.06	10.43	0.26	30.86	2.22	0.03	0.00	0.03	101.62	7.81	0.04	0.20	0.01	1.21	0.03	6.40	0.33	0.01	0.00	0.00	16.05	84.
345-44	Opx-ol gabbro	1415P	45.70	54.72	0.39	1.15	0.08	10.59	0.26	30.99	1.04	0.03	0.00	0.05	99.32	7.79	0.04	0.19	0.01	1.26	0.03	6.58	0.16	0.01	0.00	0.01	16.07	83.
345-44	Opx-ol gabbro	1415P	45.70	55.13	0.39	1.10	0.06	10.46	0.27	30.76	1.19	0.02	0.00	0.05	99.43	7.83	0.04	0.18	0.01	1.24	0.03	6.51	0.18	0.01	0.00	0.01	16.04	83.
345-44	Opx-ol gabbro	1415P	45.70	55.24	0.38	1.22	0.06	10.22	0.26	30.67	1.48	0.01	0.00	0.03	99.57	7.83	0.04	0.20	0.01	1.21	0.03	6.48	0.23	0.00	0.00	0.00	16.03	84.
345-44	Opx-ol gabbro	1415P	45.70	54.72	0.36	1.30	0.07	10.43	0.26	30.54	1.35	0.01	0.00	0.03	99.06	7.80	0.04	0.22	0.01	1.24	0.03	6.49	0.21	0.00	0.00	0.00	16.05	83.
345-44	Opx-ol gabbro	1415P	45.70	55.03	0.37	1.01	0.04	10.06	0.25	30.55	1.63	0.00	0.00	0.03	98.97	7.84	0.04	0.17	0.00	1.20	0.03	6.49	0.25	0.00	0.00	0.00	16.03	84.
345-44	Opx-ol gabbro	1415P	45.70	56.70	0.38	1.04	0.04	10.37	0.25	31.47	1.68	0.00	0.00	0.03	101.97	7.84	0.04	0.17	0.00	1.20	0.03	6.49	0.25	0.00	0.00	0.00	16.03	84.
345-44	Opx-ol gabbro	1415P	45.70	55.10	0.38	1.11	0.03	10.29	0.24	30.41	1.60	0.01	0.00	0.05	99.22	7.84	0.04	0.19	0.00	1.22	0.03	6.45	0.24	0.00	0.00	0.01	16.03	84.
345-44	Opx-ol gabbro	1415P	45.70	54.89	0.41	1.19	0.03	10.12	0.28	30.06	1.96	0.03	0.01	0.04	99.02	7.83	0.04	0.20	0.00	1.21	0.03	6.39	0.30	0.01	0.00	0.00	16.03	84.
345-44	Opx-ol gabbro	1415P	45.70	56.55	0.43	1.22	0.04	10.43	0.29	30.97	2.02	0.03	0.01	0.04	102.02	7.83	0.04	0.20	0.00	1.21	0.03	6.39	0.30	0.01	0.00	0.00	16.03	84.
345-44	Opx-ol gabbro	1415P	45.70	55.24	0.43	1.24	0.05	10.34	0.27	30.35	1.66	0.01	0.00	0.04	99.61	7.83	0.05	0.21	0.01	1.23	0.03	6.41	0.25	0.00	0.00	0.00	16.02	83.
345-45	Opx-ol gabbro	1415P	51.00	56.58	0.44	1.03	0.04	10.32	0.26	31.64	1.20	0.02	0.00	0.02	101.55	7.85	0.05	0.17	0.00	1.20	0.03	6.54	0.18	0.00	0.00	0.00	16.02	84.
345-45	Opx-ol gabbro	1415P	51.00	55.78	0.54	1.25	0.04	9.62	0.26	29.91	3.44	0.05	0.00	0.04	100.93	7.82	0.06	0.21	0.00	1.13	0.03	6.25	0.52	0.01	0.00	0.00	16.03	84.
345-45	Opx-ol gabbro	1415P	51.00	56.18	0.48	1.22	0.04	10.40	0.27	31.31	1.34	0.01	0.00	0.06	101.29	7.82	0.05	0.20	0.00	1.21	0.03	6.50	0.20	0.00	0.00	0.01	16.03	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-45	Opx-ol gabbro	1415P	51.00	56.22	0.51	1.22	0.06	10.18	0.24	31.15	1.80	0.01	0.00	0.03	101.42	7.82	0.05	0.20	0.01	1.18	0.03	6.46	0.27	0.00	0.00	0.00	16.02	84.
345-45	Opx-ol gabbro	1415P	51.00	55.37	0.51	1.34	0.03	9.81	0.24	30.14	3.14	0.05	0.00	0.02	100.65	7.79	0.05	0.22	0.00	1.15	0.03	6.32	0.47	0.01	0.00	0.00	16.05	84.
345-45	Opx-ol gabbro	1415P	51.00	56.39	0.47	0.97	0.03	10.37	0.27	31.47	1.09	0.03	0.00	0.00	101.08	7.86	0.05	0.16	0.00	1.21	0.03	6.54	0.16	0.01	0.00	0.00	16.02	84.
345-45	Opx-ol gabbro	1415P	51.00	56.32	0.49	1.17	0.02	10.57	0.29	31.49	1.22	0.01	0.00	0.02	101.58	7.82	0.05	0.19	0.00	1.23	0.03	6.52	0.18	0.00	0.00	0.00	16.03	84.
345-45	Opx-ol gabbro	1415P	51.00	56.15	0.50	1.25	0.04	10.41	0.31	31.29	1.41	0.02	0.01	0.02	101.39	7.81	0.05	0.20	0.00	1.21	0.04	6.49	0.21	0.01	0.00	0.00	16.03	84.
345-45	Opx-ol gabbro	1415P	51.00	56.36	0.44	1.22	0.04	10.43	0.27	31.50	1.32	0.01	0.00	0.02	101.61	7.82	0.05	0.20	0.00	1.21	0.03	6.52	0.20	0.00	0.00	0.00	16.03	84.
345-45	Opx-ol gabbro	1415P	51.00	56.67	0.37	1.11	0.02	10.37	0.28	31.56	1.38	0.00	0.00	0.05	101.79	7.85	0.04	0.18	0.00	1.20	0.03	6.51	0.20	0.00	0.00	0.01	16.02	84.
345-45	Opx-ol gabbro	1415P	51.00	56.70	0.39	1.12	0.03	10.16	0.24	31.50	1.66	0.02	0.00	0.06	101.88	7.84	0.04	0.18	0.00	1.18	0.03	6.49	0.25	0.00	0.00	0.01	16.03	84.
345-46	Opx-ol gabbro	1415P	59.20	56.37	0.41	1.13	0.07	10.84	0.28	31.35	1.10	0.01	0.00	0.02	101.57	7.84	0.04	0.19	0.01	1.26	0.03	6.50	0.16	0.00	0.00	0.00	16.03	83.
345-46	Opx-ol gabbro	1415P	59.20	54.92	0.35	1.44	0.17	10.19	0.27	30.98	0.82	0.05	0.01	0.03	99.22	7.80	0.04	0.24	0.02	1.21	0.03	6.56	0.12	0.01	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	54.68	0.56	1.07	0.06	10.24	0.27	30.61	1.34	0.00	0.00	0.02	98.86	7.81	0.06	0.18	0.01	1.22	0.03	6.52	0.21	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	56.34	0.58	1.10	0.07	10.55	0.28	31.54	1.38	0.00	0.00	0.02	101.86	7.81	0.06	0.18	0.01	1.22	0.03	6.52	0.21	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	53.45	0.54	2.76	0.03	11.00	0.23	30.07	1.23	0.03	0.03	0.04	99.41	7.62	0.06	0.46	0.00	1.31	0.03	6.39	0.19	0.01	0.01	0.00	16.09	82.
345-53	Opx-ol gabbro	1415P	72.00	55.65	0.57	1.21	0.06	10.65	0.25	31.62	1.09	0.01	0.01	0.04	101.16	7.77	0.06	0.20	0.01	1.24	0.03	6.58	0.16	0.00	0.00	0.00	16.07	84.
345-53	Opx-ol gabbro	1415P	72.00	54.92	0.62	1.12	0.05	10.45	0.26	30.84	1.19	0.02	0.00	0.07	99.55	7.79	0.07	0.19	0.01	1.24	0.03	6.53	0.18	0.00	0.00	0.01	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	54.77	0.53	1.18	0.04	10.29	0.27	30.81	1.39	0.02	0.01	0.06	99.36	7.79	0.06	0.20	0.00	1.22	0.03	6.53	0.21	0.01	0.00	0.01	16.06	84.
345-53	Opx-ol gabbro	1415P	72.00	56.16	0.55	1.21	0.09	10.21	0.29	31.24	1.62	0.04	0.00	0.02	101.41	7.81	0.06	0.20	0.01	1.19	0.03	6.48	0.24	0.01	0.00	0.00	16.03	84.
345-53	Opx-ol gabbro	1415P	72.00	56.44	0.40	1.13	0.05	10.57	0.26	31.42	1.45	0.01	0.00	0.04	101.77	7.83	0.04	0.18	0.01	1.23	0.03	6.50	0.22	0.00	0.00	0.01	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	54.60	0.50	1.19	0.06	10.33	0.24	30.55	1.35	0.00	0.00	0.03	98.85	7.80	0.05	0.20	0.01	1.23	0.03	6.51	0.21	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	56.26	0.52	1.23	0.06	10.64	0.25	31.48	1.39	0.00	0.00	0.03	101.85	7.80	0.05	0.20	0.01	1.23	0.03	6.51	0.21	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	56.30	0.43	1.11	0.06	10.35	0.26	31.14	2.15	0.01	0.01	0.01	101.82	7.82	0.04	0.18	0.01	1.20	0.03	6.44	0.32	0.00	0.00	0.00	16.05	84.
345-53	Opx-ol gabbro	1415P	72.00	54.57	0.44	1.21	0.06	10.45	0.24	30.73	1.30	0.01	0.00	0.04	99.06	7.79	0.05	0.20	0.01	1.25	0.03	6.54	0.20	0.00	0.00	0.00	16.06	83.
345-53	Opx-ol gabbro	1415P	72.00	54.45	0.89	1.02	0.05	10.56	0.25	30.54	1.23	0.02	0.00	0.05	99.07	7.78	0.10	0.17	0.01	1.26	0.03	6.50	0.19	0.01	0.00	0.01	16.04	83.
345-53	Opx-ol gabbro	1415P	72.00	54.61	0.51	1.15	0.09	10.58	0.23	30.73	0.94	0.01	0.00	0.03	98.87	7.80	0.05	0.19	0.01	1.26	0.03	6.54	0.14	0.00	0.00	0.00	16.04	83.
345-53	Opx-ol gabbro	1415P	72.00	56.27	0.52	1.19	0.09	10.90	0.23	31.66	0.97	0.01	0.00	0.03	101.87	7.80	0.05	0.19	0.01	1.26	0.03	6.54	0.14	0.00	0.00	0.00	16.04	83.
345-53	Opx-ol gabbro	1415P	72.00	52.60	0.30	4.71	0.10	10.85	0.26	28.88	1.31	0.10	0.05	0.03	99.19	7.51	0.03	0.79	0.01	1.30	0.03	6.15	0.20	0.03	0.01	0.00	16.07	82.
345-53	Opx-ol gabbro	1415P	72.00	54.94	0.50	1.10	0.06	10.32	0.26	31.02	0.92	0.01	0.00	0.02	99.15	7.81	0.05	0.18	0.01	1.23	0.03	6.58	0.14	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	54.72	0.57	1.31	0.06	10.52	0.25	30.66	0.98	0.01	0.00	0.05	99.13	7.79	0.06	0.22	0.01	1.25	0.03	6.51	0.15	0.00	0.00	0.01	16.03	83.
345-53	Opx-ol gabbro	1415P	72.00	56.22	0.53	1.11	0.05	10.70	0.27	31.56	1.18	0.00	0.01	0.04	101.67	7.81	0.06	0.18	0.01	1.24	0.03	6.53	0.18	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	54.71	0.53	1.34	0.06	10.15	0.25	30.51	1.52	0.02	0.00	0.03	99.12	7.79	0.06	0.22	0.01	1.21	0.03	6.48	0.23	0.01	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	56.16	0.71	1.30	0.04	10.55	0.27	31.56	1.15	0.01	0.01	0.06	101.80	7.79	0.07	0.21	0.00	1.22	0.03	6.52	0.17	0.00	0.00	0.01	16.03	84.
345-53	Opx-ol gabbro	1415P	72.00	54.51	0.50	1.34	0.04	10.39	0.25	30.80	0.98	0.03	0.00	0.01	98.87	7.78	0.05	0.23	0.01	1.24	0.03	6.56	0.15	0.01	0.00	0.00	16.05	84.
345-53	Opx-ol gabbro	1415P	72.00	56.17	0.52	1.38	0.05	10.71	0.26	31.74	1.01	0.03	0.00	0.01	101.87	7.78	0.05	0.23	0.01	1.24	0.03	6.56	0.15	0.01	0.00	0.00	16.05	84.
345-53	Opx-ol gabbro	1415P	72.00	55.86	0.63	1.34	0.07	10.55	0.26	31.64	1.23	0.01	0.00	0.03	101.62	7.76	0.07	0.22	0.01	1.23	0.03	6.56	0.18	0.00	0.00	0.00	16.06	84.
345-53	Opx-ol gabbro	1415P	72.00	54.39	0.43	1.24	0.09	10.57	0.28	30.97	0.86	0.01	0.00	0.03	98.87	7.77	0.05	0.21	0.01	1.26	0.03	6.60	0.13	0.00	0.00	0.00	16.07	83.
345-53	Opx-ol gabbro	1415P	72.00	56.04	0.44	1.28	0.09	10.89	0.29	31.91	0.89	0.01	0.01	0.03	101.87	7.77	0.05	0.21	0.01	1.26	0.03	6.60	0.13	0.00	0.00	0.00	16.07	83.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-53	Opx-ol gabbro	1415P	72.00	54.76	0.58	1.21	0.07	10.44	0.24	30.84	1.21	0.01	0.00	0.03	99.39	7.78	0.06	0.20	0.01	1.24	0.03	6.53	0.18	0.00	0.00	0.00	16.05	84.
345-53	Opx-ol gabbro	1415P	72.00	54.58	0.61	1.24	0.07	10.28	0.29	30.69	1.19	0.01	0.00	0.02	98.97	7.79	0.07	0.21	0.01	1.23	0.04	6.53	0.18	0.00	0.00	0.00	16.04	84.
345-53	Opx-ol gabbro	1415P	72.00	56.23	0.63	1.28	0.07	10.59	0.30	31.62	1.22	0.01	0.00	0.02	101.97	7.79	0.07	0.21	0.01	1.23	0.04	6.53	0.18	0.00	0.00	0.00	16.04	84.
345-65	Opx-ol gabbro	1415P	13.00	55.25	0.36	1.68	0.19	9.40	0.24	28.37	4.73	0.09	0.00	0.04	100.36	7.81	0.04	0.28	0.02	1.11	0.03	5.98	0.72	0.02	0.00	0.00	16.01	84.
345-65	Opx-ol gabbro	1415P	13.00	54.94	0.37	1.66	0.17	10.05	0.23	30.10	2.55	0.04	0.00	0.04	100.14	7.76	0.04	0.28	0.02	1.19	0.03	6.34	0.39	0.01	0.00	0.00	16.05	84.
345-65	Opx-ol gabbro	1415P	13.00	54.99	0.31	1.59	0.14	10.36	0.26	30.25	1.26	0.01	0.00	0.05	99.21	7.82	0.03	0.27	0.02	1.23	0.03	6.41	0.19	0.00	0.00	0.00	16.01	83.
345-65	Opx-ol gabbro	1415P	13.00	55.19	0.39	1.66	0.15	9.53	0.23	28.38	4.22	0.04	0.00	0.04	99.82	7.83	0.04	0.28	0.02	1.13	0.03	6.01	0.64	0.01	0.00	0.00	15.98	84.
345-65	Opx-ol gabbro	1415P	13.00	55.02	0.45	1.37	0.05	10.24	0.01	30.63	1.44	0.00	0.00	0.05	99.27	7.81	0.05	0.23	0.01	1.22	0.00	6.49	0.22	0.00	0.00	0.00	16.02	84.
345-65	Opx-ol gabbro	1415P	13.00	54.79	0.51	1.34	0.19	9.98	0.26	30.06	1.85	0.02	0.00	0.03	99.04	7.81	0.05	0.23	0.02	1.19	0.03	6.39	0.28	0.01	0.00	0.00	16.01	84.
345-65	Opx-ol gabbro	1415P	13.00	54.82	0.45	1.41	0.21	9.75	0.24	29.48	2.28	0.01	0.00	0.03	98.68	7.84	0.05	0.24	0.02	1.17	0.03	6.28	0.35	0.00	0.00	0.00	15.98	84.
345-65	Opx-ol gabbro	1415P	13.00	55.25	0.58	1.27	0.14	10.27	0.27	31.06	0.97	0.01	0.00	0.05	99.87	7.80	0.06	0.21	0.02	1.21	0.03	6.54	0.15	0.00	0.00	0.00	16.02	84.
345-65	Opx-ol gabbro	1415P	13.00	54.22	0.44	1.26	0.17	10.31	0.29	30.09	0.78	0.02	0.00	0.04	97.62	7.83	0.05	0.21	0.02	1.25	0.04	6.48	0.12	0.01	0.00	0.00	16.00	83.
345-65	Opx-ol gabbro	1415P	13.00	54.59	0.58	1.33	0.16	10.02	0.27	30.20	1.95	0.01	0.00	0.03	99.12	7.78	0.06	0.22	0.02	1.20	0.03	6.42	0.30	0.00	0.00	0.00	16.03	84.
345-75	Opx-ol gabbro	1415P	24.20	55.56	0.34	1.34	0.30	8.84	0.25	31.74	0.89	0.02	0.00	0.02	99.28	7.83	0.04	0.22	0.03	1.04	0.03	6.67	0.13	0.01	0.00	0.00	16.01	86.
345-75	Opx-ol gabbro	1415P	24.20	55.59	0.34	1.45	0.38	8.89	0.23	31.64	0.88	0.00	0.00	0.02	99.40	7.83	0.04	0.24	0.04	1.05	0.03	6.64	0.13	0.00	0.00	0.00	15.99	86.
345-75	Opx-ol gabbro	1415P	24.20	55.27	0.39	1.44	0.37	8.43	0.22	31.57	1.30	0.01	0.00	0.03	99.01	7.81	0.04	0.24	0.04	1.00	0.03	6.65	0.20	0.00	0.00	0.00	16.01	86.
345-75	Opx-ol gabbro	1415P	24.20	55.66	0.36	1.39	0.36	8.70	0.25	31.52	0.90	0.02	0.00	0.03	99.16	7.85	0.04	0.23	0.04	1.03	0.03	6.63	0.14	0.00	0.00	0.00	15.98	86.
345-75	Opx-ol gabbro	1415P	24.20	55.59	0.44	1.74	0.45	8.65	0.24	31.59	1.26	0.02	0.00	0.02	100.00	7.79	0.05	0.29	0.05	1.01	0.03	6.60	0.19	0.01	0.00	0.00	16.00	86.
345-75	Opx-ol gabbro	1415P	24.20	55.66	0.41	1.57	0.44	8.70	0.22	31.31	1.10	0.01	0.00	0.03	99.45	7.83	0.04	0.26	0.05	1.02	0.03	6.57	0.17	0.00	0.00	0.00	15.97	86.
345-75	Opx-ol gabbro	1415P	24.20	55.65	0.36	1.35	0.40	8.79	0.25	32.02	0.79	0.02	0.00	0.04	99.68	7.82	0.04	0.22	0.04	1.03	0.03	6.70	0.12	0.01	0.00	0.00	16.01	86.
345-81	Opx-ol gabbro	1415P	32.10	54.29	0.41	1.07	0.03	11.09	0.31	30.21	1.42	0.02	0.00	0.03	98.88	7.79	0.04	0.18	0.00	1.33	0.04	6.46	0.22	0.00	0.00	0.00	16.07	82.
345-81	Opx-ol gabbro	1415P	32.10	54.77	0.41	1.13	0.04	11.18	0.25	29.78	1.47	0.02	0.00	0.03	99.07	7.84	0.04	0.19	0.00	1.34	0.03	6.35	0.23	0.01	0.00	0.00	16.03	82.
345-81	Opx-ol gabbro	1415P	32.10	55.03	0.37	1.03	0.05	11.09	0.28	30.16	1.30	0.02	0.00	0.04	99.36	7.84	0.04	0.17	0.01	1.32	0.03	6.41	0.20	0.01	0.00	0.00	16.03	82.
345-81	Opx-ol gabbro	1415P	32.10	54.75	0.45	1.18	0.08	11.12	0.29	29.88	1.54	0.03	0.00	0.01	99.32	7.82	0.05	0.20	0.01	1.33	0.03	6.36	0.24	0.01	0.00	0.00	16.04	82.
345-81	Opx-ol gabbro	1415P	32.10	54.77	0.30	1.08	0.02	10.98	0.26	30.02	1.60	0.00	0.00	0.05	99.08	7.83	0.03	0.18	0.00	1.31	0.03	6.40	0.25	0.00	0.00	0.00	16.04	82.
345-81	Opx-ol gabbro	1415P	32.10	54.76	0.47	1.21	0.05	10.94	0.24	30.23	1.19	0.00	0.00	0.02	99.09	7.82	0.05	0.20	0.01	1.31	0.03	6.43	0.18	0.00	0.00	0.00	16.03	83.
345-81	Opx-ol gabbro	1415P	32.10	54.74	0.35	1.15	0.05	10.60	0.27	29.47	2.19	0.02	0.00	0.05	98.88	7.84	0.04	0.19	0.01	1.27	0.03	6.30	0.34	0.00	0.00	0.00	16.02	83.
345-81	Opx-ol gabbro	1415P	32.10	55.79	0.37	1.20	0.02	10.77	0.26	29.81	2.11	0.02	0.00	0.05	100.39	7.87	0.04	0.20	0.00	1.27	0.03	6.27	0.32	0.00	0.00	0.00	16.00	83.
345-81	Opx-ol gabbro	1415P	32.10	55.52	0.35	1.23	0.03	10.56	0.25	29.52	2.58	0.02	0.00	0.04	100.09	7.86	0.04	0.21	0.00	1.25	0.03	6.23	0.39	0.00	0.00	0.00	16.00	83.
345-81	Opx-ol gabbro	1415P	32.10	54.98	0.46	1.19	0.04	10.96	0.26	29.07	1.96	0.01	0.00	0.04	98.98	7.87	0.05	0.20	0.00	1.31	0.03	6.21	0.30	0.00	0.00	0.00	15.98	82.
345-81	Opx-ol gabbro	1415P	32.10	55.08	0.43	1.20	0.05	10.72	0.25	29.03	2.77	0.00	0.00	0.04	99.55	7.85	0.05	0.20	0.01	1.28	0.03	6.17	0.42	0.00	0.00	0.00	16.00	82.
345-81	Opx-ol gabbro	1415P	32.10	55.19	0.55	1.17	0.07	11.14	0.26	30.02	0.96	0.03	0.00	0.03	99.42	7.85	0.06	0.20	0.01	1.33	0.03	6.37	0.15	0.01	0.00	0.00	15.99	82.
345-81	Opx-ol gabbro	1415P	32.10	55.17	0.43	1.23	0.05	10.78	0.25	29.49	2.40	0.00	0.00	0.06	99.84	7.84	0.05	0.21	0.01	1.28	0.03	6.24	0.36	0.00	0.00	0.00	16.01	82.
345-81	Opx-ol gabbro	1415P	32.10	54.35	0.46	1.15	0.03	10.76	0.28	29.15	2.19	0.05	0.00	0.03	98.44	7.83	0.05	0.19	0.00	1.30	0.03	6.26	0.34	0.01	0.00	0.00	16.03	82.
345-81	Opx-ol gabbro	1415P	32.10	54.61	0.45	1.47	0.03	9.96	0.22	27.49	4.91	0.06	0.00	0.01	99.22	7.83	0.05	0.25	0.00	1.19	0.03	5.88	0.75	0.02	0.00	0.00	16.00	83.
345-81	Opx-ol gabbro	1415P	32.10	55.27	0.56	1.12	0.06	10.94	0.27	29.51	1.71	0.04	0.00	0.03	99.50	7.86	0.06	0.19	0.01	1.30	0.03	6.26	0.26	0.01	0.00	0.00	15.98	82.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-81	Opx-ol gabbro	1415P	32.10	54.92	0.50	1.10	0.03	11.14	0.27	29.99	1.51	0.01	0.00	0.04	99.52	7.82	0.05	0.18	0.00	1.33	0.03	6.37	0.23	0.00	0.00	0.00	16.03	82.
345-81	Opx-ol gabbro	1415P	32.10	55.03	0.47	1.27	0.06	10.93	0.26	29.45	2.36	0.05	0.00	0.02	99.89	7.82	0.05	0.21	0.01	1.30	0.03	6.24	0.36	0.01	0.00	0.00	16.03	82.
345-81	Opx-ol gabbro	1415P	32.10	55.78	0.37	1.16	0.06	11.23	0.28	30.65	1.36	0.00	0.00	0.05	100.93	7.83	0.04	0.19	0.01	1.32	0.03	6.41	0.20	0.00	0.00	0.01	16.04	82.
345-81	Opx-ol gabbro	1415P	32.10	55.45	0.32	1.32	0.03	10.86	0.29	30.36	1.66	0.01	0.01	0.02	100.33	7.82	0.03	0.22	0.00	1.28	0.03	6.38	0.25	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.84	0.43	1.39	0.04	10.48	0.28	29.82	3.10	0.05	0.00	0.02	101.44	7.81	0.05	0.23	0.00	1.23	0.03	6.22	0.46	0.01	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.25	0.44	1.34	0.07	11.11	0.27	30.61	1.48	0.00	0.01	0.04	100.59	7.78	0.05	0.22	0.01	1.31	0.03	6.43	0.22	0.00	0.00	0.00	16.06	83.
345-81	Opx-ol gabbro	1415P	32.10	55.72	0.47	1.35	0.08	10.53	0.25	29.59	2.51	0.01	0.00	0.04	100.55	7.84	0.05	0.22	0.01	1.24	0.03	6.21	0.38	0.00	0.00	0.00	15.99	83.
345-81	Opx-ol gabbro	1415P	32.10	55.36	0.53	1.26	0.04	10.92	0.27	29.81	1.77	0.02	0.00	0.02	99.99	7.84	0.06	0.21	0.00	1.29	0.03	6.29	0.27	0.01	0.00	0.00	16.00	82.
345-81	Opx-ol gabbro	1415P	32.10	55.39	0.58	1.18	0.05	10.93	0.30	30.58	1.50	0.01	0.00	0.02	100.53	7.80	0.06	0.20	0.01	1.29	0.04	6.42	0.23	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.94	0.53	1.15	0.06	11.05	0.26	31.33	0.97	0.00	0.01	0.04	101.32	7.80	0.06	0.19	0.01	1.29	0.03	6.52	0.14	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	56.16	0.43	1.11	0.05	11.07	0.26	30.78	1.51	0.04	0.00	0.05	101.46	7.83	0.05	0.18	0.01	1.29	0.03	6.40	0.23	0.01	0.00	0.01	16.03	83.
345-81	Opx-ol gabbro	1415P	32.10	55.82	0.36	1.16	0.04	10.68	0.24	30.04	2.15	0.05	0.00	0.04	100.58	7.85	0.04	0.19	0.00	1.26	0.03	6.30	0.32	0.01	0.00	0.00	16.02	83.
345-81	Opx-ol gabbro	1415P	32.10	55.81	0.47	1.15	0.06	11.14	0.27	30.96	1.10	0.00	0.01	0.03	101.00	7.82	0.05	0.19	0.01	1.31	0.03	6.46	0.16	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.67	0.44	1.18	0.03	10.64	0.30	30.07	2.11	0.00	0.00	0.03	100.47	7.84	0.05	0.20	0.00	1.25	0.04	6.31	0.32	0.00	0.00	0.00	16.01	83.
345-81	Opx-ol gabbro	1415P	32.10	55.41	0.58	1.30	0.02	10.97	0.28	30.93	1.08	0.01	0.02	0.03	100.63	7.79	0.06	0.22	0.00	1.29	0.03	6.48	0.16	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.43	0.67	1.20	0.04	11.05	0.32	30.48	1.65	0.03	0.00	0.04	100.90	7.79	0.07	0.20	0.00	1.30	0.04	6.38	0.25	0.01	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.00	1.56	1.08	0.05	11.71	0.25	30.46	1.50	0.00	0.00	0.03	101.64	7.70	0.16	0.18	0.01	1.37	0.03	6.36	0.23	0.00	0.00	0.00	16.04	82.
345-81	Opx-ol gabbro	1415P	32.10	55.24	1.08	1.15	0.01	11.21	0.30	29.68	1.98	0.04	0.01	0.03	100.73	7.79	0.11	0.19	0.00	1.32	0.04	6.24	0.30	0.01	0.00	0.00	16.01	82.
345-81	Opx-ol gabbro	1415P	32.10	54.00	0.64	1.36	0.06	10.60	0.25	28.92	2.70	0.04	0.00	0.05	98.62	7.78	0.07	0.23	0.01	1.28	0.03	6.21	0.42	0.01	0.00	0.01	16.04	82.
345-81	Opx-ol gabbro	1415P	32.10	55.65	0.52	1.34	0.03	10.52	0.30	30.11	1.99	0.04	0.00	0.03	100.51	7.83	0.05	0.22	0.00	1.24	0.04	6.31	0.30	0.01	0.00	0.00	16.01	83.
345-81	Opx-ol gabbro	1415P	32.10	55.67	0.58	1.22	0.05	11.02	0.27	29.89	1.59	0.04	0.00	0.01	100.34	7.85	0.06	0.20	0.01	1.30	0.03	6.28	0.24	0.01	0.00	0.00	15.99	82.
345-81	Opx-ol gabbro	1415P	32.10	55.75	0.46	1.24	0.05	10.85	0.25	30.03	1.72	0.00	0.00	0.04	100.38	7.85	0.05	0.21	0.01	1.28	0.03	6.31	0.26	0.00	0.00	0.00	15.99	83.
345-81	Opx-ol gabbro	1415P	32.10	55.69	0.49	1.36	0.05	10.94	0.23	30.62	1.41	0.04	0.00	0.05	100.88	7.81	0.05	0.22	0.01	1.28	0.03	6.40	0.21	0.01	0.00	0.01	16.03	83.
345-81	Opx-ol gabbro	1415P	32.10	55.60	0.45	1.37	0.02	10.91	0.26	30.83	1.47	0.01	0.01	0.03	100.94	7.79	0.05	0.23	0.00	1.28	0.03	6.44	0.22	0.00	0.00	0.00	16.05	83.
345-81	Opx-ol gabbro	1415P	32.10	55.37	0.70	1.40	0.02	10.68	0.22	29.70	2.54	0.07	0.00	0.04	100.73	7.79	0.07	0.23	0.00	1.26	0.03	6.23	0.38	0.02	0.00	0.00	16.02	83.
345-81	Opx-ol gabbro	1415P	32.10	55.36	0.53	1.46	0.06	10.75	0.26	30.13	2.20	0.02	0.01	0.02	100.80	7.78	0.06	0.24	0.01	1.26	0.03	6.31	0.33	0.01	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.56	0.51	1.29	0.07	10.81	0.25	30.29	1.59	0.02	0.00	0.02	100.41	7.83	0.05	0.21	0.01	1.27	0.03	6.36	0.24	0.01	0.00	0.00	16.01	83.
345-81	Opx-ol gabbro	1415P	32.10	55.44	0.47	1.42	0.05	10.71	0.24	29.72	2.30	0.06	0.00	0.03	100.45	7.82	0.05	0.24	0.01	1.26	0.03	6.25	0.35	0.02	0.00	0.00	16.02	83.
345-81	Opx-ol gabbro	1415P	32.10	55.24	0.60	1.45	0.04	10.31	0.25	29.72	2.83	0.09	0.01	0.05	100.59	7.79	0.06	0.24	0.00	1.21	0.03	6.24	0.43	0.02	0.00	0.01	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.76	0.56	1.25	0.08	10.71	0.24	30.40	1.96	0.00	0.00	0.03	100.99	7.81	0.06	0.21	0.01	1.26	0.03	6.35	0.29	0.00	0.00	0.00	16.02	83.
345-81	Opx-ol gabbro	1415P	32.10	54.53	1.40	1.17	0.03	11.36	0.24	29.89	1.65	0.00	0.01	0.02	100.30	7.73	0.15	0.20	0.00	1.35	0.03	6.32	0.25	0.00	0.00	0.00	16.02	82.
345-81	Opx-ol gabbro	1415P	32.10	54.91	0.43	1.35	0.04	10.77	0.24	30.48	1.41	0.01	0.01	0.04	99.70	7.79	0.05	0.23	0.00	1.28	0.03	6.45	0.21	0.00	0.00	0.00	16.05	83.
345-81	Opx-ol gabbro	1415P	32.10	55.77	0.57	1.26	0.07	11.06	0.27	30.90	1.37	0.00	0.03	0.04	101.33	7.79	0.06	0.21	0.01	1.29	0.03	6.44	0.20	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.30	0.44	1.15	0.07	10.60	0.26	30.21	2.15	0.00	0.00	0.02	100.20	7.81	0.05	0.19	0.01	1.25	0.03	6.36	0.33	0.00	0.00	0.00	16.04	83.
345-81	Opx-ol gabbro	1415P	32.10	55.61	0.43	1.14	0.08	10.82	0.25	30.36	1.79	0.05	0.00	0.03	100.56	7.83	0.05	0.19	0.01	1.27	0.03	6.37	0.27	0.01	0.00	0.00	16.03	83.
345-81	Opx-ol gabbro	1415P	32.10	55.65	0.49	1.33	0.02	10.99	0.28	30.06	1.82	0.04	0.01	0.04	100.73	7.82	0.05	0.22	0.00	1.29	0.03	6.30	0.27	0.01	0.00	0.00	16.02	82.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-81	Opx-ol gabbro	1415P	32.10	55.41	0.55	1.32	0.02	10.99	0.28	30.53	1.34	0.00	0.01	0.06	100.52	7.80	0.06	0.22	0.00	1.29	0.03	6.41	0.20	0.00	0.00	0.01	16.03	83.
345-81	Opx-ol gabbro	1415P	32.10	55.51	0.54	1.29	0.04	11.20	0.29	30.68	1.28	0.06	0.00	0.05	100.93	7.79	0.06	0.21	0.00	1.31	0.04	6.42	0.19	0.02	0.00	0.01	16.05	83.
345-64	Opx-ol gabbro	1415P	12.88	55.15	0.57	1.33	0.10	10.11	0.27	31.61	1.01	0.05	0.00	0.04	100.24	7.76	0.06	0.22	0.01	1.19	0.03	6.63	0.15	0.01	0.00	0.00	16.07	84.
345-64	Opx-ol gabbro	1415P	12.88	55.68	0.54	1.12	0.10	10.32	0.24	31.41	1.26	0.02	0.00	0.02	100.70	7.80	0.06	0.18	0.01	1.21	0.03	6.56	0.19	0.01	0.00	0.00	16.05	84.
345-64	Opx-ol gabbro	1415P	12.88	55.74	0.60	0.96	0.10	10.01	0.29	31.30	1.48	0.04	0.00	0.03	100.54	7.82	0.06	0.16	0.01	1.17	0.03	6.54	0.22	0.01	0.00	0.00	16.04	84.
345-64	Opx-ol gabbro	1415P	12.88	55.99	0.63	1.16	0.09	9.93	0.28	31.43	1.56	0.00	0.02	0.03	101.12	7.80	0.07	0.19	0.01	1.16	0.03	6.53	0.23	0.00	0.00	0.00	16.03	84.
345-64	Opx-ol gabbro	1415P	12.88	55.94	0.51	1.15	0.12	9.79	0.26	30.74	2.01	0.01	0.00	0.01	100.53	7.84	0.05	0.19	0.01	1.15	0.03	6.42	0.30	0.00	0.00	0.00	16.01	84.
345-64	Opx-ol gabbro	1415P	12.88	55.85	0.56	1.19	0.14	10.09	0.24	31.43	1.29	0.01	0.01	0.02	100.83	7.81	0.06	0.20	0.02	1.18	0.03	6.55	0.19	0.00	0.00	0.00	16.03	84.
345-64	Opx-ol gabbro	1415P	12.88	56.21	0.47	1.12	0.11	10.07	0.25	31.28	1.49	0.00	0.01	0.02	101.04	7.84	0.05	0.18	0.01	1.17	0.03	6.50	0.22	0.00	0.00	0.00	16.02	84.
345-64	Opx-ol gabbro	1415P	12.88	56.03	0.66	1.59	0.11	10.10	0.25	31.90	1.50	0.02	0.02	0.04	102.24	7.73	0.07	0.26	0.01	1.17	0.03	6.56	0.22	0.01	0.00	0.00	16.07	84.
345-64	Opx-ol gabbro	1415P	12.88	55.49	0.80	1.32	0.10	9.85	0.22	30.25	2.71	0.00	0.00	0.03	100.77	7.78	0.08	0.22	0.01	1.16	0.03	6.33	0.41	0.00	0.00	0.00	16.02	84.
345-64	Opx-ol gabbro	1415P	12.88	55.93	0.52	1.35	0.10	10.32	0.24	31.44	1.00	0.02	0.00	0.03	100.95	7.81	0.05	0.22	0.01	1.20	0.03	6.54	0.15	0.01	0.00	0.00	16.03	84.
345-64	Opx-ol gabbro	1415P	12.88	55.32	0.66	1.45	0.12	9.93	0.25	31.00	1.21	0.05	0.00	0.02	100.01	7.79	0.07	0.24	0.01	1.17	0.03	6.51	0.18	0.01	0.00	0.00	16.02	84.
345-64	Opx-ol gabbro	1415P	12.88	55.10	0.64	1.41	0.09	10.27	0.25	30.37	2.12	0.04	0.00	0.03	100.31	7.77	0.07	0.23	0.01	1.21	0.03	6.39	0.32	0.01	0.00	0.00	16.04	84.
345-64	Opx-ol gabbro	1415P	12.88	55.65	0.45	1.28	0.08	9.80	0.26	30.75	2.16	0.00	0.00	0.02	100.45	7.81	0.05	0.21	0.01	1.15	0.03	6.44	0.32	0.00	0.00	0.00	16.03	84.
