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Syn-metamorphic B-bearing fluid infiltrations deduced from tourmaline in the Main Central Thrust zone, Eastern Nepal Himalayas

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1	Syn-metamorphic B-bearing fluid infiltrations deduced from tourmaline in the
2	Main Central Thrust zone, eastern Nepal Himalayas
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9	
10	Abstract
11	Mode of occurrence and chemical composition of tourmaline in pelitic schists from the Main Central
12	Thrust (MCT) zone of the Lesser Himalayan Sequences (LHS) are described in detail with the aim of
13	deducing the chemical characteristics of tourmaline formed through B-bearing fluid infiltration and of
14	estimating the composition of the syn-metamorphic fluids. Metasomatic tourmalines from the
15	tourmalinized wall rocks show significant increases in X_{Ca} [=Ca/(Ca+Na)] at almost constant X_{Mg}
16	[=Mg/(Mg+Fe ²⁺)] from the cores or mantles to the rims. Tourmaline in tourmaline-rich (> 1.0 vol%)
17	pelitic schists from the biotite zone to the kyanite zone also show marked increase in X_{Ca} at almost
18	constant X_{Mg} , and are interpreted as a product of B-bearing fluid infiltration. Abundant margarite and

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19anorthite formed in the pelitic schists intercalated with the metadolostone layers suggesting that the 20B-rich fluid became Ca enriched as it interacted with metadolostone layers, and metasomatically 21introduced Ca into the pelitic schists. Infiltration of such B- and Ca-rich fluids into pelitic schists likely 22resulted in production of abundant tourmaline with the compositional trend of increasing X_{Ca} at almost 23constant X_{Mg}. Most of the tourmaline in tourmaline-rich pelitic schists are in equilibrium with $\mathbf{24}$ plagioclase, suggesting that the fluid composition was buffered by the pelitic schists. Composition of 25tourmaline in the pelitic schists with less than 1 vol% tourmaline mostly show increase in X_{Ca} and wider range of X_{Mg} values, reflecting its growth during prograde metamorphism. The composition of 2627fluids that coexisted with tournaline is estimated by applying experimentally-determined 28fluid/tourmaline chemical relationships to the composition of tourmaline from veins associated with 29tourmalinization, pelitic schists with less than 1 vol% tourmaline and tourmaline-rich pelitic schists. 30 Assuming coexisting anion to be Cl, the salinity estimated for these rock types was ~0.44-0.59 mol/l 31NaCl+CaCl₂ that is similar to or slightly lower than the present-day seawater. Veins associated with 32tourmalinization and tourmaline-rich pelitic schists are sporadically distributed in the MCT zone of 33 the LHS, suggesting that the syn-metamorphic, B-bearing saline fluid infiltrations took place widely 34in the MCT zone, and the fluid pathways were localized and channeled. Our observation supports the 35scenario whereby infiltration of fluid into the High Himalayan Crystallines (HHC) caused vaporsaturated partial melting of the HHC to give tourmaline leucogranite melts contemporaneous with 36



37 inverted metamorphism in the MCT zone.

38

Keywords: metamorphic fluid; boron; metasomatism; tourmaline leucogranite; inverted
 metamorphism

41

42 1 Introduction

43Syn-metamorphic fluid movements in the continental collision zone is of great importance especially for mass and heat transfer from the site of their generation. Under a tectonic setting of an inverted 4445metamorphism, low-grade metamorphic rocks have been thrust under high-grade metamorphic rocks. 46 In a study of the Annapurna and Manaslu massifs in the Nepal Himalaya, Le Fort (1981) emphasized 47the importance of underlying low-grade metamorphic rocks as a source of aqueous fluids that infiltrate 48into the overlying higher-grade metamorphic rocks to trigger fluid-fluxed partial melting. As the 49concept of dehydration melting was becoming increasingly accepted, more emphasis was placed on 50the role of muscovite dehydration melting in forming leucogranites in continental collision settings 51(e.g., Harrison et al., 1999; Visona and Lombardo, 2002). However, taking into account the relatively 52low temperature estimates obtained from some areas of the High Himalayan Crystallines (HHC) and 53most of the Lesser Himalayan Sequences (LHS) compared to the temperature required for the dehydration melting of muscovite, fluid-fluxed melting is potentially an alternative explanation for 54



55 the formation of leucogranites in these rocks.

56	A potential tracer of aqueous fluids is B, which can crystallize as tourmaline once the
57	pressure-temperature $(P-T)$ conditions and bulk composition of the rocks are favorable. Tourmaline,
58	with a general chemical formula of $XY_3Z_6(T_6O_{18})(BO_3)_3V_3W$, is a common accessory mineral in the
59	Earth's upper continental crust having a wide stability field (Henry and Dutrow, 1996; van Hinsberg
60	et al, 2011). In metapelites, prograde breakdown of illite and micas locally supply B for tourmaline
61	growth (Henry and Dutrow, 1996; Sperlich et al, 1996; Kawakami and Ikeda, 2003). On the other hand,
62	because tourmaline is the most important sink of B in metapelites (Henry and Dutrow, 1996;
63	Kawakami, 2001a; 2004; Sperlich et al, 1996), B is commonly fixed at the site of fluid/rock interaction
64	as accumulations of tourmaline (e.g., Kawakami, 2001b; Kawakami et al., 2008; Marschall et al.,
65	2006; Marocchi et al., 2011), and thus accumulations of tourmaline are testimony to former presence
66	of B-bearing fluids. Therefore, chemical composition of tourmaline varies as a function of
67	metamorphic grade (e.g., Henry and Dutrow, 1996) and can also serve as a monitor of fluid
68	compositions (von Goerne et al., 2011; Berryman et al., 2016).
69	Tourmaline is a common mineral in Himalayas, contained in the HHC, LHS, and High
70	Himalayan leucogranites (HHL) and thus has been studied by many researchers (e.g., Benard et al.,
71	1985; Rai and Le Fort, 2002; Visona and Lombardo, 2002). It is clear from its occurrence as a major
72	mafic mineral in the HHL that B played an important role in the formation of the HHL and can



73	potentially serve as a proxy to constrain its source region. Addition of B can lower the temperature of
74	the granitic solidus and reduce the viscosity of the melt (Johannes and Holtz, 1996). There are several
75	hypotheses for the HHL formation including: (a) fluid-present melting (e.g. Le Fort, 1981; Harris et
76	al., 1993), (b) decompression melting (e.g. Harris and Massey, 1994) and (c) muscovite- and biotite-
77	dehydration melting (e.g., Harrison et al., 1999; Visona and Lombardo, 2002). This study aims to
78	deduce chemical characteristics of tourmaline that may be associated with B-bearing fluid infiltration,
79	unravel the syn-metamorphic fluid activity in the MCT zone by using mode of occurrence and
80	composition of tourmaline, and finally discuss which melting process(es) are likely to form the HHL
81	in the Dhankuta area, Eastern Nepal. Mineral abbreviations are after Whitney and Evans (2010).
82	
82 83	2 Geological setting of the MCT zone in the Dhankuta area (Eastern Nepal)
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91	boudinaged by the E-W stretching. The detailed metamorphic zone mapping of the footwall rocks of
92	the MCT revealed that the metamorphic grade decreases from the Ky zone through the St and Grt
93	zones to the Bt zone as distance from the MCT increases toward the south (Fig. 1b), representing the
94	inverted metamorphic sequence. These metamorphic zones are apparently affected by the top-to-the-
95	S movement of the MCT as indicated by the asymmetrical structures of deformed quartz lenses (Fig.
96	2a), and termed the "MCT zone" in the previous studies. In the hanging wall of the MCT, the HHC
97	mainly composed of migmatitic Grt-Bt-Ms gneiss (Fig. 2c, Table 1) is widely distributed. The
98	gneissosity generally dips north, and mesoscale N-S trending upright folds locally disturb this trend.
99	Tourmaline-bearing leucogranite patches either occur concordantly to the gneissosity or cut it
100	discordantly (Fig. 2d).

102 **3 Analytical methods**

Quantitative analyses of rock-forming minerals and X-ray elemental mapping of thin section samples were performed by a JEOL JXA-8105 superprobe. Analytical conditions for quantitative analyses were 15.0 kV acceleration voltage, 10 nA beam current, and 3 µm beam diameter. The counting time for the peak and backgrounds were 30 s and 15 s for Cl, 60 s and 30 s for F, and 10 s and 5 s for other elements. Natural and synthetic minerals were used as standards and the ZAF correction was applied. Representative mineral analyses are given in Table 2 for tourmaline and Table 3 for other rock-forming



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109	minerals. Analytical conditions for the Zr-in-rutile thermometry followed that of Zack et al. (2004).
110	Analytical conditions for X-ray elemental mapping were an acceleration voltage of 15.0 kV, probe
111	current of 50 nA, with a focused beam or a beam diameter of 3 μ m. Fine-grained Al ₂ SiO ₅ minerals
112	were identified with laser Raman spectroscopy (JASCO NRS 3100). All of these analyses were done
113	at Department of Geology and Mineralogy, Kyoto University, Japan. Tourmaline composition was
114	normalized based on 15 T+Z+Y cations (Henry and Dutrow, 1996; Henry et al., 2011), assuming three
115	B atoms per formula unit (apfu). The most common constituents of each site are: ${}^{[9]}X = Na^+$, Ca^{2+} , K^+
116	and \Box (vacancy); ^[6] Y = Fe ²⁺ , Mg ²⁺ , Al ³⁺ and Li ⁺ ; ^[6] Z = Al ³⁺ , Fe ³⁺ and Mg ²⁺ ; ^[4] T = Si ⁴⁺ and Al ³⁺ ; ^[3] B
117	= B ³⁺ ; V = OH ⁻ and O ²⁻ ; and W = OH ⁻ , F ⁻ and O ²⁻ (Henry et al., 2011). Although Fe _{total} = Fe ²⁺ in most
118	of the tourmaline analyses, Fe^{3+} and Fe^{2+} were estimated by $Fe^{3+} = 6-Al(Z)$ and $Fe^{2+} = Fe_{total}-Fe^{3+}$,
119	respectively in some analyses. Small amounts of Ba ²⁺ are assumed to enter the X site in this study
120	(Table 2). Full dataset of tourmaline analyses is available as a supplementary material (Table S1).
121	

122 **4 Sample description**

123 4.1 Metapelites in the Lesser Himalayan Sequences

Four metamorphic zones are defined in the MCT zone based on mineral assemblages in pelitic schists
(Fig. 1b; Table 1). Abundant quartz veins are found as sheared lenses concordant to the penetrative
schistosity in the MCT zone (termed "quartz lenses" hereafter). Their asymmetric shapes indicate the



shear sense of ductile deformation to be top-to-the-S (Fig. 2a), which is identical with the movementof the MCT.

129Pelitic schists in the Ky zone are characterized by the presence of kyanite (Fig. 1b; Table 1). 130Representative mineral assemblage is $Ky + Grt + Bt \pm St + Ms + Pl + Qtz$. Some of the kyanite-bearing 131rocks have appearance similar to black slates in the outcrop due to accessory graphite. In such samples 132(e.g., sample 402-3; Table 1), fine-grained, lath-shaped kyanite is arranged along the schistosity with 133 muscovite, biotite and staurolite. Kyanite, garnet and minor plagioclase are found as mm- to cm-sized 134crystals near or within the quartz lenses, and are significantly coarser-grained than other matrix-135constituting minerals (Fig. 2e). Some garnet and kyanite grains show sheared and elongated grain 136shape in the vicinity of the quartz lenses, and some kyanite grains contained in the quartz lenses show 137curved growth texture (bottom left of Fig. 3k). The conventional Grt-Bt geothermometer 138(Bhattacharya et al., 1992; Holdaway, 2000) and GASP geobarometer (Holdaway, 2001) applied to 139the Grt + Ky + Pl + Bt + Qtz assemblage seen in the quartz lens and adjacent pelitic schist domain 140(Fig. 2e) yielded ~610 °C and ~0.92 GPa (Fig. 4). The two different calibrations of Grt-Bt 141geothermometer gave almost identical temperature estimates.

Pelitic schists with more than 1 vol% tourmaline sometimes show different microtexture. In
sample 505A, garnet shows discontinuous core/rim zoning and the rim is dark under the BSE image.
This kind of discontinuous zoning in garnet is rare in other samples. Plagioclase is An-rich (An69-80)



145	and includes tourmaline crystals (Fig. 3b). In a black pelitic schist sample 109B collected from the
146	boundary between St- and Ky-zones (Table 1), tourmaline enclosed in garnet defines an internal
147	foliation that is continuous to the matrix schistosity defined by the preferred orientation of biotite,
148	muscovite and tourmaline (Fig. 3c).
149	Pelitic schists from the St zone are represented by the mineral assemblage Grt + St + Bt +
150	$Ms + Qtz \pm Pl$ (Fig. 1b; Table 1). Staurolite and muscovite are coarser-grained near the quartz lenses.
151	In sample 908, plagioclase cores with anorthite-rich composition (An80-85) is replaced by anorthite-
152	poor plagioclase rims (An25-39), which are considered to be in equilibrium with other matrix minerals
153	such as tourmaline. Conventional P - T estimate by Grt-Bt geothermometers in combination with the
154	Grt-Bt-Ms-Pl geobarometer (Wu, 2015) gave scattered estimates depending on the calibration of the
155	Grt-Bt geothermometers: that of Bhattacharya et al. (1992) yielded ~580 °C and ~0.66 GPa, whereas
156	that of Holdaway (2000) yielded ~655 °C and ~0.78 GPa (Fig. 4). Plagioclase with a composition of
157	~An32 that is in chemical equilibrium with matrix tourmaline was used for these estimates (Table 1).
158	In a pelitic schist with more than 1vol% tourmaline from the St zone (sample 602, Table 1), garnet
159	that encloses abundant tourmaline crystals shows bell-shaped Mn zoning indicative of its prograde
160	growth (Fig. 3e). For this sample, the P - T condition for the matrix mineral assemblage estimated by
161	the Grt-Bt geothermometer (Holdaway, 2000) in combination with the Grt-Bt-Ms-Pl geobarometer
162	(Wu, 2015) was ~570 °C and ~0.80 GPa. A slightly lower <i>P-T</i> estimate of ~550 °C and ~0.76 GPa was



obtained by the Grt-Bt geothermometer (Bhattacharya et al., 1992) in combination with the same



164geobarometer. 165Pelitic schists from the Grt zone are represented by the mineral assemblage of Grt + Bt + 166 Ms + Chl + Qtz \pm Pl (Fig. 1b). The *P*-*T* estimate by Grt-Bt geothermometers (Bhattacharya et al., 1671992; Holdaway, 2000) and the Grt-Bt-Ms-Pl geobarometer (Wu, 2015) gave ~575 °C and ~0.79 GPa 168(Fig. 4). Two calibrations of the Grt-Bt geothermometer yielded almost identical temperature. 169Pelitic schists from the Bt zone are represented by the assemblage of Bt + Chl + Ms + Qtz (Fig. 1b; Table 1). Pelitic schist with more than 1vol% tourmaline (sample 2-807) was found near the 170171boundary between the Grt- and Bt-zones (Fig. 1b). 172

173 4.2 Actinolite schists in the Lesser Himalayan Sequences

Actinolite schists are commonly intercalated with pelitic and psammitic schists from the Bt- to the Ky-zones of the LHS, and are green-colored in outcrop. Radial crystals of actinolite form flat, ovalshaped aggregates arranged parallel to the sedimentary layering of protolith and define the schistosity. Some of them in the Ky zone are intercalated with orange-colored, dolomite-rich parts (Fig. 2b). In such samples, green actinolite selvedges fill cracks that cut the schistosity, with offshoots parallel to the schistosity (Fig. 2b; sample 104). The main mineral assemblage in the orange-colored part is Dol $(X_{Mg} = 0.86-0.87) + Bt (X_{Mg} = 0.67-0.73)$, whereas that in the greenish-part is Act ($X_{Mg} = 0.79-0.84$)



181	+ Cal. Minor relic dolomite is present in the greenish, actinolite schist part. Some actinolite grains
182	enclose cores of magnesiohornblende ($X_{Mg} = 0.70-0.76$). In pelitic schists near the actinolite schists,
183	abundant grains of secondary margarite and anorthite-rich plagioclase cut the schistosity of the
184	metapelites within several to ~ 10 meters from metadolostone layers (Fig. 2f).

197

186 **4.3 Pelitic gneiss from the High Himalayan Crystallines**

187Pelitic gneiss is the main rock type in the Formation I of the HHC. Tourmaline-bearing leucogranitic 188layers, either concordant (Fig. 2c) or discordant (Fig. 2d) to the gneissosity, are common in the pelitic 189gneisses. Sillimanite is rare, and is typically fibrolitic occurring at grain boundaries of matrix minerals 190(Table 1). Two types of garnet are seen in some pelitic gneisses: garnet with rounded, nearly euhedral 191shape shows Mn-bell-shaped zoning, whereas that with elongated shape is mostly homogeneous in 192major element composition (Fig. 31-n; sample 604). The elongated garnet includes euhedral 193plagioclase (Fig. 31) and has composition similar to the thin outermost rims of the rounded garnet (Fig. 1943m-n). Tourmaline is included in the Mn-bell-shaped domains and rims of the rounded garnet, and it 195is also enclosed in a garnet grain showing similar composition with the elongated garnet (top left of 196Fig. 31-n).

Holdaway, 2000) and GASP geobarometer (Holdaway, 2001) gave ~665 °C and ~1.13 GPa (Fig. 4).

The *P-T* estimate of sample 604 by the Grt-Bt geothermometers (Bhattacharya et al., 1992;



199	The Zr-in-rutile thermometer (Tomkins et al., 2007) applied to rutile grains included in the elongated
200	garnet (Fig. 31-n) also gave ~665 °C at 1.13 GPa. For sample 201A, the Grt-Bt geothermometer
201	(Bhattacharya et al., 1992; Holdaway, 2000) and GASP geobarometer (Holdaway, 2001) gave ~630
202	°C and ~1.13 GPa, and the Zr-in-rutile thermometer (Tomkins et al., 2007) gave ~670 °C at ~1.13 GPa
203	(Fig. 4). For sample 201A, <i>P-T</i> estimate using the Zr-in-rutile thermometer is preferred.
204	
205	5 Tourmaline composition and textures
206	5.1 Pelitic schists with less than 1 vol% tourmaline in the Lesser Himalayan Sequences
207	Tourmaline in pelitic schists with less than 1 vol% tourmaline (Table 1) in the Lesser Himalayan
208	Sequences shows chemical zoning consisting of several domains (Fig. 3a). Cores are in most cases
209	detrital in origin and differ in composition from one to another, whereas they are considered to be
210	metamorphic in origin in the few cases where their compositions define a chemical trend towards the
211	rims representative of increasing metamorphism (Fig. 5b-d).
212	Tourmaline inclusions in garnet porphyroblasts together with cores, mantles and rims of
213	matrix tourmaline commonly show increase in X_{Mg} [=Mg/(Mg+Fe ²⁺)] in each sample (Fig. 5c-e). This
214	chemical trend, commonly observed in metamorphic tourmaline in general, is considered to reflect the
215	increase of metamorphic grade as the tourmaline grows (Henry and Dutrow, 1996). On the other hand,

216 X_{Ca} [=Ca/(Na+Ca)] does not always increase as a function of X_{Mg} (Fig. 5a, e). Similarly, X-site



217	vacancy does not always decrease as often observed as metamorphic grade increases (Fig. S1). Based
218	on the chemical zoning from the cores to the rims that follows the trend of increasing metamorphism
219	(Figs. 5c-d, S1b, S1d-e), tourmaline contained in the pelitic schists with less than 1 vol% tourmaline
220	in the MCT zone of the LHS is considered to have grown during the prograde metamorphism.
221	In addition to tourmaline zoning observed in each sample, rims of matrix tourmaline in each
222	metamorphic zone systematically change in composition as metamorphic grade increases. The rims of
223	matrix tourmaline show increase in X_{Mg} from the Grt zone to the Ky zone (Fig. 5f), representing
224	progressive increase in metamorphic grade (Henry and Dutrow, 1996). Change of X_{Ca} and X-site
225	vacancy is again not straightforward (Fig. 5f, S1f).
226	
227	5.2 Pelitic schists with more than 1 vol% tourmaline in the Lesser Himalayan Sequences
228	Pelitic schists that contain more than 1 vol% tourmaline are termed "tourmaline-rich pelitic schists"
229	hereafter. They are either associated with or without quartz lenses (Table 1). The tourmaline-rich
230	pelitic schists not accompanied by quartz veins with tourmalinization are common in the Grt- to Ky-
231	zone rocks (Table 1). In such samples, tourmaline tends to be abundant in muscovite-rich layers, and
232	also included in garnet (Fig. 3c-d; samples 505A, 109B, 602 and 803).
233	Tourmaline in the tourmaline-rich pelitic schists commonly define different chemical trends

234 from that in the pelitic schists with less than 1 vol% tournaline: They show significant increase of X_{Ca}



235value from cores to rims at almost constant X_{Mg} value (Fig. 6g). The X-site vacancy values vary widely 236at almost constant X_{Mg} in some samples (Fig. S2b, f, g). These compositional trends are commonly 237observed for matrix tourmaline in the Grt-zone to the Ky-zone rocks, while tourmaline enclosed in 238garnet sometimes follow or constitute a part of the trends as well (Figs. 6d-h, S2d-h). For example, in 239a pelitic schist from the St zone (sample 602, Table 1) tournaline enclosed in garnet follows the compositional trend that mantles and rims of matrix tourmaline define, i.e., increasing X_{Ca} and 240241decreasing X-site vacancy at almost constant X_{Mg} (Figs. 6f, S2f). On the other hand, large 242compositional variations of the tourmaline cores that are commonly observed in pelitic schists with 243more than 1 vol% tourmaline (Fig. 6d-g) can be ascribed to their detrital origin, supported by the 244irregular shape of the cores under BSE images.

245

246 **5.3 Pelitic gneisses from the High Himalayan Crystallines**

Tourmaline is found as matrix mineral (Fig. 31) as well as inclusions in garnet. The matrix tourmaline is commonly euhedral, but some are developed as xenomorphic grains along the matrix grain boundaries, indicating later crystallization. Composition of tourmaline in Formation I gneisses is homogeneous within a sample, while it varies between samples (Fig. 5g, S1g).

251





253 Sequences

Veins discordantly cutting the schistosity of metapelites and associated with tourmalinization in the
wall rock were found at three localities in the Ky zone (Fig. 2h). In these localities, tourmaline replaces
mafic minerals such as biotite and staurolite that are concordantly arranged with the schistosity of the
wall rock.
Sample 808-2 is a tourmaline-quartz vein (Table 1). In the wall rock, kyanite and staurolite
are surrounded by secondary muscovite aggregates and by secondary chlorite. The tourmaline is
considered to be entirely of metasomatic origin. The X_{Ca} value of tourmaline increases from

261 metamorphic cores to mantles and rims at constant X_{Mg} (Figs. 6a), and the X-site vacancy value

systematically decreases from the cores to mantles and rims (Fig. S2a).

263Sample 107-1 is a plagioclase-quartz vein that crosscuts the compositional layering of the 264wall rock at a high angle (Fig. 2h; Table 1). The wall rock is mainly pelitic schists locally intercalated with actinolite-rich layers (e.g., Fig. 2b). The vein itself is mainly composed of Pl (An88) + Qtz with 265266accessory Chl + Ms, whereas a selvedge rich in tourmaline is developed in the wall rock along the 267vein. Tourmaline in the wall rock is concentrated in the partly folded, muscovite-rich layers (Fig. 3f). 268Further away from the contact with the vein, pre-existing schistose layers consisting of biotite and 269staurolite are significantly tourmalinized (Fig. 3f). Schistose layers rich in muscovite envelope garnet 270and staurolite crystals, but do not envelope metasomatic tourmaline. This indicates that the



271	compositional banding defined by the arrangement of peak metamorphic minerals in the wall rock
272	served as sites for tourmaline nucleation and growth. Rims of staurolite include tourmaline that has
273	chemical zoning identical to the wall rock tourmaline. Tourmaline formed in the wall rock is fractured
274	normal to the c-axis and shows pulling apart of the fragments (Fig. 3f). New tourmaline is locally
275	developed on the pre-existing tourmaline in the space opened by the pulling and breaking apart of the
276	pre-existing tourmaline. Tourmaline included in garnet shows variation of X_{Ca} and X-site vacancy at
277	almost constant X_{Mg} (Figs. 6b, S2b). The cores of the matrix tourmaline show similar composition
278	with rims of tourmaline inclusions in garnet (Fig. 6b). Temperature estimate using interpolar Ca/Na
279	partitioning of tourmaline (Henry and Dutrow, 1996; van Hinsberg and Schumacher, 2007) developed
280	in the wall rock gave ~530-590 °C.
281	In sample 101 from the Ky zone (Table 1; Fig. 3g), tourmaline-quartz vein (area 3; Fig. 3h)
282	almost vertically cuts the schistosity, and tourmalinized domains replacing biotite and staurolite stem
283	out parallel to the schistosity. The mineral assemblage of the wall rock changes as a function of the
284	distance from the vein, that is, from Chl + Tur + $Qtz \pm Grt$ at the contact with the vein (area 2; Fig. 3i)
285	to Tur + Chl + Qtz + Bt + St \pm Grt at about 4 cm distant from the vein (area 1; Fig. 3j). Plagioclase
286	and K-feldspar are absent in this sample. Biotite and staurolite are partly replaced by tourmaline and
287	
	chlorite in the area 1, indicating incomplete progress of tourmalinization reactions consuming them.



variation tends to be the largest in area 1 compared to areas 2 and 3.

290

291 5.5 Quartz veins in the Main Central Thrust zone of the Lesser Himalayan Sequence

292 Abundant quartz lenses showing top-to-the-S sense of shear (Fig. 2a) are found in the Ky zone near

293 the MCT to the Grt zone distant from the MCT zone. They are the most obvious evidence for the pre-

294 to syn-kinematic fluid activities in the MCT zone. Quartz lenses several centimeters to several

295 decimeters in length are found in most pelitic layers. The quartz lenses are not associated with

296 tournalinized selvedges in pelitic host rocks, and the selvedges are in most cases biotite or chlorite

297 depending on the metamorphic grade. In sample 402-3, kyanite and garnet are coarser-grained in the

298 vicinity of and in the quartz lenses, and some kyanite grains in the quartz vein show curved growth

texture (Fig. 3k). The P-T condition recorded by these coarse-grained garnet, kyanite and quartz, and

300 proximal plagioclase and biotite is estimated at ~610 °C and ~0.92 GPa by applying the Grt-Bt

301 geothermometers and GASP geobarometer (Bhattacharya et al., 1992; Holdaway, 2000; 2001) (Fig.

302 4)

303

304 6 Discussion

305 6.1 Compositional constraints on the tourmalinization- and metamorphic-fluids

306 Boron-bearing fluid infiltration in the MCT zone of the LHS took place continuously from the

307 prograde metamorphic stage to the final stage of schistosity-forming deformation possibly during early



308	retrograde metamorphism. The former is evidenced by the presence of abundant tourmaline inclusions
309	in prograde garnet (Fig. 3c, e). The latter is evidenced by the presence of veins accompanied by
310	tourmaline-rich selvedges cross-cutting the schistosity (sample 107-1; Fig. 2h) whose formation
311	temperature is estimated to be ~530-590 $^{\circ}$ C from tourmaline thermometry, and by the microstructures
312	indicating that staurolite + garnet was stable at the time of B-bearing fluid infiltration.
313	Temperature condition of the experiment by von Goerne et al. (2011) (600 °C) is similar to
314	that estimated for the St and Ky zone samples (~600 °C; Fig. 4), and broadly similar to that for
315	tourmaline-forming vein sample (~530-590 °C). Therefore, in order to estimate the coexisting fluid
316	composition, the equations $Na_{fluid}(mol/l) = 1.39X_{Na} - 1.04X_{Na}^2$ and $Ca_{fluid}(mol/l) = 0.60X_{Ca} - 0.35X_{Ca}^2$
317	were calculated from the experimental data reported by von Goerne et al. (2011) for 600 °C, where
318	$X_{Na} = Na/(Na+Ca)$ and $X_{Ca} = Ca/(Ca+Na)$ in tourmaline (cf. Dutrow and Henry, 2016). These
319	equations are applied to the studied samples, keeping in mind that extrapolating 0.20 GPa experiments
320	to higher-P, chemically complex natural samples is associated with large uncertainty. Assuming
321	coexisting anion to be Cl, fluid compositions calculated for vein samples, Tur-rich pelitic schists, and
322	even pelitic schists with less than 1 vol% tourmaline all showed salinity (~ $0.44-0.59$ mol/l
323	NaCl+CaCl ₂) similar to the present-day sea water (~0.6 mol/l NaCl) as summarized in Table 1. Fluid
324	compositions for the Formation I samples are given for reference only (Table 1) because at least part
325	of tourmaline crystals are shown to have coexisted with euhedral plagioclase indicating their magmatic



origin (Fig. 3n-l). A magmatic origin of tourmaline in the Formation I samples is also indicated by its
occurrence as a euhedral mineral in leucosome (Fig. 2c-d).

328	Tourmaline and plagioclase are known to show almost identical X_{Ca} values when they are
329	in chemical equilibrium (von Goerne et al., 2011). As shown in Fig. 7, compositions of plagioclase
330	and tourmaline in several samples such as a vein associated with tourmalinization (sample 107-1) and
331	pelitic schists with more than 1 vol% tourmaline (samples 505A and 505B) do not plot on the
332	equilibrium line defined by the experimental study of von Goerne et al. (2011), suggesting that
333	plagioclase and tourmaline in these samples are in disequilibrium relationship. Because there is a
334	possibility that fluid-mineral equilibrium is not attained in these samples, estimated fluid compositions
335	are only given for reference for these samples as well (Table 1). Although anorthite-rich cores of
336	plagioclase show disequilibrium relationship with matrix tourmaline in sample 908, plagioclase rims
337	and matrix tourmaline show equilibrium relationship (Fig. 7). Therefore, matrix tourmaline
338	composition is used in estimating fluid compositions for sample 908.

339

340 6.2 Ca-metasomatism in the Main Central Thrust zone

341 Some actinolite schists in the Ky zone are intercalated with orange-colored, dolomite-rich portions 342 (Fig. 2b). In such samples, selvedges of green actinolite fill cracks that cut the schistosity, with 343 offshoots parallel to the schistosity (Fig. 2b; sample 104). These textures clearly show that the orange



344 dolomitic portions are the protolith of greenish actinolite-rich regions, and that the hydration reaction 345 $5Ca(Mg,Fe)(CO_3)_2 + 8SiO_2$ (in fluid) + H₂O 346 $= Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2 + 3CaCO_3 + 7CO_2$ (1)347 took place locally along the crack and parallel to the schistosity into which H₂O-rich fluid infiltrated. 348 The actinolite-rich parts developed parallel to the schistosity become thinner away from the crack (Fig. 3492b), suggesting that H₂O infiltration from the crack along the schistosity was necessary for the progress 350of the reaction (1), and that H₂O was consumed during the reaction along the schistosity. Therefore, it 351is highly likely that the actinolite schists in the study area were originally metadolostones that 352underwent water-rock interaction as represented by reaction (1). Abundant grains of secondary margarite and anorthite-rich plagioclase cut the schistosity of 353354the metapelites within several to ~ 10 meters from the actinolite schist (i.e., metadolostone) layers (Fig. 355 2f). This suggests that some of the $CaCO_3$ and CO_2 components in the product side of the reaction (1) 356were presumably contained in the H₂O fluid and removed from the actinolite schists during the 357 progress of reaction (1). Infiltration of such Ca-bearing fluids into surrounding pelitic schists possibly 358caused Ca-metasomatism especially in the vicinity of the metadolostone layers, and produced observed anorthite-rich plagioclase and margarite (Fig. 2f). The An-rich nature of plagioclase in the 359360 plagioclase-quartz vein (Fig. 2h; sample 107-1) is also indicative of movement of the Ca-bearing fluid, 361 and the development of tourmaline-rich selvedges in the wall rock (Fig. 2g-h) points to the presence



362	of B in such fluids. The An-rich plagioclase contained in some of the tourmaline-rich pelitic schists
363	(e.g., Fig. 3b; Table 1) would be the products of Ca-metasomatism similar to that observed in the
364	vicinity of actinolite schists (metadolostones). Drastic change of X_{Ca} in the tourmaline enclosed in
365	garnet in the tourmaline-rich pelitic schists (e.g., Fig. 6d) suggests that such Ca-metasomatism took
366	place during the garnet growth, i.e., during the prograde metamorphism of the LHS. Enrichment of
367	some pelitic schists in tourmaline indicates that B was also introduced into the pelitic schists by the
368	same metasomatic fluid. This is consistent with the case of veins associated with tourmalinization in
369	which Ca and B were also carried by the metasomatic fluid as discussed above.

