Trace and Minor Elements in Galena:

A Reconnaissance LA-ICP-MS study

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TRACE AND MINOR ELEMENTS IN GALENA: A RECONNAISSANCE LA-ICP-MS STUDY

TRACE ELEMENTS IN GALENA

ABSTRACT

Many minor/trace elements can substitute into the crystal lattice of galena at various concentrations. *In-situ* LA-ICP-MS analysis and trace element mapping are used to obtain minor/trace element data from a range of natural galena specimens aiming to enhance understanding of the governing factors that control minor/trace element partitioning. The coupled substitution Ag^{+} + $(Bi, Sb)^{3+}$ ↔ $2Pb^{2+}$, is confirmed by data obtained, although when Bi and/or Sb are present at high concentrations (~> 0.002 mol.%), site vacancies most likely come into play through the additional substitution $2(Bi, Sb)^{3+}$ + □ ↔ $3Pb^{2+}$. Galena is the primary host of Tl in all mapped mineral assemblages. Thallium is likely incorporated into galena along with Cu through the coupled substitution: $(Ag, Cu, Tl)^{+}$ + $(Bi, Sb)^{3+}$ ↔ $2Pb^{2+}$. Tin can reach significant concentrations in galena, particularly when the latter formed via metamorphic recrystallisation. Tin is concentrated in galena, likely via the substitution: Sn^{4+} + □ ↔ $2Pb^{2+}$, involving the creation of lattice vacancies, or Sn^{2+} ↔ Pb^{2+}. Tin and In concentrations show a strong positive correlation across the sample suite indicating that the availability of these elements is intimately linked in natural systems. Cadmium and minor Hg can be incorporated into galena; the simple isovalent substitution $(Cd, Hg)^{2+}$ ↔ Pb^{2+} is inferred. Significant oscillatory compositional zoning, and lesser sector zoning of minor/trace elements (Ag, Sb, Bi, Se, Te) is confirmed, for the first time, in galena from two epithermal ores. Zoning is attributed to slow crystal growth into open spaces within the vein at relatively low temperatures. The datasets generated increase understanding of the nature and distribution of minor/trace elements in galena, and partitioning between galena and coexisting minerals. These data have several applications in the minerals industry, particularly in studies of mineral deposit genesis, ore processing and, potentially, also in mineral exploration.

KEYWORDS

Galena, trace elements, minor elements, Laser-ablation inductively coupled plasma mass spectrometry, compositional zoning, substitution mechanisms

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INTRODUCTION

Galena is the most abundant and important lead ore mineral. Despite the simple formula, PbS, a number of additional minor and trace elements can be incorporated into the simple ionic cubic crystal structure. Many of these elements, such as Ag, Bi, Se or Te, can be extracted economically as by-products from an ore containing galena. Others, for example Sb, Cd and Tl, are impurities that can represent an environmental hazard or incur a monetary penalty when present at high enough concentration in a Pb- or Pb-Zn-concentrate. Better understanding the nature and distribution of minor/trace elements in galena is thus valuable for the minerals industry. The potential benefits of mineralogical-chemical studies and geometallurgy (Cook *et al.* 2013) include:

- Using trace element concentrations and their grain-scale distinctions to recognise the geological/geochemical history of an orebody;
- Guides to optimising the processing of base metal ores for extraction of valuable trace/minor elements;
- Appreciating mechanisms for retention and release of hazardous elements in galena within a mine stockpile or tailings heap; and
- Application of trace element geochemistry for trace/minor element vector approaches in mineral exploration.

Previous studies (Bethke & Barton 1971, Tauson *et al.* 1986, Foord *et al.* 1988, Foord & Shawe 1989, Liu & Chang 1994, Lueth *et al.* 2000, Chutas *et al.* 2008, Renock & Becker 2011) have identified many minor/trace elements that are able to substitute into the crystal lattice of galena at various concentrations. There is however a marked gap in knowledge between the published observations and a fundamental understanding of why the observations are as they are. Furthermore, the range of concentrations in natural samples, and the underlying mechanisms of substitution are poorly constrained for most minor/trace elements.

Most published work has focused on elements such as Ag, Bi or Sb (Van Hook 1960, Foord *et al.* 1988, Foord & Shawe 1989, Jeppsson 1989, Lueth *et al.* 2000, Costagliola *et al.* 2004, Chutas *et al.* 2008, Renock & Becker 2011), which are known to occur at relatively high concentrations in some galena specimens. More research is needed to better understand what additional minor/trace elements can be incorporated into natural galena. In addition, under what range of physical and chemical conditions will minor/trace element incorporation into galena be facilitated or impaired? Furthermore, can grain-scale zoning be recognised in galena as it has been in many other sulphides, including pyrite, arsenopyrite, sphalerite and molybdenite (Hinchey *et al.* 2003, Chouinard *et al.* 2005, Di Benedetto *et al.* 2005, Morey *et al.* 2008, Cook *et al.* 2009, Large *et al.* 2009, Ciobanu *et al.* 2013, Cook *et al.* 2013)? Although Ramdohr (1980) mentions visible zoning of galena and implies compositional variation, there is negligible documentary evidence for grain-scale compositional zoning in galena, or what the controls on this zoning might be.

Integral to all research into minor/trace element distributions in any mineral is the ability to distinguish between the presence of an element in solid solution as opposed to a micro-scale inclusion of a distinct mineral phase. Laser-ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) allows indirect determination of whether micro-inclusions are present since they are noticeable on the time-resolved laser ablation downhole profile if large enough and sufficiently inhomogeneous. LA-ICP-MS also boasts detection limits lower than other common quantitative methods such as electron microprobe microanalysis (EPMA); well below 1 ppm for many heavier elements.

This paper reports a reconnaissance study carried out to enhance understanding of the governing factors which control minor/trace element partitioning in galena. The approach is analogous to that described in Cook *et al.* (2009) and Cook *et al.* (2011) for sphalerite and bornite, respectively. The sample suite is representative of a range of Pb-Zn ores from different deposit types, and geological environments. The mineralogy and petrography of the samples is characterised using optical microscopy and scanning electron microscopy (SEM), and *in-situ* LA-ICP-MS is used to obtain trace element data. The study sets out to identify the concentration ranges of known and previously unknown lattice bound minor/trace elements, and determine elemental trends and correlations in natural galena specimens. We also seek to ascertain how specific minor/trace elements in galena behave during recrystallisation during metamorphic overprinting at different facies conditions – are they released or retained in the structure? LA-ICP-MS trace element mapping is used to detect any minor/trace element heterogeneity at the grain scale.

BACKGROUND

Since microanalytical techniques with ppm-level precision and µm-scale spatial resolution (e.g. LA-ICP-MS, EPMA) have become readily available, large amounts of data have been generated on the abundance of various minor/trace elements in the common sulphides (Cook *et al.* 2009, Large *et al.* 2009, Cook *et al.* 2011, Ciobanu *et al.*

2013, Reich *et al.* 2013). Development of high-resolution scanning electron microscopy and chemical mapping techniques at the 0.1-1 μm-scale has shown extraordinary compositional heterogeneity in many sulphides (if not from all occurrences), even those previously considered not to display compositional inhomogeneity (Cook *et al.* 2013). One implication of this is that much of the published minor/trace element data, especially that which was obtained before the modern era, may simply represent an average of more than one compositionally-distinct zone within a given mineral. Nevertheless, the published data summarised below does provide the foundation for understanding the range and quantities of minor/trace elements that can be incorporated into galena as for other common sulphides.

Silver, Bismuth, Antimony and Arsenic

Substitution of silver into galena represents a well-characterised example of solid solution. Monovalent Ag is virtually insoluble (maximum 0.4 mol.% at 615 ^{o}C) via the simple $2Ag^{+} \leftrightarrow Pb^{2+}$ substitution (Van Hook 1960). This is because one of the two silver atoms must be placed in an interstitial position in galena, a position that is not favourable. However, if aided by the presence of Bi^{3+} and/or Sb^{3+} (and potentially other trivalent cations), significant quantities of Ag can be added to the galena structure via the coupled substitution $Ag^{+} + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$ (Chutas *et al.* 2008, Renock & Becker 2011). There is substantial, although incomplete solid solution between galena and the two end-members matildite ($AgBiS_2$) and miagyrite ($AgSbS_2$). This substitution results in the octahedral sites left by two Pb^{2+} ions being fully occupied by Ag^{+} and $(Bi, Sb)^{3+}$ (Costagliola *et al.* 2004). Silver solubility in galena has been demonstrated to reach 9.4 wt.% between 350 and 400 ^{o}C via this coupled substitution mechanism (Foord *et al.* 1988, Foord & Shawe 1989). Chutas et al. (2008) demonstrate that Bi is preferred to Sb in the coupled substitution, and, although rare, As^{3+} can also be substituted with Ag^{+} into galena. In nature, galena commonly displays wide variations in Ag, Bi and Sb concentrations (Lueth *et al.* 2000).

Coupled substitution indicates that the maximum possible mol.% Ag within the galena lattice should not exceed mol.% (Bi+Sb). If mol.% Ag > mol.% (Bi+Sb), the presence of sub-micron-scale Ag-bearing inclusions can be inferred. Common Ag phases observed as inclusions in galena include matildite, miagyrite, diaphorite ($Ag_3Pb_2Sb_3S_8$), hessite (Ag_2Te), freibergite ($[Ag,Cu,Fe]_{12}[Sb,As]_4S_{13}$), polybasite ($[(Ag,Cu)_6(Sb,As)_2S_7][Ag_9CuS_4]$), arsenpolybasite ($[Ag_9CuS_4]\ [(Ag,Cu)_6(As,Sb)_2S_7]$), pearceite ($Cu[Ag,Cu]_6\ Ag_9As_2S_{11}$), pyrargyrite ($Ag_3SbS_3$) and proustite ($Ag_3AsS_3$) (Sharp & Buseck 1993, Lueth *et al.* 2000).

Costagliola et al. (2004) showed that metallic silver (Ag^0) is an insignificant component in natural galena as with other sulphides; electrum inclusions are more widespread if Au is also present (Knipe *et al.* 1992, Larocque *et al.* 1995). Scaini et al. (1997) have however demonstrated that Ag^0 can be taken into galena through sorption of Ag^+ onto the surface of a galena and the subsequent oxidation/sulphidation of Ag^+ through ion exchange. This process may naturally only occur in environments poor in Bi, Sb, Cu, S etc., when Ag cannot be preferentially incorporated into the galena lattice or other such minerals (Jeppsson 1989). In the case that mol.% (Bi + Sb) exceeds mol.% Ag in galena, micro-inclusions of Bi or Sb phases can also be inferred. When Bi is dominant, common inclusion minerals include bismuthinite (Bi_2S_3); if Te is also present, tetradymite group minerals (Bi_xTe_y; Cook *et al.* 2007) will dominate. When Sb is dominant, common inclusion minerals include stibnite (Sb_2S_3), tellurantimony (Sb_2Te_3), or Ag-(Cu)-Pb-Sb-sulphosalts.

Thallium

Thallium is commonly found in galena at concentrations up to 20 ppm, which is lower than sphalerite or pyrite (Nriagu 1998). Similarly, Graham *et al.* (2009) found that in the SHS deposits of the Brooks Range in Alaska, the mean concentration of Tl in galena is lower than in sphalerite, which in turn is an order of magnitude less than in pyrite. Despite the fact that the intermediate phase $TlPbSbS_3$ has been identified, there is no evidence to suggest that the solid solution between $TlSbS_2$ and PbS, involving the substitution $Tl^{+} + Sb^{3+} \leftrightarrow 2Pb^{2+}$, exists (Zunić & Bente 1995).

Selenium and Tellurium

Clausthalite (PbSe) forms a continuous solid solution with galena, allowing for several wt.% Se to be present in galena (Liu & Chang 1994). Other intermediate compositions along the PbS – PbSe join are reported (Coleman 1959). A continuous solid solution with altaite (PbTe) does not exist. This is due to extensive immiscibility between end-members, becoming complete immiscibility below 805 ^{o}C (Liu & Chang 1994). This agrees with previous work by Darrow *et al.* (1966). The immiscibility between end-members commonly results in micron to sub-micron scale inclusions of altaite within galena.

Cadmium, Mercury and Manganese

Bethke and Barton (1971) and Tauson et al. (1986) demonstrated that cadmium and mercury could be incorporated into galena via solid solution. Concentration data for Hg in natural galena from the Round Mountain and Manhattan Gold Districts, Nevada, were given by Foord et al. (1988). Bethke and Barton (1971) claimed, from unpublished data, that galena could incorporate as much as 25 mol.% CdS in solid solution at the eutectic temperature of 950 ^{o}C. They also concluded, from incomplete experiments, that MnS could be substituted into galena to a maximum of 3.5 mol.%. Tauson et al. (1986) report much lower solubilities of 1.5 and 1 mol.% for CdS and HgS, respectively. Partitioning of Hg between coexisting galena and sphalerite was considered to be a potential geothermometer (Tauson *et al.* 1986). In their later paper, however, Tauson et al. (2005) showed that Cd and Hg could be adsorbed onto the surface of galena crystals, leading to the conclusion that their earlier reported concentrations of Cd and Hg in galena were 1-2 orders of magnitude too high and that the solubility limits of structurally-bound Cd and Hg may be much lower.

METHODOLOGY

A total of 45 polished block samples were analysed from 17 different deposits in 9 countries (see Table 1), largely drawn from Prof. Nigel Cook's research collection. The sample suite is representative of Pb-Zn ores from different deposit types, geological environments and facies conditions of metamorphic overprinting. Samples from deposits known to contain anomalously high concentrations of certain elements (such as Bi, Ag and Tl) were purposely included to assess whether these elements are incorporated in galena. Table 2 contains brief descriptions of each deposit; more detailed descriptions are given as Appendix 1.

Table 1: Summary of samples investigated

Country	Deposit	Samples	Classification (this paper)	Sample location	Mineralogy (order of abundance)	Textures (% sulphides)
AUSTRALIA	***Broken Hill***	BH218*	Metamorphosed	Unknown	Gn-Sp-Py-Cp-Po	massive (>85)
		BH221*	Metamorphosed	Unknown	Gn-Sp-Cp-Py-Po	massive (>85)
		BH233	Metamorphosed	Unknown	Gn-Sp-Py-Cp-Po	massive (70)
	Mt. Isa	5984B C1*	SEDEX	Unknown	Gn-Sp-Py-Cp	massive (70)
		5984B C2*	SEDEX	Unknown	Sp-Py-Gn-Cp	massive (50)
		5990 C1	SEDEX	Unknown	Gn-Py-Sp-Cp	banded (50)
BULGARIA	***Elatsite***	ELS-157	Other	Zn-Pb veins distal to porphyry system	Sp-Gn-Cp-Py	massive (50)
CANADA	***Sullivan***	Sullivan	SEDEX	Unknown	Gn-Sp-Po	banded (85)
ETHIOPIA	***Lega Dembi***	7011 A	Other	Open pit	Cp-Gn-Sp	massive (75)
NORWAY	***Bleikvassli***	Bv-1*	Metamorphosed	Main orebody (lower)	Py-Sp-Gn-Po-Cp	massive (>85)
		Bv-97-3	Metamorphosed	Main orebody (lower)	Gn-Sp-Po	massive (80)
		V57-852	Metamorphosed	Main orebody (upper)	Cp-Py-Gn-Sp-Po	massive (>85)
		V446*	Metamorphosed	Main orebody (upper)	Po-Py-Sp-Cp-Gn-Tet	massive (70)
		V538*	Metamorphosed	Main orebody (upper)	Py-Sp-Gn-Po-Cp-Tet	massive (70)
	Kapp Mineral	Kmi 2b	SEDEX	Surface exposure	Gn	semi-massive (50)
		Kmi 4	SEDEX	Surface exposure	Gn-Cp	semi-massive (40)
	Mofjellet	Mo 2*	Metamorphosed	Main orebody	Py-Gn-Sp-Cp-Po	semi-massive (50)
		Mo 5*	Metamorphosed	Main orebody	Sp-Cp-Py-Po-Gn-Tet	semi-massive (35)
		Mo 11	Metamorphosed	Main orebody	Gn-Py-Sp	massive (75)
ROMANIA	***Baia de Aries***	BdA 99-1	Epithermal	Pb-Zn orepipe	Py-Sp-Gn-Cp	massive (>85)
		BdA 99-5	Epithermal	Pb-Zn orepipe	Py-Gn-Sp-Cp	massive (>85)
		BdA 99-9	Epithermal	Pb-Zn orepipe	Sp-Py-Gn-Cp	semi-massive (30)
	Baita Bihor	BB55	Skarn	Antoniu orepipe (proximal)	Gn-Sp	minor (5)
		BB158	Skarn	Antoniu orepipe (proximal)	Gn-Sp-Cp	minor (10)
		BBH16AB	Skarn	Antoniu orepipe (proximal)	Gn-Tet-Cp	massive (70)
		BBH16B	Skarn	Antoniu orepipe (proximal)	Gn-Sp-Cp	massive (50)
		BBH20	Skarn	Antoniu orepipe (proximal)	Gn-Sp-Cp	semi-massive (40)
		BBH25	Skarn	Marta orepipe (distal)	Sp-Gn-Cp	semi-massive (20)
		BBH28A	Skarn	Marta orepipe (distal)	Gn-Cp-Sp	semi-massive (40)
		BBH32	Skarn	Marta orepipe (distal)	Sp-Gn-Py-Cp	semi-massive (25)
	Herja	Hj13	Epithermal	Main vein	Gn-Cp-Tet-Py-Sp-Po	massive (>85)
		Hj14	Epithermal	Main vein	Gn-Sp	semi-massive (35)
	Toroiaga	Emeric2	Epithermal	Emeric vein	Py-Cp-Gn-Sp	massive (85)
		T1a**	Epithermal	Emeric vein	Py-Cp-Sp-Gn	massive (75)
		TOR197	Epithermal	Magdalena vein	Py-Sp-Cp-Gn	massive (75)
	Vorta	DM3	VMS	Main orebody	Gn-Cp-Py-Sp	massive (60)
		DMV99-22	VMS	Main orebody	Sp-Cp-Py-Gn	massive (60)
SWEDEN	***Långban***	SWAS 59	Other	Björkskogsnäs deposit	Gn-Cp-Po-Sp	massive (80)
		SWAS 60	Other	Lahäll deposit	Gn-Cp-Sp	massive (50)
	Zinkgruvan	ZN 99.2	SEDEX	Mine dumps	Sp-Gn-Cp	massive (>85)
TURKEY	***Efemcukuru***	N5	Epithermal	Northern ore shoot	Gn-Sp-Cp	vein (50)
		S4	Epithermal	Southern ore shoot	Sp-Py-Gn-Cp	vein (15)
UZBEKISTAN	***Kochbulak***	30	Epithermal	Mine dumps	Gn-Tet-Py-Sp-Cp	massive (70)
		38	Epithermal	Mine dumps	Cp-Gn-Tet-Sp-Py	semi-massive (25)
		47	Epithermal	Mine dumps	Gn-Sp-Cp-Py-Tet	semi-massive (30)

Mineral abbreviations: Cp - chalcopyrite; Gn - galena; Po - pyrrhotite; Py - pyrite; Sp - sphalerite; Tet -tetrahedrite-tennantite
* coexisting sphalerite analysed in Lockington (2012), ** in Cook et al. (2009).

Table 2: Summary of deposits from which galena has been analysed

Deposit	Type	Conditions of formation or metamorphism	References
	AUSTRALIA		
Broken Hill	SEDEX (metamorphosed)	Granulite facies (750-800°C, 5-6 kbar)	(Haydon & McConachy 1987, Parr & Plimer 1993, Plimer 2007, Spry *et al.* 2008)
Mt. Isa	SEDEX or replacement-type	Greenschist facies	(Mathias & Clark 1975, Perkins 1997, Painter *et al.* 1999)
	BULGARIA		
Elatsite	Porphyry Cu	Various assemblages deposited at various temperatures. (190-575 °C)	(Dragov & Petrunov 1996, Georgiev 2008)
	CANADA		
Sullivan	Giant SEDEX	Upper greenschist (450 °C, 3.8 kbar)	(Hamilton *et al.* 1982, De Paoli & Pattison 2000, Lydon 2000)
	ETHIOPIA		
Lega Dembi	Orogenic gold, Adola greenstone belt	Amphibolite facies (430-520 °C)	(Fiori *et al.* 1988, Billay *et al.* 1997, Cook & Ciobanu 2001)
	NORWAY		
Bleikvassli	SEDEX (metamorphosed)	Upper amphibolite - lower granulite facies (570 °C, 7.5-8.0 kbar)	(Vokes 1963, 1966, Cook 1993, Cook *et al.* 1998, Rosenberg *et al.* 1998)
Kapp Mineral	SEDEX	Very weakly metamorphosed	(Flood 1967)
Mofjellet	SEDEX (metamorphosed)	Amphibolite facies (550 °C, 7.0 kbar?)	(Saager 1967, Bjerkgard *et al.* 2001, Cook 2001)

	R O M A N I A		
Baia de Aries	Epithermal vein/breccia system	Formed at < ~300 °C	(Cioflica *et al.* 1999, Ciobanu *et al.* 2004)
Baita Bihor	Polymetallic Skarn	Formed at ~500 °C (proximal), ~375 °C (distal)	(Cioflica *et al.* 1977, Shimizu *et al.* 1995, Ciobanu *et al.* 2002)
Herja	Epithermal polymetallic (Zn-Pb-Ag-Au) vein system	Formed at < ~300 °C	(Borcos *et al.* 1975, Lang 1979, Cook & Damian 1997)
Toroiaga	Epithermal polymetallic (Zn-Pb-Ag-Au) vein system	Formed at ~350 °C	(Szoke & Steclaci 1962, Gotz *et al.* 1990, Cook 1997)
Vorta	Volcanogenic massive sulphide deposit (ophiolite sequence)	Formed at 250-300 °C	(Ciobanu *et al.* 2001)
	S W E D E N		
Långban	Skarn/ hydrothermal SEDEX?	Unknown	(Holtstam & Langhof 1999)
Zinkgruvan	SEDEX	Upper amphibolite facies	(Billström 1985, Hedström *et al.* 1989)
	T U R K E Y		
Efemcukuru	Epithermal	Formed at ~200-300 °C	(Öyman *et al.* 2003)
	U Z B E K I S T A N		
Kochbulak	Epithermal	Formed at 200-400 °C	(Kovalenker *et al.* 1997, Islamov *et al.* 1999, Plotinskaya *et al.* 2006)

See Appendix 1 for more detailed deposit descriptions

The polished blocks were examined under an Olympus BX51 polarizing microscope (in reflected light mode) and using a FEI Quanta 450 scanning electron microscope (SEM) with energy dispersive X-ray spectrometry and back-scattered electron (BSE) imaging capabilities (Adelaide Microscopy, University of Adelaide). BSE imaging was used primarily to characterise and identify inclusions within galena.

Figures 1 and 2 show various occurrences of, and textures in, galena. Despite the wide range of deposit types and styles, only a few distinctive textures and a handful of inclusions were identified with reflected light microscopy or the SEM. No grain-scale compositional zoning was recognised using these techniques.

All trace element compositional data for galena was obtained using a New Wave UP-213 Nd:YAG laser-ablation system coupled to an Agilent HP-7500 inductively coupled plasma mass spectrometer (Adelaide Microscopy, University of Adelaide). Beam diameter was set at a constant 30 μm, with a repetition rate of 4 Hz and energy set to produce a fluence at the sample of ~0.5 Jcm^{-2}. Data were collected using time-resolved data acquisition in fast peak-jumping mode, and calculations were carried out using GLITTER data reduction software (Van Achterberg *et al.* 2001). Total acquisition time for each analysis was 80 seconds (s), with 30 s background measurement followed by 50 s of sample ablation. Calibration was performed against the Mass-1 sulfide reference material (Wilson *et al.* 2002). The BCR-2G reference material (Wilson 1997) was used as a secondary standard. Batches of twelve analyses were bracketed by repeat analyses of the external standards, allowing monitoring of, and correction for, instrumental drift. A linear drift correction based on the analysis sequence and on the bracketing analyses

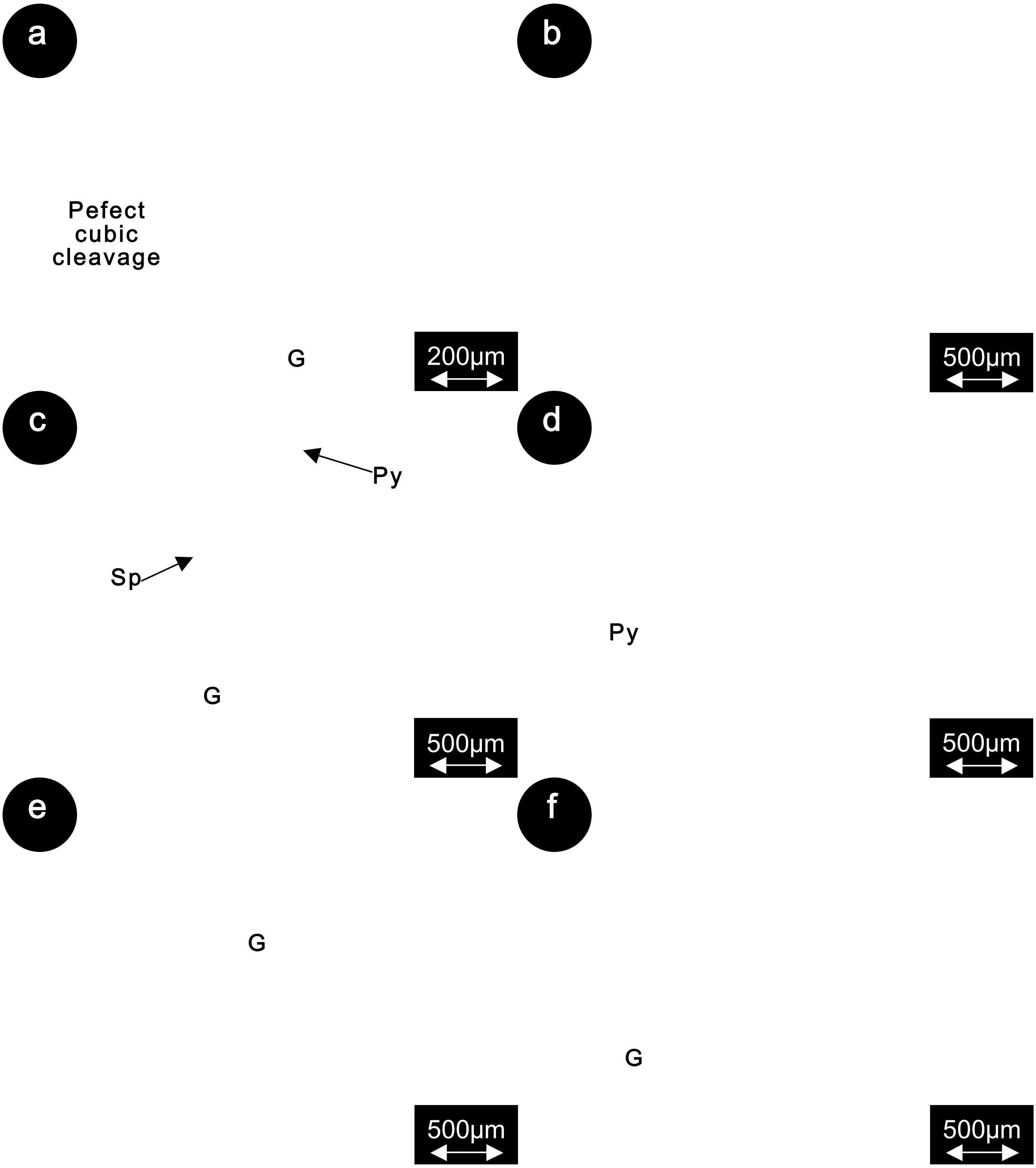


Figure 1: Reflected light photomicrographs illustrating various occurrences of, and textures in, galena. (a) Typical blocky structure of galena (Gn) due to perfect cubic cleavage on [001] parting on [111] (Baita Bihor, BBH20). (b) Common triangular cleavage pits on polished surface of galena. These reveal a deformed lattice structure (Kapp Mineral, Kmi 4). (c) Galena as a matrix for various gangue and ore minerals (Sp: sphalerite, Py: pyrite) (Mt. Isa, 5984B C1) and (d) galena and sphalerite filling the matrix between pyrite crystals (Bleikvassli, V538). (e) Intergrown galena and sphalerite from a massive SEDEX ore (Zinkgruvan, ZN 99.2) and (f) banded galena, sphalerite and pyrrhotite (Po) in a layered SEDEX ore (Sullivan).

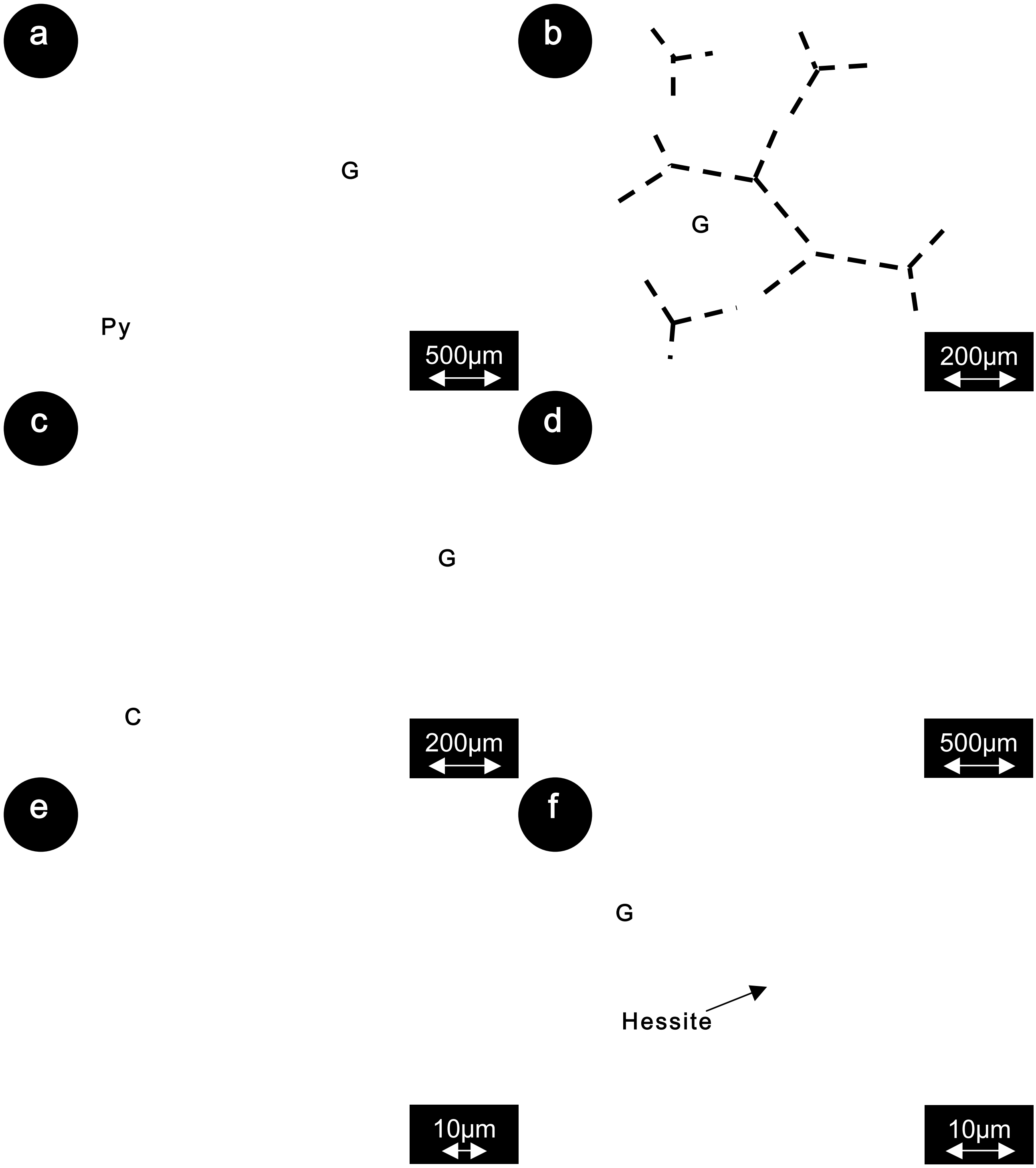


Figure 2: Reflected light photomicrographs (a - d) and backscattered SEM images (e and f) illustrating various occurrences of, and textures in, galena. (a) Galena (Gn) as inclusions in chalcopyrite (Cp) and pyrite (Py) (Toroiaga, T1a). (b) 120^o triple points between galena, sphalerite (Sp) and gangue minerals indicating chemical equilibrium due to annealing in the recrystallised ore (Broken Hill, BH233). (c) Galena filling fractures within sulphides (Kochbulak, 47) and (d) gangue minerals (Kapp Mineral, Kmi 4). Galena is typically a late-forming mineral in the paragenesis and so tends to fill fractures and cracks in pre-existing minerals. (e) Skeletal replacement of sphalerite by galena. Replacement is occurring preferentially parallel to the sphalerite cubic structure (Efemcukuru, S4). (f) Micro-inclusion of hessite (Ag_2Te) within galena (Efemcukuru, S4).

of Mass-1, was applied to the count rate for each sample. ^{208}Pb was used as the internal standard for galena, assuming 100% PbO composition. The following suite of isotopes elements were systematically analyzed for: ^{33}S, ^{34}S, ^{53}Cr, ^{55}Mn, ^{57}Fe, ^{58}Fe, ^{59}Co, ^{60}Ni, ^{65}Cu, ^{66}Zn, ^{69}Ga, ^{75}As, ^{82}Se, ^{95}Mo, ^{107}Ag, ^{111}Cd, ^{115}In, ^{118}Sn, ^{121}Sb, ^{125}Te, ^{182}W, ^{197}Au, ^{202}Hg, ^{205}Tl, ^{206}Pb, ^{207}Pb, ^{208}Pb and ^{209}Bi. The two Fe-isotopes were monitored to check for internal consistency.

Six LA-ICP-MS element maps were made on selected areas of 5 samples. Mapped areas ranged in size from approximately 1 - 4 mm^2. Mapping focussed on areas of the grains where compositional zoning was suspected to obtain a visual image of minor/trace element distribution within grains. LA-ICP-MS mapping was carried out using a Resonetics M-50-LR 193-nm Excimer laser microprobe coupled to an Agilent 7700cx Quadrupole ICP mass spectrometer (Adelaide Microscopy, University of Adelaide). The M-50 instrument utilizes a two-volume small volume ablation cell (Laurin Technic Pty designed for excellent trace element sensitivity) (Müller *et al.* 2009). Ablation was performed in an atmosphere of UHP He (0.7 l/min), and upon exiting the ablation cell the aerosol is mixed with Ar (0.93 l/min), after which the mix is passed through a pulse-homogenizing device or “squid” prior to direct introduction into the torch. The ICP-MS was optimized daily to maximize sensitivity on isotopes of the mass range of interest, while keeping production of molecular oxide species (i.e., $^{232}Th^{16}O/^{232}Th$) and doubly charged ion species (i.e., $^{140}Ce^{2+}/^{140}Ce^{+}$) as low as possible, and usually $<0.2\%$.

Imaging was performed by ablating sets of parallel line rasters in a grid across the sample. A consistent beam size of 9 µm and a scan speed of 10 µm/s were chosen to give the desired sensitivity of elements of interest, and adequate spatial resolution for the study. The spacing between the lines was kept at a constant 9 μm to match the size of the laser spot used. A laser repetition of 10 Hz was selected at a constant energy output of 80 mJ, resulting in an energy density of ~4 Jcm^{-2} at the target. A set of 29 elements were analyzed with dwell times ranging from 0.005 to 0.05 s, resulting in a total sweep time of 0.436 s. A 30 second background acquisition was acquired at the start of every raster, and to allow for cell wash-out, gas stabilization, and computing processing, a delay of 20 s was used after each line. Identical rasters were done on the Mass-1 reference material at the start and end of a mapping run.

Element maps were compiled and processed using the program Iolite developed by the Melbourne Isotope Group at Melbourne University (Paton *et al.* 2011). Iolite is an open source software package for processing ICP-MS data, and is an add-in for the data analysis program Igor developed by WaveMetrics. A typical mapping run was analyzed over a 6-20 hour-session, in which significant instrument drift could occur. To correct for this, standards were analyzed immediately before and after the run to assess drift. If present, a correction was applied using a linear fit between the two sets of standards. Following this, for each raster and every element, the average background was subtracted from its corresponding raster, and the rasters were compiled into a 2-D image displaying combined background/drift corrected intensity for each element.