345-64	Opx-ol gabbro	1415P	12.88	56.03	0.52	1.31	0.17	10.26	0.24	31.94	1.02	0.03	0.00	0.04	101.54	7.78	0.05	0.21	0.02	1.19	0.03	6.61	0.15	0.01	0.00	0.00	16.06	84.
345-64	Opx-ol gabbro	1415P	12.88	55.65	0.54	1.28	0.17	10.16	0.28	31.40	1.06	0.05	0.00	0.03	100.62	7.80	0.06	0.21	0.02	1.19	0.03	6.56	0.16	0.01	0.00	0.00	16.04	84.
345-64	Opx-ol gabbro	1415P	12.88	55.53	0.44	1.50	0.11	9.52	0.27	29.94	2.90	0.02	0.00	0.03	100.25	7.82	0.05	0.25	0.01	1.12	0.03	6.28	0.44	0.00	0.00	0.00	16.01	84.
345-64	Opx-ol gabbro	1415P	12.88	55.88	0.43	1.39	0.13	9.96	0.24	30.49	1.83	0.00	0.00	0.03	100.36	7.84	0.05	0.23	0.01	1.17	0.03	6.38	0.28	0.00	0.00	0.00	15.99	84.
345-64	Opx-ol gabbro	1415P	12.88	55.80	0.58	1.23	0.16	9.92	0.26	31.11	1.30	0.03	0.00	0.02	100.40	7.82	0.06	0.20	0.02	1.16	0.03	6.50	0.19	0.01	0.00	0.00	16.01	84.
345-64	Opx-ol gabbro	1415P	12.88	55.64	0.49	1.27	0.16	9.93	0.25	31.59	1.29	0.02	0.00	0.05	100.66	7.79	0.05	0.21	0.02	1.16	0.03	6.59	0.19	0.00	0.00	0.01	16.05	85.
345-64	Opx-ol gabbro	1415P	12.88	55.14	0.71	1.39	0.11	10.34	0.27	30.52	1.31	0.00	0.00	0.05	99.83	7.80	0.08	0.23	0.01	1.22	0.03	6.43	0.20	0.00	0.00	0.01	16.01	84.
345-64	Opx-ol gabbro	1415P	12.88	55.67	0.01	0.00	0.02	10.94	0.06	31.60	0.11	0.04	0.08	0.04	98.56	7.92	0.00	0.00	0.00	1.43	0.01	6.67	0.02	0.01	0.02	0.01	16.09	82.
345-87	Opx-ol gabbro	1415P	42.10	55.96	0.46	1.25	0.08	10.07	0.26	30.49	2.19	0.02	0.00	0.03	100.80	7.84	0.05	0.21	0.01	1.18	0.03	6.37	0.33	0.01	0.00	0.00	16.01	84.
345-87	Opx-ol gabbro	1415P	42.10	56.10	0.43	1.23	0.08	10.21	0.24	30.58	2.19	0.02	0.01	0.04	101.13	7.83	0.05	0.20	0.01	1.19	0.03	6.37	0.33	0.01	0.00	0.00	16.02	84.
345-87	Opx-ol gabbro	1415P	42.10	55.82	0.42	1.15	0.03	10.40	0.27	31.03	1.39	0.02	0.00	0.03	100.57	7.83	0.04	0.19	0.00	1.22	0.03	6.49	0.21	0.01	0.00	0.00	16.03	84.
345-87	Opx-ol gabbro	1415P	42.10	54.72	0.38	1.94	0.02	10.54	0.25	30.74	1.31	0.00	0.00	0.05	99.94	7.74	0.04	0.32	0.00	1.25	0.03	6.48	0.20	0.00	0.00	0.01	16.06	83.
345-87	Opx-ol gabbro	1415P	42.10	56.19	0.44	1.22	0.02	10.14	0.21	30.97	1.94	0.01	0.00	0.01	101.13	7.84	0.05	0.20	0.00	1.18	0.02	6.44	0.29	0.00	0.00	0.00	16.02	84.
345-87	Opx-ol gabbro	1415P	42.10	55.62	0.41	1.09	0.05	10.32	0.27	31.22	1.25	0.03	0.00	0.02	100.26	7.82	0.04	0.18	0.01	1.21	0.03	6.55	0.19	0.01	0.00	0.00	16.04	84.
345-87	Opx-ol gabbro	1415P	42.10	56.47	0.44	1.14	0.07	10.29	0.23	30.94	1.68	0.00	0.00	0.04	101.30	7.86	0.05	0.19	0.01	1.20	0.03	6.42	0.25	0.00	0.00	0.00	16.00	84.
345-87	Opx-ol gabbro	1415P	42.10	55.43	0.43	1.31	0.07	9.63	0.24	30.09	2.79	0.04	0.00	0.03	100.06	7.82	0.05	0.22	0.01	1.14	0.03	6.33	0.42	0.01	0.00	0.00	16.03	84.
345-87	Opx-ol gabbro	1415P	42.10	56.15	0.39	1.05	0.04	10.32	0.26	31.26	1.11	0.03	0.00	0.03	100.62	7.86	0.04	0.17	0.00	1.21	0.03	6.52	0.17	0.01	0.00	0.00	16.01	84.
345-87	Opx-ol gabbro	1415P	42.10	55.93	0.42	1.08	0.07	10.49	0.26	31.25	1.00	0.00	0.00	0.06	100.54	7.84	0.04	0.18	0.01	1.23	0.03	6.53	0.15	0.00	0.00	0.01	16.02	84.
345-87	Opx-ol gabbro	1415P	42.10	56.44	0.44	1.04	0.06	10.48	0.28	31.05	1.35	0.00	0.01	0.03	101.17	7.87	0.05	0.17	0.01	1.22	0.03	6.45	0.20	0.00	0.00	0.00	16.00	84.
345-87	Opx-ol gabbro	1415P	42.10	56.03	0.41	1.03	0.03	10.45	0.28	31.62	0.80	0.00	0.01	0.04	100.70	7.84	0.04	0.17	0.00	1.22	0.03	6.60	0.12	0.00	0.00	0.00	16.03	84.
345-87	Opx-ol gabbro	1415P	42.10	55.74	0.50	1.33	0.04	10.05	0.27	30.83	1.19	0.01	0.00	0.04	100.02	7.84	0.05	0.22	0.00	1.18	0.03	6.47	0.18	0.00	0.00	0.00	15.99	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-87	Opx-ol gabbro	1415P	42.10	56.24	0.47	1.17	0.05	9.98	0.25	30.71	1.85	0.02	0.00	0.05	100.78	7.86	0.05	0.19	0.01	1.17	0.03	6.40	0.28	0.01	0.00	0.01	15.99	84.
345-87	Opx-ol gabbro	1415P	42.10	55.07	0.38	1.00	0.08	10.34	0.26	31.76	1.21	0.01	0.00	0.02	100.13	7.77	0.04	0.17	0.01	1.22	0.03	6.68	0.18	0.00	0.00	0.00	16.10	84.
345-87	Opx-ol gabbro	1415P	42.10	55.64	0.41	1.01	0.04	10.47	0.31	31.46	1.26	0.00	0.00	0.04	100.65	7.81	0.04	0.17	0.00	1.23	0.04	6.58	0.19	0.00	0.00	0.00	16.06	84.
345-87	Opx-ol gabbro	1415P	42.10	56.08	0.36	1.20	0.04	10.35	0.24	30.79	1.94	0.00	0.00	0.04	101.04	7.84	0.04	0.20	0.00	1.21	0.03	6.41	0.29	0.00	0.00	0.00	16.02	84.
345-87	Opx-ol gabbro	1415P	42.10	56.13	0.52	1.18	0.03	10.42	0.30	31.35	1.20	0.00	0.01	0.01	101.14	7.83	0.05	0.19	0.00	1.21	0.04	6.52	0.18	0.00	0.00	0.00	16.02	84.
345-87	Opx-ol gabbro	1415P	42.10	56.15	0.45	1.25	0.07	10.39	0.27	30.90	1.66	0.03	0.00	0.02	101.18	7.83	0.05	0.21	0.01	1.21	0.03	6.42	0.25	0.01	0.00	0.00	16.02	84.
345-87	Opx-ol gabbro	1415P	42.10	55.64	0.44	1.17	0.03	10.52	0.29	31.23	1.39	0.00	0.01	0.04	100.76	7.80	0.05	0.19	0.00	1.23	0.03	6.53	0.21	0.00	0.00	0.00	16.05	84.
345-87	Opx-ol gabbro	1415P	42.10	55.86	0.43	1.17	0.07	10.13	0.26	30.73	1.68	0.04	0.00	0.04	100.40	7.85	0.05	0.19	0.01	1.19	0.03	6.43	0.25	0.01	0.00	0.00	16.01	84.
345-87	Opx-ol gabbro	1415P	42.10	56.01	0.48	1.18	0.06	10.58	0.26	30.92	1.48	0.00	0.01	0.04	101.01	7.83	0.05	0.20	0.01	1.24	0.03	6.44	0.22	0.00	0.00	0.00	16.02	83.
345-87	Opx-ol gabbro	1415P	42.10	56.13	0.44	1.17	0.05	10.53	0.27	31.10	1.38	0.03	0.01	0.04	101.14	7.83	0.05	0.19	0.01	1.23	0.03	6.47	0.21	0.01	0.00	0.00	16.03	84.
345-87	Opx-ol gabbro	1415P	42.10	55.70	0.49	1.27	0.05	10.32	0.27	30.55	1.74	0.00	0.01	0.01	100.43	7.83	0.05	0.21	0.01	1.21	0.03	6.40	0.26	0.00	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.10	0.48	1.11	0.03	10.33	0.27	31.27	1.22	0.03	0.00	0.04	100.89	7.84	0.05	0.18	0.00	1.21	0.03	6.51	0.18	0.01	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.76	0.45	1.24	0.06	9.79	0.26	31.02	2.33	0.01	0.00	0.02	101.93	7.85	0.05	0.20	0.01	1.13	0.03	6.39	0.34	0.00	0.00	0.00	16.00	84.
345-89	Opx-ol gabbro	1415P	46.15	56.20	0.45	1.12	0.05	9.77	0.28	30.68	2.13	0.03	0.00	0.04	100.75	7.86	0.05	0.19	0.01	1.14	0.03	6.40	0.32	0.01	0.00	0.00	16.00	84.
345-89	Opx-ol gabbro	1415P	46.15	56.61	0.40	1.12	0.06	10.41	0.27	31.71	0.76	0.02	0.00	0.04	101.39	7.86	0.04	0.18	0.01	1.21	0.03	6.56	0.11	0.01	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.12	0.43	1.20	0.08	10.47	0.25	31.68	0.99	0.03	0.00	0.04	101.27	7.81	0.04	0.20	0.01	1.22	0.03	6.57	0.15	0.01	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.15	0.46	1.23	0.04	9.86	0.25	31.18	2.08	0.08	0.01	0.03	101.36	7.81	0.05	0.20	0.00	1.15	0.03	6.47	0.31	0.02	0.00	0.00	16.05	84.
345-89	Opx-ol gabbro	1415P	46.15	55.69	0.48	1.18	0.10	9.94	0.22	31.07	1.44	0.03	0.00	0.03	100.18	7.83	0.05	0.20	0.01	1.17	0.03	6.51	0.22	0.01	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.89	0.50	1.17	0.06	10.25	0.27	31.70	1.20	0.05	0.03	0.01	101.12	7.80	0.05	0.19	0.01	1.20	0.03	6.59	0.18	0.01	0.00	0.00	16.06	84.
345-89	Opx-ol gabbro	1415P	46.15	55.79	0.49	1.15	0.07	10.07	0.27	31.31	1.19	0.00	0.02	0.04	100.40	7.83	0.05	0.19	0.01	1.18	0.03	6.55	0.18	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.87	0.52	1.42	0.03	10.08	0.26	30.63	2.39	0.04	0.02	0.01	101.25	7.80	0.05	0.23	0.00	1.18	0.03	6.37	0.36	0.01	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	55.62	0.47	1.13	0.06	10.09	0.23	31.06	1.36	0.00	0.00	0.03	100.05	7.83	0.05	0.19	0.01	1.19	0.03	6.52	0.21	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.31	0.46	1.12	0.06	9.99	0.26	30.97	1.57	0.02	0.01	0.01	100.76	7.87	0.05	0.18	0.01	1.17	0.03	6.45	0.24	0.00	0.00	0.00	15.99	84.
345-89	Opx-ol gabbro	1415P	46.15	54.01	0.40	1.72	0.07	10.39	0.25	30.62	1.48	0.00	0.00	0.02	98.96	7.72	0.04	0.29	0.01	1.24	0.03	6.52	0.23	0.00	0.00	0.00	16.09	84.
345-89	Opx-ol gabbro	1415P	46.15	55.63	0.49	1.21	0.07	10.12	0.25	31.15	1.50	0.00	0.00	0.02	100.43	7.81	0.05	0.20	0.01	1.19	0.03	6.52	0.23	0.00	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	55.86	0.45	1.11	0.04	10.04	0.23	31.12	1.49	0.04	0.00	0.02	100.39	7.84	0.05	0.18	0.00	1.18	0.03	6.51	0.22	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.39	0.45	1.16	0.06	10.20	0.25	31.18	1.30	0.04	0.00	0.04	101.08	7.86	0.05	0.19	0.01	1.19	0.03	6.47	0.19	0.01	0.00	0.00	16.00	84.
345-89	Opx-ol gabbro	1415P	46.15	55.82	0.43	1.16	0.07	10.21	0.26	31.34	1.31	0.00	0.01	0.04	100.65	7.82	0.05	0.19	0.01	1.20	0.03	6.54	0.20	0.00	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.18	0.46	1.13	0.08	9.85	0.28	30.86	2.16	0.00	0.00	0.03	101.02	7.84	0.05	0.19	0.01	1.15	0.03	6.42	0.32	0.00	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	55.81	0.40	1.13	0.07	10.15	0.21	31.73	0.72	0.00	0.00	0.03	100.25	7.83	0.04	0.19	0.01	1.19	0.03	6.64	0.11	0.00	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.37	0.46	1.24	0.06	10.24	0.26	31.77	0.89	0.01	0.00	0.01	101.32	7.83	0.05	0.20	0.01	1.19	0.03	6.58	0.13	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.90	0.47	1.20	0.06	9.66	0.26	30.81	1.57	0.04	0.00	0.03	99.99	7.86	0.05	0.20	0.01	1.14	0.03	6.46	0.24	0.01	0.00	0.00	15.99	85.
345-89	Opx-ol gabbro	1415P	46.15	55.46	0.32	1.21	0.06	9.48	0.24	30.18	2.97	0.02	0.00	0.02	99.97	7.83	0.03	0.20	0.01	1.12	0.03	6.35	0.45	0.01	0.00	0.00	16.03	85.
345-89	Opx-ol gabbro	1415P	46.15	55.79	0.43	1.12	0.07	10.13	0.27	31.37	1.37	0.00	0.00	0.04	100.60	7.82	0.05	0.19	0.01	1.19	0.03	6.55	0.21	0.00	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.11	0.40	1.18	0.04	9.79	0.24	30.83	2.06	0.02	0.00	0.06	100.72	7.85	0.04	0.19	0.00	1.15	0.03	6.43	0.31	0.01	0.00	0.01	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.35	0.41	0.95	0.05	10.10	0.29	31.91	0.74	0.00	0.00	0.02	100.80	7.86	0.04	0.16	0.00	1.18	0.03	6.63	0.11	0.00	0.00	0.00	16.02	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-89	Opx-ol gabbro	1415P	46.15	56.13	0.52	1.13	0.08	10.16	0.27	31.23	1.18	0.01	0.00	0.06	100.76	7.84	0.05	0.19	0.01	1.19	0.03	6.51	0.18	0.00	0.00	0.01	16.00	84.
345-89	Opx-ol gabbro	1415P	46.15	56.04	0.46	1.14	0.08	10.17	0.24	31.27	1.15	0.00	0.00	0.02	100.55	7.84	0.05	0.19	0.01	1.19	0.03	6.53	0.17	0.00	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	55.97	0.44	1.09	0.04	10.20	0.26	31.34	1.26	0.00	0.01	0.03	100.65	7.84	0.05	0.18	0.00	1.19	0.03	6.54	0.19	0.00	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.48	0.48	1.26	0.07	9.61	0.25	31.20	1.62	0.00	0.01	0.06	101.04	7.86	0.05	0.21	0.01	1.12	0.03	6.47	0.24	0.00	0.00	0.01	15.99	85.
345-89	Opx-ol gabbro	1415P	46.15	56.46	0.49	1.14	0.04	10.34	0.25	31.65	1.14	0.00	0.00	0.02	101.53	7.83	0.05	0.19	0.00	1.20	0.03	6.55	0.17	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.93	0.43	1.30	0.04	10.21	0.30	31.12	1.34	0.00	0.00	0.03	100.69	7.83	0.04	0.21	0.00	1.20	0.04	6.49	0.20	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	52.13	0.40	2.66	0.08	10.65	0.28	29.63	1.25	0.01	0.03	0.02	97.13	7.61	0.04	0.46	0.01	1.30	0.03	6.45	0.20	0.00	0.01	0.00	16.12	83.
345-89	Opx-ol gabbro	1415P	46.15	55.91	0.40	1.10	0.07	10.30	0.27	31.03	1.48	0.00	0.00	0.02	100.57	7.84	0.04	0.18	0.01	1.21	0.03	6.49	0.22	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.26	0.37	1.13	0.07	10.34	0.26	30.59	1.29	0.00	0.02	0.03	99.36	7.85	0.04	0.19	0.01	1.23	0.03	6.47	0.20	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.00	0.45	1.15	0.06	10.35	0.25	31.38	1.19	0.00	0.00	0.02	100.85	7.83	0.05	0.19	0.01	1.21	0.03	6.54	0.18	0.00	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.76	0.43	1.31	0.08	10.32	0.23	31.51	0.99	0.00	0.02	0.03	100.67	7.80	0.05	0.22	0.01	1.21	0.03	6.57	0.15	0.00	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.09	0.42	1.07	0.07	10.28	0.24	31.81	1.29	0.03	0.00	0.03	101.32	7.81	0.04	0.18	0.01	1.20	0.03	6.60	0.19	0.01	0.00	0.00	16.06	84.
345-89	Opx-ol gabbro	1415P	46.15	53.36	0.43	1.10	0.07	15.85	0.23	30.46	1.96	0.03	0.01	0.02	103.50	7.52	0.05	0.18	0.01	1.87	0.03	6.39	0.30	0.01	0.00	0.00	16.35	77.
345-89	Opx-ol gabbro	1415P	46.15	55.51	0.46	1.13	0.06	10.25	0.23	31.10	1.61	0.01	0.00	0.02	100.37	7.81	0.05	0.19	0.01	1.21	0.03	6.52	0.24	0.00	0.00	0.00	16.05	84.
345-89	Opx-ol gabbro	1415P	46.15	53.67	0.36	0.98	0.05	7.89	0.32	24.20	9.74	0.21	0.00	0.02	97.43	7.89	0.04	0.17	0.01	0.97	0.04	5.30	1.53	0.06	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.06	0.37	0.98	0.02	10.02	0.25	31.20	1.78	0.01	0.00	0.06	100.73	7.85	0.04	0.16	0.00	1.17	0.03	6.51	0.27	0.00	0.00	0.01	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	55.92	0.41	1.21	0.04	10.20	0.27	31.35	1.00	0.01	0.01	0.03	100.44	7.84	0.04	0.20	0.00	1.20	0.03	6.55	0.15	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.04	0.40	1.06	0.03	10.29	0.26	31.73	0.95	0.00	0.00	0.02	100.77	7.83	0.04	0.17	0.00	1.20	0.03	6.61	0.14	0.00	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.27	0.42	1.01	0.06	9.96	0.25	31.31	1.96	0.03	0.00	0.03	101.28	7.83	0.04	0.17	0.01	1.16	0.03	6.50	0.29	0.01	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.00	0.38	1.07	0.05	10.23	0.26	31.16	1.51	0.03	0.00	0.03	100.72	7.84	0.04	0.18	0.01	1.20	0.03	6.50	0.23	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.23	0.47	1.23	0.07	9.92	0.30	31.13	1.36	0.04	0.00	0.03	100.78	7.85	0.05	0.20	0.01	1.16	0.03	6.48	0.20	0.01	0.00	0.00	16.00	84.
345-89	Opx-ol gabbro	1415P	46.15	55.43	0.40	1.09	0.04	10.19	0.26	30.29	0.87	0.04	0.00	0.02	98.63	7.90	0.04	0.18	0.00	1.22	0.03	6.44	0.13	0.01	0.00	0.00	15.96	84.
345-89	Opx-ol gabbro	1415P	46.15	56.00	0.44	1.20	0.08	10.08	0.27	31.22	1.12	0.03	0.00	0.05	100.50	7.84	0.05	0.20	0.01	1.18	0.03	6.52	0.17	0.01	0.00	0.01	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	55.95	0.44	1.07	0.04	10.33	0.26	31.57	0.77	0.02	0.00	0.01	100.47	7.84	0.05	0.18	0.00	1.21	0.03	6.59	0.12	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.73	0.43	1.21	0.05	9.99	0.25	31.15	1.29	0.00	0.00	0.06	100.14	7.83	0.04	0.20	0.01	1.17	0.03	6.53	0.19	0.00	0.00	0.01	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.86	0.44	1.44	0.05	10.29	0.28	31.03	1.26	0.00	0.00	0.04	100.70	7.82	0.05	0.24	0.01	1.20	0.03	6.47	0.19	0.00	0.00	0.01	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.22	0.45	1.21	0.08	10.34	0.25	31.45	1.27	0.00	0.00	0.03	101.28	7.82	0.05	0.20	0.01	1.20	0.03	6.52	0.19	0.00	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.90	0.42	1.22	0.08	10.32	0.28	31.76	0.87	0.01	0.00	0.04	100.90	7.81	0.04	0.20	0.01	1.21	0.03	6.61	0.13	0.00	0.00	0.00	16.05	84.
345-89	Opx-ol gabbro	1415P	46.15	56.09	0.42	1.15	0.08	10.30	0.23	31.42	1.22	0.03	0.00	0.03	100.97	7.83	0.04	0.19	0.01	1.20	0.03	6.54	0.18	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.78	0.40	1.11	0.08	10.04	0.28	31.30	1.06	0.00	0.01	0.03	100.09	7.84	0.04	0.18	0.01	1.18	0.03	6.56	0.16	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.01	0.44	1.29	0.05	10.15	0.27	31.16	1.89	0.04	0.02	0.03	101.35	7.80	0.05	0.21	0.01	1.18	0.03	6.47	0.28	0.01	0.00	0.00	16.05	84.
345-89	Opx-ol gabbro	1415P	46.15	56.14	0.43	1.19	0.05	10.37	0.21	31.29	1.33	0.05	0.00	0.04	101.10	7.83	0.05	0.19	0.01	1.21	0.03	6.50	0.20	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.96	0.45	1.18	0.11	9.92	0.26	31.11	1.28	0.02	0.00	0.04	100.32	7.85	0.05	0.19	0.01	1.16	0.03	6.50	0.19	0.01	0.00	0.00	16.00	84.
345-89	Opx-ol gabbro	1415P	46.15	56.11	0.45	1.20	0.10	10.33	0.23	31.59	1.16	0.03	0.00	0.02	101.21	7.81	0.05	0.20	0.01	1.20	0.03	6.56	0.17	0.01	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.17	0.48	1.24	0.09	10.47	0.26	30.96	1.38	0.03	0.00	0.03	101.10	7.84	0.05	0.20	0.01	1.22	0.03	6.44	0.21	0.01	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.06	0.38	1.17	0.06	10.32	0.24	31.64	0.93	0.01	0.00	0.04	100.83	7.83	0.04	0.19	0.01	1.21	0.03	6.59	0.14	0.00	0.00	0.00	16.03	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-89	Opx-ol gabbro	1415P	46.15	55.89	0.44	1.19	0.09	9.82	0.28	31.02	2.23	0.05	0.00	0.03	101.04	7.81	0.05	0.20	0.01	1.15	0.03	6.46	0.33	0.01	0.00	0.00	16.05	84.
345-89	Opx-ol gabbro	1415P	46.15	55.62	0.46	1.26	0.08	9.93	0.26	30.74	2.24	0.03	0.00	0.04	100.65	7.80	0.05	0.21	0.01	1.17	0.03	6.43	0.34	0.01	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	55.81	0.41	1.32	0.07	10.29	0.24	31.09	1.49	0.00	0.00	0.04	100.76	7.81	0.04	0.22	0.01	1.21	0.03	6.49	0.22	0.00	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.57	0.41	1.54	0.09	10.19	0.25	31.40	1.35	0.04	0.01	0.02	100.88	7.77	0.04	0.25	0.01	1.19	0.03	6.54	0.20	0.01	0.00	0.00	16.06	84.
345-89	Opx-ol gabbro	1415P	46.15	55.98	0.48	1.30	0.05	9.74	0.25	30.67	2.38	0.00	0.00	0.02	100.88	7.83	0.05	0.21	0.01	1.14	0.03	6.39	0.36	0.00	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.02	0.47	1.35	0.07	9.86	0.24	30.19	3.05	0.06	0.02	0.02	101.35	7.82	0.05	0.22	0.01	1.15	0.03	6.28	0.46	0.02	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.43	0.36	1.09	0.04	10.03	0.24	31.32	1.55	0.02	0.00	0.03	101.10	7.86	0.04	0.18	0.00	1.17	0.03	6.50	0.23	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.66	0.33	1.27	0.08	10.18	0.27	31.61	1.38	0.05	0.00	0.04	100.85	7.79	0.04	0.21	0.01	1.19	0.03	6.59	0.21	0.01	0.00	0.00	16.08	84.
345-89	Opx-ol gabbro	1415P	46.15	55.94	0.44	1.32	0.02	9.94	0.23	30.74	1.98	0.06	0.01	0.03	100.71	7.83	0.05	0.22	0.00	1.16	0.03	6.42	0.30	0.02	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.17	0.50	1.19	0.07	10.22	0.25	31.33	1.19	0.03	0.00	0.04	100.99	7.83	0.05	0.20	0.01	1.19	0.03	6.51	0.18	0.01	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	54.20	0.39	1.02	0.07	10.17	0.28	29.36	1.45	0.06	0.01	0.00	97.02	7.88	0.04	0.17	0.01	1.24	0.03	6.37	0.23	0.02	0.00	0.00	15.99	83.
345-89	Opx-ol gabbro	1415P	46.15	55.98	0.46	1.18	0.06	10.30	0.23	31.38	1.14	0.00	0.00	0.04	100.77	7.83	0.05	0.19	0.01	1.20	0.03	6.54	0.17	0.00	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.26	0.41	1.24	0.07	10.14	0.27	30.99	1.66	0.01	0.01	0.03	100.09	7.80	0.04	0.21	0.01	1.20	0.03	6.52	0.25	0.00	0.00	0.00	16.06	84.
345-89	Opx-ol gabbro	1415P	46.15	56.16	0.41	1.33	0.04	10.31	0.23	30.81	1.75	0.06	0.00	0.03	101.13	7.83	0.04	0.22	0.00	1.20	0.03	6.41	0.26	0.02	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.32	0.48	1.28	0.07	9.95	0.29	30.59	1.96	0.07	0.01	0.03	100.04	7.81	0.05	0.21	0.01	1.17	0.03	6.43	0.30	0.02	0.00	0.00	16.04	84.
345-89	Opx-ol gabbro	1415P	46.15	56.27	0.39	1.19	0.06	10.21	0.26	30.84	1.60	0.06	0.01	0.02	100.90	7.86	0.04	0.20	0.01	1.19	0.03	6.42	0.24	0.01	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	56.30	0.33	1.12	0.03	10.26	0.27	31.34	1.51	0.00	0.01	0.03	101.19	7.84	0.03	0.18	0.00	1.20	0.03	6.51	0.22	0.00	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.46	0.32	1.16	0.03	9.91	0.25	30.55	2.61	0.04	0.01	0.03	101.35	7.86	0.03	0.19	0.00	1.15	0.03	6.34	0.39	0.01	0.00	0.00	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	56.24	0.43	1.28	0.04	10.20	0.26	31.43	1.36	0.02	0.00	0.04	101.31	7.82	0.05	0.21	0.00	1.19	0.03	6.52	0.20	0.00	0.00	0.01	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	56.03	0.35	1.18	0.06	9.88	0.26	30.49	2.66	0.03	0.00	0.01	100.96	7.84	0.04	0.20	0.01	1.16	0.03	6.36	0.40	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	55.82	0.43	1.15	0.03	10.34	0.30	31.18	1.04	0.00	0.00	0.05	100.35	7.84	0.05	0.19	0.00	1.21	0.04	6.53	0.16	0.00	0.00	0.01	16.02	84.
345-89	Opx-ol gabbro	1415P	46.15	55.88	0.45	1.27	0.09	10.07	0.28	30.89	2.01	0.02	0.00	0.02	100.97	7.81	0.05	0.21	0.01	1.18	0.03	6.44	0.30	0.01	0.00	0.00	16.03	84.
345-89	Opx-ol gabbro	1415P	46.15	52.32	0.46	2.12	0.01	8.75	0.25	27.07	5.78	0.11	0.01	0.02	96.90	7.69	0.05	0.37	0.00	1.08	0.03	5.93	0.91	0.03	0.00	0.00	16.09	84.
345-89	Opx-ol gabbro	1415P	46.15	56.30	0.43	1.01	0.07	9.88	0.24	30.90	2.09	0.03	0.00	0.04	100.99	7.86	0.04	0.17	0.01	1.15	0.03	6.43	0.31	0.01	0.00	0.00	16.01	84.
345-89	Opx-ol gabbro	1415P	46.15	54.41	0.41	1.14	0.05	9.94	0.27	30.84	3.10	0.03	0.00	0.03	100.20	7.71	0.04	0.19	0.01	1.18	0.03	6.51	0.47	0.01	0.00	0.00	16.15	84.
345-99	Opx-ol gabbro	1415P	60.02	55.15	0.58	1.41	0.14	10.38	0.26	29.80	2.15	0.02	0.01	0.05	99.94	7.81	0.06	0.24	0.02	1.23	0.03	6.29	0.33	0.01	0.00	0.01	16.01	83.
345-99	Opx-ol gabbro	1415P	60.02	55.82	0.36	1.37	0.08	10.38	0.29	30.54	1.75	0.03	0.00	0.03	100.65	7.83	0.04	0.23	0.01	1.22	0.03	6.39	0.26	0.01	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	55.98	0.53	1.31	0.09	10.74	0.28	31.48	0.83	0.00	0.00	0.01	101.24	7.80	0.06	0.21	0.01	1.25	0.03	6.54	0.12	0.00	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.50	0.70	1.36	0.14	10.38	0.25	31.03	1.32	0.02	0.02	0.04	100.74	7.78	0.07	0.23	0.02	1.22	0.03	6.48	0.20	0.01	0.00	0.00	16.03	84.
345-99	Opx-ol gabbro	1415P	60.02	55.59	0.66	1.39	0.13	10.82	0.24	30.74	1.44	0.00	0.00	0.03	101.04	7.78	0.07	0.23	0.01	1.27	0.03	6.42	0.22	0.00	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	56.09	0.49	1.29	0.08	10.32	0.26	30.96	1.66	0.06	0.00	0.04	101.24	7.82	0.05	0.21	0.01	1.20	0.03	6.43	0.25	0.02	0.00	0.00	16.03	84.
345-99	Opx-ol gabbro	1415P	60.02	55.45	0.59	1.39	0.12	10.85	0.27	30.88	0.97	0.05	0.00	0.04	100.60	7.79	0.06	0.23	0.01	1.27	0.03	6.47	0.15	0.01	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.55	0.53	1.36	0.15	10.66	0.30	31.09	0.77	0.00	0.02	0.03	100.46	7.80	0.06	0.23	0.02	1.25	0.04	6.51	0.12	0.00	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	56.30	0.59	1.34	0.12	8.90	0.26	27.83	6.83	0.06	0.00	0.03	102.26	7.83	0.06	0.22	0.01	1.04	0.03	5.77	1.02	0.01	0.00	0.00	16.00	84.
345-99	Opx-ol gabbro	1415P	60.02	55.80	0.45	1.17	0.11	10.40	0.24	31.12	0.74	0.01	0.00	0.01	100.04	7.85	0.05	0.19	0.01	1.22	0.03	6.53	0.11	0.00	0.00	0.00	16.00	84.
345-99	Opx-ol gabbro	1415P	60.02	55.43	0.64	1.37	0.16	10.34	0.22	30.21	2.87	0.03	0.00	0.02	101.29	7.76	0.07	0.23	0.02	1.21	0.03	6.31	0.43	0.01	0.00	0.00	16.05	83.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-99	Opx-ol gabbro	1415P	60.02	54.41	0.51	1.45	0.11	10.48	0.23	30.12	1.45	0.04	0.01	0.02	98.83	7.78	0.06	0.24	0.01	1.25	0.03	6.42	0.22	0.01	0.00	0.00	16.04	83.
345-99	Opx-ol gabbro	1415P	60.02	55.80	0.44	1.05	0.12	10.74	0.26	31.44	0.64	0.01	0.00	0.04	100.54	7.83	0.05	0.17	0.01	1.26	0.03	6.58	0.10	0.00	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	56.22	0.49	1.35	0.17	10.50	0.27	30.97	1.71	0.01	0.02	0.03	101.74	7.81	0.05	0.22	0.02	1.22	0.03	6.41	0.25	0.00	0.00	0.00	16.02	84.
345-99	Opx-ol gabbro	1415P	60.02	56.05	0.52	1.31	0.15	10.55	0.24	31.02	1.59	0.01	0.00	0.03	101.46	7.80	0.05	0.21	0.02	1.23	0.03	6.44	0.24	0.00	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.74	0.61	1.31	0.15	10.38	0.26	30.88	1.31	0.05	0.00	0.03	100.70	7.81	0.06	0.22	0.02	1.22	0.03	6.45	0.20	0.01	0.00	0.00	16.02	84.
345-99	Opx-ol gabbro	1415P	60.02	55.29	0.92	1.34	0.14	10.94	0.24	30.54	1.78	0.02	0.02	0.05	101.29	7.74	0.10	0.22	0.02	1.28	0.03	6.38	0.27	0.01	0.00	0.01	16.05	83.
345-99	Opx-ol gabbro	1415P	60.02	55.79	0.56	1.27	0.12	10.89	0.29	31.19	0.90	0.04	0.01	0.05	101.09	7.80	0.06	0.21	0.01	1.27	0.03	6.50	0.13	0.01	0.00	0.01	16.04	83.