6.3 Pressure-temperature conditions of the fluid infiltration event that formed quartz-lenses

372	As described above, garnet and kyanite are coarse-grained only in and around the quartz lenses
373	developed parallel to the schistosity (Fig. 2e), suggesting that the fluid infiltration event that formed
374	the quartz lenses (originally veins) took place during prograde to peak metamorphism when these
375	porphyroblasts grew in the Ky zone. In a pelitic schist sample 402-3, some kyanite grains in the quartz
376	lenses show curved growth texture possibly indicating the fluid flow during their growth (Fig. 3k).
377	Presence of such kyanite and plagioclase in the quartz lenses suggests that they crystallized in a fluid,
378	and Si, Al, Na and Ca were likely contained in the fluid. The <i>P</i> - <i>T</i> condition of \sim 610 °C and \sim 0.92 GPa,
379	estimated by applying the conventional geothermometers and geobarometers to the Grt + Ky + Pl +



380	Bt + Qtz assemblage found in the vein and in the adjacent wall rock, probably represents the $P-T$
381	condition of the fluid infiltration (Fig. 4). These lens-shaped quartz veins are not associated with
382	tourmalinization, and thus the B content of the fluid might have been lower than that of the fluid which
383	formed the schistosity-cutting veins associated with tourmalinization.
384	
385	6.4 Origin of tourmaline-rich pelitic schists and tourmaline-veins
386	In the veins associated with tourmalinization from the Ky zone, biotite and staurolite in the wall rock
387	are gradually replaced by tourmaline with decreasing distance from a tourmaline-quartz vein (Figs.
388	2g-h; 3g-j). This texture indicates that B-bearing fluids infiltrated into the wall rock using schistosity
389	as a pathway of the B-bearing fluids, and selectively consumed biotite and staurolite to form
390	tourmaline. A similar process probably took place in forming the tourmaline-rich pelitic schists. Pelitic
391	schists with more than 1 vol% tourmaline are sporadically distributed in the MCT zone of the LHS as
392	shown in Fig. 1b. In such rocks, tourmaline is commonly localized in muscovite-rich aluminous layers.
393	The tourmaline-rich micaceous layers tend to be poor in biotite, although biotite not coexisting with
394	abundant tourmaline is present elsewhere in the same sample (Fig. 3d). This probably reflects the
395	control of local bulk composition in the progression of tourmaline precipitation either locally or
396	ubiquitously during the infiltration of B-bearing fluids. In domains of appropriate bulk composition,
397	biotite was selectively consumed as a reactant to supply Mg, Fe and Al when B-bearing fluids



398	infiltrated to form tourmaline. Presence of biotite not coexisting with abundant tourmaline in the same
399	sample suggests that the fluid infiltration was localized and channeled. Localized and channeled nature
400	of the fluid movement in the MCT zone of the LHS is also supported by the H ₂ O-rich fluid infiltration
401	recorded in metadolostones (Fig. 2b) and sporadic occurrence of tourmaline-rich pelitic schists. Such
402	a B-bearing fluid infiltration probably started during the prograde metamorphic stage, because garnet
403	with prograde chemical zoning (bell-shaped zoning of Mn; Fig. 3e) includes abundant tourmaline
404	crystals, and lasted until the post tectonic, tourmaline-rich vein formation stage.
405	Tourmaline in the tourmaline-rich pelitic schists is characterized by a large variation in X_{Ca}
406	at almost constant X_{Mg} value (Fig. 6). Previous studies on metamorphic tourmaline show that X_{Ca} and
407	X_{Mg} tend to increase as metamorphic grade increases (Henry and Dutrow, 1996). However, the
408	chemical trend observed in tourmalines in the tourmaline-rich pelitic schists of this study contrasts
409	with the trend representative of increasing metamorphic grade elsewhere. We consider that the large
410	variation of X_{Ca} at nearly constant X_{Mg} reflects change of whole-rock X_{Ca} at constant metamorphic
411	grade, i.e., Ca-metasomatism at constant P - T condition. Because the inverted metamorphism is
412	observed in the MCT zone, a potential source of B-bearing fluids that infiltrated into the MCT zone
413	could be structurally lower metapelites of lower metamorphic grades, because syn-metamorphic
414	dehydration reactions of B-bearing hydrous minerals in low- to medium-grade metapelites such as
415	illite and muscovite (Henry and Dutrow, 1996) can supply H ₂ O, B and other incompatible elements

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416	into the fluid phase that migrate upwards into the higher-grade metamorphic zones. The metadolostone
417	layers (actinolite schists) commonly intercalated with the pelitic schist in the MCT zone texturally
418	preserve evidence for hydration and decarbonation reactions as represented by reaction (1) (Fig. 2b).
419	Upward migration of the B-bearing fluids that originated from metapelites and reaction with
420	metadolostone layers likely produced B- and Ca-rich metasomatic fluids. Infiltration of B- and Ca-
421	rich fluids into the higher structural levels resulted in the Ca-metasomatism that produced anorthite
422	and margarite in the overlying metapelites (Fig. 2f). The compositional trend recorded in tourmalines
423	in the tourmaline-rich pelitic schists and in the tourmalinization domains along the veins, i.e., increase
424	of X_{Ca} at constant X_{Mg} , can be ascribed to the infiltration of the B- and Ca-rich fluids into the pelitic
425	schists and precipitation of tourmaline whose composition reflect that of the fluids. Disequilibrium
426	relationship between tourmaline and coexisting An-rich plagioclase (Fig. 7) in some of the vein
427	samples (sample 107-1) and tourmaline-rich pelitic schists (samples 505A, 505B, 908; Fig. 7) can be
428	also explained by the short-lived infiltration of such fluids along cracks and schistosity. On the other
429	hand, in the samples with equilibrium tourmaline-plagioclase pairs, reaction between the pelitic schists
430	and the infiltrated B- and Ca-rich fluids were likely buffered by the pelitic schists, probably smaller
431	amount of fluid infiltrated for longer period. In sample 908, plagioclase cores with anorthite-rich
432	composition (An80-85) is replaced by anorthite-poor plagioclase rims (An25-39), suggesting that
433	plagioclase formation took place at several discrete stages. Presence of several formation stages of



434	different tourmaline-plagioclase pairs, either disequilibrium and equilibrium (Figs. 3a, 5c and 7),
435	points to multistage fluid infiltration events during the metamorphism (e.g., Dutrow et al., 1999).
436	Pelitic schists with less than 1 vol% tourmaline in the MCT zone of the LHS are probably
437	the rocks that were less affected by the infiltration of B- and Ca-rich fluids. However, the change of
438	X_{Ca} and X-site vacancy of tourmaline as a function of metamorphic grade is not straightforward as
439	proposed in Henry and Dutrow (1996) even in some of the pelitic schists with less than 1 vol%
440	tourmaline (Figs. 5a, e, S1). This probably reflects the effect of B- and Ca-rich fluid infiltration even
441	for some of the pelitic schists with less than 1 vol% tourmaline, although the effect is likely weaker
442	compared to the tourmaline-rich pelitic schists.
443	
443 444	6.5 Significance of B-bearing aqueous fluid infiltration into the HHC in petrogenesis of
443 444 445	6.5 Significance of B-bearing aqueous fluid infiltration into the HHC in petrogenesis of tourmaline leucogranites
443 444 445 446	6.5 Significance of B-bearing aqueous fluid infiltration into the HHC in petrogenesis of tourmaline leucogranites Our study has shown that there is abundant evidence of B-bearing aqueous fluid infiltration that took
443 444 445 446 447	6.5 Significance of B-bearing aqueous fluid infiltration into the HHC in petrogenesis of tourmaline leucogranites Our study has shown that there is abundant evidence of B-bearing aqueous fluid infiltration that took place during the prograde to post-peak metamorphism in the MCT zone of the LHS. These fluids most
443 444 445 446 447 448	6.5 Significance of B-bearing aqueous fluid infiltration into the HHC in petrogenesis of tourmaline leucogranites Our study has shown that there is abundant evidence of B-bearing aqueous fluid infiltration that took place during the prograde to post-peak metamorphism in the MCT zone of the LHS. These fluids most likely infiltrated into the structurally higher HHC across the MCT during the high-T metamorphism
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 443 444 445 446 447 448 449 450 	6.5 Significance of B-bearing aqueous fluid infiltration into the HHC in petrogenesis of tourmaline leucogranites Our study has shown that there is abundant evidence of B-bearing aqueous fluid infiltration that took place during the prograde to post-peak metamorphism in the MCT zone of the LHS. These fluids most likely infiltrated into the structurally higher HHC across the MCT during the high- <i>T</i> metamorphism in the HHC. Microstructural constraints described above (e.g., Fig. 31-m) shows that at least some of the tourmaline in the HHC grew in the presence of melt and thus the melt was B-bearing. Therefore,



452	1981). Fluid-fluxed melting has been considered unimportant for the formation of granitic bodies
453	because melts formed at wet solidus cannot rise without crystallizing. However, if the T conditions of
454	the HHC rocks into which the H ₂ O-rich fluid have infiltrated is sufficiently higher than the wet solidus,
455	the melting reaction can be incongruent, forming water-undersaturated melt and peritectic phases such
456	as garnet (Weinberg and Hasalová, 2015). Compared to a melt formed on the wet solidus, such melt
457	can rise without crystallizing. In addition, the rising melt can form more melt because the maximum
458	amount of water that can be incorporated in the melt decreases as pressure decreases (Weinberg and
459	Hasalová, 2015), especially in the case where the melt intrudes into the hotter HHC. Patiño Douce and
460	Harris (1998) melted a pelitic schist from the HHC under 1.0 GPa and 700°C with 4 wt % added H_2O ,
461	and observed a reaction as follows:
461 462	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \rightarrow Grt + Ms + Melt $ (2)
461 462 463	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \rightarrow Grt + Ms + Melt \qquad (2)$ This reaction successfully accounts for the phases present in the Formation I gneisses of the Dhankuta
461 462 463 464	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \Rightarrow Grt + Ms + Melt \qquad (2)$ This reaction successfully accounts for the phases present in the Formation I gneisses of the Dhankuta area, and the <i>P-T</i> conditions of this reaction (2) is also consistent with the estimated <i>P-T</i> conditions
 461 462 463 464 465 	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \rightarrow Grt + Ms + Melt \qquad (2)$ This reaction successfully accounts for the phases present in the Formation I gneisses of the Dhankuta area, and the <i>P-T</i> conditions of this reaction (2) is also consistent with the estimated <i>P-T</i> conditions for the Formation I rocks there (~670 °C at 1.13 GPa), taking the solidus-lowering effect of B
 461 462 463 464 465 466 	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \Rightarrow Grt + Ms + Melt \qquad (2)$ This reaction successfully accounts for the phases present in the Formation I gneisses of the Dhankuta area, and the <i>P-T</i> conditions of this reaction (2) is also consistent with the estimated <i>P-T</i> conditions for the Formation I rocks there (~670 °C at 1.13 GPa), taking the solidus-lowering effect of B (Pichavant, 1987) into account. It should be also noted that with the salinity of the fluid estimated by
 461 462 463 464 465 466 467 	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \Rightarrow Grt + Ms + Melt \qquad (2)$ This reaction successfully accounts for the phases present in the Formation I gneisses of the Dhankuta area, and the <i>P-T</i> conditions of this reaction (2) is also consistent with the estimated <i>P-T</i> conditions for the Formation I rocks there (~670 °C at 1.13 GPa), taking the solidus-lowering effect of B (Pichavant, 1987) into account. It should be also noted that with the salinity of the fluid estimated by this study, activity of H ₂ O is not lowered significantly from unity (e.g., Aranovich and Newton, 1996;
 461 462 463 464 465 466 467 468 	and observed a reaction as follows: $Bt + Pl + Qtz + H_2O \Rightarrow Grt + Ms + Melt \qquad (2)$ This reaction successfully accounts for the phases present in the Formation I gneisses of the Dhankuta area, and the <i>P-T</i> conditions of this reaction (2) is also consistent with the estimated <i>P-T</i> conditions for the Formation I rocks there (~670 °C at 1.13 GPa), taking the solidus-lowering effect of B (Pichavant, 1987) into account. It should be also noted that with the salinity of the fluid estimated by this study, activity of H ₂ O is not lowered significantly from unity (e.g., Aranovich and Newton, 1996; Johannes and Holtz, 1996). Tourmaline-bearing leucogranite patches observed in the HHC just above



470	boundary with the host gneiss (Fig. 2d) indicative of fluid-fluxed melting (Weinberg and Hasalová,
471	2015). This leucogranite patch, however, failed to be extracted from the site of formation judging from
472	the fact that it occurs just above the MCT (Fig. 1b).
473	Guo and Wilson (2012) pointed out that the whole-rock major and trace elements and Sr-
474	Nd isotope data from the HHL suggest that the HHL could have formed by the partial melting of the
475	HHC metasomatized by the fluid derived from the LHS. Their data are consistent with our evidence
476	for widespread movement of B-bearing fluid in the MCT zone of the LHS, and its possible infiltration
477	into the structurally higher HHC. Therefore, influx of B-bearing aqueous fluids released from the LHS
478	into the hot HHC during the inverted metamorphism of the MCT is one of the likely processes for
479	partial melting of the HHC, and potentially an important process for the formation of tourmaline-
480	bearing HHL in the studied area.
481	
482	7. Conclusions
483	(1) Tourmaline in the MCT zone of the LHS records channeled syn-metamorphic fluid flow through
484	an inverted metamorphic sequence.
485	(2) Dehydration of low-grade pelitic rocks likely released B-bearing fluids. Upward movement and
486	interaction of such fluids with metadolostone layers made them enriched in Ca.
487	(3) Such syn-metamorphic B- and Ca-rich fluids infiltrated to form tourmaline showing significant





488 increases of XCa at constant XMg from the cores or mantles to the rims. Salinity of such fluids was

489 estimated to be almost equivalent to the present-day sea water.

- 490 (4) The B- and Ca-rich fluids that infiltrated into the HHC caused vapor-fluxed melting of pelitic
- 491 gneisses and produced tourmaline leucogranites.

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- 608
- 609 Figure captions
- 610
- Fig. 1. (a) Simplified geological map of the Himalayas in eastern Nepal (after Catlos et al., 2001)
 showing the study area (red box). Area in pink Tethys Himalayan Sequence (THS); area in yellow
 High Himalayan Crystallines (HHC); area in green Lesser Himalayan Sequences (LHS); area



614	in orange - Siwalik Group. Lines - South Tibetan Detachment (STD); Main Boundary Thrust
615	(MBT) and Main Frontal Thrust (MFT). (b) Geological map of the Dhankuta area with
616	metamorphic mineral assemblage observed in the LHS. Thin blue lines – rivers; thick black broken
617	lines - boundaries of metamorphic zones; red line - MCT, area in yellow - HHC, area in green -
618	LHS. Location of the MCT is after Sato et al. (in revision).
619	
620	Fig. 2. Field photos of representative rock types from Dhankuta area. Pen as a scale. (a) Pelitic schist
621	with quartz lenses showing top-to-the-S sense of shear from the LHS. (b) Metadolostone from the
622	Ky zone of the LHS. Orange part is mainly composed of Dol + Bt and green part is mainly
623	composed of Amp + Cal. Sample 104. (c) Pelitic migmatite with tourmaline-bearing (black crystal)
624	leucosome from the HHC. (d) Pelitic migmatite with tourmaline-bearing leucocratic patch cutting
625	the gneissosity from the HHC. (e) Ky-grade pelitic schist from the uppermost part of the LHS.
626	Garnet and kyanite are coarser-grained in and around the quartz lenses. Sample 402-3. (f)
627	Randomly-oriented, secondary margarite crystals (white) cutting the schistosity of pelitic schist in
628	the LHS. An-rich plagioclase is commonly associated with margarite. Ky zone. (g) Tourmaline-
629	quartz vein (indicated by red arrows) cutting the schistosity of chlorite-rich metapelite. Red box
630	indicates sample 101. Ky zone. (h) Tourmalinization at the boundary between wall rock pelitic
631	schist and a plagioclase-quartz vein. Red box indicates sample 107-1. Ky zone.


632

633	Fig. 3. (a) A BSE image of tourmaline cut parallel to the c-axis from the St zone pelitic schist (sample
634	908). Bright detrital core shows a xenomorphic outline. Preferential growth indicates that a top
635	corresponds to the +c pole. (b) A BSE image of An-rich plagioclase enclosing tourmaline. Sample
636	505A from the Ky zone. (c) Muscovite-rich matrix is surrounding garnet that is enclosing
637	tourmaline. Sample 109B from the boundary between the St and Ky zones. PPL. (d) Abundant
638	tourmaline in the Ms-rich matrix of the St zone pelitic schist. Sample 602. PPL. (e) X-ray elemental
639	map showing abundant tourmaline (light green) enclosed in garnet and present in the matrix (left
640	map) and bell-shaped Mn zoning of garnet indicative of its prograde growth (right map). Sample
641	602 from the St zone. (f) Tourmaline selectively replaces pre-existing biotite and staurolite, which
642	are oriented parallel to the schistosity, resulting in development of tourmaline-rich layers in the
643	wall rock of a plagioclase-quartz vein. Fractured parts of tourmaline are indicated by red arrows.
644	Sample 107-1 from the Ky zone. (g) A slab photo of sample 101 from the Ky zone hosting a
645	tourmaline-quartz vein (black). Note that pre-existing mafic minerals distributed in the vicinity of
646	the vein are selectively tourmalinized. (h) Enlargement of the boxed area (area 3) in Fig. 3g. The
647	vein is composed of quartz and green to blue tourmaline, and the schistosity of the host pelitic
648	schist is defined by the preferred orientation of chlorite that has replaced biotite. (i) Enlargement
649	of the boxed area (area 2) in Fig. 3g. Aggregates of greenish tourmaline have grown subparallel to



650	the schistosity, possibly replacing pre-existing staurolite and biotite. Schistosity is now mainly
651	defined by the parallel orientation of chlorite. (j) Enlargement of the boxed area (area 1) in Fig. 3g.
652	Greenish tourmaline surrounding and replacing staurolite oriented parallel to the schistosity. The
653	schistosity is defined by the parallel orientation of chlorite and minor biotite. (k) Thin section photo
654	of sample 402-3 from the Ky zone. (1) Thin section photo of sample 604 from Formation I showing
655	the mode of occurrence of two types of garnet and matrix tourmaline. Euhedral plagioclase is
656	included in elongate garnet. PPL. (m), (n) X-ray elemental maps of garnets shown in Fig. 31. Note
657	the difference of chemical zoning preserved in the round and elongate garnets. Euhedral
658	plagioclase is included in elongate garnet that has the same chemical composition with another
659	garnet grain enclosing tourmaline (top left). Sample 604. Lighter blue color indicates the higher X-
660	ray intensity of a mapped element. (m) Ca map. (n) Mn map.
661	
662	Fig. 4. <i>P-T</i> diagram showing the <i>P-T</i> estimates from the HHC (samples 604 and 201A shown by orange
663	circles; Zr-in-Rt thermometry results) and from the LHS (samples 806, 908 and 402-3 shown by
664	green circles) in the Dhankuta area. P-T grid and tourmaline-stable/unstable regions are from
665	Dutrow and Henry (2011).
666	

667 Fig. 5. Composition of tourmaline from the pelitic schists with less than 1 vol% tourmaline. X_{Mg} vs



668	X-site vacancy plot for samples (a) 407-1 from the Ky zone with 0.4 vol% tournaline, (b) 3-807
669	from the Ky zone with 0.2 vol% tourmaline, (c) 908 from the St zone with 0.6 vol% tourmaline,
670	(d) 605 from the Grt zone with 0.9 vol% tourmaline, and (e) 806 from the Grt zone with 0.8 vol%
671	tourmaline. Blue arrows signify the chemical zoning trends observed from cores to rims, except
672	for (e) signifying a zoning from mantles to rims. (f) Rim compositions of matrix tourmaline from
673	the pelitic schists from the Ky, St and Grt zones. X_{Mg} vs X_{Ca} plot. (g) Rim and mantle compositions
674	of tourmaline from the HHC.
675	
676	Fig. 6 Composition of tourmaline from the veins associated with tourmalinization and pelitic schists
677	with more than 1 vol% tourmaline (tourmaline-rich pelitic schists). X_{Mg} vs X_{Ca} plot for samples (a)
678	808-2 from the Ky zone with abundant tourmaline, (b) 107-1 from the Ky zone with abundant
679	tourmaline, (c) 101 from the Ky zone with abundant tourmaline, (d) 505A from the Ky zone with
680	4.2 vol% tourmaline, (e) 109B from the boundary between the St and the Ky zones with 1.8 vol%
681	tourmaline, (f) 602 from the St zone with 12.2 vol% tourmaline, (g) 803 from the Grt zone with
682	3.7 vol% tourmaline, and (h) 406B from the Formation I just above the MCT with 5.7 vol%
683	tourmaline. Blue arrows signify the chemical zoning trends observed from cores to rims, except
684	for (g) signifying a zoning from mantles to rims.
685	





686	Fig. 7. Plot showing the relationship between X_{Ca} of rims of matrix tournaline and average X_{Ca} of
687	rims of coexisting matrix plagioclase except for sample 908. For sample 908, anorthite-rich cores
688	and less calcic rims are both plotted in this figure in order to show that the rims rather than the
689	cores are in equilibrium with matrix tourmaline rims.
690	
691	Table 1. Summary of samples used in this study.
692	
693	Table 2. Representative analyses of tourmaline. Tourmaline composition was normalized to 15 T+Z+Y
694	cations (Henry and Dutrow, 1996; Henry et al., 2011), assuming three B atoms per formula unit.
695	Full dataset is available as a supplementary material (Table S1).
696	
697	Table 3. Representative analyses of rock-forming minerals other than tourmaline.
698	
699	Electronic Supplementary Figures and Tables
700	Fig. S1 Composition of tourmaline from the pelitic schists with less than 1 vol% tourmaline. X_{Mg} vs
701	X_{Ca} plot for samples (a) 407-1 from the Ky zone, (b) 3-807 from the Ky zone, (c) 908 from the St
702	zone, (d) 605 from the Grt zone, and (e) 806 from the Grt zone. (f) Rim compositions of matrix
703	tourmaline from the pelitic schists from the Ky, St and Grt zones. X_{Mg} vs X-site vacancy plot. Note



704	the progressive chemical change towards higher X_{Mg} and lower or almost constant X-site vacancy
705	as an increase of metamorphic grade. (g) Rim and mantle compositions of tourmaline from the
706	ННС.
707	
708	Fig. S2 Composition of tourmaline from the veins associated with tourmalinization and pelitic schists
709	with more than 1 vol% tourmaline (tourmaline-rich pelitic schists). X_{Mg} vs X-site vacancy plot for
710	samples (a) 808-2 from the Ky zone, (b) 107-1 from the Ky zone, (c) 101 from the Ky zone, (d)
711	505A from the Ky zone, (e) 109B from the boundary between the St and the Ky zones, (f) 602
712	from the St zone, (g) 803 from the Grt zone, and (h) 406B from the Formation I just above the
713	MCT.
714	
715	Table S1. Full dataset of tourmaline analyses used in this study. Tourmaline composition was
716	normalized to 15 T+Z+Y cations (Henry and Dutrow, 1996; Henry et al., 2011), assuming three B
717	atoms per formula unit.







Kawakami et al. Fig. 1













Fig. 3 Kawakami et al.













Kawakami et al. Fig. 4









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Kawakami et al. Fig. 6





Kawakami et al. Fig. 7



Table 1														
Sample	metamorp		Modal	Major mineral assemblage in matrix		EPMA	Matrix Tur	rim (apfu)**	Fluid (r	nol/l)***		sample	locality	original sample
number	hic zone/unit	lithology	amount of	[+secondary]	accessory minerals	analysis	Na	Ca	Na	Са	comments	Latitude	Longitude	number
505E	EmI	nelitic gneiss	n d	Grt+Bt+Ms+Tur+Pl(An9-15)+Kfs+Otz[+Ch]]	An+Ilm+Rt+Ttn+Zrn	0	0 74-0 78	0.08-0.12	(0.46)	(0.05 - 0.07)	nartial melting	26°58'32 07"N	87°19'2 01"E	TK2013111505E
702C	FmI	pelitic gneiss	n d	Grt+Bt+Ms+Tur+Pl(An4-16)+Kfs+Otz [+Ch1]	Ap+Gr+IIm+Zrn	ŏ	0.71-0.77	0.10-0.12	(0.46)	(0.06-0.07)	partial melting	26°59'11 58"N	87°18'40 20"E	TK2013111702C
604	FmI	nelitic gneiss	n.d.	Grt+Bt+Ms+Sil+Tur+Pl(An22)+Kfs+Otz	Ap+Ep+IIm+Mnz+Rt+Zrn	ŏ	0.45-0.59	0.07-0.16	(0.42-0.46)	(0.04-0.06)	partial melting	26°58'44.67"N	87°19'51.92"E	TK2013111604
703B-1	FmI	pelitic gneiss	n d	Grt+Bt+Ms+Tur+Pl(An16)+Kfs+Otz	Gr+Mnz+Zrn	ŏ	0.67-0.72	0.13-0.17	(0.46-0.47)	(0.07-0.09)	partial melting	26°59'7 54"N	87°18'44 20"E	TK2013111703B-1
201A	FmI	pelitic gneiss	n.d.	Grt+Bt+Ms+Sil±Tur+Pl(An13-18)+Kfs+Qtz	Ap+Ccp+Ep+Gr+Ilm+Mnz+Py+Rt+ Zrn	0	0.66-0.68	0.13-0.14	(0.47)	(0.07)	partial melting. Tur is minor.	26°59'9.91"N	87°19'25.97"E	TK2012111201A
406B	MCT	Tur-rich pelitic gneiss	5.7	Grt+Bt+Ms+Tur+Pl(An31-32)+Kfs+Qtz	Ap+Ep+Ilm+Zrn	0	0.60-0.71	0.18-0.26	0.46	0.10-0.13	Just above the MCT. FmI origin?	26°58'19.84"N	87°18'23.26"E	TK2013111406B
808-2	Ку	vein + tourmalinized wall rock	abundant	vein: Tur+Qtz, wall rock: Bt+Ky+St+Ms+Tur+Qtz [+Chl]	Ap+Ep+Ilm+Py+Zrn	0	0.45-0.50	0.21-0.27	0.42-0.44	0.11-0.14		26°57'58.54"N	87°19'13.09"E	TK2013111808-2
107-1	Ky	vein + tourmalinized wall rock	abundant	vein: Pl(An88)+Qtz+Ms+Chl+Tur, wall rock: Grt+St+Bt+Ms+Qtz+Tur	Ap+Ilm+Py+Zrn	0	0.34-0.39	0.18-0.23	(0.35-0.39)	(0.10-0.12)	Disequilibrium between Tur and Pl.	26°57'54.22"N	87°19'28.49"E	TK2013112107-1
101	Ку	vein + tourmalinized wall rock	abundant	vein: Tur+Qtz (area3), wall rock: Chl+Tur+Qtz±Grt (area2), Tur+Chl+Qtz+Bt+St±Grt (area1)	Ap+Ccp+Ilm+Py+Zrn	0	(3)0.32-0.57 (2)0.42-0.59 (1)0.44-0.56	(3)0.22-0.32 (2)0.20-0.29 (1)0.24-0.32	(3)0.34-0.46 (2)0.40-0.46 (1)0.41-0.45	(3)0.11-0.16 (2)0.11-0.15 (1)0.12-0.15	(3) to (1) represent zone numbers.	26°57'55.71"N	87°19'28.92"E	TK2013112101
505A	Ky	Tur-rich pelitic schist with Otz lens	4.2	Grt+Ky+Ms+Bt+Pl(An69-80)+Qtz+Tur	Ap+Ep+Ilm+Py+Rt+Ttn+Zrn	0	0.37-0.57	0.15-0.38	(0.37-0.46)	(0.08-0.18)	Disequilibrium between Tur and Pl.	26°58'5.07"N	87°19'54.44"E	TK2012111505A
505B	Ky	Tur-rich pelitic schist near Otz lens	1.7	Grt+Bt+Ms+Pl(An74-84)+Tur+Qtz	Ap+Ep+Gr+Ilm+Py+Rt+Zrn	0	0.36-0.65	0.16-0.37	(0.36-0.47)	(0.09-0.18)	Disequilibrium between Tur and Pl.	26°58'5.07"N	87°19'54.44"E	TK2012111505B
407-1	Ку	pelitic schist	0.4	Bt+St+Ky+Ms(Paragonite)+Chl+Pl(An6- 9)+Qtz	Ap+Py+Rt+Tur+Zrn	0	0.66-0.77	0.04-0.10	0.46-0.47	0.02-0.06		26°58'8.50"N	87°21'17.64"E	TK2012111407-1
3-807	Ky	pelitic schist	0.2	St+Ky+Bt+Ms+Chl+Qtz	Ap+Ep+Rt+Tur+Zrn (+Ilm in St)	0	0.30-0.34	0.26-0.27	0.29-0.30	0.15-0.16		26°57'58.54"N	87°19'13.09"E	TK2013111807
402-3	Ky	pelitic schist with Qtz lens	0	Grt+Ky+Bt+Pl(An19-22)+Qtz [+Ms+Chl]	Ap+Gr+Ilm+Zrn	0	-	-	-	-	Tur absent.	26°57'57.79"N	87°19'1.88"E	TK2013111402-3
104	Ку	intercalation of Dol-rich rock and Act-schist	0	orange part: Dol + Bt greenish-part: Act + Cal	Py+Zrn	0	-	-	-	-	Tur absent.	26°57'55.71"N	87°19'28.92"E	TK2013112104
109B	St/Ky*	Tur-rich pelitic schist with Otz lens	1.8	Grt+Ms+Bt+Qtz+Tur	Ap+Ccp+Ilm+Py+Ttn+Zrn	0	0.39-0.57	0.18-0.26	0.38-0.46	0.10-0.13	Pl absent.	26°57'50.49"N	87°19'27.53"E	TK2013112109B
602	St	Tur-rich pelitic schist	12.2	Grt+Ms+Bt+Pl(An21-27)+Qtz+Tur [+Ch1]	Ap+Ccp+Ep+Ilm+Py+Zrn	0	0.59-0.73	0.10-0.23	0.46-0.47	0.06-0.12		26°57'47.38"N	87°19'31.22"E	TK2012111602
908	St	pelitic schist	0.6	Grt+Bt+Ms+Chl+An+St+Qtz+Pl(An80-85 is replaced by An25-39. An7-11 occurs enclosed in Bt flakes in matrix)	Ap+Ep+11m+Tur+Zrn	0	0.63, 0.41- 0.51	0.01-0.11, 0.16-0.32	0.40-0.47	0.01-0.16	St also occurs as an inclusion in Grt. All Tur compositions are used for the calculation of fluid composition.	26°57'53.20"N	87°19'53.64"E	TK2012111908
001	St	Tur-rich pelitic schist	9.36	Grt+Bt+Ms+Chl+Tur+Pl(An30-36)+Qtz	Ap+Ep+Ilm+Zrn	Ó	0.49-0.60	0.16-0.26	0.43-0.46	0.09-0.13		26°57'50.49"N	87°19'27.53"E	TK2012112001
107	St	Tur-rich pelitic schist	2.25	Bt+Ms+Cal+Tur+Qtz	Ap+Cal+Ep+Gr+Ilm+Rt+Ttn+Zrn	×	n.d.	n.d.	n.d.	n.d.		26°57'22.53"N	87°20'40.41"E	TK2012112107
905	St	Tur-rich pelitic schist	7.85	Bt+Ms+Tur+Qtz	Ap+Ep+Ilm+Py+Ttn+Zrn	×	n.d.	n.d.	n.d.	n.d.		26°57'45.29"N	87°19'48.84"E	TK2012111905
605	Grt	pelitic schist	0.9	Grt+Bt+Ms+Chl+Pl(An18-20)+Qtz	Ap+Ccp+Ilm+Py+Tur+Zrn	0	0.55-0.62	0.06-0.08	0.45-0.46	0.06-0.08		26°57'32.44"N	87°19'48.24"E	TK2012111605
806	Grt	pelitic schist	0.8	Grt+Bt+Ms+Chl+Pl(An6-16)+Qtz	Ap+Ep+Ilm+Tur+Zrn	0	0.54-0.75	0.03-0.11	0.45-0.47	0.02-0.06		26°57'13.22"N	87°20'0.93"E	TK2012111806
803	Grt	Tur-rich pelitic schist with Otz lens	3.7	Grt+Bt+Ms+Chl+Tur+Qtz	Ap+Ep+Ilm+Zrn	0	0.46-0.73	0.03-0.13	0.42-0.46	0.02-0.07	Tur included in Grt. Pl absent.	26°56'46.96"N	87°19'30.42"E	TK2013111803
109	Grt	pelitic schist	0.86	Grt+Bt+Ms+Chl+Qtz	Ap+Ep+Ilm+Py+Tur+Zrn	×	n.d.	n.d.	n.d.	n.d.		26°57'11.12"N	87°20'36.89"E	TK2012112109
2-807	Bt	Tur-rich pelitic schist	1.07	Bt+Chl+Ms+Tur+Qtz	Ap+Ep+Gr+Ilm+Ttn+Zrn	×	n.d.	n.d.	n.d.	n.d.	Pl absent.	26°57'7.94"N	87°20'3.65"E	TK2012111807

n.d. : not determined ** Mantle and rim compositions are given for sample 101. reference. See text for details.



Table 2. Representative	e analyses of tou	ırmaline													
	migi	natite		tourm	aline-poor peliti	c schist			tourma	aline-rich pelitio	e schist		tourma	aline-rich wall ro	ck/vein
Metamorphic zone	FmI	FmI	Ky	Ky	St	Grt	Grt	Ky	St/Ky	St	St	Grt	Ky	Ky	Ky
Sample name	703B-1	604	407-1	3-807	908	605	806	505B	109B	602	001	803	808-2	107-1	101
Analysis number	t65	604-38	tur5	807-64	tur2	4	68	59	9B-8	turl	40	604-55	t6	tur/mica87	136
core/mantle/rim	matrix rim	matrix rim	matrix rim	matrix rim	matrix rim	matrix rim	matrix -c rim	matrix rim	matrix -c rim	matrix rim	matrix rim	matrix +c rim	matrix rim	matrix rim	area3 rim
SiO ₂	36.08	35.99	37.15	36.24	35.89	36.54	36.89	37.42	36.25	36.13	36.39	35.86	36.85	36.20	36.14
TiO ₂	0.56	0.82	0.69	0.50	0.53	0.49	0.33	0.78	0.61	0.55	0.50	0.98	1.02	0.69	0.47
B ₂ O ₃ *	10.38	10.45	10.67	10.52	10.44	10.54	10.49	10.51	10.52	10.43	10.51	10.49	10.57	10.59	10.48
Al ₂ O ₃	32.06	32.89	32.48	33.01	31.54	33.39	32.62	30.89	32.54	30.87	31.94	32.74	32.02	33.34	32.81
Cr ₂ O ₃	0.06	0.03	0.07	0.08	0.01	0.00	0.02	0.05	0.06	0.03	0.09	0.01	0.08	0.00	0.02
Fe ₂ O ₂ *	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	8.18	9.45	5.37	5.75	7.69	6.06	8.41	6.40	7.52	8.18	6.68	11.01	5.37	7.20	7.35
MnO	0.03	0.08	0.03	0.00	0.00	0.02	0.00	0.06	0.09	0.00	0.02	0.06	0.00	0.02	0.01
MgO	5.66	4.58	7.78	6.98	6.82	6.48	5.31	7.31	6.24	6.86	7.14	4.07	7.59	6.26	6.12
CaO	0.95	0.56	0.29	1.91	1.49	0.58	0.62	0.92	1.04	0.84	1.45	0.40	1.54	1.33	1.57
BaO	0.11	0.00	0.00	0.06	0.00	0.00	0.08	0.50	0.06	0.17	0.00	0.00	0.17	0.00	0.00
Na ₂ O	2.08	1.69	2.27	0.81	1.41	1.85	1.69	2.05	1.55	2.07	1.64	1.72	1.50	1.07	1.11
K ₂ O	0.05	0.03	0.02	0.07	0.07	0.01	0.06	0.05	0.03	0.04	0.02	0.07	0.03	0.02	0.00
F	0.09	0.11	0.00	0.08	0.03	0.16	0.17	0.22	0.02	0.10	0.09	0.08	0.09	0.10	0.01
Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
H ₂ O*	3.54	3.55	3.68	3.59	3.58	3.56	3.54	3.52	3.61	3.55	3.58	3.58	3.60	3.60	3.61
-O≡F, Cl	0.04	0.05	0.00	0.03	0.01	0.07	0.07	0.09	0.01	0.04	0.04	0.04	0.04	0.04	0.01
Total	99.8	100.2	100.5	99.6	99.5	99.6	100.2	100.6	100.1	99.8	100.0	101.0	100.4	100.4	99.7
formula															
T site			< 0.5			< 0 0	<i></i>	6.10	- 00	< 0 2	< 0 0				- 00
SI	6.04	5.99	6.05	5.99	5.98	6.02	6.11	6.19	5.99	6.02	6.02	5.94	6.06	5.94	5.99
AI(IV)	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.06	0.00	0.06	0.01
Z SILE	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
AI(2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe V site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I SHE	0.32	0.43	0.22	0.41	0.17	0.40	0.37	0.02	0.22	0.06	0.22	0.34	0.21	0.30	0.41
AI(1)	0.01	0.43	0.23	0.41	0.00	0.49	0.37	0.02	0.00	0.00	0.22	0.04	0.21	0.09	0.41
Ti	0.07	0.10	0.08	0.06	0.07	0.06	0.04	0.10	0.08	0.07	0.06	0.12	0.13	0.09	0.06
Fa ²⁺	1.14	1.31	0.73	0.79	1.07	0.84	1.17	0.88	1.04	1.14	0.92	1.53	0.74	0.99	1.02
Μσ	1 41	1 13	1.89	1 72	1.69	1 59	1 31	1.80	1.54	1 70	1.76	1.01	1.86	1.53	1.51
Mn	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00
Y-site total	2.96	3.00	2.95	3.00	3.00	2.98	2.89	2.81	3.00	2.97	2.98	3.00	2.93	3.00	3.00
X site															
Ca	0.17	0.10	0.05	0.34	0.27	0.10	0.11	0.16	0.18	0.15	0.26	0.07	0.27	0.23	0.28
Na	0.68	0.54	0.72	0.26	0.46	0.59	0.54	0.66	0.50	0.67	0.53	0.55	0.48	0.34	0.36
K	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00
Ba	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.01	0.00	0.00	0.01	0.00	0.00
vacancy	0.14	0.35	0.23	0.38	0.26	0.30	0.33	0.14	0.31	0.16	0.21	0.36	0.24	0.42	0.36
V,W sites		0.07	0.00				0.00			0.05	0.05		0.05	0.05	
F	0.04	0.06	0.00	0.04	0.02	0.08	0.09	0.11	0.01	0.05	0.05	0.04	0.05	0.05	0.01
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UH (1) 12 24	5.90	0.46	4.00	5.90	3.90	3.92	0.52	3.69	3.99	3.93	3.93	0.40	0.72	0.61	3.99
Mg/(Mg+Fe ²)	0.55	0.40	0.72	0.08	0.01	0.00	0.55	0.07	0.00	0.60	0.00	0.40	0.72	0.01	0.00

* Calculated based on stoichiometric constraints.



Sample name		604 (Forr	nation I)			402-3 (k	(Xy zone)				908 (St	zone)				605 (Gr	t zone)	
Mineral	Grt	Bt	Ms	Pl	Grt	Bt	Pl	Ms	Grt	St	Bt	Ms	Pl	Pl	Grt	Bt	Ms	Pl
Occurrence	matrix	matrix	matrix	matrix	matrix	matrix	matrix	secondary	matrix	inclusion in Grt rim	matrix	matrix	replaced by An- poor Pl	replacing An-rich Pl	matrix	matrix	matrix	matrix
core/mantle/rim	rim			rim	rim				rim				core	rim	rim			
analysis number	604-3	604-5	604-6	604-44	line100	tur/mica3	110	tur/mica15	44	42	34	25	32	39	line1	37	13	12
SiO ₂	37.95	36.87	48.02	63.61	38.45	37.65	62.91	47.81	38.00	28.53	37.07	46.68	47.23	59.26	37.41	35.43	46.86	63.80
TiO ₂	b.d.	2.61	1.41	b.d.	b.d.	2.08	0.08	0.82	0.11	0.66	1.38	0.26	b.d.	b.d.	0.08	1.61	0.31	b.d.
Al_2O_3	22.00	19.07	31.58	23.06	21.48	18.65	22.65	34.44	21.57	53.49	18.31	33.54	34.16	25.35	21.39	18.28	35.60	22.43
Cr ₂ O ₃	0.01	b.d.	0.02	0.02	0.06	0.07	b.d.	0.01	0.03	0.03	b.d.	b.d.	n.d.	n.d.	0.01	b.d.	0.05	b.d.
FeO	33.72	20.21	1.90	b.d.	32.90	15.00	0.13	1.35	25.87	13.24	19.34	2.94	0.11	0.04	35.53	20.07	0.96	b.d.
MnO	0.64	b.d.	b.d.	0.01	1.12	0.06	b.d.	0.02	8.03	0.27	0.16	0.02	b.d.	0.03	0.13	b.d.	0.04	b.d.
MgO	3.10	7.93	1.48	b.d.	4.16	11.51	b.d.	1.14	2.62	2.22	10.00	0.98	0.01	b.d.	2.54	9.79	0.54	0.03
CaO	4.32	b.d.	b.d.	4.46	3.48	0.02	4.51	0.04	4.63	0.03	0.05	0.02	17.18	7.26	3.42	0.02	0.03	4.08
BaO	b.d.	0.13	0.17	0.06	b.d.	0.50	b.d.	0.23	0.21	b.d.	0.44	0.40	b.d.	b.d.	b.d.	0.06	0.00	0.17
Na ₂ O	0.03	0.22	0.66	8.76	0.09	0.23	9.18	0.91	0.04	0.02	0.09	0.70	1.65	7.80	0.03	0.19	1.71	9.42
K ₂ O	b.d.	8.76	9.71	0.11	b.d.	7.47	0.14	7.83	0.01	b.d.	8.34	8.59	0.05	0.10	0.01	8.65	6.95	0.05
F	b.d.	0.04	0.11	n.d.	n.d.	0.27	n.d.	0.06	b.d.	. b.d.	0.19	0.07	n.d.	n.d.	n.d.	0.18	0.08	n.d.
Cl	b.d.	0.01	b.d.	n.d.	n.d.	0.04	n.d.	b.d.	0.01	b.d.	0.02	b.d.	n.d.	n.d.	n.d.	0.04	b.d.	n.d.
-O≡F	0.00	0.02	0.05			0.11		0.02	0.00	0.00	0.08	0.03				0.08	0.03	
-O≡Cl	0.00	0.00	0.00			0.01		0.00	0.00	0.00	0.00	0.00				0.01	0.00	
Total	101.76	95.82	95.01	100.10	101.73	93.42	99.60	94.62	101.12	98.48	95.32	94.18	100.39	99.84	100.54	94.23	93.09	99.98
number of O	12	22	22	8	12	22	8	22	12	24.5	22	22	8	8	12	22	22	8
Si	2.98	5.56	6.41	2.81	3.01	5.66	2.80	6.31	3.00	4.18	5.61	6.29	2.16	2.65	2.99	5.46	6.25	2.82
Ti	0.00	0.30	0.14	0.00	0.00	0.23	0.00	0.08	0.01	0.07	0.16	0.03	0.00	0.00	0.00	0.19	0.03	0.00
Al	2.04	3.39	4.97	1.20	1.98	3.30	1.19	5.36	2.01	9.23	3.26	5.32	1.84	1.34	2.02	3.32	5.60	1.17
Cr	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00			0.00		0.01	0.00
Fe	2.21	2.55	0.21	0.00	2.15	1.89	0.00	0.15	1.71	1.62	2.45	0.33	0.00	0.00	2.38	2.59	0.11	0.00
Mn	0.04	0.00	0.00	0.00	0.07	0.01	0.00	0.00	0.54	0.03	0.02	0.00	0.00	0.00	0.01		0.00	0.00
Mg	0.36	1.78	0.29	0.00	0.48	2.58	0.00	0.22	0.31	0.48	2.26	0.20	0.00	0.00	0.30	2.25	0.11	0.00
Ca	0.36	0.00	0.00	0.21	0.29	0.00	0.21	0.01	0.39	0.00	0.01	0.00	0.84	0.35	0.29	0.00	0.00	0.19
Ba	0.00	0.01	0.01	0.00	0.00	0.03	0.00	0.01	0.01	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.00	0.06	0.17	0.75	0.01	0.07	0.79	0.23	0.01	0.00	0.03	0.18	0.15	0.68	0.00	0.06	0.44	0.81
K	0.00	1.08	1.00	0.01	0.00	1.43	0.01	1.32	0.00	0.00	1.01	1.48	0.00	0.01	0.00	1./0	1.18	0.00
F Cl	0.00	0.02	0.05			0.15		0.02	0.00		0.09	0.03				0.09	0.03	
 Total action	8.00	15.22	13.97	4.07	<u>8 01</u>	15 20	5.01	13 70	7.00	15.62	15.42	13.95	5.00	5.02	8.00	15.57	13.72	5.00
	0.00	15.55	13.6/	4.9/	0.01	13.20	5.01	15.70	7.99	15.05	13.42	13.83	5.00	5.02	0.00	15.57	13.75	5.00
$Mg/(Fe_{total}+Mg)$	0.14	0.41	0.58	0.22	0.18	0.58	0.01	0.60	0.15	0.23	0.48	0.37	0.05	0.24	0.11	0.47	0.50	0.10
Ca/(Ca+Na)				0.22			0.21						0.85	0.34				0.19

b.d.= below detection limit; n.d.= not determined.