RESULTS

LA-ICP-MS

The LA-ICP-MS minor/trace element dataset for natural galena is summarised as Table 3. Mean concentrations, standard deviations, minimum and maximum concentrations are given for 12 significant elements in each analysed sample. The full dataset, consisting of 893 spot analyses and all analysed elements is contained in Appendix 2. Although we endeavoured to analyse only those volumes free of inclusions, scratches and other features, some analyses did show anomalous concentrations of Cu or other elements which were likely the result of inclusions beneath the sample surface. Representative LA-ICP-MS depth profiles are shown in Figure 3, demonstrating both smooth profiles indicative of elements in solid solution, and irregular profiles suggesting the presence of inclusions. The spot analyses inferred to contain inclusions were not included in calculations of means, standard deviations etc.

SILVER

Silver has some of the highest measured concentrations in galena of any element analysed, with means within a single sample ranging from 95.5 ppm in BH218 (Broken Hill) to 14,928 ppm in BB55 (Baita Bihor). Smooth time-resolved LA-ICP-MS downhole profiles, and standard deviations for each sample on average just 21% of the mean strongly support that the measured Ag is in solid solution and is not the result of sub-μm inclusions of Ag-bearing phases. Moreover, mean concentrations are typically in the same order of magnitude across samples from the same deposit. Baita Bihor is the exception with sample means ranging from 545 to 14,928 ppm Ag. Silver values vary very little within any single sample.

Table 3:
Summary of minor/trace element concentrations in galena determined by LA-ICP-MS. Data given in ppm.

LOCALITY	SAMPLE	ELEMENT											
Broken Hill	**BH218**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Australia	**MEAN (24)**	1.7	207	95.5	10.8	0.24	83.2	28.3	4.5	0.44	0.34	1.3	79.3
	ST DEV	0.37	246	66.2	4.7	0.06	6.1	38.9	0.10	-	0.06	0.16	6.5
	MIN	1.3	47.2	39.6	5.2	0.15	69.6	4.7	4.4	0.44	0.27	1.1	65.1
	MAX	2.2	821	271	21.5	0.36	94.4	161	4.6	0.44	0.38	1.8	97.5
	BH221	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (23)	2.2	104	386	31.9	0.37	122	198	2.5	0.45	0.37	1.2	36.1
	ST DEV	0.69	59.6	125	11.5	0.07	12.9	83.0	-	-	0.09	0.11	2.5
	MIN	1.4	20.9	177	11.5	0.23	104	64.0	2.5	0.45	0.28	1.0	29.9
	MAX	3.2	161	663	56.4	0.51	152	405	2.5	0.45	0.45	1.4	41.1
	BH233	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<97.1	118	652	16.0	0.16	50.7	973	0.87	0.03	0.44	2.5	172
	ST DEV	-	97.0	74.0	4.9	0.06	3.5	110	0.39	0.01	0.07	0.21	11.8
	MIN	<44.1	49.0	484	10.5	0.08	45.1	745	0.49	0.01	0.39	2.1	148
	MAX	<97.1	186	777	28.4	0.31	61.2	1127	1.5	0.05	0.49	2.9	196
Mt Isa	**5984B C1**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Australia	**MEAN (12)**	3.3	<149	870	8.0	0.67	5.8	1200	<5.4	<0.47	0.63	47.6	27.4
	ST DEV	2.0	-	93.8	1.3	0.71	0.79	130	-	-	0.29	4.9	2.1
	MIN	1.9	<74.1	693	5.8	0.16	3.8	964	<3.7	<0.33	0.42	37.4	21.9
	MAX	6.1	<149	1056	10.1	1.2	6.8	1454	<5.4	<0.47	0.83	55.2	29.0
	5984B C2	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (11)	1.6	<94.2	810	6.5	<0.11	6.0	1164	<3.1	<0.38	0.38	35.4	20.1
	ST DEV	0.28	-	75.3	1.0	-	2.6	113	-	-	0.03	3.1	1.2
	MIN	1.2	<75.0	655	5.2	<0.08	3.9	888	<2.3	<0.25	0.36	28.5	18.8
	MAX	1.8	<94.2	949	8.0	<0.11	12.9	1262	<3.1	<0.38	0.41	39.1	21.7
	5990 C1	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<183	79.0	1521	11.6	0.05	4.8	1904	1.1	0.02	0.75	29.0	13.5
	ST DEV	-	69.2	320	3.2	0.03	1.8	394	0.47	0.01	0.28	1.3	0.77
	MIN	<84.8	30.1	1117	5.5	0.02	2.7	1489	0.74	0.02	0.55	27.0	11.9
	MAX	<183	128	2355	19.0	0.10	11.1	3032	1.8	0.04	0.94	32.1	15.5
Elatsite	**ELS-157**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Bulgaria	**MEAN (24)**	<442	146	618	29.4	0.05	<6.0	12.9	143	0.09	<1.2	3.1	1388
	ST DEV	-	97.0	385	13.8	0.02	-	12.7	44.1	0.07	-	0.28	913
	MIN	<196	60.5	124	7.6	0.03	<2.7	1.4	45.4	0.02	<0.64	2.5	82.3
	MAX	<442	314	1452	63.7	0.08	<6.0	54.4	228	0.26	<1.2	3.6	3255
Sullivan	**Sullivan**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Canada	**MEAN (24)**	25.1	<291	805	27.5	1.3	404	1109	0.25	0.01	0.41	11.9	5.1
	ST DEV	5.0	-	129	6.8	0.28	91.9	154	0.11	0.01	-	0.92	1.2
	MIN	21.6	<75.1	499	15.5	0.65	255	743	0.12	<0.01	0.41	9.9	4.0
	MAX	28.6	<291	974	38.2	1.6	528	1326	0.45	0.02	0.41	13.5	9.2
Lega	**7011 A**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Dembi	**MEAN (24)**	45.0	148	188	99.1	0.02	<2.3	96.8	28.4	0.04	0.72	1.7	3.1
Ethiopia	**ST DEV**	15.2	-	28.6	30.0	<0.01	-	9.5	6.0	0.03	-	0.20	4.9
	MIN	34.3	148	129	51.6	0.02	<1.4	81.5	16.9	0.01	0.72	1.4	0.18
	MAX	55.8	148	237	220	0.03	<2.3	117	40.7	0.09	0.72	2.1	17.5
Bleikvassli	**Bv-1**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Norway	**MEAN (24)**	<423	553	1214	11.4	1.0	346	1171	2.2	0.07	<1.2	248	1158
	ST DEV	-	289	156	6.0	0.34	112	240	0.77	0.07	-	26.3	54.8
	MIN	<262	348	871	2.6	0.42	76.5	668	1.4	0.03	<0.78	159	993
	MAX	<423	757	1475	25.7	1.9	610	1738	3.7	0.21	<1.2	289	1249

	Bv-97-3	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<788	1742	1439	46.2	1.9	619	896	3.2	0.06	<1.8	113	2697
	ST DEV	-	1238	172	17.6	0.45	69.7	355	1.5	0.02	-	5.3	123
	MIN	<267	47.6	1118	24.0	0.94	501	355	1.2	0.04	<0.80	102	2507
	MAX	<788	3006	1968	97.9	2.9	757	1870	6.0	0.10	<1.8	122	2931
	V446	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	5.4	208	1176	8.1	0.84	283	476	5.5	0.47	0.62	108	2468
	ST DEV	2.9	43.4	106	2.0	0.15	48.4	131	1.4	-	0.12	6.1	134
	MIN	2.5	155	1017	5.7	0.53	179	266	4.1	0.47	0.53	95.6	2157
	MAX	12.0	304	1318	12.0	1.0	343	705	7.7	0.47	0.70	123	2657
	V538	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	5.4	153	1464	12.1	1.8	595	1659	6.4	<0.71	<0.61	170	1224
	ST DEV	2.0	50.7	236	4.6	0.39	126	435	1.4	-	-	18.2	79.4
	MIN	2.2	93.6	1124	6.3	1.0	374	1026	5.1	<0.41	<0.44	139	1087
	MAX	8.9	243	1796	20.3	2.3	764	2439	7.9	<0.71	<0.61	201	1341
	V57-852	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	150	170	1204	32.6	0.45	139	494	8.9	0.01	0.24	158	3278
	ST DEV	127	108	108	9.4	0.07	15.6	240	2.1	<0.01	0.04	15.9	89.1
	MIN	14.9	43.3	1005	7.7	0.32	115	104	4.7	0.01	0.21	137	3086
	MAX	309	387	1380	50.0	0.57	168	1160	13.2	0.02	0.27	190	3476
Kapp	**Kmi 2b**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Mineral	**MEAN (24)**	3.8	259	125	9.0	0.09	3.6	120	2.1	0.05	0.51	1.9	10.0
Norway	**ST DEV**	1.2	278	41.8	3.2	0.05	3.1	18.7	0.78	0.01	0.29	1.0	9.5
	MIN	1.6	85.9	79.3	2.7	0.04	1.3	71.4	1.5	0.04	0.30	0.68	1.4
	MAX	5.7	580	238	18.0	0.16	7.9	147	3.0	0.07	0.71	3.2	38.5
	Kmi 4	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<198	722	223	10.7	0.05	4.3	250	1.2	0.03	1.0	1.8	16.2
	ST DEV	-	-	40.7	3.2	0.02	0.83	41.6	0.66	0.01	-	0.21	8.2
	MIN	<71.6	722	138	7.7	0.03	3.8	160	0.59	0.02	1.0	1.5	2.3
	MAX	<198	722	286	20.9	0.07	4.9	316	2.2	0.06	1.0	2.2	29.7
Mofjellet	**Mo 2**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Norway	**MEAN (23)**	2.5	28.1	1151	41.5	0.10	1.1	1450	29.7	0.29	0.35	1.3	172
	ST DEV	1.1	11.3	174	26.8	-	0.23	440	6.1	0.01	0.09	0.17	15.5
	MIN	1.3	15.0	760	14.5	0.10	0.91	759	20.3	0.28	0.25	1.0	135
	MAX	4.5	48.3	1490	137	0.10	1.5	2445	39.4	0.29	0.43	1.6	202
	Mo 5	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	12.1	318	1531	18.4	<0.11	0.73	2309	51.5	<0.47	0.43	1.5	296
	ST DEV	7.8	37.3	301	13.5	-	-	826	5.3	-	-	0.09	12.8
	MIN	2.1	277	985	8.2	<0.09	0.73	1032	40.1	<0.36	0.43	1.3	268
	MAX	23.8	377	2032	48.2	<0.11	0.73	4271	59.7	<0.47	0.43	1.6	308
	Mo 11	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	13.2	582	2981	487	0.06	1.1	3518	47.6	0.37	1.2	1.5	141
	ST DEV	5.0	546	918	137	0.02	0.31	1151	7.5	0.89	0.89	0.17	4.2
	MIN	8.2	192	1612	261	0.03	0.72	1814	31.5	<0.01	0.39	1.2	136
	MAX	20.0	2674	4713	826	0.11	1.8	5630	63.9	2.2	4.7	1.8	151
Baia de	**BdA 99-1**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Aries	**MEAN (11)**	<253	<Inf	414	54.0	0.06	<6.3	445	168	0.12	<1.2	4.0	65.9
Norway	**ST DEV**	-	-	37.2	10.9	0.03	-	42.5	166	0.06	-	1.9	56.1
	MIN	<162	<Inf	348	34.9	0.04	<4.4	375	14.5	0.05	<0.87	2.4	12.8
	MAX	<253	<Inf	474	69.7	0.07	<6.3	522	439	0.17	<1.2	7.7	161
	BdA 99-5	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<74.2	316	503	49.5	0.10	<3.3	528	123	0.40	0.47	3.1	9.6
	ST DEV	-	269	132	6.9	0.01	-	172	140	0.61	0.08	2.5	10.2
	MIN	<14.3	125	304	38.6	0.09	<1.7	276	6.3	0.01	0.37	1.5	0.11
	MAX	<74.2	506	826	70.0	0.11	<3.3	983	469	2.2	0.56	13.9	36.3

	BdA 99-9	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (12)	<108	287	1114	44.1	0.08	<3.7	355	42.9	2.2	0.55	9.0	1680
	ST DEV	-	67.7	486	9.6	0.05	-	168	25.9	4.9	-	10.1	1302
	MIN	<68.8	239	605	26.6	0.02	<2.6	148	12.9	0.02	0.55	2.5	41.4
	MAX	<108	334	2194	61.9	0.15	<3.7	781	103	11.0	0.55	38.8	4379
Baita Bihor	**BB55**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Romania	MEAN (11)	215	<Inf	14928	113	0.07	3.9	10.4	891	0.43	0.58	37.5	36453
	ST DEV	22.3	-	1673	30	0.05	0.72	2.7	143	0.23	0.02	2.6	4047
	MIN	199	<Inf	10679	64.4	0.03	3.1	6.2	575	0.13	0.57	33.4	26544
	MAX	230	<Inf	16763	166	0.12	4.6	14.3	1030	0.82	0.60	41.9	41040
	BB158	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	282	7.3	6057	48.4	0.04	<3.2	1.2	351	0.19	0.64	69.3	18079
	ST DEV	57.6	-	721	28.1	0.02	-	0.83	46.2	0.18	0.09	14.4	528
	MIN	198	7.3	4423	12.1	0.03	<2.3	0.13	271	0.02	0.56	41.9	17161
	MAX	352	7.3	7100	101	0.05	<3.2	2.4	415	0.60	0.73	93.0	18759
	BBH16AB	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	56.8	198	4528	103	0.01	1.2	14.5	226	0.31	0.33	21.2	11155
	ST DEV	16.6	62.5	225	43.8	0.01	-	12.9	25.7	0.38	0.05	3.1	810
	MIN	42.2	90.6	4086	33.9	0.01	1.2	0.31	183	<0.01	0.29	15.0	9565
	MAX	73.8	309	5061	174	0.02	1.2	41.8	269	1.2	0.38	25.0	13110
	BBH16B	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<232	456	827	57.0	0.07	<3.7	2.7	197	0.08	<1.1	9.0	2168
	ST DEV	-	421	154	19.2	0.06	-	2.5	32.4	0.05	-	2.1	457
	MIN	<119	159	675	21.3	0.03	<2.4	0.35	137	0.02	<0.65	6.9	1797
	MAX	<232	754	1459	98.2	0.15	<3.7	9.1	260	0.18	<1.1	15.9	4023
	BBH20	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	54.4	173	2820	88.6	0.02	1.1	14.1	260	0.02	0.16	20.9	7978
	ST DEV	24.9	103	171	21.3	0.01	0.29	5.9	30.2	0.01	0.02	4.4	228
	MIN	15.3	64.0	2568	54.4	0.01	0.59	7.3	212	<0.1	0.11	13.8	7554
	MAX	109	483	3192	130	0.02	1.7	32.7	340	0.06	0.18	29.6	8329
	BBH25	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	29.6	157	545	66.8	0.01	<0.74	225	64.5	0.02	0.22	10.0	918
	ST DEV	9.1	43.2	46.8	9.4	-	-	28.0	27.2	0.01	0.04	1.0	116
	MIN	20.3	77.7	486	45.2	0.01	<0.61	180	41.6	<0.01	0.17	7.8	821
	MAX	44.4	231	659	77.3	0.01	<0.74	261	128	0.03	0.28	11.6	1246
	BBH28A	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<502	34.2	697	199	0.15	3.8	301	192	0.06	1.4	13.9	1168
	ST DEV	-	11.4	94.5	27.1	0.08	-	60.3	71.5	0.05	0.49	6.1	216
	MIN	<136	26.1	474	153	0.03	3.8	150	72.1	0.03	0.64	3.0	597
	MAX	<502	42.3	827	251	0.29	3.8	392	323	0.17	2.6	23.7	1404
	BBH32	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (12)	<29.4	609	3775	65.2	0.01	1.0	31.1	314	0.04	0.22	15.2	9209
	ST DEV	-	183	182	11.9	<0.01	0.20	6.8	17.5	0.02	0.06	1.0	343
	MIN	<18.7	420	3475	30.5	0.01	0.77	14.2	292	0.01	0.17	13.3	8677
	MAX	<29.4	1018	4125	76.3	0.01	1.2	39.1	352	0.06	0.29	16.5	10038
Herja	**Hj13**	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
Romania	MEAN (24)	41.9	712	1896	21.3	0.05	2.8	1901	18.9	0.02	<0.90	2.5	1054
	ST DEV	15.5	642	414	3.6	0.04	1.0	625	25.0	<0.01	-	1.0	1864
	MIN	30.9	44.7	1014	14.8	0.01	1.9	511	0.35	0.02	<0.45	1.7	1.3
	MAX	52.9	1352	2964	28.1	0.14	4.9	2873	97.4	0.02	<0.90	6.6	6406
	Hj14	**Cu**	**Se**	**Ag**	**Cd**	**In**	**Sn**	**Sb**	**Te**	**Au**	**Hg**	**Tl**	**Bi**
	MEAN (24)	<273	165	2778	16.8	0.06	5.4	3257	3.6	0.05	<1.2	4.6	9.1
	ST DEV	-	85.1	586	3.8	0.02	1.4	689	3.0	0.03	-	0.86	13.8
	MIN	<166	45.7	1769	10.0	0.03	4.1	2173	1.1	0.02	<0.71	3.3	0.17
	MAX	<273	234	3899	24.4	0.09	8.0	4630	9.3	0.13	<1.2	6.2	46

Toroiaga	Emeric2	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
Romania	MEAN (23)	<295	153	3055	70.7	0.09	4.9	2370	149	0.05	1.1	4.6	2248
	ST DEV	-	87.4	422	20.1	0.07	1.3	352	49.5	0.02	0.23	1.7	902
	MIN	<162	49.3	2587	34.0	0.03	2.6	1834	80.7	0.03	0.93	3.1	822
	MAX	<295	276	4047	100	0.21	7.3	3090	269	0.09	1.3	10.6	4544
	T1a	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (24)	345	195	3141	75.1	0.17	4.1	2192	181	0.11	0.81	3.5	2680
	ST DEV	-	61.2	473	13.5	0.10	0.72	410	76.8	0.17	0.25	1.1	811
	MIN	345	117	2259	50.0	0.03	3.2	1267	69.7	0.02	0.53	1.8	1687
	MAX	345	352	4172	98.7	0.33	5.1	3058	436	0.59	1.1	6.5	4644
	TOR197	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (12)	296	32	1185	77.8	0.15	5.5	1274	24.3	0.03	0.79	2.4	238
	ST DEV	-	28	124	15.7	0.04	1.1	105	9.4	0.01	-	0.26	168
	MIN	296	9.6	998	51.3	0.09	3.8	1038	11.9	0.03	0.79	2.0	46.7
	MAX	296	63	1345	103	0.21	6.9	1403	45.1	0.05	0.79	2.9	566
Vorta	DM3	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
Romania	MEAN (24)	43.4	31.8	274	29.1	0.01	<0.93	252	6.1	0.05	0.27	2.1	0.06
	ST DEV	10.8	-	60.6	15.2	<0.01	-	80.1	2.0	0.03	0.03	0.09	0.01
	MIN	35.7	31.8	72.5	1.3	<0.01	<0.69	23.0	3.5	0.01	0.24	2.0	0.04
	MAX	51.0	31.8	359	51.4	0.02	<0.93	363	11.9	0.14	0.30	2.3	0.08
	DMV99-22	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (24)	797	252	134	5.9	0.04	2.3	352	13.4	0.03	0.70	2.8	0.67
	ST DEV	616	94.8	63.5	3.4	0.01	-	404	7.4	0.01	-	0.09	1.5
	MIN	145	164	58.9	0.67	0.03	2.3	0.80	1.7	0.02	0.70	2.6	0.12
	MAX	2184	352	326	11.9	0.06	2.3	1519	26.7	0.06	0.70	2.9	5.6
Långban	SWAS 59	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
Sweden	MEAN (12)	173	24.0	788	46.8	0.15	23.6	933	2.5	0.02	0.40	1.9	441
	ST DEV	80.8	13.7	112	17.7	0.19	15.9	162	0.77	0.01	-	0.10	48.0
	MIN	70.6	8.1	576	20.0	0.02	12.7	588	1.2	0.01	0.40	1.8	375
	MAX	332	48.4	971	77.9	0.64	62	1210	3.4	0.03	0.40	2.1	524
	SWAS 60	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (24)	<175	196	1034	35.2	0.70	245	1100	0.78	0.03	0.94	7.5	34.1
	ST DEV	-	89.8	171	27.7	0.23	89.9	151	0.15	0.01	0.10	4.1	7.2
	MIN	<95.1	116	605	9.5	0.18	22.5	734	0.61	0.02	0.87	3.7	2.4
	MAX	<175	334	1249	120	1.1	351	1336	1.0	0.05	1.1	17.1	40.8
Zinkgruvan	ZN 99.2	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
Sweden	MEAN (24)	<20.2	36	676	14.1	0.04	4.5	721	0.34	0.02	<0.79	1.6	1.7
	ST DEV	-	30	60.4	2.2	-	0.64	38.0	0.13	0.01	-	0.14	0.13
	MIN	<7.7	8.6	578	10.4	0.04	3.0	659	0.21	0.01	<0.23	1.5	1.4
	MAX	<20.2	95	771	18.2	0.04	5.3	781	0.50	0.03	<0.79	2.1	1.9
Efemcukuru	N5	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
Turkey	MEAN (24)	215	27.1	1165	25.8	0.27	<5.1	1372	1.8	0.04	<0.95	2.8	107
	ST DEV	-	27.3	276	5.9	0.17	-	357	1.2	0.02	-	0.24	121
	MIN	215	7.8	774	14.0	0.02	<2.4	679	0.77	0.02	<0.59	2.4	7.3
	MAX	215	46.4	1926	35.5	0.55	<5.1	1979	4.2	0.10	<0.95	3.2	523
	S4	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (12)	<275	337	652	13.6	0.07	15.3	862	3.4	0.14	0.66	3.8	3.1
	ST DEV	-	133	256	3.7	0.04	6.9	366	2.2	0.08	-	0.50	0.90
	MIN	<153	207	386	8.8	0.03	8.1	501	1.1	0.04	0.66	3.3	1.5
	MAX	<275	472	1093	20.9	0.14	29.2	1553	7.4	0.27	0.66	4.6	4.2

Kochbulak	30	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
Uzbekistan	MEAN (23)	191	140	320	10.1	0.09	1.0	824	30.6	0.14	0.71	2.8	172
	ST DEV	152	68.9	95.2	11.2	0.14	-	528	9.2	0.09	0.31	0.23	171
	MIN	69.5	57.4	125	3.6	0.01	1.0	38.0	1.9	0.01	0.10	2.3	6.8
	MAX	455	218	502	51	0.38	1.0	1979	47.4	0.38	1.1	3.1	632
	38	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (12)	550	56.5	307	19.2	0.11	2.8	683	14.4	0.17	0.36	3.0	76.1
	ST DEV	178	56.8	126	18.8	0.10	-	487	23.8	0.15	0.28	0.57	73.9
	MIN	344	5.9	100	3.3	0.02	2.8	102	0.32	0.01	0.19	2.3	0.09
	MAX	831	118	529	66.2	0.25	2.8	1572	79	0.42	0.86	4.6	211
	47	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi
	MEAN (24)	214	189	523	145	0.60	1.7	951	103	0.65	1.0	4.8	0.77
	ST DEV	139	194	196	78.3	0.50	0.79	344	117	1.0	0.81	1.1	1.2
	MIN	91.6	11.7	30.6	2.6	0.02	0.82	25.6	0.33	0.06	0.28	2.4	0.07
	MAX	693	491	776	250	1.7	3.7	1633	474	3.9	2.1	6.0	4.8

(x)	Indicates number of individual spot analyses on that sample.
-	Indicates that there are not enough data values to carry out calculation.
Spot analyses <mdl excluded from calculations	
Complete data table with all analysed elements given as Appendix 2	

BISMUTH

Bismuth concentrations in galena vary significantly across different deposits, different samples in a single deposit and also within a single sample. The lowest mean concentration for any sample was 0.06 ppm in sample DM3 (Vorta). This is in stark contrast to 36,453 ppm Bi recorded in BB55 (Baita Bihor); the highest measured mean concentration of any minor element in any sample analysed here. Nevertheless, smooth LA-ICP-MS downhole profiles and a standard deviation which is 11% of the mean in BB55 advocate that Bi is in solid solution. Individual analyses recording anomalously high Bi concentrations were recorded in several samples; BdA 99-5 (Baia de Aries), Hj14 (Herja), N5 (Efemcukuru), 30 and 47 (Kochbulak). Micro-inclusions of Bi-bearing phases were interpreted as being responsible for these anomalous concentrations (see Appendix 2). Mean Bi concentrations vary by two orders of magnitude across samples

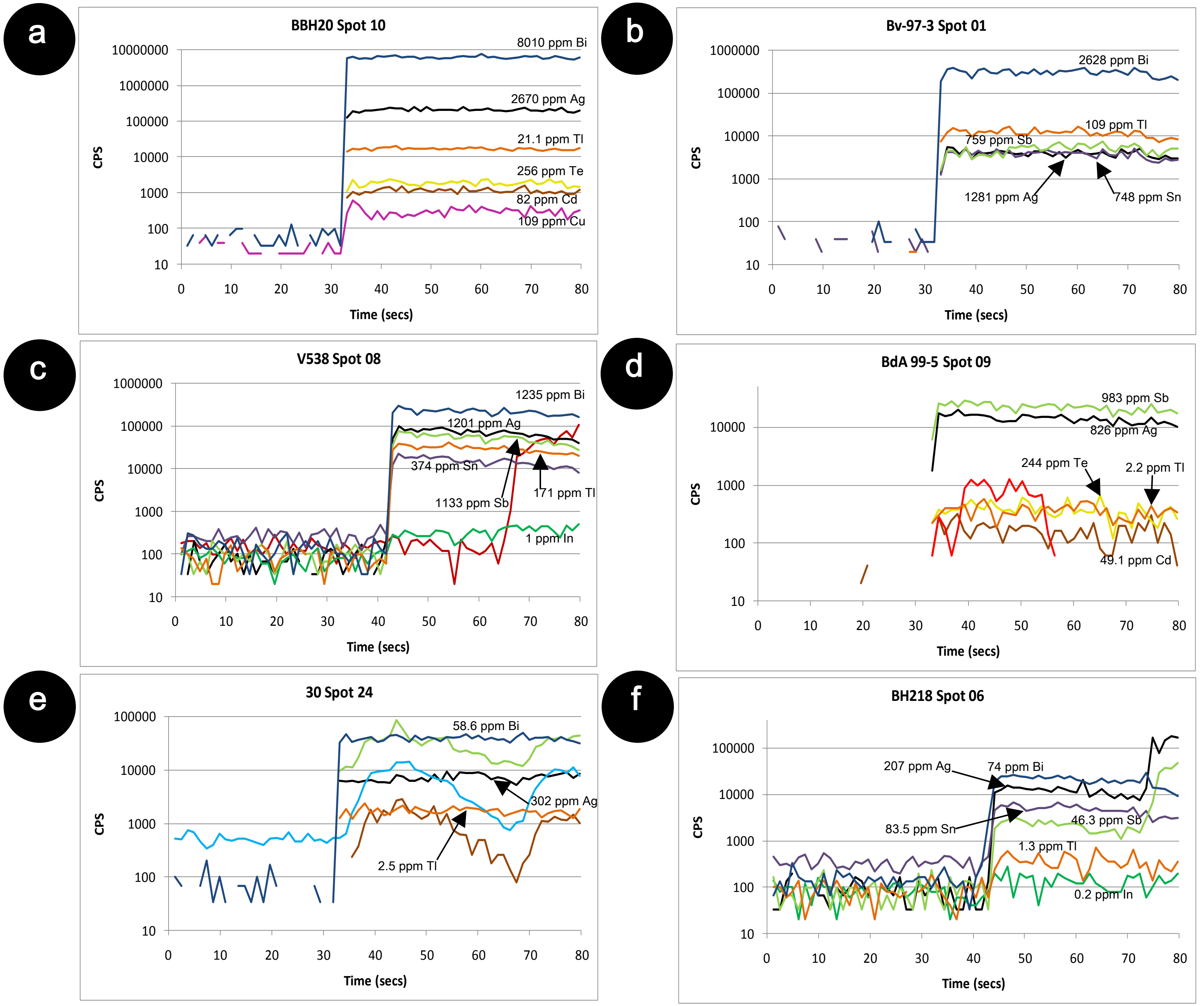


Figure 3: Representative time-resolved LA-ICP-MS depth profiles for galena. From left, the background count is 30 s, followed by 50 s ablation time, which is integrated. Parts-per-million concentrations are given for selected elements. CPS = counts per second. (a) Flat spectra reflecting solid solution for Bi, Ag and Tl, but also Te, Cd and Cu (BBH20, Baita Bihor). (b) Flat spectra for Bi, Ag, Sb and Tl, but also Sn (Bv-97-3, Bleikvassli). (c) Peak on Zn profile indicating mineral inclusion. Note flat spectra for Sn and In (V538, Bleikvassli). (d) Peak on Au profile indicating inclusion (BdA 99-5, Baia de Aries). (e) Parallel peaks on Sb, Hg and Cd profiles reflecting mineral inclusions (30, Kochbulak). (f) Peak on Ag and Sb profiles reflecting mineral inclusion. Accurate solid solution concentrations can still be calculated by selecting only the signal before the peak (BH218, Broken Hill).

from Baia de Aries, Baita Bihor, Herja, Efemcukuru and Kochbulak. These deposits are all relatively high temperature epithermal systems except for Baita Bihor which is a high temperature skarn. Such systems commonly display significant zonation of certain elements across and between ore zones as a response to temperature gradients and distance from the source of ore-forming fluids. Sample Hj13 from Herja contains galena that varies the most in Bi content; from 1.3 to 6,406 ppm. Despite the variation, this Bi is still interpreted as being locked within the galena crystal lattice

ANTIMONY

Mean antimony concentrations in galena vary from 1.2 ppm in BB158 (Baita Bihor) to 3,518 ppm in Mo 11 (Mofjellet). However Herja contains galena that on average contains the most Sb. Once again, smooth LA-ICP-MS downhole profiles and standard deviations on average 36% of the mean suggest the measured Sb is in solid solution. The exception is one LA-ICP-MS spot in sample 47 (Kochbulak) which recorded an anomalously high Sb value (see Appendix 2). Micro-inclusions of an Sb-bearing sulphide (likely tetrahedrite) were detected with the SEM in this sample. Sb shows far less variation across samples from a single deposit than Bi. Nevertheless both Broken Hill and Baita Bihor display variation up to two orders of magnitude suggesting significant zonation within these deposits. Individual samples typically show little variation in Sb, however BH218 (Broken Hill) and DMV99-22 (Vorta) both have standard deviations greater than the mean.

THALLIUM

Thallium concentrations in galena vary over two orders of magnitude from 1.2 ppm in BH221 (Broken Hill) to 248 ppm in Bv-1 (Bleikvassli). Galena in the Bleikvassli samples is around four times more Tl-rich than in the Mt. Isa samples which contain the next most Tl-rich galena. Typical Tl concentrations are, however, <10 ppm in most deposits. Standard deviations, which average 20% of the mean in all samples, and smooth LA-ICP-MS downhole profiles indicate Tl is in solid solution within galena. Tl varies very little within a single deposit, always less than one order of magnitude. A similar trend is present on the sample scale, with only BdA 99-9 (Baia de Aries) having a standard deviation greater than the mean.

CADMIUM

Mean cadmium concentrations in galena also vary over two orders of magnitude across all analysed samples. Mean concentrations range from 5.9 ppm in DMV99-22 (Vorta) up to the anomalously high value of 487 ppm in Mo 11 (Mofjellet); most samples contain a few tens ppm. A few anomalously high Cd values were recorded in samples 5984B C1 (Mt. Isa), Bv-1 (Bleikvassli) and 30 (Kochbulak). These high values most likely resulted from micro-inclusions of Cd-bearing phases being analysed (see Appendix 2). Sub-micron-sized Cd-bearing phases were detected with the SEM in sample 30. These are likely a Cd-rich variety in the tetrahedrite group. Apart from these anomalous analyses, all others recorded Cd in solid solution as evidenced by smooth LA-ICP-MS downhole profiles and standard deviations averaging 36% of the mean. Cd concentrations are typically very uniform across all samples from a single deposit. Mofjellet and Kochbulak are the exceptions showing variations of 18.4 to 487 ppm and 10.1 to 145 ppm, respectively. The Kochbulak samples also show significant variation at the sample scale with standard deviations very similar to their means.

COPPER

The copper concentrations in galena vary considerably from below the detection limit in 16 samples to 797 ppm in DMV99-22 (Vorta). It is interpreted that the galena in many samples - Bv-97-3 (Bleikvassli), Mo 5 (Mofjellet), BB55, BBH16AB (Baita Bihor), T1a (Toroiaga) and 47 (Kochbulak) – contains sub-micron-scale inclusions of Cu-bearing minerals (see Appendix 2). Similar inclusions of Cu-bearing phases (likely of the tetrahedrite group) were also detected with the SEM in samples Mo 5, BBH16AB, T1a and 47. Despite this, the majority of analyses reveal Cu that is most likely in solid solution in the galena structure (smooth LA-ICP-MS downhole profiles, standard deviations averaging 41% of the mean).

SELENIUM AND TELLURIUM

Both selenium and tellurium vary extensively across the sample set. Selenium ranges from below the detection limit in 5 samples to 1,742 ppm in Bv-97-3 (Bleikvassli) while Te ranges from below the detection limit in 2 samples to 891 ppm in BB55 (Baita Bihor). While smooth LA-ICP-MS downhole profiles reveal both elements can sit within the crystal lattice of galena, micro-inclusions of selenides are inferred in BH218, BH221 (Broken Hill), Kmi 2b (Kapp Mineral), BdA 99-9 (Baia de Aries), BBH20 (Baita Bihor), TOR197 (Toroiaga) and ZN 99.2 (Zinkgruvan) while the presence of tellurides is inferred in 38 (Kochbulak) (see Appendix 2). Both elements are capable of varying up to an order of magnitude across samples from a single deposit and significantly across a single sample.

INDIUM AND TIN

Indium and tin were found to be present at detectable concentrations in most samples but absolute values are typically less than 2 and 10 ppm, respectively. However it seems that, in some cases, galena can accommodate far more Sn in its structure than this. 619 ppm Sn was recorded in Bv-97-3 (Bleikvassli), and each sample from this deposit returned over 100 ppm Sn. One LA-ICP-MS spot on SWAS 59 (Långban) also returned a very high Sn value, however this was interpreted as being the result of a micro-inclusion of a Sn phase, possibly stannite (see Appendix 2). Neither In or Sn vary significantly across samples from a single deposit.

GOLD AND MERCURY

Minor amounts (< 2.5 ppm) of gold and mercury are contained within galena in a handful of samples. While sub-micron-scale inclusions of (especially) Au and Hg phases may be responsible for some of the variation within single samples, it appears from these examples that very low amounts of Au and Hg can be accommodated into the galena structure.

OTHER ELEMENTS

LA-ICP-MS analysis revealed that Cr, Mn, Fe, Co, Ni, Zn, Ga, As, Mo and W could not be detected in galena any significant quantities or consistencies in any of the analysed samples. Data for these elements is included, however, in Appendix 2.

LA-ICP-MS Mapping

BV-1

LA-ICP-MS element maps for sample Bv-1 from Bleikvassli (Figure 4) show the location of various minor/trace elements in a metamorphosed and recrystallised galena, sphalerite, and pyrite assemblage. Notably, the Ag, Bi, Sb, Sn, Tl, and Se are concentrated primarily in galena, while In, Cd, Hg, Ga and Cu are concentrated in sphalerite. Pyrite is the primary host of As. Silver is also concentrated to a lesser extent in sphalerite while In and Cd are also contained in galena. No compositional heterogeneity is noted in galena.

HJ13.1

The first set of element maps of Hj13 from the Herja epithermal vein system (Figure 5) show the distribution of elements in an assemblage of galena, sphalerite and chalcopyrite from an epithermal vein. Silver, Sb, Bi, Tl, Te and Se are primarily contained within galena while Cd, In, Sn, Co, Mn, Hg and Ga are largely concentrated in coexisting sphalerite. Chalcopyrite is relatively barren of minor/trace elements but does contain lesser amounts of In, Sn, Bi, Ag and Co. The Bi, Se, Te, Sb, Ag and Tl maps show extensive compositional zoning in the galena grain. A systematic decrease in these elements is seen towards the mutual boundary with sphalerite, except for Sb which seems to behave somewhat inversely to the other elements. Major zoning of In and Sn is also present in sphalerite.