345-99	Opx-ol gabbro	1415P	60.02	56.04	0.44	1.12	0.14	10.86	0.26	31.18	1.02	0.03	0.02	0.03	101.13	7.83	0.05	0.18	0.02	1.27	0.03	6.49	0.15	0.01	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.88	0.58	1.41	0.12	10.90	0.28	30.96	1.17	0.00	0.00	0.04	101.33	7.79	0.06	0.23	0.01	1.27	0.03	6.44	0.17	0.00	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	55.76	0.63	1.43	0.10	10.84	0.28	30.96	1.09	0.00	0.02	0.01	101.13	7.79	0.07	0.24	0.01	1.27	0.03	6.45	0.16	0.00	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	55.54	0.68	1.35	0.10	10.50	0.27	30.61	1.43	0.04	0.01	0.02	100.54	7.80	0.07	0.22	0.01	1.23	0.03	6.41	0.22	0.01	0.00	0.00	16.01	83.
345-99	Opx-ol gabbro	1415P	60.02	55.53	0.59	1.42	0.14	10.59	0.27	31.00	1.16	0.03	0.01	0.02	100.74	7.78	0.06	0.23	0.02	1.24	0.03	6.48	0.17	0.01	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.09	0.54	1.37	0.13	10.15	0.26	30.16	1.89	0.02	0.00	0.03	99.65	7.81	0.06	0.23	0.02	1.20	0.03	6.37	0.29	0.00	0.00	0.00	16.01	84.
345-99	Opx-ol gabbro	1415P	60.02	55.60	0.51	1.41	0.16	10.71	0.29	31.26	1.06	0.03	0.00	0.02	101.03	7.78	0.05	0.23	0.02	1.25	0.03	6.52	0.16	0.01	0.00	0.00	16.05	83.
345-99	Opx-ol gabbro	1415P	60.02	53.74	0.42	1.41	0.13	10.09	0.27	29.86	1.97	0.06	0.02	0.04	98.01	7.76	0.05	0.24	0.02	1.22	0.03	6.43	0.31	0.02	0.00	0.00	16.07	84.
345-99	Opx-ol gabbro	1415P	60.02	55.02	0.61	1.36	0.19	10.58	0.30	30.56	1.18	0.02	0.01	0.04	99.86	7.79	0.06	0.23	0.02	1.25	0.04	6.45	0.18	0.01	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.38	0.46	1.30	0.12	10.39	0.25	30.63	1.21	0.01	0.00	0.04	99.79	7.83	0.05	0.22	0.01	1.23	0.03	6.45	0.18	0.00	0.00	0.01	16.01	84.
345-99	Opx-ol gabbro	1415P	60.02	55.70	0.55	1.30	0.13	10.50	0.26	30.89	1.26	0.00	0.01	0.04	100.64	7.81	0.06	0.21	0.01	1.23	0.03	6.46	0.19	0.00	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	54.79	0.53	1.53	0.24	9.66	0.23	29.14	2.58	0.07	0.00	0.04	98.81	7.83	0.06	0.26	0.03	1.15	0.03	6.21	0.40	0.02	0.00	0.00	15.98	84.
345-99	Opx-ol gabbro	1415P	60.02	55.37	0.41	1.12	0.17	10.01	0.25	30.25	1.98	0.05	0.01	0.04	99.67	7.84	0.04	0.19	0.02	1.19	0.03	6.39	0.30	0.01	0.00	0.00	16.02	84.
345-99	Opx-ol gabbro	1415P	60.02	55.93	0.49	1.33	0.08	10.62	0.28	31.26	1.00	0.01	0.00	0.04	101.05	7.81	0.05	0.22	0.01	1.24	0.03	6.51	0.15	0.00	0.00	0.00	16.03	83.
345-99	Opx-ol gabbro	1415P	60.02	55.42	0.50	1.29	0.19	10.55	0.27	30.49	1.36	0.05	0.00	0.03	100.14	7.82	0.05	0.21	0.02	1.24	0.03	6.41	0.21	0.01	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	55.58	0.46	1.36	0.17	10.72	0.29	30.67	1.61	0.01	0.00	0.03	100.89	7.79	0.05	0.22	0.02	1.26	0.03	6.41	0.24	0.00	0.00	0.00	16.04	83.
345-99	Opx-ol gabbro	1415P	60.02	55.90	0.41	1.10	0.15	10.73	0.27	31.18	0.82	0.00	0.03	0.04	100.62	7.84	0.04	0.18	0.02	1.26	0.03	6.52	0.12	0.00	0.00	0.00	16.02	83.
345-99	Opx-ol gabbro	1415P	60.02	55.54	0.34	1.40	0.12	10.17	0.23	31.27	1.41	0.06	0.01	0.02	100.56	7.79	0.04	0.23	0.01	1.19	0.03	6.54	0.21	0.02	0.00	0.00	16.06	84.
345-70	Opx-ol gabbro	1415P	18.18	54.96	0.63	1.42	0.06	10.63	0.29	30.11	1.88	0.02	0.00	0.04	100.03	7.78	0.07	0.24	0.01	1.26	0.03	6.35	0.28	0.01	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	54.66	1.84	1.03	0.08	11.52	0.25	29.99	1.83	0.02	0.01	0.04	101.27	7.69	0.20	0.17	0.01	1.36	0.03	6.29	0.28	0.01	0.00	0.00	16.03	82.
345-70	Opx-ol gabbro	1415P	18.18	54.96	0.62	1.24	0.04	10.69	0.28	30.75	1.30	0.04	0.01	0.02	99.95	7.78	0.07	0.21	0.00	1.27	0.03	6.49	0.20	0.01	0.00	0.00	16.06	83.
345-70	Opx-ol gabbro	1415P	18.18	55.43	0.57	1.23	0.09	10.83	0.26	30.83	1.41	0.02	0.00	0.04	100.70	7.79	0.06	0.20	0.01	1.27	0.03	6.46	0.21	0.00	0.00	0.00	16.05	83.
345-70	Opx-ol gabbro	1415P	18.18	55.65	0.51	1.10	0.05	10.78	0.27	30.80	1.51	0.00	0.00	0.03	100.70	7.82	0.05	0.18	0.01	1.27	0.03	6.45	0.23	0.00	0.00	0.00	16.04	83.
345-70	Opx-ol gabbro	1415P	18.18	55.60	0.52	1.24	0.05	10.73	0.25	30.67	1.41	0.01	0.00	0.03	100.50	7.82	0.05	0.21	0.01	1.26	0.03	6.43	0.21	0.00	0.00	0.00	16.02	83.
345-70	Opx-ol gabbro	1415P	18.18	55.28	0.61	1.20	0.04	10.77	0.31	30.61	1.51	0.00	0.01	0.06	100.38	7.80	0.06	0.20	0.00	1.27	0.04	6.43	0.23	0.00	0.00	0.01	16.04	83.
345-70	Opx-ol gabbro	1415P	18.18	56.05	0.76	1.40	0.09	11.39	0.26	30.92	0.94	0.00	0.01	0.03	101.85	7.79	0.08	0.23	0.01	1.32	0.03	6.41	0.14	0.00	0.00	0.00	16.01	82.
345-70	Opx-ol gabbro	1415P	18.18	55.75	0.50	1.44	0.12	10.89	0.27	30.17	1.89	0.00	0.00	0.04	101.07	7.81	0.05	0.24	0.01	1.28	0.03	6.30	0.28	0.00	0.00	0.00	16.01	83.
345-70	Opx-ol gabbro	1415P	18.18	55.47	0.55	1.54	0.12	10.75	0.28	30.44	1.82	0.00	0.00	0.05	101.01	7.78	0.06	0.26	0.01	1.26	0.03	6.36	0.27	0.00	0.00	0.01	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.14	0.63	1.55	0.12	10.59	0.24	30.21	1.93	0.02	0.00	0.03	100.45	7.77	0.07	0.26	0.01	1.25	0.03	6.35	0.29	0.00	0.00	0.00	16.03	83.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-70	Opx-ol gabbro	1415P	18.18	54.27	1.56	1.28	0.14	11.44	0.24	29.91	1.80	0.01	0.01	0.02	100.67	7.68	0.17	0.21	0.02	1.35	0.03	6.31	0.27	0.00	0.00	0.00	16.04	82.
345-70	Opx-ol gabbro	1415P	18.18	55.15	0.69	1.52	0.10	10.93	0.29	30.40	1.49	0.00	0.01	0.03	100.59	7.77	0.07	0.25	0.01	1.29	0.03	6.38	0.22	0.00	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.25	0.50	1.35	0.10	11.01	0.31	30.58	0.92	0.01	0.01	0.01	100.06	7.81	0.05	0.22	0.01	1.30	0.04	6.44	0.14	0.00	0.00	0.00	16.02	83.
345-70	Opx-ol gabbro	1415P	18.18	55.07	0.76	1.40	0.10	10.95	0.28	29.95	1.85	0.00	0.02	0.03	100.40	7.78	0.08	0.23	0.01	1.29	0.03	6.31	0.28	0.00	0.00	0.00	16.02	82.
345-70	Opx-ol gabbro	1415P	18.18	55.69	0.52	1.41	0.11	10.45	0.27	30.08	2.40	0.03	0.02	0.04	101.02	7.81	0.05	0.23	0.01	1.23	0.03	6.28	0.36	0.01	0.00	0.00	16.02	83.
345-70	Opx-ol gabbro	1415P	18.18	55.76	0.49	1.23	0.12	10.72	0.28	30.21	1.58	0.00	0.00	0.03	100.42	7.85	0.05	0.20	0.01	1.26	0.03	6.34	0.24	0.00	0.00	0.00	15.99	83.
345-70	Opx-ol gabbro	1415P	18.18	55.45	0.49	1.14	0.10	10.99	0.26	30.23	1.72	0.01	0.01	0.02	100.41	7.82	0.05	0.19	0.01	1.30	0.03	6.36	0.26	0.00	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.84	0.49	1.31	0.05	11.12	0.29	31.04	1.03	0.01	0.01	0.04	101.22	7.80	0.05	0.22	0.01	1.30	0.03	6.47	0.15	0.00	0.00	0.00	16.04	83.
345-70	Opx-ol gabbro	1415P	18.18	55.58	0.40	1.24	0.05	10.98	0.33	31.25	0.91	0.00	0.01	0.03	100.75	7.80	0.04	0.21	0.01	1.29	0.04	6.54	0.14	0.00	0.00	0.00	16.05	83.
345-70	Opx-ol gabbro	1415P	18.18	55.40	0.51	1.44	0.04	11.10	0.32	30.52	0.89	0.02	0.00	0.06	100.28	7.81	0.05	0.24	0.00	1.31	0.04	6.41	0.13	0.01	0.00	0.01	16.02	83.
345-70	Opx-ol gabbro	1415P	18.18	53.89	1.86	1.10	0.04	11.95	0.29	30.27	1.31	0.01	0.01	0.05	100.78	7.64	0.20	0.18	0.00	1.42	0.04	6.39	0.20	0.00	0.00	0.01	16.08	81.
345-70	Opx-ol gabbro	1415P	18.18	54.12	2.48	1.06	0.02	11.78	0.52	29.06	2.25	0.01	0.00	0.03	101.33	7.64	0.26	0.18	0.00	1.39	0.06	6.12	0.34	0.00	0.00	0.00	16.00	81.
345-70	Opx-ol gabbro	1415P	18.18	55.31	0.30	1.37	0.02	10.36	0.25	29.70	2.96	0.04	0.00	0.03	100.34	7.81	0.03	0.23	0.00	1.22	0.03	6.25	0.45	0.01	0.00	0.00	16.05	83.
345-70	Opx-ol gabbro	1415P	18.18	55.41	0.52	1.65	0.06	10.75	0.30	29.97	1.77	0.00	0.00	0.03	100.45	7.80	0.05	0.27	0.01	1.27	0.04	6.29	0.27	0.00	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	55.36	0.48	1.24	0.03	10.85	0.26	30.88	0.98	0.00	0.00	0.02	100.10	7.81	0.05	0.21	0.00	1.28	0.03	6.50	0.15	0.00	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.19	0.50	1.42	0.04	10.75	0.26	30.27	1.76	0.01	0.00	0.03	100.23	7.79	0.05	0.24	0.00	1.27	0.03	6.37	0.27	0.00	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	54.81	0.57	1.30	0.02	10.86	0.28	30.41	1.93	0.00	0.01	0.04	100.22	7.76	0.06	0.22	0.00	1.29	0.03	6.42	0.29	0.00	0.00	0.00	16.07	83.
345-70	Opx-ol gabbro	1415P	18.18	55.32	0.63	1.19	0.02	11.11	0.27	30.86	1.45	0.02	0.00	0.04	100.91	7.77	0.07	0.20	0.00	1.30	0.03	6.46	0.22	0.00	0.00	0.00	16.06	83.
345-70	Opx-ol gabbro	1415P	18.18	54.71	0.45	1.39	0.08	11.26	0.27	29.95	1.19	0.00	0.00	0.04	99.35	7.80	0.05	0.23	0.01	1.34	0.03	6.37	0.18	0.00	0.00	0.00	16.03	82.
345-70	Opx-ol gabbro	1415P	18.18	53.62	2.53	1.06	0.02	12.56	0.31	29.99	1.30	0.02	0.00	0.01	101.41	7.58	0.27	0.18	0.00	1.48	0.04	6.32	0.20	0.01	0.00	0.00	16.07	80.
345-70	Opx-ol gabbro	1415P	18.18	55.99	0.39	1.22	0.02	10.71	0.30	30.60	1.96	0.04	0.01	0.03	101.27	7.82	0.04	0.20	0.00	1.25	0.04	6.37	0.29	0.01	0.00	0.00	16.04	83.
345-70	Opx-ol gabbro	1415P	18.18	55.29	0.43	1.22	0.04	10.21	0.29	30.30	1.66	0.03	0.00	0.03	99.49	7.84	0.05	0.20	0.00	1.21	0.04	6.41	0.25	0.01	0.00	0.00	16.01	84.
345-70	Opx-ol gabbro	1415P	18.18	55.59	0.55	1.20	0.03	11.02	0.29	30.70	1.28	0.01	0.01	0.03	100.70	7.81	0.06	0.20	0.00	1.29	0.03	6.43	0.19	0.00	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.00	0.66	1.51	0.00	10.94	0.26	30.54	1.56	0.00	0.03	0.03	100.51	7.75	0.07	0.25	0.00	1.29	0.03	6.42	0.23	0.00	0.00	0.00	16.05	83.
345-70	Opx-ol gabbro	1415P	18.18	53.96	1.58	1.90	0.02	10.55	0.39	28.36	3.61	0.03	0.01	0.03	100.43	7.66	0.17	0.32	0.00	1.25	0.05	6.00	0.55	0.01	0.00	0.00	16.01	82.
345-70	Opx-ol gabbro	1415P	18.18	55.09	0.67	1.36	0.03	10.78	0.27	29.45	1.94	0.01	0.00	0.03	99.62	7.83	0.07	0.23	0.00	1.28	0.03	6.24	0.30	0.00	0.00	0.00	15.99	82.
345-70	Opx-ol gabbro	1415P	18.18	55.06	0.51	1.22	0.03	11.31	0.29	30.73	1.58	0.02	0.02	0.03	100.79	7.76	0.05	0.20	0.00	1.33	0.03	6.45	0.24	0.01	0.00	0.00	16.09	82.
345-70	Opx-ol gabbro	1415P	18.18	53.76	1.88	1.15	0.01	12.35	0.28	30.35	1.05	0.01	0.01	0.02	100.87	7.62	0.20	0.19	0.00	1.46	0.03	6.41	0.16	0.00	0.00	0.00	16.09	81.
345-70	Opx-ol gabbro	1415P	18.18	55.34	0.63	1.29	0.02	11.04	0.24	30.65	1.14	0.00	0.00	0.01	100.34	7.80	0.07	0.21	0.00	1.30	0.03	6.44	0.17	0.00	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.73	0.47	1.36	0.12	10.53	0.26	30.30	1.94	0.00	0.01	0.02	100.73	7.82	0.05	0.22	0.01	1.24	0.03	6.34	0.29	0.00	0.00	0.00	16.01	83.
345-70	Opx-ol gabbro	1415P	18.18	55.85	0.40	1.35	0.07	10.91	0.27	30.52	1.17	0.02	0.00	0.05	100.59	7.84	0.04	0.22	0.01	1.28	0.03	6.39	0.18	0.01	0.00	0.01	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	56.08	0.42	1.24	0.12	10.62	0.31	30.80	1.14	0.01	0.01	0.02	100.78	7.85	0.04	0.20	0.01	1.24	0.04	6.43	0.17	0.00	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	56.01	0.47	1.22	0.13	10.57	0.27	29.71	2.35	0.04	0.00	0.03	100.80	7.86	0.05	0.20	0.01	1.24	0.03	6.22	0.35	0.01	0.00	0.00	15.99	83.
345-70	Opx-ol gabbro	1415P	18.18	56.00	0.40	1.24	0.11	10.87	0.28	30.53	1.22	0.00	0.00	0.04	100.69	7.86	0.04	0.21	0.01	1.28	0.03	6.38	0.18	0.00	0.00	0.00	15.99	83.
345-70	Opx-ol gabbro	1415P	18.18	55.95	0.39	1.25	0.12	10.22	0.26	30.16	1.97	0.00	0.00	0.05	100.37	7.87	0.04	0.21	0.01	1.20	0.03	6.32	0.30	0.00	0.00	0.01	15.98	84.
345-70	Opx-ol gabbro	1415P	18.18	55.95	0.41	1.19	0.12	10.61	0.23	30.31	1.86	0.01	0.00	0.03	100.72	7.85	0.04	0.20	0.01	1.25	0.03	6.34	0.28	0.00	0.00	0.00	16.00	83.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-70	Opx-ol gabbro	1415P	18.18	55.94	0.36	1.20	0.12	10.62	0.25	30.41	1.44	0.00	0.00	0.02	100.35	7.87	0.04	0.20	0.01	1.25	0.03	6.37	0.22	0.00	0.00	0.00	15.99	83.
345-70	Opx-ol gabbro	1415P	18.18	55.75	0.40	1.27	0.11	10.38	0.25	29.87	2.72	0.02	0.01	0.03	100.80	7.83	0.04	0.21	0.01	1.22	0.03	6.25	0.41	0.01	0.00	0.00	16.02	83.
345-70	Opx-ol gabbro	1415P	18.18	50.63	0.46	2.91	0.09	9.65	0.25	27.11	3.57	0.15	0.01	0.03	94.85	7.60	0.05	0.52	0.01	1.21	0.03	6.07	0.57	0.04	0.00	0.00	16.11	83.
345-70	Opx-ol gabbro	1415P	18.18	56.02	0.48	1.21	0.09	10.86	0.29	30.66	0.99	0.00	0.00	0.03	100.62	7.86	0.05	0.20	0.01	1.27	0.03	6.41	0.15	0.00	0.00	0.00	15.99	83.
345-70	Opx-ol gabbro	1415P	18.18	56.22	0.45	1.25	0.10	10.77	0.28	30.51	0.90	0.00	0.00	0.02	100.49	7.88	0.05	0.21	0.01	1.26	0.03	6.38	0.14	0.00	0.00	0.00	15.96	83.
345-70	Opx-ol gabbro	1415P	18.18	56.14	0.44	1.16	0.08	10.56	0.24	30.54	1.73	0.00	0.01	0.03	100.93	7.86	0.05	0.19	0.01	1.24	0.03	6.37	0.26	0.00	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	56.08	0.44	1.20	0.10	10.59	0.29	30.24	1.59	0.00	0.00	0.04	100.57	7.87	0.05	0.20	0.01	1.24	0.03	6.33	0.24	0.00	0.00	0.00	15.98	83.
345-70	Opx-ol gabbro	1415P	18.18	54.31	0.45	1.10	0.14	10.86	0.27	29.69	1.10	0.03	0.00	0.04	98.00	7.84	0.05	0.19	0.02	1.31	0.03	6.39	0.17	0.01	0.00	0.00	16.01	82.
345-70	Opx-ol gabbro	1415P	18.18	47.87	0.04	33.24	0.01	0.40	0.00	0.00	16.57	2.09	0.06	0.02	100.31	6.57	0.00	5.38	0.00	0.05	0.00	0.00	2.44	0.56	0.01	0.00	15.01	0.
345-70	Opx-ol gabbro	1415P	18.18	55.98	0.43	1.31	0.13	10.60	0.24	30.09	2.45	0.02	0.00	0.02	101.26	7.83	0.04	0.22	0.01	1.24	0.03	6.27	0.37	0.01	0.00	0.00	16.02	83.
345-70	Opx-ol gabbro	1415P	18.18	56.01	0.48	1.27	0.16	10.63	0.28	30.33	1.80	0.01	0.01	0.03	101.00	7.84	0.05	0.21	0.02	1.24	0.03	6.33	0.27	0.00	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	56.03	0.47	1.33	0.13	10.49	0.27	30.40	1.74	0.05	0.01	0.03	100.94	7.84	0.05	0.22	0.01	1.23	0.03	6.34	0.26	0.01	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	56.23	0.39	1.18	0.13	9.72	0.26	28.87	3.95	0.03	0.02	0.03	100.79	7.89	0.04	0.19	0.01	1.14	0.03	6.04	0.59	0.01	0.00	0.00	15.97	84.
345-70	Opx-ol gabbro	1415P	18.18	55.68	0.48	1.34	0.10	10.72	0.30	30.33	2.01	0.04	0.00	0.01	101.02	7.81	0.05	0.22	0.01	1.26	0.04	6.34	0.30	0.01	0.00	0.00	16.03	83.
345-70	Opx-ol gabbro	1415P	18.18	55.28	0.47	1.76	0.07	10.21	0.24	29.05	1.88	0.06	0.00	0.05	99.07	7.87	0.05	0.29	0.01	1.21	0.03	6.16	0.29	0.02	0.00	0.01	15.94	83.
345-70	Opx-ol gabbro	1415P	18.18	53.77	2.50	1.17	0.09	11.91	0.34	29.11	1.72	0.00	0.00	0.04	100.65	7.64	0.27	0.20	0.01	1.41	0.04	6.16	0.26	0.00	0.00	0.00	15.99	81.
345-70	Opx-ol gabbro	1415P	18.18	55.35	0.50	1.34	0.03	11.04	0.29	30.79	1.04	0.01	0.02	0.03	100.44	7.80	0.05	0.22	0.00	1.30	0.04	6.46	0.16	0.00	0.00	0.00	16.04	83.
345-70	Opx-ol gabbro	1415P	18.18	55.62	0.51	1.32	0.14	10.63	0.28	30.23	1.58	0.02	0.00	0.03	100.36	7.83	0.05	0.22	0.02	1.25	0.03	6.35	0.24	0.01	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	55.47	0.44	1.40	0.15	10.77	0.30	29.92	1.68	0.00	0.01	0.02	100.15	7.83	0.05	0.23	0.02	1.27	0.04	6.30	0.25	0.00	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	55.58	0.47	1.34	0.16	10.74	0.27	30.28	1.47	0.01	0.02	0.05	100.39	7.83	0.05	0.22	0.02	1.27	0.03	6.36	0.22	0.00	0.00	0.01	16.01	83.
345-70	Opx-ol gabbro	1415P	18.18	55.80	0.45	1.36	0.18	10.67	0.31	30.10	1.86	0.04	0.00	0.04	100.80	7.83	0.05	0.22	0.02	1.25	0.04	6.30	0.28	0.01	0.00	0.00	16.00	83.
345-70	Opx-ol gabbro	1415P	18.18	55.30	0.50	1.47	0.15	10.13	0.27	30.33	1.71	0.02	0.00	0.04	99.92	7.81	0.05	0.24	0.02	1.20	0.03	6.39	0.26	0.01	0.00	0.00	16.01	84.
345-71	Opx-ol gabbro	1415P	19.00	55.27	0.57	1.57	0.11	10.93	0.25	30.35	1.27	0.01	0.00	0.04	100.36	7.79	0.06	0.26	0.01	1.29	0.03	6.38	0.19	0.00	0.00	0.00	16.02	83.
345-71	Opx-ol gabbro	1415P	19.00	55.19	0.48	1.53	0.09	10.92	0.29	30.54	1.20	0.02	0.00	0.04	100.29	7.79	0.05	0.25	0.01	1.29	0.03	6.42	0.18	0.00	0.00	0.00	16.03	83.
345-71	Opx-ol gabbro	1415P	19.00	54.79	1.07	1.33	0.07	10.67	0.26	29.28	3.08	0.07	0.01	0.02	100.66	7.74	0.11	0.22	0.01	1.26	0.03	6.17	0.47	0.02	0.00	0.00	16.04	83.
345-71	Opx-ol gabbro	1415P	19.00	54.21	0.44	1.70	0.10	10.67	0.23	29.98	1.79	0.04	0.01	0.03	99.18	7.75	0.05	0.29	0.01	1.27	0.03	6.38	0.27	0.01	0.00	0.00	16.06	83.
345-71	Opx-ol gabbro	1415P	19.00	55.23	0.42	1.49	0.10	11.17	0.27	30.35	1.06	0.00	0.01	0.04	100.14	7.81	0.04	0.25	0.01	1.32	0.03	6.39	0.16	0.00	0.00	0.00	16.02	82.
345-71	Opx-ol gabbro	1415P	19.00	55.36	0.47	1.54	0.09	11.03	0.31	30.70	0.90	0.01	0.02	0.04	100.47	7.79	0.05	0.26	0.01	1.30	0.04	6.44	0.14	0.00	0.00	0.00	16.03	83.
345-71	Opx-ol gabbro	1415P	19.00	54.93	0.45	1.49	0.08	11.12	0.27	30.93	1.18	0.00	0.00	0.05	100.50	7.75	0.05	0.25	0.01	1.31	0.03	6.50	0.18	0.00	0.00	0.01	16.08	83.
345-71	Opx-ol gabbro	1415P	19.00	55.11	0.56	1.36	0.09	10.92	0.28	30.36	1.36	0.00	0.00	0.04	100.08	7.79	0.06	0.23	0.01	1.29	0.03	6.40	0.21	0.00	0.00	0.00	16.03	83.
345-71	Opx-ol gabbro	1415P	19.00	55.52	0.35	1.24	0.05	10.23	0.25	30.21	2.55	0.06	0.00	0.03	100.49	7.82	0.04	0.21	0.01	1.21	0.03	6.34	0.38	0.02	0.00	0.00	16.05	84.
345-71	Opx-ol gabbro	1415P	19.00	52.13	1.51	2.15	0.04	11.32	0.31	27.54	3.05	0.10	0.00	0.04	98.20	7.60	0.17	0.37	0.01	1.38	0.04	5.99	0.48	0.03	0.00	0.00	16.06	81.
345-71	Opx-ol gabbro	1415P	19.00	55.17	0.65	1.32	0.05	10.82	0.31	30.06	1.63	0.01	0.01	0.03	100.06	7.81	0.07	0.22	0.01	1.28	0.04	6.34	0.25	0.00	0.00	0.00	16.01	83.
345-71	Opx-ol gabbro	1415P	19.00	54.34	1.97	1.11	0.05	11.43	0.27	30.01	1.96	0.00	0.00	0.04	101.17	7.66	0.21	0.18	0.01	1.35	0.03	6.30	0.30	0.00	0.00	0.00	16.04	82.
345-71	Opx-ol gabbro	1415P	19.00	55.26	1.10	1.18	0.03	10.75	0.28	30.18	2.57	0.04	0.00	0.03	101.41	7.74	0.12	0.19	0.00	1.26	0.03	6.30	0.39	0.01	0.00	0.00	16.05	83.
345-71	Opx-ol gabbro	1415P	19.00	55.35	0.55	1.38	0.07	10.37	0.24	30.55	1.74	0.00	0.01	0.05	100.30	7.80	0.06	0.23	0.01	1.22	0.03	6.42	0.26	0.00	0.00	0.01	16.03	84.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-71	Opx-ol gabbro	1415P	19.00	53.25	2.50	1.03	0.09	11.86	0.27	29.61	1.42	0.02	0.00	0.04	100.10	7.60	0.27	0.17	0.01	1.42	0.03	6.30	0.22	0.01	0.00	0.00	16.04	81.
345-71	Opx-ol gabbro	1415P	19.00	55.45	0.46	1.76	0.11	10.80	0.27	30.39	1.32	0.04	0.01	0.05	100.67	7.79	0.05	0.29	0.01	1.27	0.03	6.36	0.20	0.01	0.00	0.01	16.02	83.
345-71	Opx-ol gabbro	1415P	19.00	55.72	0.57	1.25	0.10	10.54	0.27	31.05	1.53	0.04	0.01	0.03	101.09	7.79	0.06	0.21	0.01	1.23	0.03	6.47	0.23	0.01	0.00	0.00	16.05	83.
345-71	Opx-ol gabbro	1415P	19.00	54.63	0.46	1.64	0.11	10.12	0.27	29.94	3.22	0.05	0.00	0.04	100.49	7.72	0.05	0.27	0.01	1.20	0.03	6.31	0.49	0.01	0.00	0.00	16.10	84.
345-71	Opx-ol gabbro	1415P	19.00	55.90	0.37	1.23	0.11	10.67	0.29	31.03	1.26	0.03	0.01	0.04	100.94	7.82	0.04	0.20	0.01	1.25	0.03	6.47	0.19	0.01	0.00	0.00	16.04	83.
345-71	Opx-ol gabbro	1415P	19.00	55.53	0.55	1.33	0.06	10.96	0.30	30.76	1.11	0.03	0.01	0.04	100.67	7.80	0.06	0.22	0.01	1.29	0.04	6.44	0.17	0.01	0.00	0.00	16.03	83.
345-71	Opx-ol gabbro	1415P	19.00	55.29	0.52	1.55	0.10	10.82	0.27	30.61	1.56	0.02	0.03	0.04	100.80	7.77	0.05	0.26	0.01	1.27	0.03	6.41	0.24	0.01	0.01	0.00	16.05	83.
345-71	Opx-ol gabbro	1415P	19.00	52.67	3.74	0.90	0.07	12.90	0.28	29.99	0.77	0.00	0.01	0.02	101.33	7.47	0.40	0.15	0.01	1.53	0.03	6.34	0.12	0.00	0.00	0.00	16.05	80.
345-71	Opx-ol gabbro	1415P	19.00	55.48	0.49	1.53	0.10	10.61	0.28	30.29	2.20	0.01	0.00	0.02	101.00	7.78	0.05	0.25	0.01	1.24	0.03	6.33	0.33	0.00	0.00	0.00	16.04	83.
345-74	Opx-ol gabbro	1415P	23.99	55.59	0.32	1.59	0.32	9.57	0.23	30.59	2.16	0.05	0.01	0.04	100.46	7.80	0.03	0.26	0.04	1.12	0.03	6.40	0.33	0.01	0.00	0.00	16.03	85.
345-74	Opx-ol gabbro	1415P	23.99	55.37	0.36	1.55	0.32	9.43	0.26	30.14	2.37	0.07	0.01	0.05	99.92	7.81	0.04	0.26	0.04	1.11	0.03	6.34	0.36	0.02	0.00	0.01	16.01	85.
345-74	Opx-ol gabbro	1415P	23.99	55.47	0.32	1.43	0.30	9.56	0.23	30.26	2.26	0.10	0.00	0.05	99.98	7.82	0.03	0.24	0.03	1.13	0.03	6.36	0.34	0.03	0.00	0.01	16.02	84.
345-74	Opx-ol gabbro	1415P	23.99	55.64	0.33	1.52	0.28	9.53	0.23	30.71	1.87	0.02	0.00	0.06	100.18	7.82	0.03	0.25	0.03	1.12	0.03	6.43	0.28	0.01	0.00	0.01	16.01	85.
345-74	Opx-ol gabbro	1415P	23.99	55.26	0.49	1.75	0.32	9.76	0.24	30.27	1.76	0.05	0.00	0.06	99.95	7.79	0.05	0.29	0.04	1.15	0.03	6.36	0.27	0.01	0.00	0.01	16.00	84.
345-74	Opx-ol gabbro	1415P	23.99	55.49	0.35	1.57	0.33	9.50	0.24	30.70	2.12	0.04	0.02	0.06	100.41	7.79	0.04	0.26	0.04	1.12	0.03	6.42	0.32	0.01	0.00	0.01	16.03	85.
345-74	Opx-ol gabbro	1415P	23.99	55.85	0.34	1.61	0.32	9.20	0.23	29.83	3.12	0.07	0.00	0.04	100.62	7.83	0.04	0.27	0.04	1.08	0.03	6.23	0.47	0.02	0.00	0.00	16.00	85.
345-74	Opx-ol gabbro	1415P	23.99	55.20	0.45	1.48	0.30	9.50	0.24	31.03	1.46	0.01	0.00	0.04	99.71	7.79	0.05	0.25	0.03	1.12	0.03	6.53	0.22	0.00	0.00	0.00	16.02	85.
345-74	Opx-ol gabbro	1415P	23.99	55.43	0.32	1.49	0.36	9.47	0.24	30.13	2.02	0.01	0.00	0.02	99.49	7.84	0.03	0.25	0.04	1.12	0.03	6.35	0.31	0.00	0.00	0.00	15.98	85.
345-74	Opx-ol gabbro	1415P	23.99	55.47	0.38	1.54	0.32	9.80	0.26	30.99	1.68	0.03	0.00	0.04	100.49	7.78	0.04	0.25	0.04	1.15	0.03	6.48	0.25	0.01	0.00	0.00	16.04	84.
345-74	Opx-ol gabbro	1415P	23.99	55.61	0.32	1.51	0.28	9.68	0.24	30.70	2.10	0.03	0.01	0.03	100.52	7.80	0.03	0.25	0.03	1.14	0.03	6.42	0.32	0.01	0.00	0.00	16.03	84.
345-74	Opx-ol gabbro	1415P	23.99	55.41	0.32	1.56	0.29	9.69	0.24	30.56	2.03	0.01	0.00	0.03	100.13	7.80	0.03	0.26	0.03	1.14	0.03	6.41	0.31	0.00	0.00	0.00	16.02	84.
345-74	Opx-ol gabbro	1415P	23.99	55.34	0.32	1.64	0.32	9.44	0.23	30.20	2.47	0.01	0.00	0.02	99.98	7.80	0.03	0.27	0.04	1.11	0.03	6.35	0.37	0.00	0.00	0.00	16.01	85.
345-74	Opx-ol gabbro	1415P	23.99	55.57	0.44	1.45	0.32	9.87	0.23	31.49	0.79	0.02	0.00	0.03	100.22	7.80	0.05	0.24	0.04	1.16	0.03	6.59	0.12	0.01	0.00	0.00	16.02	85.
345-74	Opx-ol gabbro	1415P	23.99	55.24	0.44	1.47	0.33	9.75	0.27	31.12	1.32	0.03	0.00	0.05	100.02	7.78	0.05	0.24	0.04	1.15	0.03	6.53	0.20	0.01	0.00	0.01	16.04	85.
345-84	Opx-ol gabbro	1415P	37.20	55.60	0.52	1.33	0.09	9.45	0.24	30.77	1.78	0.03	0.01	0.05	99.86	7.83	0.06	0.22	0.01	1.11	0.03	6.46	0.27	0.01	0.00	0.01	16.00	85.
345-84	Opx-ol gabbro	1415P	37.20	55.76	0.50	1.20	0.07	9.86	0.25	31.30	1.41	0.00	0.01	0.02	100.38	7.82	0.05	0.20	0.01	1.16	0.03	6.54	0.21	0.00	0.00	0.00	16.03	84.
345-84	Opx-ol gabbro	1415P	37.20	56.26	0.40	1.05	0.05	9.82	0.25	31.92	0.68	0.01	0.00	0.03	100.47	7.86	0.04	0.17	0.01	1.15	0.03	6.65	0.10	0.00	0.00	0.00	16.01	85.
345-84	Opx-ol gabbro	1415P	37.20	55.72	0.53	1.25	0.09	9.87	0.25	31.03	1.55	0.00	0.00	0.06	100.34	7.82	0.06	0.21	0.01	1.16	0.03	6.49	0.23	0.00	0.00	0.01	16.01	84.
345-84	Opx-ol gabbro	1415P	37.20	55.72	0.55	1.32	0.09	9.05	0.25	29.66	3.68	0.04	0.00	0.07	100.42	7.83	0.06	0.22	0.01	1.06	0.03	6.22	0.55	0.01	0.00	0.01	16.00	85.
345-84	Opx-ol gabbro	1415P	37.20	55.45	0.47	1.27	0.08	9.68	0.24	31.18	1.59	0.02	0.00	0.03	99.99	7.81	0.05	0.21	0.01	1.14	0.03	6.54	0.24	0.00	0.00	0.00	16.04	85.
345-84	Opx-ol gabbro	1415P	37.20	55.65	0.47	1.20	0.10	9.37	0.24	30.89	1.89	0.03	0.00	0.05	99.87	7.84	0.05	0.20	0.01	1.10	0.03	6.48	0.29	0.01	0.00	0.01	16.01	85.
345-84	Opx-ol gabbro	1415P	37.20	56.05	0.40	1.09	0.08	9.76	0.23	31.44	1.54	0.04	0.00	0.02	100.64	7.84	0.04	0.18	0.01	1.14	0.03	6.55	0.23	0.01	0.00	0.00	16.03	85.
345-84	Opx-ol gabbro	1415P	37.20	54.63	0.48	1.54	0.06	10.08	0.24	31.03	1.34	0.03	0.00	0.05	99.47	7.75	0.05	0.26	0.01	1.20	0.03	6.56	0.20	0.01	0.00	0.01	16.07	84.
345-84	Opx-ol gabbro	1415P	37.20	55.74	0.54	1.21	0.07	9.85	0.27	31.61	1.09	0.00	0.01	0.05	100.44	7.81	0.06	0.20	0.01	1.15	0.03	6.60	0.16	0.00	0.00	0.01	16.03	85.
345-84	Opx-ol gabbro	1415P	37.20	55.66	0.44	1.20	0.08	9.66	0.25	31.39	1.15	0.01	0.00	0.05	99.90	7.83	0.05	0.20	0.01	1.14	0.03	6.58	0.17	0.00	0.00	0.01	16.02	85.
345-84	Opx-ol gabbro	1415P	37.20	56.08	0.30	1.21	0.08	9.52	0.23	31.62	1.07	0.02	0.00	0.03	100.17	7.86	0.03	0.20	0.01	1.12	0.03	6.60	0.16	0.01	0.00	0.00	16.01	85.