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Kawakami et al. Fig. S2

	original sample	TK1311140	6Blinp																								
	number metamorphic zone mineral	just above MCT Tur	ust above MCT Tur	just above MCT Tur																							
	site of occurrence	Grt inc	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix							
	core/mantle/rim	no zoning	rim	rim	rim	rim	rim	rim	mantle2(ou	mantle1(in	mantle1(in																
	analysis number	t18	t19	t20	t21	t22	t23	t24	t25	t27	t32	t37	t47	t55	t57	t26	t29	t31	t38	t41	t42	t46	t51	t52	t56	t28	t39
	SiO ₂ TiO	36.20	36.47	36.55	36.19	36.49	36.18	36.44	36.37	35.29	36.39	35.46	36.38	35.72	2 35.76	36.11	35.82	2 36.58	36.27	35.53	36.18	36.50	36.44	35.83	36.76	36.88	36.40
	Al ₂ O ₃	31.82	32.00	31.06	31.68	31.26	31.04	31.53	32.21	31.11	31.09	31.12	31.27	30.90	31.56	31.02	31.28	31.10	31.06	31.27	31.22	31.39	31.16	31.28	31.35	32.78	32.75
	Cr ₂ O ₃	0.03	0.03	0.00	0.05	0.00	0.00	0.03	0.03	0.05	0.02	0.00	0.01	0.02	0.04	0.03	0.01	0.00	0.00	0.10	0.07	0.05	0.05	0.01	0.06	0.02	0.05
	B ₂ O ₃ calc	10.37	10.48	10.48	10.45	10.42	10.40	10.49	10.45	10.33	10.41	10.36	10.47	10.31	10.43	10.38	10.38	3 10.39	10.37	10.33	10.39	10.49	10.48	10.48	10.49	10.53	10.61
	FeO calc	9.48	10.06	10.72	9.40	9.27	10.45	10.09	9.33	9.86	9.76	9.77	9.99	9.42	9.82	10.62	9.82	2 10.08	10.94	9.19	9.35	9.82	9.87	9.82	9.55	8.63	8.80
	FeO	9.48	10.06	10.72	9.40	9.27	10.45	10.09	9.33	9.86	9.76	9.77	9.99	9.42	9.82	10.62	9.82	2 10.08	10.94	9.19	9.35	9.82	9.87	9.82	9.55	8.63	8.80
	MgO	4.84	4.98	5.00	5.21	5.28	5.05	5.23	5.06	5.54	5.37	5.56	5.36	5.55	5.31	5.02	5.41	4.89	4.49	5.34	5.51	5.35	5.50	5.63	5.46	5.24	5.62
	CaO	0.32	0.22	0.35	0.25	0.48	0.33	0.23	0.31	1.44	1.10	1.19	1.03	1.32	1.35	0.36	1.28	3 0.33	0.23	1.24	0.61	0.50	0.38	1.13	0.47	0.30	0.56
	Na ₂ O	2.22	2.54	2.49	2.51	2.38	2.47	2.68	2.60	1.89	2.20	1.87	1.94	1.87	1.85	2.57	1.97	2.58	2.60	1.98	2.44	2.46	2.58	1.91	2.39	2.34	2.22
	K ₂ O	0.03	0.02	0.05	0.06	0.00	0.04	0.04	0.02	0.04	0.06	0.06	0.07	0.05	0.04	0.04	0.07	0.06	0.07	0.03	0.05	0.02	0.05	0.06	0.07	0.02	0.01
	F	0.05	0.12	0.08	0.10	0.11	0.03	0.13	0.15	0.20	0.18	0.15	0.15	0.17	0.10	0.07	0.13	8 0.05 0 0.00	0.12	0.16	0.07	0.16	0.14	0.14	0.19	0.08	0.12
	H ₂ O calc	3.55	3.56	3.57	3.55	3.54	3.57	3.56	3.53	3.46	3.50	3.50	3.54	3.47	3.55	3.55	3.52	2 3.56	3.52	3.48	3.55	3.54	3.55	3.55	3.53	3.59	3.60
	Total	99.72 0.02	101.10	0 101.70	100.91	100.54	100.52	101.70	100.89	100.03	100.86	100.19	101.73	99.70	0 101.02	100.52	100.62	2 100.74	100.75	100.23	100.48	101.30	101.30	101.35	101.25	101.02	102.05
	TOTAL	99.70	101.05	101.66	100.87	100.50	100.51	101.64	100.83	99.94	100.79	100.13	101.66	99.63	100.98	100.49	100.57	100.72	100.69	100.16	100.45	101.23	101.24	101.29	101.16	100.98	102.00
	Si	6.07	6.05	6.06	6.02	6.09	6.05	6.04	6.05	5.94	6.08	5.95	6.04	6.02	5.96	6.04	6.00	6.12	6.08	5.98	6.05	6.05	6.04	5.94	6.09	6.09	5.96
	Ti	0.09	0.06	0.12	0.16	0.15	0.11	0.10	0.07	0.10	0.09	0.14	0.13	0.11	0.15	0.09	0.10	0.11	0.12	0.17	0.10	0.12	0.13	0.19	0.11	0.05	0.13
	Al Cr	6.29 0.00	6.25	0.00	6.21 0.01	6.14 0.00	0.00	6.16 0.00	0.00	6.17 0.01	6.12 0.00	0.15	0.00	0.00	6.20 0 0.01	0.00	0.00	0.13	0.00	6.20	0.01	0.13	6.09 0.01	6.11 0.00	6.12 0.01	0.38	6.32 0.01
	Fe	1.33	1.40	1.49	1.31	1.29	1.46	1.40	1.30	1.39	1.36	1.37	1.39	1.33	1.37	1.49	1.37	1.41	1.53	1.29	1.31	1.36	1.37	1.36	1.32	1.19	1.21
	Mg	1.21	1.23	1.24	1.29	1.31	1.26	1.29	1.25	1.39	1.34	1.39	1.33	1.39	0.00	1.25	1.35	5 1.22	1.12	1.34	1.37	1.32	1.36	1.39	1.35	1.29	1.37
	Ca	0.06	0.04	0.06	0.04	0.09	0.06	0.04	0.06	0.26	0.20	0.21	0.18	0.24	0.24	0.06	0.23	0.06	0.04	0.22	0.11	0.09	0.07	0.20	0.08	0.05	0.10
	Ва Na	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.03	0.00	0.60	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
	K	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.02	0.00	0.00
	r Cl	0.03	0.00	0.04	0.05	0.00	0.01	0.07	0.08	0.11	0.09	0.08	0.08	0.09	0.05	0.04	0.00	0.03	0.00	0.09	0.04	0.08	0.07	0.07	0.10	0.04	0.06
Formula	в	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00) 3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
		6.07	6.05	6.06	6.02	6.00	6.05	6.04	6.05	5.04	6.09	5.05	6.04	6.02	5.06	6.04	6.00		6.09	5.00	6.05	6.05	6.04	5.04	6.00	6.00	5.06
	T Al(IV)	0.00	0.00	0.00	0.02	0.09	0.05	0.04	0.05	0.06	0.08	0.05	0.04	0.02	2 5.96 0 0.04	0.04	0.00	0.00	0.00	0.02	0.00	0.05	0.04	0.06	0.09	0.09	5.96 0.04
	T-site total	6.07	6.05	6.06	6.02	6.09	6.05	6.04	6.05	6.00	6.08	6.00	6.04	6.02	6.00	6.04	6.00	6.12	6.08	6.00	6.05	6.05	6.04	6.00	6.09	6.09	6.00
	Al(Z)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	Z Fe ³⁺	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Z-site total	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	Al(Y)	0.29	0.25	0.07	0.21	0.14	0.11	0.16	0.32	0.11	0.12	0.10	0.12	0.14	0.16	0.12	0.17	0.13	0.13	0.18	0.15	0.13	0.09	0.06	0.12	0.38	0.28
	Ti	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01
	Y Fe ²⁺	1.33	1.40	1.49	1.31	1.29	1.46	1.40	1.30	1.39	1.36	1.37	1.39	1.33	1.37	1.49	1.37	1.41	1.53	1.29	1.31	1.36	1.37	1.36	1.32	1.19	1.21
	Mg	1.21	1.23	1.24	1.29	1.31	1.26	1.29	1.25	1.39	1.34	1.39	1.33	1.39	1.32	1.25	1.35	5 1.22	1.12	1.34	1.37	1.32	1.36	1.39	1.35	1.29	1.37
	Y-site total	2.93	2.95	2.94	2.98	2.91	2.95	2.96	2.95	3.00	2.92	3.00	2.96	2.98	3.00	2.96	3.00	2.88	2.92	3.00	2.95	2.95	2.96	3.00	2.91	2.91	3.00
	Ca	0.06	0.04	0.06	0.04	0.09	0.06	0.04	0.06	0.26	0.20	0.21	0.18	0.24	0.24	0.06	0.23	8 0.06	0.04	0.22	0.11	0.09	0.07	0.20	0.08	0.05	0.10
	Na	0.72	0.82	0.80	0.81	0.77	0.80	0.86	0.84	0.62	0.20	0.61	0.62	0.61	0.60	0.84	0.64	0.84	0.84	0.65	0.79	0.79	0.83	0.61	0.77	0.75	0.70
	X K	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.02	0.00	0.00
	vacancy	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.05	0.00	0.15	0.00	0.01	0.01	0.10	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
	X-site total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	F	0.03	0.06	0.04	0.05	0.06	0.01	0.07	0.08	0.11	0.09	0.08	0.08	0.09	0.05	0.04	0.07	0.03	0.06	0.09	0.04	0.08	0.07	0.07	0.10	0.04	0.06
,	W CI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	V&W site total	3.97 4.00	3.94 4.00	5.95 4.00	3.94 4.00	5.94 4.00	3.99 4.00	3.93 4.00	3.92 4.00	3.89 4.00	3.91 4.00	3.92 4.00	3.92 4.00	3.91 4.00	3.95 4.00	5.96 4.00	3.93 4.00	5 3.97 4.00	3.94 4.00	- 3.91 4.00	5.96 4.00	3.92 4.00	3.93 4.00	5.93 4.00	3.90 4.00	3.96 4.00	3.94 4.00
	Mg/(Mg+Fe _{total})	0.48	0.47	0.45	0.50	0.50	0.46	0.48	0.49	0.50	0.50	0.50	0.49	0.51	0.49	0.46	0.50) 0.46) 0.46	0.42	0.51	0.51	0.49	0.50	0.51	0.50	0.52	0.53
	Ca/(Ca+Na)	0.07	0.04	0.07	0.05	0.10	0.07	0.05	0.06	0.30	0.22	0.26	0.23	0.28	0.29	0.07	0.26	5 0.07	0.05	0.26	0.12	0.10	0.07	0.25	0.10	0.07	0.12

Tourmaline composition was normalized to 15 T+Z+Y cations (Henry and Dutrow, 1996; Henry et al., 2011), assuming three B atoms per formula unit.

						TK2013111	505E																					
just above MCT	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI					
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
ner)	ner)	ner)	ner)	core	core	rim, dark	rim, dark	rim, dark	rim, dark	rim, dark	rim, dark	rim, light	rim, light	rim, light	rim	dark	dark	dark	dark	light	light	light	light	light	light	light	light	light
t40	t44	t45	t50	t30	t43	tur/mica40	tur/mica44	tur/mica45	tur/mica49	tur/mica78	tur/mica81	tur/mica55	tur/mica57	tur/mica62	tur/mica64	tur/mica42	tur/mica48	tur/mica56	tur/mica61	tur/mica63	tur/mica41	tur/mica46	tur/mica47	tur/mica54	tur/mica58	tur/mica59	tur/mica60	ur/mica77
0.99	30.30	36.42 0.93	.30.04 0.98	0.50	36.00 0.77	0.72	1.33	30.37	30.73 1.08	5 30.93 3 0.99	36.42 1.07	30.00	30.30 0.95	0.83	36.52 0.70	36.30 0.87	30.95	30.03 0.63	1.19	0.87	30.13	0.92	30.80 0.76	0.75	1.28	30.09	30.23	30.5
32.17	32.11	32.37	32.73	33.07	32.86	32.71	32.15	31.97	32.32	31.78	32.26	31.87	32.34	32.05	32.42	31.27	31.64	32.26	31.64	4 31.30	31.06	31.22	31.77	30.83	31.66	31.40	30.83	31.30
0.02	0.05	0.01	0.02	0.02	0.01	0.01	0.03	0.00	0.04	0.02	0.04	0.04	0.01	0.02	0.00	0.01	0.03	0.00	0.04	4 0.00	0.01	0.00	0.01	0.03	0.03	0.02	0.03	0.0
0.00	0.00	10.52	0.00	0.00	10.48	5 10.58 0.00	10.54	0.00	0.00	2 10.61	0.00	10.46	0.00	0.00	10.55	10.48	0.00	0.00	10.53	0.00	0.00	2 10.43	10.57	0.00	10.56	0.00	0.00	10.5
8.54	8.61	8.68	8.31	10.32	11.00	7.53	7.50	7.54	7.77	7.69	7.63	7.34	7.32	7.80	7.53	7.57	7.47	6.96	7.73	8.19	8.68	8.77	9.22	7.82	8.31	9.42	8.55	8.6
8.54	8.61	8.68 0.01	8.31	10.32	11.00	0 7.53 0.04	7.50	7.54	7.77	7.69	7.63	7.34	7.32	7.80	7.53	7.57	7.47	6.96 0.03	7.73	8 8.19 0 0.05	8.68	8.77	9.22	7.82	8.31	9.42	8.55	8.6
5.27	5.43	5.51	5.28	4.34	3.91	6.15	6.47	6.45	6.34	6.68	6.37	6.07	5.87	6.12	6.34	6.87	6.62	6.53	6.62	2 6.64	6.13	5.84	5.86	6.42	6.27	6.13	6.28	6.2
0.47	0.47	0.56	0.46	0.42	0.30	0.54 0.00	0.68	0.53	0.69	0.69 00.00	0.48	0.51	0.55	0.53	0.65	0.77	0.74	0.48	0.53	3 1.00 0 0.00	0.77	0.72	0.41	0.99	0.58	1.00	0.80 0.16	0.9
2.36	2.34	2.22	2.05	2.45	2.44	2.41	2.37	2.30	2.35	5 2.35	2.40	2.43	2.33	2.36	2.36	2.18	2.23	2.48	2.44	1 2.27	2.37	2.38	2.47	2.33	2.51	2.19	2.28	2.3
0.05	0.03	0.03	0.00	0.02	0.04	0.02	0.03	0.02	0.04	0.05	0.02	0.04	0.03	0.04	0.06	0.07	0.03	0.09	0.02	2 0.04	0.05	0.06	0.02	0.04	0.04	0.02	0.04	0.0
0.08	0.12	0.00	0.02	0.00	0.00	0.13	0.15	0.13	0.12	0.18	0.13	0.12	0.00	0.12	0.14	0.23	0.20	0.14	0.23	0.20	0.00	0.10	0.00	0.20	0.24	0.00	0.14	0.0
3.54	3.57	3.57	3.62	3.56	3.58	3.57	3.57	3.56	3.60	3.57	3.58	3.55	3.53	3.54	3.57	3.49	3.55	3.56	3.52	3.51	3.54	3.55	3.61	3.46	3.52	3.62	3.53	3.5
0.04	0.05	0.05	0.01	0.04	0.03	0.06	0.06	0.06	0.05	5 0.08	0.06	0.05	0.07	0.05	0.06	0.10	0.09	0.06	0.10	0.11	0.05	0.04	0.03	0.09	0.10	0.04	0.06	0.0
100.15	100.91	100.89	100.63	101.01	101.55	101.06	100.86	100.51	101.67	101.50	100.96	100.42	100.14	99.73	100.82	100.06	101.05	100.41	100.76	5 101.21	100.26	100.69	101.53	99.10	101.51	102.52	100.47	101.3
6.03	6.05	6.02	6.05	5.94	5.98	6.03	5.96	6.00	6.02	6.05	5.99	6.09	6.08	5.97	6.02	6.02	6.08	6.06	6.00	6.04	6.03	6.08	6.05	6.07	6.01	6.00	6.04	6.0
0.12 6.34	0.14 6.26	0.12	0.12	0.06	0.10	0.09	0.17	0.14	0.13	8 0.12 8 6.14	0.13	0.14 6.24	0.12	0.10 6.30	0.09	0.11 6.12	0.14 6.13	0.08	0.15	5 0.11 5 6.08	0.13	6.13	0.09	0.09	0.16 6.14	0.14 6.06	0.14 6.05	0.1
0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.96	0.00	0.01	0.00	0.00	0.00	0.00	1.14	0.01	0.01	0.0
1.31	1.34	1.36	1.30	1.07	0.97	1.51	1.59	1.59	1.55	5 1.63	1.56	1.50	1.45	1.52	1.56	1.70	1.62	1.61	1.63	3 1.63	1.52	1.45	1.43	1.61	1.54	1.50	1.56	1.5
0.08	0.08	0.10	0.08	0.07	0.00	0.10	0.12	0.09	0.12	0.12	0.08	0.09	0.10	0.09	0.11	0.14	0.13	0.09	0.09	0.18	0.14	0.13	0.07	0.18	0.10	0.18	0.14	0.0
0.76	0.75	0.71	0.66	0.79	0.79	0.77	0.76	0.74	0.74	0.75	0.77	0.78	0.75	0.76	0.75	0.70	0.71	0.79	0.78	8 0.73	0.77	0.77	0.79	0.76	0.80	0.70	0.73	0.70
0.01	0.06	0.01	0.00	0.06	0.03	0.00	0.01	0.08	0.06	5 0.09	0.07	0.06	0.01	0.06	0.01	0.01	0.10	0.02	0.12	2 0.13	0.06	0.01	0.00	0.01	0.01	0.05	0.07	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.0
6.03	6.05	6.02	6.05	5.94	5.98	6.03	5.96	6.00	6.02	6.05	5.99	6.09	6.08	5.97	6.02	6.02	6.08	6.06	6.00	6.04	6.03	6.08	6.05	6.07	6.01	6.00	6.04	6.0
0.00 6.03	0.00 6.05	0.00 6.02	0.00 6.05	0.06 6.00	0.02 6.00	2 0.00 6.03	0.04 6.00	0.00 6.00	0.00	0.00	0.01 6.00	0.00	0.00	0.03 6.00	0.00	0.00	0.00 6.08	0.00	0.00) 0.00) 6.04	0.00 6.03	0.00 6.08	0.00 6.05	0.00 6.07	0.00 6.01	0.00 6.00	0.00 6.04	0.0
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	600	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.34	0.26	0.31	0.37	0.42	0.40	0.33	0.21	0.22	0.23	0.14	0.25	0.24	0.33	0.28	0.30	0.12	0.13	0.29	0.15	5 0.08	0.11	0.13	0.15	0.12	0.14	0.06	0.05	0.1
0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1.19	1.19	1.20	1.15	1.43	1.53	1.04	1.03	1.04	1.06	5 1.05	1.05	1.02	1.02	1.09	1.04	1.05	1.03	0.96	1.07	1.13	1.21	1.22	1.27	1.10	1.14	1.29	1.19	1.20
1.31	1.34	1.36	1.30	1.07	0.97	1.51	1.59	1.59	1.55	5 1.63	1.56	1.50	1.45	1.52	1.56	1.70	1.62	1.61	1.63	3 1.63	1.52	1.45	1.43	1.61	1.54	1.50	1.56	1.5
2.97	2.95	2.98	2.95	3.00	3.00	2.97	3.00	3.00	2.98	2.95	3.00	2.91	2.92	3.00	2.98	2.98	2.92	2.94	3.00	2.96	2.97	2.92	2.95	2.93	2.99	3.00	2.96	2.95
0.08	0.08	0.10	0.08	0.07	0.05	0.10	0.12	0.09	0.12	2 0.12	0.08	0.09	0.10	0.09	0.11	0.14	0.13	0.09	0.09	0.18	0.14	0.13	0.07	0.18	0.10	0.18	0.14	0.1
0.76	0.75	0.71	0.66	0.79	0.79	0.77	0.76	0.74	0.74	0.75	0.77	0.78	0.75	0.76	0.75	0.70	0.71	0.79	0.78	3 0.73	0.77	0.77	0.79	0.76	0.80	0.70	0.73	0.7
0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00
0.13	0.16	0.18	0.26	0.13	0.15	0.13	0.12	0.17	0.13	0.12	0.14	0.10	0.14	0.13	0.12	0.15	0.15	0.09	0.12	2 0.09	0.08	0.07	0.14	0.05	0.08	0.12	0.10	0.0
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.04	0.06	0.06	0.01	0.06	0.03	0.08	0.07	0.08	0.06	5 0.09	0.07	0.06	0.08	0.06	0.07	0.13	0.10	0.07	0.12	2 0.13	0.06	0.05	0.04	0.11	0.13	0.05	0.07	0.0
3.95	3.94	3.94	3.99	3.94	3.97	3.92	3.93	3.92	3.94	5 0.00 I 3.90	3.93	3.94	3.92	3.94	3.93	3.87	3.89	3.92	3.88	3.87	3.94	3.95	3.96	3.89	3.87	3.95	3.93	3.94
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.52	0.53	0.53	0.53	0.43	0.39	0.59	0.61	0.60	0.59	0.61	0.60	0.60	0.59	0.58	0.60	0.62	0.61	0.63	0.60	0.59	0.56	0.54	0.53	0.59	0.57	0.54	0.57	0.50
0.52	0.53	0.53	0.53	0.43	0.39	0.59	0.61	0.60	0.59	0.61	0.60	0.60	0.59	0.58	0.60	0.62	0.61	0.63	0.60	0.59	0.56	0.54	0.53	0.59	0.57	0.54	0.57	0.5
0.10	0.10	0.12	0.11	0.09	0.06	0.11	0.14	0.11	0.14	F 0.14	0.10	0.10	0.12	0.11	0.13	0.16	0.16	0.10	0.11	0.20	0.15	0.14	0.08	0.19	0.11	0.20	0.16	0.1

	TK2013111702C TK13111703B-1																	TK2013111	308-2									
FmI	FmI I	FmI	FmI	FmI	FmI	FmI	FmI I	mI I	FmI I	FmI I	FmI I	FmI	FmI	FmI I	FmI	FmI	FmI	FmI	FmI I	FmI I	FmI	FmI	FmI	FmI	FmI	FmI	Ky	Ky
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	in leucosome	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix							
mantle,	core, dark	core, dark							BSI white	BSI white	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	core	core	core	core	core	core	rim	rim
light tur/mica80	tur/mica43 t	tur/mica79	tur/mica19	tur/mica20	tur/mica21	tur/mica22	tur/mica25 t	ur/mica26	tur/mica23 t	ur/mica24	t62	t63	t65	t66	t68	t69	t70	t72	t79	t80	t61	t64	t67	t71	t78	t81	t6	t7
36.69	36.59	36.93	35.99	35.83	36.57	36.89	36.74	36.91	36.54	36.24	36.47	36.14	36.08	35.93	35.24	36.14	35.64	36.53	36.00	36.20	36.58	36.22	35.94	36.44	36.67	36.35	36.85	36.69
1.19	0.67	0.99	1.23	1.14	1.09	1.23	1.52	1.08	0.42	0.38	1.27	1.58	0.56	1.37	1.43	0.62	1.16	1.02	1.21	0.80	1.51	1.01	1.04	0.72	1.24	1.01	1.02	0.84
0.01	0.00	0.04	0.01	0.03	0.03	0.01	0.05	0.07	0.00	0.01	0.01	0.03	0.06	0.07	0.02	0.06	0.06	0.03	0.03	0.07	0.05	0.06	0.00	0.03	0.06	0.00	0.08	0.00
10.53	10.41	10.55	10.53	10.52	10.55	10.63	10.61	10.61	10.46	10.53	10.51	10.48	10.38	10.52	10.39	10.40	10.42	10.55	10.46	10.41	10.59	10.49	10.47	10.53	10.52	10.48	10.57	10.66
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.13	7.77	7.87	8.13	7.24	7.13	7.59	7.55	7.64	11.89	11.95	8.44	8.29	8.18	8.40	8.64	7.97	8.61	8.14	8.02	8.29	8.54	7.97	7.91	8.20	7.88	8.27	5.37	4.47
0.00	0.01	0.05	0.00	0.08	0.04	0.03	0.00	0.06	0.03	0.02	0.02	0.00	0.03	0.00	0.04	0.08	0.06	0.01	0.01	0.04	0.00	0.01	0.00	0.04	0.01	0.01	0.00	0.04
0.22	0.27	0.27	0.00	0.59	0.17	0.69	0.67	0.10	0.19	0.22	0.75	0.96	0.95	0.75	0.89	0.76	0.70	0.80	0.77	0.70	0.11	0.64	0.87	1.06	0.95	1.05	1.54	1.48
0.11	0.00	0.27	0.00	0.00	0.11	0.06	0.28	0.00	0.28	0.17	0.11	0.22	0.11	0.00	0.00	0.00	0.00	0.00	0.06	0.22	0.33	0.39	0.28	0.33	0.00	0.28	0.17	0.00
2.30	2.55	2.39	2.23	2.28	2.26	2.26	2.33	2.43	1.23	1.47	2.23	2.14	2.08	2.23	2.17	2.25	2.07	2.16	2.10	2.17	2.11	2.29	2.22	2.08	2.11	2.02	1.50	1.43
0.09	0.13	0.11	0.02	0.04	0.06	0.03	0.02	0.05	0.00	0.00	0.06	0.05	0.09	0.04	0.00	0.03	0.02	0.06	0.00	0.06	0.07	0.00	0.00	0.07	0.02	0.02	0.09	0.06
0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
101.09	99.74	101.18	100.70	100.48	100.97	101.81	102.00	101.64	100.95	101.53	101.24	101.08	99.82	101.05	100.10	99.73	99.99	101.23	100.35	100.16	102.20	100.94	100.70	101.42	100.99	100.90	100.42	100.59
0.04	0.05	0.05	0.01	0.02	0.03	0.01	0.01	0.02	0.00	0.00	0.03	0.02	0.04	0.02	0.00	0.01	0.01	0.02	0.00	0.02	0.03	0.00	0.00	0.03	0.03	0.01	0.04	0.03
101.02	<i>)</i> ,,,,)	101.15	100.70	100.47	100.55	101.75	101.55	101.02	100.55	101.55	101.21	101.00	<i>)</i>).//0	101.05	100.10	,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	101.20	100.55	100.14	102.17	100.74	100.70	101.57	100.90	100.07	100.00	100.50
6.06	6.11	6.08	5.94	5.92	6.02 0.14	6.03	6.02 0.19	6.05	6.07 0.05	5.98	6.03 0.16	6.00 0.20	6.04	5.94	5.90	6.04	5.95	6.02	5.98	6.04 0.10	6.00	6.00	5.97	6.02	6.06	6.03	6.06	5.98
6.14	6.16	6.25	6.29	6.35	6.34	6.29	6.27	6.25	6.67	6.69	6.27	6.21	6.32	6.26	6.39	6.31	6.33	6.32	6.34	6.33	6.14	6.35	6.34	6.28	6.21	6.22	6.21	6.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00
0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01
0.11	0.09	0.05	0.10	0.12	0.11	0.11	0.12	0.11	0.55	0.63	0.13	0.17	0.17	0.13	0.16	1.44	0.13	0.14	0.14	0.13	0.16	0.11	0.15	0.19	0.17	0.19	0.27	0.26
0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.02	0.00	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.02	0.00	0.02	0.01	0.00
0.74	0.83	0.76	0.71	0.73	0.72	0.72	0.74 0.01	0.77	0.39	0.47	0.72	0.69	0.68	0.71	0.70	0.73	0.67	0.69	0.68	0.70	0.67	0.74 0.01	0.71	0.67	0.67	0.65	0.48	0.45
0.04	0.07	0.06	0.01	0.02	0.03	0.01	0.01	0.03	0.00	0.00	0.03	0.02	0.04	0.02	0.00	0.02	0.01	0.03	0.00	0.03	0.03	0.00	0.00	0.03	0.04	0.01	0.05	0.03
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.06	6.11	6.08	5.94	5.92	6.02	6.03	6.02	6.05	6.07	5.98	6.03	6.00	6.04	5.94	5.90	6.04	5.95	6.02	5.98	6.04	6.00	6.00	5.97	6.02	6.06	6.03	6.06	5.98
0.00	0.00	0.00	0.06	0.08	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.06	0.10	0.00	0.05	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02
0.00	0.11	0.00	0.00	0.00	0.02	0.02	0.02	0.05	0.07	0.00	0.05	0.00	0.07	0.00	0.00	0.07	0.00	0.02	0.00	0.07	0.00	0.00	0.00	0.02	0.00	0.05	0.00	0.00
6.00	6.00 0.00	6.00	6.00	6.00	6.00	6.00	6.00 0.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00) 6.00) 0.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.14	0.16	0.25	0.23	0.27	0.34	0.29	0.27	0.25	0.67	0.67	0.27	0.20	0.32	0.20	0.29	0.31	0.27	0.32	0.32	0.33	0.14	0.35	0.31	0.28	0.21	0.22	0.21	0.48
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00
0.15	0.08	0.12	0.15	0.14	0.14	0.15	0.19	0.13	0.05	0.05	0.16	0.20	0.07	0.17	0.18	0.08	0.14	0.13	0.15	0.10	0.19	0.13	0.13	0.09	0.15	0.13	0.13	0.10
1.53	1.56	1.08	1.12	1.57	1.51	1.48	1.05	1.50	0.55	0.63	1.17	1.15	1.14	1.46	1.32	1.11	1.36	1.12	1.41	1.10	1.49	1.11	1.10	1.14	1.48	1.13	1.86	1.80
0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01
2.94	2.09	2.92	5.00	5.00	2.96	2.97	2.90	2.95	2.93	5.00	2.97	5.00	2.90	5.00	5.00	2.90	5.00	2.90	5.00	2.90	3.00	5.00	5.00	2.90	2.94	2.97	2.94	3.00
0.11	0.09	0.05	0.10	0.12	0.11	0.11	0.12	0.11	0.03	0.04	0.13	0.17	0.17	0.13	0.16	0.14	0.13	0.14	0.14	0.13	0.16	0.11	0.15	0.19	0.17	0.19	0.27	0.26
0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.47	0.01	0.09	0.08	0.01	0.00	0.00	0.01	0.09	0.00	0.01	0.01	0.01	0.02	0.01	0.00	0.01	0.43	0.01
0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.02	0.00	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.02	0.00	0.02	0.01	0.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.04	0.07	0.04	0.01	0.02	0.02	0.01	0.01	0.02	0.00	0.00	0.02	0.02	0.04	0.02	0.00	0.03	0.01	0.02	0.00	0.02	0.02	0.00	0.00	0.02	0.04	0.01	0.05	0.02
0.04	0.07	0.06	0.01	0.02	0.03	0.01	0.01	0.03	0.00	0.00	0.03	0.02	0.04	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.03	0.00	0.00	0.03	0.04	0.01	0.05	0.05
3.95	3.93	3.94	3.99	3.98	3.97	3.99	3.99	3.97	4.00	4.00	3.97	3.97	3.96	3.98	4.00	3.98	3.99	3.97	4.00	3.97	3.97	4.00	4.00	3.97	3.96	3.99	3.95	3.97
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	7.00
0.58	0.59	0.57	0.57	0.61	0.61	0.59	0.59	0.59	0.25	0.28	0.54	0.56	0.55	0.56	0.52	0.56	0.53	0.56	0.56	0.54	0.56	0.56	0.57	0.56	0.58	0.56	0.72	0.75
0.58	0.59	0.57	0.57	0.61	0.61	0.59	0.59	0.59	0.25	0.28	0.54	0.56	0.55	0.56	0.52	0.56	0.53	0.56	0.56	0.54	0.56	0.56	0.57	0.56	0.58	0.56	0.72	0.75