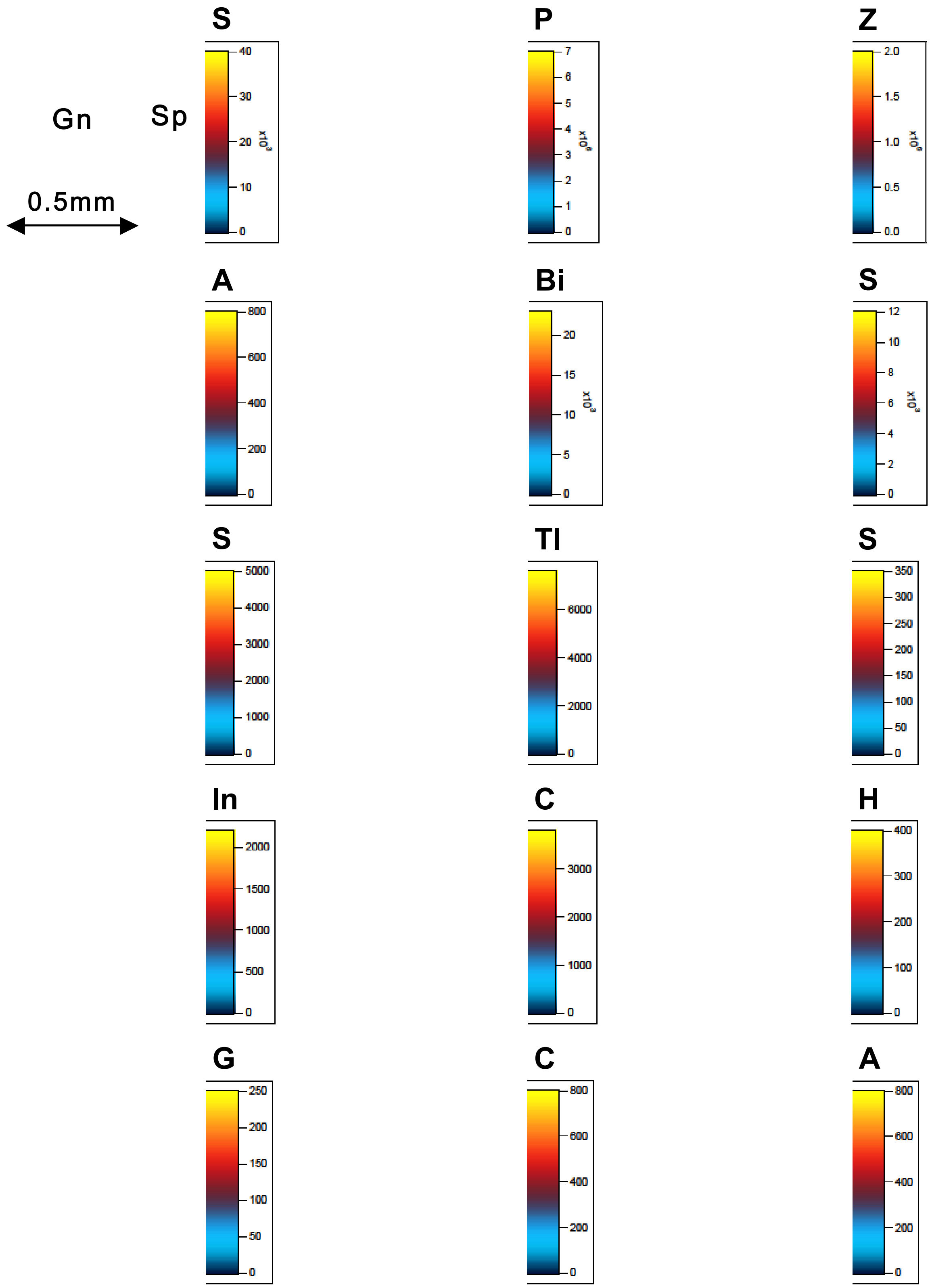


Figure 4: LA-ICP-MS element maps of co-existing galena (Gn), sphalerite (Sp) and pyrite (Py) from Bleikvassli (sample Bv-1). Scales are in counts per second.

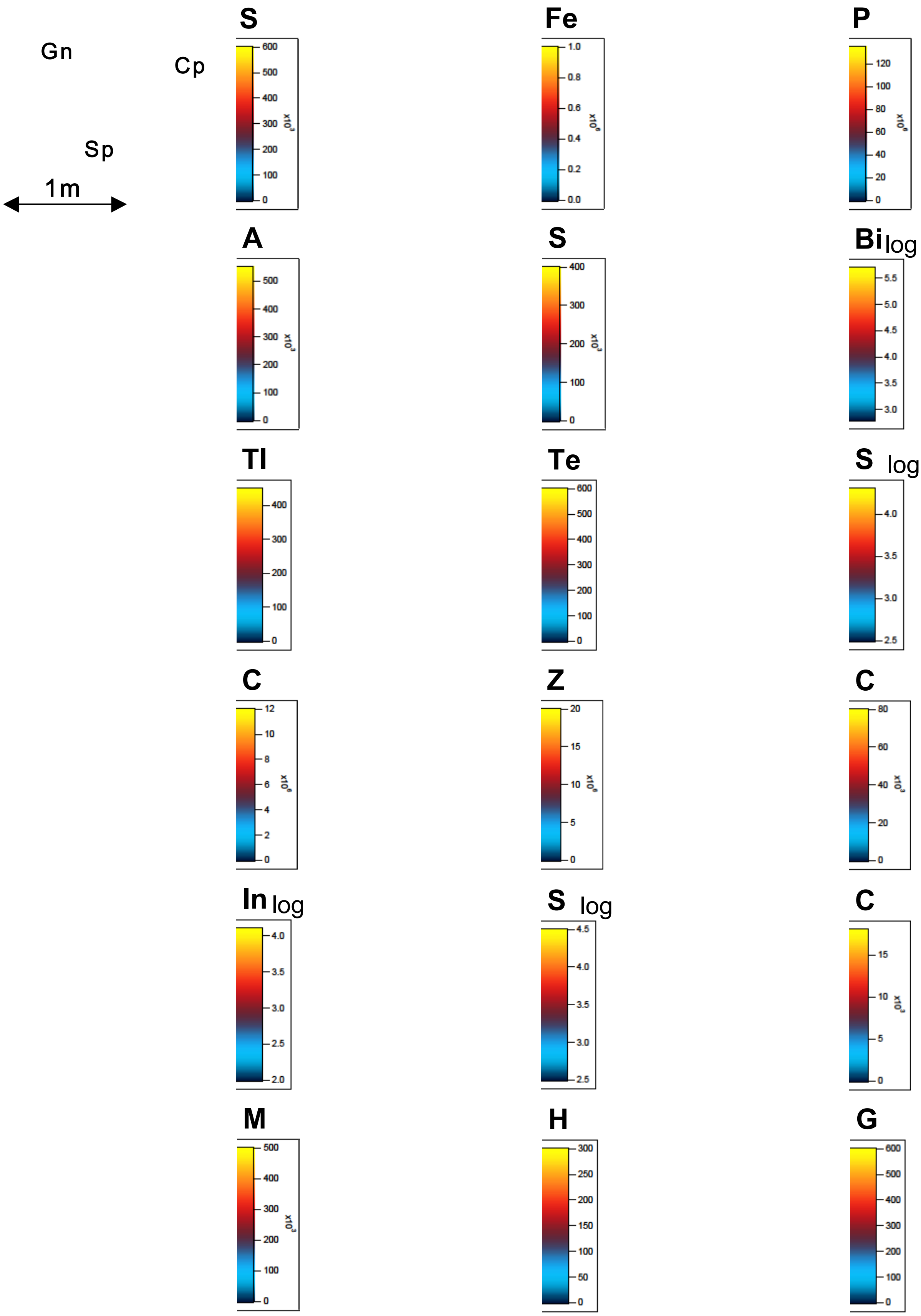


Figure 5: LA-ICP-MS element maps of co-existing galena (Gn), sphalerite (Sp) and chalcopyrite (Cp) from Herja (sample Hj13). Scales are in counts per second.

EMERIC2

The element maps of Emeric2 from Toroiaga (Figure 6) show the distribution of elements in a galena, sphalerite, chalcopyrite and pyrite assemblage in an epithermal vein system. Antimony, Bi, Ag, Tl, Te and Se are all primarily restricted to galena. Cadmium, Mn, Hg, Ga and In are chiefly concentrated within sphalerite. Nickel, Co, As, and Au are almost exclusively present within pyrite whereas Sn is largely contained in chalcopyrite. The chalcopyrite also plays host to lesser amounts of Ga and In while galena plays host to some Sn. A minor amount of Cu is contained within sphalerite. Galena is compositionally zoned with respect to Bi and Se. While the zoning in one galena crystal is systematic – a relatively barren core and enriched rim – the other crystal shows a less obvious pattern, although a similar depletion is seen towards the boundary with sphalerite. The zoning pattern is mimicked to a lesser extent by Te, and somewhat by Tl and Ag. Antimony also follows the same pattern, but with concentrations reversed, i.e. the galena crystal with a systematic compositional zoning has an antimony-enriched core and depleted rim. Significant zoning is also displayed by In in sphalerite, and by Ni, As, Co and Au in pyrite.

HJ13.2

The second set of element maps from sample Hj13 (Figure 7) admirably shows the compositional zoning of various trace elements within galena. These maps show that the zonation is oscillatory with alternating enriched and depleted zones. Moreover, the zonal pattern radiates outwards from the galena-sphalerite boundary. Bismuth, Se, Ag, Te and Tl are all seen to correlate with one another, displaying the same zonal pattern across the map, whereas Sb, again, behaves in an inverse manner. Some sector zoning is also noticeable (seen particularly well on the Bi and Sb maps) although the variation is

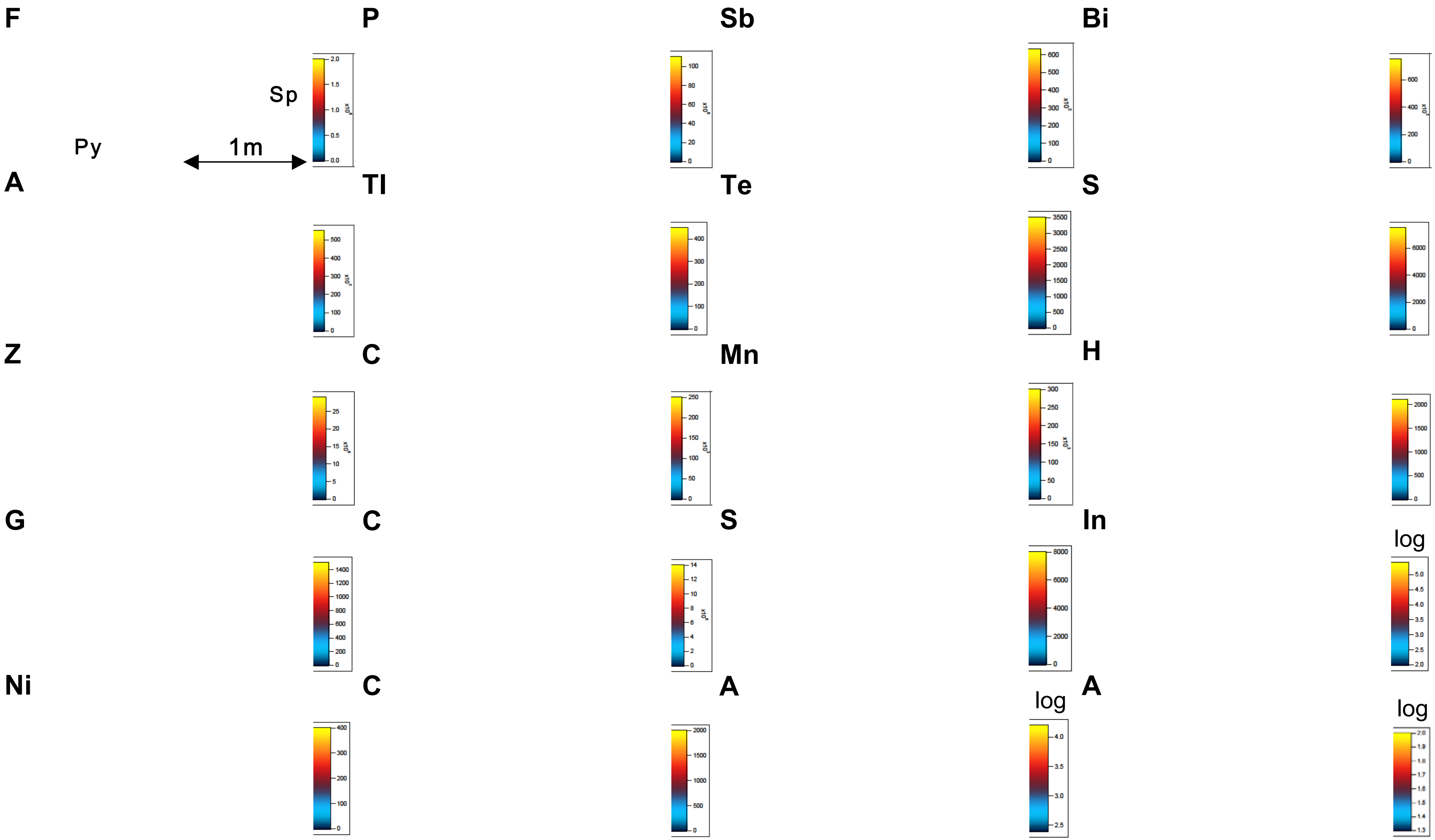


Figure 6: LA-ICP-MS element maps of co-existing galena (Gn), sphalerite (Sp), chalcopyrite (Cp) and pyrite (Py) from Toroiaga (sample Emeric2). Scales are in counts per second.

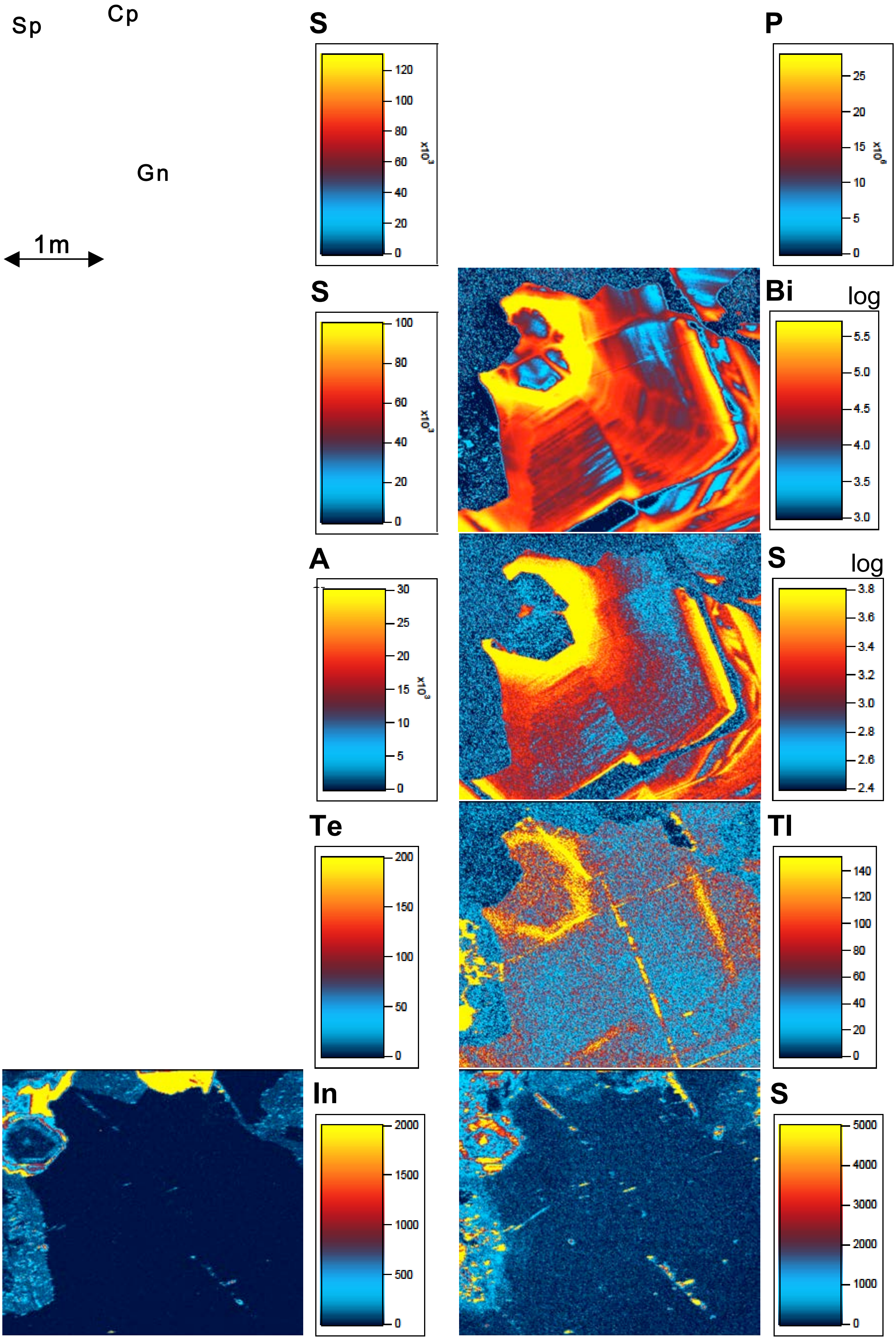


Figure 7: LA-ICP-MS element maps of co-existing galena (Gn), sphalerite (Sp) and chalcopyrite (Cp) from Herja (sample Hj13). Note compositional zoning in galena (see text for further explanation). Scales are in counts per second.

somewhat weaker than the oscillatory zoning. Smaller scale oscillatory zoning of In and Sn is also visible in the sphalerite.

DISCUSSION

Element Correlations

Table 4 reveals a very high correlation ($R^2 = 0.9645$) between Ag and (Bi + Sb) across the full dataset. This association is expected as a direct result of the coupled substitution $Ag^+ + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$. Under a true coupled substitution reaction, one would expect that mol.% Ag would equal mol.% (Bi + Sb) and thus have a ratio of 1. However Figure 8a reveals that the slopes of the lines of best fit for various deposit types in the Bi + Sb vs. Ag scatter-plot vary from 1.04 (Epithermal) to 1.28 (skarn). As all three elements are interpreted as being in solid solution, this implies more (Bi + Sb) is contained within the galena crystal lattice than Ag.

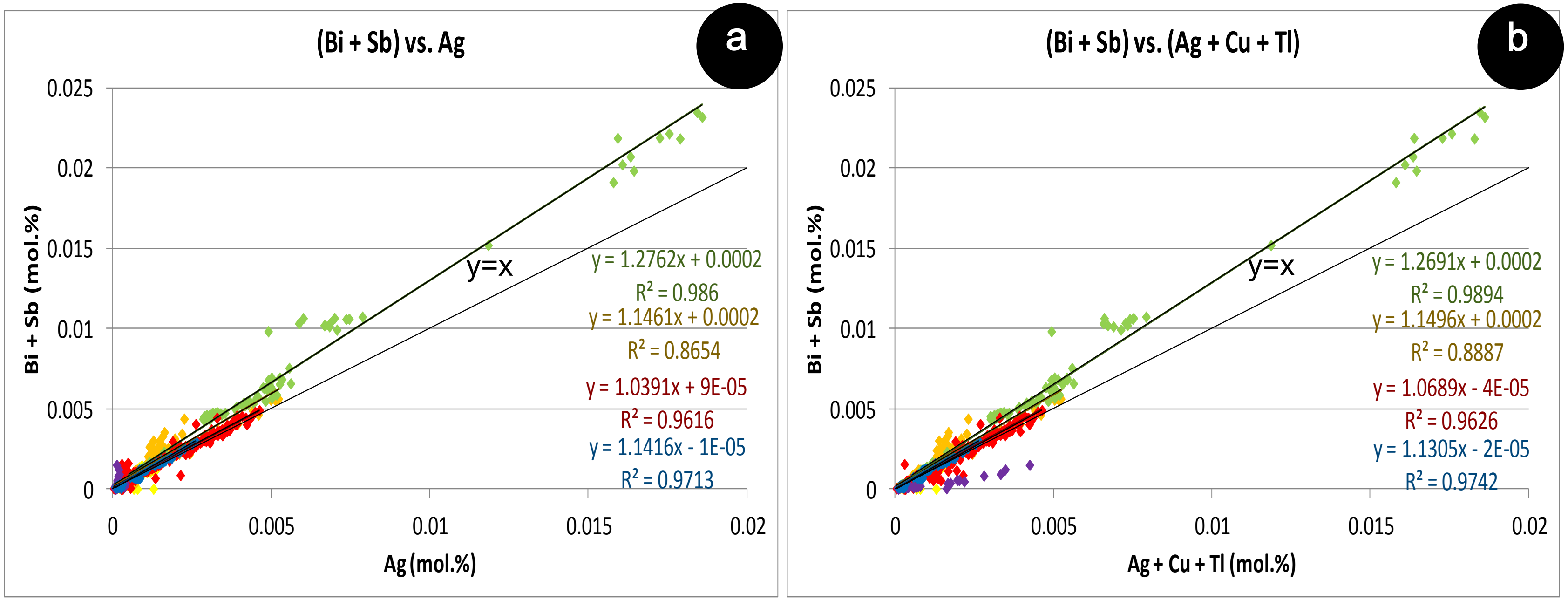
Table 4 however shows that by adding Cu to Ag, the correlation with (Bi + Sb) is increased to $R^2 = 0.9644$. This correlation is further increased to $R^2 = 0.9662$ if Tl is added to (Ag + Cu). Notice also that the coefficient of determination (R^2) of the entire dataset for each deposit type in Figure 8a is increased when Cu and Tl are added to Ag in Figure 8b. As Cu and Tl also probably exist in the +1 state along with Ag (see Substitution Mechanisms section), these correlations indicate that both Cu^+ and Tl^+ may also be involved in a coupled substitution by which Ag^+, and either Bi^{3+} or Sb^{3+} are

Table 4:
Correlation table of minor and trace elements in galena.

R^2	Cu	Se	Ag	Cd	In	Sn	Sb	Te	Au	Hg	Tl	Bi	(Sb + Bi)	(Ag + Cu)	(Ag + Tl)	(Ag + Tl + C
Cu	1	0.0308	0.0126	0.0016	0.0208	0.0358	0.0068	0.0139	0.0048	0.0324	0.0096	0.0221	0.0201	0.0316	0.0120	0.0308
Se		1	0.0028	0.0116	0.1531	0.1853	0.0069	0.0124	0.0002	0.0193	0.0656	0.0042	0.0030	0.0041	0.0022	0.0034
Ag			1	0.0612	0.0104	0.0067	0.0000	0.7931	0.0044	0.0003	0.0009	0.9050	0.9645	0.9956	0.9995	0.9954
Cd				1	0.0172	0.0265	0.0881	0.0628	0.0160	0.1321	0.0218	0.0192	0.0344	0.0587	0.0593	0.0569
In					1	0.9169	0.0121	0.0535	0.0055	0.0355	0.4328	0.0104	0.0080	0.0123	0.0076	0.0093
Sn						1	0.0059	0.0505	0.0105	0.0593	0.4659	0.0055	0.0043	0.0088	0.0045	0.0062
Sb							1	0.0816	0.0216	0.0052	0.0001	0.0832	0.0237	0.0000	0.0000	0.0000
Te								1	0.0099	0.0014	0.0014	0.8564	0.8353	0.7917	0.7879	0.7869
Au									1	0.0103	0.0082	0.0075	0.0046	0.0037	0.0041	0.0034
Hg										1	0.0690	0.0005	0.0001	0.0008	0.0001	0.0005
Tl											1	0.0179	0.0194	0.0076	0.0136	0.0118
Bi												1	0.9811	0.9063	0.9064	0.9080
(Sb + Bi)													1	0.9644	0.9660	0.9662
(Ag + Cu)														1	0.9948	0.9995
(Ag + Tl)															1	0.9956
(Ag + Tl + Cu)																1

R^2 = Correlation — **0 None** — **0.5** — **1 Perfect**

Coefficients of determination (R^2) calculated from the mean concentration of each minor/trace element pair in each sample. Correlations not calculated from individual spot analyses.



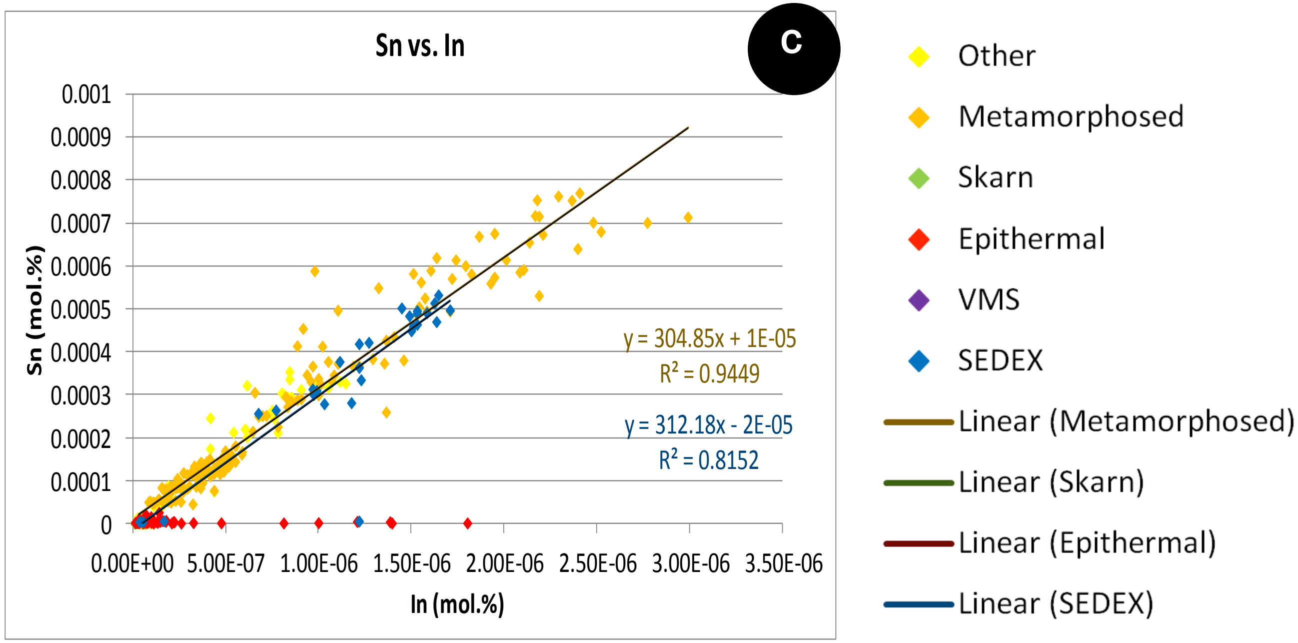


Figure 8: Correlation plots of (a) (Bi + Sb) vs. Ag, (b) (Bi + Sb) vs. (Ag + Cu + Tl) and (c) Sn vs. In in galena from the total dataset. Lines of best fit, linear equations and coefficients of determination (R^2) are given for selected deposit types.

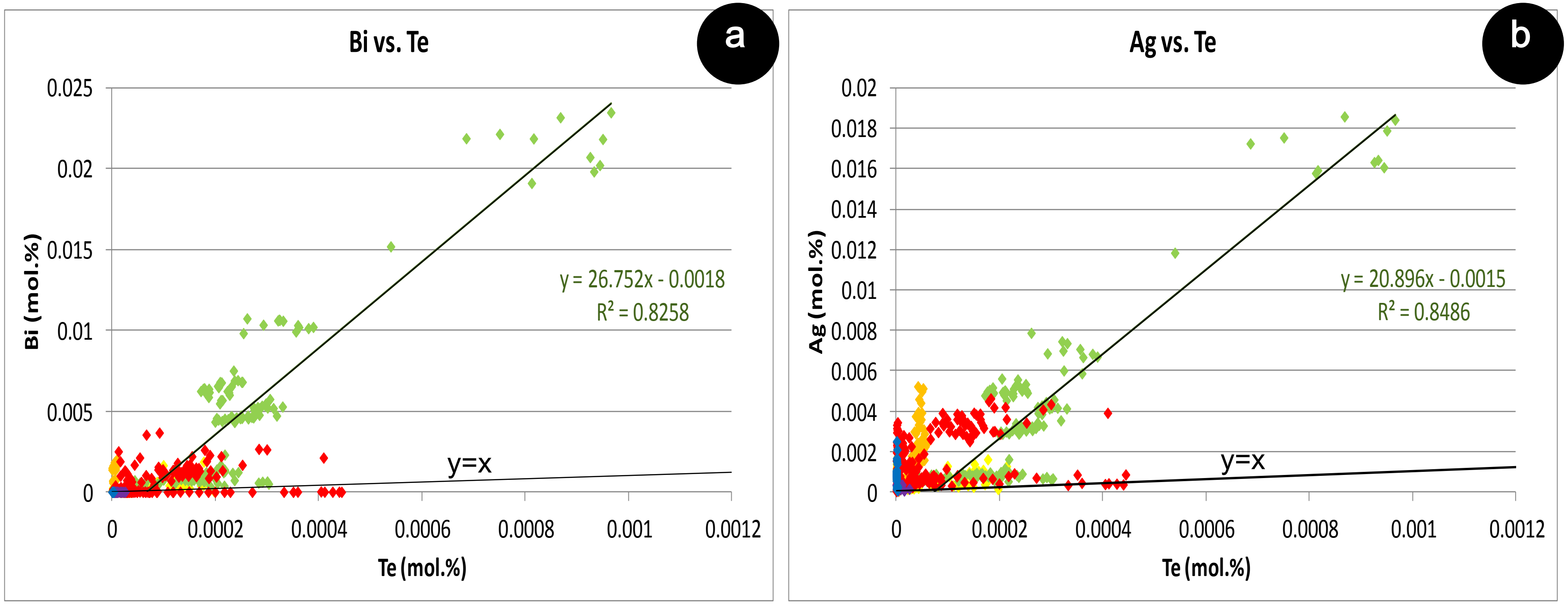
incorporated into the galena crystal lattice. Thus, the coupled substitution may be more accurately expressed as $(Ag, Cu, Tl)^{+} + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$. Since both Cu and Tl have been measured and are interpreted as residing in solid solution in galena, this updated coupled substitution provides a mechanism for adding these elements into the galena lattice.

Although adding Cu and Tl to Ag improves the correlation with (Bi + Sb) overall, Figure 8b shows that this has done little to bring the mol.% (Ag + Cu + Tl) ≈ mol.% (Bi + Sb) for most of the data. In those deposits with high concentrations (~> 0.002 mol.%) of Bi and/or Sb (e.g. Bleikvassli, Herja, Toroiaga, and especially, Baita Bihor), the mol.% (Bi + Sb) still exceeds mol.% (Ag + Cu + Tl). This implies that Bi^{3+} and/or Sb^{3+} can substitute into the crystal lattice of galena without a corresponding monovalent cation, particularly in environments significantly enriched in Bi and/or Sb. If true, the site usually filled by the monovalent cation in this case would be left vacant and so the substitution would be $2(Bi, Sb)^{3+} + \square \leftrightarrow 3Pb^{2+}$. Although a structural configuration including vacancies is non-ideal (Silinsh 1980, Mishin *et al.* 2001), it may become acceptable when there are either not enough monovalent cations to substitute with Bi^{3+} and/or Sb^{3+} into galena, or too much Bi and/or Sb to be accommodated solely via crystallisation of other coexisting minerals.

Indium and tin are strongly correlated ($R^2 = 0.9169$, table 4) across the sample suite. This reveals that those samples with galena rich in Sn are also rich in In, indicating that the availability of these elements in natural systems is intimately linked, perhaps from granite-sourced fluids. Tin however is typically present at concentrations 1-3 orders of magnitude higher than In as evidenced by the slope of ~310 in Figure 8c. For those galena crystals rich in Sn (i.e. at Bleikvassli), most of the Sn is interpreted as being secondary, i.e. not present when the galena initially crystallised but partitioned into that mineral via syn-metamorphic recrystallisation (see next section). Indium behaves in the same way albeit at lower ranges of concentration.

Similarly, tellurium shares significant correlation with both Ag and Bi (R^2 = 0.7931 and 0.8564, respectively; Table 4). Figure 9 reveals, however, that these correlations are only expressed obviously by the single skarn sampled (Baita Bihor). The presence of various bismuth chalcogenides of the tetradymite group is documented at Baita Bihor (Cioflica *et al.* 1995, Cioflica & Lupulescu 1995, Cioflica *et al.* 1997, Ilinca & Makovicky 1999, Damian *et al.* 2004, Cook *et al.* 2007), therefore it is possible that micro-inclusions of Bi-tellurides were analysed in the Baita Bihor samples, creating the impression that Bi and Te correlate in solid solution in galena. Furthermore, many of these Bi-tellurides are significant carriers of Ag (15,626 ppm Ag has been recorded in tetradymite for example; Ciobanu *et al.* 2009), thus possibly creating an artificial secondary correlation between Ag and Te.

Any correlation of Te with Bi and/or Ag at Baita Bihor as a result of the presence of Ag-bearing Bi-telluride inclusions is not supported by LA-ICP-MS depth profiles. Figure 3a clearly shows smooth depth profiles for Bi, Ag and Te, strongly indicating that these elements are in solid solution in galena at Baita Bihor. Since Bi-enriched galena is also commonly Ag-rich due to the coupled substitution Ag^{+} + $(Bi, Sb)^{3+}$ ↔



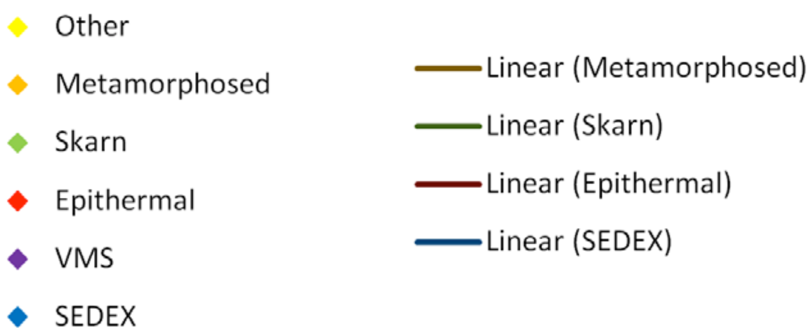


Figure 9: Correlation plots of (a) Bi vs. Te and (b) Ag vs. Te in galena from the total dataset. Lines of best fit, linear equations and coefficients of determination (R^2) are given for selected deposit types.

$2Pb^{2+}$, a correlation between Te and both Bi and Ag can be expected even if Te only truly correlates with one of these elements. Thus, the correlation of Te with Bi and Ag observed in the Baita Bihor samples is likely an isolated case due to a uniquely Bi and Te rich deposit.

Effects of Regional Metamorphism

In this study, the classification of a deposit as metamorphosed is somewhat arbitrary. Many deposits in the sample suite have been metamorphosed to some degree but have not been classified as a metamorphosed deposit since no recrystallisation of the sulphide assemblage can be recognised. Recrystallisation at equilibrium would allow extensive elemental partitioning between coexisting phases.

The effect which recrystallisation has on the distribution of minor/trace elements in galena is somewhat obscured by individual deposits containing ‘anomalous galena’ particularly rich in certain elements. For example, Baita Bihor contains galena that is 5 times richer in Bi than in any other deposit analysed. This is primarily due to the anomalous Bi-rich environment of this deposit, in which a wide range of rare Bi-sulphosalt minerals are recorded (Lupulescu & Lupulescu 1994, Cioflica *et al.* 1997, Ilinca *et al.* 2012). As well as this, enrichment of any element in galena due to recrystallisation is entirely dependent on the presence of sufficient quantities of that element in the immediate environment (i.e. coexisting minerals or fluids). In a similar way, elemental depletion in galena due to recrystallisation is reliant on the presence a nearby suitable host for any element in question. Nevertheless, some trends do arise when element concentrations are plotted by deposit types.

Silver is somewhat enriched in galena from those deposits that have recrystallised (Figure 10a). While similar trends are not noticeable for either Bi or Sb, any increase in Ag content as the result of metamorphism should be matched by Bi and/or Sb due to the coupled substitution $Ag^{+} + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$. It is likely, however, that the availability of either Bi or Sb in the immediate environment will govern which element will partition into galena with Ag during recrystallisation. This explains why those deposits that have been significantly metamorphosed are not necessarily enriched in Bi and/or Sb since the availability of these elements is not guaranteed. Despite this, it does seem that Ag is commonly available to be incorporated into galena.