Section No	Lithol	Hole	Depth	SiO2	TiO2	Al2O3	Cr2O3	FeO	MnO	MgO	CaO	Na2O	K2O	NiO	Total	Si	Ti	Al	Cr	Fe	Mn	Mg	Ca	Na	K	Ni	Total Cation	An%
345-84	Opx-ol gabbro	1415P	37.20	55.88	0.29	0.95	0.07	9.59	0.24	31.68	0.85	0.00	0.00	0.05	99.59	7.87	0.03	0.16	0.01	1.13	0.03	6.65	0.13	0.00	0.00	0.01	16.01	85.
345-84	Opx-ol gabbro	1415P	37.20	55.78	0.45	1.27	0.10	9.65	0.25	31.14	1.85	0.01	0.01	0.01	100.50	7.82	0.05	0.21	0.01	1.13	0.03	6.50	0.28	0.00	0.00	0.00	16.03	85.
345-84	Opx-ol gabbro	1415P	37.20	55.56	0.47	1.23	0.08	9.58	0.26	30.80	1.76	0.02	0.01	0.03	99.79	7.84	0.05	0.20	0.01	1.13	0.03	6.47	0.27	0.01	0.00	0.00	16.01	85.
345-84	Opx-ol gabbro	1415P	37.20	55.86	0.48	1.20	0.09	9.74	0.22	31.36	1.51	0.03	0.01	0.01	100.51	7.82	0.05	0.20	0.01	1.14	0.03	6.54	0.23	0.01	0.00	0.00	16.03	85.
345-84	Opx-ol gabbro	1415P	37.20	55.50	0.49	1.18	0.08	9.61	0.25	30.94	1.56	0.02	0.00	0.04	99.67	7.83	0.05	0.20	0.01	1.13	0.03	6.51	0.24	0.01	0.00	0.00	16.01	85.