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Ky	Ку	Ky I	Ky	Ку	Ky	Ку	Ky I	Ky	Ky I	Ky I	Ky	Ку	Ky	Ky	Ky	Ky I	Ку	Ку	Ку	Ky l	Ky	Ку	Ку	Ку	Ку	Ky l	Ky	Ky
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
rim	rim	rim	rim	rim	mantle	mantle	mantle	core	core	core	core	core	core	core	rim	rim	rim	rim	rim	rim	rim	rim	mantle	mantle	mantle	mantle	core	core
t9 36.46	t11 36.66	t13 36.70	t16 36.94	t17 36.00	t2 36.65	t4 36.90	t15 36.56	tl 37.69	t3 37.26	t5 37.77	t8 37.92	t10 37 57	t12 38 20	t14 37.20	tur/mica87	tur/mica89 t 36.90	ur/mica94 36.31	tur/mica98 37.16	tur/mica99 t	ur/mica101 tr 36 71	ur/mica102 t 36 90	ur/mica103 36.86	tur/mica86 36 30	tur/mica88 37.16	tur/mica91 36.67	tur/mica92 1 37.46	ur/mica84 36.27	tur/mica85 36.98
0.49	0.66	0.63	0.76	0.61	0.77	0.79	0.62	0.14	0.18	0.36	0.34	0.31	0.06	0.14	0.69	0.31	0.59	0.36	0.53	0.30	0.74	0.82	0.80	0.14	0.73	0.34	0.84	0.64
33.30	33.51	32.83	33.19	33.79	33.88	33.73	33.41	34.51	33.81	33.89	34.34	34.09	34.66	34.73	33.34	34.79	33.84	34.69	34.02	34.23	34.88	33.42	33.83	34.52	34.02	34.10	34.25	33.97
0.00	0.05	0.00	0.00	0.01	0.03	0.02	0.02	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.09	0.00	0.02	0.05	0.02	0.00	0.04	0.02	0.04	0.03	0.01	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.58	5.23	4.68	4.79	4.64	4.76	4.01	4.37	3.88	4.04	4.24	4.03	4.31	4.38	4.20	7.20	6.44	6.11	5.58	6.05	5.83	6.16	6.44	6.26	5.76	6.05	5.92	6.18	5.45
4.58	5.23	4.68	4.79	4.64	4.76	4.01	4.37	3.88	4.04	4.24	4.03	4.31	4.38	4.20	7.20	6.44 0.01	6.11	5.58	6.05 0.02	5.83	6.16	6.44	6.26	5.76	6.05	5.92	6.18	5.45
7.69	7.56	7.52	7.84	7.60	7.34	7.42	7.69	7.38	7.41	7.58	7.80	7.33	7.47	7.42	6.26	6.30	6.61	6.38	6.20	6.56	6.46	6.54	6.70	6.15	6.68	6.51	6.12	6.18
1.35	1.41	1.33	1.29	1.20	1.07	1.34	1.44	0.61	0.75	0.65	0.65	0.69	0.51	0.52	1.33	1.25	1.16	1.02	1.05	1.14	1.09	1.31	1.43	0.82	1.05	0.91	1.14	1.11
1.46	1.42	1.49	1.59	1.49	1.47	1.44	1.63	1.32	1.50	1.47	1.32	1.40	1.33	1.39	1.07	1.22	1.19	1.24	1.20	1.25	1.16	1.24	1.21	1.04	1.36	1.19	1.14	1.21
0.00	0.03	0.02	0.01	0.03	0.03	0.00	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.00	0.02	0.03	0.02	0.01	0.03	0.02	0.00	0.03	0.03	0.02	0.02	0.03	0.04	0.01
0.08	0.07	0.05	0.09	0.04	0.02	0.05	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.03	0.02	0.01	0.00	0.09	0.02	0.00	0.01	0.00	0.00	0.02	0.01
3.61	3.66	3.61	3.65	3.64	3.67	3.64	3.62	3.70	3.66	3.71	3.74	3.70	3.75	3.71	3.60	3.71	3.64	3.68	3.63	3.64	3.68	3.67	3.68	3.67	3.66	3.70	3.65	3.64
99.89 0.03	101.29	99.41 0.02	100.97	99.77 0.02	100.35	100.03	100.07	100.21	99.28 0.00	100.59	101.01	100.19	101.59	100.18	100.42	101.81	100.45	100.88	99.68 0.01	100.48	102.42	101.04	100.91	100.00	101.26	100.94	100.30	99.78 0.00
99.86	101.27	99.39	100.93	99.76	100.35	100.01	100.04	100.20	99.28	100.59	101.01	100.19	101.59	100.18	100.37	101.81	100.44	100.87	99.67	100.45	102.38	101.03	100.91	99.99	101.23	100.94	100.29	99.77
5.99	5.96	6.05	6.00	5.90	5.97	6.03	5.99	6.09	6.10	6.10	6.07	6.09	6.11	6.02	5.94	5.95	5.95	6.03	5.97	5.99	5.93	6.01	5.92	6.06	5.96	6.07	5.94	6.08
0.06 6.44	0.08 6.42	0.08 6.38	0.09 6.35	6.53	6.50	0.10 6.50	0.08 6.45	6.58	0.02 6.52	0.04 6.45	0.04 6.48	0.04 6.51	6.52	0.02 6.61	0.09 6.45	0.04 6.61	6.53	0.04	0.07 6.60	0.04 6.58	0.09 6.61	0.10 6.42	0.10 6.50	0.02 6.64	0.09 6.51	0.04 6.51	0.10 6.61	0.08 6.58
0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
0.63	0.71	0.65	0.65	0.64	0.65	0.55	0.60	0.52	0.55	0.57	0.54	0.58	0.58	0.57	0.99	0.87	0.84	0.76	0.83	0.80	0.83	0.88	0.85	0.79	0.82	0.80	0.85	0.75
1.88	1.83	1.85	1.90	1.86	1.78	1.81	1.88	1.78	1.81	1.82	1.86	1.77	1.78	1.78	1.53	1.51	1.61	1.54	1.52	1.59	1.55	1.59	1.63	1.49	1.62	1.57	1.49	1.51
0.24	0.25	0.24	0.22 0.01	0.21	0.19	0.24	0.25	0.11 0.01	0.13	0.11 0.01	0.11 0.00	0.12	0.09	0.09	0.23	0.22	0.20	0.18	0.18	0.20	0.19	0.23	0.25	0.14	0.18	0.16	0.20	0.20
0.47	0.45	0.48	0.50	0.47	0.46	0.46	0.52	0.41	0.48	0.46	0.41	0.44	0.41	0.44	0.34	0.38	0.38	0.39	0.38	0.39	0.36	0.39	0.38	0.33	0.43	0.37	0.36	0.39
0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
5.99	5.96	6.05	6.00	5.90	5.97	6.03	5.99	6.09	6.10	6.10	6.07	6.09	6.11	6.02	5.94	5.95	5.95	6.03	5.97	5.99	5.93	6.01	5.92	6.06	5.96	6.07	5.94	6.08
0.01 6.00	0.04 6.00	0.00 6.05	0.00 6.00	0.10 6.00	0.03 6.00	0.00 6.03	0.01 6.00	0.00 6.09	0.00 6.10	0.00 6.10	0.00 6.07	0.00 6.09	0.00 6.11	0.00 6.02	0.06 6.00	0.05 6.00	0.05 6.00	0.00 6.03	0.03 6.00	0.01 6.00	0.07 6.00	0.00 6.01	0.08 6.00	0.00 6.06	0.04 6.00	0.00 6.07	0.06 6.00	0.00 6.08
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.44	0.01	0.00	0.40	0.48	0.00	0.02	0.00	0.09	0.01	0.00	0.00	0.01	0.00	0.00	0.42	0.42	0.04	0.47	0.00	0.00	0.00
0.06	0.08	0.08	0.09	0.08	0.09	0.10	0.08	0.02	0.02	0.04	0.04	0.04	0.01	0.02	0.09	0.04	0.07	0.04	0.07	0.04	0.09	0.10	0.10	0.02	0.09	0.04	0.10	0.08
1.88	1.83	1.85	1.90	1.86	1.78	1.81	1.88	1.78	1.81	1.82	1.86	1.77	1.78	1.78	1.53	1.51	1.61	1.54	1.52	1.59	1.55	1.59	1.63	1.49	1.62	1.57	1.49	1.51
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
3.00	3.00	2.95	3.00	3.00	3.00	2.97	3.00	2.91	2.90	2.90	2.93	2.91	2.89	2.98	3.00	3.00	3.00	2.97	3.00	3.00	3.00	2.99	3.00	2.94	3.00	2.93	3.00	2.92
0.24	0.25	0.24	0.22	0.21	0.19	0.24	0.25	0.11	0.13	0.11	0.11	0.12	0.09	0.09	0.23	0.22	0.20	0.18	0.18	0.20	0.19	0.23	0.25	0.14	0.18	0.16	0.20	0.20
0.47	0.45	0.48	0.00	0.47	0.40	0.40	0.32	0.41	0.48	0.40	0.41	0.44	0.41	0.44	0.34	0.58	0.58	0.39	0.58	0.39	0.00	0.39	0.58	0.33	0.43	0.37	0.50	0.39
0.02	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.04	0.03	0.03	0.05	0.02	0.01	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.02	0.01	0.01	0.03	0.05	0.01	0.00	0.01	0.03	0.00	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.75	0.72	0.74	0.74	0.74	0.73	0.77	0.76	0.77	0.77	0.76	0.78	0.75	0.75	0.76	0.61	0.64	0.66	0.67	0.65	0.67	0.65	0.64	0.66	0.66	0.66	0.66	0.64	0.67
0.75	0.72	0.74	0.74	0.74	0.73	0.77	0.76	0.77	0.77	0.76	0.78	0.75	0.75	0.76	0.61	0.64	0.66	0.67	0.65	0.67	0.65	0.64	0.66	0.66	0.66	0.66	0.64	0.67
0.34	0.35	0.33	0.31	0.31	0.29	0.34	0.33	0.20	0.22	0.20	0.21	0.21	0.17	0.17	0.41	0.36	0.35	0.31	0.33	0.34	0.34	0.37	0.40	0.30	0.30	0.30	0.36	0.34

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V.	V	V	V	v	<i>V</i>	V	V 1	z., 1	V 1	v	P.4	P.4	C 4	C.	C 4	e.	C 4	5 4	e.	C 4	C 4	e.	C 4	5 .	ē.	c.	C.	C.
ку	т	т	к у т	т	ку	ку	ку г "	ху . 	љу I 	љу . 	51 m	51	51	31	51	51	31 m	51	31 m	51	51	51	31	51	31 m	51	51	51
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	Grt rim inc	Grt rim inc	Grt rim inc (Grt rim inc	Grt rim inc	Grt rim inc	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix
core	core	core	core	core	rim	rim	rim	rim	core	core	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	mantle	mantle	mantle
tur/mice00	tur/mice02	tur/mice06	tur/mice07	tur/mice100	tur/mice108		ur/mice112 tr	ur/mice116 t		ur/mice115	turl	tur9	tur10	tur 14	tur22	tur24	tur27	tur20	tur40	tur-12	tur-14	tur/17	tur-40	tur51	tur52	tur?	tur6	tur7
36.28	36.59	36.38	37.23	35.80	35.78	36.67	35.94	36.25	36.40	37.24	36.13	36.04	36.60	35.97	36.38	35.85	35.98	36.70	36.44	36.28	36.31	36.39	35.99	36.55	36.64	36.89	36.15	35.99
0.36	0.41	0.62	0.15	0.41	0.56	1.06	0.22	0.58	0.57	0.37	0.55	0.34	0.49	0.19	0.64	0.27	0.66	0.58	0.62	0.56	0.48	0.48	0.73	0.59	0.82	0.05	0.52	0.60
31.81	33.32	31.84	31.48	31.76	32.26	31.05	32.00	30.57	34.02	31.92	30.87	30.28	30.32	31.33	31.34	30.42	30.78	31.16	31.14	30.92	30.48	30.92	30.58	30.54	31.73	32.66	31.67	30.98
0.62	0.08	0.00	0.53	0.04	0.04	0.00	0.00	0.00	0.02	0.02	0.03	0.07	0.04	0.00	0.07	0.01	0.02	0.04	0.12	0.04	0.09	0.00	0.10	0.08	0.04	0.04	0.00	0.07
10.46	10.67	10.56	10.58	10.51	10.56	10.55	10.59	10.44	10.72	10.71	10.43	10.32	10.38	10.29	10.36	10.34	10.31	10.45	10.38	10.39	10.29	10.31	10.30	10.35	10.45	10.44	10.40	10.30
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.85	6.78	8.32	8.37	8.40	8.01	9.85	8.48	9.08	6.96	6.39	8.18	8.12	7.89	7.68	7.79	8.14	8.06	8.35	7.73	7.73	7.44	7.22	7.22	7.38	7.39	7.02	7.42	7.89
7.85	0.78	8.52	8.37	8.40	0.06	9.85	8.48	9.09	0.90	0.39	8.18	8.12	7.99	7.08	7.79	8.14	8.00	8.35	7.73	1.73	7.44	7.22	7.22	7.58	0.02	7.02	7.42	7.89
6.15	6.80	6.54	6.30	6.79	6.80	5.84	7.02	6.50	6.48	7.92	6.86	6.86	6.79	6.28	6.06	7.05	6.36	6.22	6.34	6.67	6.65	6.53	6.83	6.75	6.27	5.90	6.45	6.20
1.45	1.60	1.56	0.13	1.87	1.52	0.26	2.02	1.29	1.26	0.63	0.84	0.97	0.57	0.84	0.91	1.16	0.91	0.89	0.79	1.00	0.93	0.79	1.25	1.03	0.74	0.26	0.72	0.81
0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.39	0.00	0.17	0.00	0.00	0.00	0.22	0.22	0.00	0.06	0.00	0.28	0.00	0.00	0.00	0.00	0.28	0.00	0.06	0.00
1.55	1.1/	1.35	2.24	1.26	1.30	2.28	1.07	1.63	1.31	2.11	2.07	2.09	2.24	1.87	1.82	1.86	1.93	1.90	1.96	2.03	2.02	1.96	1.94	1.85	1.94	1.84	2.08	1.75
0.00	0.04	0.00	0.02	0.03	0.04	0.02	0.02	0.00	0.01	0.03	0.04	0.01	0.05	0.02	0.05	0.02	0.01	0.00	0.03	0.01	0.04	0.04	0.06	0.03	0.00	0.04	0.01	0.00
0.01	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
3.59	3.66	3.59	3.63	3.60	3.58	3.60	3.62	3.57	3.67	3.63	3.55	3.50	3.52	3.49	3.48	3.51	3.44	3.55	3.54	3.51	3.48	3.50	3.48	3.47	3.52	3.59	3.51	3.47
100.25	101.16	100.88	100.72	100.52	100.62	101.29	101.35	100.07	101.92	101.20	99.84	98.75	99.11	98.08	99.32	99.01	98.71	100.04	99.19	99.61	98.37	98.34	98.63	98.92	100.03	98.75	99.18	98.26
0.02	0.02	0.04	0.01	0.02	0.05	0.04	0.03	0.03	0.02	0.06	0.04	0.05	0.05	0.05	0.08	0.05	0.10	0.05	0.03	0.06	0.06	0.05	0.06	0.09	0.08	0.01	0.07	0.07
100.24	101.15	100.04	100.71	100.50	100.57	101.20	101.52	100.05	101.90	101.14	99.79	96.70	99.00	98.05	99.24	90.90	98.02	99.99	99.10	99.55	96.51	96.29	90.57	90.03	99.90	90.75	99.11	96.19
6.03	5.96	5.99	6.12	5.92	5.89	6.04	5.90	6.04	5.90	6.05	6.02	6.07	6.13	6.07	6.10	6.02	6.06	6.11	6.10	6.07	6.13	6.13	6.07	6.14	6.09	6.14	6.04	6.07
0.04	0.05	0.08	0.02	0.05	0.07	0.13	0.03	0.07	0.07	0.05	0.07	0.04	0.06	0.02	0.08	0.03	0.08	0.07	0.08	0.07	0.06	0.06	0.09	0.07	0.10	0.01	0.07	0.08
6.23	6.40	6.18	6.10	6.19	6.26	6.03	6.19	6.00	6.50	6.11	6.06	6.01	5.99	6.24	6.19	6.03	6.11	6.11	6.14	6.10	6.07	6.14	6.08	6.04	6.22	6.41	6.24	6.16
1.09	0.92	1.15	1.15	1.16	1.10	1.36	1.16	1.27	0.94	0.87	1.14	1.14	1.12	1.08	1.09	1.14	1.14	1.16	1.08	1.08	1.05	1.02	1.02	1.04	1.03	0.98	1.04	1.11
0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01
1.52	1.65	1.60	1.54	1.67	1.67	1.43	1.72	1.61	1.57	1.92	1.70	1.72	1.69	1.58	1.52	1.77	1.60	1.54	1.58	1.66	1.67	1.64	1.72	1.69	1.55	1.46	1.61	1.56
0.26	0.28	0.27	0.02	0.33	0.27	0.05	0.36	0.23	0.22	0.11	0.15	0.17	0.10	0.15	0.16	0.21	0.16	0.16	0.14	0.18	0.17	0.14	0.23	0.19	0.13	0.05	0.13	0.15
0.50	0.00	0.43	0.71	0.40	0.42	0.73	0.34	0.52	0.41	0.66	0.67	0.68	0.00	0.61	0.59	0.61	0.63	0.61	0.64	0.66	0.66	0.64	0.63	0.60	0.63	0.59	0.67	0.57
0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00
0.02	0.02	0.05	0.01	0.03	0.06	0.04	0.03	0.03	0.03	0.07	0.05	0.06	0.06	0.07	0.10	0.07	0.12	0.06	0.04	0.07	0.08	0.06	0.08	0.11	0.10	0.02	0.09	0.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.03	5.96	5.99	6.12	5.92	5.89	6.04	5.90	6.04	5.90	6.05	6.02	6.07	6.13	6.07	6.10	6.02	6.06	6.11	6.10	6.07	6.13	6.13	6.07	6.14	6.09	6.14	6.04	6.07
6.03	6.00	6.00	6.12	6.00	6.00	6.04	6.00	6.04	6.00	6.05	6.02	6.07	6.13	6.07	6.10	6.02	6.06	6.11	6.10	6.07	6.13	6.13	6.07	6.14	6.09	6.14	6.04	6.07
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.99	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.23	0.36	0.17	0.10	0.11	0.15	0.03	0.08	0.00	0.41	0.11	0.06	0.01	0.00	0.24	0.19	0.03	0.11	0.11	0.14	0.10	0.07	0.14	0.08	0.04	0.22	0.41	0.24	0.16
0.08	0.01	0.00	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01
0.04	0.05	0.08	0.02	0.05	0.07	0.13	0.03	0.07	0.07	0.05	0.07	0.04	0.06	0.02	0.08	0.03	0.08	0.07	0.08	0.07	0.06	0.06	0.09	0.07	0.10	0.01	0.07	0.08
1.09	0.92	1.15	1.15	1.10	1.10	1.50	1.10	1.26	0.94	0.87	1.14	1.14	1.11	1.08	1.09	1.14	1.14	1.10	1.08	1.08	1.05	1.02	1.02	1.04	1.03	0.98	1.04	1.11
0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01
2.97	3.00	3.00	2.88	3.00	3.00	2.96	3.00	2.96	3.00	2.95	2.98	2.93	2.87	2.93	2.90	2.98	2.94	2.89	2.90	2.93	2.87	2.87	2.93	2.86	2.91	2.86	2.96	2.93
0.26	0.28	0.27	0.02	0.33	0.27	0.05	0.36	0.23	0.22	0.11	0.15	0.17	0.10	0.15	0.16	0.21	0.16	0.16	0.14	0.18	0.17	0.14	0.23	0.19	0.13	0.05	0.13	0.15
0.00	0.01	0.00	0.00	0.40	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.04	0.00	0.01	0.01	0.05	0.00	0.00	0.01	0.00	0.00
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
0.24	0.34	0.30	0.26	0.26	0.31	0.22	0.28	0.24	0.34	0.22	0.16	0.14	0.16	0.23	0.23	0.17	0.20	0.23	0.22	0.14	0.16	0.21	0.13	0.21	0.22	0.35	0.19	0.28
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.02	0.02	0.05	0.01	0.03	0.06	0.04	0.03	0.03	0.03	0.07	0.05	0.06	0.06	0.07	0.10	0.07	0.12	0.06	0.04	0.07	0.08	0.06	0.08	0.11	0.10	0.02	0.09	0.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.98	3.98	3.95	3.99	3.97	3.94	3.96	3.97	3.97	3.97	3.93	3.95	3.94	3.93	3.93	3.90	3.93	3.87	3.94	3.96	3.93	3.92	3.94	3.92	3.89	3.90	3.98	3.91	3.92
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.58	0.64	0.58	0.57	0.59	0.60	0.51	0.60	0.56	0.62	0.69	0.60	0.60	0.60	0.59	0.58	0.61	0.58	0.57	0.59	0.61	0.61	0.62	0.63	0.62	0.60	0.60	0.61	0.58
0.58	0.64	0.58	0.57	0.59	0.60	0.51	0.60	0.56	0.62	0.69	0.60	0.60	0.61	0.59	0.58	0.61	0.58	0.57	0.59	0.61	0.61	0.62	0.63	0.62	0.60	0.60	0.61	0.58
0.34	0.43	0.39	0.03	0.45	0.39	0.06	0.51	0.31	0.35	0.14	0.18	0.20	0.12	0.20	0.22	0.26	0.21	0.21	0.18	0.21	0.20	0.18	0.26	0.24	0.17	0.07	0.16	0.20

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St	St	St	St	St	St	St	St	St	St	St	St S	St St	St	St	St	St	St	St	St	St	St	St	St	St	Ky F	(y I	Ky I	ζy
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	in matrix	Grt mantle	Grt rim inc	Grt mantle	Grt mantle	matrix	matrix	matrix	matrix										
											inc	inc	inc	inc	inc	inc							inc	inc				
mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	core	core	core	rim	rim	rim	mantle	mantle	core									rim 67	rim	rim	rim
tur9 37.03	tur12 36.13	tur13 37.29	tur.36 36.19	tur.38 36.66	tur4.3 36.62	tur48 36.56	tur50 37.36	tur11 37.05	tur35 36.68	tur45 36.97	tur5/ 36.19	tur58 36.22	tur65 36.63	tur56 36.74	tur64 36.43	tur54 35.36	tur20 36.87	tur21 36.25	tur26 35.95	tur2/ 36.34	tur28 35.59	tur29 36.39	tur62 36.87	tur63 37.06	57 36.06	36.15	36.55	/1 35.93
0.36	0.57	0.09	0.55	0.42	0.19	0.49	0.43	0.60	0.16	1.00	0.19	0.72	0.29	0.16	0.39	0.51	0.27	0.53	0.24	0.38	0.61	0.17	0.35	0.11	0.90	0.74	0.61	0.38
32.61	31.29	31.62	30.77	31.19	32.02	31.94	33.56	30.68	31.05	30.10	30.65	29.86	33.78	31.40	30.95	32.46	32.07	31.59	29.99	31.08	30.12	30.97	32.66	33.50	32.45	32.40	32.66	31.90
0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.05	0.00	0.04	0.08	0.01	0.03	0.04	0.00	0.04	0.03	0.00	0.04	0.01	0.00	0.00	0.01	0.10	0.03	0.01	0.04	0.02	0.05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.99	7.36	8.80	7.87	8.60	7.07	7.90	6.76	4.27	9.94	3.07	7.62	7.68	9.34	8.53	7.94	12.26	7.90	8.44	8.82	9.39	8.72	9.01	8.09	7.52	4.62	4.63	5.22	5.65
9.99	7.36	8.80	7.87	8.60	7.07	7.90	6.76	4.27	9.94	3.72	7.62	8.18	9.34	8.53	7.94	12.26	7.90	8.44	9.35	9.39	9.07	9.01	8.09	7.52	4.62	4.63	5.22	5.65
3.47	6.42	5.64	6.34	6.27	5.87	5.85	5.22	8.60	5.21	9.15	6.61	6.83	3.71	5.16	6.59	2.15	6.02	6.00	6.80	5.60	6.91	6.56	5.24	5.43	8.38	8.15	7.93	7.42
0.17	0.77	0.21	0.57	0.58	0.73	0.80	0.35	0.36	0.10	0.44	0.87	0.89	0.46	0.05	0.70	0.29	0.62	0.83	0.85	0.16	0.74	0.68	0.37	0.34	2.16	2.05	1.53	1.58
1.28	2.01	2.04	1.95	2.02	1.65	1.82	1.55	2.37	2.14	2.65	2.12	2.09	1.40	2.12	2.03	1.76	1.88	1.62	2.18	2.24	2.22	2.17	1.78	1.45	1.29	1.29	1.36	1.15
0.02	0.02	0.00	0.02	0.03	0.06	0.04	0.00	0.02	0.03	0.04	0.03	0.01	0.00	0.01	0.02	0.05	0.00	0.00	0.02	0.03	0.02	0.02	0.00	0.00	0.02	0.03	0.07	0.05
0.00	0.16	0.08	0.16	0.13	0.11	0.10	0.10	0.27	0.07	0.28	0.11	0.13	0.00	0.06	0.15	0.00	0.06	0.09	0.16	0.10	0.17	0.13	0.09	0.09	0.20	0.13	0.16	0.08
3.57	3.49	3.57	3.48	3.54	3.51	3.54	3.58	3.47	3.54	3.46	3.49	3.50	3.60	3.52	3.51	3.50	3.59	3.55	3.50	3.53	3.49	3.55	3.56	3.60	3.56	3.57	3.59	3.54
98.90	98.68 0.07	99.99 0.04	98.26	100.12	98.48	99.52 0.04	99.49 0.04	98.13	99.52 0.03	98.37 0.12	98.18 0.05	98.80 0.05	99.96 0.00	98.04	99.19 0.06	98.74	99.87	99.43 0.04	99.55 0.07	99.52 0.04	99.34 0.07	100.33	100.08	99.92 0.04	100.25	99.75 0.06	100.44	98.62
98.90	98.61	99.96	98.20	100.07	98.43	99.48	99.45	98.01	99.49	98.25	98.14	98.74	99.96	98.02	99.13	98.74	99.84	99.39	99.48	99.48	99.27	100.28	100.05	99.88	100.17	99.69	100.37	98.59
6.22	6.08	6.19	6.10	6.09	6.16	6.10	6.18	6.17	6.15	6.16	6.12	6.10	6.10	6.21	6.09	6.05	6.11	6.05	6.03	6.09	5.97	6.04	6.13	6.10	5.92	5.96	5.98	6.01
0.05	0.07	0.01	0.07	0.05	0.02	0.06	0.05	0.08	0.02	0.13	0.02	0.09	0.04	0.02	0.05	0.07	0.03	0.07	0.03	0.05	0.08	0.02	0.04	0.01	0.11	0.09	0.07	0.05
0.40	0.00	0.18	0.12	0.00	0.00	0.28	0.54	0.02	0.13	0.01	0.00	0.00	0.03	0.20	0.01	0.00	0.27	0.01	0.00	0.14	0.00	0.00	0.01	0.00	0.28	0.01	0.00	0.29
1.40	1.04	1.22	1.11	1.19	0.99	1.10	0.93	0.59	1.39	0.52	1.08	1.15	1.30	1.21	1.11	1.76	1.10	1.18	1.31	1.32	1.27	1.25	1.12	1.04	0.63	0.64	0.71	0.79
0.00	1.61	1.39	1.59	1.55	1.47	1.45	1.29	2.13	1.30	2.27	1.67	1.71	0.01	1.30	1.64	0.02	1.49	1.49	1.70	1.40	1.73	1.62	1.30	1.33	2.05	2.00	1.93	1.85
0.03	0.14	0.04	0.10	0.10	0.13	0.14	0.06	0.06	0.02	0.08	0.16	0.16	0.08	0.01	0.13	0.05	0.11	0.15	0.15	0.03	0.13	0.12	0.07	0.06	0.38	0.36	0.27	0.28
0.00	0.65	0.66	0.60	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.68	0.01	0.69	0.66	0.00	0.60	0.00	0.01	0.01	0.00	0.01	0.03	0.01	0.00	0.00	0.01	0.03
0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
0.00	0.08	0.04	0.09	0.07	0.00	0.03	0.00	0.14	0.04	0.13	0.00	0.07	0.00	0.03	0.08	0.00	0.03	0.04	0.08	0.00	0.09	0.07	0.05	0.04	0.10	0.07	0.08	0.04
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
5100	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
6.22	6.08	6.19	6.10	6.09	6.16	6.10	6.18	6.17	6.15	6.16	6.12	6.10	6.10	6.21	6.09	6.05	6.11	6.05	6.03	6.09	5.97	6.04	6.13	6.10	5.92	5.96	5.98	6.01
6.22	6.08	6.19	6.10	6.09	6.16	6.10	6.18	6.17	6.15	6.16	6.12	6.10	6.10	6.21	6.09	6.05	6.11	6.05	6.03	6.09	6.00	6.04	6.13	6.10	6.00	6.00	6.00	6.01
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.91	6.00	5.93	6.00	6.00	6.00	6.00	6.00	6.00	5.93	6.00	5.95	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.46	0.20	0.18	0.12	0.11	0.35	0.28	0.54	0.02	0.13	0.00	0.11	0.00	0.63	0.26	0.10	0.55	0.27	0.21	0.00	0.14	0.00	0.06	0.40	0.50	0.20	0.26	0.28	0.29
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01
1.40	1.04	1.22	1.11	1.19	0.02	1.10	0.03	0.59	1.39	0.13	1.08	1.08	1.30	1.21	1.11	1.76	1.10	1.18	1.24	1.32	1.22	1.25	1.12	1.04	0.63	0.64	0.07	0.05
0.87	1.61	1.39	1.59	1.55	1.47	1.45	1.29	2.13	1.30	2.27	1.67	1.71	0.92	1.30	1.64	0.55	1.49	1.49	1.70	1.40	1.73	1.62	1.30	1.33	2.05	2.00	1.93	1.85
2.78	2.92	2.81	2.90	2.91	2.84	2.90	2.82	2.83	2.85	2.84	2.88	2.90	2.90	2.79	2.91	0.02 2.95	2.89	2.95	2.97	2.91	0.01 3.03	2.96	0.00 2.87	0.01 2.90	0.00 3.00	0.00 3.00	0.00 3.00	2.99
0.02	0.14	0.04	0.10	0.10	0.12	0.14	0.06	0.06	0.02	0.08	0.16	0.16	0.08	0.01	0.12	0.05	0.11	0.15	0.15	0.02	0.12	0.12	0.07	0.06	0.28	0.26	0.27	0.28
0.03	0.14	0.66	0.10	0.10	0.13	0.14	0.00	0.00	0.02	0.08	0.10	0.18	0.08	0.69	0.15	0.05	0.60	0.13	0.13	0.03	0.13	0.12	0.07	0.00	0.38	0.30	0.27	0.28
0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
0.00	0.01	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.03	0.01	0.00	0.00	0.01	0.03
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.00	0.08	0.04	0.09	0.07	0.06	0.05	0.05	0.14	0.04	0.15	0.06	0.07	0.00	0.03	0.08	0.00	0.03	0.04	0.08	0.05	0.09	0.07	0.05	0.04	0.10	0.07	0.08	0.04
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	5.92 4.00	5.96 4.00	5.91 4.00	5.93 4.00	5.94 4.00	. 5.95 4.00	5.95 4.00	5.86 4.00	5.96 4.00	5.85 4.00	5.94 4.00	5.93 4.00	4.00 4.00	5.97 4.00	5.92 4.00	4.00 4.00	5.97 4.00	5.95 4.00	5.92 4.00	5.95 4.00	5.91 4.00	5.93 4.00	5.95 4.00	5.96 4.00	5.90 4.00	5.93 4.00	5.92 4.00	5.96 4.00
0.55	0.65	0.5-	0.5-	0.57	0.55	0.57	0.57	0.5-	0.45		0.00	0.77	o	0.55	0.65		0.55	0.55	0.55	0.55	0.5-	0.55	0.5.	0.55	0.57	0.55	0.85	0.5-
0.38	0.61	0.53	0.59	0.57	0.60	0.57	0.58	0.78	0.48	0.81	0.61	0.60	0.41	0.52	0.60	0.24	0.58	0.56	0.56	0.52	0.58	0.56	0.54	0.56	0.76	0.76	0.73	0.70
0.56	0.01	0.55	0.39	0.37	0.00	0.37	0.10	0.78	0.48	0.04	0.01	0.01	0.41	0.02	0.00	0.24	0.58	0.50	0.58	0.52	0.59	0.50	0.04	0.50	0.70	0.70	0.75	0.70

Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky I	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky I	Ky	Ky	Ky F	Cy F	(y I	Cy F	Cy I	ζy
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	Grt rim inc (Grt rim inc (Grt rim inc (Grt rim inc (Grt rim inc (Grt rim inc
rim	rim	rim	rim	rim	rim	mantle/rim	mantle/rim	mantle	mantle	mantle	mantle	mantle	mantle	core	core	core	core	core	core	core	core	core	rim	rim	rim	rim	rim	rim
76	81 0 36.18	82	84 35 29	85	87	11 36.27	65 36.84	63 35.80	73	75	83	86 36.11	88 36.76	12	56 36.21	64 35.67	67 37.03	68 36 57	70	72	74 36.54	80 34.94	18	24	26	29	30 36.87	32
0.0	8 0.73	0.55	0.90	0.52	0.23	0.80	0.37	0.78	0.77	0.76	0.62	0.92	0.70	0.54	0.81	0.22	0.63	0.84	0.52	0.74	0.26	0.72	0.48	0.97	0.86	1.07	1.14	0.69
32.2	9 31.13	31.91	32.40	32.51	32.15	32.14	32.70	31.83	31.90	31.01	31.68	32.56	31.99	33.22	31.97	31.99	31.84	32.56	32.76	31.74	33.07	31.80	31.52	31.07	30.53	30.60	30.47	31.98
0.0	3 0.07	0.00	0.07	0.02	0.00	0.02	0.03	0.00	0.04	0.00	0.00	0.03	0.03	0.07	0.00	0.00	0.03	0.04	0.02	0.01	0.00	0.00	0.04	0.08	0.00	0.07	0.01	0.03
10.0	0 10.51	10.58	10.51	10.48	10.49	10.52	10.62	10.44	10.50	10.49	10.42	10.50	10.48	10.57	10.54	10.32	10.53	10.58	10.16	10.44	10.37	10.25	10.58	10.53	10.53	10.56	10.59	10.55
4.8	3 7.10	6.53	5.53	4.41	4.45	4.87	5.34	6.38	4.48	6.80	6.09	5.26	5.97	5.37	7.06	12.61	6.91	7.03	13.47	6.51	8.54	13.92	7.45	6.63	6.19	6.44	6.42	6.95
4.	3 7.10	6.53	5.53	4.41	4.45	4.87	5.34	6.38	4.48	6.80	6.09	5.26	5.97	5.37	7.06	12.61	6.91	7.03	13.47	6.51	8.54	13.92	7.45	6.63	6.62	6.92	7.21	6.95
0.0	0 0.00 3 7.60	0.01	0.01 7.98	0.00 8.01	0.00 8.57	0.00 8.05	0.00	0.00 7.31	0.00 8.24	0.03	0.01 7.34	0.00 7.42	0.00	0.02	0.00 7.11	0.16	0.04 6.73	0.00	0.15	0.02 6.87	0.00	0.08 2.53	0.05	0.08	0.00	0.05	0.04 7.86	0.11 7.11
2.0	4 1.07	0.87	2.14	1.76	1.80	1.90	1.42	2.08	1.79	1.11	1.73	1.61	1.82	1.28	1.49	0.44	0.14	0.99	0.38	1.83	0.17	0.95	0.15	0.36	0.48	0.32	0.38	1.25
0.	1 0.00	0.00	0.00	0.00	0.11	0.00	0.06	0.00	0.34	0.00	0.17	0.00	0.00	0.00	0.45	0.22	0.06	0.17	0.28	0.00	0.00	0.11	0.00	0.17	0.00	0.00	0.22	0.17
0.0	0 1.05 3 0.08	0.04	0.03	0.03	0.09	0.03	0.03	0.98	0.08	0.08	0.04	0.04	0.06	0.03	0.03	2.04	0.03	0.05	0.08	0.03	0.04	0.09	2.50	0.01	0.02	0.03	0.01	0.06
0.	6 0.14	0.11	0.08	0.15	0.13	0.05	0.08	0.20	0.11	0.09	0.16	0.08	0.09	0.04	0.11	0.00	0.11	0.02	0.00	0.15	0.00	0.00	0.08	0.08	0.08	0.14	0.15	0.15
0.0	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
3.3 100.3	8 3.30 8 99.82	100.37	3.59 99.71	3.54 98.82	3.35 98.79	3.60 99.61	100.26	99.33	3.57 99.41	3.38 99.75	3.52 99.09	3.38 99.37	3.57 99.61	5.62 99.69	3.58 100.58	3.50 100.50	3.38 99.77	3.64 100.42	3.50 99.58	5.52 99.34	3.57 98.78	3.53 100.82	5.61 100.31	3.39	3.59 99.98	3.57 100.32	3.38 100.98	3.30 100.39
0.0	0.06	0.05	0.04	0.06	0.05	0.02	0.04	0.08	0.05	0.04	0.07	0.04	0.04	0.02	0.05	0.00	0.05	0.01	0.00	0.07	0.00	0.00	0.03	0.03	0.03	0.06	0.06	0.06
100.2	2 99.76	100.32	99.67	98.75	98.73	99.59	100.22	99.24	99.37	99.71	99.03	99.34	99.57	99.67	100.53	100.50	99.72	100.41	99.58	99.28	98.78	100.82	100.28	100.13	99.94	100.26	100.92	100.33
5.9	7 5.98	6.13	5.83	5.98	5.96	5.99	6.03	5.96	6.02	6.06	6.02	5.97	6.09	5.97	5.97	6.01	6.11	6.01	5.97	6.06	6.12	5.93	6.04	6.11	6.14	6.06	6.05	5.98
0.0	4 6.06	0.07	0.11	0.07	0.03	0.10	0.05	0.10	0.10	0.09	0.08	0.11	0.09	0.07 6.44	0.10	0.03	0.08	0.10	0.07	0.09	0.03	0.09	0.06	0.12	0.11	0.13	0.14	0.09
0.0	0 0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
0.0	6 0.98	0.90	0.76	0.61	0.62	0.67	0.73	0.89	0.62	0.94	0.85	0.73	0.83	0.74	0.97	1.78	0.95	0.97	1.93	0.91	1.20	1.97	1.02	0.92	0.91	0.95	0.99	0.96
2.0	4 1.87	1.73	1.97	1.98	2.12	1.98	1.88	1.81	2.03	1.84	1.82	1.83	1.74	1.78	1.75	0.81	1.66	1.62	0.02	1.70	1.11	0.64	1.76	1.79	1.90	1.91	1.92	1.75
0.3	6 0.19	0.15	0.38	0.31	0.32	0.34	0.25	0.37	0.32	0.20	0.31	0.29	0.32	0.23	0.26	0.08	0.03	0.17	0.07	0.33	0.03	0.17	0.03	0.06	0.08	0.06	0.07	0.22
0.0	8 0.53	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.03	0.01	0.00	0.01	0.02	0.00	0.00	0.63	0.00	0.01	0.00	0.00	0.01	0.01
0.0	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.00	0.00	0.01	0.00	0.01
0.0	8 0.07 0 0.00	0.06	0.04	0.08	0.07	0.03	0.04	0.10	0.06	0.04	0.08	0.04	0.04	0.02	0.06	0.00	0.06	0.01	0.00	0.08	0.00	0.00	0.04	0.04	0.04	0.07	0.08	0.08
3.0	0 3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
5.9	7 5.98	6.13	5.83	5.98	5.96	5.99	6.03	5.96	6.02	6.06	6.02	5.97	6.09	5.97	5.97	6.01	6.11	6.01	5.97	6.06	6.12	5.93	6.04	6.11	6.14	6.06	6.05	5.98
0.0	0.02 0 6.00	6.13	0.17	0.02 6.00	0.04 6.00	0.01 6.00	0.00	0.04	0.00	0.00	0.00	0.03	0.00	0.03	0.03	0.00 6.01	0.00 6.11	0.00 6.01	0.03	0.00	0.00 6.12	0.07 6.00	0.00 6.04	0.00 6.11	0.00 6.14	0.00	0.00	6.00
6.0	0 6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.94	5.93	5.89	6.00
6.0	0 0.00 0 6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.1	1 0.05	0.19	0.15	0.24	0.04	0.04	0.21	0.20	0.22	0.00	0.22	0.22	0.25	0.41	0.10	0.25	0.10	0.20	0.57	0.22	0.52	0.20	0.10	0.05	0.00	0.00	0.00	0.10
0.0	0.05	0.18	0.13	0.54	0.24	0.24	0.00	0.20	0.23	0.00	0.22	0.32	0.23	0.41	0.18	0.33	0.19	0.00	0.07	0.23	0.00	0.28	0.10	0.03	0.00	0.00	0.00	0.19
0.0	8 0.09	0.07	0.11	0.07	0.03	0.10	0.05	0.10	0.10	0.09	0.08	0.11	0.09	0.07	0.10	0.03	0.08	0.10	0.07	0.09	0.03	0.09	0.06	0.12	0.11	0.13	0.14	0.09
0.0	6 0.98	0.90	0.76	0.61	0.62	0.67	0.73	0.89	0.62	0.94	0.85	0.73	0.83	0.74	0.97	1.78	0.95	0.97	1.93	0.91	1.20	1.97	1.02	0.92	0.85	0.89	0.88	0.96
0.0	0 0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.02
3.0	0 3.00	2.87	3.00	3.00	3.00	3.00	2.97	3.00	2.98	2.94	2.98	3.00	2.91	3.00	3.00	2.99	2.89	2.99	3.00	2.94	2.88	3.00	2.96	2.89	2.86	2.94	2.95	3.00
0.3	6 0.19	0.15	0.38	0.31	0.32	0.34	0.25	0.37	0.32	0.20	0.31	0.29	0.32	0.23	0.26	0.08	0.03	0.17	0.07	0.33	0.03	0.17	0.03	0.06	0.08	0.06	0.07	0.22
0.3	8 0.53	0.57	0.37	0.43	0.41	0.43	0.46	0.32	0.41	0.57	0.38	0.40	0.36	0.45	0.39	0.67	0.67	0.42	0.58	0.34	0.57	0.63	0.75	0.75	0.76	0.77	0.77	0.48
0.0	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.00	0.00	0.01	0.00	0.01
0.1	5 0.26	0.27	0.24	0.25	0.24	0.22	0.28	0.31	0.24	0.22	0.29	0.30	0.31	0.32	0.31	0.23	0.29	0.38	0.32	0.33	0.39	0.17	0.21	0.17	0.15	0.17	0.15	0.28
1.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.0	8 0.07	0.06	0.04	0.08	0.07	0.03	0.04	0.10	0.06	0.04	0.08	0.04	0.04	0.02	0.06	0.00	0.06	0.01	0.00	0.08	0.00	0.00	0.04	0.04	0.04	0.07	0.08	0.08
0.0	0 0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0	0 4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	5 077	0.00	0.72	0.74	0.77	0.75	0.72	0.67	0.77	0.00	0.69	0.72	0.69	0.71	0.64	0.21	0.72	0.02	0.19	0.65	0.49	0.24	0.62	0.67	0.69	0.67	0.67	0.65
0.1	5 0.66 5 0.66	0.66	0.72	0.76	0.77	0.75	0.72	0.67	0.77	0.66	0.68	0.72	0.68	0.71	0.64	0.31	0.63	0.63	0.18	0.65	0.48	0.24	0.63	0.66	0.68	0.67	0.69	0.65
0.4	8 0.26	0.21	0.50	0.42	0.44	0.44	0.35	0.54	0.44	0.26	0.45	0.42	0.48	0.33	0.40	0.11	0.04	0.29	0.11	0.49	0.05	0.24	0.03	0.08	0.10	0.07	0.08	0.32