Tin is significantly concentrated in those deposits that have been metamorphosed (Figure 10e). This is seen particularly well in the LA-ICP-MS element map from Bleikvassli (Figure 4). There the recrystallised galena is highly enriched in Sn while the coexisting sphalerite is almost entirely depleted. Since Sn is commonly a minor component in sphalerite (Stoiber 1940, Cook *et al.* 2009) (see also Figure 5), and since sphalerite is abundant in the Bleikvassli samples, it can be inferred that upper amphibolite facies metamorphism of a coexisting galena-sphalerite assemblage results in a re-partitioning of Sn from sphalerite to galena – assuming Sn was originally concentrated in sphalerite. An alternate explanation is that Sn was initially deposited as other minerals (e.g. stannite, cassiterite etc.) and subsequently incorporated into galena upon recrystallisation of the latter.

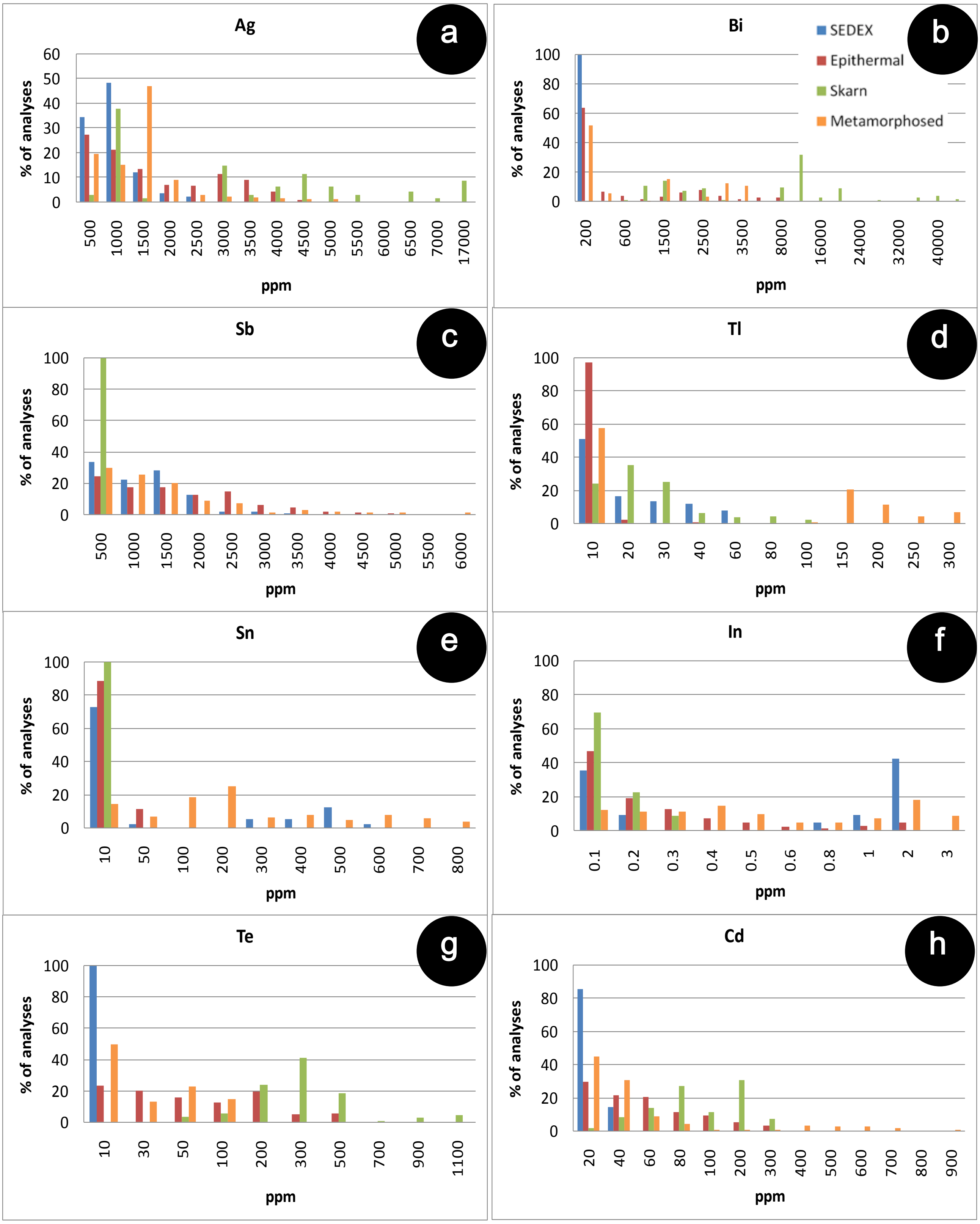


Figure 10: Histograms showing the distribution of (a) Ag, (b) Bi, (c) Sb, (d) Tl, (e) Sn, (f) In, (g) Te and (h) Cd in galena. Distributions are plotted by deposit type. SEDEX ores seem to be significantly depleted in a number of elements including Bi, Te and Cd, while In is skewed by the anomalously rich Sullivan deposit. Epithermal deposits are lacking in Tl and Sn while being somewhat enriched in Te. Skarns are skewed by the anomalously Ag, Bi, Te rich and Sb, Sn poor Baita Bihor deposit. Silver, Sn and In are enriched in the metamorphosed ores while Tl is skewed by the anomalously Tl rich Bleikvassli deposit.

It should be noted, however, that Sn-bearing galena is not found exclusively in recrystallised deposits. Galena from Sullivan (SEDEX) contains over 400 ppm Sn and, although this deposit has been metamorphosed to lower amphibolite facies, there is no evidence for any significant recrystallisation of the sulphide assemblage. As Figure 6 shows, chalcopyrite may also be a primary host of Sn. The partitioning behaviour of Sn between coexisting minerals under metamorphic conditions represents a significant research gap which needs to be assessed in terms of the galena-sphalerite-chalcopyrite ternary assemblage. This is beyond the scope of the present study.

Indium, which usually mimics Sn, is also somewhat concentrated in galena during metamorphism (see Figure 10f). However, as the LA-ICP-MS element map from Bleikvassli (Figure 4) shows, in a recrystallised assemblage In is still preferentially hosted by sphalerite, its usual host in sulphide systems (Cook *et al.* 2009) (see also Figures 5, 6 and 7).

Substitution Mechanisms

The data obtained in this study confirms established substitution mechanisms for Ag, Bi and Sb through the coupled substitution $Ag^{+} + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$. When Bi and/or Sb are at high concentrations (~> 0.002 mol.%), site vacancies most likely come into play through an additional substitution $2(Bi, Sb)^{3+} + \square \leftrightarrow 3Pb^{2+}$. Arsenic is not detected in any significant concentrations in any sample, even with detection limits commonly as low as a few ppm, thus not allowing any confirmation that As^{3+} also takes part in the coupled substitution (Chutas *et al.* 2008).

Data introduced here suggest an expanded coupled substitution $(Ag, Cu, Tl)^{+}$ + $(Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$, i.e. also involving other monovalent cations. As the oxidation state of Cu and Tl in galena cannot be determined experimentally by XAFS or XANES analysis due to the very low concentrations of these elements, the presence of Cu^{+} may only be assumed based on its presence in other common sulphide minerals such as chalcopyrite (Goh *et al.* 2006), or in substituted sphalerite (Cook *et al.* 2012). Thallium also prefers the +1 state over +3 as Tl^{3+} is a powerful oxidising agent under normal conditions (Downs 1993). This study has also shown that far more Tl can be accommodated in galena than previously thought. The highest concentration of Tl in galena recorded in this study (248 ppm; Bv-1, Bleikvassli) is an order of magnitude greater than the maximum 20 ppm reported by Nriagu (1998). Furthermore, contrary to Nriagu (1998) and Graham *et al.* (2009), galena appears to be the primary host for Tl in assemblages containing pyrite and sphalerite (Figures 4, 5, 6 and 7). Whether there is a systematic partitioning of Tl into galena in any sulphide ore, is, however, unclear.

It seems most likely that Cd and Hg are incorporated into galena via the simple bivalent cation substitution: $(Cd, Hg)^{2+} \leftrightarrow Pb^{2+}$. However this study has shown that the previously reported concentrations of Cd and Hg in solid solution in galena may be gross over-calculations. As Tauson et al. (2005) concluded, the 1.5 mol.% Cd reported by Tauson et al. (1986) is probably 1-2 orders of magnitude too high. Over-calculation of the Hg content of galena by Tauson *et al.* (1986) may still be greater, since only a few ppm Hg is ever recorded in galena in this study. Given the apparent lack of Hg in galena, at least in the studied sample suite, partitioning of Hg between coexisting galena and sphalerite would not appear to be a prospective geothermometer for most deposits.

Contrary to Bethke and Barton (1971), Mn has not been detected in galena in any significant concentrations or consistencies in any sample to permit its use as a geothermometer.

Although introduced as a possible mechanism of integration into sphalerite by Cook *et al.* (2009) via the coupled substitution $Ag^{+} + Sn^{3+} \leftrightarrow 2Zn^{2+}$, the integration of Sn in the +3 reduced state in galena is not supported from the dataset, nor is that the preferred oxidation state of Sn in minerals (Stwertka 1998). Rather it is more likely Sn is being substituted into galena via $Sn^{4+} + \square \leftrightarrow 2Pb^{2+}$ involving the creation of vacancies in the galena lattice, or through simple bivalent cation substitution with Pb in the less stable +2 state: $Sn^{2+} \leftrightarrow Pb^{2+}$ (Stwertka 1998). Tin could also potentially be incorporated, at least to a limited extent, via $Sn^{4+} + 2(Ag, Cu, Tl)^{+} \leftrightarrow 3Pb^{2+}$, although the budget of monovalent cations is insufficient to incorporate the large concentrations of Sn documented in deposits such as Bleikvassli or Sullivan. It may be possible, at least in those most Sn rich galena specimens (e.g. Bv-97-3; Bleikvassli), to determine the oxidation state of Sn in galena by XANES, EXAFS or XPS.

It can be assumed that In is incorporated in galena as a trivalent cation in the coupled substitution $Ag^{+} + (Bi, Sb, In)^{3+} \leftrightarrow 2Pb^{2+}$. Similarly, the data obtained in this study does not contradict the incorporation of both Se and Te through the substitution $(Se, Te)^{2-} \leftrightarrow S^{2-}$.

Grain-scale Compositional Zoning

Oscillatory zoning of minor/trace elements has been documented in galena from two epithermal ores (Herja and Toroiaga; Figures 5, 6 and 7), confirming that galena, like other sulphides, can be compositionally zoned at the grain-scale. Given the non-metamorphosed character of these geologically young (~10 Ma) deposits, zoning must have developed during initial crystallisation. The 120^o triple junctions between galena, sphalerite and chalcopyrite (Figure 5) strongly suggest the sulphide assemblage at Herja formed at equilibrium, presumably during slow growth conditions. The contrasting zoning pattern shown by Sb compared to all other elements displaying zonation (Bi, Se, Ag, Te and Tl) is a direct result of the coupled substitution $Ag^+ + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$. When Bi is enriched in galena, Sb is depleted by necessity and *vice versa*.

The mechanism behind the growth zoning pattern in galena is unclear, as various oscillatory zoning mechanisms are debated in the wider literature. It is, however, difficult to envisage an epithermal system in which the Bi, Ag, Se, Te and Tl content of the ore-forming fluid varies to such a great degree, and in such a rhythmic fashion. It is more reasonable to interpret the observed zoning in galena as intrinsic (relating to crystal growth and local phenomena) rather than extrinsic (involving physical and/or chemical changes within the larger system independent of local crystallisation).

Reeder and Grams (1987) proposed a model for sector zoning in crystals growing from an aqueous solution as a result of differential partitioning between non-equivalent crystal faces. Shore and Fowler (1996) claim this model may be applicable to oscillatory zoning as well since both types of zoning are often visible in the same crystal, as is the case observed in this study (Figure 7). Indeed, oscillatory zoning was replicated by Reeder *et al.* (1990) in synthetic calcite without changing the composition of an isothermal solution. The absence of grain-scale zoning in other samples may suggest that such phenomena are rarely preserved, and that recrystallised galena will not show zoning. Identifying the relationships between crystal zoning and lattice-scale structural features, including the possible role of defects and twinning, would be a worthy topic for future study, e.g. by a combination of focussed-ion-beam (FIB)-SEM and transmission electron microscopy methods as was applied to sphalerite and other sulphides (Ciobanu *et al.* 2011).

A precedent for the importance of nanoscale features exists in the work of Sharp *et al.* (1990) who identified defects in the surface structure of Ag-Sb-substituted galena using scanning tunnelling microscopy (STM). They describe a distortion in the surface structure of Ag- and Sb-bearing galena, resulting in kinking of atomic rows that parallel [110]. This distortion is interpreted as the result of strain in the atomic structure caused by the grouping of substituted Ag and Sb in the galena lattice. If true, this may indicate that substituted elements (especially Ag and Sb) in the galena lattice are not evenly distributed, but grouped.

Partitioning Trends with Sphalerite

Some of the samples in this study (see Table 1) contain coexisting sphalerite which has been analysed by LA-ICP-MS in previous studies (Cook *et al.* 2009, Lockington 2012). This allows a comparison of minor/trace element partitioning trends between these coexisting phases.

As expected, Ag, Sb and Bi are primarily contained within galena whereas Cd, In and Hg are concentrated in sphalerite. Tin is largely absent in sphalerite; only the Bleikvassli samples have concentrations of Sn above the detection limit. In coexisting galena, concentrations range from 0.7 (Mo 5, Mofjellet) to 595 (V538, Bleikvassli) ppm, with galena always containing more Sn than sphalerite. It has already been suggested that galena becomes the primary host of Sn in a recrystallised assemblage. Nevertheless, galena still contains more Sn than sphalerite even in SEDEX (Mt. Isa) and epithermal (Toroiaga) ores. This study thus clearly shows that the role played by galena in controlling trace Sn distributions may be significantly greater than previously recognised. Further work to establish this would, however, also need to consider the role played by coexisting chalcopyrite, generally considered a good Sn-carrier (Kase 1987).

Thallium is always primarily concentrated in galena, with only the Mt. Isa sphalerite containing concentrations of Tl above the detection level. This again suggests that galena is the primary host of Tl, contrary to the claims of Nriagu (1998) and Graham *et al.* (2009). Copper concentrations are always an order of magnitude greater in sphalerite than coexisting galena indicating that sphalerite is the preferred host. Sample Mo 5 (Mofjellet) is the exception with 12 ppm Cu recorded in galena compared to 8 ppm Cu in the sphalerite. Selenium is essentially absent from sphalerite (only sample above the detection limit is 4 ppm Se in T1a, Toroiaga) where there is coexisting analysed galena. In contrast, the galena is relatively Se rich (concentrations up to 553 ppm Se in Bv-1, Bleikvassli). This may suggest that in a galena-sphalerite assemblage, Se is preferentially partitioned within galena.

CONCLUSIONS

This study has provided substantial new information about the distribution of minor/trace elements in galena. The main conclusions are:

- LA-ICP-MS analysis is a reliable method for determining the minor/trace element concentrations in galena, and for distinguishing between elements in solid solution as opposed to discrete micro-inclusions.
- The coupled substitution $Ag^{+} + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$, allowing Ag, Bi, and Sb to be incorporated into galena, is confirmed by the data obtained in this study. When Bi and/or Sb are at high concentrations (~> 0.002 mol.%), site vacancies most likely come into play through an additional, previously-unrecognised substitution $2(Bi, Sb)^{3+} + \square \leftrightarrow 3Pb^{2+}$. Extremely Bi-rich galena was analysed in sample BB55 (Baita Bihor; > 35,000 ppm Bi).
- Galena is the primary host of Tl in all mapped mineral assemblages. Thallium and copper are likely incorporated into galena via the expanded coupled substitution with Ag, Bi and Sb: $(Ag, Cu, Tl)^{+} + (Bi, Sb)^{3+} \leftrightarrow 2Pb^{2+}$.
- Galena has been found to be a significant Sn-carrier. Tin is measured in galena up to 619 ppm (Bv-97-3, Bleikvassli), and correlates highly with In across the sample suite. This indicates that the availability of these elements in natural systems is intimately linked. It is concluded that Sn and to a lesser extent In are concentrated in galena through recrystallisation during metamorphism. Tin is most likely substituted into galena via $Sn^{4+} + \square \leftrightarrow 2Pb^{2+}$ involving the creation of vacancies in the galena lattice, or via $Sn^{2+} \leftrightarrow Pb^{2+}$. Indium is likely incorporated via $Ag^{+} + (Bi, Sb, In)^{3+} \leftrightarrow 2Pb^{2+}$.
- Cadmium and minor amounts of Hg can be incorporated into galena. Simple isovalent substitution $(Cd, Hg)^{2+} \leftrightarrow Pb^{2+}$ is inferred as the mechanism of this incorporation. Given the apparent lack of significant Hg in galena, at least in the studied sample suite, partitioning of Hg between coexisting galena and

sphalerite would not appear to be a prospective geothermometer for most deposits.

- Oscillatory zoning, and lesser sector zoning of minor/trace elements in galena is confirmed in galena from epithermal ores for the first time. This zoning is interpreted as the result of slow crystallisation at relatively low temperatures.

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APPENDIX 1: BRIEF DESCRIPTIONS OF SAMPLED DEPOSITS

See attached

APPENDIX 2: LA-ICP-MS MINOR/TRACE ELEMENT DATASET

See attached

APPENDIX 1: BRIEF DESCRIPTIONS OF SAMPLED DEPOSITS

BAIA DE ARIES

Neogene mineralisation in the Baia de Aries area, Apuseni Mts., Romania, is present as (epithermal) breccia pipes and stocks in 25 breccia bodies. These breccias are located along the contact between an andesite-schist, andesite-limestone and limestone-schist which form the basement in the area (Ciobanu et al. 2004). The two styles of mineralisation, gold-dominant, and Pb-Zn-(Cu), are contained in the Afinis and Valea Lacului-Ambru stocks, respectively. These stocks are segregated as a result of lateral zonation, however the system is not vertically zoned (Ghitulescu et al. 1979). Mineralisation has been interpreted as resulting from a single stage (Ianovici et al. 1976), two-stages (Borcos 1968) and multiple stages (Ghitulescu et al. 1979) of epithermal activity. The breccias associated with the Valea Lacului-Ambru stocks contain limestone, andesite and schist fragments cemented by volcanic ash. Polymetallic mineralisation consists of massive pockets containing galena, sphalerite, pyrite, alabandine (MnS), tetrahedrite-tennantite and lesser chalcopyrite. Gold mineralisation tends to be pyrite-dominant and is generally disseminated rather than massive (Ciobanu et al. 2004).

BAITA BIHOR

Baita Bihor is a Cu-Au-Pb-Zn-Mo skarn deposit located in the northernmost district of the Upper Cretaceous Banatitic Magmatic and Metallogenetic Belt (Ciobanu et al. 2002). This belt extends for 1500 km through Romania, Serbia and Bulgaria, and hosts many intrusion-related ore deposits. The host rocks at Baita Bihor are sedimentary and metamorphic rocks of Permo-Mesozoic and Paleozoic ages, respectively. The skarn system at Baita Bihor (Cioflica et al. 1971, Cioflica et al. 1977) consists of around 10 orepipes controlled by major faults in the area. A large granite pluton some 1-1.2 km below the surface is responsible for the mineralisation. Ages for intrusion and mineralisation coincide at ~ 74 Ma (Ciobanu et al. 2002, Zimmerman et al. 2008).

The mine closed in 2007. Commodities exploited included Cu, Mo, Zn, Pb and Mo; the main ore minerals are bornite, chalcopyrite, molybdenite, sphalerite and galena. Lesser pyrrhotite, pyrite and magnetite are also present. More than 100 different minerals have been reported, making it well known among mineralogists. The deposit is particularly noted for the unusual enrichment in Bi, which is hosted primarily by a wide range of rare Bi-sulphosalts, many of which are only known from this single locality (e.g. cuproneyite; Ilinca et al. 2012). The abundance of Bi and intimate association of Bi-minerals in the Cu-ores presented a significant problem in ore processing, and was one reason for closure of the operation.

Ores are contained in skarns varying from magnesian (spinel – forsterite – chondrodite – phlogopite) to calcic (scapolite – diopside – wollastonite – vesuvianite) in composition. There is a marked west-to-east metal zonation (Mo-Cu-Pb/Zn) across the orefield, but each orepipe also features similar zonation trends from the core of each orepipe to the skarn-marble contact, sometimes with superposition of discrete zones due to telescoping (Cook et al. 2009, unpubl. consultancy report).

BLEIKVASSLI

The Bleikvassli deposit is located ~45 km southeast of Mo i Ranan north-central Norway. Mining between 1957 and 1997 produced about 5.0 Mt of ore grading 4.0% Zn, 2% Pb, 0.15% Cu and 25 g/t Ag. The main orebody is made up of interlayered lenses of massive sulphide ore hosted within amphibolites, quartzites, mica schists and quartzofeldspathic gneisses of the Uppermost Allochthon, Scandinavian Caledonides (Ramberg 1967, Stephens et al. 1985, Bjerkgard et al. 1997). The deposit is believed by most researchers to be of SEDEX-type (Vokes 1963, 1966, Skauli 1990, 1992, Skauli et al. 1992a, Skauli et al. 1992b, Skauli 1993, Moralev et al. 1995, Cook et al. 1998).

The deposit underwent Caledonian metamorphism at peak conditions of roughly 570 °C and 7.5-8 kbar (Cook 1993, Rosenberg et al. 1998). At least five phases of syn-metamorphic deformation are recognised (Bjerkgard et al. 1995). Spry et al. (1995) identified a syn-metamorphic sulphidation-oxidation halo enclosing the ores. Ore petrography is comprehensively described by Vokes and Hagemann (1963). Massive ores are medium-grained (mm-scale) and comprise assemblages of pyrite-sphalerite-galena ore with lesser amounts of pyrrhotite and chalcopyrite. Pyrrhotite and base-metal sulphides occupy the matrix between the pyrite metablasts. A distinct pyrrhotite-rich ore, usually with greater chalcopyrite content and often displaying a brecciated texture, with numerous, generally rounded, clasts of wall-rock schists and vein quartz occurs close to the footwall in the southern part of the deposit. Remobilisation of ore components is abundant, with a characteristic ‘wall rock mineralization’ that includes abundant, coarse Pb-As-(Sb)-sulphosalt-dominant assemblages emplaced in crosscutting veins within wallrock adjacent to massive ore (Vokes & Hagemann 1963, Cook et al. 1998).

BROKEN HILL

The giant (>300 Mt) Broken Hill Pb-Zn-Ag orebody lies in the south-eastern part of the Curnamona Craton, South-eastern Australia, within Early to Middle Proterozoic meta-sedimentary and meta-volcanic rocks of the Willyama Supergroup (Haydon & McConachy 1987). These rocks encompass a range of metamorphic lithologies including pelitic, quartzofeldspathic and mafic rocks (Pidgeon 1967, Haydon & McConachy 1987). They were deposited in a continental back-arc environment between ca. 1710-1640 Ma, and were subsequently deformed during the Olarian Orogeny ca. 1600-1580 Ma (Clarke et al. 1986, Stevens 1986, Stevens et al. 1988, Stüwe & Ehlers 1997). There is a regional progressive increase in metamorphic grade from northwest to southeast, ranging from andalusite grade to granulite grade (Binns 1964). Sedimentary rocks of the Adelaidian sequence (ca. 820-750 Ma) were unconformably deposited onto the metamorphic rocks during break-up of the Rodinia supercontinent. Both the Adelaidian and Willyama Supergroups then underwent deformation during the Delamerian Orogeny (520-500 Ma).

There is a substantial literature on the genesis of the Broken Hill orebody (Greenfield et al. 2003, Webster 2006, Spry et al. 2008). Phillips et al. (1985), Plimer (1986) and Parr and Plimer (1993) argued that deposition of the Broken Hill ore deposit was coeval with bimodal felsic–mafic volcanism and pre-metamorphic alteration. The most commonly accepted (sedimentary-exhalative) genetic model therefore encompasses formation by hydrothermal processes and subsequent multi-phase high-grade metamorphism and deformation. This has been favoured by many authors (Stanton & Russell 1959, Both & Rutland 1976, Laing et al. 1978, Plimer 1979, 1984, Parr & Plimer 1993, Marshall & Spry 2000, Plimer 2007, Spry et al. 2007).

Overprinting of the Broken Hill deposit during high-temperature metamorphism led to substantial recrystallization of both ore and host rock assemblage. An alternative model involving syntectonic introduction of metals during peak metamorphism or post-tectonic replacement has been proposed (Stillwell & Edwards 1956, Stillwell 1959, Lewis et al. 1965, Nutman & Ehlers 1998, Rothery 2001, Gibson & Nutman 2004). A second alternative model considers metamorphic melting of a primary sediment-hosted mineralization (Lawrence 1967, Mavrogenes et al. 2001). Some researchers (Mavrogenes et al. 2001, Frost et al. 2002, Frost et al. 2005) have argued that extensive melting of the sulphide assemblages may have occurred. Others (e.g. Spry et al. 2008) suggest that although there may have been localised partial melting of minor parts of the ore, there was no substantial liquidation of the sulphides during the metamorphic event.

EFEMCUKURU

The Efemçukuru deposit is located within the central part of the N-S-striking, Tertiary Seferihisar horst structure within the Bornova Flysch Zone that constitutes the western end of the major Izmir-Ankara suture zone, Western Turkey. Neogene sedimentary and volcanic rocks fill the graben. Mineralisation is hosted by rocks of the Bornova Flysch Zone which are composed of chaotically deformed Upper Maastrichtian to Lower Paleocene graywackes and shales, with blocks of Mesozoic limestone, low-grade metamorphics, mafic volcanic rock, radiolarian chert and serpentinite (Erdogan 1990, Okay & Suyako 1993, Okay et al. 1996).

The deposit consists of two major veins, Kestanebeleni and Kokarpınar, which strike approximately parallel to each other with strike and dip directions of N40-60° W 50-70° NE. At upper levels (>800 m above sea level) alteration zones displaying pervasive Si -Fe-Mn enrichment are observed along structural discontinuities such as joints, faults, fractures, layers and shear zones in shale-sandstone, schist and hornfels. Wallrock alteration zones contain chlorite, sericite, illite and kaolinite. Rhyolitic dykes and cross-cutting quartz veins are controlled by deep-seated, NW-SE-trending fracture zones (Öyman et al. 2003). The rhyolitic dykes are considered to be the subvolcanic equivalents of a (hidden) intrusive body which is believed to be the source of ore-forming fluids. Veins are hosted in hornfelsed pelitic rocks formed from a flysch protolith, which are best exposed along the valley between the Kestanebeleni and Kokarpınar veins. The main gold mineralization is associated with both multi-stage gangue- dominant and sulphide-dominant assemblages (Öyman et al. 2003). Metre-scale variation in sulphide mineralogy, reflecting evolution of ore-forming fluids, is a feature of the deposit. Both pyrite and arsenopyrite host significant amounts of invisible gold (Öyman et al. 2010 and in prep.).

ELATSITE

The >300 Mt Elatsite porphyry copper system is located in the Panagyurishte metallogenetic district in central Bulgaria. This district contains hypabyssal intrusions with approximately coeval volcanic rocks that host the ore. At Elatsite, the porphyritic intrusion is either monzonite or diorite, and is exposed adjacent to the mineralisation (Strashimirov & Popov 2000). Coupled with the porphyry system is high-sulphidation epithermal-style massive sulphide mineralisation at Chelopech (Kouzmanov et al. 2002). Porphyry ore stockworks are concentrated along the boundary between the porphyry intrusion and the schist/granite basement. The system has a strong potassic alteration and lesser argillic alteration. Mineralisation has been dated at ~92-90 Ma (von Quadt et al. 2005, Zimmerman et al. 2008), placing it within the same upper Cretaceous metallogenic belt as Baita Bihor (Ciobanu et al. 2002).

The Elatsite deposit is moderately gold-rich, contains a number of rare polymetallic minerals and, notably in the massive magnetite-bornite core, also platinum group metals (Dragov & Petrunov 1996, Kouzmanov et al. 2000, Strashimirov et al. 2002). Galena-sphalerite-chalcopyrite assemblages are found in distal cm-scale veins at the perimeters of the porphyry mineralisation.

HERJA

The epithermal vein system at Herja, consisting of more than 180 veins, is located in the metallogenic district around Baia Mare, northern Romania. Veins are hosted by Samartian-Pannonian volcanics and Neogene and Paleogene sediments. Herja is one of a number of major polymetallic ores of epithermal type of Neogene age in the Carpathians and Apuseni Mts. associated with subduction and slab-detachment (Neubauer et al. 2005).

The Herja veins follow fractures orientated along a ENE-WSW trend which are associated with a subvolcanic body of pyroxene andesite and porphyritic quartz microdiorite (Cook & Damian 1997). Veins are classified in two sets, the southern and northern. The southern vein set are surrounded by porphyritic quartz microdiorite while the northern veins are enclosed by altered sediments (Cook & Damian 1997). Hydrothermal activity associated with andesitic volcanism has been dated via the K-Ar method between 11.5 and 8 Ma, with mineralisation occurring at 8.8 ± 0.6 Ma (Edelstein et al. 1992, Lang et al. 1994). As a whole, the system extends to more than 1000 m at a width of 1200 m. Pb and Zn are relatively evenly distributed throughout; little evidence exists for any vertical zonation (Borcos et al. 1975).

The ore is massive, often drusy without abundant vugs, and consists of sphalerite, galena with lesser chalcopyrite, pyrite, pyrrhotite, marcasite, tetrahedrite and various sulphosalts. Gangue minerals are quartz and calcite. Mineralisation is interpreted as being single phase, with pyrite and pyrrhotite deposited first followed by sphalerite and galena. Idiomorphic chalcopyrite, galena and marcasite were deposited last at temperatures probably well below 200 oC, often coating other minerals (Borcos et al. 1975).

KAPP MINERAL

The small Kapp Mineral prospect is located 2.5 km east of Isfjorden Radio in the Hecla Hoek Complex, which extends along the entire west coast of Spitsbergen, Svalbard Archipelago. The basement rocks of the archipelago are Precambrian and to a lesser extent lowermost Paleozoic. These rocks, comprising a wide range of metamorphosed sedimentary and igneous lithologies, outcrop widely on Western Spitsbergen. Beginning in the Silurian, around 400 million years ago, these rocks were involved in the formation of the Caledonide mountain chain. Erosion of the mountain chain and development of a central basin began in the Devonian after the end of mountain building, enabling the deposition of thick volumes of sedimentary rocks. This was followed by continued sedimentation throughout the Carboniferous and Permian, and into the Mesozoic as Svalbard moved northwards. The complex is a thick metamorphosed sequence consisting of latest Precambrian, Eocambrian and lower Paleozoic rocks of both igneous and sedimentary origin.

Lead-Zn ores at Kapp Mineral were worked on a small scale in the 1920's. Sphalerite and galena occur within a brecciated carbonate phyllite (Flood 1969; Cook, unpublished manuscript). The breccia zone, from which the bulk of the ore was exploited is several metres wide and contains a mass of crosscutting calcite veins. Many of these are barren, but some contain veinlets of sphalerite and galena a few cm in thickness.

KOCHBULAK

The Kochbulak deposit is located in the Kochbulak-Kairagach caldera in the Chatkel-Kurama ore district, Uzbekistan. The caldera is located at the intersection of the Southern Angren and Lashkerek-Dukent fault zones and is filled with andesites, dacites and minor volcanics (Akcha and Nadak formations), rhyolite (Oyasai and Kyzylnura formations) and other subvolcanic intrusions (Islamov et al. 1999). Mineralisation is primarily concentrated within volcanics of the Nadak formation. Volcanic rocks have been mildly affected by a propylitic alteration while faults and ore zones concentrate more intense chlorite-epidote and silica alteration (Islamov et al. 1999). These ore zones are controlled by structures resulting in three types of ore; steeply dipping veins, flat lenticular lodes and ore pipes.

Mineralisation is classified in three groups; gold-pyrite, gold-polysulphide and gold-telluride (Islamov et al. 1999). The gold-pyrite mineralisation is most prominent at depth and is typified by low grades of finely dispersed gold in pyrite. The gold-polysulphide group is most prominent at upper levels with gold associated with a complex assemblage of Cu-Pb-Zn-Bi and –Sb minerals (Plotinskaya et al. 2006). The gold-telluride group has gold associated with tellurides such as calaverite, petzite, sylvanite, hessite, stützite and empessite and is most prominent close to surface.

Developed reserves at Kochbulak are 5.6 Mt of ore at 13.4 g/t Au and 120 g/t Ag (Islamov et al. 1999).

LANGBAN

Långban, Värmland, Sweden, was the site of iron and manganese mining from 1711 until 1972. The locality has a special place among mineralogists as it is one of the most mineral-rich places in the world; more than 340 minerals have been found so far. Långban is the type locality for more than 70 of these species.

No single mineral deposit model accounts for the diversity of ore styles present at Långban. These include metamorphosed manganese-iron ores, complex skarns, pegmatites and massive sulphide-rich ores (Holtstam & Langhof 1999). The two specimens analysed here are from a small deposit close to Långban called Björkskogsnäs (Burke & Zakrzewski 1990) and another deposit called Lahäll.

LEGA DEMBI

The Lega Dembi gold mine, Sidamo Province, southern Ethiopia, is contained within the Megado belt of the 1030 ± 40 Ma Adola greenstone terrane (Charter 1971). The Late Precambrian shear-zone hosted deposit is the country’s greatest gold producer, boasting 11 Mt at 3.8 g/T Au. Mineralisation occurs in a N-S-trending quartz vein system that dips steeply to the west (Cook & Ciobanu 2001). These veins follow the contact between the feldspathic gneisses beneath and the volcanosedimentary sequence of the Megado belt (Billay et al. 1997). The boundary between these units marks the regional-scale sinistral strike-slip Lega Dembi-Aflata shear zone.

Gold mineralisation occurs almost exclusively within veins in graphite rich metasediments (Billay et al. 1997). Most of the gold at Lega Dembi is free gold, with lesser amounts intergrown with sulphides (Nikulin et al. 1986). Gold is intimately associated with both galena (which is unusually abundant for an orogenic gold system), and with Bi- and Ag-tellurides. Four types of veins are described by Billay et al. (1997): Type-1 contain sulphide mineralisation consisting of chalcopyrite, galena, pyrrhotite, pyrite, sphalerite, gersdorffite, arsenopyrite, bournonite, molybdenite, tellurides, Ag tetrahedrite and gold; Type-2 and -3 veins consist of pyrite, pyrrhotite, chalcopyrite, minor galena and rare microscopic gold; Type-4 veins are barren of gold.

MOFJELLET

The Mofjellet deposit, located roughly 1 km south of the city of Mo i Rana, north-central Norway, is hosted within metapelitic quartz-mica-feldspar gneisses and amphibolites of the Mofjellet Group in the Rødjngsfjellet Nappe complex of the Uppermost Allochthon of the Scandinavian Caledonides (Saager 1967, Bjerkgard et al. 2001). Bjerkgard et al. (1997) proposed that the Möfjellet Group was formed in a volcanic arc or a back-arc basin. The Mofjell deposit was under exploitation between 1926 and 1987, producing 4.3 Mt of ore grading 3.61% Zn, 0.71% Pb, 0.31% Cu, as well as sulphuric acid from pyrite. The presence of gold was confirmed during exploration work carried out since 1990; a remaining resource of ~4 Mt is indicated.

The deposit consists of three massive, stratiform lenses and has been metamorphosed at lower amphibolite facies conditions of approximately 550°C and 7 kbar (Bjerkgard et al. 2001). The ores and host rocks have experienced at least one stage of deformation and folding. Like Bleikvassli, the Mofjell deposit is interpreted to be of SEDEX-type (Bjerkgard et al. 2001). Sulphide recrystallization and mobilization of minor elements, including gold, is widespread with sulphosalt-rich remobilizate assemblages noted within thin veinlets, up to 3 cm in width, located in host rocks immediately adjacent to massive pyrite ore (Cook 2001).

MT. ISA

The stratiform, sediment-hosted Mt. Isa Zn-Pb-(Cu) deposit (Grondijs & Schouten 1937, Mathias & Clark 1975, Perkins 1984, Swager 1985, Perkins 1997) lies within the Mt. Isa Inlier, Western Queensland, Australia. The Mt. Isa Inlier is a multiply deformed terrain in which basement rocks are overlain by thick successions of volcanic and sedimentary rocks (Page & Sweet 1998). The Mt. Isa Inlier is part of the larger Mt. Isa-McArthur basin system which contains a number of major sulphide deposits with a total tonnage of > 370 Mt @ 10 % Zn, 5.6% Pb, and 120 g/t Ag; (Large et al. 2005). The stratiform orebodies which make up the Mt. Isa deposit are hosted within reduced, fine-grained carbonaceous and pyrite-bearing lithologies within the upper 650 m of the 1,000-m-thick Urquhart Shale, a Middle Proterozoic sedimentary unit which is part of the larger Mount Isa Group (Painter et al. 1999). The Urquhart Shale has undergone greenschist facies metamorphism (Large et al. 2005) and up to six phases of deformation (Swager 1985, Bell & Hickey 1998).