Trace Element Plag

Sample Id	345-108	345-108	345-108	345- 109	345- 109	345- 109	345- 109	345-81	345-81	345-81	345-81	345-81	345-99	345-99	345-99	345-99	345-99	345-99
Hole Id	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	0.867	1.02	3.09	1.37	2.01	1.83	2.24	0.00456		0.143	0.164		1.7	0.447	2.09	0.225	0.8	
B	4.87	3.69	5.28	3.77	5.01	7.1	7.09	0.0277	10.69	10.38	7.74	5.71	7	5.39	7.78	7.02	5.57	7.11
Si	257229.13	235197.83	246168.64	256173.31	257799.23	261321.36	216513.09	288.24	219592.38	276387.53	229458	168031.44	263873.91	237738.31	241103.64	238481.19	248682.78	262911.91
Ca	109799.5	110978.77	110206.88	110171.16	112258.12	114538	108420.16	214.41	115674.38	111464.77	107548.21	71470.1	115903.01	113637.42	116496.23	116496.23	115545.69	126502.05
Sc	1.038	1.012	1.047	0.598	0.699	0.701	0.716	0.00089	0.948	1.263	0.904	0.816	0.649	0.531	0.745	0.739	0.811	1.02
Ti 47	233.66	231.43	249.38	296.54	253.46	279.14	222.77	0.587	292.8	451.76	290.22	230.24	499.97	359.81	537.25	304.34	191.73	236.69
Ti 49	238.16	234.91	257.27	284.47	257.3	294.37	235.08	0.6	303.01	460.62	290.55	236.45	505.97	364.46	538.44	311.77	189.85	242.37
V	3.48	3.9	3.96	4.16	3.58	3.55	3.81	0.00274	4.51	5.4	2.445	3.13	4.47	2.94	3.76	3.92	4.98	5.07
Cr 52	13.31	5.48	7.45	5.14	4.93	5.92	6.12	0.00502	5.85	6.16	5.61	3.65	3.75	2.88	7.51	7.65	5.43	8.2
Cr 53	1.03								1.09	0.82		0.52				0.92		2.36
Cu	0.209	0.275	0.301						0.128	0.112	0.193	0.183			1.271		0.326	
Zn	4.68	4.17	5.61	5.13	7.02	4.78	4.22	0.01876	1.34	3.59	5.8	2.24	10.6	10.52	3.75	3.51	5.45	2.08
Rb			0.0251			0.053	0.052	0.00067	0.155	0.639	0.389	0.414	0.212	0.28	0.208	0.066	0.253	0.106
Sr	140.37	140.24	142.83	154.84	153.11	163.19	123.55	0.0352	132.09	146.93	131.13	93.89	143.56	140.85	145.28	149.17	144.25	144.5
Y	0.135	0.1347	0.146	0.166	0.139	0.175	0.202	0.00185	1.101	0.493	0.921	0.294	0.588	0.467	0.512	0.32	0.465	0.512
Zr		0.0166	0.0148		0.0234		0.0331	0.00012	0.09	0.12	0.0782	0.1032	0.048	0.052	0.0263		0.073	0.0628
Nb	0.0036					0.0096		0		0.009		0.00304				0.0133	0.0138	0.0248
Ba	3.25	3.19	3.61	3.74	3.65	5.02	2.97	0.00118	4.37	6.25	5.83	3.68	5.61	5.06	5.86	5.04	4.66	4.99
La	0.1348	0.1252	0.1499	0.141	0.121	0.161	0.141	0.00197	0.519	0.27	1.053	0.17	0.645	0.614	0.623	0.429	0.18	0.418
Ce	0.269	0.274	0.279	0.332	0.362	0.33	0.337	0.00454	1.347	0.691	2.37	0.303	1.379	1.352	1.417	0.995	0.497	1.077
Pr	0.0391	0.0402	0.0437	0.0548	0.0427	0.0437	0.0557	0.00062	0.212	0.1024	0.35	0.0495	0.228	0.187	0.187	0.1048	0.0736	0.137
Nd	0.182	0.194	0.176	0.174	0.2	0.191	0.201	0.00326	1.158	0.516	1.7	0.267	0.919	0.845	0.915	0.565	0.468	0.857
Sm	0.045	0.071	0.049	0.023	0.024	0	0.025	0.00074	0.321	0.124	0.337	0.0542	0.226	0.229	0.176	0.068	0.115	0.121
Eu	0.254	0.244	0.272	0.301	0.309	0.306	0.267	0.00228	0.359	0.379	0.42	0.24	0.353	0.387	0.304	0.311	0.364	0.315
Gd	0.065	0.034	0.044	0.027		0.063	0.042	0.00067	0.299	0.143	0.335	0.0485	0.182	0.147	0.292	0.093	0.097	0.15
Tb	0.0033	0.0072	0.0048	0.007	0.0047		0.0096	0.00008	0.0437	0.0239	0.0379	0.0127	0.0277	0.0201	0.0241	0.0198	0.0169	0.021
Dy	0.0333	0.0243	0.0466			0.035	0.04	0.0004	0.264	0.148	0.195	0.0444	0.124	0.109	0.079	0.054	0.138	0.099
Ho	0.003	0.0072	0.0047		0			0.00006	0.0353	0.0178	0.0332	0.0064	0.0277	0.0132	0.0049	0.0045	0.0184	0.0131
Er		0.015	0.0293	0		0	0	0.0001	0.0497	0.0272	0.05	0.0135	0.0281	0.036	0.0214	0.0099	0.0241	
Tm				0		0	0	0.00001	0.0076	0.0023	0.0039	0.00263	0.0058					0.0026
Yb				0	0	0.024		0.00003	0.0127		0.0223		0.028	0	0	0	0.027	0
Lu				0		0	0	0			0	0		0	0.0034	0	0	0
Hf					0	0		0	0	0	0	0			0	0	0	0
Ta								0		0.00178								
Pb	0.0729	0.1359	0.0704	0.067	0.074	0.088	0.0544	0.00004	0.085	0.0921	0.209	0.0526	0.184	0.123	0.244	0.137	0.18	0.0657
Th	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
U	0.00179				0	0	0	0	0	0	0.00346	0	0	0		0	0	0

Trace Element Plag

Sample Id	345-70	345-70	345-70	345-70	345-70	345-70	345-70	345-70	345-70	345-70	345-70	345-87	345-87	345-87	345-87	345-89	345-89	345-71
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	0.222	2.49	0.189	0.152	0.245	0.111	6.5			2.77	0.338			0.218	0.162	0.157		0.688
B	10.94	8.82	7.25	7.59	6.7	6.75	7.04	6.15	7.19	6.41	7.46					10.92	12.42	9.97
Si	299755.28	240373.89	246393.08	289483.34	215459.08	221764.41	206031.72	232116.25	238235.36	212320.09	302377.09	245108.88	234964.97	244854.33	229040.23	222975.89	259071.75	269044.31
Ca	121141.8	121184.68	124336.51	120141.2	120141.23	118997.71	124186.44	124572.38	123571.8	122213.86	158306.27	121556.34	115424.21	115781.56	116496.26	113373	120212.71	121291.91
Sc	1.5	1.125	1.127	1.568	1.041	1.101	0.999	1.163	1.288	1.026	1.519	0.647	0.866	1.01	0.657	1.85	1.967	1.269
Ti 47	560.92	321.46	242.09	504.06	353.55	254.76	168.61	116.22	338.41	243.22	185.53	445.35	242.53	350.65	197.67	331.43	497.54	553.87
Ti 49	561.99	325.88	250.36	520.39	360.77	257.26	171.29	123.59	353.65	253.73	184.14					349.51	518.6	565.58
V	6.74	5.37	3.98	6.23	5.06	4.6	3.94	4.05	5.93	5.15	5.53	3.44	4.63	3.61	1.628	3.51	4.17	5.36
Cr 52	4.68	3.5	5.54	3.53	1.86	4.67	2.75	4.44	9	5.04	3.62	2.12		4.29	1.46	2.64	6.61	7.4
Cr 53				2.25		1.52		0.82	1.7									1.03
Cu	0.372	0.162	0.143	0.324	0.212	0.103	1.992	0.191	0.159	0.175	0.143					0.203	0.226	2.652
Zn	3.97	7.41	1.916	3.61	1.725	1.516	1.683	2.55	3.69	1.965	2.33					2.5	2.63	3.5
Rb	1.683	0.573	0.666	1.572	0.416	0.383	0.944	0.478	0.648	0.771	0.667	0.053	0.0294	0.101	0.0479	0.0832	0.1068	1.366
Sr	154.54	135.48	135.45	171.61	130.6	130.41	131.67	133.93	158.12	130.3	169.27	146.46	134.74	143.5	131.26	135.83	155.61	146.83
Y	1.399	1.242	1.78	1.399	1.849	1.275	0.931	1.202	2.108	1.562	1.233	0.25	0.31	0.355	0.248	0.209	0.263	1.581
Zr	0.228	0.195	0.0658	0.192	0.194	0.0472	0.145	0.267	0.094	0.16	0.271		0.0232				0.0134	0.0941
Nb	0.0051	0.0036	0	0.0024	0.0035		0.0086	0.0033	0.0046	0.0102	0.0068		0.009			0.00298	0.0056	
Ba	10.55	5.44	7.83	9.09	6.71	5.03	8.4	5.56	5.69	6.3	5.6					3.96	5.4	8.38
La	0.807	0.416	3.65	0.6	1.275	0.54	0.1285	0.226	0.828	0.612	0.231	0.373	0.327	0.362	0.381	0.303	0.356	1.575
Ce	2.387	1.038	8.01	1.653	3.25	1.679	0.411	0.604	2.47	1.815	0.74	0.919	0.853	0.746	0.773	0.757	0.78	3.96
Pr	0.339	0.1599	0.953	0.251	0.472	0.288	0.072	0.1089	0.384	0.269	0.1258	0.1222	0.1105	0.1138	0.1116	0.1115	0.1	0.538
Nd	1.59	0.934	3.91	1.434	2.42	1.484	0.371	0.467	2.03	1.3	0.608	0.582	0.47	0.595	0.484	0.484	0.544	2.69
Sm	0.381	0.291	0.807	0.386	0.714	0.364	0.131	0.158	0.677	0.431	0.173	0.108	0.179	0.144	0.114	0.0743	0.1	0.527
Eu	0.478	0.333	0.419	0.444	0.4	0.33	0.196	0.417	0.371	0.362	0.423	0.308	0.281	0.375	0.302	0.315	0.292	0.357
Gd	0.369	0.303	0.66	0.381	0.584	0.396	0.121	0.173	0.559	0.371	0.195	0.122	0.087	0.107	0.098	0.0673	0.1	0.449
Tb	0.0458	0.0428	0.0682	0.0491	0.0775	0.0582	0.0324	0.0381	0.0864	0.065	0.0378	0.0137	0.0112	0.0175	0.0119	0.0101	0.009	0.0647
Dy	0.332	0.277	0.407	0.335	0.4	0.301	0.18	0.253	0.441	0.338	0.21	0.0544	0.066	0.063	0.0452	0.0451	0.0524	0.354
Ho	0.0614	0.0445	0.0464	0.0477	0.0722	0.048	0.0304	0.0467	0.0568	0.0645	0.0396	0.0089	0.0111	0.0113	0.0092	0.0079	0.0079	0.0593
Er	0.123	0.083	0.087	0.119	0.128	0.087	0.079	0.11	0.163	0.139	0.069	0.0189	0.0226	0.0202	0.0187	0.0128	0.0112	0.101
Tm	0.0085	0.0088	0.0108	0.0063	0.0156	0.0076	0.0117	0.0198	0.0124	0.015	0.0127			0.004		0.0051	0.00118	0.0098
Yb	0.0231	0.0497	0.0331	0.058	0.0389	0.0274	0.0349	0.105	0.096	0.058	0.048	0.0123	0.0263	0.0172		0	0.0102	0.046
Lu	0.0071	0.0064	0.0063	0.0038	0.0038		0.004	0.0065	0.0096	0.0078	0.0043		0.004	0.0024	0.0047	0	0	0.0022
Hf		0	0	0	0	0	0	0	0	0	0					0	0	
Ta				0.00201							0.0032					0.00104		
Pb	0.079	0.0916	0.0751	0.127	0.0669	0.0628	0.0399	0.0738	0.0992	0.127	0.1099	0.1	0.177	0.161	0.131	0.189	0.151	0.1177
Th	0		0	0		0	0	0	0	0	0			0	0	0	0	
U	0		0				0		0				0			0		

Trace Element Plag

Sample Id	345-71	345-71	345-84	345-84	345-84	345-41	345-41	345-30	345-30	345-30	345-53	345-53	345-53	345-53	345-53	345-53	345-45	345-45
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	0.173			0.651	4.62	0.414	1.665	0.074	0.435		0.289	0.141	0.505	0.923	1.98		4.46	0.957
B	9.15	8.02	8.56	9.1	6.7	6.7	9.08	11.82	11.77	11.74	10.09	12.48	9.43	10.46	9.47	8.33	34.25	8.19
Si	240273.8	229368.86	251120.94	245076.39	157169.61	210290.66	261283.45	242228.25	233304.17	223391.98	236586.92	318108.03	226590.66	254291.48	262491.53	229372.03	926991.44	241034.27
Ca	118826.2	119926.84	108863.27	110256.93	111822.12	102788.29	118926.23	123042.92	121499.17	120284.17	118926.23	153446.28	124000.63	129360.88	122178.12	119998.3	116632.05	115252.67
Sc	1.34	1.903	1.22	1.172	0.719	0.972	1.09	2.398	2.337	1.933	1.465	2.051	1.249	1.537	1.444	1.252	156.65	0.968
Ti 47	186.29	291.37	484.03	473.01	152.4	239.93	375.44	453.19	485.11	277.78	552.45	664.36	418.38	402.31	509.9	425.18	10693.47	311.73
Ti 49	191.93	298.18	486.81	469.89	156.94	244.08	384.52	472.35	508.91	282.97	555.85	669.62	428.01	408.18	520.5	430.9	10850.72	308.99
V	4.69	9.54	4.3	4.28	3	4.29	3.8	4.26	3.55	1.998	4.41	5.6	2.863	4.2	3.45	3.97	623.38	2.379
Cr 52	5.88	4.79	6.2	6.41	3.4	5.12	14.08	4.98	3.1	5.63	17.22	6.82	5.7	5.15	4.59	3.63	755.82	5.18
Cr 53	0.64		0.86		0.4	1.25	6.39	0.75	0.62	0.4	12.96	0.83	0.73	0.59	0.75		809.55	0.58
Cu	0.1	0.16	0.262	0.216	0.082	0.17	1.09	0.152	0.379	0.372	1.827	0.509	1.028	0.169	0.679	0.137	0.294	0.149
Zn	2.37	1.798	2.92	10.07	1.982	3.04	10.78	2.054	6.72	1.353	4.89	3.96	2.58	6.54	16.89	1.766	248.04	12.35
Rb	0.59	0.478	0.1119	0.1671	1.275	0.0639	0.178	0.1416	0.2234	0.1199	0.1863	0.208	0.1493	0.294	0.473	0.1166	0.626	0.1268
Sr	129.98	132.05	141.49	134.39	93.94	119.04	153.69	138.78	136.9	138.13	142.28	181.45	147.7	143.99	145.51	132.67	104.08	139.17
Y	0.7	1.052	0.289	0.354	0.237	0.293	0.275	0.336	0.339	0.1864	0.375	0.477	0.445	0.342	0.356	0.354	13.93	0.213
Zr	0.175	0.1066	0.0142	0.0242	0.0226	0.0327	0.0203	0.0382	0.0256	0.0166	0.0727	0.037	0.0912	0.0396	0.0767	0.031	5.76	0.0158
Nb	0.0037	0.0082	0.0081		0.00209	0.0112		0.0096	0.0053	0.0077	0.0255	0.0084	0.0162	0.0124	0.0106	0.0145	0.201	0
Ba	3.78	3.22	4.87	4.11	4.95	3.13	5.3	4.34	4.29	4.3	4.99	5.72	4.53	4.29	4.97	4	3.89	4.22
La	0.197	0.1819	0.328	0.38	0.1243	0.208	0.361	0.356	0.435	0.377	0.474	0.508	0.477	0.479	0.52	0.379	0.472	0.331
Ce	0.561	0.52	0.75	0.81	0.352	0.5	0.818	0.938	0.999	0.686	1.071	1.216	0.972	1.12	1.115	0.952	0.962	0.775
Pr	0.0744	0.0868	0.0936	0.1074	0.0466	0.076	0.0999	0.148	0.1306	0.1102	0.146	0.1681	0.1424	0.1525	0.1571	0.1394	0.1243	0.1174
Nd	0.329	0.461	0.489	0.577	0.196	0.355	0.41	0.542	0.677	0.439	0.774	0.81	0.766	0.713	0.665	0.684	0.648	0.437
Sm	0.113	0.139	0.055	0.073	0.0561	0.0598	0.058	0.137	0.163	0.0523	0.146	0.193	0.152	0.134	0.113	0.153	0.224	0.052
Eu	0.276	0.339	0.34	0.287	0.225	0.233	0.3	0.253	0.296	0.233	0.301	0.43	0.312	0.32	0.316	0.33	0.402	0.298
Gd	0.123	0.144	0.101	0.119	0.0559	0.081	0.109	0.136	0.119	0.0789	0.129	0.185	0.151	0.126	0.124	0.147	0.51	0.074
Tb	0.0241	0.0271	0.0128	0.0093	0.0077	0.0108	0.0129	0.0153	0.0151	0.0082	0.0184	0.0181	0.0131	0.0106	0.0159	0.0208	0.1285	0.0069
Dy	0.174	0.177	0.037	0.095	0.0455	0.0742	0.0408	0.0715	0.0958	0.0383	0.0851	0.106	0.115	0.0719	0.0675	0.0844	1.687	0.0452
Ho	0.0264	0.0447	0.0088	0.0172	0.0109	0.007	0.0043	0.0113	0.0138	0.0059	0.0106	0.0182	0.0151	0.0103	0.0113	0.0168	0.534	0.0067
Er	0.0552	0.083	0.0138	0.0396	0.0153	0.0245		0.0421	0.0172	0.0073	0.0232	0.0166	0.0283	0.0092	0.0195	0.0345	1.934	0.0216
Tm	0.003	0.0097	0.00162	0.0016	0.0019	0.00143		0.00071	0.00245	0.00113	0.00211	0.0044	0.0041	0.00343	0.00189	0	0.392	0
Yb	0.051	0.082	0	0.0193	0.0078	0.011			0.0057	0	0.0146		0.0071				3.14	
Lu	0.0037	0.0083	0	0				0.00124			0.00128		0	0.00147		0	0.585	
Hf	0	0			0	0	0	0	0		0	0	0	0	0	0	0.215	
Ta									0.00263		0.0393							
Pb	0.0904	0.1177	0.1004	0.0677	0.0477	0.0713	0.246	0.0514	0.0699	0.0649	0.257	0.0827	0.1274	0.0817	0.1183	0.0655	0.145	0.1109
Th	0		0		0	0		0	0		0.0022	0			0	0		
U	0	0			0	0				0		0	0.00373	0		0	0	0