Ky	Ky I	Ky H	Ку .	Ку К	Ly K	Ly K	y K	y K	iy K	iy H	Ky I	Ky K	Ly F	Ly K	iy K	Cy F	Ky H	Су (Ky l	Ky K	Ly I	Ky I	Ky H	Ку К	(y K	.y K	iy K	Ly .
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
Grt rim inc	Grt rim inc	Grt rim inc 0	Grt rim inc	Grt rim inc G	Grt rim inc C	Grt rim inc G	rt rim inc	Grt core inc	Grt core inc	Grt core inc	Grt core inc	Grt core C	Grt rim inc O	Grt rim inc C	Grt rim inc C	Grt rim inc O	Grt rim inc 0	Grt rim inc	Grt rim inc	Grt rim inc C	Grt rim inc (Grt rim inc	Grt rim inc 0	Grt rim inc O	Jrt rim inc G	irt rim inc C	Jrt rim inc C	Brt rim inc
rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim 1	nantle/rim	mantle/rim	mantle/rim n	nantle/rim	mantle	mantle	COLE	core	COLE	core	COLE
34	35	37	38	39	40	42	46	89	90	91	92	95	101	104	105	108	109	20	21	28	103	19	107	17	23	25	27	31
36.54	37.27	36.64	37.13	36.44	36.27	37.31	36.51	35.46	36.90	36.32	36.91	36.55	36.53	36.57	36.76	36.80	36.77	36.91	37.34	36.77	36.99	36.97	36.71	36.97	36.54	37.08	36.76	35.57
0.88	0.89	0.67	0.80	0.30	0.80	0.14	0.50	0.65	0.77	0.52	0.66	0.95	0.56	0.66	0.58	0.97	0.71	0.22	0.43	0.58	0.90	0.99	0.83	0.16	0.53	0.45	0.34	0.44
31.18	31.45	31.91	31.11	32.89	31.48	32.50	31.75	31.73	30.67	32.47	31.65	32.18	32.52	32.39	32.06	31.50	31.59	32.05	31.46	31.47	31.00	31.06	32.61	32.32	33.46	30.51	30.60	32.98
0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.05	0.02	0.05	0.05	0.00	0.01	0.00	0.02	0.02	0.07	0.01	0.04	0.00	0.06	0.07	0.00	0.05	0.04	0.00	0.02	0.09	0.05
10.55	10.65	10.57	10.63	10.59	10.53	10.67	10.55	10.37	10.45	10.56	10.64	10.52	10.61	10.62	10.59	10.62	10.56	10.56	10.52	10.46	10.59	10.58	10.63	10.53	10.48	10.53	10.51	10.42
7.37	6.98	6.73	7.07	6.85	7.48	7.94	7.21	6.60	6.80	6.68	7.11	6.35	7.47	6.87	7.16	7.16	7.30	7.46	6.44	6.48	6.95	7.07	5.30	10.30	9.30	6.39	7.75	9.47
7.37	6.98	6.73	7.11	6.85	7.48	7.94	7.21	6.60	6.80	6.68	7.11	6.35	7.47	6.87	7.16	7.16	7.30	7.46	6.44	6.48	6.97	7.07	5.30	10.30	9.30	6.86	8.00	9.47
0.06	0.01	0.03	0.00	0.05	0.02	0.02	0.00	0.02	0.01	0.02	0.05	0.06 6.87	0.01	0.06	0.05	0.03	0.06	0.02 6.74	0.02	0.03	0.05	0.00	0.01	0.06	0.06	0.03	0.08	0.05
1.13	0.28	1.30	1.22	1.23	1.38	0.11	1.70	1.89	0.76	1.45	1.25	1.51	1.04	1.57	1.00	1.35	1.06	0.61	0.16	1.59	0.90	0.47	1.72	0.09	0.45	0.13	0.94	1.03
0.11	0.00	0.23	0.22	0.11	0.17	0.45	0.00	0.06	0.00	0.00	0.28	0.06	0.11	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.39	0.39	0.34	0.00	0.06
1.64	2.51	1.55	1.72	1.20	1.65	2.25	1.17	1.11	2.12	1.25	1.63	1.18	1.51	1.19	1.70	1.65	1.60	1.77	2.29	1.18	2.02	2.36	1.21	1.91	1.75	2.67	1.86	1.62
0.04	0.01	0.05	0.05	0.03	0.03	0.00	0.02	0.04	0.00	0.05	0.05	0.05	0.04	0.04	0.04	0.09	0.01	0.02	0.00	0.05	0.02	0.00	0.04	0.00	0.02	0.05	0.03	0.04
0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
3.60	3.62	3.55	3.59	3.63	3.57	3.66	3.61	3.54	3.55	3.59	3.59	3.60	3.62	3.62	3.60	3.62	3.62	3.63	3.61	3.58	3.56	3.63	3.62	3.63	3.58	3.58	3.56	3.56
0.03	0.05	0.08	0.07	0.02	0.05	0.01	0.03	0.03	0.05	0.05	0.07	0.02	0.03	0.04	0.04	0.04	0.02	0.02	0.02	99.28 0.02	0.08	0.01	0.04	0.00	0.03	0.04	0.06	0.03
100.48	101.20	100.64	101.31	100.18	100.61	101.59	100.29	98.63	99.49	100.09	101.33	99.89	100.80	101.05	100.57	101.15	100.33	100.05	99.45	99.26	100.69	100.68	100.64	101.09	100.78	100.15	100.07	100.17
6.02	6.08	6.02	6.07	5.98	5.98	6.08	6.01	5.94	6.13	5.98	6.03	6.04	5.98	5,99	6.03	6.02	6.05	6.07	6.17	6.11	6.07	6.07	6.00	6.10	6.06	6.12	6.08	5.93
0.11	0.11	0.08	0.10	0.04	0.10	0.02	0.06	0.08	0.10	0.06	0.08	0.12	0.07	0.08	0.07	0.12	0.09	0.03	0.05	0.07	0.11	0.12	0.10	0.02	0.07	0.06	0.04	0.06
6.05	6.05	6.18	5.99	6.36	6.12	6.24	6.16	6.27	6.01	6.30	6.10	6.27	6.28	6.25	6.20	6.08	6.13	6.21	6.12	6.17	6.00	6.02	6.28	6.29	6.54	5.93	5.97	6.48
1.02	0.00	0.01	0.00	0.00	1.03	1.08	0.99	0.00	0.95	0.92	0.00	0.88	1.02	0.00	0.00	0.98	1.00	1.03	0.89	0.01	0.96	0.00	0.01	1.42	1.29	0.00	1.11	1.32
0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01
0.20	1.81	0.23	0.21	0.22	0.24	1.58	0.30	1.78	0.14	0.26	0.22	0.27	0.18	0.28	0.18	0.24	0.19	0.11	1.76	1.74	0.16	0.08	0.30	1.15	0.08	1.94	0.17	0.18
0.01	0.00	0.01	0.01	0.01	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.02	0.00	0.00
0.52	0.79	0.49	0.54	0.38	0.53	0.71	0.37	0.36	0.68	0.40	0.52	0.38	0.48	0.38	0.54	0.52	0.51	0.57	0.73	0.38	0.64	0.75	0.38	0.61	0.56	0.85	0.60	0.52
0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.02	6.08	6.02	6.07	5.98	5.98	6.08	6.01	5.94	6.13	5.98	6.03	6.04	5.98	5.99	6.03	6.02	6.05	6.07	6.17	6.11	6.07	6.07	6.00	6.10	6.06	6.12	6.08	5.93
6.02	6.08	6.02	6.07	6.00	6.00	6.08	6.01	6.00	6.13	6.00	6.03	6.04	6.00	6.00	6.03	6.02	6.05	6.07	6.17	6.11	6.07	6.07	6.00	6.10	6.06	6.12	6.08	6.00
6.00	6.00	6.02	5.00	6.00	6.00	6.00	6.00	6.00	6.00	6.02	6.00	6.00	6.00	6.00	6.00	6.02	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.02	5.07	6.00
6.00 0.00	6.00	6.00	5.99	6.00	6.00 0.00	6.00	6.00	6.00 0.00	6.00 0.00	6.00	6.00	6.00	6.00 0.00	6.00 0.00	6.00	6.00 0.00	6.00 0.00	6.00	6.00 0.00	6.00 0.00	6.00 0.00	6.00	6.00 0.00	6.00 0.00	6.00	5.93	5.97	6.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.05	0.05	0.10	0.00	0.24	0.11	0.24	0.17	0.21	0.01	0.07	0.10	0.07	0.04	0.00	0.00	0.00	0.12	0.21	0.12	0.17	0.00	0.02	0.20	0.00	0.54	0.00	0.00	0.41
0.05	0.05	0.18	0.00	0.34	0.11	0.24	0.16	0.21	0.01	0.27	0.10	0.27	0.26	0.23	0.20	0.08	0.13	0.21	0.12	0.17	0.00	0.02	0.28	0.29	0.54	0.00	0.00	0.41
0.11	0.11	0.08	0.10	0.04	0.10	0.02	0.06	0.08	0.10	0.06	0.08	0.12	0.07	0.08	0.07	0.12	0.09	0.03	0.05	0.07	0.11	0.12	0.10	0.02	0.07	0.06	0.04	0.06
1.02	0.95	0.92	0.97	0.94	1.03	1.08	0.99	0.92	0.95	0.92	0.97	0.88	1.02	0.94	0.98	0.98	1.00	1.03	0.89	0.90	0.95	0.97	0.72	1.42	1.29	0.88	1.07	1.32
1.80	1.81	1.78	1.86	1.67	0.00	1.58	0.00	1.78	1.81	1.73	0.01	0.01	0.00	1.74	0.01	0.00	1.72	1.65	1.76	1.74	1.85	1.82	0.00	0.01	0.01	1.94	0.01	0.01
2.98	2.92	2.98	2.93	3.00	3.00	2.92	2.99	3.00	2.87	3.00	2.97	2.96	3.00	3.00	2.97	2.98	2.95	2.93	2.83	2.89	2.93	2.93	3.00	2.90	2.94	2.88	2.92	3.00
0.20	0.05	0.22	0.21	0.22	0.24	0.02	0.20	0.24	0.14	0.26	0.22	0.27	0.19	0.28	0.19	0.24	0.10	0.11	0.02	0.26	0.16	0.09	0.20	0.02	0.08	0.02	0.17	0.19
0.20	0.03	0.23	0.21	0.22	0.24	0.02	0.30	0.34	0.14	0.20	0.22	0.27	0.18	0.28	0.18	0.24	0.19	0.11	0.03	0.28	0.10	0.08	0.30	0.62	0.56	0.85	0.60	0.18
0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01
0.01	0.00	0.01	0.01	0.01	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.03	0.02	0.00	0.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.01	0.04	0.10	0.00	0.03	0.07	0.00	0.02	0.01	0.07	0.07	0.00	0.00	0.04	0.05	0.05	0.05	0.05	0.07	0.05	0.02	0.05	0.07	0.05	0.00	0.02	0.05	0.07	0.02
0.04	0.06	0.10	0.08	0.02	0.06	0.02	0.03	0.04	0.06	0.06	0.08	0.03	0.04	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.09	0.01	0.05	0.00	0.03	0.05	0.07	0.03
3.96	3.94	3.90	3.92	3.98	3.94	3.98	3.97	3.96	3.94	3.94	3.92	3.97	3.96	3.95	3.95	3.95	3.98	3.98	3.98	3.98	3.91	3.99	3.95	4.00	3.97	3.95	3.93	3.97
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.64	0.65	0.66	0.66	0.64	0.63	0.59	0.64	0.66	0.66	0.65	0.65	0.66	0.62	0.65	0.63	0.65	0.63	0.62	0.66	0.66	0.66	0.65	0.72	0.45	0.45	0.67	0.62	0.48
0.64	0.65	0.66	0.66	0.64	0.63	0.59	0.64	0.66	0.66	0.65	0.65	0.66	0.62	0.65	0.63	0.65	0.63	0.62	0.66	0.66	0.66	0.65	0.72	0.45	0.45	0.69	0.62	0.48
0.28	0.06	0.32	0.28	0.36	0.32	0.03	0.44	0.49	0.17	0.39	0.30	0.41	0.28	0.42	0.25	0.31	0.27	0.16	0.04	0.43	0.20	0.10	0.44	0.03	0.12	0.03	0.22	0.26

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Ку	Ky H	Ky F	Ky I	Ky K	Ly K	Ky S	St	St	St	St St	St S	St	St	St	St	St St	St	St	St	St S	St	St	St S	St	St	St S	St S	St
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
Grt rim inc	Grt rim inc 0	Grt rim inc O	Grt rim inc (Grt rim inc C	Grt rim inc C	Grt rim inc (Grt rim inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
core	core	core	core	core	core	core	rim	dark	dark	dark	dark	dark	dark	dark	dark	core	core	core	core	mantle	mantle	mantle/rim	rim	rim	rim	rim	rim	rim
33	36	43	96	102	106	110	tur20	tur41	tur45	tur46	tur47	tur49	tur54	tur55	tur57	tur19	tur51	tur53	tur56	tur5	tur8	tur33	tur2	tur3	tur6	tur7	tur9	tur13
35.96	36.91	36.57	36.62	36.43	36.33	36.71	36.28	36.20	36.60	36.11	37.23	35.92	36.46	36.20	36.70	37.80	35.94	35.39	35.11	37.32	36.99	37.18	35.89	36.75	36.61	36.23	36.61	36.30
33.43	0.20	0.88	0.08	1.14	0.88	33.29	0.28	0.43	0.23	0.47	0.21	0.52	0.28	0.80	0.34	29.08	0.64	0.77	0.57	0.21	0.57	0.13	0.53	0.14	0.40	0.60	0.17	30.98
0.11	0.02	0.05	0.00	0.02	0.00	0.03	0.01	0.02	0.03	0.06	0.06	0.04	0.07	0.01	0.02	0.04	0.00	0.00	0.06	0.06	0.00	0.00	0.01	0.01	0.00	0.05	0.03	0.01
10.47	10.58	10.63	10.47	10.60	10.60	10.56	10.55	10.48	10.63	10.51	10.51	10.46	10.67	10.56	10.68	10.38	10.55	10.23	10.16	10.45	10.60	10.44	10.44	10.55	10.52	10.55	10.53	10.39
0.00	0.00 8.04	0.00	0.00	0.00	0.00	0.00 6.47	0.00	0.00	0.00 8.42	0.00	0.00	0.00 9.25	0.00	0.00	0.00	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.68	8.04	7.62	8.03	9.96	7.88	6.47	8.97	7.86	8.42	8.62	8.00	9.25	8.58	8.04	9.29	10.84	10.50	11.93	14.48	8.34	8.21	8.51	7.69	8.64	6.97	7.53	7.27	8.06
0.04	0.04 5.81	0.04 7.56	0.04 5.37	0.07 4.73	0.03 6.20	0.04 6.05	0.12	0.02 6.14	0.11 6.26	0.07 6.44	0.06 5.46	0.12 5.03	0.08	0.07 7.07	0.09	0.04 5.42	0.11 4.15	0.17 2.04	0.12	0.00 5.39	0.00	0.07 5.08	0.00 6.82	0.01 6.34	0.02 6.81	0.08 6.91	0.04 6.28	0.06
0.49	0.16	0.87	0.25	0.33	0.70	0.51	1.23	1.11	1.00	1.61	0.12	0.66	0.86	1.54	0.60	0.17	0.87	0.26	0.28	0.08	1.38	0.06	1.49	1.39	1.38	1.81	0.91	0.62
0.00	0.00	0.22	0.06	0.22	0.28	0.28	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.00	0.45	0.00	0.00	0.00	0.11	0.00	0.11
0.01	0.03	0.04	0.01	0.00	0.03	0.00	0.01	0.01	0.01	0.00	0.00	0.03	0.04	0.03	0.03	0.01	0.04	0.06	0.09	0.04	0.01	0.00	0.07	0.03	0.03	0.06	0.02	0.01
0.00	0.00	0.10	0.00	0.00	0.02	0.06	0.02	0.08	0.05	0.10	0.06	0.03	0.09	0.14	0.05	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.03	0.09	0.09	0.13	0.10	0.11
3.61	3.64	3.62	3.61	3.65	3.64	3.61	3.62	3.58	3.64	3.57	3.60	3.59	3.64	3.57	3.66	3.58	3.64	3.53	3.50	3.60	3.62	3.60	3.58	3.60	3.59	3.58	3.58	3.53
100.12	100.40	101.36	99.43	102.05	101.23	100.40	101.20	99.75	101.01	100.57	99.63	100.34	101.42	100.81	101.83	100.03	101.37	99.62	100.25	99.46	101.19	99.60	99.50	100.74	100.08	100.92	99.68	99.11
0.00 100.12	0.00 100.40	0.04 101.31	0.00 99.43	0.00 102.05	101.22	0.02 100.37	101.18	0.03 99.72	0.02 100.98	0.04 100.53	0.02 99.61	100.32	0.04 101.38	100.75	0.02 101.81	100.00 100.03	0.00 101.37	0.00 99.62	100.25	0.00 99.46	0.03 101.17	0.00 99.60	0.01 99.49	0.04 100.71	0.04 100.05	0.05 100.87	0.04 99.64	0.0: 99.0 0
5.97	6.06	5.08	6.08	5.07	5.96	6.04	5.08	6.00	5 00	5.97	6.16	5.97	5.94	5.96	5 07	6 33	5.92	6.01	6.01	6.20	6.07	6 19	5.08	6.05	6.05	5.07	6.04	6.07
0.13	0.00	0.11	0.00	0.14	0.11	0.12	0.03	0.05	0.03	0.06	0.03	0.07	0.03	0.10	0.04	0.05	0.08	0.10	0.07	0.03	0.07	0.02	0.07	0.05	0.05	0.07	0.04	0.0
6.54	6.38	6.02	6.46 0.00	6.36	6.33	6.45 0.00	6.10	6.33	6.29	6.17	6.35	6.42	6.33	6.09	6.18	5.74	6.52	6.66	6.55	6.27	6.20	6.34	6.19 0.00	6.18	6.26	6.21	6.38	6.11
1.21	1.11	1.04	1.12	1.36	1.08	0.89	1.23	1.09	1.15	1.19	1.11	1.28	1.17	1.11	1.26	1.52	1.45	1.69	2.07	1.16	1.13	1.18	1.07	1.19	0.96	1.04	1.00	1.13
0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.02	0.00	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01
0.09	0.03	0.15	0.05	0.06	0.12	0.09	0.22	0.20	0.18	0.29	0.02	0.12	0.15	0.27	0.10	0.03	0.15	0.05	0.05	0.01	0.24	0.01	0.27	0.24	0.24	0.32	0.16	0.11
0.00	0.00	0.01	0.00	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.01
0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00
0.00	0.00	0.05	0.00	0.00	0.01	0.03	0.01	0.04	0.03	0.05	0.03	0.01	0.05	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.05	0.04	0.07	0.05	0.06
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
5.97	6.06	5.08	6.08	5.07	5.96	6.04	5.08	6.00	5 00	5.97	6.16	5.97	5.94	5.96	5 07	6 33	5.92	6.01	6.01	6.20	6.07	6 19	5.08	6.05	6.05	5.07	6.04	6.07
0.03	0.00	0.02	0.08	0.03	0.04	0.04	0.02	0.00	0.01	0.03	0.00	0.03	0.06	0.04	0.03	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.04	0.00
6.00	6.06	6.00	6.08	6.00	6.00	6.04	6.00	6.00	6.00	6.00	6.16	6.00	6.00	6.00	6.00	6.33	6.00	6.01	6.01	6.20	6.07	6.19	6.00	6.05	6.05	6.00	6.04	6.07
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.74	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.51	0.38	0.00	0.46	0.33	0.29	0.45	0.07	0.33	0.28	0.14	0.35	0.38	0.27	0.05	0.15	0.00	0.44	0.66	0.55	0.27	0.20	0.34	0.17	0.18	0.26	0.18	0.38	0.1
0.01	0.00	0.01 0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01 0.07	0.00	0.00
1.21	1.11	1.04	1.12	1.36	1.08	0.89	1.23	1.09	1.15	1.19	1.11	1.28	1.17	1.11	1.26	1.26	1.45	1.69	2.07	1.16	1.13	1.18	1.07	1.19	0.96	1.04	1.00	1.13
1.13	1.42	1.84	1.33	1.16	1.51	1.48	1.64	1.52	1.53	1.59	1.35	1.24	1.51	1.73	1.53	1.35	1.02	0.52	0.27	1.34	1.54	1.26	1.69	1.55	1.68	1.70	1.54	1.62
3.00	2.94	3.00	2.92	3.00	3.00	2.96	3.00	3.00	3.00	3.00	2.84	3.00	3.00	3.00	3.00	2.67	3.00	2.99	2.99	2.80	2.93	2.81	3.00	2.95	2.95	3.00	2.96	2.93
0.09	0.03	0.15	0.05	0.06	0.12	0.09	0.22	0.20	0.18	0.29	0.02	0.12	0.15	0.27	0.10	0.03	0.15	0.05	0.05	0.01	0.24	0.01	0.27	0.24	0.24	0.32	0.16	0.11
0.55	0.65	0.61	0.60	0.63	0.60	0.57	0.54	0.46	0.44	0.44	0.56	0.62	0.46	0.45	0.59	0.75	0.45	0.66	0.72	0.59	0.43	0.58	0.46	0.43	0.48	0.41	0.43	0.63
0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.00	0.01
0.36	0.31	0.22	0.35	0.29	0.26	0.32	0.22	0.34	0.38	0.28	0.42	0.26	0.39	0.28	0.30	0.22	0.39	0.28	0.20	0.38	0.32	0.38	0.26	0.32	0.27	0.25	0.40	0.25
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.00	0.00	0.05	0.00	0.00	0.01	0.03	0.01	0.04	0.03	0.05	0.03	0.01	0.05	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.05	0.04	0.07	0.05	0.00
4.00	4.00	3.95	4.00	4.00	3.99	3.97	3.99	3.96	3.97	3.94	3.97	3.99	3.95	3.93	3.98	4.00	4.00	4.00	4.00	4.00	3.97	4.00	3.98	3.95	3.96	3.93	3.95	3.94
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.48	0.56	0.64	0.54	0.46	0.58	0.63	0.57	0.58	0.57	0.57	0.55	0.49	0.56	0.61	0.55	0.47	0.41	0.23	0.12	0.54	0.58	0.52	0.61	0.57	0.64	0.62	0.61	0.59
0.48	0.56	0.64	0.54	0.46	0.58	0.63	0.57	0.58	0.57	0.57	0.55	0.49	0.56	0.61	0.55	0.52	0.41	0.23	0.12	0.54	0.58	0.52	0.61	0.57	0.64	0.62	0.61	0.59

St	St St	St S	St	St	St	St	St	St	St S	St	St	St	Ky	Ку	Ку	Ку	Ky	Ky	Ky	Ky I	Ky	Ky	Ку	Ky	Ky I	Ky I	Ky	Ky
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	Ms inc	Ms inc	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
rim	rim	rim	rim	core	core	core	core	core	core	core	rim	rim	mantle	mantle	mantle	mantle	mantle	mantle	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim
tur14	tur30	tur37	tur40	tur1	tur4	tur12	tur28	tur32	tur36	tur39	tur21	tur22	tur7	tur10	tur18	tur25	tur29	tur35	tur4	tur5	tur8	tur11	tur12	tur19	tur22	tur23	tur26	tur28
37.65	36.15 0.32	37.21	36.59 0.40	35.60 0.37	35.70 0.23	35.68	35.90 0.80	35.54 0.94	35.08 0.30	35.66	35.84 0.43	36.87 0.13	36.98 0.61	36.97	37.25	37.48 0.53	37.25	37.49	37.88 0.73	37.15	37.22 0.78	37.22	37.31 0.61	37.22	36.86 0.43	37.19	36.63 0.80	37.56
31.88	31.25	31.89	31.89	32.49	29.28	29.08	33.33	30.99	32.24	30.20	31.33	32.58	31.60	32.28	31.69	32.36	32.36	32.60	32.04	32.48	31.66	32.53	31.84	31.75	32.28	31.99	31.78	32.54
0.02	0.02	0.02	0.01	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.01	0.01	0.04	0.01	0.00	0.01	0.02	0.00	0.02	0.07	0.00	0.01	0.02	0.05	0.00	0.04	0.00	0.06
0.00	0.00	0.00	0.00	0.00	1.11	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.75	7.22	8.22	7.65	15.22	13.93	13.37	8.90	13.61	14.04	14.40	7.21	7.24	5.53	5.36	5.84	4.41	4.73	5.22	5.30	5.37	5.06	4.86	4.71	4.91	4.69	5.21	4.77	5.24
0.03	0.02	0.02	0.00	0.23	0.05	0.04	0.01	0.09	0.05	0.09	0.01	0.00	0.04	0.03	0.01	0.00	0.01	0.03	0.00	0.03	0.02	0.06	0.02	0.02	0.07	0.02	0.06	0.01
5.49 0.08	7.08	6.61 1.23	7.30	0.76	3.66 0.68	3.26	4.89	1.50	1.73	0.23	7.12	6.27 0.97	7.78	7.76	7.85	8.08 0.40	7.83	7.51	8.11 0.38	7.78	8.07 0.47	7.82	8.22 0.41	8.17 0.56	0.22	7.81	7.80	7.40
0.00	0.39	0.28	0.11	0.17	0.00	0.06	0.11	0.06	0.00	0.11	0.00	0.00	0.06	0.00	0.06	0.00	0.00	0.28	0.62	0.00	0.00	0.28	0.00	0.11	0.00	0.00	0.11	0.11
0.02	0.06	0.04	0.01	2.30	2.01	0.06	0.05	2.26	2.31	2.38	0.03	0.01	2.44	2.32	2.39	2.25	2.26	0.00	2.45	0.02	2.26	2.21	2.27	2.23	2.09	2.29	2.32	2.09
0.02	0.11	0.11	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0.03	0.08	0.05	0.05	0.06	0.01	0.05	0.00	0.09	0.02	0.07	0.06	0.04	0.00	0.04	0.03
0.00	0.00 3.53	3.63	0.00 3.62	3.52	3.53	0.00 3.51	0.00 3.62	0.00 3.45	0.00	0.01 3.49	0.00 3.54	3.62	3.62	0.00 3.61	3.63	0.00 3.64	3.62	3.66	3.68	0.00	0.00 3.61	3.65	0.00 3.62	3.62	0.00 3.60	0.00 3.65	3.59	0.00 3.65
100.06	99.65	102.19	101.52	100.99	100.34	100.50	100.82	98.73	99.65	100.52	99.08	99.59	99.61	99.57	99.99	99.86	99.56	99.92	101.99	100.50	99.83	99.90	99.71	99.77	98.58	99.85	98.67	100.22
100.05	99.60	102.14	101.48	100.99	100.34	100.50	100.82	98.72	99.65	100.52	99.04	99.58	99.59	99.54	99.97	99.84	99.53	99.91	101.97	100.50	99.80	99.89	99.68	99.74	98.56	99.85	98.65	100.21
6.22	6.04	6.06	5.98	6.05	6.06	6.09	5.95	6.17	6.00	6.11	5.99	6.09	6.10	6.07	6.12	6.13	6.12	6.13	6.13	6.05	6.11	6.10	6.12	6.11	6.09	6.10	6.08	6.14
0.00	0.04	0.09	0.05	0.05	0.03	0.16	0.10	0.12	0.04	0.26	0.05	0.02	0.08	0.03	0.02	0.06	0.05	0.03	0.09	0.08	0.10	0.04	0.07	0.06	0.05	0.07	0.10	0.06
0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.20	0.29	0.00	0.23	0.00	0.28	0.00	0.01	0.29	0.00	0.00	0.01
1.21	1.01	1.12	1.05	2.16	2.12	2.06	1.23	1.97	2.01	2.06	1.01	1.00	0.76	0.74	0.80	0.60	0.65	0.71	0.72	0.73	0.69	0.67	0.65	0.67	0.65	0.72	0.66	0.72
1.35	1.76	1.60	1.78	0.19	0.92	0.83	1.21	0.39	0.44	0.46	1.77	1.54	1.91	1.90	1.92	1.97	1.92	1.83	1.95	1.89	1.97	1.91	2.01	2.00	1.91	1.91	1.93	1.80
0.01	0.27	0.21	0.33	0.01	0.12	0.26	0.14 0.01	0.04	0.04	0.04	0.33	0.17	0.06	0.05	0.09	0.07	0.08	0.04	0.07	0.05	0.08	0.06	0.07	0.10	0.04	0.08	0.05	0.06
0.63	0.52	0.50	0.42	0.76	0.66	0.49	0.61	0.76	0.76	0.79	0.40	0.43	0.78	0.74	0.76	0.71	0.72	0.63	0.77	0.72	0.72	0.70	0.72	0.71	0.67	0.73	0.75	0.66
0.01	0.06	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.01	0.04	0.02	0.02	0.03	0.01	0.03	0.00	0.04	0.01	0.03	0.03	0.02	0.00	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.22	6.04	6.06	5.98	6.05	6.06	6.09	5.95	6.17	6.00	6.11	5.99	6.09	6.10	6.07	6.12	6.13	6.12	6.13	6.13	6.05	6.11	6.10	6.12	6.11	6.09	6.10	6.08	6.14
6.22	6.04	6.06	6.00	6.05	6.06	6.09	6.00	6.17	6.00	6.11	6.00	6.09	6.10	6.07	6.12	6.13	6.12	6.13	6.13	6.05	6.11	6.10	6.12	6.11	6.09	6.10	6.08	6.14
6.00	6.00	6.00	6.00	6.00	5.86	5.85	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.14	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.21	0.15	0.12	0.13	0.51	0.00	0.00	0.46	0.34	0.50	0.10	0.16	0.35	0.14	0.25	0.14	0.24	0.26	0.29	0.11	0.23	0.12	0.28	0.15	0.15	0.29	0.19	0.22	0.27
0.00	0.04	0.09	0.05	0.05	0.03	0.16	0.10	0.12	0.00	0.26	0.05	0.02	0.08	0.03	0.02	0.06	0.05	0.03	0.09	0.08	0.10	0.04	0.07	0.06	0.05	0.07	0.10	0.06
1.21	1.01	1.12	1.05	2.16	1.98	1.91	1.23	1.97	2.01	2.06	1.01	1.00	0.76	0.74	0.80	0.60	0.65	0.71	0.72	0.73	0.69	0.67	0.65	0.67	0.65	0.72	0.66	0.72
0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00
2.78	2.96	2.94	3.00	2.95	2.94	2.91	3.00	2.83	3.00	2.89	3.00	2.91	2.90	2.93	2.88	2.87	2.88	2.87	2.87	2.95	2.89	2.90	2.88	2.89	2.91	2.90	2.92	2.86
0.01	0.27	0.21	0.33	0.01	0.12	0.26	0.14	0.04	0.04	0.04	0.33	0.17	0.06	0.05	0.09	0.07	0.08	0.04	0.07	0.05	0.08	0.06	0.07	0.10	0.04	0.08	0.05	0.06
0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
0.00	0.03	0.02	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.01	0.01
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.01	0.06	0.06	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.01	0.04	0.02	0.02	0.03	0.01	0.03	0.00	0.04	0.01	0.03	0.03	0.02	0.00	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.53	0.64	0.59	0.63	0.08	0.30	0.29	0.49	0.16	0.18	0.18	0.64	0.61	0.71	0.72	0.71	0.77	0.75	0.72	0.73	0.72	0.74	0.74	0.76	0.75	0.75	0.73	0.74	0.72
0.53	0.64	0.59	0.63	0.08	0.32	0.30	0.49	0.16	0.18	0.18	0.64	0.61	0.71	0.72	0.71	0.77	0.75	0.72	0.73	0.72	0.74	0.74	0.76	0.75	0.75	0.73	0.74	0.72
0.02	0.34	0.30	0.44	0.02	0.16	0.34	0.19	0.05	0.05	0.05	0.45	0.28	0.07	0.07	0.10	0.09	0.10	0.07	0.08	0.07	0.10	0.08	0.09	0.12	0.05	0.10	0.06	0.09