Like other deposits in the Mt. Isa-McArthur basin, the Mt. Isa deposit has been classified as a syngenetic SEDEX-style deposit by many authors (Knight 1953, Murray 1961, Stanton 1962, 1963, Finlow-Bates & Stumofl 1985, McGoldrick & Keays 1990, Smith 2000, Large et al. 2005). Despite this, there has been considerable debate in the literature over the past 50 years, particularly concerning genetic relationships between Zn-Pb and Cu-dominant ores. A syn-deformational replacement model for the limited volume of Cu-rich ores was advanced by Perkins (1984), Perkins and Bell (1998) and Davis (2004); and was, in part, further substantiated by evidence put forward by Wilde et al. (2006). The deposit has experienced the same sequence of metamorphism and deformation as its host rocks and this has substantially modified ore textures (Stanton 1964, Perkins & Bell 1998). Perkins (1997) re-evaluated the widespread evidence for large-scale remobilisation and recrystallization (McClay 1977) in terms of a single syngenetic episode of sulphide deposition in which replacement and control by pre-existing structures was common.

SULLIVAN

The Sullivan deposit is located in southeastern British Columbia, Canada. This giant deposit originally contained around 160 Mt of Pb-Zn-Ag ore. After 92 years of active production, the Sullivan Mine was closed in 2001. Sulphide mineralisation took place at the same time as clastic sedimentation as is typical of a SEDEX deposit. Sulphides are stratabound and hosted by metasedimentary turbidites of the Aldridge formation, the lowermost section of the Mesoproterozoic Purcell Supergroup (Hamilton et al. 1982). At the mine, a large hydrothermal vent complex is surrounded by bedded massive sulphides with classic sediments. Primary sulphide minerals include pyrrhotite, sphalerite, galena and pyrite, however pyrite is generally lacking in the bedded ores (Hamilton et al. 1982). Following sulphide deposition, gabbro sills and dykes intruded the then unconsolidated sediments of the Aldridge formation. This led to the deformation and greenschist facies (450 oC, 3.8 kbar) metamorphism of the deposit and surrounding area as part of the Mesoproterozoic East Kootenay orogeny (De Paoli & Pattison 2000).

TOROIAGA

The Toroiaga epithermal Cu-Pb-Zn-Ag-Au system is part of the Neogene Toroiaga-Tiganul sub-volcanic Massif, Maramures Mountains, northwest Romania (100 km east of Herja). The deposit is comprised of a number of polymetallic hydrothermal veins, some of which are several hundred meters long, which plunge sharply to the southwest (Cook 1997). These polymetallic veins are interpreted as healing fractures associated with the last of five injections of magma into the epithermal system (Borcos 1967).

The epithermal system is vertically zoned with chalcopyrite increasing downwards while sphalerite, galena, a rich variety of sulphosalts and gold increase upwards (Borcos et al. 1982). The primary ore minerals at Toroiaga are Au-bearing pyrite and pyrrhotite (at lower levels), chalcopyrite, marcasite, arsenopyrite, sphalerite and galena. The presence of porphyry copper mineralisation beneath the epithermal vein system was proposed by Socolescu (1954) and supported by Chioreanu et al. (1993) but not confirmed. The mine was closed in 2003; additional exploration was carried out in 2006-2008 but failed to establish significant additional reserves.

VORTA

Vorta is a massive and disseminated Zn-Pb-(Cu)-(Ag)-(Au) deposit located in the Vorta-Dealul Mare-Barbura belt, Barasti Formation, Romania. Mineralisation is ophiolite hosted and Middle to Late Jurassic in age. The deposit is composed of lenses of variable grade that are discontinuous along an east-west alignment (Ciobanu et al. 2001). Mineralisation comes in two types, the first being massive but compact lenticular and spheroidal bodies with the second being disseminations and veinlets which surround and overprint the massive mineralisation. The fine-grained ore is contained in a reworked, remobilised quartz rich breccia hosted within alkali basalt lavas altered to a calcite-quartz-chlorite-albite assemblage (Ciobanu et al. 2001). The deposit is non-metamorphosed and it is believed to closely resemble VMS-style mineralization formed at the ocean floor.

ZINKGRUVAN

Zinkgruvan is a massive stratiform Zn-Pb deposit situated in the southern Bergslagen province, south-central Sweden. Ores are lower Proterozoic in age and consist of massive Zn-Pb-Cu-Ag sulphides and banded iron-formations in volcano-sedimentary complexes. Host rocks consist are metatuffites, marble, dolomite and quartzite. The deposit has been deformed and metamorphosed to upper amphibolite facies during the Svecofennian orogeny (Hedström et al. 1989). Although the stratiform ore extends up to 5 km along strike, it is less than 20 m thick. Nevertheless, the deposit contains > 40 Mt of Zn-Pb-Ag ore. Much of the stratigraphic footwall is hydrothermally altered to a quartz microcline lithology enriched in K, Ba and Si while depleted in Na, Fe, Mg and Mn. Those hydrothermal solutions are responsible for precipitating chert, carbonates, sulphides and minor iron oxides in brine pools on the sea floor (Hedström et al. 1989).

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APPENDIX 2: LA-ICP-MS MINOR/TRACE ELEMENT DATASET

Minor and trace element concentrations in galena determined by LA-ICP-MS. Data given in ppm.

BROKEN HILL	S33	S34	Cr53	Mn55	Fe57	Fe58	Co59	Ni60	Cu65	Zn66	Ga69	As75	Se82
BH21801	175446	154933	<5.47	<1.93	<49.71	<233.89	<0.28	<1.52	<1.39	6.6	<0.36	<2.09	[illegible]
BH21802	136997	145169	<5.33	11.0	<49.76	<234.05	<0.30	<1.55	<1.34	<2.56	<0.37	<2.13	<37.77
BH21803	174029	154073	<6.22	<2.28	<55.29	<270.40	<0.33	<1.64	<1.59	<3.10	<0.42	<2.32	<44.21
BH21804	144862	148122	7.2	<2.10	<49.85	<246.10	<0.29	<1.63	<1.39	<2.54	<0.37	<2.05	<41.54
BH21805	133327	170653	<6.15	<2.24	<53.67	<268.95	<0.31	<1.60	<1.52	<2.88	<0.42	<2.26	[illegible]
BH21806	139257	148586	<4.60	<1.76	<41.08	<201.06	<0.25	<1.25	1.3	<2.14	<0.34	<1.83	<37.01
BH21807	142329	151227	<5.67	3.5	<50.26	<254.60	<0.31	<1.50	<1.44	<2.48	<0.40	2.2	[illegible]
BH21808	134756	126728	<4.65	2.5	<40.00	<201.80	<0.26	<1.17	1.7	6.2	<0.33	<1.72	<38.04
BH21809	124805	140669	<5.29	<1.92	<47.12	<229.21	<0.29	<1.35	1.4	6.3	<0.37	<2.13	<44.87
BH21810	140242	139399	<5.28	<1.97	<46.75	<239.71	<0.30	<1.32	<1.28	2.6	<0.37	<2.20	[illegible]
BH21811	156656	141460	<5.53	<1.97	<46.33	<244.95	<0.29	<1.53	<1.42	<2.38	<0.39	<2.36	<49.53
BH21812	125190	139981	<5.55	<2.03	<47.65	<242.89	<0.30	<1.51	<1.39	<2.39	<0.38	<2.32	<51.38
BH21813	127230	146729	<5.88	<2.04	<50.31	<254.19	<0.34	<1.61	<1.73	<2.99	<0.44	<2.43	
BH21814	166370	178253	<6.01	2.7	<51.45	<258.26	<0.38	<1.74	2.2	<2.96	<0.47	<2.45	
BH21815	119305	121718	<5.33	<1.77	<40.46	<213.97	<0.28	<1.41	<1.35	<2.24	<0.37	<2.05	[illegible]
BH21816	127208	142417	<5.65	<2.04	<46.62	<238.84	<0.33	<1.62	<1.58	<2.65	<0.44	<2.30	<131.09
BH21817	115054	149241	<6.11	<2.09	<47.37	<238.93	<0.31	<1.55	<1.60	<2.75	<0.42	<2.28	<149.65
BH21818	115190	144410	<6.16	4.1	<46.53	<238.62	<0.34	<1.79	<1.64	<2.70	<0.43	<2.32	
BH21819	111631	112584	<5.49	<1.99	<43.69	<234.40	<0.34	<1.65	<1.55	<2.47	<0.39	<2.10	
BH21820	118115	150660	<5.08	2.6	<40.20	<209.57	<0.28	<1.42	2.0	4.1	0.5	<1.88	<222.11
BH21821	108050	175846	<5.52	<1.89	<43.20	<229.56	<0.32	<1.52	1.6	<2.43	<0.39	<2.07	<316.17
BH21822	100714	153362	<6.46	<2.18	<49.65	<250.95	<0.34	<1.82	2.0	4.1	<0.44	<2.39	
BH21823	117239	132366	<5.40	<1.79	<39.99	<209.69	<0.29	<1.43	<1.50	<2.20	<0.35	<1.92	<825.66

BH21824	116333	135997	<5.34	<1.77	<39.56	<206.16	<0.29	<1.50	<1.41	<2.16	<0.37	<1.90	10667.1
BH22101	155312	141355	<7.09	<2.12	<45.53	<228.99	0.4	<1.76	<1.50	6.8	<0.47	<2.52	<51.75
BH22102	193929	122200	<8.04	<2.40	<49.93	<258.62	<0.36	<2.08	2.1	<3.44	<0.47	<2.40	<58.87
BH22103	166279	115579	<7.45	<2.22	<47.26	<239.30	<0.36	<1.72	1.9	<3.03	<0.43	<2.36	<54.28
BH22104	116303	116918	<6.77	<2.04	<42.69	<217.56	<0.32	<1.54	<1.36	<2.77	<0.40	<2.21	<50.48
BH22105	177871	139107	<7.70	<2.33	<49.08	<245.32	<0.37	<1.74	<1.67	<3.04	<0.49	<2.48	<56.84
BH22106	134305	115249	<6.49	<1.97	<41.84	<209.77	<0.32	<1.62	1.4	3.8	<0.39	<2.15	<48.30
BH22107	120953	122134	<6.74	<2.13	<45.12	<229.00	<0.33	<1.82	3.2	3.4	<0.42	<2.38	<52.13
BH22108	136753	142701	<6.81	<2.06	<44.75	<216.59	<0.33	<1.67	<1.50	<2.67	<0.40	<2.04	<51.49
BH22109	146647	125529	<7.59	<2.34	<49.55	<249.09	<0.39	<2.01	<1.54	4.1	<0.45	<2.44	<57.17
BH22111	139282	127436	<6.79	<2.02	<43.24	<216.19	<0.33	<1.84	<1.48	<2.44	<0.43	<2.17	<52.23
BH22112	124652	115968	<6.43	<1.94	<40.60	<208.33	<0.32	1.9	<1.25	<2.34	<0.41	<2.13	<48.97
BH22113	133812	115638	6.7	<2.06	<43.43	<226.70	<0.35	<1.99	<1.54	<2.87	<0.44	<2.27	<82.63
BH22114	127426	133494	<6.76	<2.16	<46.00	<234.56	<0.37	<1.86	<1.55	<2.90	<0.46	<2.43	
BH22115	145192	120175	<6.74	<2.00	<42.68	<227.25	<0.34	<1.98	<1.34	6.4	<0.41	<2.31	
BH22116	144591	126616	<6.45	<2.06	<42.71	<228.21	<0.36	<1.87	<1.49	<2.65	<0.42	<2.19	<146.20
BH22117	116233	119238	<6.42	<2.06	<43.36	<218.81	<0.34	<1.81	<1.54	2.8	<0.43	<2.33	<200.46
BH22118	120922	132269	<7.31	<2.20	<46.67	<245.67	<0.37	<2.22	<1.55	<2.81	<0.43	<2.49	<310.88
BH22119	127354	123592	<6.10	<1.93	<40.17	<215.05	<0.33	<1.78	<1.31	<2.35	<0.37	<2.22	<541.37
BH22120	109185	121827	<5.75	<1.84	<38.22	<197.98	<0.33	<1.62	<1.36	2.6	<0.38	<2.14	<6862.2
BH22121	120586	121890	<5.81	<1.80	<37.17	<200.74	<0.29	<1.78	<1.22	<2.22	<0.34	<2.03	800.12*
BH22122	122696	106274	<4.99	<1.55	<31.94	<170.66	<0.25	<1.48	<1.08	<1.97	<0.32	<1.71	
BH22123	114435	124393	<5.42	2.6	<36.77	<190.72	<0.31	<1.76	2.6	<2.24	<0.36	<2.08	2
BH22124	115404	109288	<5.02	<1.59	<32.40	1373	<0.28	10.0	<1.14	<2.04	<0.33	<1.74	<****
BH23301	<169314.80	89212	<89.66	<39.00	<1475.53	<4182.28	<4.23	<21.36	<44.10	<27.22	<4.73	<24.66	4
BH23302	<162888.08	<76021.79	<100.71	<37.02	<2039.28	<3074.88	<10.67	<20.22	<54.60	<79.84	<3.76	<27.32	****
BH23303	<196313.41	<81734.09	<90.32	<35.66	<2115.47	<4621.63	<7.21	<15.71	<57.21	<70.77	<3.99	<36.97	****
BH23304	<232724.00	<96622.78	<175.68	<53.48	<2611.02	<6610.79	<14.66	<26.91	<75.08	<72.94	<4.67	<26.92	
BH23305	<203701.23	<101510.45	<184.88	<43.22	<2021.96	<5938.57	<7.64	12.6	<52.12	<91.40	<2.96	<37.68	****
BH23306	<161227.13	<82573.33	<129.77	<45.00	<1880.38	<4742.23	<6.96	<16.79	<56.93	<40.80	<0.00	<21.26	<1491.6

BH23307	<193819.36	<91934.16	<182.10	<49.72	<2188.49	<4734.25	<10.13	<20.77	<50.56	<58.18	<5.49	<42.83	<611.75
BH23308	469993	<112985.59	<240.39	<51.50	<2438.75	<5707.16	<11.22	<24.03	<65.45	<103.01	<6.05	<32.81	<442.40
BH23309	<260650.00	<95701.13	<324.41	<53.35	<1821.52	<5978.24	<12.64	<24.62	<71.20	<69.57	<3.39	<18.08	<304.14
BH23310	<293018.69	227097	<412.33	<52.46	<1992.33	<5909.86	<8.90	10.9	<71.82	<82.93	<4.74	<24.86	<209.13
BH23311	<217123.39	<114519.20	<312.08	<51.55	<2286.37	<4397.14	<7.89	<24.36	<55.09	<65.58	<5.90	3.6	<160.00
BH23312	<256987.61	<130287.60	<533.57	<62.28	<2413.90	<5488.55	<12.15	<46.39	<78.89	<50.93	<3.68	13.4	<157.37
BH23313	<313965.84	118610	****	<54.14	<2896.74	<6866.68	<14.10	<45.99	<69.39	<59.90	<4.04	<25.33	<102.85
BH23314	<398822.59	<136002.55	0.6	<66.04	<2787.23	<5632.53	<7.48	<97.59	<71.62	<91.56	<4.39	<39.20	<122.71
BH23315	<484797.31	<165814.22	****	<66.90	<3320.62	<2912.94	7.2	<85.43	<76.30	<86.08	<6.43	<28.92	<139.18
BH23316	<618905.69	195447	75.2	<79.25	<3952.60	<8639.35	<17.86	<58.33	<87.80	<65.63	<7.79	<24.99	<152.97
BH23317	<595616.25	<133483.91	28.1	<68.24	<3401.41	<6907.17	<19.08	33.5	<77.60	<78.34	<5.40	<34.95	<158.97
BH23318	<752541.50	<128278.56	25.8	<72.56	<3638.02	<6311.92	<10.75	<86.07	<73.50	<82.26	<6.99	<22.82	<141.46
BH23319	<701698.69	<124795.73	****	<74.72	<3240.92	<5626.22	5.7	24.9	<90.13	<42.12	<7.21	<53.10	<171.16
BH23320	897865	<135255.30	30.3	<64.65	<3589.10	<8521.29	<9.74	22.5	<94.56	<67.30	<6.70	16.7	<164.59
BH23321	<1839828.00	<151549.77	10.9	<85.66	<3850.31	<7284.36	<16.20	<53.00	<77.84	<123.58	1.0	<27.29	<237.12
BH23322	<5750541.50	<149146.28	74.1	<96.02	<3961.12	<9996.31	6.6	<53.48	<90.80	<68.12	<5.96	<70.29	<256.47
BH23323	4639119	<130305.36	27.5	<98.92	<3311.34	<8953.85	<14.22	<46.55	<86.10	<85.75	<9.26	<45.17	<241.90
BH23324	****	141542	25.2	<84.07	<3787.91	<8022.46	<14.16	48.8	<97.11	<71.40	2.9	<31.40	<320.62
BLEIKVASSLI	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
BV-101	39697	<Inf	<1076.33	<185.06	<9840.13	<21224.33	<40.09	<146.16	<320.65	<289.20	<26.01	<123.41	<166.82
BV-102	<****	<Inf	<922.80	<245.21	<10855.66	<26081.50	<52.61	<206.19	<322.82	<250.41	<28.86	<95.34	<183.46
BV-103	96920	<Inf	<631.97	<217.79	<11558.90	<29073.06	6.3	<127.04	<324.36	<395.76	<17.12	<136.39	<222.68
BV-104	****	<Inf	<906.09	<231.35	<11394.69	<22998.85	<48.04	35.4	<288.25	<294.65	<37.42	<131.40	<239.57
BV-105	****	<Inf	<584.01	<183.95	<10236.97	<19535.18	<24.36	27.5	<284.84	<284.38	<20.28	<78.49	<171.29
BV-106	98156	<Inf	<729.21	<235.94	<14193.08	<30547.96	<35.25	<169.57	<393.12	<361.48	<35.05	<189.16	<215.49
BV-107	167324	<Inf	<413.61	<236.51	<9835.59	<23431.23	<39.56	<237.18	<286.83	<140.83	18.4	<117.87	<161.80
BV-108	****	<Inf	<405.64	<211.43	<10838.01	<23798.54	<46.48	<133.83	<297.95	99.3	<20.70	<76.90	<156.71
BV-109	<****	<Inf	<335.27	<265.52	<12303.88	<19029.28	<54.40	27.9	<371.48	<263.78	<16.69	<86.54	<196.65
BV-110	148230	<Inf	<408.89	<265.52	<11247.29	<21439.02	<44.86	78.5	<349.46	<399.13	<28.43	<84.05	<166.49
BV-111	224947	<Inf	<356.09	<238.28	<12478.49	<17244.02	<52.84	<0.00	<396.37	<318.02	<30.73	<134.61	<160.79

BV-112	****	<Inf	<185.11	<218.12	<9343.35	<26891.22	<52.26	<284.12	<328.73	<194.93	<20.91	<73.90	<133.83
BV-113	<1044108.44	<Inf	<394.25	<214.42	<11103.55	<21056.99	<42.13	48.5	<318.18	<267.39	<13.34	<61.67	<180.78
BV-114	<528952.94	<Inf	<240.05	<227.81	<10221.70	<12359.19	<73.23	81.8	<261.82	<261.39	<14.75	<154.18	<246.01
BV-115	<668067.38	<Inf	256	<288.33	<12414.68	<16241.08	<74.61	41.6	<342.93	<296.06	<27.60	<206.43	<312.01
BV-116	<623245.19	<Inf	<407.41	<271.76	<10295.05	<19578.16	10.6	<162.63	<349.12	<334.89	<19.34	<160.45	
BV-117	<558712.88	<Inf	<463.81	<346.14	<14434.45	<18550.29	<90.01	<253.37	<422.57	<315.78	<18.46	<89.54	<392.49
BV-118	<420285.63	<Inf	<544.05	<250.41	<13527.98	<23282.09	<67.86	<191.28	<295.74	<216.03	<18.08	<125.68	<511.36
BV-119	<374090.88	<Inf	<633.14	<290.08	<11105.72	<25807.36	<79.37	39.7	<344.37	<343.94	<26.07	28.0	
BV-120	<356273.22	<Inf	<504.78	<336.40	<12083.34	<28483.73	<37.97	<168.20	<366.74	<292.59	<30.76	<89.78	<1500.6
BV-121	<251224.61	<Inf	<854.34	<399.85	<13567.76	<21594.34	52.9	<140.71	<417.14	<180.22	<54.28	<254.34	<9604.8
BV-122	<353104.84	<Inf	<1080.26	<278.00	<14101.85	<27281.91	<59.53	<120.29	<360.25	<423.81	<19.96	<147.18	****
BV-123	<251688.09	<Inf	<1691.51	<389.26	<10742.21	<31881.54	<40.21	88.7	<392.40	<402.33	<27.16	41.1	****
BV-124	201994	<Inf	<2318.35	<321.48	<10664.82	<17829.84	<67.54	<176.98	<311.98	<219.82	<28.14	25.3	****
BV-97-301	<202780.17	495747	169	<266.21	<10099.96	<24223.52	<33.88	<160.45	<266.69	<253.89	<36.38	31.3	****
BV-97-302	<380374.69	546933	223	289	<10973.74	<32305.20	<76.18	55.2	<280.35	<307.24	<38.53	<82.82	****
BV-97-303	<275809.13	<336575.84	230	<325.44	<14890.31	<36915.08	<60.75	80.4	<659.75	<450.52	<29.49	<103.13	****
BV-97-304	351944	<368260.53	****	<508.88	<17053.64	<37599.55	<102.60	<296.77	<485.44	<223.45	18.0	<108.91	****
BV-97-305	<534299.19	608668	****	<374.22	<17157.87	<57188.22	<61.08	63.0	<491.84	<377.69	<32.61	<143.47	<****
BV-97-306	<868825.88	<494135.56	****	<448.08	<19560.71	<38287.87	31.4	59.8	<568.63	<435.33	<75.99	<111.88	4
BV-97-307	<596738.94	<385099.75	108	<330.49	<14005.03	<36385.63	<46.96	<213.40	<493.20	<179.46	<47.50	21.1	****
BV-97-308	<1198372.38	<378896.75	201	<470.22	<21481.90	<42330.72	<89.80	<506.14	<558.89	<317.00	<59.99	45.6	****
BV-97-309	<2028761.13	<406397.94	137	<510.06	<20340.69	<40787.56	<64.58	<379.11	<639.00	<455.39	<71.14	<103.70	<****
BV-97-310	<2306613.25	<435350.38	227	<429.10	<16187.45	<38536.46	<72.09	<398.02	<636.30	<427.64	<67.56	19.1	****
BV-97-311	<2303560.00	<536169.38	265	<553.48	<22888.33	<50939.52	<82.30	<749.48	<788.47	<710.69	<65.55	<150.54	****
BV-97-312	<5363448.00	<480279.28	****	<418.08	<22963.75	<69678.20	8.6	<1313.11	<598.17	<394.46	17.4	19.0	****
BV-97-313	<****	<419532.78	****	<254.78	<13001.04	<30170.53	<24.43	112	<293.20	237	<62.86	<69.96	****
BV-97-314	651548	<476824.72	53.8	<279.76	<16471.15	<41577.00	<45.48	<917.08	1756.73*	<451.69	<45.93	<112.20	<****
BV-97-315	****	<706732.88	74.4	<302.00	<17547.38	18643	<57.27	<693.21	<542.46	48.3	<45.36	<114.69	<****
BV-97-316	****	<1021982.75	****	<474.66	<20970.52	<33800.79	<42.63	<808.37	<610.39	<360.80	<39.69	<146.98	****
BV-97-317	****	<648929.00	****	<431.88	<18245.06	<34196.31	<54.65	<470.34	<595.91	<225.43	<34.51	<108.10	<****

BV-97-318	455563	<818108.19	89.7	<401.51	<19727.18	<34551.06	<70.04	<633.70	<645.31	<513.66	<48.92	<112.35	****
BV-97-319	3224379	<625833.25	****	<354.67	<21112.58	<39448.18	<67.69	<395.28	<627.74	<529.04	<45.26	<76.23	<232489
BV-97-320	****	<745743.88	72.4	<249.30	<12306.80	<24190.33	<35.18	132	<302.74	<188.91	<33.74	<48.15	3
BV-97-321	<****	<1108970.75	****	<354.20	<13131.35	<36388.61	<72.01	<0.00	<334.16	<459.62	<53.85	86.3	2
BV-97-322	****	<2026043.25	29.1	<275.78	<15880.76	<37721.83	<77.68	<426.84	<439.28	236	<27.71	64.0	<1534.3
BV-97-323	2719838	<3118851.00	****	<483.31	<22395.13	22410	<118.10	<421.25	<662.31	<500.11	<40.14	<111.36	1
BV-97-324	3082745	7871034	63.6	<541.95	<20909.45	<42296.89	<62.66	<580.61	<567.14	<662.12	<57.30	<202.65	<1457.4
V44601	139112	132398	<5.54	2.8	<38.68	<196.46	<0.33	<1.98	3.8	<3.22	<0.40	<1.89	
V44602	142062	148055	<6.37	<1.95	<42.90	<222.39	<0.37	<2.08	3.0	<3.30	<0.47	<2.13	
V44603	139887	126370	<6.16	<1.95	<42.25	<217.78	<0.38	<2.03	4.5	<3.30	<0.44	<2.06	
V44604	154799	148487	<5.90	<1.84	2715	2829.56	<0.34	<1.81	4.6	<3.01	<0.42	<1.87	
V44605	153953	145112	<6.74	<1.98	<43.24	<215.03	<0.37	<2.06	<1.87	<3.14	<0.48	<2.18	
V44606	123828	135875	<6.51	<1.98	<42.10	<218.02	<0.37	<1.90	12.0	<3.16	<0.47	<2.09	
V44607	133484	127711	<6.59	<2.00	<42.23	<211.75	<0.40	<1.98	5.5	<2.93	<0.45	<1.95	
V44608	187097	132477	<7.07	2.1	<45.03	<221.83	<0.39	<2.02	9.7	3.7	<0.46	<2.29	
V44609	158002	139000	<9.00	<2.79	<57.38	<302.67	<0.50	<2.71	4.4	<4.12	<0.56	<3.01	
V44610	87942	136957	<7.90	2.4	<48.75	<246.43	<0.41	<2.26	2.5	<3.38	<0.50	<2.49	
V44611	136212	110755	<6.49	<1.95	<39.40	<201.79	<0.34	<1.71	4.2	<2.90	<0.42	<1.98	
V44612	129296	140195	<8.64	2.9	<49.80	<261.55	<0.46	<2.44	5.2	<3.71	<0.49	<2.55	
V53801	147378	151334	<7.21	3.3	<48.89	<263.64	<0.40	<2.21	5.2	<3.99	<0.51	<2.68	9
V53802	146956	160537	<6.81	<2.28	<47.11	<252.77	<0.43	<1.98	3.0	<3.59	<0.51	<2.62	
V53803	143443	155058	<6.41	<2.12	<45.86	<238.29	<0.39	<1.85	6.0	<3.42	<0.47	<2.49	
V53804	149934	155223	<6.46	<2.15	<46.33	<235.51	<0.38	<1.95	8.9	<3.39	<0.46	<2.54	
V53805	140641	166723	<7.27	<2.46	<54.13	<267.44	<0.46	<2.30	4.3	<3.97	<0.55	<2.87	
V53806	150404	159381	<8.90	<2.87	<63.99	359	<0.54	<2.46	6.1	<4.62	1.0	<3.45	
V53807	163403	165483	<6.94	<2.34	<50.27	<248.78	<0.44	2.6	8.0	<3.75	<0.54	<2.59	
V53808	177670	180371	<6.86	<2.26	<48.62	<252.54	<0.42	<2.17	2.2	<3.63	<0.50	<2.64	
V53809	159853	173939	<8.40	<2.72	<59.21	<306.60	<0.51	<2.40	4.3	<4.20	<0.63	<3.17	
V53810	123259	167895	<7.90	<2.62	<58.07	<292.78	<0.51	<2.54	3.9	<4.22	<0.62	<3.09	
V53811	169891	188636	<7.06	<2.36	<53.09	<265.25	<0.44	<2.30	7.1	<3.74	<0.55	<2.80	

V53812	196596	180968	<8.18	<2.67	<57.84	<292.16	<0.49	<2.73	5.9	<4.49	<0.62	<3.24	
V57-85201	144083	<Inf	<Inf	<25.89	<1505.87	<2720.34	<5.58	<26.60	<47.63	<30.35	<3.59	7.6	7
V57-85202	<95023.02	<Inf	<Inf	<25.59	<1448.81	<2610.12	<4.84	<23.21	<48.70	<32.54	1.9	<17.27	8
V57-85203	<94386.17	<Inf	<Inf	<23.35	<1272.93	<3449.03	<5.98	<39.44	<36.27	<28.65	<4.39	<14.57	7
V57-85204	<105755.73	<Inf	<Inf	<22.40	<1336.26	<2886.21	<5.26	<25.46	89.1	<29.35	<2.84	<24.61	6
V57-85205	<136895.72	<Inf	<Inf	<27.17	<1500.66	<2216.37	<4.62	<27.53	185	<39.01	<3.78	<16.53	5
V57-85206	102448	<Inf	<Inf	<27.06	<1415.67	<3561.59	<6.38	<0.00	<54.05	<22.15	<5.27	<25.10	<44.86
V57-85207	150614	<Inf	<Inf	<28.35	<1518.50	<3016.26	<3.39	<35.25	<54.21	<23.71	<4.61	<25.16	<49.34
V57-85208	392763	<Inf	<Inf	<30.29	<1938.56	<3548.76	<6.24	<21.77	<61.33	<44.08	<2.48	<19.31	<51.88
V57-85209	253360	<Inf	<Inf	<24.11	<1390.97	<2638.22	<2.91	<24.96	<49.59	<38.75	<4.04	<20.53	6
V57-85210	<109534.91	<Inf	<Inf	<19.22	<1348.06	<3102.99	<4.79	<14.61	<40.18	<36.51	<4.75	<13.38	7
V57-85211	<160082.72	<Inf	<Inf	<26.48	<1503.79	<2657.09	<4.07	14.6	<48.31	<25.51	<2.88	<9.46	4
V57-85212	<139469.02	<Inf	<Inf	<26.92	<1593.54	<2239.82	<5.37	<33.06	<52.19	<39.23	<3.14	<20.85	4
V57-85213	<174229.05	140246	<52.06	<6.07	<311.56	<626.91	<1.11	<4.06	309	<13.24	<0.78	5.5	
V57-85214	<196102.73	132231	<45.22	<6.94	<313.46	<883.95	<1.78	<4.29	<7.51	<11.68	<0.72	<5.84	
V57-85215	631229	131521	<49.02	<6.39	<303.00	<743.35	<1.36	0.7	<7.83	<10.46	<0.42	4.7	
V57-85216	398103	78560	<52.76	<7.81	<365.89	<772.34	<1.56	<4.97	<8.43	<16.15	<0.48	4.6	
V57-85217	338847	<43190.41	<63.40	<6.57	<348.93	<621.79	<1.32	<4.88	<10.48	<14.62	<1.05	<4.42	
V57-85218	<220055.95	126544	<77.21	<6.56	<367.89	<721.79	1.5	<4.38	<10.32	<11.87	<0.60	3.3	
V57-85219	<235809.39	83756	<75.67	<8.48	<425.23	<804.87	<1.81	<5.81	<12.46	<11.13	<1.38	<5.70	
V57-85220	<256748.50	<49213.54	<74.20	<6.92	<420.53	<854.90	<1.19	<6.64	<11.38	<11.76	<1.17	<4.32	
V57-85221	<208347.84	181064	<72.62	<6.59	<368.67	<627.75	<0.92	<5.15	<9.37	<8.02	<1.00	<4.07	
V57-85222	<265737.84	94756	<96.03	<8.09	<436.11	<877.73	<2.33	<6.75	14.9	<14.58	<0.93	<7.00	
V57-85223	722060	178812	<125.17	<8.45	<460.11	<727.86	1.4	<6.82	<11.53	<19.58	<0.94	<5.92	
V57-85224	<381366.88	<78138.92	<162.14	<10.66	<578.27	<1395.16	<2.82	2.1	<16.42	<16.63	<1.59	<6.30	
MOFJELLET	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
MO201	187325	143344	<9.79	8.7	<57.57	<330.08	<0.32	<1.90	2.5	<4.55	<0.38	<2.52	<****
MO202	140978	135876	<8.64	<4.26	<54.00	<307.92	<0.33	<1.57	4.5	<4.16	<0.42	<2.36	<****
MO203	144667	123408	<7.47	3.9	<47.55	<266.51	<0.27	<1.46	3.4	<3.31	<0.38	<2.11	<****
MO204	124859	131756	<7.78	<3.34	<47.24	<274.81	<0.30	<1.47	1.9	<3.40	<0.37	<2.00	<****

MO206	155569	134231	<7.56	3.6	<47.69	<267.80	<0.34	<1.54	1.5	<5.30	<0.41	<2.25	<****
MO207	162723	123057	7.7	<2.88	<47.69	<268.75	<0.32	<1.65	4.4	<4.20	<0.40	<2.15	<****
MO208	188476	128704	<7.07	<2.69	<48.33	317	<0.30	<1.55	1.9	<3.54	<0.42	<2.23	<****
MO209	181932	151141	<6.79	<2.47	<45.69	<256.95	<0.31	<1.56	<1.46	<3.38	<0.43	<1.86	<****
MO210	170916	136704	7.0	<2.47	<47.44	<263.16	<0.33	<1.65	<1.54	<3.42	<0.44	<2.05	<****
MO211	156954	135518	<6.25	<2.18	<42.92	<236.51	<0.32	<1.59	<1.28	<2.93	<0.37	<1.83	<****
MO212	183019	128399	<5.92	<2.01	<41.38	<223.57	<0.27	<1.41	<1.22	<2.70	<0.38	<1.77	<****
MO213	169995	117954	<5.07	<1.51	<38.97	<206.61	<0.28	<1.45	1.5	<2.26	<0.35	<1.62	4
MO214	199913	123718	<5.01	1.7	<38.26	<210.10	<0.29	<1.44	3.2	<2.08	<0.37	<1.57	3
MO215	184146	136579	<4.46	<1.30	<34.40	<190.41	<0.26	<1.28	<1.09	<1.87	<0.32	<1.39	4
MO216	159089	137981	<4.58	1.8	<35.82	<191.97	<0.26	<1.36	<1.16	<1.95	<0.35	<1.49	3
MO217	176027	154637	<4.60	<1.32	<36.78	<195.91	<0.27	<1.27	<1.14	<1.88	<0.34	1.4	2
MO218	177302	124256	<4.23	1.5	<34.14	<194.86	<0.26	<1.22	<1.09	<1.80	<0.33	<1.34	2
MO219	182112	126641	<4.45	<1.20	<33.48	<183.25	<0.27	<1.36	<1.12	<1.59	<0.32	<1.36	2
MO220	183387	118735	<4.26	<1.21	<35.83	<188.88	<0.27	<1.27	1.7	<1.91	<0.36	<1.33	2
MO221	160024	113374	<4.03	<1.14	<33.64	<172.38	<0.25	<1.21	2.6	<1.62	<0.34	<1.43	1
MO222	230434	139008	<4.42	<1.26	<37.02	<200.13	<0.30	<1.42	<1.23	<1.79	<0.35	<1.54	1
MO223	199938	131482	4.8	<1.27	<38.29	<198.19	<0.31	<1.48	1.3	<1.83	<0.38	<1.41	1
MO224	184758	130165	<3.18	<0.89	<26.42	<145.23	<0.19	<1.00	<0.90	<1.22	<0.26	<1.00	1
MO501	128980	137300	<4.94	<1.51	<36.80	<185.11	<0.28	<1.36	17.7	<2.72	<0.34	<1.69	
MO502	139363	134059	<5.13	<1.55	<36.52	<205.04	<0.30	<1.46	13.6	<2.64	<0.36	<1.61	
MO503	133985	129415	<4.55	4.5	<32.92	<171.44	<0.24	<1.32	563.16*	<2.32	<0.33	<1.54	
MO504	143734	119458	<4.71	<1.50	<35.55	<188.18	<0.26	<1.41	6.0	<2.36	<0.35	<1.78	
MO505	141837	140296	<5.80	<1.70	<41.24	<214.51	<0.30	<1.72	5.2	<2.86	<0.40	<1.97	
MO506	148864	120465	<5.53	<1.66	<40.35	<202.72	<0.30	<1.72	17.7	<2.83	<0.40	<1.81	
MO507	99663	116644	<5.33	<1.65	<40.53	202	<0.29	<1.65	2.1	<2.91	<0.37	<2.04	
MO508	133614	138269	<4.79	10.9	<37.34	<193.96	<0.29	<1.47	23.8	<2.57	<0.41	<1.93	
MO509	134610	119733	<5.34	2.1	<40.03	<200.23	<0.29	<1.69	6.7	<2.79	<0.37	<1.99	
MO510	120111	127442	<5.69	3.2	160	<208.48	<0.33	<1.78	815.13*	<2.97	<0.42	<2.15	
MO511	122258	122323	<5.57	2.8	<40.41	<213.12	<0.31	<1.68	22.2	2.9	<0.39	<2.12	