Trace Element Plag

Sample Id	345-45	345-31	345-31	345-31	345-32	345-32	345-32	345-32	345-44	345-44	345-42	345-42	345-42
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	1.105		0.073			0.056		0.066		2.54	5.68	0.139	0.464
B	8.41	7.38	8.68	7.55	10.91	12.58	11.2	11.98	8.51	8.92	6.21	5.23	5.44
Si	213947.58	228917.03	242288.98	229548.11	222135.92	231999.3	240903.64	228973.47	233959.81	204593.56	220491.13	224604.58	225819.95
Ca	107298.06	123085.77	120570.05	118568.9	103124.21	124715.33	125172.74	127216.76	113873.3	119355.05	135312.31	112448.83	111176.25
Sc	1.014	1.226	1.374	1.16	1.762	2.021	1.677	1.685	1.046	1.02	0.831	0.967	0.956
Ti 47	325.16	348.47	285.18	436.75	455.92	297.65	231.2	320.69	317.78	213.47	474.97	339.99	559.02
Ti 49	325.03	352.97	286.43	443.13	463.85	305.05	236.78	332.57	323.24	218.85	483.84	343.27	577.41
V	3.66	3.63	4.85	3.22	3.79	2.501	1.45	4.81	2.053	3.75	3.35	4.39	4.17
Cr 52	4.72	6.94	8.02	4.6	4.54	4.12	3.69	4.88	5.28	4.95	2.5	1.94	3.47
Cr 53	0.85		0.56				0.46	0.97					
Cu	0.165	0.127	0.164	0.133	0.231	0.191	0.179	0.182	18.79	0.217	0.143	0.33	
Zn	3.35	1.792	2.57	2.03	2.504	5.1	1.593	1.566	2.96	1.533	2.08	2.88	1.84
Rb	0.116	0.0567	0.0849	0.0734	0.484	0.307	0.221	0.206	0.1007	0.374	1.919	0.1488	0.1216
Sr	122.26	135.12	139.37	132.05	122.59	138.75	138.43	137.09	150.65	134.46	185.88	139.58	139.83
Y	0.315	0.449	0.48	0.309	0.625	0.555	0.671	0.602	0.275	0.435	0.334	0.392	0.481
Zr	0.024	0.0232	0.0208	0.0203	0.0374	0.0461	0.043	0.0836		0.0446	0.0246	0.0427	0.0399
Nb	0.006	0.0072	0.0075			0.0039	0.00134	0.0072	0	0.0091	0.0075		0.0054
Ba	3.62	3.2	4.37	4.08	5.29	4.69	4.18	3.71	4.44	4.49	7.34	4.67	4.32
La	0.365	0.357	0.298	0.351	0.613	0.624	0.638	0.425	0.366	0.212	0.365	0.407	0.426
Ce	0.764	0.729	0.709	0.901	1.565	1.506	1.647	0.904	0.839	0.52	0.759	0.904	0.914
Pr	0.1011	0.1021	0.099	0.1242	0.2117	0.1896	0.2204	0.1371	0.1188	0.0795	0.1129	0.1252	0.109
Nd	0.542	0.658	0.625	0.657	0.96	0.907	1.077	0.73	0.571	0.489	0.506	0.595	0.669
Sm	0.132	0.116	0.083	0.136	0.238	0.178	0.262	0.206	0.127	0.106	0.168	0.126	0.119
Eu	0.273	0.307	0.309	0.292	0.263	0.261	0.264	0.27	0.33	0.266	0.322	0.256	0.357
Gd	0.089	0.157	0.12	0.11	0.2	0.154	0.222	0.152	0.092	0.124	0.084	0.132	0.184
Tb	0.013	0.0177	0.0249	0.0128	0.0236	0.0221	0.0247	0.0236	0.0067	0.0151	0.0145	0.0137	0.019
Dy	0.0537	0.094	0.108	0.0556	0.144	0.125	0.139	0.129	0.0201	0.122	0.088	0.079	0.065
Ho	0.0063	0.0112	0.0165	0.0077	0.0205	0.0162	0.0162	0.0217	0.0084	0.0145	0.0143	0.0099	0.0175
Er	0.0243	0.0279	0.0305	0.0187	0.0443	0.0387	0.0556	0.0364	0.0176	0.0317		0	0.0144
Tm	0	0.00209	0.00276	0.00244	0.00435	0.00286	0.0043	0.0049	0.00274	0.00258	0		0
Yb		0.0146	0.0082	0.0119	0.0195	0.0088	0.0089	0.0215	0	0.0205	0		0
Lu		0.00196		0	0.0013	0.00178	0.00313	0.0024	0	0	0	0	0
Hf	0	0	0			0	0		0	0		0	0
Ta						0.0043		0.00294					0.0026
Pb	0.0799	0.0491	0.0826	0.0677	0.0662	0.746	0.0608	0.0576	0.0676	0.0462	0.0563	0.226	0.0474
Th	0	0	0	0	0	0	0	0	0	0	0		0
U	0	0	0				0	0	0	0			

Trace element Olv

Sample Id	345-108	345-108	345-81	345-81	345-99	345-99	345-99	345-99	345-99	345-99	345-99	345-99	345-70	345-70	345-70	345-70	345-87	345-87
Hole Id	Hole J	Hole J	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	1.798	1.492	1.871	2.81	2.1	2.55	2.9	0.343	0.459	2.09	52.32	25.97	2.27	2.285	1.802	2.221	1.921	2.419
B	4.45	4.31	13.65	9.27	12.27	20.42	6.27	6.66	10.85	15.26	72.76	58.41	6.19	6.97	5.7	6		
Si	185526.66	184919.02	185292.97	185891.31	186975.73	186087.64	186293.3	187069.27	186742.06	186742.05	187910.61	185152.72	184919.02	183900	185994.13	186321.33	187078.58	186882.27
Ca	322.8	218.31	287.76	152.22	346.16	728.15	250.48	100.31	360.19	251.51	235.28	199.74	319.73	245.19	313.76	283.51	186.71	245.95
Sc	11.21	7.07	8.17	6.42	8.34	6.32	6.85	3.44	2.571	5.76	78.3	76.74	7.79	7.27	9.87	8	6.63	6.79
Ti 47	85.14	42.35	136.83	37.04	173.61	72.05	74.1	97.35	81.5	159.6	736.5	1071.63	133.76	112.34	168.18	100.57	119.99	95.96
Ti 49	87.46	42.18	139.14	37.84	172.6	70.53	75.84	101.08	82.63	157.11	745.3	1094.52	136.25	114.03	171.21	105.66		
V	7.07	3.3	8.76	3.3	9.39	3.85	5.73	2.83	2.431	4.96	91.52	92.8	11.82	9.94	11.6	9.41	8.19	6.83
Cr 52	41.57	24.08	13.64	9.26	37.83	13.31	21.5	16.43	16.87	26.09	322.9	264.21	9.49	12	15.53	8.2	10.44	14.22
Cr 53	42.07	18.14	10.77	6.71	35.27	13.42	21.22	14.91	17.61	25	308.1	247.14	7.45	7.61	14.19	7.27		
Cu	0.139		4.12	3.81	2.27	1.403	0.116	1.809	0.495	30.42	23.65	4.3	0.15	0.049	0.053	10.3		
Zn	111.31	123.65	102.98	115.87	103.93	106.85	117.32	28.1	171.01	123.99	1525.36	1434.14	123.36	122.28	127.28	125.6		
Rb			0.1039	0.0129	0.1224	0.0224		0.1927	0.463			0.132				0.0151		
Sr			0.233	0.0206	0.271	0.089	0.0248	0.255	7.23	0.043	0.158	0.068				0.034	0.0127	
Y	0.0793	0.035	0.368	0.19	0.207	0.1236	0.174	0.0437	0.0683	0.116	1.88	1.87	0.892	0.703	0.787	0.691	0.0966	0.1071
Zr			0.241	0.1053	0.242	0.165	0.0927	0.1051	0.1021	0.389	1.02	3.39	0.487	0.37	0.441	0.327	0.0457	0.0401
Nb	0	0		0.0083	0.0167	0.0181			0.0056	0.0263	0.238	0.068	0.00077			0.0012		
Ba	0.011	0.0128				0.0147	0		0.0555									
La			0.0046	0		0.00193		0.00519	0.0138	0.0013	0.038							
Ce			0.0119	0.00335	0.00209			0.0177	0.0397		0.149	0.043			0.00086	0.00126		
Pr			0.00109	0	0	0		0	0.00372	0	0.0447			0	0	0		
Nd				0			0	0.0059	0.0048	0	0.184				0			
Sm	0		0			0	0	0	0.0057	0	0.144		0	0	0		0	
Eu		0	0.0036		0	0		0.0075	0.0261			0.041				0		
Gd			0.0202							0	0.157							
Tb			0.00179		0.00192		0			0			0.00245	0.00218	0.00241	0.00295		
Dy	0	0	0.0394	0.0075	0.0203	0.0041		0		0.008	0.172	0.128	0.0614	0.0401	0.0429	0.0521	0.0051	0.0104
Ho			0.0096	0.00393	0.0073	0.00345	0.0061	0	0.00082	0.0012	0.046	0.051	0.0263	0.0211	0.0186	0.02		0.00426
Er	0.0138	0.0063	0.0527	0.0268	0.0459	0.0152	0.0135	0	0.0072	0.0146	0.288	0.225	0.167	0.154	0.132	0.158	0.0231	0.0115
Tm	0.0053	0.0019	0.0123	0.0087	0.0111	0.0102	0.0063		0.00126	0.0071	0.069	0.071	0.0451	0.0374	0.0482	0.0384	0.0058	0.0058
Yb	0.0446	0.0425	0.174	0.114	0.123	0.084	0.123	0.0223	0.0189	0.085	0.95	1.04	0.519	0.474	0.471	0.392	0.0677	0.0702
Lu	0.0162	0.0073	0.0473	0.0302	0.0314	0.0231	0.0326	0.0059	0.0046	0.0184	0.309	0.36	0.1158	0.1095	0.1259	0.1093	0.0134	0.0193
Hf	0	0		0	0		0			0			0.013	0.0037	0.0086	0.0069		
Ta					0.0011					0.0023								
Pb	0.0289	0.0147	0.0597	0.0216	0.0142	0.0161	0.019	0.0247	0.0353	0.0244	0.303	0.202	0.0065	0.0187	0.0196	0.1656	0.072	0.0137
Th	0	0	0	0	0		0	0	0		0.0179		0		0	0	0	0
U	0	0	0	0.00507	0			0	0	0			0	0	0	0		

Trace element Olv

Sample Id	345-87	345-87	345-87	345-87	345-87	345-89	345-89	345-89	345-89	345-89	345-89	345-71	345-84	345-84	345-84	345-84	345-41	345-41
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	2.446	3.26	2.91	2.551	2.028	1.94	4.07	1.921	3.34	1.85	2.79	1.685	2.81	4.87	1.482	1.16	1.527	4.11
B						13	11.66	11.13	10.76	12.13	9.58	30.02	7.07	7.42	8.4	8.56	16.59	10.15
Si	188424.81	188097.61	187770.38	186751.38	187064.56	186461.52	187489.89	185433.14	185526.64	187373.06	185760.41	186414.83	186929.03	186508.33	184157.11	186573.77	188144.31	187443.17
Ca	211.94	262.97	255.12	605.42	290.15	215.99	1376.58	264.2	222.23	230.14	167.67	1465.17	229.33	219	213.08	206.4	254.62	221.41
Sc	6.91	9.63	7.35	4.3	6.54	7.04	9.01	8.93	7.79	7.93	5.85	3.75	7.28	7.91	6.38	8.55	8.33	6.81
Ti 47	92.31	137.6	72.13			76.58	114.1	131.35	81.66	90.41	45.4	47.57	100.39	98.05	283.86	133.97	135.44	72.46
Ti 49						77.29	119.85	137.04	85.69	94.4	45.52	47.18	101.35	100.39	287.86	137.44	135.96	72.79
V	6.34	10.11	5.84	2.395	5.96	6.25	8.79	8.09	5.85	6.81	4.93	5.89	7.04	7.53	8.58	8.86	8.6	6.51
Cr 52	9.16	11.87	6.63	9.81	24.33	21.8	16.41	17.47	27.38	21.28	10.44	9.06	24.99	24.07	18.68	21.46	30.09	26.66
Cr 53						18.94	13.75	15.34	25.52	18.8	7.96	6.99	22.63	21.45	15.48	20.14	27.69	23.74
Cu						0.846	2.58	0.083	7.38	13.3	1.436	0.077	1.134	7.57	2.27	6.09	6.67	7.43
Zn						109.99	111.03	108.06	107.74	100.31	114.59	31.63	100.61	102.88	94.49	89.28	86.63	103.44
Rb				0.727	0.0753				0.0064			2.638			0.0201		0.0396	0.0189
Sr	0.0259		0.0253	1.316	0.343	0.0101	0.392	0.0057	0.0057	0.0214	0.0097	6.21	0.0162	0.0151	0.0441	0.0209	0.388	0.0849
Y	0.1026	0.1601	0.096	0.0508	0.0679	0.0826	0.1122	0.1156	0.0733	0.1027	0.0648	0.609	0.0977	0.1073	0.1212	0.1506	0.1068	0.1025
Zr	0.0358	0.0732	0.0333	0.0072	0.0162	0.0154	0.0562	0.0414	0.0244	0.0261	0.0383	0.401	0.0362	0.0962	0.495	0.0511	0.0644	0.0423
Nb			0.00183		0.00218		0.00125		0.00084		0.0007	0.00171	0.0138	0.0153	0.0544	0.00356	0.0163	0.00375
Ba												0.192	0.0114				0.133	0.0474
La	0.00137			0.0251	0.00212	0	0.00176	0	0.00053			0.1393				0.00089	0.0118	
Ce			0.00183	0.041	0.00184		0.00146		0.00225		0.00096	0.35		0.00063	0.00105	0.00119	0.0224	0.00139
Pr				0.00386	0.00104	0			0	0		0.0409		0			0.00373	0
Nd				0.0176		0	0			0		0.21		0	0		0.0061	
Sm		0		0.0047		0	0		0	0	0	0.0368	0		0	0	0	
Eu				0.0192	0.0061	0	0.0007		0		0	0.0091	0	0		0		0
Gd							0					0.0445						
Tb					0.00127	0				0.00107		0.0091			0			
Dy	0.0121	0.0124		0.0048		0.0028	0.0085	0.0089	0.00238			0.0622		0	0.0063	0.0039	0.0039	0
Ho	0.00177	0.00387	0.00224	0.00151	0.00225	0.00188	0.00257	0.00174	0.00126	0.0019	0.00107	0.0183			0.00379	0.00415	0.00397	0.00189
Er	0.0102	0.0351	0.0268	0.0094	0.0096	0.018	0.0318	0.0186	0.0166	0.0229	0.0115	0.0853	0.0108	0.0155	0.0179	0.0259	0.0116	0.0166
Tm	0.0051	0.0071	0.00362	0.00284	0.00461	0.00287	0.00762	0.00731	0.00375	0.00529	0.00291	0.0161	0.00457	0.0062	0.0074	0.0085	0.0056	0.00265
Yb	0.08	0.082	0.086	0.04	0.0565	0.0553	0.0643	0.0699	0.0482	0.0725	0.0404	0.192	0.0594	0.0606	0.0754	0.097	0.083	0.0644
Lu	0.0184	0.028	0.0202	0.0099	0.0136	0.0139	0.0205	0.0224	0.0189	0.0183	0.0178	0.0394	0.0203	0.0273	0.0184	0.0316	0.0181	0.0197
Hf						0	0	0	0	0	0	0.0084	0	0			0	0
Ta									0.0007						0.00285	0.0011		
Pb	0.0174	0.0129	0.0135	0.0117	0.028	0.0154	0.0142	0.0141	0.0179	0.0303	0.0183	0.0139	0.019	0.0155	0.0521	0.0275	0.1134	0.0897
Th	0		0	0	0	0	0	0	0	0	0	0.00082	0		0	0	0	0
U	0.00048				0	0	0	0		0	0		0	0	0	0	0.00389	

Trace element Olv

Sample Id	345-41	345-30	345-30	345-30	345-53	345-53	345-53	345-53	345-53	345-53	345-45	345-45	345-45	345-31	345-31	345-31	345-32	345-44	345-44
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	2.05	1.922	2.097	2.273	1.931	2.157	1.311	1.61	1.584	1.421	0.939	0.0446	0.88	1.794	2.388	2.079	2.53	2.155	1.915
B	36.52	12.51	12.06	10.81	9.36	10.78	8.75	8.07	11.06	11.13	4.36	0.319	2.7	14.51	8.17	7.24	10.96	9.08	8.3
Si	251014.91	183610.2	184217.88	184778.78	182581.78	182722.02	182722.02	182488.33	183049.25	185573.42	72197.59	3804	62211.94	186508.33	186882.28	184404.83	186695.28	182535.13	181576.88
Ca	181.46	168.77	245.41	244.45	191.01	263.69	200.07	208.6	706.74	253.42	71.47	71.47	71.47	246.84	220.18	2095.62	192.41	225.44	237.97
Sc	9.12	6.52	7.41	7.42	9.58	7.59	7.5	7.75	7.36	8.02	2.58	0.126	2.59	9.28	9.67	7.74	7.51	6.7	7.45
Ti 47	138.91	64.16	131.65	67.41	163.69	80.83	157.37	140.66	104.97	150.33	28.04	2.159	17.57	97.16	106.06	127.42	83.45	125.71	109.36
Ti 49	144.24	65.5	134.81	67.72	164.54	80.85	157.4	138.32	106.22	149.13	27.25	2.138	17.66	94.86	104.51	128.89	85.57	127.15	109.16
V	13.09	3.4	4.65	3.68	10.67	5.24	8.06	7.52	7.02	7.14	0.964	0.1225	1.65	4.36	5.82	4.69	4.51	6.18	6.34
Cr 52	40.58	21.5	40.36	34.07	34.86	13.18	26.04	15.72	13.65	15.44	3.03	0.305	4.19	38.94	40.44	82.46	19.69	19.35	30.25
Cr 53	40.42	18.66	37.69	31.4	33.61	11.15	24.76	14.12	9.94	13.23	1.738	0.2579	2.89	37.45	41.51	87.06	17.51	16.02	27.54
Cu	158.38	0.281	0.091	0.097		1.396	0.139	0.047	124.52	7.17	2.83	0.2494	0.0132	8.84	10.59	27.11	0.0238	0.15	0.053
Zn	200.79	95.86	98.02	95.94	109.36	102.63	110.42	108.61	108.99	107.01	40.46	1.832	37.69	80.13	96.36	86.66	118.47	106.79	107.26
Rb	0.1327	0.0073				0.0321			0.0124	0.033		0.00052				0.0091			
Sr	0.148	0.0182		0.282		0.0648	0.0303	0.017	0.1923	0.0623	0.0126	0.00484	0.00254	0.031	0.0112	1.289		0.0171	
Y	0.0986	0.0891	0.1418	0.1072	0.17	0.1245	0.0962	0.1083	0.1268	0.1055	0.0453	0.0018	0.0305	0.1776	0.2016	0.1039	0.1872	0.1014	0.0767
Zr	0.0669	0.1124	0.236	0.0697	0.0759	0.06	0.079	0.0882	0.0808	0.0856	0.0484	0.00076	0.00368	0.0408	0.0543	0.1898	0.0935	0.0565	0.0399
Nb		0.0046	0.00715	0	0.00288	0.0035	0.00196	0.00284	0.0165	0.00312	0.00711	0.00023		0.00071		0.0396	0.00155	0.00519	
Ba	0.113			0.0759			0.0174	0.0139	0.0072	0.0174	0.00248	0.00017			0.0062	0.15			0.0114
La	0.0023		0	0	0		0		0.00318		0.00086	0.00007		0.00075		0.00553		0	
Ce		0.00044		0			0	0	0.0119		0.0017	0.00021		0.00067	0.00085	0.00814	0		0
Pr		0		0	0	0	0	0		0		0.00003		0		0.00037			
Nd	0	0	0	0			0	0	0			0		0	0		0		0
Sm		0		0	0	0	0	0	0		0		0	0		0			0
Eu			0	0	0	0.0017		0	0	0	0	0.00013	0			0		0	0
Gd					0	0.0028						0.00006						0	
Tb				0.00036						0.00039		0			0	0.00093	0.00058		
Dy	0	0.0029	0.0045	0.0066	0.0102	0.0102	0.0055		0.006	0.0049				0.007	0.0085	0.0142	0.0087		
Ho	0.00126	0.00332	0.00355	0.00306	0.00378	0.00298	0.00178	0.0019	0.00475	0.00219	0.00165	0.00004	0	0.00478	0.0081	0.00161	0.00501	0.00305	0.00106
Er	0.0103	0.0209	0.0342	0.018	0.0308	0.0223	0.0122	0.0313	0.0182	0.0248	0.0099	0.00032	0.0089	0.0283	0.0354	0.0142	0.0383	0.0161	0.0058
Tm	0.0065	0.00405	0.00771	0.00709	0.0082	0.00622	0.00615	0.00754	0.0083	0.00683	0.00186	0.00007	0.00181	0.0094	0.0077	0.00443	0.0122	0.0021	0.00483
Yb	0.056	0.0631	0.0782	0.0821	0.123	0.0865	0.0446	0.0819	0.0804	0.0701	0.0231	0.00099	0.017	0.116	0.122	0.0724	0.124	0.0499	0.0778
Lu	0.0171	0.0187	0.0191	0.0202	0.0332	0.0225	0.0233	0.0263	0.0261	0.0215	0.00642	0.00033	0.00629	0.0324	0.0316	0.0236	0.0336	0.0235	0.0149
Hf	0	0	0	0	0				0	0		0	0					0	0
Ta														0.00054	0.00074	0.00275			
Pb	0.371	0.0112	0.0108	0.0174	0.0096	0.0262	0.0158	0.0177	0.0195	0.0568	0.00578	0.00194	0.00328	0.0133	0.0147	0.0268	0.0166	0.0174	0.0197
Th	0	0	0	0						0	0		0	0	0	0	0		0
U	0	0	0	0	0	0	0	0		0	0.00026	0	0	0		0	0		0

Trace element Olv

Sample Id	345-44	345-42	345-42	345-42	345-42
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P
Li	2.2	1.709	2.357	2.162	1.847
B	8.31	7.21	6.24	5.58	5.07
Si	181600.22	185947.38	185339.72	182722.08	183002.55
Ca	232.2	279.5	224.52	199.12	236.75
Sc	7.63	9.68	6.95	6.37	9.99
Ti 47	109.2	157.92	103.19	88.72	191.32
Ti 49	112.57	160.03	105.31	90.65	199.16
V	7.37	10.08	7.03	5.86	12.76
Cr 52	16.85	29.02	18.2	15.34	37.21
Cr 53	14.63	26.69	15.21	12.52	36.44
Cu	4.96			0.058	
Zn	103.21	104.01	102.61	98.01	95.91
Rb	0.0596			0.0197	
Sr	0.068			0.0166	0.0281
Y	0.1056	0.1488	0.1142	0.0906	0.1621
Zr	0.0482	0.0901	0.0519	0.0489	0.1262
Nb	0.00147	0	0		
Ba	0.0068				
La				0	
Ce	0			0.00112	
Pr	0	0			0
Nd	0	0		0	
Sm		0	0		
Eu			0		
Gd					
Tb					
Dy	0.0064	0.02	0.0052	0	0.0036
Ho	0.00358	0.00301	0.0038	0.00171	0.00271
Er	0.0298	0.0164	0.0198	0.0167	0.024
Tm	0.0055	0.0088	0.005	0.00311	0.0102
Yb	0.0686	0.096	0.0497	0.0654	0.13
Lu	0.0164	0.0324	0.0238	0.0204	0.0258
Hf	0	0	0		0
Ta			0.0011		
Pb	0.024	0.0208	0.0144	0.0123	0.0118
Th	0	0	0		0
U	0	0	0		0