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Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Grt	Grt (Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	Grt inc	Grt inc
																montle	montla	montle	montle	montle	montle							
rim tur21	rim tur22	rim tur26	rim tur20	rim tur42	rim tur/12	core turl	core	core tur0	core	rim	rim 6	rim 7	rim 11	rim 10	rim 21	mantie	2	mantie	o	10	mantie 16	core	core	core	core 19	core 20	rim 25	rim 26
37.01	37.72	36.79	36.85	37.01	36.36	37.24	37.12	36.43	37.15	36.54	36.47	36.27	37.12	36.64	36.15	36.17	36.49	35.90	36.15	37.02	36.74	35.20	35.88	34.31	33.72	34.96	36.52	37.11
0.67	0.46	0.79	0.28	0.53	0.41	0.30	0.36	0.82	0.43	0.49	0.78	0.79	0.44	0.95	0.60	0.81	0.70	0.85	0.96	0.65	1.04	0.80	0.62	0.89	0.20	1.12	0.70	0.23
32.40	32.85	31.88	32.28	32.57	32.49	31.57	31.58	29.87	32.05	33.39	32.73	32.38	32.46	32.15	31.72	32.22	31.81	32.06	30.95	32.83	32.01	32.94	32.50	32.98	33.84	33.93	32.84	33.89
10.61	10.69	10.53	10.50	10.63	10.51	10.51	10.52	10.32	10.57	10.54	10.48	10.49	10.55	10.54	10.36	10.50	10.51	10.42	10.36	10.51	10.61	10.20	10.34	10.18	10.08	10.12	10.38	10.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.50	5.04	5.00	4.90	5.49 5.49	4.94	5.50	6.28	6.11	5.30 5.30	6.06	7.66	7.52	6.61	9.33	8.06	8.18	9.08	8.96	8.93	8.58	9.26	12.41	12.82	15.23	14.80 14.80	11.88	9.40	9.95
0.04	0.01	0.00	0.00	0.05	0.00	0.01	0.04	0.00	0.04	0.02	0.01	0.00	0.00	0.06	0.04	0.00	0.05	0.02	0.01	0.00	0.04	0.10	0.11	0.32	0.07	0.14	0.02	0.01
7.52	7.52	7.88	7.64	7.61	7.77	7.64	7.28	7.54	7.72	6.48 0.58	5.64	6.21	6.59	5.28	5.78	6.01 0.76	5.72	5.43	5.74	4.90 0.48	5.75	1.98	2.53	0.68	0.53	0.96	3.98	4.34
0.00	0.00	0.00	0.06	0.00	0.00	0.11	0.00	0.17	0.17	0.00	0.22	0.22	0.00	0.17	0.00	0.00	0.00	0.22	0.00	0.00	0.22	0.00	0.00	0.00	0.17	0.17	0.22	0.22
2.21	2.18	2.35	2.20	2.27	2.32	2.24	2.11	2.15	2.20	1.85	1.94	1.94	1.93	1.72	1.88	2.00	2.05	2.16	2.13	1.60	1.72	1.74	2.26	1.99	1.78	1.72	1.72	1.68
0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.01	0.01	0.01	0.03	0.04	0.02	0.04	0.02	0.03	0.00	0.01	0.05	0.02	0.05	0.02	0.08	0.06	0.09	0.04	0.00	0.00
0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
3.63	3.67	3.60	3.61 98.58	3.66	3.59 98.77	3.62	3.63	3.56	3.64 99.70	3.56	3.53	3.56	3.55	3.61	3.49 99.10	3.54	3.56	3.55	3.48	3.59	3.61	3.42	3.57	3.45	3.47 99.24	3.43 98.87	3.58	3.66
0.02	0.01	0.02	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.07	0.08	0.05	0.08	0.02	0.07	0.07	0.05	0.04	0.08	0.03	0.05	0.08	0.00	0.05	0.00	0.05	0.00	0.01
99.94	100.49	99.24	98.57	100.13	98.74	99.21	99.55	98.49	99.70	99.61	100.29	100.29	100.21	101.26	99.03	100.38	100.93	100.47	99.73	100.22	101.97	99.23	100.93	100.41	99.24	98.82	99.76	101.88
6.06	6.14	6.07	6.10	6.05	6.01	6.16	6.13	6.13	6.11	6.02	6.05	6.01	6.11	6.04	6.07	5.99	6.04	5.99	6.06	6.12	6.02	6.00	6.03	5.86	5.82	6.01	6.11	6.05
0.08 6.26	6.30	0.10 6.20	0.04 6.30	0.06 6.27	6.33	0.04 6.16	6.15	0.10 5.93	0.05 6.21	0.06 6.49	0.10 6.39	6.32	6.30	0.12 6.25	0.08 6.27	0.10 6.29	0.09 6.20	6.30	0.12 6.12	0.08 6.40	0.13 6.18	0.10 6.61	0.08 6.44	0.11 6.63	6.88	0.15	0.09 6.48	0.03
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
0.75	0.69	0.69	0.68	0.75	0.68	0.76	0.87	0.93	0.73	0.84	0.00	0.00	0.91	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	2.17	2.13	0.02	0.00	0.00
1.83	1.82	1.94	1.88	1.85	1.92	1.88	1.79	1.89	1.89	1.59	1.39	1.53	1.62	1.30	1.45	1.48	1.41	1.35	1.44	1.21	1.40	0.50	0.63	0.17	0.14	0.25	0.99	1.05
0.05	0.05	0.07	0.04	0.05	0.05	0.08	0.10	0.16	0.07	0.10	0.12	0.14 0.01	0.14	0.12	0.15	0.14	0.16	0.14 0.01	0.15	0.09	0.15	0.06	0.03	0.04	0.09	0.05	0.06	0.01
0.70	0.69	0.75	0.71	0.72	0.75	0.72	0.68	0.70	0.70	0.59	0.62	0.62	0.62	0.55	0.61	0.64	0.66	0.70	0.69	0.51	0.55	0.57	0.74	0.66	0.60	0.57	0.56	0.53
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.02	0.01	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.06	6.14	6.07	6.10	6.05	6.01	6.16	6.13	6.13	6.11	6.02	6.05	6.01	6.11	6.04	6.07	5.99	6.04	5.99	6.06	6.12	6.02	6.00	6.03	5.86	5.82	6.01	6.11	6.05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.14	0.18	0.00	0.00	0.00
6.06	6.14	6.07	6.10	6.05	6.01	6.16	6.13	6.13	6.11	6.02	6.05	6.01	6.11	6.04	6.07	6.00	6.04	6.00	6.06	6.12	6.02	6.00	6.03	6.00	6.00	6.01	6.11	6.05
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.93	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00 6.00	0.00	0.00	0.00	0.00 6.00	0.00 6.00	0.00 6.00	0.07 6.00	0.00 6.00	0.00	0.00 6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 6.00	0.00 6.00	0.00	0.00 6.00	0.00 6.00	0.00	0.00	0.00 6.00	0.00 6.00	0.00	0.00 6.00
	0.20		0.00								0.00				0.07	0.07					0.10			0.40	0.00	0.07		
0.26	0.30	0.20	0.30	0.27	0.33	0.16	0.15	0.00	0.21	0.49	0.39	0.32	0.30	0.25	0.27	0.27	0.20	0.28	0.12	0.40	0.18	0.61	0.44	0.49	0.69	0.87	0.48	0.51
0.08	0.06	0.10	0.04	0.06	0.05	0.04	0.05	0.10	0.05	0.06	0.10	0.10	0.05	0.12	0.08	0.10	0.09	0.11	0.12	0.08	0.13	0.10	0.08	0.11	0.03	0.15	0.09	0.03
0.75	0.69	0.69	0.68	0.75	0.68	0.76	0.87	0.86	0.73	0.84	1.06	1.04	0.91	1.29	1.13	1.13	1.26	1.25	1.25	1.19	1.27	1.77	1.80	2.17	2.13	1.71	1.32	1.36
0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.05	0.01	0.02	0.00	0.00
2.94	2.86	2.93	2.90	2.95	2.99	2.84	2.87	2.87	2.89	2.98	2.95	2.99	2.89	2.96	2.93	3.00	2.96	3.00	2.94	2.88	2.98	3.00	2.97	3.00	3.00	2.99	2.89	2.95
0.05	0.05	0.07	0.04	0.05	0.05	0.08	0.10	0.16	0.07	0.10	0.12	0.14	0.14	0.12	0.15	0.14	0.16	0.14	0.15	0.09	0.15	0.06	0.03	0.04	0.09	0.05	0.06	0.01
0.70	0.69	0.75	0.71	0.72	0.75	0.72	0.68	0.70	0.70	0.59	0.62	0.62	0.62	0.55	0.61	0.64	0.66	0.70	0.69	0.51	0.55	0.57	0.74	0.66	0.60	0.57	0.56	0.53
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01
0.25	0.26 1.00	0.18	0.25	0.23	0.20	0.19	0.22 1.00	0.12 1.00	0.22	0.30	0.24 1.00	0.21 1.00	0.24	0.31	0.24 1.00	0.22 1.00	0.19	0.15	0.15	0.40 1.00	0.28 1.00	0.37	0.21	0.28	0.28	0.36 1.00	0.37	0.44 1.00
0.02	0.01	0.03	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.08	0.09	0.07	0.10	0.03	0.09	0.08	0.07	0.05	0.11	0.04	0.06	0.11	0.00	0.06	0.00	0.06	0.00	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.97 4.00	3.99 4.00	3.97 4.00	3.99 4.00	3.99 4.00	3.96 4.00	4.00 4.00	4.00 4.00	4.00 4.00	4.00 4.00	3.92 4.00	3.91 4.00	3.93 4.00	3.90 4.00	3.97 4.00	3.91 4.00	3.92 4.00	3.93 4.00	3.95 4.00	3.89 4.00	3.96 4.00	3.94 4.00	3.89 4.00	4.00 4.00	3.94 4.00	4.00 4.00	3.94 4.00	4.00 4.00	3.98 4.00
0.71	0.73	0.74	0.74	0.71	0.74	0.71	0.67	0.67	0.72	0.66	0.57	0.60	0.64	0.50	0.56	0.57	0.53	0.52	0.53	0.50	0.53	0.22	0.26	0.07	0.06	0.13	0.43	0.44
0.07	0.73	0.08	0.05	0.07	0.74	0.71	0.07	0.09	0.72	0.00	0.16	0.18	0.04	0.18	0.20	0.17	0.55	0.32	0.18	0.14	0.33	0.22	0.20	0.06	0.00	0.13	0.45	0.44

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Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt (irt (Grt	Grt (Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Kv I	Kv	Kv I	Cv .	ζν 1	(v
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur C	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur I	Tur	Tur	Tur	Tur	Tur
Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	matrix	matrix	matrix	matrix	matrix	matrix
on me	ore me	011110	Gittine	on me	on me	Greine	on me	ort me	Gittine	Gittine	on me	on me	ore me	orenie	ort me	Gittine	ore me	Greine	ontine	oreme	Gittine	Greine	munx	matrix	matrix	maan	manna	muna
rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	mantle	mantle	core	core	core	core	core	core	core	core	rim	rim	rim	rim	rim	rim
28	29	31	32	34	37	38	40	42	43	45	54 25.97	56 36.48	30	49	27	33	36	39	44	48	53	55 36 34	59	69 36 73	70	72	73	75
1.08	0.43	0.49	0.48	0.46	0.49	0.83	0.63	1.12	0.83	0.67	0.82	1.07	0.78	0.12	0.74	0.89	0.23	0.00	0.75	0.41	0.52	0.09	0.78	0.43	0.90	0.82	0.60	0.59
31.38	32.31	32.22	33.16	33.40	31.89	31.70	32.74	33.34	34.09	32.70	32.31	31.70	32.90	34.26	32.84	33.87	33.54	32.66	33.46	33.79	34.07	34.13	30.89	32.58	31.65	32.01	31.95	32.40
0.07	0.01	0.04	0.02	0.04	0.02	0.08	0.06	0.05	0.00	0.00	0.04	0.01	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.07	0.02	0.02	0.00	0.04
10.50	10.44	10.50	10.52	10.51	10.41	10.41	10.51	10.49	10.38	10.38	10.45	10.63	10.42	10.73	10.28	10.47	10.33	10.16	10.40	10.50	10.33	10.37	10.51	10.62	10.55	10.50	10.47	10.53
8.97	8.82	8.47	9.60	9.62	7.84	8.74	9.58	10.11	10.79	9.64	9.42	9.69	9.44	8.26	15.03	11.71	13.66	12.70	11.64	11.68	14.62	14.14	6.40	6.57	6.69	6.27	6.37	6.16
8.97	8.82	8.47	9.60	9.62	7.84	8.74	9.58	10.11	10.79	9.64	9.42	9.69	9.44	8.26	15.03	11.71	13.66	12.70	11.64	11.68	14.62	14.14	6.40	6.57	6.69	6.27	6.37	6.16
0.01	0.00	0.01	0.00 4.61	0.01 4.19	0.04 6.35	0.01	0.05 4.56	0.01 3.71	0.14 2.47	0.01 4.21	0.05	0.00 6.04	0.06 4.35	0.02	0.12	0.05	0.10	0.08 2.04	0.05	0.09	0.10	0.15	0.06	0.05	0.00 7.24	0.04 7.07	0.00 7.02	0.04 6.95
0.84	0.63	0.70	0.54	0.63	1.06	0.91	0.68	0.57	0.13	0.59	0.86	0.88	0.66	0.29	0.31	0.50	0.17	0.31	0.53	0.23	0.12	0.08	0.92	1.58	1.16	1.40	1.41	1.46
0.17	0.00	0.28	0.00	0.17	0.00	0.28	0.00	0.06	0.17	0.00	0.00	0.33	0.06	0.00	0.06	0.00	0.00	0.17	0.00	0.17	0.06	0.17	0.50	0.00	0.11	0.28	0.22	0.06
0.00	0.01	0.03	0.00	0.00	0.01	2.14	0.01	0.01	0.03	0.02	0.00	2.00	0.00	0.00	0.03	0.04	0.08	0.06	0.03	0.04	2.03	0.04	2.05	0.09	0.08	0.04	0.01	0.09
0.13	0.15	0.16	0.05	0.00	0.10	0.09	0.00	0.00	0.01	0.02	0.09	0.19	0.05	0.05	0.00	0.00	0.00	0.21	0.00	0.01	0.30	0.00	0.22	0.00	0.08	0.10	0.11	0.06
0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
100.98	99.91	100.82	100.38	100.90	99.49	100.57	100.82	100.82	100.34	99.33	100.26	102.61	99.96	101.42	101.14	101.58	100.93	99.47	100.74	101.47	101.45	101.25	100.67	100.63	100.35	99.79	99.50	99.89
0.06	0.06	0.07	0.02	0.00	0.04	0.04	0.00	0.00	0.00	0.01	0.04	0.08	0.02	0.02	0.00	0.00	0.00	0.09	0.00	0.01	0.13	0.00	0.09	0.00	0.04	0.04	0.05	0.02
100.92	99.85	100.76	100.36	100.90	99.45	100.53	100.82	100.82	100.34	99.33	100.23	102.53	99.94	101.40	101.14	101.58	100.93	99.38	100.74	101.46	101.33	101.25	100.58	100.63	100.31	99.74	99.45	99.87
6.07	6.04	6.06	6.02	6.07	5.98	6.05	6.08	6.03	6.02	6.06	5.96	5.96	6.03	5.98	5.85	5.88	6.04	6.07	5.94	5.93	5.86	6.09	6.19	6.01	6.05	6.03	6.05	6.06
0.13	0.05	0.06	0.06	0.06	0.06	0.10	0.08	0.14	6.73	0.08	0.10	6.11	0.10	0.01	0.09	0.11	0.03	0.00	0.09	0.05	0.07	0.01 6.74	0.10	0.05	0.11 6.14	0.10 6.25	0.08	6.30
0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01
1.24	1.23	1.17	1.33	1.33	1.09	1.22	1.32	1.40	1.51	1.35	1.31	1.32	1.32	1.12	2.13	1.63	1.92	1.82	1.63	1.62	2.06	1.98	0.88	0.90	0.92	0.87	0.88	0.85
1.42	1.34	1.42	1.13	1.03	1.58	1.37	1.12	0.92	0.62	1.05	1.28	1.47	1.08	1.33	0.36	0.76	0.35	0.52	0.74	0.80	0.26	0.15	1.80	1.74	1.78	1.74	1.74	1.71
0.15	0.11	0.12	0.09	0.11	0.19	0.16	0.12	0.10	0.02	0.11	0.15	0.15	0.12	0.05	0.06	0.09	0.03	0.06	0.09	0.04	0.02	0.01	0.16	0.28	0.20	0.25	0.25	0.26
0.01	0.00	0.02	0.00	0.01	0.64	0.62	0.00	0.00	0.01	0.00	0.00	0.62	0.00	0.00	0.00	0.63	0.64	0.01	0.00	0.61	0.00	0.01	0.05	0.00	0.01	0.02	0.01	0.00
0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.00	0.02
0.07	0.08	0.08	0.02	0.00	0.05	0.05	0.00	0.00	0.00	0.01	0.05	0.10	0.03	0.03	0.00	0.00	0.00	0.11	0.00	0.01	0.16	0.00	0.11	0.00	0.04	0.05	0.00	0.03
2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
6.07	6.04	6.06	6.02	6.07	5.98	6.05	6.08	6.03	6.02	6.06	5.96	5.96	6.03	5.98	5.85	5.88	6.04	6.07	5.94	5.93	5.86	6.09	6.19	6.01	6.05	6.03	6.05	6.06
6.07	6.04	6.06	6.02	6.07	6.00	6.05	6.08	6.03	6.02	6.06	6.00	6.00	6.03	6.00	6.00	6.00	6.04	6.07	6.00	6.00	6.00	6.09	6.19	6.01	6.05	6.03	6.05	6.06
6.00	6.00	6.00	6.00	r 00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	<	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.12	0 34	0.28	0.46	0.51	0.26	0.23	0.38	0.51	0.73	0.46	0.30	0.07	0.47	0.52	0.40	0.50	0.65	0.58	0.53	0.52	0.61	0.74	0.02	0.28	0.14	0.25	0.25	0.30
0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01
0.13	0.05	0.06	0.06	0.06	0.06	0.10	0.08	0.14	0.11	0.08	0.10	0.13	0.10	0.01	0.09	0.11	0.03	0.00	0.09	0.05	0.07	0.01	0.10	0.05	0.11	0.10	0.08	0.07
1.24	1.23	1.17	1.33	1.55	1.09	1.22	1.32	0.92	0.62	1.35	1.31	1.32	1.32	1.12	0.36	0.76	0.35	0.52	0.74	0.80	0.26	0.15	1.80	1.74	1.78	1.74	0.88	0.85
0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.01
2.93	2.96	2.94	2.98	2.93	3.00	2.95	2.92	2.97	2.98	2.94	3.00	3.00	2.97	3.00	3.00	3.00	2.96	2.93	3.00	3.00	3.00	2.91	2.81	2.99	2.95	2.97	2.95	2.94
0.15	0.11	0.12	0.09	0.11	0.19	0.16	0.12	0.10	0.02	0.11	0.15	0.15	0.12	0.05	0.06	0.09	0.03	0.06	0.09	0.04	0.02	0.01	0.16	0.28	0.20	0.25	0.25	0.26
0.59	0.61	0.65	0.44	0.49	0.64	0.69	0.52	0.44	0.58	0.45	0.53	0.63	0.49	0.48	0.71	0.63	0.64	0.73	0.58	0.61	0.67	0.51	0.66	0.36	0.50	0.39	0.43	0.40
0.00	0.00	0.02	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.03	0.00	0.01	0.02	0.01	0.00
0.25	0.28	0.20	0.47	0.38	0.17	0.12	0.36	0.45	0.38	0.44	0.32	0.19	0.38	0.47	0.23	0.27	0.31	0.19	0.31	0.33	0.30	0.46	0.14	0.35	0.27	0.33	0.30	0.32
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.07	0.08	0.08	0.02	0.00	0.05	0.05	0.00	0.00	0.00	0.01	0.05	0.10	0.03	0.03	0.00	0.00	0.00	0.11	0.00	0.01	0.16	0.00	0.11	0.00	0.04	0.05	0.06	0.03
3.93	3.92	3.92	3.97	4.00	3.95	3.95	4.00	4.00	4.00	3.99	3.95	3.90	3.97	3.97	4.00	4.00	4.00	3.89	4.00	3.99	3.84	4.00	3.89	4.00	3.96	3.95	3.94	3.97
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.53	0.52	0.55	0.46	0.44	0.59	0.53	0,46	0.40	0.29	0.44	0.49	0.53	0.45	0.54	0.15	0.32	0.15	0.22	0.31	0.33	0.11	0.07	0.67	0,66	0.66	0.67	0.66	0.67
0.53	0.52	0.55	0.46	0.44	0.59	0.53	0.46	0.40	0.29	0.44	0.49	0.53	0.45	0.54	0.15	0.32	0.15	0.22	0.31	0.33	0.11	0.07	0.67	0.66	0.66	0.67	0.66	0.67
0.20	0.16	0.16	0.18	0.18	0.23	0.10	0.10	0.19	0.04	0.19	0.23	0.20	0.19	0.10	0.07	0.12	0.04	0.07	0.14	0.06	0.03	0.03	0.20	0.44	0.20	0.30	0.37	0.40

TK2013112

Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv I	Kv I	ζv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv	Kv I	Kv F	(v)	Kv
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	Grt rim inc	Grt inc	Grt inc	Grt rim inc	Grt rim inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	areal
rim	rim	rim	rim	mantle	mantle	mantle	mantle	mantle	core	core	core	core	rim	rim	rim	rim	rim	rim	rim	rim	matrix/rim	mantle/rim	mantle	core	core	core	core	core light
79	82	85	89	60	78	81	84	88	58	68	74	80	99	101	103	105	106	111	115	116	104	112	114	100	109	110	113	1
36.71	36.33	36.23	36.34	37.29	37.44	36.80	36.06	36.25	35.36	36.45	36.89	33.15	36.08	37.27	36.77	36.47	36.30	36.64	36.40	36.83	37.27	37.01	38.97	37.80	35.27	35.47	36.79	36.77
0.75	0.85	0.74	0.46	0.95	0.46	0.62	0.69	0.64	0.77	0.67	0.84	0.83	0.57	0.83	0.58	0.97	0.49	0.56	0.75	0.61	0.23	1.00	0.75	0.61	0.29	0.00	0.38	0.42
31.95	32.37	32.80	32.45	31.03	31.95	31.84	31.77	31.55	32.19	30.82	32.25	34.84	32.30	31.41	31.55	31.94	32.61	31.76	31.34	31.56	32.42	32.07	29.99	31.33	34.47	35.31	32.34	31.74
0.04	0.03	0.04	0.02	0.03	0.00	0.01	0.02	0.01	0.01	0.03	0.03	0.03	0.04	0.02	0.04	0.03	0.01	0.00	0.04	0.04	0.00	0.00	0.02	0.00	0.00	0.00	0.04	0.01
10.52	10.63	10.64	10.54	10.55	10.61	10.58	10.58	10.43	10.19	10.49	10.50	10.28	10.61	10.60	10.49	10.60	10.56	10.53	10.48	10.48	10.67	10.67	10.51	10.50	10.25	10.44	10.53	10.41
6.36	5.59	5.03	5.13	5.82	7.81	6.94	7.33	6.41	9.45	10.34	7.19	10.46	7.20	7.06	6.58	7.32	6.55	6.71	6.86	7.78	6.95	6.87	5.26	7.08	10.83	11.82	8.82	9.59
6.36	5.59	5.03	5.13	5.82	7.81	6.94	7.33	6.41	9.45	10.34	7.19	10.46	7.20	7.06	6.58	7.32	6.55	6.71	6.86	7.78	6.95	6.87	6.38	7.08	10.83	11.82	8.82	9.59
0.08	0.02	0.03	0.01	0.00	0.01	0.04	0.05	0.01	0.05	0.10	0.02	0.00	0.02	0.02	0.07	0.04	0.03	0.06	0.02	0.00	0.00	0.07	0.03	0.00	0.12	0.05	0.04	0.01
1.35	1.69	2.13	1.85	0.33	0.45	0.92	2.02	1.80	0.42	0.32	0.62	1.31	1.90	0.33	1.14	1.88	1.89	1.33	1.32	0.01	0.14	0.22	0.34	0.40	0.21	0.19	0.16	0.28
0.00	0.23	0.45	0.00	0.00	0.11	0.28	0.00	0.51	0.00	0.00	0.00	0.22	0.00	0.00	0.06	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.00
1.32	1.44	1.29	1.26	2.39	2.40	1.75	0.89	0.98	2.02	2.06	1.91	1.62	0.95	2.10	1.62	1.00	0.94	1.40	1.48	2.30	2.30	2.28	2.25	2.16	1.86	1.81	1.98	1.85
0.06	0.06	0.03	0.05	0.01	0.02	0.04	0.03	0.06	0.03	0.04	0.03	0.03	0.03	0.00	0.05	0.06	0.05	0.04	0.06	0.01	0.02	0.01	0.01	0.04	0.03	0.00	0.03	0.00
0.02	0.10	0.15	0.10	0.19	0.04	0.10	0.12	0.05	0.00	0.01	0.02	0.00	0.11	0.08	0.14	0.07	0.08	0.09	0.04	0.00	0.00	0.00	0.03	0.08	0.00	0.00	0.02	0.00
3.62	3.62	3.60	3.58	3.54	3.64	3.60	3.59	3.57	3.51	3.61	3.61	3.54	3.60	3.62	3.55	3.62	3.60	3.59	3.59	3.59	3.65	3.68	3.61	3.58	3.53	3.60	3.62	3.59
99.82	100.93	101.28	99.56	99.89	100.99	100.67	100.58	99.45	98.08	100.64	99.97	99.75	100.77	100.50	99.70	101.00	100.18	99.91	99.76	99.63	100.81	101.09	100.01	99.78	98.98	100.78	100.34	99.58
0.01 99.81	0.04	0.06	0.05 99.51	0.08 99.81	0.02 100.97	0.04	0.05	99.43	0.00 98.08	0.01 100.63	0.01 99.96	0.00 99.75	0.05	0.03	0.06 99.64	0.03 100.97	0.03	0.04 99.88	0.02 99.74	0.02 99.61	0.02 100.78	0.00	0.01 99.99	0.03 99.75	0.00 98.98	0.00	0.01 100.33	0.00 99.58
6.06	5.94	5.92	5.99	6.14	6.13	6.05	5.93	6.04	6.03	6.04	6.11	5.61	5.91	6.11	6.09	5.98	5.97	6.05	6.04	6.11	6.07	6.03	6.45	6.25	5.98	5.91	6.07	6.14
6.22	6.24	6.32	6.31	6.03	6.17	6.17	6.15	6.20	6.47	6.02	6.29	6.94	6.24	6.07	6.16	6.17	6.32	6.18	6.13	6.17	6.23	6.12	5.85	6.11	6.89	6.93	6.29	6.25
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.88	0.76	0.69	0.71	0.80	1.07	0.95	1.01	0.89	1.35	1.43	0.99	1.48	0.99	0.97	0.91	1.00	0.90	0.93	0.95	1.08	0.95	0.94	0.88	0.98	1.54	1.65	1.22	1.34
1.73	1.95	1.98	1.93	1.91	1.57	1.75	1.82	1.79	1.04	1.41	1.50	0.86	1.79	1.75	1.75	1.72	1.73	1.77	1.79	1.56	1.72	1.75	1.73	1.58	0.54	0.51	1.37	1.22
0.24	0.30	0.37	0.31	0.06	0.01	0.16	0.36	0.32	0.08	0.06	0.11	0.24	0.33	0.06	0.20	0.33	0.33	0.24	0.24	0.01	0.02	0.04	0.06	0.04	0.04	0.03	0.03	0.05
0.00	0.01	0.03	0.00	0.00	0.01	0.02	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.42	0.40	0.41	0.40	0.00	0.00	0.01	0.20	0.01	0.07	0.00	0.01	0.05	0.01	0.07	0.02	0.02	0.01	0.45	0.43	0.00	0.00	0.00	0.00	0.09	0.01	0.00	0.05	0.00
0.01	0.05	0.08	0.05	0.10	0.02	0.05	0.06	0.02	0.00	0.01	0.01	0.00	0.06	0.04	0.07	0.04	0.04	0.05	0.02	0.03	0.03	0.00	0.02	0.04	0.00	0.00	0.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.06	5.94	5.92	5.99	6.14	6.13	6.05	5.93	6.04	6.03	6.04	6.11	5.61	5.91	6.11	6.09	5.98	5.97	6.05	6.04	6.11	6.07	6.03	6.45	6.25	5.98	5.91	6.07	6.14
0.00	0.06	0.08	0.01	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.39	0.09	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00
6.06	6.00	6.00	6.00	6.14	6.13	6.05	6.00	6.04	6.03	6.04	6.11	6.00	6.00	6.11	6.09	6.00	6.00	6.05	6.04	6.11	6.07	6.03	6.45	6.25	6.00	6.00	6.07	6.14
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.85	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.22	0.18	0.24	0.30	0.03	0.17	0.17	0.08	0.20	0.47	0.02	0.29	0.55	0.14	0.07	0.16	0.15	0.30	0.18	0.13	0.17	0.23	0.15	0.00	0.11	0.87	0.84	0.29	0.25
0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.09	0.10	0.09	0.06	0.12	0.06	0.08	0.08	0.08	0.10	0.08	0.10	0.11	0.07	0.10	0.07	0.12	0.06	0.07	0.09	0.08	0.03	0.12	0.09	0.08	0.04	0.00	0.05	0.05
0.88	0.76	0.69	1.93	1.91	1.07	0.95	1.01	0.89	1.55	1.45	1.50	1.48	0.99	1.75	1.75	1.00	1.73	0.93	0.95	1.08	172	0.94	1.73	0.98	0.54	0.51	1.22	1.34
0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.00
2.94	3.00	3.00	3.00	2.86	2.87	2.95	3.00	2.96	2.97	2.96	2.89	3.00	3.00	2.89	2.91	3.00	3.00	2.95	2.96	2.89	2.93	2.97	2.55	2.75	3.00	3.00	2.93	2.86
0.24	0.30	0.37	0.31	0.06	0.01	0.16	0.36	0.32	0.08	0.06	0.11	0.24	0.33	0.06	0.20	0.33	0.33	0.24	0.24	0.01	0.02	0.04	0.06	0.04	0.04	0.03	0.03	0.05
0.42	0.46	0.41	0.40	0.76	0.76	0.56	0.28	0.32	0.67	0.66	0.61	0.53	0.30	0.67	0.52	0.32	0.30	0.45	0.48	0.74	0.73	0.72	0.72	0.69	0.61	0.58	0.63	0.60
0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00
0.00	0.01	0.03	0.00	0.00	0.01	0.02	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.01	0.05	0.09	0.05	0.10	0.02	0.05	0.04	0.02	0.00	0.01	0.01	0.00	0.06	0.04	0.07	0.04	0.04	0.05	0.02	0.03	0.03	0.00	0.02	0.04	0.00	0.00	0.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
3.99	3.95	3.92	3.94	3.90	3.98	3.95	3.94	3.97	4.00	3.99	3.99	4.00	3.94	3.96	3.93	3.96	3.96	3.95	3.98	3.97	3.97	4.00	3.98	3.96	4.00	4.00	3.99	4.00
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.66	0.72	0.74	0.73	0.70	0.59	0.65	0.64	0.67	0.44	0.50	0.60	0.37	0.64	0.64	0.66	0.63	0.66	0.66	0.65	0.59	0.65	0.65	0.66	0.62	0.26	0.24	0.53	0.48
0.66	0.72	0.74	0.73	0.70	0.59	0.65	0.64	0.67	0.44	0.50	0.60	0.37	0.64	0.64	0.66	0.63	0.66	0.66	0.65	0.59	0.65	0.65	0.70	0.62	0.26	0.24	0.53	0.48
0.36	0.39	0.48	0.43	0.07	0.02	0.22	0.56	0.51	0.10	0.08	0.15	0.31	0.52	0.08	0.28	0.51	0.53	0.35	0.33	0.01	0.03	0.05	0.08	0.05	0.06	0.05	0.04	0.08

101																									TK2013111	604		
Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky I	ζy	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	Ky	FmI	FmI	FmI	FmI
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
area1	area l	areal	area1	areal	areal	area2	area2	area2	area2	area2	area2	area2	area2	area2	area3	area3	area3	area3	area3	area3	area3	area3	area3	area3	matrix	matrix	matrix	matrix
core light	mantle	mantle1	mantle2	mantle3	rim dark	light core	light core	mantle	mantle	mantle	mantle	mantle	rim	rim	light core	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	rim	rim	rim	rim	rim
14	29	dark 2	light 3	dark 4	5	48	80	49	50	76	77	78	79	51	127	128	129	130	131	132	133	134	135	136	604-38	604-39	604-40	604-43
36.99	36.50	36.43	35.63	35.59	35.72	36.47	36.27	36.51	36.06	36.31	36.78	35.73	35.84	35.90	36.89	36.21	35.50	36.54	35.88	35.84	36.59	36.14	35.87	36.14	35.99	36.21	36.27	36.4
0.30	0.62	0.43	0.42	0.49	0.44	0.85	0.79	0.57	0.37	0.61	0.61	0.38	0.32	0.39	0.16	0.31	0.55	0.57	0.85	0.32	0.37	0.28	0.30	0.47	0.82	1.21	0.67	1.0
0.01	0.01	0.00	0.02	0.00	0.00	0.02	29.90	0.01	0.05	0.00	0.02	0.03	0.00	0.01	0.00	0.05	0.02	0.04	0.00	0.02	0.02	0.03	0.00	0.02	0.03	0.05	0.00	52.0 0.0
10.51	10.37	10.49	10.40	10.35	10.46	10.53	10.46	10.58	10.49	10.51	10.58	10.50	10.46	10.36	10.65	10.45	10.29	10.52	10.42	10.46	10.59	10.43	10.47	10.48	10.45	10.45	10.53	10.4
0.00	0.00	0.00	0.00	0.00	0.00	0.22	1.14	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
10.47	5.76	7.11	9.08 9.08	8.30	8.35	9.04 9.24	9.33	7.22	9.44 9.44	9.22 9.53	7.30	9.56 9.56	8.25	7.66	9.02	6.76 6.76	8.79	8.87 8.87	8.02	7.51	6.73	7.24	8.91	7.35	9.45 9.45	10.53	10.41	10.6
0.00	0.01	0.00	0.00	0.01	0.06	0.00	0.00	0.03	0.01	0.00	0.03	0.00	0.00	0.03	0.06	0.00	0.06	0.00	0.00	0.06	0.02	0.00	0.00	0.01	0.08	0.25	0.13	0.0
4.73	7.41 1.34	1.55	5.86	6.14 1.45	5.97	6.61	0.23	1.29	6.02 1.66	6.66 1.15	1.23	5.92	6.40 1.39	6.26 1.48	6.18 0.69	1.22	6.25	5.70	6.17	5.90 1.48	6.16	6.00	6.32 1.42	6.12	4.58	4.04	4.90	3.8 0.4
0.03	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.10	0.02	0.08	0.00	0.00	0.00	0.00	0.09	0.04	0.09	0.04	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.1
1.72	1.73	1.61	1.37	1.38	1.38	1.75	2.43	1.76	1.30	1.72	1.87	1.32	1.47	1.37	1.63	1.76	1.25	1.26	0.98	1.20	1.12	1.17	1.42	1.11	1.69	1.56	1.77	1.3
0.02	0.03	0.02	0.03	0.00	0.02	0.04	0.01	0.02	0.03	0.01	0.02	0.01	0.01	0.02	0.02	0.03	0.05	0.00	0.01	0.00	0.03	0.04	0.00	0.00	0.03	0.03	0.07	0.0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
3.62	3.51	3.58	3.57	3.54	3.60	3.62	3.60	3.62	3.62	3.59	3.63	3.61	3.59	3.54	3.67	3.59	3.52	3.63	3.59	3.60	3.64	3.59	3.59	3.61	3.55	3.54	3.54	3.5
0.00	0.06	0.03	0.01	0.03	0.00	0.01	0.01	0.02	0.00	0.03	0.02	0.01	0.01	0.03	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.05	0.05	0.08	0.0
100.49	98.54	99.90	99.97	98.89	99.95	100.99	100.42	100.62	100.77	100.69	100.85	100.72	99.77	98.85	101.29	99.28	98.77	100.71	99.55	99.56	100.27	99.02	100.01	99.69	100.17	100.57	101.50	100.2
6.12	6.12	6.04	5.95	5.98	5.94	6.02	6.03	6.00	5.98	6.01	6.04	5.91	5.96	6.02	6.02	6.02	6.00	6.04	5.99	5.96	6.00	6.02	5.96	5.99	5.99	6.02	5.99	6.1
0.04	0.08	0.05	0.05	0.06	0.06	0.11 5.97	0.10 5.86	0.07	0.05	0.08	0.07	0.05	0.04	0.05	0.02	0.04 6.14	0.07	6.26	0.11	0.04 6.49	0.05	0.03	0.04	0.06	0.10	0.15	0.08	0.1
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.0
1.45	0.81	0.98	1.27	1.17	1.16	1.28	1.44	0.99	1.31	1.32	1.00	1.32	1.15	1.07	1.23	0.94	1.24	1.22	1.12	1.04	0.92	1.01	1.24	1.02	1.31	1.47	1.44	1.4
1.17	1.85	1.82	1.46	1.54	1.48	1.63	1.57	1.84	1.49	1.64	1.83	1.46	1.58	1.56	1.50	1.85	1.57	1.40	1.53	1.46	1.51	1.49	1.56	1.51	1.13	1.00	1.20	0.9
0.03	0.24	0.28	0.32	0.26	0.25	0.20	0.04	0.23	0.29	0.20	0.22	0.29	0.25	0.27	0.12	0.22	0.32	0.24	0.32	0.26	0.22	0.24	0.25	0.28	0.10	0.07	0.16	0.0
0.55	0.56	0.52	0.44	0.45	0.00	0.56	0.78	0.56	0.42	0.55	0.60	0.42	0.47	0.44	0.52	0.57	0.41	0.40	0.32	0.39	0.36	0.38	0.46	0.36	0.54	0.50	0.57	0.0
0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.0
0.00	0.00	0.04	0.02	0.04	0.00	0.00	0.00	0.02	0.00	0.04	0.02	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.09	0.0
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.0
6.12	6.12	6.04	5.95	5.98	5.94	6.02	6.03	6.00	5.98	6.01	6.04	5.91	5.96	6.02	6.02	6.02	6.00	6.04	5.99	5.96	6.00	6.02	5.96	5.99	5.99	6.02	5.99	6.1
0.00	0.00	0.00	0.05	0.02	0.06	0.00	0.00	0.00	0.02	0.00	0.00	0.09	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.04	0.01	0.01	0.00	0.01	0.0
0.12	0.12	0.04	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.01	0.04	0.00	0.00	0.02	0.02	0.02	0.00	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.10
6.00	6.00	6.00	6.00	6.00	6.00	5.97	5.86	6.00	6.00	5.96	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.0
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.23	0.15	0.11	0.22	0.24	0.30	0.00	0.00	0.09	0.15	0.00	0.05	0.17	0.23	0.29	0.22	0.14	0.10	0.26	0.24	0.44	0.52	0.44	0.16	0.41	0.43	0.32	0.26	0.3
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.0
0.04	0.08	0.05	0.05	0.06	0.06	0.11	0.10	0.07	0.05	0.08	0.07	0.05	0.04	0.05	0.02	0.04	0.07	0.07	0.11	0.04	0.05	0.03	0.04	0.06	0.10	0.15	0.08	0.1
1.45	1.85	1.82	1.27	1.17	1.10	1.23	1.50	1.84	1.51	1.28	1.83	1.52	1.15	1.07	1.23	1.85	1.24	1.22	1.12	1.04	1.51	1.01	1.24	1.02	1.31	1.47	1.44	0.9
0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.02	0.0
2.88	2.88	2.96	3.00	3.00	3.00	2.98	2.97	3.00	3.00	2.99	2.96	3.00	3.00	2.98	2.98	2.98	3.00	2.96	3.00	3.00	3.00	2.98	3.00	3.00	3.00	2.98	3.00	2.90
0.03	0.24	0.28	0.32	0.26	0.25	0.20	0.04	0.23	0.29	0.20	0.22	0.29	0.25	0.27	0.12	0.22	0.32	0.24	0.32	0.26	0.22	0.24	0.25	0.28	0.10	0.07	0.16	0.0
0.55	0.56	0.52	0.44	0.45	0.44	0.56	0.78	0.56	0.42	0.55	0.60	0.42	0.47	0.44	0.52	0.57	0.41 0.01	0.40	0.32	0.39	0.36	0.38	0.46	0.36	0.54	0.50	0.57	0.4
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
0.41	0.19 1.00	0.20	0.23	0.29 1.00	0.30 1.00	0.23	0.18 1.00	0.21	0.28 1.00	0.24 1.00	0.18 1.00	0.29 1.00	0.28 1.00	0.29 1.00	0.36	0.20 1.00	0.26 1.00	0.35 1.00	0.36	0.35 1.00	0.41	0.37 1.00	0.29 1.00	0.36	0.35	0.42	0.26	0.4
0.00	0.07	0.04	0.02	0.04	0.01	0.01	0.01	0.02	0.00 0.00	0.04 0.00	0.02	0.01	0.01	0.04	0.00	0.01	0.03	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.06	0.06	0.09	0.0 0.0
4.00	3.93	3.96	3.98	3.96	3.99	3.99	3.99	3.98	4.00	3.96	3.98	3.99	3.99	3.96	3.99	3.99	3.97	4.00	4.00	3.99	3.99	4.00	3.98	3.99	3.94	3.94	3.91	3.9
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.45	0.70	0.65	0.53	0.57	0.56	0.56	0.52	0.65	0.53	0.55	0.65	0.52	0.58	0.59	0.55	0.66	0.56	0.53	0.58	0.58	0.62	0.60	0.56	0.60	0.46	0.41	0.46	0.3
0.45	0.70	0.65	0.53	0.57	0.56	0.57	0.55	0.65	0.53	0.56	0.65	0.52	0.58	0.59	0.55	0.66	0.56	0.53	0.58	0.58	0.62	0.60	0.56	0.60	0.46	0.41	0.46	0.3