MO512	127960	125551	<5.29	<1.68	<40.44	<203.40	<0.32	<1.76	6.3	<2.74	<0.38	<2.09	
MO1101	308222	98255	<58.28	<7.21	<160.01	<893.52	<1.45	<6.15	<7.61	<9.88	<0.67	<3.25	
MO1102	<301706.81	198093	<73.36	<7.62	<212.89	<735.89	1.2	<2.78	12.5	<8.07	<0.85	<4.73	
MO1103	476792	167342	<69.10	<6.92	<206.87	<919.79	<1.77	<10.78	<7.94	<11.78	<0.76	<4.48	
MO1104	<307438.97	189498	<69.85	<7.45	<181.24	<946.79	<1.70	<4.19	<9.08	<11.56	<0.45	3.3	
MO1105	435385	50316	<94.97	<7.64	<203.33	<791.32	<1.29	<7.30	<9.74	<8.57	<1.19	<3.21	
MO1106	<294918.66	95481	<113.78	<8.23	<208.94	<1149.70	<1.74	<7.49	20.0	<11.87	0.1	<3.26	
MO1107	<384298.69	138008	<105.89	<7.49	<222.93	<960.06	<1.37	<9.58	<9.86	<9.13	<1.26	<5.15	
MO1108	<346546.25	<51430.52	<124.89	<8.19	<242.18	<957.77	<1.67	<6.36	8.2	<9.79	<0.94	<3.83	
MO1109	738854	116207	<125.62	<7.45	<242.65	<863.97	<1.83	<9.14	<8.86	<11.84	<0.95	<3.33	
MO1110	<364998.22	114557	<193.11	<8.54	<280.36	<926.08	<1.95	<8.47	8.4	<7.98	<0.72	<4.06	
MO1111	360760	161322	<132.42	<8.37	<212.63	<946.76	2.1	<9.06	11.9	<8.51	<0.54	<4.28	
MO1112	<411088.22	131411	<251.32	<9.77	<257.02	<1241.14	<1.75	<11.13	18.2	<9.51	<1.20	<5.61	
MO1113	<548729.31	65789	<218.92	<9.07	<324.08	<1182.53	<2.41	<9.47	<12.30	<12.66	<0.85	<4.72	
MO1114	<622079.69	228933	<232.64	<11.60	<396.96	<1115.74	<2.26	<10.41	<13.93	<11.76	1.2	7.2	
MO1115	<739384.44	154682	<197.79	<13.32	<412.45	<1424.43	<2.36	<8.35	<15.51	<15.40	<1.37	<5.43	
MO1116	1142803	142964	<142.42	<10.52	<355.88	<1186.05	<2.69	<11.28	<15.20	<16.43	<0.93	<5.21	
MO1117	<758174.81	191080	<148.24	<11.75	<358.63	<716.78	<1.07	<12.66	<14.92	<16.19	<0.97	<7.20	
MO1118	1063073	167796	<99.56	<11.64	<361.15	<970.56	<2.51	<9.96	<12.91	<13.75	<0.71	<4.94	
MO1119	<1109241.13	230774	<117.26	<12.07	<422.46	<1782.72	<2.58	<13.43	<14.09	<16.17	<1.03	<4.13	
MO1120	2793042	228810	<123.85	<11.05	<460.90	<1624.17	<3.38	<9.81	<15.60	<11.04	<1.41	<6.96	
MO1121	<1421243.88	181534	<105.96	<14.52	<427.62	<1623.95	<2.73	<11.74	<13.90	<15.64	<1.86	<5.30	
MO1122	<1979873.50	97906	<111.36	<12.69	<437.03	<1454.94	<2.69	<11.42	<16.21	<18.17	<1.43	<6.70	1
MO1123	<2753576.75	113213	<91.21	<13.23	<378.16	<1334.58	<3.74	<14.68	<18.87	<15.29	<1.61	3.7	1
MO1124	<4398870.00	181961	<89.30	<11.43	<437.73	<1634.71	<3.72	<7.27	<16.88	<15.29	<0.75	<4.33	2
BAITA BIHOR	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
BB5501	<149060.91	173910	0.0	<86.29	<5874.50	<12046.13	<36.41	<28.48	<151.23	<143.29	<22.41	<88.97	<Inf
BB5502	<133818.95	<242213.31	15.9	<94.65	<6629.72	<16568.06	<28.06	<30.97	<180.23	<176.98	<15.17	<104.21	<Inf
BB5503	<243358.00	<236696.30	12.4	<108.16	<7749.27	<17980.04	<18.00	<48.55	<195.70	121	<11.70	<0.00	<Inf
BB5504	<264302.22	<240637.34	7.4	<94.73	<8119.06	<23639.86	12.6	<34.38	<198.18	<189.77	<23.03	<53.03	<Inf

BB5505	<366555.56	470821	50.5	<95.41	<7042.14	<14111.29	<19.15	<36.35	199	<170.62	<11.96	<87.41	<Inf
BB5506	<273826.03	<168475.97	****	<96.61	<6510.58	<15624.84	<26.65	<50.45	<144.77	<134.15	<21.05	9.6	<Inf
BB5507	<454930.31	<216300.64	****	<124.16	<6527.62	<7613.59	<26.67	<35.60	<172.89	<185.68	7.7	<40.63	<Inf
BB5508	<463895.78	122539	****	<111.18	<6965.94	<21591.15	<24.58	<46.27	<177.40	<167.23	<14.39	<34.05	<Inf
BB5509	<380530.72	<208625.45	****	<133.98	<7670.32	<10976.31	<40.66	<38.15	230	<270.02	<11.63	<51.36	<Inf
BB5510	1221861	325699	143	<145.18	<7189.76	<15849.43	<21.38	13.3	<158.10	<97.90	<11.93	<34.91	<Inf
BB5512	<2009543.38	<162117.00	62.7	<131.23	<8182.66	<10786.24	<30.98	<70.41	<173.69	<232.88	2.6	<60.10	<Inf
BB15801	<****	<130700.29	<547.03	400	<7196.72	<12087.53	<37.53	<74.12	352	<173.75	<23.23	24.3	<378.75
BB15802	683251	<214435.14	<502.19	551	<7740.74	<17635.53	<24.21	<87.63	309	<277.36	<22.72	<27.02	<669.28
BB15803	****	<200486.81	189	720	<8392.32	<18103.09	<24.57	<94.27	293	<224.81	<13.46	<57.07	<2834.7
BB15804	<**********	<186932.97	<369.06	<145.70	<9648.67	<21715.11	<37.64	<76.65	<226.75	77.7	<25.52	<45.49	****
BB15805	3600939	366372	<330.50	<125.20	<6613.46	<22726.07	<38.96	<68.92	2707.51*	<162.55	<21.80	8.3	****
BB15806	<1837509.38	<204144.92	<450.77	<122.87	<7353.09	<18124.17	<21.74	<100.42	1298.44*	<224.26	<21.28	27.9	****
BB15807	<831637.88	<193564.06	<203.53	1052	<5089.68	<18538.90	<24.11	<103.06	260	<72.45	<13.76	<40.36	****
BB15808	876501	<204000.86	<244.83	<123.30	<6799.47	<14873.86	17.3	<101.27	<199.04	<142.22	<19.11	<72.21	****
BB15809	909970	233438	<347.76	<116.10	<6211.86	<6160.83	<24.83	<99.80	<170.82	<151.93	<10.22	6.2	<****
BB15810	<691238.13	<281076.94	<300.47	646	<6574.92	<15910.25	<40.15	<123.10	198	<247.86	<20.43	<62.39	<****
BB15811	<475743.03	<372660.38	<288.06	489	<6349.21	<21574.24	<30.14	109	<215.67	<248.26	<12.64	<48.95	****
BB15812	408314	<389272.72	<288.37	<109.20	<7030.05	11257	<19.45	<140.49	<187.72	<122.14	<20.16	<66.10	
BBH16AB01	2030241	<84727.57	<353.53	<22.55	<909.54	<1942.40	<3.33	<34.30	<30.84	<26.56	<2.51	<8.73	
BBH16AB02	****	<78357.50	<335.19	<21.10	<1014.63	<1927.87	<5.24	<22.84	<29.16	<23.67	<3.52	4.0	
BBH16AB03	21278	216103	<325.66	<19.94	<861.26	<2111.26	1.3	<14.54	<32.66	<26.01	<3.53	<7.77	
BBH16AB04	****	249854	<323.43	<16.17	<1005.92	1502	<6.63	<14.56	<30.22	<21.22	<2.22	<7.75	
BBH16AB05	****	169292	<301.53	<17.43	<820.17	<2375.68	<3.81	<10.85	<34.31	<24.93	<2.85	<5.75	
BBH16AB06	****	172738	<381.40	<18.48	<1123.24	<2775.97	<6.44	<15.92	<33.56	<25.79	<2.94	<10.27	
BBH16AB07	<****	<85296.47	<502.24	<20.01	<1076.42	<2388.40	<5.89	<13.09	<32.08	<29.88	<2.78	<11.88	
BBH16AB08	****	164247	<538.73	<30.52	<1198.88	<3925.81	<6.87	<30.63	<44.50	<44.11	<2.28	<17.85	
BBH16AB09	****	69571	<447.43	<23.93	<988.74	<2184.31	2.6	<22.16	42.2	<22.49	<4.34	<8.12	
BBH16AB10	<****	217672	<528.54	<20.80	<952.56	<1540.78	<4.43	<22.26	<34.75	<37.36	<2.32	6.6	
BBH16AB11	<****	<58988.68	<679.51	<22.49	<1076.98	<2528.57	<5.34	<17.03	<35.44	22.1	<3.05	<6.18	

BBH16AB12	<****	173069	<495.42	<20.58	<967.32	<2379.40	<4.51	<19.77	<34.17	<22.96	<2.88	<10.09	
BBH16AB13	548877	101462	<239.02	<24.26	<990.80	<2299.89	<5.93	<14.02	<39.33	<26.84	<2.70	<9.25	
BBH16AB14	230659	102205	<172.54	<22.01	<1067.45	<2422.98	<5.71	<23.58	<36.22	<34.20	<3.19	6.0	9
BBH16AB15	<****	<70284.78	<113.99	<23.67	<955.27	<2630.23	<5.75	<27.65	<31.42	<29.09	<4.14	<8.85	
BBH16AB16	397100	103187	<78.17	<21.13	<946.15	<2181.18	<5.65	<25.03	<31.01	<26.10	1.9	<11.14	
BBH16AB17	228103	134688	<112.82	<24.89	<1087.79	<2925.09	<4.39	<19.59	<36.08	<33.86	<1.82	9.8	
BBH16AB18	<****	<73847.63	<115.87	<24.26	<1057.22	<1995.06	<6.87	<35.09	43.0	<37.09	2.8	<6.17	
BBH16AB19	<****	<65898.37	<78.43	<22.75	<1084.63	<1708.66	<4.45	<14.33	<30.77	<22.50	<3.69	<10.52	
BBH16AB20	449801	157752	<100.06	<23.18	<1056.72	<2717.20	<5.37	<21.33	<41.89	25.8	0.9	12.0	
BBH16AB21	<****	84418	<77.56	<21.04	<1021.57	<2178.02	<5.20	<18.68	68.5	<31.07	<3.33	<5.42	
BBH16AB22	<****	<67418.44	<68.54	<24.79	<969.88	<3105.75	<6.07	<22.00	73.8	<19.37	<4.34	<15.36	
BBH16AB23	<****	215249	<84.02	<29.01	<1271.49	<3038.71	<7.47	<40.02	954.46*	<31.83	<3.49	<11.21	
BBH16AB24	<****	122178	<64.88	<24.28	<1129.73	<2043.64	<2.69	18.7	<37.66	<33.22	<4.70	<10.60	
BBH16B01	<417518.59	1171110	<139.77	<122.65	<7019.53	<16215.96	<37.22	36.6	<175.37	<145.25	<12.83	<45.91	<188.50
BBH16B02	<665859.06	<663209.13	<197.93	<161.58	<6879.50	<16786.08	<30.56	<122.71	<186.50	<278.50	<19.92	36.8	<192.73
BBH16B03	<587254.13	<851900.56	<196.27	<154.55	<7751.16	<15240.42	<39.47	<184.91	<192.11	<172.80	<21.24	<67.43	<167.48
BBH16B04	<744805.19	581513	<234.34	<129.94	<7112.43	<11852.77	<23.83	<112.78	<132.95	<130.17	<18.32	<33.99	<174.52
BBH16B05	<957374.88	<547215.31	<209.34	<119.90	<6605.68	10912	<19.90	<164.72	<151.90	<135.56	<13.39	<61.56	<171.64
BBH16B06	<1251071.25	511171	<174.59	<133.04	<6614.69	<10700.52	<13.85	55.2	<157.73	<110.88	<13.31	<0.00	<145.02
BBH16B07	<1805615.25	<538778.56	<254.50	<134.40	<6684.12	<9956.14	<21.95	<185.05	<178.46	<145.95	<15.05	7.3	<141.56
BBH16B08	<2724842.50	726385	<183.63	<150.49	<6679.08	<12985.50	<12.59	<214.23	<133.44	<164.92	1.9	<47.92	<127.94
BBH16B09	<**********	<389754.97	<274.96	<154.70	<7100.84	<12936.29	<13.80	<205.08	<161.68	<142.33	<16.69	<75.81	<132.94
BBH16B10	****	490414	<358.40	<165.89	<8171.91	<16511.06	5.9	<244.94	<231.67	<171.34	<9.97	<39.67	<133.68
BBH16B11	****	<343437.16	<264.08	<120.26	<5435.80	<12158.16	<22.49	<98.06	<128.36	<69.13	9.5	<45.45	<109.28
BBH16B12	<****	<276386.34	<184.83	<102.29	<7539.78	<11548.67	<31.12	<146.20	<122.47	<146.88	<11.91	<59.37	<120.49
BBH16B13	<1097628.88	<182501.36	<376.31	<140.41	<4973.83	<15471.38	<11.53	<133.41	<122.48	<147.46	<11.77	<58.20	<125.61
BBH16B14	<901711.13	<270199.94	<340.34	<118.91	<6474.06	6611	<11.25	<0.00	<119.32	<101.02	<18.08	<55.74	
BBH16B15	<737382.81	<262217.56	383	<151.13	<7518.58	<17121.42	<13.93	<189.70	<155.59	118	7.9	<39.14	<176.01
BBH16B16	<567829.94	<235243.53	<399.16	<119.01	<6711.38	<12804.38	<18.15	104	<156.78	<80.36	<12.94	9.3	<184.09
BBH16B17	<609934.94	<162158.58	<354.43	<126.91	<6296.68	<9781.34	<11.39	36.1	<188.05	<122.58	6.8	<30.81	<168.56

BBH16B18	<541264.19	196088	<338.77	<152.82	<7844.67	<6111.52	<17.53	<129.66	<137.81	<171.00	4.8	<46.55	<274.77
BBH16B19	<351109.63	<194415.20	<261.61	<146.13	<6263.64	<11800.18	<12.04	<174.49	<140.16	<127.67	4.7	<54.33	<252.34
BBH16B20	<303357.09	203723	<320.04	<109.10	<6020.37	<16041.81	<16.47	18.9	<135.34	<100.05	<14.13	<29.77	<317.48
BBH16B21	351883	376781	<220.08	130	<7095.08	<10661.31	<17.98	<153.16	<133.48	<153.31	4.7	8.4	<458.72
BBH16B22	<387067.97	<250841.23	<224.70	<151.62	<6635.25	<20871.28	<13.72	<93.46	<179.34	<142.13	<13.46	18.6	<813.57
BBH16B23	<191274.56	<221119.97	<152.33	<164.01	<6763.63	<14835.27	<13.88	<0.00	<193.65	<82.35	<9.59	<47.36	<2167.6
BBH16B24	<330707.78	<191104.98	<222.14	<178.77	<7885.18	<12404.67	<15.08	57.4	<166.07	<217.39	<25.39	20.8	
BBH2001	<129443.43	111816	<22.00	<4.44	<145.66	<494.91	<0.74	0.6	50.9	<5.91	<0.35	<3.30	
BBH2002	213189	81984	<33.75	<4.71	<143.14	<628.94	<0.87	0.3	17.5	<7.43	<0.64	<3.14	
BBH2003	<129010.81	91274	<23.66	<4.76	<172.46	<598.76	<0.87	<4.36	56.9	<5.02	<0.37	<1.97	
BBH2004	<126969.86	92526	<23.62	<4.57	<149.17	<403.97	<0.00	2.3	37.8	<7.40	<0.59	2.3	
BBH2005	<141606.44	48329	<32.76	<4.84	<166.09	<662.24	<0.97	1.2	26.8	<7.11	<0.29	<3.02	
BBH2006	<135861.34	69349	<27.58	5.8	<187.44	<738.59	<0.78	<2.15	16.5	<5.70	0.1	<2.20	[illegible]
BBH2007	<118372.31	162208	<32.86	<4.58	<166.76	<674.29	<1.04	<3.10	72.7	<5.34	<0.44	<4.21	[illegible]
BBH2008	161241	120499	<27.11	7.0	<173.82	<616.82	<0.64	<2.09	57.1	<6.10	<0.52	<2.65	
BBH2009	<107665.04	69129	<21.94	<4.64	<211.52	<471.78	0.9	<3.85	42.6	<8.22	<0.46	<4.00	
BBH2010	126186	140437	<34.94	<5.61	<221.53	<506.35	<0.74	<2.34	109	<9.16	<0.49	<3.00	[illegible]
BBH2011	143589	117350	<41.82	<5.80	<215.41	<736.02	<0.76	<4.08	64.8	<6.61	<0.87	<3.04	
BBH2012	<114254.98	94139	<35.98	<5.85	<268.80	<566.86	<1.02	0.6	72.6	<9.68	<0.87	<2.67	[illegible]
BBH2013	<126956.76	117560	<37.95	<7.25	<329.96	<889.08	1.0	<0.00	33.3	<13.89	<0.89	<3.21	
BBH2014	323227	157752	<38.06	<8.22	<376.58	<788.58	<1.38	<7.76	49.1	<11.55	<1.06	<4.04	
BBH2015	<140956.23	149914	<42.73	<7.27	<338.28	<1077.63	0.8	<6.34	72.0	<13.81	<0.75	2.9	
BBH2016	<163613.09	156435	<42.96	<8.56	<353.14	<644.28	<1.62	<4.65	52.1	<10.46	<1.09	3.1	
BBH2017	200252	164737	<46.42	<7.84	<391.69	<713.45	<1.63	<4.71	71.2	<10.54	0.4	<4.06	
BBH2018	<181479.58	201286	<50.26	<8.94	<405.00	<752.38	<1.37	<4.61	15.3	<8.67	<1.07	<5.97	
BBH2019	<192930.80	<53180.72	<58.27	<9.71	<432.79	<1164.00	<1.78	<3.71	39.2	<11.61	<1.21	<4.38	
BBH2020	<152010.73	127896	<50.19	<7.79	<321.81	<544.05	<1.82	1.6	82.7	<14.27	<0.72	<2.97	
BBH2021	355463	150864	<65.30	<8.37	<380.10	<1211.38	<1.78	<5.87	61.4	<8.86	<1.10	<3.16	
BBH2022	309669	125343	<61.68	9.7	<371.82	<637.17	<1.49	<3.68	105	<10.49	<1.19	<4.14	
BBH2023	<250892.09	<45889.39	<75.75	<7.75	<435.89	<546.11	<1.19	<3.65	59.5	<9.44	<1.17	<2.33	

BBH2024	426487	92111	<53.06	<8.93	<377.43	<697.83	<1.43	<3.62	40.3	<9.31	<1.53	<4.55	2218.92
BBH2501	<Inf	152361	<Inf	<11.36	<510.95	<1103.81	<2.46	<6.41	<19.80	<15.80	<1.76	4.1	
BBH2502	<Inf	149925	<Inf	<11.80	<588.74	<1281.98	<2.61	<10.46	26.8	<21.87	<1.50	<5.83	
BBH2503	<Inf	<51541.23	<Inf	<10.23	<582.38	<1020.17	<2.29	3.8	<19.65	<13.44	<1.64	3.6	
BBH2504	<Inf	76296	<Inf	<10.10	<550.88	773	<1.87	<7.73	44.4	<16.24	<0.97	<5.26	
BBH2505	<Inf	65636	<Inf	<11.18	<579.09	<1130.67	<3.13	3.0	21.1	<20.93	<1.82	<7.12	
BBH2506	<Inf	126177	<Inf	<11.85	<659.85	<1232.97	<2.80	<6.94	23.0	<16.09	<1.54	<5.45	
BBH2507	<Inf	<61575.99	<Inf	<12.97	<716.20	<1018.16	<2.01	<6.97	34.7	<13.24	<1.28	<9.48	
BBH2508	<Inf	<56700.96	<Inf	<14.06	<738.19	<706.84	2.1	2.1	<17.65	<15.86	<1.54	<9.23	
BBH2509	<Inf	<50721.47	<Inf	<11.10	<603.06	<1536.55	<3.62	<6.56	<20.62	<14.03	<1.50	<8.13	
BBH2510	<Inf	152498	<Inf	<15.48	<676.43	<1620.49	<3.05	<10.24	26.2	<25.05	<2.36	<8.96	
BBH2511	<Inf	174633	<Inf	<14.12	<804.90	1421	<3.77	<14.42	20.3	<20.83	<1.37	<3.99	
BBH2512	<Inf	<61399.08	<Inf	<11.61	<679.86	<1306.93	<3.73	<9.96	40.1	<18.01	<1.66	<5.51	7
BBH28A01	342764	267309	<199.91	<130.20	<7800.65	<20231.76	<14.72	60.1	<196.91	<78.78	17.8	<46.05	****
BBH28A02	497811	<172320.20	<216.83	<127.20	<7436.64	<19679.58	<16.24	<135.81	<207.79	<171.45	<11.32	<51.16	****
BBH28A03	<337956.41	<244478.66	<300.55	<146.24	<7304.53	<12893.31	<26.45	<129.49	<136.16	<137.65	<15.15	<68.52	****
BBH28A04	<571550.56	254274	<312.01	<162.89	<8124.56	8279	<18.31	<111.37	<188.48	<132.73	<12.92	<41.38	****
BBH28A05	1091514	<428676.06	<301.63	<160.13	<9787.32	15087	<27.56	<170.22	<272.74	<139.06	<13.84	<62.77	4
BBH28A06	1387594	<353028.88	<408.99	<230.88	<9552.28	<19780.97	<53.90	<138.17	<247.29	154	<22.25	<113.01	****
BBH28A07	<1667739.63	395336	<328.58	<168.15	<8547.51	<20001.97	<27.06	<211.85	<252.64	<132.10	<23.87	<108.62	****
BBH28A08	<3009653.25	<295392.34	<338.11	<191.35	<9213.06	<14446.69	<43.00	<198.09	<206.75	<272.83	<0.00	78.6	****
BBH28A09	****	<335239.19	<416.10	<159.61	<8978.48	<19261.51	<41.31	<194.31	<256.22	<194.56	11.8	<84.55	****
BBH28A10	763991	<393483.91	<348.46	<194.12	<9086.95	<21184.12	<40.13	31.8	<266.60	<262.23	<29.62	<78.29	2
BBH28A11	475480	691130	<286.71	<198.40	<8638.12	<28010.93	<61.10	<161.01	<260.41	<104.61	<34.42	<111.67	****
BBH28A12	****	<346690.78	<318.46	<130.64	<8386.60	<12886.13	<29.39	<257.81	<236.09	<130.41	<22.13	<50.89	****
BBH28A13	<****	<358764.69	<256.80	<172.20	<8081.74	<14616.43	<35.59	<233.22	<203.64	<90.44	<15.40	<0.00	****
BBH28A14	****	645105	<380.83	<178.39	<10375.29	9266	<34.35	<0.00	<271.04	<189.37	<17.89	<131.90	****
BBH28A15	466259	<393040.22	<312.88	<235.43	<9010.89	<15438.55	<41.51	<191.20	<229.49	<220.56	<17.37	<78.00	****
BBH28A16	284913	<369834.81	<220.95	<184.90	<9636.09	<11553.48	<30.40	204	<242.64	<267.38	<15.34	<145.23	****
BBH28A17	581736	<220831.38	<198.47	<210.59	<8578.76	<15506.10	<56.49	<274.44	<237.12	<271.24	<28.10	21.1	****

BBH28A18	826974	417214	<317.29	<199.67	<9383.53	<18467.95	<32.95	<319.29	<237.04	<197.80	<22.86	<119.85	****
BBH28A19	144128	<242022.83	<217.39	<198.70	<8147.81	<18210.29	<45.01	<158.89	<289.14	<201.41	<19.49	<75.99	****
BBH28A20	<****	<250160.67	<167.86	<187.49	<8323.52	<11796.17	5.9	<159.11	<246.76	<178.63	<13.67	<158.29	****
BBH28A21	614019	<219304.03	<234.29	<210.43	<7618.76	<17835.03	<29.96	<135.86	<240.59	<201.28	<20.02	<121.73	<****
BBH28A22	682031	<243022.52	<194.34	<295.86	<9936.73	<19272.93	24.1	76.9	<235.91	<119.12	<14.83	102	****
BBH28A23	<****	<386037.31	<193.98	<358.67	<16110.41	<37528.77	<45.85	<253.56	<501.62	<175.31	<36.71	<141.84	****
BBH28A24	214256	<202412.75	<134.10	<269.43	<8958.37	<21656.89	<19.83	<309.58	<268.54	<154.52	<22.22	<90.03	<****
BBH3201	194206	206998	<243.22	<16.74	<791.12	<1170.01	<1.60	<10.50	<18.72	<24.80	<1.68	<5.31	
BBH3202	<266684.81	120686	<252.62	<14.12	<773.02	<1146.26	<2.54	<8.33	<21.95	<21.46	<3.29	<9.58	
BBH3203	<230809.06	251425	<341.12	<14.43	<866.45	<1399.69	2.7	<11.03	<27.10	<20.34	<1.81	<4.08	1
BBH3204	<246009.55	116196	<871.16	<16.42	<857.11	<1154.06	<3.59	<14.26	<20.92	<21.69	<1.11	<11.60	
BBH3205	<424465.44	177324	<2544.89	<14.70	<802.43	<1306.17	<3.51	<17.88	<24.45	<19.72	<2.45	<6.13	
BBH3206	1539360	<85864.79	****	<16.68	<901.74	878	<2.43	<11.01	<24.30	<22.42	<2.65	<6.07	
BBH3207	<1314014.75	143072	****	<16.59	<765.73	<1716.16	<4.57	<11.03	<27.68	<19.66	<2.90	1.6	
BBH3208	<****	199645	****	<16.69	<936.86	<1783.86	<2.73	2.7	<29.35	<31.28	<2.14	4.7	
BBH3209	569931	<76605.02	****	<12.87	<831.07	<1801.07	<3.55	<7.09	<25.39	<14.92	<2.29	<8.25	
BBH3210	****	176652	****	<14.45	<751.42	<1831.06	<1.53	<9.59	<24.79	<17.65	<2.21	<8.03	
BBH3211	<****	<74172.65	49.0	<14.53	<836.78	<2093.92	<4.91	5.8	<26.12	<18.47	<1.14	4.3	
BBH3212	538559	101479	18.9	<12.12	<703.39	<1279.98	0.8	<0.00	<21.39	<14.31	<1.71	<4.04	
LANGBAN	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
SWAS5901	<101499.66	497829	<63.22	<43.15	<2744.96	<4558.84	<12.75	<56.32	70.6	39.1	<4.41	<21.92	4
SWAS5902	146591	404142	<49.02	<46.03	<3209.58	<5890.77	<9.94	<73.19	<99.95	<59.82	<3.05	12.3	2
SWAS5903	150440	<300185.66	<59.58	<46.93	<2869.24	<6534.80	3.9	<29.25	<65.84	<99.92	<4.49	<13.16	****
SWAS5904	<180333.50	<226720.38	<43.11	<47.39	<3186.43	<4557.76	<9.03	10.8	109	<97.16	<5.62	<9.74	****
SWAS5905	<156226.83	<235714.77	<58.25	<47.73	<2803.81	<5256.29	<10.12	<47.85	248	<72.31	<6.15	<9.20	****
SWAS5906	<271660.00	<213363.88	<56.77	<50.69	<2940.26	<5894.25	<13.84	<29.43	221	<79.94	<4.37	<22.39	2
SWAS5907	293227	144559	<37.54	<39.00	<2558.21	<3713.67	<5.93	<36.18	<54.86	<63.46	<5.17	<10.24	****
SWAS5908	424445	<136845.39	<55.01	<38.28	<2633.67	3595	<6.84	<32.60	332	<61.20	<5.37	6.9	****
SWAS5909	<664871.44	366910	<60.78	<49.62	<3460.64	<6977.21	<11.65	<46.14	150	<56.55	<3.26	<19.14	1
SWAS5910	<2560056.75	<144313.55	<66.69	<46.52	<3217.66	<4061.23	<10.13	<25.69	120	<79.49	<4.66	<9.37	

SWAS5911	388531	<141252.63	<51.56	<48.41	<3171.21	<5226.07	<7.49	<22.39	150	<77.03	<7.38	<11.73	1
SWAS5912	****	<135486.47	<60.62	<52.52	<3259.27	<5716.25	<8.93	5.0	151	<48.64	<7.24	<16.74	3
SWAS6001	**********	<861067.06	<298.05	<79.55	<4920.65	<5013.93	<11.24	<129.59	<117.95	<135.21	<6.28	<43.23	<119.41
SWAS6002	<**********	1930367	<377.56	<84.72	<5532.52	<8646.52	<12.75	<159.73	<126.54	<115.97	5.2	29.4	<139.58
SWAS6003	**********	1327995	<258.18	<72.69	<5867.31	<8113.28	<17.64	<73.36	<101.99	<110.52	<9.44	<43.46	<158.72
SWAS6004	<**********	<1429860.13	<322.49	<76.84	<5057.35	<9488.36	<17.03	<132.85	<115.24	<84.76	<8.91	<39.82	<167.21
SWAS6005	**********	<1728344.63	<339.78	<81.71	<5628.12	<8380.58	<15.74	<132.72	<109.05	78.3	<9.28	<40.25	<171.79
SWAS6006	<**********	<2695775.50	<355.14	<71.22	<5248.34	<9275.58	<27.93	<71.97	<125.82	86.4	<14.84	<38.24	<246.08
SWAS6007	<**********	7688601	<382.89	<88.02	<5741.67	<10627.89	<27.00	<69.99	<129.95	<86.41	<13.04	<53.19	<307.44
SWAS6008	<**********	<**********	<336.79	<77.89	<5232.79	<7043.39	<18.89	<90.95	<123.23	<142.74	<10.20	9.2	<320.91
SWAS6009	Inf	****	<377.42	<112.83	<6125.68	<10546.71	<28.25	<133.55	<107.81	<167.49	9.1	<24.45	<622.46
SWAS6010	<Inf	<****	<278.12	<67.31	<4348.49	<8498.50	<20.96	<81.76	<124.35	<92.20	<11.55	<15.12	<729.79
SWAS6011	<Inf	****	<423.27	<90.98	<5536.50	<7438.20	<30.99	26.9	<110.19	<75.06	<8.19	<20.75	<3702.3
SWAS6012	<Inf	<****	<491.28	<85.28	<6053.14	10169	11.8	37.4	<130.57	<109.66	<8.52	<29.47	
SWAS6013	****	<740191.13	<257.79	<70.55	<5208.75	<8981.34	<28.49	9.6	<118.68	<104.53	5.3	<39.49	
SWAS6014	****	<637523.31	<202.79	<75.25	<5164.65	<6315.65	<23.40	<60.51	<95.11	<125.83	<14.08	<48.23	
SWAS6015	****	<477056.78	<313.28	<89.66	<6304.50	<10229.37	<33.06	<70.03	<148.20	<174.41	<15.89	<22.61	****
SWAS6016	2217459	<394062.31	<406.34	<87.04	<5847.65	<8248.40	<24.19	<121.07	<99.41	<138.97	<8.92	<44.79	****
SWAS6017	709239	452477	<290.42	<96.96	<5342.37	<9459.76	<12.52	33.1	<118.61	<117.38	<14.26	<36.42	****
SWAS6018	****	<333435.78	<457.45	<96.39	<6202.83	<12079.46	<14.19	31.9	<175.03	<137.11	<13.56	<43.19	
SWAS6019	68435	<210277.61	<368.46	<69.50	<4737.09	7079	15.7	<131.27	<100.16	<88.87	<13.86	<25.94	****
SWAS6020	281142	<212947.94	<562.49	<76.81	<6201.85	<6632.38	<10.97	<67.93	<113.01	<100.39	<13.52	14.4	****
SWAS6021	<****	<232554.86	<657.64	<96.70	<6047.49	<10126.66	<21.61	19.4	<148.42	<58.65	<15.76	<35.30	****
SWAS6022	****	<161905.84	<567.49	<71.72	<6153.04	<7043.80	<24.11	<0.00	<100.05	<137.63	<8.05	<44.97	
SWAS6023	****	131288	<819.14	<65.98	<5132.80	<9321.71	<28.17	29.8	<110.01	<129.02	<16.25	<40.05	
SWAS6024	****	<154788.72	<697.96	<84.65	<5310.24	<13640.77	<14.31	<171.75	<132.80	<114.76	<15.79	<32.37	****
ELATSITE	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
ELS15701	967574	<210419.67	****	<132.26	<7390.99	10883	<29.33	<2351.66	<196.37	<191.98	10.2	<91.19	6
ELS15702	****	<215862.06	481	<113.85	<8511.91	<16213.64	<20.59	<1133.36	<269.57	<95.24	<11.79	<50.34	6
ELS15703	1180106	<256122.09	****	<114.11	<7373.16	<14760.35	17.3	<530.37	<226.61	<192.09	<20.86	<84.80	<61.46