Trace element Cpx

Sample Id	345-108	345-108	345-108	345-108	345- 109	345- 109	345- 109	345- 109	345- 109	345- 109	345- 109	345-99	345-99	345-99	345-99	345-99	345-70	345-87
Hole Id	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole J	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	1.526	1.482	1.376	1.569	1.424	2.07	1.99	1.6	0.934	1.313	0.0726	6.86	6.42	6.25	3.81	5.73	0.078	3.03
B	4.06	4.02	4.41	4.02	6.01	7.29	5.51	5.57	3.78	6.16	0.271	5.86	5.61	7.07	5.98	5.75	12.64	
Si	230732.41	262390.78	275571.34	240381.61	270440.38	278054.22	222967.75	265566.66	181118.98	274097.91	14636.41	229770.78	234242.69	250116.38	232439.3	224860.55	441063.88	224311.81
Ca	147442.8	151230.72	157877.44	149443.97	157948.94	161951.27	139366.7	157019.84	106347.54	160378.94	8276.24	154018.02	153231.88	151159.25	145298.7	150801.88	158377.72	152660.13
Sc	97.74	108.62	125.2	102.66	129.06	137.01	117.99	100.3	88.3	130.59	6.71	101.15	109.35	101.02	112.86	102.95	6.52	121.24
Ti 47	2104.79	2479.79	4079.37	2056.57	2591.13	4468.34	6049.85	2018.68	2221.21	3212.61	183.11	2498.45	4456.12	4853.22	6750.97	2721.14	1051.79	4017.44
Ti 49	2147.12	2550.84	4257.78	2097.05	2584.79	4445.14	6072.42	2073.5	2296.56	3422.91	195.45	2515.58	4472.04	5060.5	6767.37	2850.8	1059.91	
V	266.57	335.01	427.78	263.7	349.17	467.11	462.16	277.23	268.81	391.39	21.46	313.38	407.04	429.12	554.5	302.47	339.76	461.65
Cr 52	3521.15	1417.02	1752.47	3871.74	1241.46	945.13	906.04	5380.18	902.28	843.47	149.17	7306.62	6201.97	3100.88	2044.51	4855.54		444.04
Cr 53	3601.36	1464.16	1840.74	4096.6	1311.1	1084.42	1019.15	5700.45	976.17	946.13	150.1	8961.33	6567.21	3231.48	2203.11	5338.34	3.7	
Cu	1.09			717.27				0.222		21.39		0.18		299.78	0.161	0.077	0.177	
Zn	30.18	38.53	42.71	37	38.06	37.6	30.65	33.14	25.12	36.42	2.01	33.4	42.61	32.02	28.96	21.15	56.63	
Rb						0.0504	0.049		0.0542	0.0288		0.0237	0.0872	0.1949	0.0556	0.0312	0.0698	0.0279
Sr	6.26	6.11	5.93	6.58	6.38	6.75	5.95	6.02	4.27	6.39	0.331	6.85	6.21	5.91	5.42	6.03	5.11	5.63
Y	9.72	13.09	15.53	10.43	16.32	20.93	16.49	9.85	12.89	18.58	0.923	11.43	28.59	27.27	38.72	20.94	91.12	34.25
Zr	4.23	3.52	5.01	4.48	5.11	6.06	7.02	3.69	3.62	5.61	0.293	5.15	36.99	41.2	54.35	11.76	1.247	23.09
Nb	0.0103	0.0169	0.0268	0.0147	0.0118	0.0263	0.0408	0.0096	0.0156	0.0281	0.00224	0.103	0.344	0.278	0.254	0.238	0.1821	0.1565
Ba				0.0422	0.0169	0.067	0.066	0.0161				0.268	0.262	0.132	0.085	0.165	0.257	
La	0.1411	0.1286	0.1487	0.1255	0.1675	0.187	0.189	0.1195	0.113	0.1589	0.00862	0.1786	0.358	0.416	0.512	0.291	0.964	0.313
Ce	0.6	0.673	0.837	0.569	0.76	0.91	0.919	0.555	0.56	0.826	0.0428	0.713	1.982	2.189	2.769	1.279	6.46	1.74
Pr	0.1722	0.1738	0.2222	0.1397	0.1705	0.241	0.317	0.1217	0.141	0.205	0.01058	0.1718	0.483	0.548	0.723	0.31	1.52	0.506
Nd	1.246	1.447	1.913	1.086	1.593	2	2.116	1.099	1.285	1.72	0.0937	1.424	3.83	3.84	5.45	2.23	9.48	4.18
Sm	0.743	0.851	1.109	0.742	0.885	1.28	1.36	0.524	0.736	1.104	0.0662	0.769	1.97	2.107	2.92	1.326	3.97	2.48
Eu	0.234	0.324	0.413	0.246	0.322	0.481	0.465	0.246	0.277	0.378	0.0185	0.321	0.544	0.489	0.605	0.361	0.909	0.596
Gd	1.211	1.499	1.967	1.19	1.767	2.53	2.48	1.079	1.522	2.25	0.1095	1.404	3.4	3.38	4.74	2.291	5.28	4.13
Tb	0.2288	0.308	0.381	0.254	0.351	0.468	0.41	0.239	0.286	0.406	0.02042	0.291	0.694	0.673	0.938	0.462	1.362	0.844
Dy	1.722	2.347	2.99	1.907	2.78	3.79	3.27	1.82	2.212	3.3	0.1618	2.288	4.98	5.02	6.84	3.48	12.44	6.32
Ho	0.393	0.519	0.589	0.387	0.632	0.838	0.685	0.388	0.507	0.716	0.0367	0.465	1.126	1.031	1.506	0.789	3.28	1.379
Er	1.082	1.498	1.793	1.153	1.733	2.267	1.885	1.022	1.496	2.078	0.098	1.278	3.26	3.01	4.28	2.228	11.85	3.88
Tm	0.1573	0.2162	0.252	0.1711	0.249	0.333	0.265	0.1632	0.207	0.315	0.01666	0.202	0.481	0.426	0.654	0.358	2.157	0.56
Yb	1.106	1.445	1.727	1.237	1.885	2.22	1.673	1.103	1.361	2.05	0.0982	1.122	3.19	2.91	4.09	2.366	17.45	3.53
Lu	0.1689	0.219	0.234	0.1824	0.288	0.366	0.249	0.191	0.215	0.298	0.01566	0.194	0.434	0.407	0.562	0.34	2.406	0.511
Hf	0.223	0.242	0.35	0.228	0.299	0.512	0.664	0.226	0.167	0.304	0.0207	0.299	0.864	0.882	1.378	0.311	0.0143	0.796
Ta			0.003							0.0034			0.0386	0.0546	0.0465	0.0122		0.0294
Pb	0.559	0.0197	0.0164	0.0873	0.0132	0.0237	0.0163	0.0246	0.0262	0.0274		0.0157	0.0252	0.0486	0.0254	0.0201	0.0128	0.0197
Th	0.00098				0	0	0.0038	0	0.00269	0	0.00008	0.0199	0.0931	0.0931	0.0693	0.0744	0.0256	0.0322
U			0.00185			0	0	0	0	0		0.0119	0.0154	0.0125	0.0092	0.0106	0.0083	0.00727

Trace element Cpx

Sample Id	345-87	345-87	345-89	345-89	345-89	345-71	345-71	345-84	345-84	345-41	345-41	345-41	345-30	345-30	345-53	345-53	345-53	345-53
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	3.75	3.99	4.87	3.58	5.65	1.613	4.38	3.69	3.26	4.25	3.57	4.77	6.53	6.15	3.03	4.22	3.23	5.4
B			13.93	11.01	12.27	19.63	9.59	9.91	7.23	6.58	6.53	7.52	10.42	9.84	7.06	15.49	8.25	9.85
Si	244417.72	234302.8	263299.59	246532.91	228837.3	404704.13	231302.66	287832.03	213952.61	231869.09	233944.7	254772.91	205378.69	221268.98	192711.22	402786.22	240262.55	263724.88
Ca	151159.25	152874.52	163809.41	157419.98	143083.14	156876.88	156876.89	160021.58	145012.84	157019.8	150087.2	156233.63	156162.16	163166.23	130504.39	157298.53	146942.52	156805.39
Sc	111.99	118.78	110.74	124.85	96.51	89.06	122.79	139.93	107.62	124.63	106.05	109.27	92.71	96.37	115.26	160.04	117.33	122.78
Ti 47			5272.48	4582.89	3339	10510.16	8914.77	5129.83	5481.19	5631.48	5740.26	4794.76	2492.61	3836.56	2987.59	10563.8	5511.68	3335.4
Ti 49			5272.19	4572.82	3492.2	10499.27	8725.6	5239.23	5462.45	5497.42	5658.96	4966.99	2564.04	3883.61	3028.05	10554.43	5298.65	3388.54
V	308.98	389.31	489.61	430.2	371.53	405.87	683.98	456.39	434.39	471.78	548.07	485.26	293.19	315.3	283.09	711.18	426.01	376.02
Cr 52	1477.29	1497.71	1509.49	1298.07	1881.23	701.47	1492.24	2386.69	1103.58	1015.74	1256.08	1840.2	8105.93	8658.54	1195.98	2530.6	966.52	1912.49
Cr 53			1532.69	1338.04	1943.05	708.32	1493.73	2502.22	1199.79	1058.69	1354.01	1970.54	8444.47	9080.89	1264.64	2672.76	1054.12	1995.14
Cu			0.189	0.102	0.822	0.263	0.183	0.17	0.098	0.812	0.594	1.505	0.904	0.314	0.242	0.291	0.147	0.38
Zn			34.15	30.23	29.81	50.97	27.18	40.26	26.52	23.3	23.53	24.6	35.34	47.01	22.64	83.38	32.6	32.91
Rb	0.0312	0.0832	0.1786	0.014	0.1212	0.293	0.0977	0.0436	0.0488	0.0324	0.0608	0.0632	0.0712	0.0851	0.0223	0.0499	0.0081	0.1911
Sr	5.66	5.49	6.61	5.6	6.15	6.68	6.37	5.88	6.3	7.72	13.3	6.92	7.22	6.68	5.19	5.1	5.08	6.5
Y	18.45	24.94	26.42	29.2	17.55	25.97	46.65	33.85	30.84	34.92	28.55	26.85	18.09	20.49	23.56	38.13	37.39	21.27
Zr	7.34	12.53	18.07	15.48	8.69	49.38	24.54	22.31	29.58	23.95	28.15	17.26	14.69	24.45	13.82	78.43	51.58	10.42
Nb	0.1587	0.1266	0.1674	0.2068	0.1811	0.1218	0.1392	0.27	0.1521	0.1116	0.1415	0.238	0.533	0.599	0.6	0.52	0.338	0.704
Ba			0.21	0.0197	0.162	0.782	0.439	0.0536	0.479	0.807	0.298	0.352	0.435	0.604	0.0638	0.0244	0.0157	0.0148
La	0.234	0.305	0.379	0.312	0.268	1.485	0.715	0.334	0.365	0.429	0.285	0.329	0.333	0.346	0.2552	0.422	0.402	0.273
Ce	1.159	1.449	1.993	1.462	1.392	3.15	3.29	1.786	1.778	1.798	1.722	1.847	1.371	1.623	1.007	2.313	2.157	1.194
Pr	0.304	0.362	0.488	0.382	0.332	0.411	0.773	0.456	0.442	0.487	0.471	0.421	0.327	0.425	0.2557	0.665	0.582	0.313
Nd	2.27	3	3.72	3.26	2.483	2.022	5.81	3.78	3.74	3.91	3.52	3.39	2.393	2.96	2.215	5.19	4.65	2.268
Sm	1.083	1.63	1.992	1.807	1.244	0.922	3.16	1.983	2.086	2.275	2.158	1.887	1.239	1.614	1.35	2.97	2.501	1.32
Eu	0.37	0.499	0.575	0.506	0.43	0.198	0.534	0.514	0.491	0.603	0.488	0.469	0.359	0.377	0.336	0.578	0.515	0.404
Gd	2.04	2.86	2.47	2.66	1.84	1.687	5.03	3.49	3.53	3.75	3.33	3.02	1.612	2.046	2.212	4.09	3.83	2.15
Tb	0.455	0.586	0.637	0.649	0.428	0.427	1.095	0.718	0.725	0.819	0.712	0.625	0.398	0.492	0.518	0.944	0.831	0.5
Dy	3.26	4.44	4.65	5.04	3.07	4.04	8.12	5.76	5.55	6.11	5.26	4.83	3.02	3.64	4	7.08	6.6	3.75
Ho	0.746	0.964	1.043	1.123	0.708	0.989	1.81	1.308	1.214	1.368	1.16	1.047	0.702	0.81	0.921	1.48	1.437	0.855
Er	2.2	2.8	3.01	3.33	2.015	3.41	5.08	3.84	3.6	4.02	3.37	3.06	2.078	2.286	2.69	4.31	4.22	2.43
Tm	0.308	0.422	0.437	0.498	0.317	0.569	0.76	0.594	0.52	0.581	0.483	0.459	0.317	0.347	0.399	0.606	0.604	0.373
Yb	2.26	2.71	2.91	3.28	2.126	3.93	4.93	3.87	3.42	3.92	3.16	3.17	2.244	2.109	2.61	4.25	4	2.53
Lu	0.324	0.401	0.416	0.469	0.297	0.579	0.695	0.587	0.483	0.555	0.423	0.437	0.308	0.322	0.389	0.605	0.585	0.379
Hf	0.339	0.527	0.653	0.587	0.281	1.019	1.215	0.6	0.94	0.794	1.004	0.494	0.317	0.586	0.422	3.11	1.045	0.388
Ta	0.0118	0.0133	0.0238	0.0194	0.0128		0.0095	0.0407	0.0261	0.0214	0.0282	0.0298	0.0357	0.0523	0.0409	0.1127	0.0661	0.0225
Pb	0.0143	0.0213	0.0229	0.0238	0.0237	0.0422	0.0323	0.0192	0.0369	0.0654	0.0579	0.049	0.0175	0.025	0.0176	0.0308	0.0133	0.0352
Th	0.0195	0.0134	0.0275	0.0255	0.0174	0.0407	0.1372	0.0629	0.0321	0.0411	0.0156	0.037	0.0447	0.0533	0.137	0.274	0.1221	0.1449
U	0.00728	0.00443	0.0082	0.00746	0.0053	0.0372	0.0271	0.0112	0.00791	0.00865	0.00306	0.0082	0.01371	0.01279	0.0226	0.00752	0.00764	0.0458

Trace element Cpx

Sample Id	345-45	345-45	345-45	345-31	345-31	345-31	345-32	345-32	345-32	345-32	345-44	345-44	345-44	345-42	345-42	345-42	345-42
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	5.62	2.4	7.36	4.57	5.37	5.49	4.22	4.04	4.5	4.9	4.51	4.56	7.25	3.59	4.06	3.59	3.06
B	8.99	7.93	10.42	7.08	6.88	7.52	14.38	11.6	12.83	10.74	9.79	9.64	8.56	7.45	7.3	6.86	6.14
Si	257498.69	240788.23	269626.81	224698.44	234173.02	224903.73	277362.41	224535.25	232928.88	236537.05	250044.66	234292.56	247752.09	250173.52	248724.45	251529.09	251809.59
Ca	161093.63	163380.64	163523.56	156376.52	160093.02	158520.67	168312.08	166525.33	161736.81	161236.53	158949.48	150201.55	160593.3	168808.42	165421.3	156121.94	155477.44
Sc	104.29	146.18	139.52	128.27	113.57	101.35	115.8	122.41	105.95	100.26	102.94	112.41	107.78	154.16	146.11	115.23	134.1
Ti 47	4687.62	6346.2	6129.45	4068.74	2266.95	1886.42	10360.2	3737.59	3025.78	2915.5	2756.93	2918.16	3958.04	8272.99	7102.32	4854.64	5662.1
Ti 49	4752.89	6330.2	5525.93	4093.47	2305.42	1953.94	10019.63	3885.3	3209.85	3057.07	2818.12	2994.86	4086.34	8023.53	6930.96	5070.73	5868.02
V	484.11	595.12	508.34	372.54	269.2	229.92	693.47	377.06	373.67	343.01	316.59	343.47	406	640.57	559.93	440.01	503.34
Cr 52	1505.98	723.99	1113.01	4940.77	8391.62	6841.35	2805.38	4939.51	5272.18	5290.8	3102.39	4485.61	1229.64	907.62	966.74	1463.58	1180.1
Cr 53	1586.36	740.14	1170.18	5429.31	9180.46	7315.07	2881.82	5327.09	5825.33	5486.06	3096.96	4825.52	1240.55	932.76	981.76	1540.9	1248.24
Cu	0.163	0.299	0.103	0.187	0.233	0.144	0.655	0.126	0.23	0.254	0.089	0.671	0.124	0.095	0.06	0.079	0.241
Zn	29.83	25.85	35.82	24.5	25.91	19.18	55.25	29.68	29.22	31.21	29.68	27.5	30.99	29.34	22.86	26.67	28.58
Rb	0.0622	0.0438	0.287	0.0477	0.0434	0.0304	0.0915	0.1061	0.1109	0.0901	0.0116	0.0491	0.1281	0.0824	0.0853	0.0786	0.0149
Sr	6.28	5.54	6.52	6.16	7.58	6.79	6.96	6.41	7.47	6.76	7.23	6.17	7.41	7.02	7.14	6.16	5.8
Y	23.5	35.97	38.02	34.16	12.39	10.21	55.65	45.4	26.08	16.56	14.8	21.44	23.67	44.9	38.97	35.51	33.15
Zr	15.4	29.06	28.4	19.46	5.62	4.09	71.35	42.47	10.15	6.45	5.23	9	14.26	28.61	20.43	37.58	19.44
Nb	0.237	0.118	0.1783	0.312	0.2048	0.1075	0.394	0.232	0.237	0.1693	0.159	0.257	0.251	0.278	0.448	0.2008	0.339
Ba	0.224	0.122	0.246	0.604	0.293	0.384	0.816	0.392	0.273	0.225	0.256	0.162	0.311	0.144	0.306	0.158	0.0269
La	0.306	0.354	0.445	0.347	0.1684	0.1252	0.731	0.542	0.433	0.304	0.2051	0.275	0.395	0.474	0.368	0.439	0.395
Ce	1.843	2.063	2.07	1.457	0.633	0.451	3.84	2.654	1.905	1.192	0.904	1.312	1.746	2.218	1.713	2.187	1.868
Pr	0.479	0.565	0.56	0.417	0.1642	0.1395	0.972	0.68	0.436	0.266	0.222	0.34	0.458	0.582	0.49	0.569	0.488
Nd	3.27	4.57	4.42	3.27	1.368	1.038	7.23	5.12	3.02	2.089	1.776	2.344	3.11	4.69	4.17	4.54	3.72
Sm	1.79	2.589	2.404	1.892	0.763	0.609	4.09	2.82	1.565	1.043	1.025	1.231	1.681	2.77	2.6	2.34	2.25
Eu	0.578	0.615	0.631	0.471	0.272	0.241	0.619	0.478	0.406	0.324	0.369	0.416	0.55	0.627	0.559	0.51	0.544
Gd	2.655	3.98	4.08	3.34	1.343	1.066	5.28	4.01	2.24	1.7	1.596	2.142	2.446	5.13	4.42	3.88	3.72
Tb	0.557	0.853	0.856	0.712	0.281	0.2432	1.267	0.982	0.57	0.371	0.347	0.475	0.546	0.987	0.901	0.859	0.754
Dy	4.19	6.29	6.77	5.87	2.168	1.84	9.54	7.76	4.35	2.89	2.626	3.81	4.09	7.89	6.92	6.05	5.91
Ho	0.927	1.391	1.512	1.301	0.461	0.391	2.111	1.701	0.992	0.645	0.555	0.82	0.926	1.699	1.529	1.376	1.347
Er	2.71	3.99	4.51	3.9	1.416	1.067	6.23	5.22	2.99	1.922	1.654	2.5	2.79	4.98	4.34	4.05	3.79
Tm	0.395	0.614	0.66	0.596	0.2074	0.165	0.904	0.774	0.489	0.284	0.233	0.362	0.39	0.712	0.623	0.611	0.578
Yb	2.63	4.28	4.28	3.71	1.376	1.092	6.44	4.89	3.37	1.986	1.728	2.58	2.61	4.82	4.06	4	3.83
Lu	0.389	0.598	0.621	0.572	0.2098	0.1697	0.864	0.692	0.479	0.291	0.255	0.397	0.366	0.692	0.619	0.543	0.523
Hf	0.445	0.973	0.858	0.622	0.31	0.211	1.929	0.593	0.318	0.293	0.269	0.293	0.35	0.957	0.846	0.672	0.619
Ta	0.0268	0.0257	0.0291	0.0259	0.0035		0.0275	0.0228	0.008	0.00445	0.00287	0.0108	0.0206	0.0315	0.0337	0.035	0.0294
Pb	0.011	0.0227	0.0396	0.0181	0.0266	0.0168	0.0283	0.0177	0.0359	0.0388	0.0222	0.0211	0.022	0.0282	0.0319	0.0247	0.0168
Th	0.0295	0.0466	0.0628	0.0741	0.02	0.0087	0.327	0.1716	0.1501	0.0874	0.0249	0.0178	0.0474	0.1082	0.0752	0.0943	0.1128
U	0.00893	0.00657	0.00528	0.0171	0.00843	0.00656	0.0339	0.0324	0.0404	0.0307	0.0118	0.00933	0.0108	0.0144	0.02	0.0107	0.0246

Trace element Opx

Sample Id	345-108	345-108	345-81	345-81	345-81	345-81	345-81	345-81	345-99	345-99	345-99	345-99	345-99	345-99	345-99	345-70	345-70	345-70
Hole Id	Hole J	Hole J	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	0.527	0.34	0.357	0.49	0.408	0.852	0.519	0.772	0.495	0.548	0.341	0.286	0.274	0.66	0.75	1.68	0.656	1.782
B	5	4.72	7.34	7.9	6.85	15.79	6.86	7.42	4.92	4.07	1.265	2.24	1.8	4.01	5.11	4.77	5.56	4.82
Si	280756.81	285425.13	179931.27	197481.64	204806.92	447975.84	219516.45	219870.16	171391.59	168963.23	54607	104526.59	89316.15	211319.23	241713.8	119952.61	195804.55	121890.74
Ca	19025.34	19046.78	10788.41	11699.66	10506.11	15094.49	11657.49	14056.03	8269.09	9648.46	5496.05	5281.64	4595.53	10148.75	9719.93	12836.03	10649.04	10363.16
Sc	61.14	73.11	44.46	43.5	43.3	88.22	44.99	47.69	38.2	30.34	10.33	18.85	14.67	35.1	52.45	22.46	44.63	30.03
Ti 47	1770	1588.02	2123.74	2310.4	2570.17	7161.97	2763.45	3087.81	3847.49	1803.89	772.02	1024.9	863.69	2139.77	4677.79	1987.89	3239.91	2972.66
Ti 49	1802.15	1624.34	2197.14	2390.23	2658.58	7305.98	2831.19	3163.08	3893.64	1832.22	799.65	1061.47	885.7	2223.15	4870.46	2001.14	3187.82	2963.15
V	159.56	167.38	162.7	188.29	195.84	413.94	218.31	217.28	171.91	147.55	54.73	94.45	79.5	187.21	217.61	176.43	249.14	186.06
Cr 52	776.08	926.12	203.75	235.54	295.96	660.88	219.46	331.32	384.67	443.65	187.42	329.3	259.94	570.48	574.66	349.3	641.81	248.05
Cr 53	743.19	903.99	212.02	242.57	302.59	669.82	239.29	353.16	414.92	474.31	188.35	338.5	271.14	597.2	591.03	341.92	648.97	256.41
Cu	0.068		0.028	0.062		0.197		0.043		0.051	0.1974			0.05	0.059	0.0468	0.047	0.0589
Zn	94.79	91.34	58.79	64.02	71.27	154.37	78.55	76.09	54.83	58.2	17.46	35.92	30.75	71.29	81.01	42.42	66.35	45.33
Rb						0.0749		0.0267			0.0215		0.00274	0.0055		0.1652	0.0108	0.451
Sr	0.1141	0.1395	0.1091	0.243	0.0848	0.342	0.0894	0.375	0.0595	0.0902	0.2116	0.049	0.0362	0.0741	0.063	1.034	0.1478	1.32
Y	3.21	3.98	10.72	13.26	11.49	21.53	15.98	11.71	6.78	5.14	1.666	2.743	2.189	5.75	8.86	12.45	19.2	14.54
Zr	0.549	0.893	7.66	12	11.28	19.71	17.37	12.36	12.84	5.91	2.294	2.882	2.498	7.49	14.94	12.85	24.55	17.39
Nb	0.0076		0.0077	0.0056	0.0075	0.0466	0.01	0.012	0.448	0.0067	0.00896	0.0101	0.0066	0.0169	0.342	0.0268	0.0237	0.055
Ba	0.0222		0	0.009		0.072		0.0345	0.0278	0.0581	0.0162		0.00228			0.1602	0.0132	0.1896
La	0.0055	0.004	0.0103	0.0143	0.0072	0.0196	0.0129	0.0278	0.0051	0.0067	0.01082	0.00509	0.00251	0.0064	0.00264	0.1376	0.0529	0.1602
Ce	0.0153	0.0116	0.102	0.0854	0.0768	0.1056	0.1059	0.1161	0.0381	0.0364	0.0697	0.0415	0.0306	0.0529	0.0395	0.363	0.1766	0.362
Pr	0.0073	0.00303	0.0354	0.03	0.0275	0.0257	0.0298	0.0277	0.014	0.0166	0.01469	0.0103	0.01052	0.0177	0.0117	0.0588	0.0382	0.0598
Nd	0.0602	0.042	0.252	0.289	0.275	0.275	0.318	0.225	0.108	0.137	0.135	0.1092	0.0664	0.179	0.163	0.364	0.397	0.364
Sm	0.0636	0.081	0.181	0.221	0.241	0.286	0.326	0.229	0.13	0.0834	0.0768	0.059	0.0711	0.135	0.154	0.19	0.364	0.232
Eu	0.0206	0.0279	0.035	0.0313	0.0336	0.0446	0.0278	0.0414	0.0151	0.0218	0.0191	0.0112	0.0108	0.0245	0.0245	0.0316	0.0291	0.0313
Gd	0.166	0.205	0.576	0.653	0.675	0.904	0.829	0.652	0.378	0.252	0.1502	0.1518	0.1124	0.304	0.403	0.52	0.8	0.587
Tb	0.044	0.062	0.1404	0.1917	0.1702	0.297	0.228	0.1659	0.0806	0.0702	0.03	0.0425	0.032	0.0777	0.1172	0.174	0.272	0.1823
Dy	0.447	0.5	1.441	1.916	1.636	2.95	2.21	1.516	0.887	0.755	0.246	0.383	0.292	0.751	1.067	1.717	2.576	1.956
Ho	0.1183	0.1487	0.38	0.494	0.426	0.795	0.607	0.425	0.249	0.1933	0.0583	0.0963	0.084	0.2024	0.327	0.452	0.694	0.547
Er	0.413	0.517	1.32	1.563	1.45	2.85	2.05	1.634	0.953	0.69	0.1977	0.359	0.275	0.735	1.328	1.69	2.54	2.016
Tm	0.076	0.0828	0.236	0.283	0.245	0.478	0.372	0.274	0.1683	0.1218	0.0322	0.0601	0.0553	0.1379	0.2194	0.287	0.437	0.358
Yb	0.564	0.729	1.821	2.025	1.795	3.49	2.9	2.1	1.37	0.861	0.233	0.463	0.401	1.037	1.66	2.312	3.22	2.88
Lu	0.1128	0.1391	0.276	0.345	0.277	0.611	0.45	0.338	0.235	0.1547	0.0396	0.0796	0.0652	0.1755	0.327	0.343	0.534	0.472
Hf	0.0347	0.0463	0.142	0.279	0.34	0.782	0.5	0.314	0.534	0.168	0.1177	0.0781	0.0381	0.174	0.754	0.405	0.787	0.936
Ta								0	0.013					0.00127	0.0079	0.00101		0.00118
Pb	0.0201	0.0312	0.0103	0.0116	0.0157	0.0371	0.0086	0.0157	0.016	0.0142	0.00469	0.00542	0.00574	0.0115	0.0175	0.0072	0.0083	0.0162
Th		0	0.0082	0.0077	0.0052	0.0117	0.0128	0.0101	0.0144	0.00181	0.00741	0.00439	0.00095	0.00401	0.0104	0.00537	0.0222	0.00737
U				0.0741	0	0.0149	0	0.00173		0	0.00027	0	0	0	0	0.00062	0.00102	0.00114