		TK2013111807												TK2012111806														
FmI	FmI	FmI	FmI	FmI	FmI	FmI	FmI	Ку	Ky	Ку	Ky	Ky	Ky	Ку	Ку	Ку	Ку	Ky	Ky	Grt	Grt	Grt (Grt	Grt	Grt	Grt	Grt (Grt
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
rim	rim	core	core	core	core	core	core	rim	rim	rim	rim	rim	core	core	core	core	core	core	core	-c rim	+c rim	-c rim	rim	rim	rim	rim	rim	rim
604-46	604-48	604-32	604-35	604-37	604-42	604-45	604-47	807-64	807-67	807-69	807-74	807-80	807-65	807-66	807-68	807-73	807-78	807-79	807-81	68	69	70	71	72	73	82	83	84
.36.40 1.11	0.55	36.59 0.80	0.53	36.10 0.97	36.19 0.76	30.05 0.94	30.35 0.78	56.24 0.50	.56.44 1.01	36.21 0.41	0.25	.50.80 0.98	36.50 0.64	0.57	36.62 0.66	0.76	0.85	0.57	56.44 0.78	0.33	0.21	56.85 0.40	0.83	0.59	1.18	0.84	0.48	0.53
32.07	31.80	31.90	32.27	31.42	31.86	32.07	31.44	33.01	33.46	33.24	33.35	32.73	33.16	33.44	31.25	33.03	31.78	32.82	32.50	32.62	33.38	32.23	32.09	31.80	31.71	32.39	32.55	32.55
0.00 10.41	0.00	0.04 10.48	0.04 10.48	0.01 10.41	0.06	0.00 10.52	0.00	0.08	0.01	0.00 10.57	0.00 10.58	0.07 10.61	0.04	0.09	0.00 10.45	0.01	0.02	0.06	0.00 10.60	0.02 10.49	0.06 10.54	0.00 10.45	0.09	0.02	0.00 10.49	0.00 10.47	0.00	0.01 10.41
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.22	10.29 10.29	8.28 8.28	8.45 8.45	8.69 8.69	9.74 9.74	8.74 8.74	7.59 7.59	5.75 5.75	5.35 5.35	5.57 5.57	6.03 6.03	5.59 5.59	6.83 6.83	6.55 6.55	6.51 6.51	6.26 6.26	6.38 6.38	6.11 6.11	6.79 6.79	8.41 8.41	8.74 8.74	8.57 8.57	9.63 9.63	9.29 9.29	10.10 10.10	10.69 10.69	9.28 9.28	8.75 8.75
0.24	0.05	0.00	0.00	0.00	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.08	0.11	0.02	0.13	0.14
0.44	0.46	0.55	0.51	0.62	0.35	0.53	0.65	1.91	1.76	1.79	1.83	1.73	1.24	1.52	0.91	1.69	0.99	1.49	1.82	0.62	0.31	0.49	0.43	0.42	0.29	0.42	0.19	0.20
0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.00	0.03	0.03	0.00	0.13	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.03	0.00	0.00	0.00	0.04	0.00	0.08
0.06	0.05	0.05	0.01	0.03	0.02	0.00	0.03	0.07	0.07	0.07	0.09	0.05	0.04	0.05	0.06	0.02	0.04	0.05	0.05	0.06	0.04	0.06	0.07	0.04	0.04	0.05	0.07	0.03
0.14	0.23	0.11	0.05	0.06	0.03	0.10	0.07	0.08	0.09	0.06	0.05	0.01	0.02	0.03	0.10	0.11	0.08	0.11	0.04	0.17	0.15	0.14	0.09	0.11	0.17	0.21	0.12	0.10
3.52	3.49	3.56	3.59	3.56	3.54	3.58	3.55	3.59	3.64	3.62	3.63	3.65	3.65	3.63	3.55	3.58	3.59	3.59	3.63	3.54	3.56	3.53	3.59	3.53	3.54	3.51	3.54	3.54
100.17 0.06	100.70 0.10	100.29 0.05	100.44 0.02	99.99 0.03	99.61 0.01	101.06 0.04	99.41 0.03	99.61 0.03	100.83 0.04	99.65 0.02	100.09 0.02	100.28 0.01	100.10 0.01	100.16 0.01	99.05 0.04	99.75 0.05	99.96 0.03	100.07 0.05	100.71 0.02	100.22 0.07	100.68 0.06	100.08 0.06	101.28 0.04	99.96 0.05	101.28 0.07	100.79 0.09	100.34 0.05	99.66 0.04
100.11	100.60	100.25	100.42	99.96	99.60	101.02	99.38	99.57	100.80	99.63	100.07	100.28	100.09	100.15	99.01	99.70	99.93	100.02	100.69	100.15	100.61	100.02	101.24	99.91	101.21	100.70	100.29	99.62
6.08	6.13	6.07	6.09	6.03	6.10	6.06	6.07	5.99	5.92	5.96	5.99	6.03	5.98	5.98	6.09	6.00	6.12	5.99	5.98	6.11	6.10	6.13	6.09	6.10	6.05	5.90	6.20	6.13
0.14 6.31	6.23	6.23	6.31	0.12 6.18	6.33	0.12 6.25	0.10 6.19	0.06 6.43	0.12 6.41	0.05 6.44	0.03 6.45	6.32	0.08 6.41	0.07 6.48	6.12	0.09 6.43	0.11 6.18	6.35	6.28	0.04 6.37	0.03 6.49	0.05 6.32	0.10 6.24	6.26	0.15 6.19	0.10 6.34	6.38	6.41
0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
0.03	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.02
1.01 0.08	1.14 0.08	1.44 0.10	1.36	1.45	1.09	1.36	0.12	1.72 0.34	0.31	1.78	1.69 0.32	0.30	0.22	0.27	1.80 0.16	0.30	1.72 0.14	1.74 0.26	1.71 0.32	1.31 0.11	1.17	1.31 0.09	1.22 0.08	1.25	1.20	1.17 0.07	0.03	1.15 0.04
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
0.48	0.09	0.07	0.74	0.73	0.00	0.70	0.72	0.20	0.20	0.27	0.27	0.20	0.28	0.29	0.04	0.20	0.01	0.01	0.01	0.04	0.02	0.03	0.07	0.09	0.01	0.01	0.03	0.04
0.07	0.12	0.06	0.03	0.03	0.01	0.05	0.04 0.00	0.04	0.04 0.00	0.03	0.03	0.01	0.01	0.01	0.05	0.06	0.04	0.06	0.02	0.09	0.08 0.00	0.07 0.00	0.05	0.06	0.09	0.11 0.00	0.06	0.05
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.08	6.12	6.07	6.00	6.02	6.10	6.06	6.07	5 00	5.02	5.06	5.00	6.02	5.00	5.09	6.00	6.00	6.12	5.00	£ 09	6.11	6.10	6.12	6.00	6 10	6.05	5.00	6 20	6.12
0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.01	0.08	0.04	0.01	0.00	0.02	0.02	0.09	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.20	0.00
6.08	6.13	6.07	6.09	6.03	6.10	6.06	6.07	6.00	6.00	6.00	6.00	6.03	6.00	6.00	6.09	6.00	6.12	6.00	6.00	6.11	6.10	6.13	6.09	6.10	6.05	6.00	6.20	6.13
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.31	0.23	0.23	0.31	0.18	0.33	0.25	0.19	0.41	0.33	0.40	0.45	0.32	0.39	0.46	0.12	0.42	0.18	0.34	0.26	0.37	0.49	0.32	0.24	0.26	0.19	0.24	0.38	0.41
0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
0.14	0.07	0.10	0.07	0.12	0.10	0.12	0.10	0.06	0.12	0.05	0.03	0.12	0.08	0.07	0.08	0.09	0.11 0.88	0.07	0.10	0.04	0.03	0.05	1.33	1.30	0.15	0.10	0.06	0.07
1.01	1.14	1.44	1.36	1.45	1.09	1.36	1.57	1.72	1.81	1.78	1.69	1.75	1.58	1.56	1.80	1.61	1.72	1.74	1.71	1.31	1.17	1.31	1.22	1.25	1.20	1.17	1.06	1.15
2.92	2.87	0.00 2.93	2.91	2.97	2.90	0.01 2.94	0.00 2.93	0.00 3.00	0.00 3.00	0.00 3.00	0.00 3.00	2.97	0.00 3.00	0.00 3.00	2.91	0.01 3.00	2.88	0.00 3.00	0.00 3.00	2.89	2.90	2.87	2.91	0.01 2.90	2.95	0.00 3.00	2.80	2.87
0.08	0.08	0.10	0.09	0.11	0.06	0.09	0.12	0.34	0.31	0.32	0.32	0.30	0.22	0.27	0.16	0.30	0.14	0.26	0.32	0.11	0.05	0.09	0.08	0.08	0.05	0.07	0.03	0.04
0.48	0.59	0.67	0.74	0.75	0.77	0.76	0.72	0.26	0.26	0.27	0.27	0.26	0.28	0.29	0.54	0.26	0.55	0.35	0.33	0.54	0.62	0.65	0.67	0.69	0.73	0.61	0.65	0.64
0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.43	0.32	0.22	0.17	0.13	0.16	0.15	0.16	0.38	0.42	0.40	0.39	0.42	0.49	0.43	0.29	0.43	0.29	0.38	0.33	0.33	0.32	0.25	0.24	0.22	0.21	0.30	0.30	0.31
		1.00		1.00		1.00					1.00	1.00				1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00	
0.07	0.12 0.00	0.06 0.00	0.03	0.03	0.01 0.00	0.05	0.04 0.00	0.04 0.00	0.04 0.00	0.03	0.03	0.01 0.00	0.01	0.01	0.05	0.06	0.04 0.00	0.06	0.02	0.09 0.00	0.08 0.00	0.07 0.00	0.05	0.06 0.00	0.09 0.00	0.11 0.00	0.06	0.05
3.93	3.88	3.94	3.97	3.97	3.99	3.95	3.96	3.96	3.96	3.97	3.97	3.99	3.99	3.99	3.95	3.94	3.96	3.94	3.98	3.91	3.92	3.93	3.95	3.94	3.91	3.89	3.94	3.95
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.41	0.44	0.56	0.54	0.54	0.44	0.53	0.60	0.68	0.71	0.70	0.67	0.70	0.63	0.63	0.66	0.65	0.66	0.67	0.65	0.53	0.49	0.52	0.48	0.49	0.46	0.44	0.45	0.48
0.14	0.12	0.13	0.11	0.13	0.08	0.11	0.14	0.57	0.54	0.54	0.55	0.54	0.43	0.48	0.23	0.53	0.20	0.43	0.49	0.17	0.08	0.12	0.10	0.10	0.07	0.11	0.05	0.05

,	Grt (Grt	Grt	Grt (Grt	Grt	Grt	Grt	Grt	Grt (Grt (Grt	Grt (Grt (Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt	Grt						
	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
	rim	+c rim	-c rim	rim	rim	rim	rim	rim	+c rim	+c rim	rim	rim	-c rim	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle							
	85	86	87	88	89	91	100	101	102	103	113	114	115	74	75	76	79	80	92	93	97	98	99	105	106	107	109	110	111
	36.80	37.01	36.79	36.44	36.60	37.12	37.05	36.44	36.83	36.89	36.62	36.72	36.68	36.68	36.01	35.90	36.36	36.93	36.01	35.74	37.00	36.61	36.57	37.13	36.59	36.44	35.53	35.45	36.35
	0.40	0.25	0.59	0.70	0.88	0.95	0.45	0.67	0.40	0.46	0.95	0.72	1.03	1.13	1.35	1.46	0.89	0.42	1.23	1.12	0.34	0.60	0.57	0.46	0.67	0.67	1.03	1.23	1.41
	52.94 0.00	0.00	0.00	0.03	0.01	0.02	52.64 0.04	0.04	0.06	32.84 0.05	0.01	32.24 0.01	0.03	0.04	0.02	0.06	0.03	0.02	0.04	0.05	32.73 0.00	0.04	52.29 0.04	52.49 0.02	0.00	32.68 0.02	50.68 0.01	0.02	30.99 0.00
	10.44	10.40	10.39	10.39	10.52	10.57	10.60	10.52	10.49	10.52	10.55	10.55	10.56	10.46	10.41	10.47	10.33	10.58	10.44	10.35	10.48	10.53	10.49	10.62	10.53	10.59	10.41	10.30	10.44
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8.67	8.42	8.22	8.97	9.69	10.60	10.66	9.65	9.05	9.45	10.06	9.90	9.19	10.36	10.22	11.30	9.45	10.53	10.41	10.22	10.61	10.22	10.29	10.65	10.02	11.00	13.89	10.50	10.39
	0.03 4.61	0.00 4.34	0.00	0.09 5.04	0.11	0.10	0.09	0.00 4.58	0.08	0.00 4.64	0.09 4.99	0.00	0.00	0.07	0.08	0.11 4.56	0.08 4.58	0.25	0.13	0.14	0.07 3.84	0.24	0.05	0.13	0.07	0.06	0.03	0.00 4.50	0.15
	0.19	0.21	0.52	0.50	0.37	0.46	0.16	0.22	0.29	0.26	0.28	0.46	0.47	0.72	1.01	0.74	0.56	0.41	0.91	1.08	0.46	0.44	0.46	0.34	0.44	0.35	0.40	0.77	1.11
	0.00	0.00	0.04	0.00	0.00	0.12	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.13	0.00	0.00	0.00	0.00	0.00	0.07	0.16	0.01	0.06	0.04	0.08	0.00	0.00	0.01	0.03
	0.05	0.19	0.08	0.04	0.05	0.06	0.03	0.05	0.05	0.05	0.07	0.03	0.08	0.06	0.06	0.07	0.03	0.03	0.07	0.05	0.02	0.06	0.05	0.04	0.03	0.07	0.22	0.05	0.02
	0.12	0.09	0.08	0.14	0.19	0.20	0.10	0.06	0.07	0.11	0.17	0.11	0.10	0.18	0.21	0.19	0.11	0.12	0.18	0.17	0.11	0.14	0.23	0.16	0.20	0.14	0.23	0.18	0.21
	3.54	3.54	3.54	3.51	3.54	3.55	3.60	3.60	3.58	3.57	3.56	3.59	3.59	3.52	3.49	3.52	3.51	3.59	3.51	3.49	3.56	3.56	3.51	3.59	3.53	3.58	3.48	3.47	3.50
	99.56	99.46	99.64	99.82	101.28	102.44	101.75	100.88	100.27	100.75	101.58	101.47	101.47	101.43	100.65	101.59	99.24	101.54	100.97	100.15	100.77	101.08	101.03	102.17	101.08	101.94	101.49	99.78	101.22
	99.51	99.43	99.61	99.76	101.21	102.36	101.71	100.85	100.24	100.70	101.51	101.43	101.42	101.36	100.56	101.51	99.19	101.49	100.89	100.07	100.73	101.02	100.93	102.11	100.99	101.88	101.39	99.71	101.14
	6.13	6.19	6.15	6.10	6.05	6.10	6.08	6.02	6.10	6.09	6.03	6.05	6.04	6.10	6.01	5.96	6.12	6.07	6.00	6.00	6.13	6.04	6.06	6.08	6.04	5.98	5.93	5.98	6.05
	0.05	0.03	0.07	0.09	0.11	0.12	0.06	0.08	0.05	0.06	0.12	0.09	0.13	0.14	0.17	0.18	0.11	0.05	0.15	0.14	0.04	0.07	0.07	0.06	0.08	0.08	0.13	0.16	0.18
	6.47 0.00	6.52 0.00	6.35	6.29 0.00	6.23 0.00	6.05 0.00	6.31 0.01	6.43 0.01	6.45 0.01	6.39 0.01	6.23 0.00	6.26 0.00	6.34 0.00	6.07 0.00	6.13 0.00	6.14 0.01	6.28 0.00	6.40 0.00	6.16 0.01	6.09 0.01	6.39 0.00	6.43 0.01	6.30 0.01	6.27 0.00	6.45 0.00	6.32 0.00	6.04 0.00	6.25 0.00	6.08
	1.21	1.18	1.15	1.25	1.34	1.46	1.46	1.33	1.25	1.30	1.39	1.37	1.26	1.44	1.43	1.57	1.33	1.45	1.45	1.43	1.47	1.41	1.43	1.46	1.38	1.52	1.94	1.48	1.45
	1.14	1.08	1.28	1.26	1.26	1.25	1.08	1.13	1.12	1.14	1.22	1.23	1.23	1.24	1.25	1.13	1.15	0.03	1.22	1.31	0.01	1.00	1.13	1.12	1.03	1.08	0.00	1.13	1.22
	0.03	0.04	0.09	0.09	0.07	0.08	0.03	0.04	0.05	0.05	0.05	0.08	0.08	0.13	0.18	0.13	0.10	0.07	0.16	0.19	0.08	0.08	0.08	0.06	0.08	0.06	0.07	0.14	0.20
	0.57	0.62	0.67	0.68	0.71	0.75	0.61	0.64	0.58	0.61	0.70	0.67	0.64	0.69	0.53	0.60	0.55	0.50	0.57	0.54	0.45	0.48	0.59	0.60	0.51	0.59	0.56	0.61	0.54
	0.01	0.04	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	6.13	6.19	6.15	6.10	6.05	6.10	6.08	6.02	6.10	6.09	6.03	6.05	6.04	6.10	6.01	5.96	6.12	6.07	6.00	6.00	6.13	6.04	6.06	6.08	6.04	5.98	5.93	5.98	6.05
	0.00 6.13	0.00 6.19	0.00 6.15	0.00 6.10	0.00 6.05	0.00 6.10	0.00 6.08	0.00 6.02	0.00 6.10	0.00 6.09	0.00 6.03	0.00 6.05	0.00 6.04	0.00 6.10	0.00 6.01	0.04 6.00	0.00 6.12	0.00 6.07	0.00 6.00	0.00 6.00	0.00 6.13	0.00 6.04	0.00 6.06	0.00 6.08	0.00 6.04	0.02 6.00	0.07 6.00	0.02 6.00	0.00 6.05
	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	0.47	0.52	0.35	0.29	0.23	0.05	0.31	0.43	0.45	0.39	0.23	0.26	0.34	0.07	0.13	0.10	0.28	0.40	0.16	0.09	0.39	0.43	0.30	0.27	0.45	0.30	0.00	0.23	0.08
	0.05	0.03	0.07	0.09	0.11	0.12	0.06	0.08	0.05	0.06	0.12	0.09	0.13	0.14	0.17	0.18	0.11	0.05	0.15	0.14	0.04	0.07	0.07	0.06	0.08	0.08	0.13	0.16	0.18
	1.21	1.18	1.15	1.25	1.34	1.46	1.46	1.33	1.25	1.30	1.39	1.37	1.26	1.44	1.43	1.57	1.33	1.45	1.45	1.43	1.47	1.41	1.43	1.46	1.38	1.52	1.94	1.48	1.45
	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.03	0.02	0.02	0.01	0.03	0.01	0.02	0.01	0.01	0.00	0.00	0.02
	2.87	2.81	2.85	2.90	2.95	2.90	2.92	2.98	2.90	2.91	2.97	2.95	2.96	2.90	2.99	3.00	2.88	2.93	3.00	3.00	2.87	2.96	2.94	2.92	2.96	3.00	3.03	3.00	2.95
	0.03	0.04	0.09	0.09	0.07	0.08	0.03	0.04	0.05	0.05	0.05	0.08	0.08	0.13	0.18	0.13	0.10	0.07	0.16	0.19	0.08	0.08	0.08	0.06	0.08	0.06	0.07	0.14	0.20
	0.57	0.62	0.67	0.08	0.71	0.75	0.01	0.64	0.58	0.01	0.70	0.67	0.64	0.69	0.55	0.60	0.55	0.50	0.57	0.54	0.45	0.48	0.59	0.60	0.51	0.59	0.56	0.01	0.54
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.06	0.05	0.04	0.08	0.10	0.10	0.05	0.03	0.04	0.06	0.09	0.05	0.05	0.09	0.11	0.10	0.06	0.06	0.09	0.09	0.06	0.07	0.12	0.08	0.11	0.07	0.12	0.09	0.11
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	0.49	0.48	0.53	0.50	0.49	0.46	0.42	0.46	0.47	0.47	0.47	0.47	0.49	0.46	0.47	0.42	0.46	0.41	0.46	0.48	0.39	0.41	0.44	0.44	0.43	0.42	0.33	0.43	0.46
	0.49	0.48	0.53	0.50	0.49	0.46	0.42	0.46	0.47	0.47	0.47	0.47	0.49	0.46	0.47	0.42	0.46	0.41	0.46	0.48	0.39	0.41	0.44	0.44	0.43	0.42	0.33	0.43	0.46
	0.05	0.06	0.12	0.12	0.09	0.10	0.04	0.06	0.08	0.07	0.06	0.11	0.12	0.16	0.25	0.18	0.16	0.13	0.22	0.27	0.15	0.14	0.12	0.09	0.13	0.09	0.11	0.19	0.27

							TK2012112001																					
Grt	Grt (Grt	Grt	Grt	Grt	Grt	St	St S	St :	St	St S	St	St	St S	St	St St	St St	St S	St S	St S	it i	St S	it S	St S	St	St	St	St
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	Grt inc	Grt inc	Grt inc	Grt inc	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	Grt inc	Grt inc
core	core	core	core	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	rim	core	core	core	core	core	rim	rim
94	95	96	52	54	57	58	40	43	45	46	48	50	53	54	58	59	60	64	66	68	70	38	41	51	55	61	15	17
36.32	30.38 0.44	30.88 0.47	0.76	0.57	35.89 0.99	54.72 0.88	0.50	0.64	0.49	36.28 0.57	0.62	0.74	35.34 0.60	0.43	36.74 0.61	0.52	0.28	0.36	30.57 0.55	0.68	0.44	0.39	36.69 0.79	36.54 0.55	36.50 0.66	0.34	0.60	0.35
31.08	31.94	32.39	31.77	32.07	30.49	33.53	31.94	32.47	32.26	32.37	32.90	32.71	32.71	32.41	32.69	32.16	31.68	32.39	32.49	32.90	33.20	32.11	32.47	30.77	30.43	30.85	31.61	30.59
0.00	0.02	0.00	0.02	0.03	0.04	0.00	0.09	0.06	0.04	0.05	0.07	0.11	0.10	0.08	0.01	0.00	0.04	0.04	0.08	0.12	0.00	0.08	0.03	0.05	0.24	0.01	0.02	0.04
10.41	10.41	10.51	10.36	10.50	10.39	10.36	10.51	10.52	10.57	10.44	10.54	10.58	10.36	10.41	10.53	10.58	10.42	10.51	10.52	10.62	10.63	10.56	10.51	10.41	10.41	10.42	10.52	10.31
10.25	10.78	9.98	13.12	10.45	10.78	11.08	6.68	6.60	6.74	6.38	6.10	6.43	6.21	6.27	6.52	6.84	7.70	6.84	6.04	6.08	6.98	4.43	8.73	6.94	7.09	8.49	7.96	8.09
10.25	10.78	9.98	13.12	10.45	10.78	11.08	6.68	6.60	6.74	6.38	6.10	6.43	6.21	6.27	6.52	6.84	7.70	6.84	6.04	6.08	6.98	4.43	8.73	6.94 0.07	7.16	8.49	7.96	8.09
5.00	4.18	4.61	2.80	4.66	5.24	3.31	7.14	6.90	7.08	6.62	6.94	6.75	6.60	6.61	6.52	7.19	6.51	6.79	6.93	6.84	6.42	8.05	5.26	7.21	7.23	6.70	6.26	6.55
0.47	0.16	0.09	0.23	0.51	0.76	0.35	1.45	1.21	1.38	0.98	1.12	1.06	1.00	1.07	0.94	1.20	1.25	1.14	0.91	1.10	1.07	0.15	0.81	0.87	1.12	0.80	1.03	1.06
2.03	2.11	1.82	2.01	1.76	2.07	1.96	1.64	1.81	1.52	1.60	1.79	1.73	1.69	1.63	1.71	1.70	1.74	1.63	1.78	1.89	1.72	2.25	1.54	1.95	1.90	1.98	1.98	1.85
0.04	0.07	0.02	0.00	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.01	0.03	0.03	0.03	0.05	0.00	0.04	0.04	0.04	0.03	0.03	0.02	0.00	0.02	0.03	0.00	0.03	0.00
0.16	0.15	0.09	0.17	0.20	0.22	0.18	0.09	0.06	0.12	0.06	0.05	0.12	0.02	0.07	0.11	0.09	0.17	0.07	0.07	0.11	0.05	0.20	0.02	0.12	0.12	0.08	0.05	0.14
3.51	3.52	3.58	3.49	3.53	3.47	3.49	3.58	3.60	3.59	3.57	3.61	3.59	3.56	3.55	3.58	3.60	3.51	3.59	3.59	3.61	3.64	3.55	3.61	3.53	3.53	3.56	3.60	3.49
100.50	100.46	100.64	100.97	101.11	100.69	100.37	100.07	100.03	100.40	98.98 0.03	100.09	100.71	98.23	98.75 0.03	100.04	100.41	99.58 0.07	99.84 0.03	99.75 0.03	101.07	101.06	99.11 0.08	100.50	99.06 0.05	99.32 0.05	99.51 0.03	100.78	98.5
100.43	100.40	100.60	100.90	101.03	100.59	100.29	100.03	100.01	100.35	98.96	100.08	100.65	98.22	98.71	100.00	100.37	99.50	99.81	99.72	101.03	101.04	99.02	100.49	99.01	99.27	99.48	100.76	98.47
6.07	6.11	6.10	6.05	6.05	6.01	5.82	6.02	5.97	6.01	6.04	5.98	6.02	5.93	6.04	6.06	6.01	6.03	6.02	6.04	6.05	6.01	6.12	6.06	6.10	6.10	6.04	6.13	6.08
0.13	0.06	0.06	0.10	0.07	0.12	0.11	0.06	0.08	0.06	0.07	0.08	0.09	0.08	0.05	0.08	0.06	0.04	0.04	0.07	0.08	0.05	0.05	0.10	0.07	0.08	0.04	0.07	0.04
0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.03	0.00	0.00	0.00
1.43	1.51	1.38	1.84	1.45	1.51	1.55	0.92	0.91	0.93	0.89	0.84	0.88	0.87	0.88	0.90	0.94	1.07	0.95	0.83	0.83	0.95	0.61	1.21	0.97	1.00	1.18	1.10	1.14
1.24	1.04	1.14	0.70	1.15	1.31	0.83	1.76	1.70	1.74	1.64	1.71	1.65	1.65	1.64	1.60	1.76	1.62	1.67	1.71	1.67	1.56	1.97	1.30	1.79	1.80	1.66	1.54	1.65
0.08	0.03	0.02	0.04	0.09	0.14	0.06	0.26	0.21	0.24	0.17	0.20	0.19	0.18	0.19	0.17	0.21	0.22	0.20	0.16	0.19	0.19	0.03	0.14	0.16	0.20	0.14	0.18	0.19
0.66	0.68	0.58	0.65	0.56	0.67	0.64	0.53	0.58	0.49	0.52	0.57	0.55	0.55	0.53	0.55	0.54	0.56	0.52	0.57	0.60	0.55	0.72	0.49	0.63	0.61	0.64	0.63	0.60
0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.07	6.11	6.10	6.05	6.05	6.01	5.82	6.02	5.97	6.01	6.04	5.98	6.02	5.93	6.04	6.06	6.01	6.03	6.02	6.04	6.05	6.01	6.12	6.06	6.10	6.10	6.04	6.13	6.08
0.00	0.00 6.11	0.00 6.10	0.00	0.00	0.00	0.18	0.00	0.03	0.00 6.01	0.00 6.04	0.02	0.00	0.07	0.00 6.04	0.00	0.00 6.01	0.00	0.00	0.00 6.04	0.00	0.00 6.01	0.00	0.00	0.00 6.10	0.00 6.10	0.00 6.04	0.00 6.13	0.00
0.07		0.10	0.02	0.05	0.01	0.00	0.02	0.00	0.01	0.07	0.00	0.02	0.00	0.07	0.00	0.01	0.05	0.02	0.07	0.05	0.01		0.00		0.10	0.07	0.12	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.99	6.00	6.00	6.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.12	0.28	0.31	0.28	0.25	0.01	0.45	0.22	0.29	0.25	0.35	0.37	0.33	0.39	0.38	0.36	0.23	0.23	0.31	0.33	0.34	0.40	0.23	0.33	0.05	0.00	0.06	0.15	0.0
0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.03	0.00	0.00	0.00
1.43	1.51	1.38	1.84	1.45	1.51	1.55	0.92	0.91	0.93	0.89	0.84	0.88	0.87	0.88	0.90	0.94	1.07	0.95	0.83	0.83	0.95	0.61	1.21	0.97	0.99	1.18	1.10	1.14
1.24	1.04	1.14	0.70	1.15	1.31	0.83	1.76	1.70	1.74	1.64	1.71	1.65	1.65	1.64	1.60	1.76	1.62	1.67	1.71	1.67	1.56	1.97	1.30	1.79	1.80	1.66	1.54	1.65
2.93	2.89	2.90	2.95	2.95	2.99	3.00	2.98	3.00	2.99	2.96	3.00	2.98	3.00	2.96	2.94	2.99	2.97	2.98	2.96	2.95	2.99	2.88	2.94	2.90	2.90	2.96	2.87	2.92
0.08	0.03	0.02	0.04	0.09	0.14	0.06	0.26	0.21	0.24	0.17	0.20	0.19	0.18	0.19	0.17	0.21	0.22	0.20	0.16	0.19	0.19	0.03	0.14	0.16	0.20	0.14	0.18	0.19
0.66	0.68	0.58	0.65	0.56	0.67	0.64	0.53	0.58	0.49	0.52	0.57	0.55	0.55	0.53	0.55	0.54	0.56	0.52	0.57	0.60	0.55	0.72	0.49	0.63	0.61	0.64	0.63	0.60
0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00
0.24 1.00	0.27 1.00	0.39 1.00	0.30 1.00	0.34 1.00	0.18 1.00	0.29 1.00	0.21 1.00	0.20 1.00	0.27 1.00	0.30 1.00	0.22 1.00	0.25 1.00	0.27 1.00	0.28 1.00	0.27 1.00	0.25 1.00	0.20 1.00	0.26 1.00	0.25 1.00	0.20 1.00	0.26 1.00	0.25 1.00	0.36 1.00	0.21 1.00	0.18 1.00	0.22 1.00	0.18 1.00	0.21
0.08	0.08	0.05	0.00	0.10	0.12	0.10	0.05	0.03	0.06	0.03	0.02	0.06	0.01	0.04	0.06	0.05	0.00	0.04	0.04	0.05	0.02	0.10	0.01	0.06	0.06	0.04	0.03	0.07
0.00	0.08	0.00	0.09	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.04	0.00	0.00	0.09	0.04	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.00	0.00
3.91	3.92	3.95	3.91	3.90	3.88	3.90	3.95	3.97 4.00	3.94	3.97	3.98	3.94	3.99	3.96 4.00	3.94	3.95	3.91	3.96	3.96	3.94	3.97 4.00	3.90	3.99	3.94	3.94	3.96	3.97	3.93
															1.50	1.50								1.00		1.50		
0.46	0.41	0.45	0.28	0.44	0.46	0.35	0.66	0.65	0.65	0.65	0.67	0.65	0.65	0.65	0.64	0.65	0.60	0.64	0.67	0.67	0.62	0.76	0.52	0.65	0.64	0.58	0.58	0.59
0.46	0.41	0.45	0.28	0.44	0.46	0.35	0.00	0.05	0.05	0.05	0.67	0.05	0.05	0.05	0.64	0.05	0.00	0.04	0.67	0.07	0.62	0.76	0.52	0.05	0.04	0.58	0.58	0.59