ELS15704	****	<405805.97	<6446.58	<140.44	<6763.17	<15736.24	<31.04	<586.63	<253.68	<143.44	3.6	<49.89	<68.83
ELS15705	<****	<494154.19	<1546.74	<173.76	<9037.49	13794	<62.22	<464.70	<293.19	<287.31	11.3	<167.13	<107.10
ELS15706	7990827	<609479.81	<1303.87	<190.65	<11102.21	<15260.50	<41.79	<514.28	<310.98	<192.86	<25.19	<88.49	
ELS15707	9265577	798021	<767.32	<188.19	<10880.09	10913	<58.75	<750.56	<356.52	<234.66	<17.95	<84.97	<112.85
ELS15708	<2507550.50	1004218	<724.52	<211.45	<10581.10	<21329.29	<57.26	<577.95	<347.07	<263.94	<25.10	<98.03	<102.41
ELS15709	<1597121.50	<1462519.63	<461.06	<168.18	<10529.36	<28435.84	<28.56	<392.56	<256.40	<322.22	<17.97	<94.54	
ELS15710	1929378	<2346776.75	<388.97	<213.26	<9372.17	<15514.93	<64.48	42.5	<311.87	<375.50	<18.42	<106.64	9
ELS15711	<1648124.25	**********	<428.43	<140.38	<11152.19	<24720.52	<37.10	<288.68	<265.06	<120.70	<24.09	31.0	<127.49
ELS15712	1063053	****	<288.44	<154.38	<8053.91	<20354.21	27.4	<260.92	<254.30	<208.29	<29.90	<0.00	<130.08
ELS15713	<3562981.25	335852	<239.93	<141.04	<9139.28	<14515.00	<24.50	<138.94	<319.68	<261.22	<37.92	<62.63	<194.63
ELS15714	4132547	****	<183.72	<179.51	<11919.46	<32001.64	<69.51	<160.43	<221.27	<275.16	16.7	36.2	<230.12
ELS15715	826783	****	<252.96	<162.62	<10064.07	<25599.78	<59.02	<105.21	<304.03	<290.99	<25.99	<51.90	
ELS15716	****	2937596	<492.90	<200.13	<10905.65	<36239.46	<43.89	<213.62	<351.40	<155.59	<21.66	45.6	<212.79
ELS15717	****	2700759	<614.25	<303.62	<14192.73	<27970.31	28.8	<390.22	<378.92	<388.86	<61.65	<94.63	<311.22
ELS15718	293606	<1096464.25	<285.83	<267.79	<14831.15	<37263.24	26.1	<144.09	<436.89	<422.69	<25.59	<82.07	<290.93
ELS15719	364433	985147	<311.71	<212.02	<10862.97	26796	<61.65	<171.80	<327.23	<162.51	<21.69	<72.78	<220.14
ELS15720	141149	<535975.94	<512.18	<272.65	<17505.57	<36429.39	<62.84	<174.66	<429.51	<291.78	<44.35	<155.89	
ELS15721	<****	1527743	<606.05	<240.26	<13263.71	<33869.90	<60.89	<275.65	<368.03	<271.08	<60.93	15.5	<243.43
ELS15722	<****	<293676.06	<485.72	<142.57	<12645.47	17539	50.1	<245.97	<347.16	<461.38	<38.64	<149.95	<200.72
ELS15723	348062	<414984.97	584	<213.34	<12257.38	<35581.61	<29.11	<227.11	<442.32	<328.33	<35.86	<119.74	<207.69
ELS15724	****	875534	<466.14	<223.22	<11095.05	<27063.07	<26.65	<207.35	<301.81	<152.80	<19.00	<142.13	<183.96
LEGA DEMBI	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
7011A01	<****	552304	<167.64	<30.87	<1322.83	<2753.38	<3.44	5.6	<24.99	<15.96	<2.85	8.5	<237.01
7011A02	596358	<234146.27	<192.44	<32.64	<1543.99	<2280.87	<8.60	<31.54	<29.39	<32.47	<2.37	9.4	<261.45
7011A03	<****	<233902.77	<175.08	<33.15	<1489.07	<2938.97	<4.98	8.3	<28.61	<29.66	<2.90	<25.27	<233.50
7011A04	****	388423	<151.58	<34.30	<1596.38	<3247.95	<8.76	<28.07	55.8	<32.86	<1.69	<15.98	<214.23
7011A05	****	332435	<159.85	<40.16	<1598.89	<3198.11	<7.09	<17.68	<34.91	<35.54	<2.58	<14.79	<218.32
7011A06	<****	<271049.97	<206.59	<37.55	<1866.71	<3576.05	<10.72	21.8	<36.31	20.9	<2.88	<16.38	<205.87
7011A07	****	519077	<161.33	<35.79	<1655.73	<3090.57	<6.23	<17.53	34.3	<34.56	<3.05	<18.09	<170.46
7011A08	****	327525	<212.20	<33.00	<1815.94	<3502.71	<8.71	<20.15	<39.73	<42.45	<2.83	<12.82	<197.31

7011A09	****	422898	<135.40	<37.28	<1932.96	<3862.22	<6.86	15.4	<42.01	<39.71	<4.94	<17.12	<187.93
7011A10	****	<297953.03	<266.51	<44.80	<1985.28	<3926.92	<9.09	<26.09	<50.39	<40.53	0.5	<22.20	<210.79
7011A11	127249	<211700.25	<176.42	<35.78	<1553.23	<2827.65	<5.73	<19.13	<31.15	<35.90	<3.62	<11.16	<128.06
7011A12	<****	363289	<132.77	<40.22	<1986.14	<3416.69	<10.70	<33.36	<46.44	<35.58	<4.90	<16.30	<160.73
7011A13	<****	<226456.27	<94.97	<40.11	<2178.21	<4234.71	<9.90	17.0	<43.45	<55.49	<3.75	<8.88	<128.43
7011A14	335167	<236295.09	<172.26	<51.08	<2516.80	<5223.86	<11.53	<71.80	<69.14	<87.78	2.6	<22.45	<148.17
7011A15	****	<219613.84	<161.22	<45.84	<2217.73	<4094.24	<8.71	<35.10	<61.61	<59.86	<6.72	<8.51	<128.01
7011A16	354650	<236571.41	<149.49	<59.00	<3074.85	<4910.27	<6.41	<43.53	<67.84	<53.84	<3.53	<27.96	
7011A17	<****	373935	<125.23	<46.73	<2356.74	<4260.30	<7.83	11.8	<69.50	<46.35	<5.33	<15.40	<132.49
7011A18	2165960	265423	<92.96	<48.93	<2536.98	2965	<18.83	<36.54	<58.85	<52.96	<4.51	<19.87	<128.93
7011A19	1658260	217621	<134.24	<46.02	<2456.45	<5050.75	2.3	15.2	<56.55	<50.61	<4.36	<14.40	<119.13
7011A20	<**********	<182033.45	<96.90	<46.38	<2894.88	<4451.31	<13.97	<55.25	<73.44	<66.92	4.0	<19.04	<137.22
7011A21	<4025019.25	<165931.80	<128.35	<37.74	<2611.10	<2126.90	<10.15	<21.48	<51.61	<46.94	<6.54	<14.82	<112.51
7011A22	<2583149.00	<174137.83	<123.49	<50.96	<2694.52	<3219.01	<8.83	<51.66	<71.95	<63.07	<5.14	9.6	<143.15
7011A23	<1808919.75	431524	<132.31	<42.30	<2639.35	2960	<10.27	<41.60	<55.35	<64.56	<6.96	<16.59	<126.23
7011A24	1674170	<121222.72	<84.89	<35.38	<2157.93	<4481.03	<6.36	<30.88	<47.35	<48.81	<2.66	<8.71	<96.02
BAIA DE ARIES	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
BDA99-101	366857	1355171	<627.68	<136.68	<6894.73	<10786.80	<35.07	<122.06	<202.16	<174.17	<20.39	<63.76	<Inf
BDA99-103	<139794.98	<4695682.00	<2456.16	<129.35	<7592.03	<15204.85	<30.42	<247.38	<213.80	<181.53	<14.63	<66.52	<Inf
BDA99-104	<222497.56	1665087	****	<111.71	<7441.05	<14752.72	<24.75	<165.58	<217.82	<150.85	<24.01	<63.87	<Inf
BDA99-105	<232186.59	****	****	<141.95	<8223.19	<15222.48	<20.05	<0.00	<235.71	<191.98	<21.33	<49.80	<Inf
BDA99-106	<205937.64	466426	****	<118.11	<7558.87	<16385.38	<34.41	74.1	<195.76	<79.14	5.9	<91.86	<Inf
BDA99-107	<242194.00	****	11.4	<107.74	<9032.81	<15297.67	<37.02	<121.93	<252.89	<163.37	<20.45	<109.54	<Inf
BDA99-108	<241701.02	<****	68.9	<118.79	<8763.36	<13665.75	8.8	<164.78	<222.95	<182.54	<23.95	<82.15	<Inf
BDA99-109	<204643.86	<****	****	<113.07	<7218.27	<14069.99	<38.83	<140.04	<218.41	<157.05	<11.76	<40.83	<Inf
BDA99-110	<192870.58	<****	****	<114.61	<7322.87	<13440.02	9.4	<141.14	<162.11	<113.28	<26.52	<41.67	<Inf
BDA99-111	<216082.06	****	27.1	<116.64	<7057.95	<9436.14	<18.50	<145.23	<165.23	<180.17	<14.10	<79.25	<Inf
BDA99-112	<205102.80	****	****	<96.60	<6719.11	<16874.63	<42.11	<103.61	<208.06	<147.45	11.1	<62.69	<Inf
BDA99-501	33817	79635	<52.85	<14.96	<903.50	<1945.82	<2.66	<10.13	<16.38	<21.24	<1.62	<11.01	

BDA99-502	<****	114890	<69.04	<16.23	<1111.94	<2344.61	<2.81	<11.64	<18.79	<25.66	<1.06	<7.30	****
BDA99-503	9309	111050	<67.89	<14.79	<1055.42	<2211.43	2.4	<9.17	<14.32	<7.82	<1.44	<9.08	****
BDA99-504	<****	172186	<77.83	<17.42	<1080.77	<2763.76	<2.76	5.4	<19.00	<15.17	<1.60	<10.19	
BDA99-505	****	132576	<86.75	<17.22	<1194.51	<2660.60	<4.27	<7.46	<18.71	<15.48	0.4	7.1	****
BDA99-506	****	<65441.36	76.7	18.5	<1133.50	<2005.98	<3.68	<11.01	<22.29	<20.80	<2.36	<14.56	<1008.0
BDA99-507	107483	<94247.45	<84.33	23.4	<1347.17	<3245.69	<3.38	8.8	<18.36	<29.21	<2.99	<15.25	<611.73
BDA99-508	14053	<90345.12	<135.33	75.3	<1553.28	<2801.20	<5.92	3.8	<27.21	<38.12	<2.90	<19.94	<429.00
BDA99-509	<****	<74067.27	<126.86	<20.87	<1302.95	<1754.63	<4.30	<19.25	<29.72	<34.16	<2.42	<11.93	<241.55
BDA99-510	20460	<74050.16	<124.64	32.7	<1453.71	<2572.24	<4.04	<9.98	<29.14	<20.36	<3.48	<15.11	<194.60
BDA99-511	****	126150	<142.61	29.2	<1536.95	<3651.18	<5.18	<15.92	<24.43	<37.32	<1.57	<9.81	<166.59
BDA99-512	<****	<92708.85	<143.53	35.2	<1476.46	<3225.72	<4.86	<20.06	<32.67	<33.08	<3.17	<15.92	<150.19
BDA99-513	<1048421.50	<140013.41	161	40.1	<2253.56	<3852.57	<10.29	<29.98	<51.46	<50.01	<3.30	<23.76	<72.07
BDA99-514	<1413313.38	<149678.03	****	45.5	<2441.27	<5769.46	<9.61	<17.37	<41.16	<66.11	<5.93	<21.67	<75.34
BDA99-515	<3338365.00	<153403.25	22.9	<44.63	<2397.26	<3920.31	<10.14	7.0	<52.34	<44.13	<2.59	<22.30	<78.82
BDA99-516	3439903	341505	40.9	46.0	<2546.42	<3662.41	<11.16	<27.40	<51.92	<48.60	<2.90	<32.15	<90.92
BDA99-517	2798872	380293	****	<47.77	<2746.99	<4921.67	<6.68	<17.97	<49.11	<51.45	<3.95	<19.79	<82.45
BDA99-518	<****	<180611.17	****	<43.92	<2732.67	<4972.39	<7.08	<18.67	<57.75	<48.83	<6.03	12.2	<88.61
BDA99-519	****	<200768.84	****	<43.31	<2827.66	<4003.05	<8.52	<31.09	<54.87	<53.62	<6.02	<16.99	<91.42
BDA99-520	****	<227321.11	3.0	65.6	<2838.31	<6697.82	7.4	<33.20	<65.51	<36.99	<4.73	<23.33	<97.04
BDA99-521	****	255766	25.9	<34.57	<2427.35	<3845.71	<8.67	<21.45	<49.89	<66.89	<6.17	<18.39	<83.39
BDA99-522	63170	<286733.50	****	<50.93	<3427.45	<5278.88	2.1	<20.28	<58.99	<76.50	<8.61	<28.99	<102.49
BDA99-523	****	<318277.13	6.4	<47.76	<2789.38	<4582.56	<7.81	<26.19	<57.25	<66.11	<5.19	<14.09	<96.60
BDA99-524	161169	492269	****	<50.82	<3256.80	<5336.50	<14.51	<19.44	<74.19	<57.93	2.0	<20.84	<110.63
BDA99-901	****	<884405.13	21.2	<56.57	<3741.54	<6691.68	<20.37	16.1	<89.30	<49.15	<7.21	<16.75	
BDA99-902	****	1299070	****	<62.45	<4282.56	<5111.33	<12.61	<59.46	<86.39	<37.84	<5.49	<18.37	
BDA99-903	<****	<1261274.13	0.5	<56.03	<3409.59	<6920.95	<9.23	<31.33	<78.62	<76.97	<9.87	<23.82	<208.63
BDA99-904	80392	<1237522.88	****	67.5	<4720.32	8092	<13.01	<45.00	<71.21	<98.57	<8.06	<31.39	<281.88
BDA99-905	<****	<1144113.00	<****	<60.83	<3811.56	<6451.67	<16.65	16.8	<87.27	<82.69	<8.96	<18.40	<381.87
BDA99-906	<****	1540382	****	<60.80	<4069.54	<7648.93	<12.22	4.2	<102.91	<95.52	<5.39	<39.15	<540.55
BDA99-907	788747	<1249570.63	308	<46.55	3009	<6059.17	<9.61	<35.20	<68.81	<88.12	<4.25	<29.54	<852.20

BDA99-908	2321415	<1751563.63	<4287.64	<46.34	<3739.39	<5249.16	5.0	<41.43	<107.86	54.2	<6.96	<13.22	10176.8
BDA99-909	<**********	<1902264.50	<519.29	<50.10	<3528.30	<6907.81	<12.46	4.3	<97.87	<102.27	<6.79	<18.69	****
BDA99-910	<2691045.75	3682413	<322.23	<51.60	<3736.59	<6647.63	<8.93	<34.76	<76.24	<64.52	<4.88	<19.45	****
BDA99-911	<981123.38	<2176206.25	<202.08	<34.93	<3728.33	<6855.37	<8.17	<22.98	<73.91	<77.56	<6.34	<25.90	****
BDA99-912	<745049.69	2473649	<190.72	<52.40	<4076.28	<6211.46	<8.78	<50.48	<74.37	<65.70	<8.38	<28.65	****
EFEMCUKURU	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
N501	****	646063	80.6	<293.91	<8706.02	<13280.09	<23.61	35.3	<191.95	<151.14	<18.00	<98.70	
N502	163425	<404219.81	****	<248.75	<8785.97	<20845.97	<59.48	<111.88	<194.09	<202.61	<16.52	<99.54	****
N503	<****	<291143.47	****	<224.48	<9255.76	<22670.06	<52.13	<80.14	<137.14	<196.35	<16.35	<54.12	****
N504	1779702	<469522.09	****	<249.92	<9864.87	<15965.26	<49.30	<155.26	<195.59	<281.19	<14.56	<68.78	****
N505	****	602504	18.4	<251.80	<10079.71	14356	<35.90	<138.51	<183.68	<194.90	<15.48	<69.56	4
N506	1808603	<426235.84	56.7	<283.31	<11203.14	<22345.18	<48.88	<163.86	<262.55	<244.54	<25.14	<75.96	****
N507	305527	<328734.13	120	<261.84	<8712.84	<19025.57	<41.66	<105.46	<191.32	<266.12	<19.19	52.5	<2480.0
N508	****	<365249.22	****	<187.37	<9209.45	<18668.87	<40.92	17.9	<208.26	<161.58	9.1	<79.33	<555.47
N509	**********	<424064.28	****	<222.23	<8828.96	<15951.52	<55.33	<177.22	215	99.5	<17.27	<63.31	<359.23
N510	<7333301.00	<368980.94	64.3	<190.15	<8731.78	<21229.70	<52.11	<221.40	<178.75	95.0	<16.87	<58.69	<202.78
N511	<2431181.75	463845	30.4	<173.90	<8081.68	<16263.63	<27.02	<197.74	<192.87	<109.77	<22.69	<47.36	<139.24
N512	2194505	<352388.03	****	<197.03	<8760.19	<15127.65	<47.05	<195.18	<183.34	<228.39	<23.22	<51.38	<134.22
N513	489547	<480346.94	****	<95.62	<7068.39	<7703.09	<23.17	<253.71	<149.46	<125.13	<10.72	<40.35	<53.88
N514	<722961.31	<794468.94	536	<135.32	<7983.63	<11076.28	<38.30	<0.00	<192.56	<147.01	<17.63	<61.50	<68.44
N515	<582744.50	896932	105	<138.29	<8840.26	<11501.33	28.6	<295.96	<226.42	<124.74	<28.67	<49.75	<70.32
N516	<605611.69	<1080562.25	****	<130.51	6568	<16980.50	6.2	64.7	<171.05	<159.61	<19.88	<58.40	<60.77
N517	<640991.19	<1830233.13	****	<113.66	<6957.35	<13802.25	17.9	<294.45	<196.99	<149.92	<21.34	<65.24	<65.75
N518	<713580.81	8306840	<5281.54	<128.12	<7686.47	<13606.66	<25.31	<179.65	<184.58	<114.57	<16.13	<75.77	<57.17
N519	<775518.69	<****	<1812.15	<122.50	<7990.73	<12811.37	<18.75	<413.86	<205.21	<85.35	<20.59	<49.15	<69.06
N520	<823387.81	****	<1047.61	<139.33	<8203.16	<17222.31	<35.48	31.1	<195.44	<81.20	<19.38	<54.29	<77.88
N521	1762450	<****	<719.65	<130.21	<8368.06	<21764.79	<28.22	<330.00	<221.36	<225.01	<25.04	<53.49	<101.03
N522	<1115522.75	<****	<572.10	<136.06	<7890.11	<15129.54	<19.52	<366.71	<228.70	<127.82	<12.18	<30.56	<78.32
N523	<1662668.75	****	<601.95	<160.10	<9846.80	<16792.74	36.8	197	<257.24	<251.02	<39.59	60.5	<106.38
N524	980379	****	<301.17	<115.78	<8527.58	12568	<35.96	29.6	<187.76	<222.80	<11.10	<57.64	<79.38

S401	<3489096.00	****	<393.48	<91.21	<7661.61	<8456.53	<34.91	<201.08	<181.03	<213.27	<15.73	<49.19	<121.84
S402	<4924732.50	<****	<476.15	<118.59	<7600.61	<17673.59	13.5	<288.28	<153.08	135	<15.48	<56.03	<117.41
S403	<**********	****	<715.98	<134.32	<9223.46	<12806.70	<26.90	<455.82	<226.62	<213.00	19.2	<43.12	<157.09
S404	<****	<****	<760.47	<128.29	<7597.51	<17627.22	<24.88	<215.05	<258.45	<152.96	<18.87	<48.52	<162.42
S405	3462224	****	<1724.86	<113.24	<8570.80	<12804.32	19.7	<240.87	<274.89	<97.19	<23.72	44.9	
S406	****	<****	<3917.09	<164.58	<9637.43	<12529.23	<22.00	<484.44	<243.97	<221.77	<37.86	<69.15	<234.26
S407	2148265	547685	****	<112.97	<8126.37	<12916.03	<32.32	129	<167.84	207	<16.88	<43.70	<218.35
S408	641649	**********	1326	<129.81	<7478.44	<9008.85	<32.12	<212.22	<202.84	<229.74	<16.64	<35.23	<258.96
S409	630790	<3524256.25	664	<93.23	<6765.08	<9734.12	<26.21	<288.38	<202.17	<153.38	<21.99	42.0	
S410	****	<1769228.75	427	<133.66	<6637.02	<14112.31	<37.34	123	<201.91	<119.90	<9.83	<67.74	
S411	****	<1325459.38	159	<131.01	6897	<13042.42	<23.73	257	<226.82	<190.85	<19.61	<57.21	<560.32
S412	<****	<1208669.63	4.0	<150.07	<7960.02	<7632.43	3.6	51.3	<215.47	<123.36	<19.86	<63.58	<1038.2
HERJA	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
HJ1301	****	<****	<336.37	<54.94	<2288.37	<4442.22	<4.94	<40.65	<38.96	<69.10	<7.85	3.1	<****
HJ1302	316519	****	<247.85	<48.18	<1817.31	<5431.57	<6.37	<26.14	<46.54	<62.83	<4.50	<19.76	<****
HJ1303	4068661	<****	<221.02	<49.39	<1778.89	<6753.18	<7.51	<35.53	30.9	<39.51	1.5	<10.96	<****
HJ1304	<**********	<****	<250.69	<44.64	<2058.81	<4579.68	<8.05	20.2	52.9	<48.79	<3.25	<20.31	****
HJ1305	7271534	**********	<267.48	<50.27	<2207.85	<5412.01	<7.77	<44.82	<35.54	<33.20	<4.41	5.4	4
HJ1306	<2386694.00	<5833990.50	<291.10	<53.24	<2201.23	<3439.42	1.6	14.0	<44.42	<36.44	1.1	<12.39	****
HJ1307	<1911047.38	<2017739.00	<267.71	<45.52	<2066.25	<5843.82	<9.68	<27.81	<43.63	<50.40	<4.69	<17.14	<****
HJ1308	1653035	1704745	<347.88	<53.22	<2326.37	2414	<10.59	<67.88	<59.65	<72.75	<5.10	<22.91	****
HJ1309	<1095451.00	1663947	<315.95	<54.11	<2209.67	<2887.20	1.3	<0.00	<43.24	<45.45	<3.43	<25.25	****
HJ1310	<807154.81	<999314.44	<318.13	<57.83	<2291.94	<7569.05	<5.66	<32.31	<51.34	<50.63	1.2	8.7	****
HJ1311	1298441	1124817	<255.17	<63.46	<2801.37	<4792.50	<10.30	<0.00	<67.35	<52.97	<5.60	<29.44	****
HJ1312	<747065.25	<661886.13	<249.89	<60.70	<3160.27	<5832.34	6.8	<73.39	<48.08	<57.44	<4.28	4.2	****
HJ1313	<333787.56	<332413.16	<189.31	57.6	<3329.21	<5153.51	1.6	<44.14	<90.90	<74.70	<8.18	<25.07	<14905.
HJ1314	<484525.13	<429688.75	<304.37	<82.45	<3800.20	<8882.80	<8.52	<0.00	<85.22	42.1	5.3	<34.51	<2950.9
HJ1315	<336845.78	480306	<111.08	<74.35	<3462.19	4519	8.1	<48.37	<68.89	<39.92	<7.15	<18.77	<1271.5
HJ1316	<411922.16	1022327	<126.87	<79.76	<3616.24	<6815.21	<8.69	<74.45	<107.97	<60.61	<5.44	<28.36	<1073.3
HJ1317	356403	<533662.44	<177.31	<107.78	<4072.01	<5504.49	<26.31	<122.08	<94.80	<48.98	<10.77	7.0	1

HJ1318	407490	<775527.63	<145.27	<114.60	<4252.67	<7044.91	<25.52	<129.61	<136.87	<51.22	<9.21	8.9	<675.39
HJ1319	<474893.13	<773606.50	<149.29	<99.76	<4888.26	<7784.99	<19.99	<72.82	<125.41	<56.64	<7.21	<36.89	<635.17
HJ1320	<452339.69	<816503.13	<154.01	<95.86	<4628.08	<7282.65	<18.75	<69.34	<117.61	<91.85	<11.71	<34.34	1
HJ1321	<402532.63	<907093.31	<155.87	<111.44	<5189.11	<9530.84	<15.56	51.2	<124.05	<76.08	<19.42	<24.49	<432.22
HJ1322	<482700.19	<765581.50	<172.92	<102.73	<5738.15	<12608.35	<24.68	<115.55	<123.28	<120.40	3.9	<38.52	<402.06
HJ1323	<370868.63	1565751	<207.72	<123.70	<5066.88	<11593.14	<17.38	59.3	<97.95	<84.62	<7.66	<26.90	<394.04
HJ1324	<510039.16	<1037741.13	<165.64	<118.00	<5058.37	<8533.90	<18.15	<152.93	<122.25	<88.17	<11.31	5.6	
HJ1401	<666268.56	****	<****	<94.96	<6319.27	8210	<20.86	<75.72	<165.65	<91.41	<19.85	<45.32	<Inf
HJ1402	<522770.09	****	16.1	<123.20	<8162.02	<16646.54	<27.18	<100.78	<213.86	<121.04	<26.45	<42.63	<Inf
HJ1403	<599064.25	****	101	<133.14	<9142.69	<16017.08	<27.42	<254.30	<188.20	<175.41	<34.52	41.1	<Inf
HJ1404	<711663.69	****	75.6	<130.03	<8602.33	<15461.06	<25.96	<100.37	<181.06	<168.69	<11.82	<64.80	<Inf
HJ1405	741941	****	21.3	<108.39	<7370.30	<12886.08	<25.62	<127.98	<194.16	<169.13	<15.09	<31.22	<Inf
HJ1406	<614187.00	140423	3.3	<119.56	<8486.12	<16865.65	<29.42	17.5	<179.07	<113.87	<19.81	<33.40	<Inf
HJ1407	<504855.78	****	36.2	<96.13	<7596.94	<17448.24	<11.56	<95.22	<202.22	<136.34	<22.52	<40.19	<Inf
HJ1408	<541750.94	697098	218	<137.60	<8900.93	<16189.97	<25.15	<211.55	<206.04	<122.96	<21.71	<57.61	<Inf
HJ1409	<568619.81	****	63.0	<120.96	<8747.60	<10394.65	<24.19	<179.98	<223.78	<281.68	<21.36	<43.82	<Inf
HJ1410	<412472.28	<****	204	<113.47	<6978.58	<13945.39	<27.57	<129.29	<209.34	<74.28	<10.87	<31.46	<Inf
HJ1411	<519204.00	<****	****	<118.58	<8309.26	<15450.61	<11.32	38.4	<235.84	131	<20.93	<42.74	<Inf
HJ1412	1238336	****	****	<140.55	<8531.84	<13673.50	<26.01	34.3	<220.05	<170.92	<25.40	<51.74	<Inf
HJ1413	<914355.94	989540	<5793.92	<183.93	<9254.78	<14655.35	<14.51	<100.26	<227.08	<212.44	<12.89	<78.02	<975.83
HJ1414	<1221518.50	556543	****	<149.72	<8302.89	<17207.71	<13.13	<84.69	<198.32	<118.09	7.8	<57.30	<4634.4
HJ1415	<2398676.75	<**********	1447	<130.26	<9539.06	<14574.74	<30.03	16.2	<236.12	<160.44	<11.90	<72.78	
HJ1416	<7049927.50	<3867746.25	208	<152.40	<9537.05	<17293.65	<28.19	<129.43	<186.33	<97.32	<27.21	<92.71	
HJ1417	6388292	2631069	438	<158.43	<8914.23	<19075.30	<15.52	31.6	<220.55	184	<26.80	<81.23	
HJ1418	****	3021207	****	<181.97	<10399.23	8249	<36.98	<156.89	<293.26	<146.24	<21.27	61.3	****
HJ1419	<****	1992398	986	<188.10	<10890.83	<16199.87	<25.88	<167.25	<273.13	<171.08	<19.82	<66.62	****
HJ1420	1633315	<539355.69	****	<159.09	<9212.67	<15160.38	<24.86	40.6	<190.84	<241.92	<10.33	<73.23	****
HJ1421	<****	799348	****	<202.96	<9705.52	<22167.44	<28.24	<79.29	<177.53	<223.52	<22.06	<58.27	****
HJ1422	533884	<619264.31	****	<248.67	<10057.28	<22189.94	<31.44	<82.15	<272.74	<185.12	8.4	<101.49	4
HJ1423	****	<462333.38	****	<229.54	<8982.72	<22814.26	<40.84	<99.19	<238.58	<94.09	<22.15	<58.29	****

HJ1424	941143	626871	298	<255.99	<10762.57	<20215.57	<48.28	<119.25	<206.14	<164.82	<16.96	<149.12	****
TOROIAGA	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
EMERIC201	753515	<214045.08	<165.82	<165.10	<7449.03	<6602.03	<26.00	<111.16	<193.45	<144.94	<9.20	<67.06	<****
EMERIC202	<****	<225472.63	<185.15	<183.12	<6420.20	<6199.81	19.5	<181.30	<194.79	<158.33	4.8	<61.65	****
EMERIC203	144712	<306661.41	<219.20	<172.15	<8192.05	<19123.95	3.6	128	<207.58	<142.04	<16.00	<131.70	****
EMERIC205	****	291407	<182.00	<229.60	<9667.92	<18191.45	<37.45	30.9	<263.13	<117.90	<19.02	<150.34	****
EMERIC206	<****	<335379.47	<402.47	<225.99	<9344.07	<8778.61	<36.71	<334.22	<226.77	<198.59	<29.62	<82.11	****
EMERIC207	875392	<303522.59	<272.63	<191.95	<8107.23	<16588.27	4.4	61.9	<225.45	<244.10	<18.07	33.2	<****
EMERIC208	****	<457273.78	<524.02	<162.90	<9441.52	<17301.10	<30.48	<296.26	<205.17	<281.06	<23.59	<110.05	****
EMERIC209	951799	1133730	<505.29	<115.68	<7761.99	<21942.76	<41.03	<0.00	<174.79	<176.89	<26.08	<82.59	****
EMERIC210	****	<470680.59	<895.77	<142.79	<8168.35	<18122.76	<29.50	<197.40	<195.17	<218.41	<18.87	<70.21	4
EMERIC211	1788471	<539277.38	<1469.84	<120.42	<7390.52	<12682.81	<19.17	<219.06	<236.93	<172.26	<27.58	42.6	****
EMERIC212	1060097	<768494.94	<2192.90	<99.36	<6815.66	<16309.42	<35.46	<230.68	<203.10	<157.91	<11.48	<55.62	****
EMERIC213	****	575664	****	<122.56	<8174.49	<18966.25	<37.52	42.6	<210.27	<238.90	<31.12	<60.78	
EMERIC214	1707633	<393657.97	****	<128.62	<9371.99	<14238.34	<39.80	<241.76	<276.04	<225.70	<25.30	17.8	
EMERIC215	930717	1119001	****	<136.77	<10180.87	<24844.35	<49.05	<587.37	<284.65	<195.93	<30.87	<112.50	<256.42
EMERIC216	637646	<308683.75	12.6	<122.03	<7862.60	<15272.75	<30.12	134	<253.77	<179.78	<22.99	<103.70	<136.63
EMERIC217	143460	<174332.25	27.8	<97.08	<7493.96	<12609.13	<35.13	<576.38	<202.22	<278.52	<17.71	<0.00	<120.86
EMERIC218	<****	538492	<****	<166.11	<10342.88	<26927.20	<56.66	<567.42	<281.31	<237.32	<24.50	39.9	<180.50
EMERIC219	1191979	<320369.41	****	<162.14	<9187.76	<25576.69	<25.15	379	<268.65	<242.34	<21.54	<70.82	
EMERIC220	****	<225104.64	****	<140.04	<9289.68	<15263.25	<64.77	<1727.16	<295.44	<262.83	<25.46	<97.56	<111.93
EMERIC221	188453	<217898.34	51.2	<127.12	<7616.05	<22850.83	<44.85	<1127.27	<204.91	<253.86	<11.94	<79.97	<80.99
EMERIC222	859996	275057	****	<132.11	<7201.75	<14562.97	<40.38	<3866.97	<189.05	<136.13	8.2	<56.96	
EMERIC223	****	<134657.03	62.3	<97.76	<5716.10	<9629.37	<37.73	****	<162.10	<146.35	<23.84	<75.30	7
EMERIC224	<****	<111048.12	290	<122.16	<7502.56	<11421.50	<18.25	<****	<191.41	<122.22	<14.98	<103.09	<62.92
T1A01	**********	****	****	<76.13	<5980.03	<12092.66	<10.13	<84.03	<160.56	<103.08	3.6	<70.25	
T1A02	<**********	<****	4.3	<94.10	<6068.32	<11066.89	<17.44	<102.76	<154.86	<154.91	<13.81	<87.17	
T1A03	<**********	<**********	****	<82.19	<5141.82	<6841.38	<21.80	<94.31	<164.11	<123.56	<12.62	<62.91	<79.00
T1A04	**********	5031622	****	<111.48	<5838.27	<8921.11	<15.43	<129.91	<176.79	<139.44	<7.07	<80.32	<98.05
T1A05	2826838	<1878575.75	6.8	<105.68	<7686.95	<13652.32	<19.10	53.2	<215.21	<123.13	<8.76	<101.52	

T1A06	****	<1047038.25	61.5	<109.51	<6101.57	<13139.00	<15.78	<54.78	<126.62	<118.42	<14.48	<54.15	
T1A07	<****	<838659.50	<****	<116.72	<6591.69	<10509.06	<21.65	<106.87	2308.73*	<250.44	<11.49	<87.67	
T1A08	**********	<656865.88	****	<102.67	<6231.02	<9522.55	<11.22	<78.73	<191.82	<121.22	<12.64	<80.43	<109.93
T1A09	**********	497637	17.1	<85.02	<4693.70	<9188.82	<18.14	<57.19	<126.34	<116.89	<9.15	<29.71	<81.11
T1A10	2478161	<459572.69	65.8	<138.26	<6148.99	<12167.72	<34.48	<81.44	<153.29	<89.31	<10.59	<86.10	
T1A11	<****	463404	****	<103.52	<5989.21	<9204.89	<23.58	<92.01	<188.56	<116.94	<6.88	<80.85	
T1A12	2869102	<319072.00	****	<83.10	<4822.96	<10429.87	<19.33	<48.93	345	136	<8.93	<75.83	
T1A13	****	<395811.91	72.9	<102.67	<5699.22	<11371.64	<18.08	<56.62	<168.07	<162.62	<12.23	<35.45	<151.49
T1A14	**********	<434086.09	****	<104.31	<6347.39	<10373.17	<14.89	<116.20	<172.54	<61.91	<12.43	<47.45	
T1A15	<**********	491272	****	<109.73	<6452.02	<13342.35	<12.48	<85.86	<135.51	<146.57	5.1	<37.41	
T1A16	<**********	<605337.31	16.9	<106.75	<6225.36	<12638.72	<22.10	<89.43	<168.06	<129.59	<15.31	<69.84	
T1A17	<**********	<959209.25	****	<109.28	<7226.25	<15819.32	<20.24	<118.06	<159.72	<118.50	<19.99	24.1	<161.67
T1A18	<8352974.00	<1296976.00	****	<104.09	<6604.63	<12400.26	<24.72	<113.96	<149.64	<171.01	<13.49	<48.42	
T1A19	<6561379.50	<1821480.50	32.8	<143.64	<8005.78	<11026.02	<32.18	<112.87	<188.17	<171.44	4.7	<31.50	
T1A20	<5493390.00	6572227	24.3	<133.76	<7821.85	<12829.26	<13.81	<121.26	<195.83	<160.94	<9.91	<44.49	<146.04
T1A21	8194203	****	****	<126.46	<7819.82	<17179.00	<21.81	<79.99	<176.79	<163.83	<15.80	<38.60	
T1A22	8723269	<****	85.8	<130.04	<9158.58	<15435.24	<21.89	113	<193.87	<201.04	2.1	<45.20	<168.23
T1A23	<3245821.75	****	****	<82.37	<5636.46	6668	<15.07	<123.09	<159.70	<87.40	<11.13	<41.98	
T1A24	3235245	435045	****	<120.81	<7573.02	<13422.34	<12.72	<87.09	<193.60	<104.18	<18.99	<63.33	<140.38
TOR19701	<528408.56	**********	<152.48	<59.47	<5135.65	<8567.05	<15.12	<56.81	<106.60	<68.12	<11.78	<30.69	2
TOR19702	741844	6.5	<160.47	<47.57	<3958.58	<4992.20	<6.25	<38.59	<96.97	<55.50	<8.34	<31.08	6
TOR19703	<512854.56	6699750	<175.87	<52.69	<4166.30	<6405.84	<14.70	<40.84	<94.53	<57.47	2.0	<32.67	
TOR19704	<563177.69	351521	<325.95	<63.73	<5351.97	<10310.22	<12.27	<38.35	<132.08	<129.25	<11.29	<55.64	****
TOR19705	<452410.91	19275	<327.40	<62.46	<4945.59	<8662.59	<7.32	<32.58	<106.85	<87.57	<15.35	<51.41	6906.18
TOR19706	<584294.38	1979455	<577.94	<63.83	<5695.62	<5490.76	<8.07	<62.68	296	<82.21	2.1	<51.73	<925.51
TOR19707	<680777.88	****	<4370.28	<67.46	<5767.31	<6895.78	<22.75	8.2	<172.26	42.1	<12.71	<50.53	<591.11
TOR19708	<674945.31	<****	****	<75.32	<5246.84	<8153.69	<12.09	30.3	<143.13	<84.07	<8.59	<34.65	<302.13
TOR19709	<663550.00	647606	175	<53.15	<4948.73	<5366.01	17.4	<73.54	<100.04	<77.16	<11.19	<51.22	<207.82
TOR19710	<703944.19	****	292	<76.60	<4650.83	<7471.17	10.1	<56.90	<102.61	<116.02	<10.34	38.6	<173.56
TOR19711	<936001.75	606060	****	<75.99	<5059.51	<8041.09	<22.96	26.6	<144.13	<112.33	<12.72	<37.98	<165.55