Trace element Opx

Sample Id	345-70	345-70	345-70	345-70	345-87	345-87	345-87	345-87	345-87	345-87	345-87	345-87	345-89	345-89	345-89	345-89	345-71	345-71
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	1.065	0.74	0.937	0.827	0.71	1.088	0.603	0.965	0.906	0.337	0.509	1.121	0.663	0.547	0.888	0.461	0.881	0.708
B	6.45	5.64	5.34	7.22									9.33	5.17	7.8	6.45	16.26	5.82
Si	234148	230358.94	195087.89	282740.5	304680.81	347961.09	239851.72	353835.13	379568.28	190794.56	118134.45	243227.16	204204.02	110152.98	203350.75	180523.27	415142.56	180786.95
Ca	12650.21	12864.62	10506.1	11864.04	11835.45	12006.98	9834.29	15987.86	13843.76	8862.29	8219.06	8640.73	9362.58	7039.8	10291.69	11220.81	21984.2	9005.23
Sc	53.37	40.55	36.21	63.23	46.33	55.82	42.52	67.78	78.53	45.6	25.42	56.94	41.77	22.67	40.7	34.12	90.68	36
Ti 47	3833.73	2046.84	2021.87	3672.34	3714.03	4341.18	2999.7	4190.43	4604.56	2124.96	1131.57	2305.07	2376.98	1268.31	2707.96	2054.92	8029.75	3060.93
Ti 49	3870.07	2123.66	2089.93	3833.52									2484.81	1325.32	2798.24	2148.45	7980.79	3117.67
V	306.97	164.52	165.48	371.87	242.43	302.16	204.38	312.13	310.12	159.34	93.59	190.12	179.36	86.52	163.65	167.08	628.84	225.03
Cr 52	786.57	394.06	456.15	543.85	354.02	447.32	282.66	388.47	374.26	191.47	106.33	209.72	377.17	168.5	364.91	272.44	661.86	373.45
Cr 53	783.66	381.58	455.06	551.18									355.21	162.4	364.67	280.12	687.93	385.39
Cu	0.114		0.039	0.122									0.0642	0.029	0.0603	0.0996	0.114	0.0514
Zn	83.16	80.57	67.88	103.11									65.73	35.6	66.11	56.17	157.85	66.96
Rb	0.0994	0.0052	0.0064	0.0061		0.0577	0.0169	0.0185	0.0839	0.0099	0.0467	0.116		0.0321	0.0938	0.033	0.0412	0.0047
Sr	0.323	0.1409	0.0961	0.1791	0.1133	0.141	0.1129	0.215	0.469	0.1194	0.303	0.179	0.0828	0.336	4.08	0.304	1.284	0.0522
Y	29.38	12	11.96	37.5	4.76	5.77	4.74	7.15	7.59	4.98	2.64	5.56	4.29	2.48	3.78	4.4	70.42	16.86
Zr	32.8	4.77	8.86	29.7	3.15	3.81	3.3	4.81	4.41	2.44	1.24	2.19	2.367	1.119	1.578	5.48	58.15	8.6
Nb	0.0507	0.0264	0.0133	0.0199	0.0149	0.0132	0.0148	0.0285	0.0331	0.008	0.0087	0.009	0.0088	0.00584	0.0208	0.0185	0.584	0.0098
Ba	0.0332		0.0047	0.0087										0.0461	0.142	0.0109	0.069	0.00366
La	0.0295	0.0292	0.0189	0.0301	0.0075		0.0087	0.0135	0.0297	0.0067	0.0137	0.0109	0.00388	0.0148	0.0287	0.0191	0.984	0.00701
Ce	0.1882	0.2021	0.1358	0.1606	0.0497	0.0497	0.0456	0.0748	0.0767	0.0318	0.0343	0.0251	0.0322	0.0327	0.0651	0.0986	4.01	0.0873
Pr	0.0639	0.0549	0.0376	0.0507	0.013	0.0129	0.0116	0.0237	0.0171	0.0088	0.0063	0.0055	0.01028	0.00477	0.00805	0.025	0.842	0.0301
Nd	0.527	0.419	0.321	0.512	0.087	0.101	0.113	0.194	0.116	0.0615	0.0412	0.0456	0.0796	0.0532	0.0697	0.243	5.7	0.306
Sm	0.533	0.257	0.224	0.515	0.072	0.106	0.0798	0.146	0.124	0.094	0.0312	0.0498	0.073	0.0394	0.0409	0.1237	2.51	0.259
Eu	0.0355	0.0305	0.0263	0.0324	0.0229	0.0273	0.0249	0.0455	0.0315	0.0184	0.0174	0.0204	0.0194	0.0235	0.028	0.0415	0.1293	0.0271
Gd	1.298	0.571	0.545	1.439	0.203	0.274	0.215	0.368	0.29	0.228	0.107	0.208	0.159	0.1024	0.112	0.236	4.6	0.642
Tb	0.398	0.1725	0.1662	0.44	0.0639	0.0706	0.0601	0.1039	0.0902	0.0573	0.0284	0.0593	0.052	0.0326	0.0433	0.07	1.113	0.2156
Dy	4	1.617	1.631	4.77	0.667	0.701	0.599	0.952	0.883	0.66	0.331	0.676	0.545	0.314	0.458	0.618	9.75	2.107
Ho	1.082	0.445	0.422	1.375	0.1711	0.1901	0.1593	0.272	0.243	0.1871	0.0916	0.201	0.151	0.0865	0.1371	0.167	2.476	0.602
Er	3.9	1.541	1.538	5.12	0.655	0.757	0.641	1.026	1.145	0.658	0.361	0.782	0.605	0.347	0.561	0.621	8.55	2.195
Tm	0.731	0.263	0.268	0.964	0.1227	0.1458	0.1188	0.178	0.213	0.1328	0.0715	0.1357	0.1093	0.0603	0.1094	0.1068	1.48	0.419
Yb	5.36	2.002	2.015	7.14	1.081	1.263	0.923	1.399	1.68	1.051	0.585	1.253	0.837	0.474	0.882	0.787	11.15	3.13
Lu	0.872	0.308	0.297	1.207	0.1737	0.191	0.1521	0.249	0.328	0.1875	0.1011	0.229	0.1492	0.0891	0.1622	0.1364	1.708	0.486
Hf	0.975	0.0572	0.234	1.338	0.123	0.153	0.14	0.193	0.172	0.128	0.0461	0.125	0.1019	0.0454	0.0775	0.19	1.787	0.178
Ta	0.00233	0.00081			0.00225				0.0035		0.00114			0.00045	0.00164	0.00085	0.0102	
Pb	0.0149	0.01	0.0066	0.0229	0.0288	0.035	0.0101	0.0253	0.0169	0.0104	0.0052	0.0102	0.0109	0.00513	0.021	0.0159	0.0286	0.0106
Th	0.0162	0.0471	0.0114	0.00229	0.00172	0.00165	0.0037	0.0065	0.00169	0.00358			0.00062	0.00027	0	0.0081	1.052	0.00401
U	0.00042	0.0004	0	0									0	0		0.00119	0.1378	0

Trace element Opx

Sample Id	345-71	345-71	345-84	345-84	345-84	345-41	345-41	345-30	345-30	345-30	345-30	345-53	345-53	345-53	345-53	345-45	345-45	345-45
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	0.841	3.48	0.515	0.466	0.33	0.1661	0.495	0.308	0.922	0.439	0.69	0.399	0.359	0.349	0.516	0.848	1.155	0.653
B	7.86	8.11	5.04	5.28	5.56	0.841	5.21	5.2	12.98	7.32	8.2	6.15	3.54	5.73	9.06	12.58	6.91	5.97
Si	251869.23	223792.19	184094.69	200565.3	191185.38	30393.81	207688.14	115039.8	311878.25	168631.05	193678.84	157846.08	122851.79	177220.22	277880.16	388598.06	222811.61	194675.77
Ca	11599.6	153660.73	10105.87	11085.01	9934.34	4023.77	9162.47	9961.5	11513.83	8787.25	10791.98	8790.82	6575.25	7004.07	8219.06	13500.7	10062.99	9434.05
Sc	58.22	124.42	40.54	37.47	40.47	5.82	41.31	17.68	53.33	34.93	40.86	31.73	24.5	29.96	51.47	92.13	53.16	47.5
Ti 47	5296.21	15619.53	2287.05	1743.49	2526.35	382.66	2553.42	1380.06	4635.13	2470.82	2394.56	2332.15	1875.73	2318.51	4061.8	5105.87	3249.6	2700
Ti 49	5226.31	15486.17	2318.16	1771.01	2578.76	387.68	2651.8	1451.07	4693.78	2346.8	2460.05	2347.81	1905.09	2371.88	4144.47	5216.71	3286.26	2742.87
V	361.28	891.38	173.65	152.65	176.73	25.97	194.86	86.81	261.25	149.81	171.93	106.69	122.29	141.85	235.7	347.85	206.68	183.75
Cr 52	153.67	385.19	379.89	411.09	400.44	67.91	513.63	839.55	2661.38	1473.66	1588.91	238.11	242.73	277.56	482.83	378.77	240.25	224.19
Cr 53	164.27	398.04	386.67	384.18	411.21	67.88	526.93	841.42	2640.69	1489	1613.53	243.78	262	280.4	506.65	412.76	260.09	238.74
Cu	0.088	0.361	0.034		0.042	0.1834	0.435	14.36	0.33	0.0742	0.0714	0.087	0.703	0.477	0.293	0.13	0.149	
Zn	91.21	26.92	53.78	59.53	56.64	8.59	65.21	29.35	89.68	47.33	54.42	46.58	40.89	56.9	93.48	124.62	75.32	63.15
Rb		0.0394	0.0369		0.0172	0.01463	0.0165	0.0616	0.0251		0.0581	0.0205	0.0113	0.0107	0.0379	0.0548	0.0756	0.0338
Sr	0.0746	5.55	0.1442	0.0765	0.415	0.309	0.1491	0.606	0.464	0.408	0.451	3.075	0.2294	0.413	0.436	0.307	1.113	0.2502
Y	34.83	148.48	5.33	4.82	4.73	0.552	4.05	1.99	7.16	4.71	5.72	3.6	3.62	4.39	7.07	8.5	5.36	4.91
Zr	26.94	136.35	4.63	2.8	3.63	0.34	2.883	2.382	7.11	4.19	6.45	2.219	4.27	4.45	6.23	4.44	2.454	2.77
Nb	0.0157	1.015	0.0108	0.0085	0.007	0.00301	0.0155	0.0477	0.0797	0.0238	0.0159	0.0137	0.0138	0.0168	0.0346	0.0572	0.0301	0.0169
Ba		0.245			0.0335	0.0793	0.0249	0.0314	0.151	0.0515	0.072	0.1297	0.0508	0.032	0.066	0.112	0.21	0.0212
La	0.0208	1.361	0.0102	0.00246	0.00772	0.01728	0.00551	0.02	0.0096	0.00808	0.0127	0.014	0.00318	0.00373	0.0231	0.0086	0.0788	0.0084
Ce	0.1157	8.45	0.0356	0.0371	0.0275	0.0388	0.0272	0.0492	0.0382	0.0446	0.0547	0.0344	0.0315	0.0247	0.0693	0.0246	0.1311	0.0238
Pr	0.0377	2.281	0.00881	0.00823	0.00508	0.00441	0.00794	0.00631	0.0071	0.01244	0.01431	0.00489	0.00939	0.00772	0.00915	0.00325	0.0159	0.00516
Nd	0.363	17.67	0.0754	0.1057	0.0632	0.0241	0.0768	0.0417	0.0717	0.1144	0.1583	0.0553	0.0897	0.0725	0.0904	0.0836	0.0707	0.0561
Sm	0.494	9.67	0.0929	0.0503	0.0582	0.0087	0.0499	0.0274	0.1021	0.0749	0.1112	0.0319	0.0696	0.0712	0.1048	0.08	0.058	0.0716
Eu	0.0306	0.951	0.0183	0.022	0.0207	0.01791	0.0182	0.01154	0.0218	0.0258	0.0223	0.0258	0.0126	0.0151	0.023	0.0176	0.0448	0.0179
Gd	1.386	15.96	0.233	0.221	0.212	0.0217	0.166	0.0628	0.221	0.1678	0.237	0.1189	0.161	0.182	0.236	0.306	0.17	0.228
Tb	0.448	3.54	0.0659	0.0631	0.053	0.00711	0.0458	0.0216	0.0801	0.0608	0.0798	0.037	0.0509	0.0549	0.0843	0.0885	0.0554	0.0662
Dy	4.74	26.17	0.685	0.639	0.562	0.0654	0.534	0.2198	0.856	0.616	0.756	0.431	0.459	0.585	0.895	1.03	0.621	0.605
Ho	1.302	5.75	0.194	0.1812	0.1639	0.01917	0.1498	0.0702	0.2536	0.1744	0.2109	0.128	0.1254	0.1614	0.242	0.299	0.1906	0.1787
Er	4.62	16.23	0.708	0.609	0.649	0.0856	0.535	0.275	0.977	0.639	0.769	0.482	0.49	0.561	0.892	1.22	0.803	0.665
Tm	0.854	2.313	0.1332	0.1064	0.1323	0.01623	0.1059	0.055	0.1881	0.1259	0.1397	0.0963	0.0861	0.1149	0.1789	0.233	0.1507	0.132
Yb	6.05	14.57	1.061	0.983	1.081	0.1371	0.856	0.432	1.614	0.966	1.079	0.876	0.654	0.883	1.429	2.125	1.174	1.082
Lu	0.965	1.935	0.1796	0.1583	0.1836	0.02236	0.1529	0.0766	0.268	0.169	0.1842	0.1613	0.1178	0.151	0.244	0.369	0.2307	0.1776
Hf	1.063	4.84	0.137	0.0578	0.135	0.0144	0.133	0.1125	0.404	0.206	0.259	0.1006	0.1517	0.219	0.332	0.156	0.0966	0.125
Ta		0.0477		0.00086				0.00158	0.00273	0.00092	0.00192	0.00055					0.00091	
Pb	0.0138	0.111	0.0101	0.0115	0.0146	0.01023	0.0417	0.00748	0.0141	0.00974	0.00903	0.0169	0.0121	0.0128	0.016	0.0175	0.009	0.007
Th	0.0185	0.273	0	0.00327		0	0.00143	0.00067		0.00693	0.0156	0.001	0.00257	0.0011	0.0056	0		0
U	0.00054	0.074		0	0	0.00021		0	0	0.00071		0.00033	0	0.00122	0.00065	0		0

Trace element Opx

Sample Id	345-31	345-31	345-32	345-32	345-32	345-32	345-44	345-44	345-44	345-44	345-44	345-44	345-42	345-42	345-42	345-42	345-42	345-42
Hole Id	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P	Hole P
Li	2.32	2.55	0.907	2.146	0.71	1.059	0.402	0.756	0.263	0.534	0.331	0.809	0.62	0.723	0.764	0.67	0.494	0.753
B	10.97	15.01	12.29	10.94	10.13	10.37	4.85	12.1	4.64	6.14	7.6	7.35	7.39	6.87	6.46	5.7	6.2	5.7
Si	396873.25	496673.47	255441.5	197410.89	218303.02	218144.53	142251.28	382655.25	151323.28	209375.64	251930.8	253435.52	264570.66	264944.59	262700.91	264570.66	264103.25	262046.52
Ca	12671.65	14937.25	12450.09	14494.14	11435.22	12864.62	7361.42	15723.42	9576.99	10077.28	11363.74	11435.21	14123.32	18824.13	7736.5	10386.22	15477.97	13850.21
Sc	77.72	90.42	43.64	34.69	42.14	41.27	32.16	83.32	39.47	52.2	56.64	59.04	58.43	65.29	53.88	51.67	65.54	71.14
Ti 47	5789.56	6446.73	3151.33	2516.91	2247.91	1797.89	2051.59	5486.83	1921.23	2978.39	3273.53	3649.66	3702	3937.25	3732.29	3478	3699.65	3961.43
Ti 49	5899.98	6575.03	3260.21	2594.29	2319.37	1861.03	2112.32	5615.37	1987.22	3003.06	3326.86	3681.66	3778.98	4068.97	3846.25	3612.33	3843.88	4131.77
V	373.97	446.16	287.39	218.36	212.53	170.3	125.42	320.76	132.3	167.29	184.65	198.38	252.91	278.54	253.29	232.55	241.74	251.17
Cr 52	3365.44	3575.29	1416.73	1062.83	1208.64	1230.78	234.84	585.38	224.98	288.51	341.46	349.92	449.49	481.34	500.23	550.86	542.63	541.49
Cr 53	3429.96	3683.8	1400.63	1057.79	1220.47	1230.26	229.93	583.58	228.5	300.46	345.9	367.71	460.48	500.75	511	537.01	534.09	545.82
Cu	0.221	0.856	0.0901	0.182	0.0443	17.27				0.037	0.077	0.052	0.058	0.268	0.067	0.289	0.059	0.066
Zn	127.67	163.4	90.02	70.12	72.53	70.71	44.75	124.48	47.38	61.4	74.97	75.77	79.79	75.54	78.54	79.89	69.07	72.3
Rb	0.244	0.2067		0.2281		0.0133		0.0105	0.0045	0.0058	0.0158	0.0058	0.0075	0.0183	0.0622	0.1052		0.0095
Sr	1.343	1.705	0.1329	1.914	0.0969	0.2287	0.0738	0.1873	0.1152	0.1193	0.678	0.1023	0.0899	0.776	0.2202	4.12	0.309	0.1434
Y	8.13	10.04	15.62	12.16	10.63	7.86	4.07	9.77	5.06	6.24	6.3	7.04	8.89	9.35	7.6	5.88	9.09	10.04
Zr	5.34	6.54	17.6	14.72	10.21	3.14	3.69	7.48	4.4	4.7	4	5.15	8.41	8.38	10.7	4.25	8.35	9.92
Nb	0.045	0.0355	0.025	0.0175	0.015	0.0343	0.011	0.042	0.016	0.0107	0.015	0.0158	0.0093	0.02	0.1019	0.0106	0.0128	0.0249
Ba	0.436	1.205		0.445	0.0036	0.0748					0.123	0.005		0.084	0.0142	0.119	0.116	
La	0.0659	0.0512	0.0179	0.0501	0.00453	0.0147	0.00672	0.004	0.0116	0.0075	0.0114	0.00268	0.00273	0.0221	0.1344	0.026	0.0155	0.0084
Ce	0.1592	0.1143	0.1434	0.2058	0.0751	0.1127	0.0367	0.0355	0.0599	0.0308	0.0401	0.0338	0.0331	0.0832	0.357	0.0568	0.0562	0.0524
Pr	0.021	0.0183	0.0433	0.0596	0.0217	0.0266	0.01105	0.00478	0.0147	0.0102	0.0093	0.0084	0.0079	0.0215	0.0377	0.0073	0.0135	0.0142
Nd	0.154	0.106	0.384	0.455	0.23	0.284	0.103	0.135	0.1197	0.0996	0.0866	0.0901	0.156	0.198	0.186	0.0712	0.165	0.164
Sm	0.103	0.095	0.345	0.346	0.173	0.1421	0.0905	0.074	0.1334	0.0983	0.0816	0.1	0.119	0.173	0.115	0.0564	0.145	0.133
Eu	0.0343	0.0459	0.0327	0.0414	0.0166	0.025	0.0194	0.0262	0.0321	0.0207	0.0453	0.0231	0.0261	0.0552	0.0261	0.0282	0.0337	0.0295
Gd	0.251	0.337	0.588	0.536	0.385	0.324	0.205	0.315	0.266	0.265	0.21	0.295	0.402	0.418	0.301	0.203	0.411	0.448
Tb	0.0935	0.1061	0.2055	0.187	0.1417	0.1051	0.06	0.11	0.0764	0.0729	0.0625	0.0873	0.115	0.1421	0.0831	0.0662	0.1198	0.1164
Dy	0.981	1.211	2.003	1.71	1.402	1.018	0.591	1.167	0.711	0.822	0.787	0.898	1.177	1.251	0.956	0.699	1.19	1.262
Ho	0.299	0.343	0.561	0.464	0.372	0.276	0.1539	0.338	0.19	0.2345	0.2248	0.248	0.306	0.333	0.272	0.217	0.329	0.372
Er	1.159	1.451	2.018	1.609	1.411	0.983	0.54	1.419	0.636	0.829	0.861	0.978	1.259	1.25	1.067	0.761	1.285	1.372
Tm	0.229	0.268	0.344	0.294	0.2598	0.1815	0.0967	0.249	0.1258	0.1524	0.1759	0.1706	0.1971	0.236	0.1995	0.1568	0.221	0.252
Yb	2.069	2.347	2.59	2.211	1.869	1.454	0.75	1.984	0.875	1.268	1.369	1.432	1.66	1.825	1.699	1.327	1.713	2.024
Lu	0.327	0.404	0.424	0.336	0.331	0.2174	0.1299	0.364	0.1577	0.2154	0.245	0.237	0.295	0.31	0.278	0.232	0.325	0.347
Hf	0.213	0.298	0.353	0.293	0.213	0.0537	0.1241	0.327	0.14	0.164	0.144	0.182	0.287	0.284	0.319	0.193	0.34	0.345
Ta	0.00218	0.0028	0.00147	0.00063		0.00194		0.00322	0.00222		0.0013				0.00341	0.00203	0.00138	
Pb	0.0403	0.0629	0.0143	0.016	0.0115	0.0139	0.008	0.0175	0.0073	0.0163	0.0203	0.0088	0.0122	0.0159	0.0297	0.0304	0.0222	0.0209
Th	0.00153		0.0149	0.0111	0.0119	0.0176	0.00107		0.0089	0.0056	0.00233	0.00201	0	0.0062	0.0366	0.00193	0.0064	0.00214
U	0	0	0.0008	0.00066	0.0003	0.00128	0	0	0.00087	0	0	0	0	0.00139	0.0222	0		0

Sample No	Label identifier
345-1	345-U1415E-1R-1-W 24/26-ILDE
345-2	345-U1415G-1R-1-W 2/5-ILDE
345-4	345-U1415I-3R-4-W 14/17-ILDE
345-6	345-U1415J-3R-1-W 0/2-ILDE
345-7	345-U1415J-5R-1-W 63/67-ILDE
345-8	345-U1415J-5R-1-W 111/112-ILDE
345-21	345-U1415J-12R-1-W 97/99-ILDE
345-22	345-U1415J-13R-1-W 2/3-ILDE
345-28	345-U1415P-3R-1-W 18/21-ILDE
345-29	345-U1415P-4G-1-W 19/23-ILDE
345-30	345-U1415P-4G-1-W 100/102-ILDE
345-31	345-U1415P-4G-2-W 5/6-ILDE
345-32	345-U1415P-5R-1-ILDE
345-33	345-U1415P-5R-2-W 15/16-ILDE
345-34	345-U1415P-6R-1-W 76/77-ILDE
345-35	345-U1415P-6R-2-W 8/9-ILDE
345-36	345-U1415P-7R-1-W 76/77-ILDE
345-37	345-U1415P-7R-2-W 35/36-ILDE
345-38	345-U1415P-8R-1-W 121/124-ILDE
345-39	345-U1415P-8R-1-W 132/135-ILDE
345-40	345-U1415P-8R-2-W 21/23-ILDE
345-41	345-U1415P-9R-1-W 137/138-ILDE
345-42	345-U1415P-9R-2-W 25/26-ILDE
345-43	345-U1415P-10R-1-W 25/27-ILDE
345-44	345-U1415P-11R-1-W 1/4-ILDE
345-45	345-U1415P-12R-1-W 115/116-ILDE
345-46	345-U1415P-14R-1-W 35/36-ILDE
345-47	345-U1415P-15R-1-W 24/27-ILDE
345-53	345-U1415P-19G-1-W 4/8-ILDE
345-54	345-U1415P-20R-1-W 51/52-ILDE
345-55	345-U1415P-20R-2-W 95/96-ILDE
345-56	345-U1415P-21G-1-W 4/8-ILDE
345-57	345-U1415P-22R-1-W 7/9-ILDE
345-64	345-U1415P-3R-1-W 35/38-PYTHON
345-65	345-U1415P-3R-1-W 60/63-PYTHON
345-66	345-U1415P-4G-1-W 5/8-PYTHON

Sample No	Label identifier
345-75	345-U1415P-6R-2-W 26/29-PYTHON
345-76	345-U1415P-6R-2-W 98/101-PYTHON
345-77	345-U1415P-7R-1-W 16/19-PYTHON
345-78	345-U1415P-7R-1-W 122/125-PYTHON
345-79	345-U1415P-7R-2-W 10/13-PYTHON
345-80	345-U1415P-8R-1-W 11/14-PYTHON
345-81	345-U1415P-8R-1-W 67/70-PYTHON
345-82	345-U1415P-8R-2-W 6/9-PYTHON
345-83	345-U1415P-9R-1-W 14/17-PYTHON
345-84	345-U1415P-9R-1-W 78/81-PYTHON
345-85	345-U1415P-9R-2-W 72/75-PYTHON
345-86	345-U1415P-10R-1-W 9/12-PYTHON
345-87	345-U1415P-10R-1-W 107/110-PYTHON
345-88	345-U1415P-10R-2-W 8/11-PYTHON
345-89	345-U1415P-11R-1-W 52/55-PYTHON
345-90	345-U1415P-11R-1-W 130/132-PYTHON
345-91	345-U1415P-11R-2-W 29/32-PYTHON
345-92	345-U1415P-12R-1-W 13/16-PYTHON
345-93	345-U1415P-12R-1-W 38/40-PYTHON
345-94	345-U1415P-13R-1-W 14/16-PYTHON
345-95	345-U1415P-13R-1-W 110/112-PYTHON
345-96	345-U1415P-13R-2-W 9/12-PYTHON
345-97	345-U1415P-13R-2-W 74/77-PYTHON
345-98	345-U1415P-14R-1-W 2/5-PYTHON
345-99	345-U1415P-14R-1-W 119/122-PYTHON
345-100	345-U1415P-14R-2-W 37/40-PYTHON
345-101	345-U1415P-15R-2-W 35/38-PYTHON
345-102	345-U1415P-16R-1-W 66/69-PYTHON
345-103	345-U1415P-19G-1-W 32/35-PYTHON
345-104	345-U1415P-22R-2-W 110/113-PYTHON
345-105	345-U1415J-3R-1-W 7/10-PYTHON
345-106	345-U1415J-5R-1-W 9/12-PYTHON
345-107	345-U1415J-5R-1-W 81/85-PYTHON
345-108	345-U1415J-5R-2-W 5/8-PYTHON
345-109	345-U1415J-5R-2-W 58/62-PYTHON

Sample No	Label identifier
345-67	345-U1415P-4G-1-W 51/54-PYTHON
345-68	345-U1415P-4G-1-W 127/130-PYTHON
345-69	345-U1415P-4G-2-W 26/29-PYTHON
345-70	345-U1415P-5R-1-W 6/9-PYTHON
345-71	345-U1415P-5R-1-W 87/90-PYTHON
345-72	345-U1415P-5R-2-W 66/69-PYTHON
345-73	345-U1415P-6R-1-W 7/10-PYTHON
345-74	345-U1415P-6R-1-W 136/139-PYTHON
147-1	147-U894A-1R-5-W38/40-icp-KOEP
147-2	147--U894E-3R-1-W21/25-icp21-25-MARK
147-3	147-U894E-3R-1-W62/70-ICP-GILL
147-4	147-U894F-3R-1-W98/103-icp-KOEP
147-6	147-U894G-2R-2_w95/100-ICP-SAHA

Sample No	Label identifier
345-110	345-U1415J-6G-1-W 9/11-PYTHON
345-111	345-U1415J-7G-1-W 43/46-PYTHON
345-112	345-U1415J-8R-1-W 6/9-PYTHON
345-113	345-U1415J-8R-2-W 66/69-PYTHON
345-114	345-U1415J-8R-3-W 37/41-PYTHON
345-115	345-U1415J-8R-3-W 112/115-PYTHON
345-116	345-U1415J-9R-1-W 102/105-PYTHON
345-118	345-U1415J-23R-1-W 1/3-PYTHON