	TK2013112109B																												
St S	it S	St	St	St	St	St	St	St	St 5	St	St	St	St	St	St	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky								
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	
Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	
rim	rim	rim	rim	rim	rim	rim	core	core	core	core	core	core	core	core	core	core	rim												
19 36.23	20 36.77	22 36.58	27 36.09	28 35.64	31 36.22	36 36.10	16 36.44	18 36.61	21 35.51	25 36.36	26 34.98	29 36.04	32 36.19	35 36.68	37 36.45	9B-34 35.47	9B-35 36.33	9B-36 36.73	9B-37 36.84	9B-38 35.54	9B-39 36.48	9B-40 36.00	9B-41 35.95	9B-42 35.8	9B-6 1 36.17	9B-7 35.84	9B-16 36.08	9B-17 34.7	
0.60	0.36	0.62	0.69	0.63	0.27	0.44	0.34	0.66	1.06	0.57	1.16	1.05	0.53	0.50	0.42	0.41	0.64	0.68	0.00	0.75	0.66	0.80	0.73	0.42	2 0.59	0.55	0.46	0.7	
31.60 0.09	31.28	31.41	30.21	29.81 0.03	30.74	30.57	32.34	33.11 0.04	31.29 0.04	30.58	31.95	28.59	30.44 0.10	30.52	30.66 0.05	34.66 0.00	30.64	31.00	32.46	32.77	30.77	30.13	31.01	32.0	5 31.01 7 0.02	31.12	31.31	31.1	
10.57	10.38	10.43	10.34	10.24	10.32	10.41	10.41	10.48	10.18	10.32	10.10	10.17	10.39	10.38	10.32	10.44	10.42	10.48	10.45	10.40	10.51	10.39	10.43	10.4	7 10.44	10.39	10.38	10.2	
0.00 8.74	0.00 7.93	0.00 7.95	0.11 8.11	0.29 9.08	0.00 8.02	0.00 9.05	0.00 8.45	0.00 8.69	0.00 11.30	0.00 8.29	0.00 12.95	1.87 9.60	0.00 8.97	0.00 10.37	0.00 10.14	0.00 13.78	0.00 10.71	0.00	0.00 10.34	0.00	0.03	0.46	0.00 10.33	0.0 9.4) 0.00 6 10.85	0.00	0.00 10.42	0.0 13.8	
8.74	7.93	7.95	8.21	9.34	8.02	9.05	8.45	8.69	11.30	8.29	12.95	11.28	8.97	10.37	10.14	13.78	10.71	10.98	10.34	12.22	11.02	10.90	10.33	9.4	5 10.85	10.33	10.42	13.8	
6.66	6.01	6.19	6.76	6.23	6.44	6.54	5.25	4.67	3.46	6.15	1.80	5.17	6.44	5.26	5.08	1.26	5.38	4.89	4.25	3.11	5.45	5.64	5.50	5.6	8 5.29	5.35	5.06	3.3	
1.18 0.00	0.70	0.67	0.87	0.88	0.90	0.90	0.55	0.52	0.34 0.00	0.63	0.89	0.24	0.74 0.11	0.37	0.30	0.20	1.12	0.34	0.24	0.28	1.23	0.02	1.55	1.64	4 0.77 0 0.00	1.44 0.14	0.80	1.5	
1.90	2.11	2.01	2.16	2.12	2.04	2.10	1.81	1.64	2.12	2.10	1.77	2.42	2.11	2.19	2.23	1.89	1.57	2.02	1.65	2.00	1.68	1.37	1.23	1.1	5 1.71	1.48	1.68	1.5	
0.04	0.02	0.02	0.02	0.01	0.10	0.03	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.03	0.02	0.03	0.03	0.02	0.05	0.03	0.01	0.02	0.04	0.0	9 0.02	0.03	0.01	0.0	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01 3.49	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.0	i 0.00 7 3.58	0.00	0.00	0.0	
101.32	99.22	99.68	99.15	98.51	98.79	99.91	99.43	100.09	98.91	98.79	99.27	98.61	99.72	100.06	99.26	101.82	100.56	100.94	100.00	100.90	101.61	100.68	100.52	100.5) 100.49	100.43	99.83	100.7	
101.27	99.19	99.62	99.13	98.49	98.75	99.88	99.42	100.02	98.91	98.77	99.27	98.61	99.63	100.02	99.26	101.82	100.54	100.93	100.00	100.90	101.61	100.63	100.50	100.4	6 100.47	100.40	99.82	100.7	
5.96	6.16	6.09	6.07	6.05	6.10	6.03	6.08	6.07	6.06	6.12	6.02	6.16	6.06	6.14	6.14	5.91	6.06	6.09	6.13	5.94	6.03	6.02	5.99	5.94	4 6.02	5.99	6.04	5.8	
0.07 6.12	0.05 6.18	0.08 6.17	0.09	0.08 5.96	0.03	0.05	0.04	0.08 6.47	0.14	0.07 6.07	0.15 6.48	0.14	0.07 6.00	0.06	0.05	0.05	0.08	0.08	0.00	0.09	0.08	0.10	0.09	0.0	5 0.07 7 6.08	0.07	0.06	0.0	
0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.0	0.00	0.00	0.01	0.0	
0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.02	0.03	0.02	0.00	0.01	0.0	1 0.00	0.02	0.00	0.0	
0.21	1.50 0.13	1.54 0.12	1.69 0.16	1.58 0.16	1.62 0.16	1.63 0.16	1.31 0.10	1.15 0.09	0.88	1.54 0.11	0.46 0.16	1.32	1.61 0.13	1.31 0.07	1.27	0.31 0.04	1.34 0.20	0.06	1.05	0.78	1.34	0.32	1.37	1.4	i 1.31 9 0.14	0.26	1.26	0.8	
0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0) 0.00 7 0.55	0.01	0.00	0.0	
0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.0	1 0.00	0.01	0.00	0.0	
0.07	0.03	0.00	0.02	0.00	0.00	0.04	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.0	0.02 0.00	0.04	0.02	0.0	
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.0	3.00	3.00	3.00	3.0	
5.96	6.16	6.09	6.07	6.05	6.10	6.03	6.08	6.07	6.06	6.12	6.02	6.16	6.06	6.14	6.14	5.91	6.06	6.09	6.13	5.94	6.03	6.02	5.99	5.9	4 6.02	5.99	6.04	5.8	
0.04 6.00	0.00 6.16	0.00 6.09	0.00 6.07	0.00 6.05	0.00 6.10	0.00 6.03	0.00 6.08	0.00 6.07	0.00 6.06	0.00 6.12	0.00 6.02	0.00 6.16	0.00 6.06	0.00 6.14	0.00 6.14	0.09 6.00	0.00 6.06	0.00 6.09	0.00 6.13	0.06 6.00	0.00 6.03	0.00	0.01 6.00	0.0 6.00	5 0.00) 6.02	0.01 6.00	0.00 6.04	0.1 6.00	
6.00	6.00	6.00	5 99	5.96	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.76	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5 94	6.00	6.0	0 6.00	6.00	6.00	6.0	
0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.0) 0.00) 0.00	0.00	0.00	0.0	
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	
0.08	0.18	0.17	0.00	0.00	0.10	0.02	0.36	0.47	0.30	0.07	0.48	0.00	0.00	0.02	0.09	0.71	0.02	0.06	0.36	0.39	0.00	0.00	0.08	0.2	2 0.08	0.13	0.18	0.1	
0.07	0.05	0.08	0.09	0.08	0.03	0.05	0.04	0.08	0.14	0.07	0.15	0.14	0.07	0.06	0.05	0.05	0.08	0.08	0.00	0.09	0.08	0.10	0.09	0.0	5 0.07	0.07	0.06	0.0	
1.20	1.11 1.50	1.11 1.54	1.14	1.29	1.13	1.26	1.18	1.21	1.61 0.88	1.17 1.54	1.86 0.46	1.37	1.25	1.45	1.43	1.92	1.49	1.52	1.44	0.78	1.52	1.47	1.44	1.3	i 1.51 1 1.31	1.45	1.46	1.9	
0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.02	0.03	0.02	0.00	0.01	0.0	1 0.00	0.02	0.00	0.0	
5.00	2.07	2.71	2.75	2.75	2.90	2.77	2.72	2.75	2.74	2.00	2.70	2.04	2.74	2.00	2.00	5.00	2.74	2.91	2.07	5.00	2.77	2.90	0.00	0.00	2.90	5.00	2.90	0.00	
0.21 0.61	0.13 0.68	0.12 0.65	0.16 0.70	0.16 0.70	0.16 0.67	0.16 0.68	0.10 0.59	0.09	0.06	0.11 0.69	0.16 0.59	0.04 0.80	0.13 0.68	0.07	0.05	0.04 0.61	0.20 0.51	0.06	0.04	0.05	0.22 0.54	0.32	0.28	0.29) 0.14 7 0.55	0.26	0.14 0.54	0.2	
0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.0	0.00 0 0 0.00	0.01	0.00	0.0	
0.18	0.19	0.23	0.13	0.14	0.17	0.15	0.31	0.38	0.22	0.19	0.23	0.15	0.17	0.21	0.21	0.34	0.28	0.29	0.42	0.29	0.24	0.23	0.32	0.3	3 0.31	0.25	0.31	0.2	
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
0.07 0.00	0.05 0.00	0.07 0.00	0.02 0.00	0.03 0.00	0.05 0.00	0.04 0.00	0.01 0.00	0.02 0.00	0.00 0.00	0.03 0.00	0.00 0.00	0.00 0.00	0.10 0.00	0.02 0.00	0.00 0.00	0.00 0.00	0.02 0.00	0.01 0.00	0.00	0.00 0.00	0.00 0.00	0.06	0.02 0.00	0.0	5 0.02 0 0.00	0.04 0.00	0.02	0.0 0.0	
3.93	3.95	3.93	3.98	3.97 4.00	3.95	3.96	3.99 4.00	3.98	4.00	3.97 4.00	4.00	4.00	3.90 4.00	3.98	4.00	4.00	3.98	3.99	4.00	4.00	4.00	3.94	3.97	3.9	5 3.98	3.96	3.98 4 00	4.0	
	+.00		+.00	4.00			4.00	4.00			7.00				7.00	7.00	7.00	4.00	+.00		7.00	4.00	7.00	00	7.00	4.00			
0.58 0.58	0.57 0.57	0.58 0.58	0.59	0.54	0.59	0.56	0.53	0.49 0.49	0.35	0.57 0.57	0.20	0.45 0.49	0.56 0.56	0.47 0.47	0.47 0.47	0.14 0.14	0.47 0.47	0.44	0.42	0.31	0.47	0.48	0.49 0.49	0.5	2 0.46 2 0.46	0.48	0.46 0.46	0.3	
0.25	0.16	0.16	0.18	0.10	0.20	0.10	0.14	0.15	0.08	0.14	0.22	0.05	0.16	0.00	0.07	0.06	0.28	0.08	0.07	0.07	0.20	0.42	0.41	0.4	4 0.20	0.35	0.21	0.3	
St/	Ky S	st/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky	St/Ky
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	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
	Grt inc	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
		core	core	core	core	core	core	core	core	core	mantle	mantle	mantle	inner mantle	outer	inner	outer	outer	inner	mantle	mantle		-c rim	+c rim	rim	rim	rim	rim	rim
·	9B-18	9B-11	9B-25	9B-33	9B-43	9B-44	9B-48	9B-55	9B-56	9B-59	9B-23	9B-24	9B-45	9B-47	9B-49	9B-12	9B-13	9B-9	9B-10	9B-31	9B-29	9B-28	9B-8	9B-14	9B-26	9B-27	9B-30	9B-32	9B-50
	36.14	34.03	36.50	35.89	35.22	36.08	36.74	36.14	36.28	36.23	35.58	35.98	36.00	36.42	36.24	35.91	36.09	36.34	4 36.78	35.63	35.83	35.94	36.25	35.12	35.30	36.44	36.44	36.50	36.54
	31.69	34.30	30.02	0.44 31.82	31.27	31.46	31.12	32.43	31.72	31.71	31.63	31.48	32.53	31.64	29.77	30.67	32.42	31.74	+ 0.36 4 32.15	30.81	31.61	32.08	32.54	31.58	31.47	32.51	32.52	32.05	32.36
	0.00	0.02	0.02	0.01	0.00	0.02	0.00	0.03	0.00	0.00	0.09	0.02	0.03	0.87	0.01	0.02	0.08	0.02	2 0.04	0.02	0.03	0.03	0.06	0.01	0.03	0.00	0.00	0.00	0.00
	10.39	10.17	10.38	10.40	10.42	10.45	10.34	10.50	10.43	10.46	10.43	10.28	10.38	10.38	10.32	10.32	10.47	10.49	9 10.46	10.38	10.47	10.56	10.52	10.33	10.29	10.53	10.41	10.51	10.60
	10.51	12.97	0.59	0.00	0.00	0.00	0.00	0.00 7.49	0.00	0.00	9.02	0.00 9.51	0.00 8.38	5.85	0.73 0.73	0.00	7.24	0.00) 0.00) 10.24	0.00	10.20	0.00 8.57	0.00	0.00) 0.00) 8.84	0.00	6.35	0.00 7.25	0.00
	10.51	12.97	11.04	8.15	10.78	10.49	11.30	7.49	10.53	10.65	9.02	9.51	8.38	5.85	11.17	10.05	7.24	10.40	0 10.24	10.80	10.20	8.57	7.52	8.60	8.84	7.54	6.35	7.25	7.94
	0.10 4.79	0.07	0.00	0.02	0.00	0.00	0.00 4.06	0.06	0.00 4.94	0.05	0.07	0.00	0.13	0.03	6 0.05 5.04	0.04	0.00	0.06	5 0.01 I 4.54	0.04	0.01 5.43	0.01 6.45	0.09 6.24	0.00	0 0.01 5 5.76	0.00	0.00	0.00 6.51	0.00
	0.96	0.40	0.65	1.43	1.29	1.12	0.13	1.10	0.81	0.86	1.46	0.85	1.10	0.58	0.65	1.83	1.24	1.35	5 0.33	1.69	1.76	1.08	1.04	1.43	1.35	1.39	1.15	1.23	1.33
	0.02	0.02	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.10	0.00	0.00	0.09	0.02	0.00	0.07	7 0.00 5 1.75	0.00	0.04	0.02	0.06	0.00	0.07	0.00	0.00	0.16	0.05
	0.02	0.05	0.03	0.06	0.04	0.04	0.03	0.02	0.00	0.07	0.04	0.06	0.03	0.03	0.03	0.04	0.07	0.05	5 0.02	0.02	0.04	0.02	0.03	0.06	0.07	0.02	0.06	0.03	0.06
	0.01	0.00	0.03	0.05	0.05	0.05	0.00	0.07	0.09	0.04	0.05	0.05	0.07	0.42	0.04	0.04	0.08	0.06	5 0.00	0.07	0.11	0.03	0.02	0.05	0.08	0.07	0.13	0.04	0.07
	3.58	3.51	3.56	3.56	3.57	3.58	3.56	3.59	3.56	3.59	3.57	3.52	3.54	3.38	3.54	3.54	3.57	3.58	3 3.61	3.54	3.56	3.63	3.61	3.54	3.51	3.60	3.53	3.60	3.62
	99.94	99.51	100.20	99.24	100.59	100.56	99.84	100.10	100.28	100.54	100.36	98.63	98.95	98.95	100.05	99.65	99.70	101.17	7 100.28	100.11	101.01	101.02	100.14	99.40	99.00	100.06	98.56	100.44	101.25
	0.00 99.93	0.00 99.51	0.01 100.18	0.02 99.22	0.02	0.02	0.00 99.84	0.03	0.04	0.02 100.53	0.02 100.34	0.02 98.61	0.03 98.92	0.17 98.77	0.02 100.04	0.02 99.63	0.03 99.67	0.03 101.14	3 0.00 4 100.28	0.03	0.05	0.01 101.01	0.01 100.13	0.02 99.37	0.03 98.97	0.03	0.05 98.50	0.02 100.43	0.03
	6.04	5.01	(11	6.00	5.07	6.00	(17	5.00	6.04	6.02	5.02	6.08	6.02	6.16	C 10	6.05	5.00	6.00		5.07	5.05	5.01	5.00	5.01	5.00	(01	6.08	6.02	5.00
	0.04	0.12	0.06	0.00	0.13	0.00	0.17	0.08	0.04	0.02	0.10	0.08	0.05	0.10	0.10	0.05	0.09	0.02	7 0.04	0.03	0.10	0.10	0.08	0.11	0.07	0.01	0.08	0.03	0.11
	6.25	6.91	5.93	6.27	6.15	6.17	6.16	6.32	6.23	6.21	6.21	6.27	6.42	6.25	5.91	6.09	6.34	6.20	6.29	6.08	6.18	6.22	6.34	6.26	6.26	6.32	6.40	6.24	6.25
	1.47	1.85	1.55	1.14	1.50	1.46	1.59	1.04	1.47	1.48	1.26	1.34	1.17	0.12	2 1.57	1.42	1.00	1.44	4 1.42	1.51	1.42	1.18	1.04	1.21	1.25	1.04	0.00	1.00	1.09
	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	0.17	0.29	0.12	0.26	0.23	0.20	0.02	0.19	0.14	0.15	0.26	0.15	0.20	0.10	0.12	0.33	0.22	0.24	4 0.06	0.30	0.31	0.19	0.18	0.26	0.24	0.25	0.21	0.22	0.23
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
	0.49	0.02	0.05	0.40	0.49	0.45	0.08	0.04	0.32	0.48	0.04	0.50	0.00	0.01	0.04	0.39	0.40	0.42	0.00	0.41	0.33	0.00	0.00	0.07	0.04	0.41	0.40	0.32	0.43
	0.00	0.00	0.02	0.03	0.02	0.03	0.00	0.04	0.05	0.02	0.03	0.03	0.04	0.22	0.02	0.02	0.04	0.03	3 0.00	0.04	0.06	0.02	0.01	0.03	0.04	0.04	0.07	0.02	0.04
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00) 3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	6.04	5.81	6.11	6.00	5.87	6.00	6.17	5.98	6.04	6.02	5.93	6.08	6.03	6.10	6.10	6.05	5.99	6.02	6.11	5.97	5.95	5.91	5.99	5.91	5.96	6.01	6.08	6.03	5.99
	0.00 6.04	0.19 6.00	0.00	0.00	0.13	0.00	0.00 6.17	0.02	0.00 6.04	0.00	0.07	0.00 6.08	0.00	0.00	0.00	0.00	0.01	0.00) 0.00 ! 6.11	0.03	0.05	0.09	0.01	0.09	0.04	0.00 6.01	0.00 6.08	0.00	0.01
	6.00	6.00	5.93	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00) 5.91) 0.09	6.00	6.00	6.00) 6.00) 0.00	6.00	6.00	6.00	6.00	6.00) 6.00) 0.00) 6.00) 0.00	6.00	6.00	6.00
	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
	0.25	0.72	0.00	0.26	0.02	0.17	0.16	0.30	0.23	0.21	0.14	0.27	0.42	0.25	0.00	0.09	0.34	0.20	0.29	0.05	0.13	0.13	0.33	0.17	0.23	0.32	0.40	0.24	0.24
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.12	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	0.03	0.12	0.06	0.06	0.13	0.09	0.06	0.08	0.04	0.05	0.10	0.03	0.06	0.08	6 0.14	0.06	0.09	0.07	7 0.04	0.03	0.10	0.10	0.08	0.11	0.07	0.02	0.05	0.12	0.11
	1.19	0.29	1.35	1.14	1.30	1.40	1.02	1.57	1.23	1.24	1.47	1.26	1.30	1.64	1.40	1.38	1.56	1.26	5 1.12	1.40	1.34	1.58	1.54	1.51	1.45	1.61	1.58	1.60	1.56
	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	2.90	5.00	2.09	5.00	5.00	5.00	2.05	5.00	2.90	2.90	5.00	2.92	2.97	2.90	2.90	2.95	5.00	2.90	2.09	5.00	5.00	5.00	5.00	5.00	5.00	2.99	2.92	2.97	5.00
	0.17	0.07	0.12	0.26	0.23	0.20	0.02	0.19	0.14	0.15	0.26	0.15	0.20	0.10	0.12	0.33	0.22	0.24	4 0.06 3 0.56	0.30	0.31	0.19	0.18	0.26	0.24	0.25	0.21	0.22	0.23
	0.00	0.01	0.01	0.40	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.04	0.01	0.40	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.40	0.01	0.01
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.00	0.00	0.02	0.03	0.02	0.03	0.00	0.04	0.05	0.02	0.03	0.03	0.04	0.23	0.02	0.02	0.04	0.03	3 0.00	0.04	0.06	0.02	0.01	0.03	0.04	0.04	0.07	0.02	0.04
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.99	4.00	3.98 4 00	3.97	3.98	3.97	4.00	3.96	3.95	3.98	3.97	3.97	3.96	3.78	3.98 4.00	3.98	3.96	3.97	7 4.00	3.96	3.94	3.98	3.99	3.97	3.96 4.00	3.96	3.93	3.98	3.96 4 00
																												1.50	
	0.45	0.13	0.47	0.57	0.47	0.47	0.39	0.60	0.46	0.46	0.54	0.48	0.53	0.67	0.45	0.49	0.61	0.47	7 0.44	0.48	0.49	0.57	0.60	0.56	0.54	0.61	0.64	0.62	0.59
	0.45	0.13	0.48	0.57	0.47	0.47	0.39	0.60	0.46	0.46	0.54	0.48	0.53	0.67	0.46	0.49	0.61	0.4	0.44 0.09	0.48	0.49	0.57	0.60	0.50	0.54	0.61	0.64	0.62	0.59

			TK20131118	803																								
St/Ky	St/Ky S	St/Ky	Grt	Grt	Grt	Grt	Grt	Grt	Grt (Grt	Grt	Grt	Grt	Grt	Grt	Grt (Grt	Grt	Grt	Grt	Grt (Grt						
Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur	Tur
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
rim	rim	rim	core	core	core	core	core	core	core	core	core	core	core	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle	mantle
9B-57	9B-58	9B-60	604-50	604-51	604-59	604-61	604-63	604-69	604-74	604-79	604-85	604-88	604-93	604-52	604-53	604-54	604-56	604-57	604-64	604-66	604-68	604-71	604-73	604-75	604-77	604-80	604-82	604-83
0.45	1.16	0.56	0.20	0.72	0.20	0.41	1.03	0.69	1.26	0.84	0.43	0.01	0.80	0.28	1.38	0.90	1.29	1.11	1.23	0.95	0.52	0.33	1.23	0.92	0.60	0.66	0.84	0.55
32.75	33.03	32.45	33.41	31.73	33.60	33.53	33.26	33.68	33.33	32.57	32.58	34.94	32.91	29.92	31.19	32.02	30.59	31.07	30.97	31.92	33.01	32.79	31.38	31.62	31.83	30.79	32.61	32.62
0.01	0.04	0.08	0.00	0.00	0.00	0.03	0.02	0.01	0.03	0.04	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.03	0.01	0.00	0.05	0.00	0.03	0.03
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.69	7.41	7.72	13.31	15.05	13.15	7.40	12.04	6.01	6.43	7.31	14.47	8.77	10.40	9.22	11.02	11.13	10.93	11.38	10.82	11.29	10.56	11.31	11.60	11.55	10.19	10.86	10.83	10.51
0.00	7.41	0.04	0.14	0.05	0.01	7.40 0.00	0.11	6.01 0.11	6.4 <i>3</i> 0.06	0.00	14.47	8.77	0.04	0.07	0.00	0.06	0.09	0.02	0.01	0.04	0.05	0.01	0.00	0.03	0.07	10.86	0.00	0.10
5.99	6.25	6.20	1.63	1.58	1.90	5.40	2.78	6.00	5.94	5.12	1.09	3.38	3.62	3.95	4.28	4.01	4.60	4.40	4.53	4.04	3.64	3.69	4.15	4.04	3.81	4.59	3.61	3.74
0.00	0.01	0.08	0.28	0.42	0.33	0.34	0.31	0.00	0.01	0.48	0.23	0.42	0.17	0.11	0.41	0.26	0.42	0.50	0.40	0.28	0.24	0.21	0.42	0.52	0.12	0.40	0.11	0.33
1.22	1.26	1.51	1.80	2.10	1.69	1.94	1.88	1.93	1.65	1.65	2.00	1.59	1.94	1.82	1.93	1.98	1.98	1.99	1.95	2.05	1.67	1.84	2.16	2.00	1.79	2.05	1.72	1.71
0.07	0.03	0.06	0.03	0.03	0.05	0.10	0.05	0.06	0.07	0.04	0.09	0.02	0.06	0.03	0.03	0.03	0.05	0.06	0.02	0.03	0.05	0.04	0.03	0.01	0.04	0.03	0.04	0.04
0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
3.59	3.66	3.57	3.43	3.36	3.55	3.49	3.46	3.47	3.54	3.51	3.50	3.52	3.40	3.58	3.53	3.55	3.50	3.52	3.50	3.61	3.55	3.59	3.54	3.52	3.51	3.48	3.57	3.52
0.04	0.03	0.05	0.09	0.15	0.02	0.12	0.13	0.13	0.07	0.03	0.03	0.05	0.16	0.02	0.05	0.05	0.06	0.05	0.08	0.02	0.04	0.03	0.06	0.06	0.03	0.06	0.03	0.04
100.24	102.06	100.18	99.91	101.01	100.75	100.04	101.42	99.50	100.15	98.11	100.58	99.30	100.09	100.86	100.70	100.95	100.07	100.75	100.60	102.11	100.40	101.12	101.47	100.61	98.89	99.56	100.65	99.75
6.03	6.03	5.98	5.98	6.02	6.01	6.06	5.97	6.01	5.99	6.10	6.08	6.03	6.04	6.70	6.09	6.06	6.08	6.05	6.11	6.13	6.09	6.08	6.05	6.02	6.17	6.11	6.11	6.06
6.37	6.31	6.33	6.68	6.35	6.64	6.53	6.52	6.58	6.49	6.47	6.52	6.89	6.49	5.86	6.14	6.27	6.06	6.12	6.09	6.20	6.47	6.40	6.15	6.24	6.34	6.12	6.38	6.45
0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.02	0.02	0.01	0.00	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01
1.47 0.24	1.51 0.22	1.53	0.41	0.40	0.48	1.33	0.69	1.48 0.11	1.46 0.18	1.29	0.28	0.84	0.90	0.98	1.06	0.99	1.15	1.09	1.13	0.99	0.90	0.91 0.04	1.03	1.01 0.09	0.96	1.15	0.89	0.93
0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.39	0.40	0.48	0.59	0.69	0.55	0.62	0.61	0.62	0.53	0.54	0.66	0.51	0.63	0.58	0.62	0.64 0.01	0.64 0.01	0.64 0.01	0.63	0.65	0.54	0.59	0.69	0.65	0.59	0.67	0.55	0.56
0.05	0.04	0.06	0.12	0.19	0.02	0.15	0.16	0.16	0.09	0.04	0.04	0.06	0.20	0.03	0.07	0.06	0.07	0.07	0.10	0.03	0.06	0.04	0.07	0.07	0.04	0.08	0.04	0.06
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.03	6.03	5.98	5.98	6.02	6.01	6.06	5.97	6.01	5.99	6.10	6.08	6.03	6.04	6.70	6.09	6.06	6.08	6.05	6.11	6.13	6.09	6.08	6.05	6.02	6.17	6.11	6.11	6.06
6.03	6.03	6.00	6.00	6.02	6.01	6.06	6.00	6.01	6.00	6.10	6.08	6.03	6.04	6.70	6.09	6.06	6.08	6.05	6.11	6.13	6.09	6.08	6.05	6.02	6.17	6.11	6.11	6.06
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.86	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.37	0.31	0.32	0.66	0.35	0.64	0.53	0.49	0.58	0.48	0.47	0.52	0.89	0.49	0.00	0.14	0.27	0.06	0.12	0.09	0.20	0.47	0.40	0.15	0.24	0.34	0.12	0.38	0.45
0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1.06	1.00	1.07	1.89	2.14	1.84	1.02	1.67	0.83	0.89	1.03	2.05	1.23	1.46	1.28	1.54	1.55	1.54	1.59	1.51	1.55	1.47	1.57	1.61	1.62	1.44	1.53	1.50	1.47
1.47	1.51	1.53	0.41	0.40	0.48	1.33	0.69	1.48	1.46	1.29	0.28	0.84	0.90	0.98	1.06	0.99	1.15	1.09	1.13	0.99	0.90	0.91	1.03	1.01	0.96	1.15	0.89	0.93
2.97	2.97	3.00	3.00	2.98	2.99	2.94	3.00	2.99	3.00	2.90	2.92	2.97	2.96	2.30	2.91	2.94	2.92	2.95	2.89	2.87	2.91	2.92	2.95	2.98	2.83	2.89	2.89	2.94
0.24	0.22	0.22	0.05	0.08	0.06	0.06	0.05	0.11	0.18	0.09	0.04	0.08	0.03	0.02	0.07	0.05	0.08	0.09	0.07	0.05	0.04	0.04	0.08	0.09	0.02	0.07	0.02	0.06
0.39	0.40	0.48	0.59	0.69	0.55	0.62	0.61	0.62	0.53	0.54	0.66	0.51	0.63	0.58	0.62	0.64	0.64	0.64	0.63	0.65	0.54	0.59	0.69	0.65	0.59	0.67	0.55	0.56
0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01
0.36	0.38	0.28	0.35	0.22	0.38	0.29	0.33	0.26	0.28	0.36	0.28	0.41	0.32	0.39	0.30	0.31	0.27	0.25	0.29	0.29	0.41	0.36	0.22	0.26	0.38	0.25	0.42	0.37
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.05	0.04	0.06	0.12	0.19	0.02	0.15	0.16	0.16	0.09	0.04	0.04	0.06	0.20	0.03	0.07	0.06	0.07	0.07	0.10	0.03	0.06	0.04	0.07	0.07	0.04	0.08	0.04	0.06
3.95	3.96	3.94	3.88	3.81	3.98	3.85	3.84	3.84	3.91	3.96	3.96	3.93	3.80	3.97	3.93	3.94	3.93	3.93	3.90	3.97	3.94	3.96	3.93	3.93	3.96	3.92	3.96	3.94
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
0.58	0.60	0.59	0.18	0.16	0.21	0.57	0.29	0.64	0.62	0.55	0.12	0.41	0.38	0.41	0.41	0.39	0.43	0.41	0.43	0.39	0.38	0.37	0.39	0.38	0.40	0.43	0.37	0.39
0.58	0.60	0.59	0.18	0.16	0.21	0.57	0.29	0.64	0.62	0.55	0.12	0.41	0.38	0.43	0.41	0.39	0.43	0.41	0.43	0.39	0.38	0.37	0.39	0.38	0.40	0.43	0.37	0.39
0.50	0.00	0.02	0.00	0.10	0.10	0.07	0.00	0.10	· · · · · · · · · · · · · · · · · · ·	0.14	0.00	0.10	0.05	0.05	0.10	0.07	0.10	0.12	0.10	0.07	0.07	0.00	0.10	0.10	0.04	0.10	0.00	00

C	C .	C	C ·	C .	C ·	C +	C +	C .	C	C +	C .	C ·	C	C +	C .	.	C +	C .	C	C .	C +	C -	C ·	C .	C .
Grt	Tur	Grt	Grt	Grt	Grt	Grt Tur	Grt	Tur	Tur	Tur	Grt Tur	Grt Tur	Grt	Grt Tur	Grt	Grt	Grt	Grt	Grt Tur	Grt	Grt Tur	Grt	Grt	Grt Tur	Grt	Grt	Grt	Grt
matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc	Grt inc
mantle	mantle	inner	inner	outer	outer	+c rim	-c rim	rim	rim	rim	rim	rim	rim	rim	rim	+c rim	-c rim	rim	rim	rim	-c rim	core	rim	rim	rim			
604-89	604-92	mantle 604-94	mantle 604-95	mantle 604-96	mantle 604-98	604-55	604-58	604-60	604-62	604-65	604-67	604-70	604-72	604-76	604-78	604-81	604-84	604-87	604-90	604-91	604-99	604-102	604-100	604-101	604-103	604-106	604-107	604-108
36.30	36.59	36.70	36.73	36.72	36.02	35.86	36.09	36.46	36.38	36.41	36.88	37.30	35.57	36.29	35.62	36.40	36.06	35.87	36.40	36.03	36.88	37.97	36.74	35.74	36.25	36.55	36.34	36.63
1.20	0.63	0.07	1.21	0.67	0.42	0.98	0.86	0.61	0.39	0.70	0.48	0.44	0.91	1.34	1.17	0.90	0.69	0.64	1.21	0.42	0.34	0.21	0.91	0.91	0.63	0.61	0.95	1.03
0.05	0.04	0.00	0.04	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.05	0.00	0.01	0.03	0.00	0.02	0.01	0.05	0.03	0.00	0.01	0.06	0.00	0.01	0.02	0.03	0.01	0.00
10.36	10.37	10.39	10.38	10.44	10.40	10.49	10.36	10.33	10.39	10.54	10.57	10.57	10.30	10.43	10.17	10.45	10.39	10.26	10.46	10.35	10.50	10.74	10.37	10.46	10.33	10.46	10.41	10.39
11.25	10.73	10.73	0.00	0.00	0.00	0.00	0.00 9.88	0.00	0.00	10.75	10.00	10.17	10.68	10.53	0.00	0.00	0.00	0.00	10.00	0.00	10.34	0.00 5.64	0.00 10.94	12.37	0.00	0.00	0.00	11.10
11.25	10.73	10.73	11.29	10.93	11.46	11.01	9.88	10.89	11.17	10.75	10.30	10.17	10.68	10.53	10.39	10.03	10.36	11.14	10.06	10.19	10.34	5.64	10.94	12.37	10.94	10.92	11.16	11.10
4.28	3.71	3.29	4.42	4.06	3.95	4.07	4.29	3.69	3.93	4.27	4.06	3.98	4.17	4.25	4.27	4.28	3.77	3.76	4.16	3.72	3.91	5.52	4.41	4.18	4.04	4.20	4.26	4.52
0.51	0.26	0.06	0.41	0.57	0.26	0.40	0.70	0.24	0.15	0.64	0.57	0.40	0.52	0.62	0.42	0.55	0.27	0.27	0.51	0.37	0.30	0.11	0.27	0.47	0.21	0.52	0.25	0.40
2.14	1.91	1.52	1.99	1.97	2.03	1.72	1.62	2.01	1.83	1.58	1.44	1.78	1.79	1.82	2.21	1.68	1.46	1.88	1.77	1.52	1.71	1.40	2.13	2.02	1.98	1.74	2.11	1.99
0.06	0.03	0.04	0.04	0.05	0.01	0.07	0.07	0.08	0.13	0.05	0.05	0.04	0.05	0.00	0.06	0.08	0.03	0.11	0.05	0.04	0.06	0.00	0.04	0.23	0.06	0.04	0.05	0.02
0.18	0.05	0.07	0.20	0.13	0.11	0.08	0.07	0.08	0.14	0.10	0.10	0.15	0.07	0.05	0.15	0.13	0.07	0.10	0.13	0.11	0.12	0.08	0.20	0.09	0.10	0.04	0.10	0.19
3.49	3.55	3.55	3.48	3.54	3.53	3.58	3.54	3.52	3.52	3.59	3.60	3.57	3.52	3.57	3.43	3.54	3.55	3.49	3.54	3.52	3.56	3.66	3.48	3.56	3.52	3.58	3.54	3.49
0.08	0.02	99.54 0.03	100.67	0.06	0.05	101.06	99.73	99.95 0.03	0.06	101.46 0.04	0.04	0.06	99.45 0.03	0.02	98.63	0.05	99.66 0.03	99.22 0.04	0.05	99.34 0.04	0.05	0.03	0.08	0.04	99.67	0.02	0.04	100.50
100.67	99.99	99.51	100.59	101.04	100.38	101.02	99.70	99.92	100.10	101.42	101.38	101.66	99.41	100.75	98.56	100.57	99.63	99.17	100.83	99.30	100.84	100.69	100.31	101.62	99.63	100.79	100.65	100.42
6.09	6.14	6.14	6.15	6.11	6.02	5.94	6.05	6.13	6.08	6.00	6.07	6.13	6.00	6.05	6.09	6.05	6.03	6.07	6.05	6.05	6.10	6.15	6.16	5.94	6.10	6.07	6.07	6.13
0.15	0.08	0.01 6.53	0.15	0.08	0.05 6.33	0.12	0.11 6.38	0.08 6.32	0.05 6.33	0.09 6.37	0.06 6.45	0.05 6.43	0.12 6.32	0.17 6.25	0.15	0.11 6.37	0.09	0.08	0.15	0.05 6.53	0.04 6.44	0.02 6.72	0.11 6.09	0.11 6.17	0.08	0.08	0.12	0.13
0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.70	0.00	0.02	0.01	0.01	0.01	0.01
1.07	0.93	0.82	1.10	1.01	0.98	1.01	1.07	0.92	0.98	1.05	0.99	0.98	1.05	1.06	1.09	1.06	0.94	0.95	1.03	0.93	0.96	1.33	1.10	1.04	1.01	1.04	1.06	1.13
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.69 0.01	0.62	0.49	0.65	0.64 0.01	0.66	0.55 0.01	0.53	0.66	0.59	0.51 0.01	0.46 0.01	0.57 0.01	0.59	0.59	0.73 0.01	0.54 0.02	0.47	0.62	0.57	0.49	0.55	0.44	0.69	0.65	0.64 0.01	0.56	0.68	0.65
0.10	0.02	0.04	0.10	0.07	0.06	0.04	0.04	0.04	0.07	0.05	0.05	0.08	0.04	0.03	0.08	0.07	0.04	0.05	0.07	0.06	0.06	0.04	0.11	0.05	0.05	0.02	0.05	0.10
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
6.09	6.14	6.14	6.15	6.11	6.02	5.94	6.05	6.13	6.08	6.00	6.07	6.13	6.00	6.05	6.09	6.05	6.03	6.07	6.05	6.05	6.10	6.15	6.16	5.94	6.10	6.07	6.07	6.13
6.09	6.14	6.14	6.15	6.11	6.02	6.00	6.05	6.13	6.08	6.00	6.07	6.13	6.00	6.05	6.09	6.05	6.03	6.07	6.05	6.05	6.10	6.15	6.16	6.00	6.10	6.07	6.07	6.13
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
0.10	0.35	0.53	0.00	0.26	0.33	0.34	0.38	0.32	0.33	0.37	0.45	0.43	0.32	0.25	0.17	0.37	0.49	0.31	0.36	0.53	0.44	0.72	0.09	0.11	0.26	0.28	0.19	0.05
0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1.58	1.50	1.50	1.58	1.52	1.60	1.53	1.39	1.53	1.56	1.48	1.42	1.40	1.51	1.47	1.49	1.39	1.45	1.58	1.40	1.43	1.43	0.76	1.53	1.72	1.54	1.52	1.56	1.55
0.00	0.93	0.82	0.00	0.02	0.98	0.01	0.00	0.92	0.98	0.01	0.99	0.98	0.01	0.01	0.02	0.01	0.94	0.95	0.01	0.93	0.96	0.00	0.00	0.02	0.01	0.01	0.01	0.01
2.91	2.86	2.86	2.85	2.89	2.98	3.00	2.95	2.87	2.92	3.00	2.93	2.87	3.00	2.95	2.91	2.95	2.97	2.93	2.95	2.95	2.90	2.85	2.84	3.00	2.90	2.93	2.93	2.87
0.09	0.05	0.01	0.07	0.10	0.05	0.07	0.13	0.04	0.03	0.11	0.10	0.07	0.09	0.11	0.08	0.10	0.05	0.05	0.09	0.07	0.05	0.02	0.05	0.08	0.04	0.09	0.05	0.07
0.69	0.62	0.49	0.65	0.64	0.66	0.55	0.53	0.66	0.59	0.51	0.46	0.57	0.59	0.59	0.73	0.54	0.47	0.62	0.57	0.49	0.55	0.44	0.69	0.65	0.64	0.56	0.68	0.65
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.10	0.02	0.04	0.10	0.07	0.06	0.04	0.04	0.04	0.07	0.05	0.05	0.08	0.04	0.03	0.08	0.07	0.04	0.05	0.07	0.06	0.06	0.04	0.11	0.05	0.05	0.02	0.05	0.10
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
3.90 4.00	3.98 4.00	3.96 4.00	3.89 4.00	3.93 4.00	3.94 4.00	3.96 4.00	3.96 4.00	3.96 4.00	3.93 4.00	3.95 4.00	3.95 4.00	3.92 4.00	3.96 4.00	3.97 4.00	3.92 4.00	3.93 4.00	3.96 4.00	3.95 4.00	3.93 4.00	3.94 4.00	3.94 4.00	3.96 4.00	3.89 4.00	3.95 4.00	3.95 4.00	3.98 4.00	3.95 4.00	3.90 4.00
0.55		0							0.57					0.15				0	0.15	0	0.17		0.1-					
0.40	0.38	0.35	0.41	0.40	0.38	0.40	0.44	0.38	0.39	0.41	0.41	0.41	0.41	0.42	0.42	0.43	0.39	0.38	0.42	0.39	0.40	0.64	0.42	0.38	0.40	0.41	0.40	0.42
0.12	0.07	0.02	0.10	0.14	0.07	0.11	0.19	0.06	0.04	0.18	0.18	0.11	0.14	0.42	0.42	0.15	0.09	0.07	0.14	0.12	0.09	0.04	0.07	0.11	0.40	0.14	0.06	0.10

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Get	Grt	EmI	EmI	EmI
	on m			
Tur	Tur	Tur	Tur	Tur
Git inc	Git inc	maurx	maurx	mautx
		rim	rim	core
604-109	604-111	201A-127	201A-126	201A-128
36.62	36.10	36.26	35.98	36.34
0.92	0.66	1.08	1.61	0.70
32.48	32.75	32.44	31.85	31.93
0.00	0.02	0.10	0.26	0.07
10.50	10.36	10.50	10.46	10.46
0.00	0.00	0.00	0.00	0.00
10.33	9.85	8.11	7.97	8.49
10.33	9.85	8.11	7.97	8.49
0.15	0.06	0.13	0.00	0.00
4.21	0.44	0.72	0.71	0.80
0.11	0.00	0.00	0.00	0.04
1.73	1.75	2.04	2.06	2.12
0.02	0.07	0.05	0.06	0.05
0.08	0.07	0.08	0.03	0.04
0.00	0.00	0.00	0.00	0.01
3.58	3.54	3.58	3.59	3.58
101.28	99.62	100.67	100.42	100.42
0.04	0.03	0.03	0.02	0.02
101.24	99.59	100.64	100.41	100.40
6.06	6.06	6.00	5.98	6.04
0.11	0.08	0.13	0.20	0.09
6.34	6.48	6.33	6.24	6.25
0.00	0.00	0.01	0.03	0.01
1.45	1.38	1.12	1.11	1.18
1.04	0.01	1.38	1.45	0.00
0.10	0.08	0.13	0.13	0.14
0.01	0.00	0.00	0.00	0.00
0.55	0.57	0.66	0.66	0.68
0.00	0.02	0.01	0.01	0.01
0.04	0.04	0.04	0.02	0.02
0.00	0.00	0.00	0.00	0.00
3.00	3.00	3.00	3.00	3.00
6.06	6.06	6.00	5.98	6.04
0.00	0.00	0.00	0.02	0.00
6.06	6.06	6.00	6.00	6.04
6.00	6.00	6.00	6.00	6.00
0.00	0.00	0.00	0.00	0.00
6.00	6.00	6.00	6.00	6.00
0.34	0.48	0.33	0.21	0.25
0.00	0.00	0.01	0.03	0.01
0.11	0.08	0.13	0.20	0.09
1.43	1.38	1.12	1.11	1.18
1.04	0.99	1.58	1.45	1.43
2.94	2.94	3.00	3.00	2.96
0.10	0.08	0.13	0.13	0.14
0.55	0.57	0.66	0.66	0.68
0.00	0.02	0.01	0.01	0.01
0.34	0.00	0.20	0.00	0.16
1.00	1.00	1.00	1.00	1.00
0.04	0.04	0.04	0.02	0.02
0.00	0.00	0.00	0.00	0.00
3.96	3.96	3.96	3.98	3.98
4.00	4.00	4.00	4.00	4.00
0.42	0.42	0.55	0.57	0.55
0.42	0.42	0.55	0.57	0.55
0.15	0.12	0.16	0.16	0.17