TOR19712	<1211879.88	****	75.3	<80.84	<5443.49	<6685.40	<17.52	<47.98	<168.98	<140.51	6.8	<50.19	<134.08
KOCHBULAK	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
3001	<147787.03	290252	<77.13	25.8	<840.65	<1899.83	<3.71	<19.79	156	23.0	<1.81	<13.63	5
3002	<130581.20	231042	<99.33	<19.25	<1076.93	<1503.61	<3.19	<15.28	<27.00	<24.14	<2.18	<10.72	<****
3004	178681	252510	<91.48	<16.65	<1218.99	<2715.33	<5.02	<15.26	<25.86	20.4	<2.62	<10.54	
3005	<122570.82	273962	<86.05	<17.23	<1021.24	<1857.06	<3.09	<18.26	<35.96	<32.70	<1.46	<10.12	<****
3006	<120120.66	184674	<72.94	21.4	<993.18	<2263.18	<3.68	<14.52	<27.12	<19.94	<1.40	<11.19	<6442.0
3007	<112666.73	<104926.68	<86.93	<22.55	<995.87	<2508.31	<2.37	<0.00	<35.17	<24.73	<1.54	<10.67	<1101.1
3008	189507	296785	<68.62	<17.71	<989.25	<1461.91	<5.57	<11.07	157	<31.59	<2.53	<11.64	<487.26
3009	<133058.17	129019	<84.00	<19.23	<956.64	<2356.71	<5.55	<22.11	<33.05	<29.43	<2.03	<11.41	<330.67
3010	<150190.92	250510	<55.40	<24.08	<1100.39	<1577.90	<2.50	<12.24	<41.32	<22.77	<3.83	<12.38	<253.91
3011	<125805.37	122691	<60.05	<20.09	<905.36	<2451.93	<3.62	7.9	<33.82	<20.07	<2.24	<12.50	<231.55
3012	305970	<113078.80	<108.09	<30.20	<1378.53	<3835.43	<4.78	<16.72	<42.20	<40.16	<4.12	12.9	<269.51
3013	<102518.48	<75370.35	<Inf	<23.64	<1295.19	<2198.68	<6.26	<13.95	<32.70	<42.84	<4.58	9.7	
3014	181649	93124	<Inf	<27.65	<1313.68	<2211.11	<5.59	<0.00	<45.38	<37.37	<3.26	<11.14	<112.80
3015	<160262.16	95440	<Inf	22.2	<1389.70	<2624.18	<3.01	<25.97	<42.34	<40.55	<1.76	<12.12	<114.94
3016	<131985.86	234424	<Inf	<25.50	<1353.00	<2457.07	<4.34	<15.27	<45.33	<31.05	<4.04	<7.21	<129.89
3017	<116653.96	115638	<Inf	<23.46	<1236.56	<2631.31	<8.27	<23.78	<38.04	<28.15	2.3	<20.72	
3018	178069	79826	<Inf	<27.67	<1396.72	<1910.19	<6.08	<26.19	69.5	<41.95	<3.14	<10.32	<132.78
3019	<165190.63	249961	<Inf	<31.50	<1274.98	<3064.89	<8.39	19.9	116	<32.90	<1.90	<10.89	<140.09
3021	<162443.23	123937	<Inf	<23.21	<1202.75	<2102.77	<0.00	<25.43	<43.01	<37.83	<2.67	<14.05	<119.31
3020	291069	159396	<Inf	<25.40	<1395.78	<1999.93	<2.70	<13.42	<43.74	<25.49	<2.32	<15.01	<117.59
3022	<182794.44	171872	<Inf	<24.67	<1400.09	<2065.67	<3.92	<13.77	<50.58	<26.37	<2.40	<9.85	<145.74
3023	<222010.00	90788	<Inf	<26.47	<1183.22	<2269.87	<5.41	<13.44	<48.55	<36.72	<3.72	<6.88	<151.76
3024	<211778.73	73513	<Inf	<27.71	<1485.56	<1867.32	<6.38	<20.04	455	<30.89	<3.06	<19.43	<147.45
3801	****	278522	<183.65	<32.33	<1565.26	<2502.60	<12.39	<33.50	344	<54.44	<2.60	<9.65	****
3802	****	157058	<101.76	<28.47	<1460.96	<3120.76	<10.26	<30.28	<53.05	<26.70	<4.79	<11.10	****
3803	421606	236380	<130.53	<34.31	<1981.53	<3643.15	<5.16	<33.95	<49.53	<40.10	<3.86	<12.91	
3804	14464	350670	<153.86	<29.98	<1673.63	<3113.63	<8.72	<23.34	<67.83	<31.30	<3.81	<16.79	<****
3805	****	<107194.18	<98.37	<26.45	<1784.00	<2500.27	6.6	<45.11	<57.25	<45.72	<4.09	<9.49	<****

3806	****	261534	<149.55	<31.06	<1828.54	<3954.28	<7.13	<40.26	377	<54.47	<6.75	<7.99	****
3807	<****	241294	<132.77	<34.85	<1960.36	<3493.42	<9.31	<30.27	674	<54.93	<4.46	<13.16	
3808	<****	338214	<96.05	<31.06	<1655.31	<2974.32	<7.28	<27.26	831	122	<4.06	<14.11	4
3809	****	<141028.97	<166.09	<36.20	<1816.54	<2948.58	<12.76	<29.21	648	84.6	<6.23	<15.58	****
3810	131922	158721	<142.68	<34.48	<1714.68	<3380.21	<7.09	<32.40	<55.91	<49.57	2.7	<10.27	****
3811	****	292274	<105.18	<32.61	<1640.27	<3235.99	<5.38	<34.68	431	<47.28	0.6	<9.79	****
3812	107268	570511	<78.31	<28.47	<1614.74	<2697.95	<6.74	<26.58	545	<52.69	<2.76	8.5	****
4701	****	<72374.51	****	<35.28	<1826.32	<3461.20	<9.04	<24.78	251	<43.88	<5.39	<18.30	
4702	****	135118	****	<37.41	<2304.83	<3714.90	<8.83	<26.52	109	<73.59	<6.45	<13.99	<211.05
4703	<****	306751	****	<37.94	<2176.60	<3249.35	<5.45	<63.37	91.6	<59.26	<3.98	<15.92	<270.13
4704	43847	280216	620	<27.43	<2083.10	<4019.31	<6.72	<26.06	179	<47.72	<4.91	<11.45	<366.24
4705	****	150324	****	<40.18	<1957.97	<3281.07	<8.65	<25.99	142	<56.93	4.2	<8.15	<388.75
4706	<****	190091	2772	<34.66	<2196.96	<3090.78	3.8	<39.87	95.1	<40.88	<6.13	<15.47	<685.91
4707	<****	167185	<3041.87	<34.52	2363	<4966.04	<4.12	<39.13	167	<70.25	<6.01	<15.32	<2129.5
4708	0.1	221522	<1325.30	<34.41	<2056.87	<2401.38	<11.92	<46.24	158	<72.22	<5.02	<12.19	****
4709	614624	133523	<689.37	<32.44	<2159.21	<3107.30	<3.63	<34.46	268	<36.49	<3.74	7.4	
4710	<****	173089	<460.09	<28.43	<1906.10	<4086.77	<6.23	<24.17	260	<55.88	<6.43	<15.90	1
4711	1335203	<143857.61	<412.68	<40.80	<2273.11	<3725.82	<6.70	<26.01	<51.42	<51.36	<4.89	<14.95	<****
4712	1202467	289549	<288.96	<32.46	<1961.11	<3296.13	<8.54	<25.67	<65.56	<64.79	1.2	<8.60	****
4713	<**********	318086	<224.21	39.7	<2061.55	<4038.08	5.4	<37.78	213	<48.48	<5.77	<16.65	6
4714	9446002	<160998.63	<189.47	<38.74	<2362.53	<2504.81	<5.81	<24.88	127	<61.40	<6.71	<21.74	****
4715	****	291513	<215.43	<38.03	<1957.06	<2462.46	<7.00	<41.66	<66.19	<73.65	<5.12	<9.62	****
4716	<****	273043	<107.82	35.8	<2184.06	<4715.32	<5.46	5.2	285	<52.36	<2.83	<16.07	<****
4717	****	463662	<182.26	<49.77	<2535.84	<4554.51	<4.72	<27.22	<85.32	<75.41	<6.00	<11.41	
4718	<****	222925	<132.35	<36.65	<2246.53	<4682.29	<12.51	<25.14	2024.35*	<88.39	<4.60	44.0	<****
4719	1616078	192426	<309.19	<50.20	<2955.81	<7210.52	<7.86	<31.11	1159.57*	68.4	<8.20	13.7	****
4720	1310816	<172003.11	<216.82	<48.14	<3227.90	<6321.86	<10.89	<26.85	178	<101.02	<5.09	<29.52	****
4721	****	228679	<202.72	<46.77	<2315.30	<6483.63	<7.19	3.9	265	<65.60	<6.87	<10.36	****
4722	<****	<125233.80	<95.62	<38.16	<2205.16	<4433.12	<9.47	<20.70	156	<56.38	<2.87	<13.75	****
4723	<****	222710	<115.14	<34.17	<2537.17	<4868.77	<4.24	<31.67	693	<43.62	<5.46	<18.62	****

4724	<****	<161186.55	<147.43	<45.22	<2754.00	<6004.45	<9.78	<22.77	4828.67*	<36.62	4.8	38.5	****
VORTA	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
DM301	****	173324	12.2	<18.57	<998.83	<2981.14	1.8	<19.30	<27.63	<32.15	0.8	<19.61	<133.30
DM302	****	279733	****	<19.88	<1096.46	<1205.47	<3.62	<20.18	51.0	<32.89	<2.46	<16.59	<121.74
DM303	<5765222.50	<89725.45	19.9	<18.46	<874.47	<2539.17	<3.44	<26.29	<31.73	<29.49	<3.00	<18.55	<123.81
DM304	<1687720.13	167678	38.2	<20.23	<916.26	<1379.10	<2.82	<22.08	<27.59	<16.93	<2.68	<7.28	<141.75
DM305	941222	<101270.48	52.7	<19.94	<987.07	<1413.73	<2.93	<12.78	<35.77	<26.60	<1.38	<10.23	<132.20
DM306	<918131.50	352052	144	<23.58	<1018.01	<2555.45	<2.32	<19.56	<30.50	<31.58	<2.17	3.4	<133.72
DM307	<529665.56	126240	288	<20.73	<974.60	<2339.67	<4.59	<18.72	<33.54	<24.52	<2.14	<14.74	<128.73
DM308	677575	<86872.28	<7825.25	<19.46	<1119.80	<2131.08	<2.12	<20.42	<31.17	<14.17	<1.39	<11.28	<104.32
DM309	<457466.66	<77402.49	<562.44	<22.13	<1287.97	<1913.79	<4.57	<12.25	<29.61	<32.06	<2.57	<13.43	<119.62
DM310	<262008.59	236888	<258.10	<22.18	<967.51	<2878.09	4.1	<17.18	<36.76	<28.78	<1.51	<9.35	<106.09
DM311	296643	<79137.58	<204.36	<21.22	<1102.83	<1854.45	<4.55	4.1	<26.44	<29.51	<1.45	<12.27	<111.29
DM312	194650	164792	<116.52	<22.89	<1186.05	<2135.01	<4.21	<16.50	<29.37	<24.61	<3.44	<14.00	<119.19
DM313	<233564.81	102919	<114.12	<23.67	<1545.67	<2271.19	3.5	<26.92	<41.49	<38.04	<3.55	<10.23	<197.44
DM314	<159862.13	<53464.59	<76.61	<19.31	<1040.73	<1765.00	<4.35	<17.01	<32.39	<24.05	<2.60	<7.93	<167.01
DM315	<186997.92	<70884.09	<93.60	<29.36	1219	<2096.55	<4.48	<17.42	<42.03	<37.27	<3.76	<6.64	<257.01
DM316	<120939.80	96079	<92.78	<24.52	<1282.32	<2176.98	<5.90	<16.11	<43.52	<40.45	<4.27	<8.70	<348.83
DM317	188182	168506	95.7	<20.96	<1181.82	<2168.19	<7.21	<15.98	<39.34	<32.02	<1.73	6.6	<400.19
DM318	166593	139847	<94.47	<21.16	<1173.57	<1275.47	<0.00	<10.46	<36.49	<35.47	0.5	<9.81	<819.66
DM319	<152176.33	72939	<177.82	<21.79	<1455.01	<1480.52	<5.53	<12.09	35.7	<18.35	<2.63	<9.27	<4024.3
DM320	<144948.36	81998	<126.60	<27.72	<1342.88	<3395.45	1.0	<12.35	<38.47	<32.47	<3.29	<9.48	****
DM321	<171608.28	222512	<160.15	<28.65	<1291.25	<2308.51	<3.54	10.1	<44.68	<28.40	<2.88	2.7	****
DM322	245613	<61994.47	<146.94	<19.96	<1080.24	<2693.50	3.0	<16.81	<35.79	<20.88	<2.12	<13.99	****
DM323	<126460.13	101877	<210.30	<21.89	<1333.33	<3249.99	<7.99	<11.12	<33.25	18.9	<2.43	<14.86	****
DM324	170553	<71080.38	<265.10	<24.71	<1368.53	<2790.66	<7.98	<20.63	<39.71	<40.57	<2.60	<13.02	3
DMV99-2201	<215117.38	357477	<Inf	<125.59	<5662.12	<12063.92	<26.95	12.7	146	<146.34	3.8	22.5	
DMV99-2202	<284740.41	<****	<Inf	<117.80	<5471.20	<10936.51	<21.84	<78.43	145	<115.49	<16.45	<44.26	<1973.9
DMV99-2203	<369556.00	<****	<Inf	<158.16	<6365.16	<11777.65	<26.61	<0.00	2184	350	<10.35	<38.17	<836.79
DMV99-2204	<243237.17	<****	<Inf	<161.07	<5656.95	<10994.16	<34.42	<0.00	961	<206.93	<9.78	<78.20	<475.66

DMV99-2205	<429059.97	<****	<Inf	<139.55	<6721.77	<14404.27	<27.08	<112.02	<205.71	<154.52	<19.47	<77.90	<421.18
DMV99-2206	<307130.41	<**********	<Inf	<134.62	<6416.80	<12301.83	<22.68	28.1	1741	473	<9.72	<32.66	<229.60
DMV99-2207	518721	<2332813.75	<Inf	<114.05	<4531.50	<13645.46	<26.39	<85.02	783	167	<16.51	<26.90	<189.40
DMV99-2208	377961	<1082548.38	<Inf	<139.63	<5897.09	<9491.22	<27.52	<65.86	329	<137.97	<8.89	<39.71	<161.81
DMV99-2209	<320162.75	989958	<Inf	<142.13	<6082.84	<10163.29	<32.34	42.4	1653	463	3.8	34.4	<148.03
DMV99-2210	<333396.75	<624278.06	<Inf	<131.08	<5149.37	<13259.35	<19.65	<60.08	308	<119.33	8.2	<46.41	<109.74
DMV99-2211	<451066.91	536651	<Inf	<144.15	<4753.00	<12094.20	<23.48	<92.57	985	<167.19	<14.44	<33.99	<88.37
DMV99-2212	<560843.19	844570	<Inf	<147.81	<7701.45	<11897.99	<22.69	64.4	<208.70	<125.03	<20.37	<46.50	<133.03
DMV99-2213	<403161.63	<Inf	5.2	<146.63	<6613.01	<13259.27	<14.25	26.3	1391	<211.41	<16.11	38.3	<145.29
DMV99-2214	<311746.16	<Inf	****	<127.67	<6246.62	6152	<23.31	10.8	<161.08	<183.01	<21.50	<37.65	<159.04
DMV99-2215	<394077.31	<Inf	****	<153.58	<8138.12	<23167.08	<14.67	<97.59	338	<89.56	2.8	<43.39	<183.30
DMV99-2216	320760	<Inf	****	<119.89	<6189.59	<16119.69	<19.33	<49.31	276	<221.55	<10.89	<60.54	<203.37
DMV99-2217	<283613.31	<Inf	11.9	<111.45	<7414.24	<16444.51	<21.36	<89.10	747	<185.76	<12.02	<71.02	<284.66
DMV99-2218	<180554.81	<Inf	****	<85.28	<5349.14	10088	<24.57	<39.66	231	<131.29	<13.81	<43.45	<319.26
DMV99-2219	186793	<Inf	0.7	<81.36	<5751.91	<12773.19	2.5	<61.08	801	<174.11	<15.79	<86.63	<384.08
DMV99-2220	<210785.47	<Inf	****	<90.06	<5318.18	<19430.20	<32.31	<50.67	<132.47	<131.46	<16.78	<85.41	<733.35
DMV99-2221	<216859.72	<Inf	4.3	<94.42	<6710.90	<12447.89	<14.13	<0.00	252	<215.87	11.8	<106.11	<1977.0
DMV99-2222	<215925.38	<Inf	10.0	<100.87	<5441.97	<13023.67	<17.92	<68.36	<178.80	<177.27	4.9	<83.70	****
DMV99-2223	<136454.56	<Inf	****	<68.50	<4341.17	<7754.14	<10.56	6.3	<157.33	<175.34	<14.47	<119.34	
DMV99-2224	170663	<Inf	26.0	87.2	<5290.91	<15620.60	<17.19	12.8	1080	<187.46	12.2	<94.50	
SULLIVAN	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
SULLIVAN01	<108695.38	100110	<58.00	<14.59	<522.35	<1855.16	<2.88	<20.45	28.6	39.7	<1.25	<4.37	<92.68
SULLIVAN02	<129752.98	<93511.50	<76.00	<18.80	<684.76	<2251.26	<4.14	<12.80	<25.53	<21.38	<1.77	<6.18	<103.06
SULLIVAN03	<126653.12	<81006.13	<68.14	<15.32	<595.45	<1722.90	<4.46	<21.01	<23.40	<23.45	<1.78	<7.56	<94.65
SULLIVAN04	<155130.47	<84015.80	58.8	<16.03	<701.91	<2032.78	<3.23	<17.19	<25.59	<30.55	<1.91	<3.80	<110.22
SULLIVAN05	<132184.55	192765	<78.80	<18.52	<730.34	<2128.47	<5.28	<28.04	<22.17	<27.79	<2.66	<7.48	<125.52
SULLIVAN06	<164222.41	270366	<79.73	<17.70	<654.65	<1800.80	<4.37	<18.86	<25.22	<16.67	<1.45	<11.08	<135.90
SULLIVAN07	364673	143696	<77.26	<16.81	<582.29	<1919.50	<4.79	<9.53	<25.63	<18.80	<1.44	<7.79	<142.33
SULLIVAN08	<160545.86	281110	<82.23	<14.41	<608.87	<1879.15	2.8	<16.26	<22.35	<21.45	<2.43	<6.54	<130.98
SULLIVAN09	<123246.78	156318	<83.53	<14.91	<706.48	<1204.44	<2.01	<18.17	<23.39	<22.53	1.3	<3.71	<167.88

SULLIVAN10	<229667.13	116510	<90.72	<19.42	<714.76	<2144.44	3.3	<16.28	21.6	<30.19	<1.68	<6.93	<211.54
SULLIVAN11	<217522.42	216507	<115.87	<18.42	<816.38	<1744.86	<3.26	<16.87	<26.44	<18.01	<1.72	<9.10	<227.80
SULLIVAN12	<217264.11	131694	<103.74	<19.52	<807.26	<2865.50	<6.54	<25.47	<19.62	<31.30	<1.81	<6.03	<253.01
SULLIVAN13	<414121.34	<108327.38	<144.13	<22.81	<1043.23	<2691.59	<6.80	<30.40	<36.03	<40.01	<3.74	<7.02	<291.09
SULLIVAN14	<333275.81	243560	<173.74	<22.92	<1112.18	<3102.22	<7.07	<28.81	<33.09	<42.27	<2.94	7.6	<237.34
SULLIVAN15	<398622.53	<100451.82	<117.18	<22.43	<986.66	<2964.35	<3.84	20.6	<26.38	<17.07	<2.81	<4.53	<171.82
SULLIVAN16	821740	124222	<98.02	<21.20	<828.63	<2662.88	<7.60	<23.15	<24.67	<39.85	<2.44	<7.84	<173.21
SULLIVAN17	<416824.44	115986	<155.80	<24.84	<975.66	<2712.23	<4.67	<18.93	<34.63	<36.39	<2.87	<6.49	<159.91
SULLIVAN18	329941	121857	<120.85	<14.55	<983.46	<1970.81	<4.23	18.5	<24.86	<38.29	<1.32	<8.40	<138.06
SULLIVAN19	<371657.53	145618	<115.26	<18.15	<871.66	<1911.31	<5.22	<28.30	<24.56	<15.03	<2.21	<7.02	<105.59
SULLIVAN20	621881	<82753.01	81.0	<17.95	<832.98	<1896.93	<4.57	<19.55	<24.79	<25.61	<2.53	<8.01	<102.56
SULLIVAN21	<292821.59	143168	<87.13	<17.24	<714.67	<2002.90	<3.76	<20.74	<21.52	<17.31	<2.11	3.8	<76.80
SULLIVAN22	<376826.44	<80763.01	<93.27	<19.91	<803.41	<1962.85	<5.14	<19.61	<22.56	<21.28	<2.62	<9.18	<87.73
SULLIVAN23	<278989.53	260176	<64.80	<18.72	<841.58	<1224.63	<6.32	<11.00	<28.14	<29.43	1.0	<6.98	<75.21
SULLIVAN24	<299536.78	261005	<98.57	<18.94	<831.58	<2154.20	<4.48	<11.01	<24.86	<27.73	<1.31	<9.99	<75.12
ZINKGRUVAN	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
ZN99201	****	<42336.28	<37.31	<13.10	<518.36	<1749.74	<2.92	<8.22	<12.47	<15.90	<0.96	<6.73	<94.35
ZN99202	****	<41580.08	<38.27	<12.08	<506.46	<1710.74	<1.65	<6.91	<11.32	<16.25	<0.99	<8.35	<114.23
ZN99203	86729	80520	<52.34	<13.36	<578.51	<1912.27	<1.57	<12.69	<9.29	<13.94	<1.33	<10.29	<175.26
ZN99204	92457	101288	<40.32	<13.47	<498.18	<1554.89	<1.72	<11.26	<12.05	<9.49	<1.02	<6.77	<214.87
ZN99205	381212	<45665.34	<53.21	<13.04	<568.63	<1839.60	0.9	<5.57	<14.18	<16.98	<1.61	<8.21	<511.73
ZN99206	41623	<39694.50	<44.76	<12.38	<508.76	<1704.08	<2.75	<7.99	<8.53	<15.57	<0.77	<5.16	835.49*
ZN99207	109732	<44283.70	<50.74	<12.89	<612.22	<1547.16	<2.35	<9.11	<15.20	<11.10	<0.88	<6.65	8
ZN99208	<****	134159	<48.72	<13.04	<592.02	<1390.55	<3.25	<11.43	<14.50	<10.32	<1.17	<6.11	****
ZN99209	75128	138693	<72.52	<17.01	<689.82	<1817.96	<4.01	<7.47	<17.17	<21.76	<2.34	<10.06	9
ZN99210	<****	<54803.12	<57.11	<16.54	<729.36	<2055.94	<3.77	<9.87	<17.67	<10.04	0.5	<7.10	****
ZN99211	252300	<59298.32	<58.37	<16.91	<724.15	<2548.66	<2.88	<9.90	<17.69	<12.15	<0.83	<5.65	****
ZN99212	**********	<65441.51	<56.26	<19.77	<842.67	<2082.94	<2.42	<18.40	<18.84	<21.48	<1.96	<7.90	1
ZN99213	522100	89832	<60.64	<9.89	<534.62	<1146.62	<1.70	<4.61	<7.72	<11.63	<1.05	<6.60	2
ZN99214	<631852.31	<50275.88	<66.92	<11.47	<539.85	<1162.36	<1.52	<6.11	<9.86	<11.70	<0.66	<10.18	****

ZN99215	<841350.06	99288	<104.04	<12.88	<587.44	<1341.70	<2.25	<8.39	<9.83	<15.09	<0.56	<6.11	****
ZN99216	<1131320.50	54964	<76.31	<13.36	<642.69	<1616.62	<1.81	<8.18	<12.06	<15.81	<0.96	<10.40	2
ZN99217	2308737	158078	<81.58	<14.29	<651.56	<1470.14	<3.15	<4.66	<13.62	<12.81	0.7	<6.91	****
ZN99218	<5103324.00	130447	<126.89	<19.44	<966.41	<2275.69	<3.52	3.5	<16.61	17.5	<1.25	<12.18	2
ZN99219	****	60829	<81.69	<13.27	<666.33	<1439.11	<2.85	<10.34	<12.85	<15.75	0.1	<9.91	****
ZN99220	703780	<56421.66	<92.24	<16.83	<716.91	<1778.51	<2.80	<7.46	<14.96	<24.49	<1.08	<8.10	4
ZN99221	****	<55423.49	<91.94	<19.84	<820.80	<2313.38	<3.99	<0.00	<18.88	<23.22	<0.86	<11.70	
ZN99222	76999	100960	<88.67	<16.28	<734.30	<1498.66	<3.21	<7.48	<14.34	<23.75	<1.46	<9.64	1
ZN99223	****	<44819.71	<71.69	<16.61	<755.46	<1637.13	<2.20	6.1	<20.19	<14.32	<1.34	<9.26	2
ZN99224	<****	107108	<92.73	<18.69	<834.42	<1345.45	<4.01	2.3	<19.55	9.9	<1.72	<11.43	****
MT ISA	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**
5984BC101	110672	111496	<6.64	2.9	<51.13	<261.45	<0.40	<2.05	<1.88	<3.49	<0.54	<2.94	<94.96
5984BC102	117857	128356	<7.34	<2.59	<53.81	<288.11	<0.41	<2.18	<1.97	<3.62	<0.54	<2.75	<102.73
5984BC103	95642	85275	<5.08	<1.79	<37.09	<195.28	<0.30	<1.36	<1.33	<2.55	<0.35	<1.99	<74.05
5984BC104	129463	114894	<6.10	<2.15	<45.06	<232.61	<0.36	<1.84	1.9	<2.79	<0.40	<2.38	<92.62
5984BC105	138953	129139	<6.85	<2.47	<52.56	<276.84	<0.38	<1.91	<1.92	<3.10	<0.51	3.3	<110.53
5984BC106	118189	134470	<6.47	<2.29	<49.11	<251.32	<0.37	<1.99	<1.76	<3.18	<0.47	<2.40	<108.43
5984BC107	111144	122574	<6.08	<2.07	<43.16	<222.66	<0.34	<1.86	3.0	<2.88	<0.41	<2.38	<102.30
5984BC108	108589	124428	<6.54	<2.33	<48.59	<259.35	<0.41	<2.06	2.0	<2.96	<0.43	<2.65	<120.67
5984BC109	128872	136821	<7.65	<2.61	751	699	<0.47	<2.07	<1.99	14091	<0.54	<2.80	<142.40
5984BC110	168167	182852	<7.31	<2.42	18181	16589	4.7	2.2	6.1	7.7	<0.51	61.9	<138.98
5984BC111	136691	142419	<6.71	<2.19	<47.90	<254.08	<0.35	<1.88	<1.69	<3.16	<0.44	<2.62	<136.06
5984BC112	128440	142296	<6.82	<2.30	<48.72	<257.50	<0.39	<2.13	<1.76	<3.02	<0.47	<2.57	<149.01
5984BC201	3374574	123761	<6.45	<2.16	<76.35	<317.21	<0.26	<1.05	<0.88	<2.89	<0.36	<2.00	<81.76
5984BC203	610971	143762	<6.98	<2.34	<74.48	<324.70	<0.27	<1.29	1.2	<2.90	<0.38	<2.12	<89.85
5984BC204	633808	167979	<7.03	<2.43	<73.32	<321.47	<0.28	<1.47	1.5	<3.21	<0.40	<2.38	<94.19
5984BC205	371637	133766	<5.93	<2.14	<62.53	<285.48	<0.27	<1.22	<1.10	63.9	<0.36	2.3	<83.69
5984BC206	402365	145265	<6.06	<2.16	<61.30	<279.66	<0.26	<1.33	<1.13	<2.84	<0.39	<1.89	<83.40
5984BC207	357283	149222	7.1	<2.31	<61.77	<295.70	<0.29	<1.26	1.8	<2.91	<0.37	<2.01	<88.69
5984BC208	225794	140560	<6.28	<2.41	<63.22	<299.58	<0.31	<1.51	1.8	<2.85	<0.42	<2.45	<93.93

5984BC209	236191	150075	<5.35	<2.08	<54.04	<251.71	<0.26	<1.30	<1.18	<2.73	<0.38	<1.99	<81.69
5984BC210	196145	157093	<5.71	<2.16	<55.88	266	<0.28	<1.34	<1.33	<2.56	<0.38	<1.99	<86.04
5984BC211	225446	146025	<5.43	<2.09	<51.80	<254.17	<0.26	<1.22	<1.31	<2.70	<0.35	<1.91	<84.04
5984BC212	164987	140522	<4.65	<1.90	<46.70	<226.90	<0.23	<1.11	<1.14	<2.22	<0.36	<1.72	<74.96
5990C101	**********	148405	****	<97.13	<3639.14	<7320.98	<10.19	<37.35	<111.61	<99.31	<13.19	<62.20	<4170.6
5990C102	2966058	<136411.97	****	<102.28	<4483.81	<10758.12	<12.50	<62.86	<103.01	<75.25	<14.03	<0.00	<1879.3
5990C103	<1385656.38	324366	73.6	<108.53	<4756.42	<12418.12	<16.73	<47.11	<118.53	<126.95	<15.36	<63.27	<1336.7
5990C104	1760398	<153445.34	****	<101.01	<5034.84	<9379.72	<13.97	11.1	<107.53	<138.74	<15.73	<52.26	<884.73
5990C105	<594121.81	<133727.95	161	<101.37	<3739.59	<7986.02	<17.22	<39.43	<84.83	<117.94	<13.74	<71.24	<538.09
5990C106	<412026.69	316725	105	<83.52	<3975.51	<9721.07	<16.64	<42.59	<88.72	<52.34	<15.35	<35.13	<589.81
5990C107	405713	242041	528	<117.79	<6039.09	<11915.32	<15.59	<66.84	<118.34	<58.47	<14.41	<39.82	<537.04
5990C108	<426050.84	<148139.39	<2471.53	<120.38	<5557.02	<12305.97	<31.34	<53.05	<134.90	<147.69	<20.53	<45.64	<496.32
5990C109	<340279.28	<182822.88	<467.74	<92.19	<4599.59	<17467.63	<20.85	<48.22	<145.10	<104.66	<11.17	<103.81	<486.09
5990C110	<330031.41	<141289.27	<389.10	<109.55	<5334.64	<7501.16	<22.55	<87.15	<127.23	<109.91	<27.08	<63.91	<374.20
5990C111	318101	<155078.59	<274.41	<83.59	<5166.61	<9556.72	<17.06	<63.59	<101.32	<80.72	<15.91	<71.50	<305.32
5990C112	160929	222633	<143.83	<91.34	<4811.43	<8770.26	<11.40	<57.90	<93.72	59.7	<10.66	<66.54	<279.74
5990C113	<138333.89	<193999.59	<106.75	<87.65	<4668.22	11883	<20.21	<0.00	<135.77	<142.85	<20.68	25.7	<421.94
5990C114	<157655.83	<246455.36	<122.11	<103.60	<4347.49	7770	<15.10	<47.32	<138.96	<123.69	<17.29	27.8	<473.05
5990C115	<177716.69	<214157.81	<79.57	<120.68	<5396.40	<14868.93	3.8	<96.13	<119.32	<206.33	<26.58	<72.62	<616.87
5990C116	<124789.77	<226224.81	<106.22	<99.27	<4876.28	<10223.04	<26.20	<73.00	<116.47	<132.28	<9.98	42.6	<887.70
5990C117	<159320.70	227485	<114.80	<102.72	<5166.18	<8353.94	<19.44	19.6	<126.53	<56.86	<10.16	24.3	<1370.8
5990C118	<157812.36	<365426.44	<110.77	<106.00	<6412.75	<12177.83	<17.26	<80.75	<183.48	<124.10	<17.53	<64.81	<8714.6
5990C119	284306	<409403.91	<147.08	<92.74	<5000.18	<10919.66	<27.53	<46.20	<122.46	<140.48	<16.65	<36.05	****
5990C120	<136539.13	<463256.41	<81.53	<97.12	<4072.27	<15012.20	<18.82	<78.51	<114.10	<111.28	<12.78	<76.87	****
5990C121	<198180.11	<787934.88	<158.88	<115.93	<5714.30	<7663.73	11.7	<52.23	<129.53	<109.79	<14.11	22.4	
5990C122	<147814.03	<771741.50	<120.39	<107.34	<3721.70	9037	<15.61	<67.14	<98.24	287	6.5	<67.96	[illegible]
5990C123	<142751.34	<2629134.75	<144.82	<114.48	<5056.35	<11469.12	<24.47	12.0	<125.80	<103.48	<12.52	<35.05	****
5990C124	<252413.91	3727801	<197.10	<108.67	<5523.01	<15462.05	<35.79	<100.54	<131.94	<96.06	<13.82	<67.83	****
KAPP MINERAL	**S33**	**S34**	**Cr53**	**Mn55**	**Fe57**	**Fe58**	**Co59**	**Ni60**	**Cu65**	**Zn66**	**Ga69**	**As75**	**Se82**

KMI2B01	<****	131470	<9.21	<3.02	<159.82	<551.87	<0.60	<1.72	3.1	<2.86	<0.36	<2.96	<97.53
KMI2B02	<****	3420964	350	552	<356.97	13047	<1.53	<13.82	<8.05	60.5	13.7	<4.76	11649.0
KMI2B03	<****	465491	<12.28	<6.35	355	1392	<0.29	<1.48	1.6	<2.15	<0.41	<1.93	<174.80
KMI2B04	<****	300790	<14.75	<5.51	358	<992.65	<0.61	<2.50	<2.69	<4.19	<0.54	<3.58	<159.11
KMI2B05	**********	225488	<12.69	<4.54	<185.09	<853.53	<0.64	<3.02	4.3	<3.59	<0.49	<2.92	<128.69
KMI2B06	2191800	267269	<14.53	<5.01	<210.55	<907.34	<0.68	<2.89	3.9	<3.72	<0.55	<3.58	<143.28
KMI2B07	881750	203543	<13.49	<4.24	<188.30	<760.89	<0.67	<2.57	5.7	<3.68	<0.54	<3.13	<127.35
KMI2B08	578355	213929	<17.11	<5.55	<255.84	<999.03	<0.82	<3.02	<3.67	<4.75	<0.71	<4.50	<169.81
KMI2B09	636856	154290	<16.02	<5.25	<242.36	<910.16	<0.82	<3.41	<3.59	<3.71	<0.56	<4.20	<166.13
KMI2B10	465799	160549	<13.23	<4.53	<205.21	<725.65	<0.71	<2.47	3.9	<4.02	<0.57	<4.00	<143.44
KMI2B11	392450	138670	<14.70	<4.41	<202.98	<751.63	<0.73	<2.58	<3.43	<3.81	<0.51	<3.48	<144.55
KMI2B12	316720	178046	<15.75	<4.80	<212.55	<790.49	<0.73	<3.55	4.1	<3.49	<0.56	<3.08	<158.05
KMI2B13	****	<****	125	<260.74	<12664.55	<33542.97	<67.64	<309.78	<361.08	<388.20	<20.96	<68.47	<529.96
KMI2B14	<****	2434129	54.2	<318.29	<14383.96	<29419.75	<71.95	<0.00	<370.74	<338.13	<39.02	<73.02	<656.18
KMI2B15	****	8409120	****	<393.54	<15156.74	<33535.72	38.5	<357.84	<546.36	<468.77	<28.14	22.6	<1019.6
KMI2B16	<****	5316399	****	<321.11	<13763.46	<29261.26	<99.21	<0.00	<355.54	<444.87	<24.57	<110.86	<1474.6
KMI2B17	****	****	15.3	<287.75	<17004.12	<19570.71	<80.45	<855.19	<392.99	<269.66	20.5	<142.50	<3227.4
KMI2B18	<****	<8005702.50	****	<242.59	<10946.85	<16143.72	<53.63	<588.65	<308.75	<312.27	<37.16	<116.65	<18384.
KMI2B19	3733753	<5009112.50	****	<281.64	<16736.63	<40081.34	<86.26	<957.69	<449.71	<411.34	<40.29	<153.61	****
KMI2B20	<**********	2818673	51.0	<197.63	<14200.26	<24092.65	<55.42	<990.59	<260.31	<229.54	<22.67	<69.97	
KMI2B21	<**********	<2406654.00	****	<253.49	<13673.73	<33406.17	28.3	<1984.80	<444.69	<407.73	<51.35	82.6	****
KMI2B22	<6843947.00	<1932202.75	165	<220.10	<14902.66	<35100.75	<84.48	<3547.80	<322.46	<351.99	<49.98	21.7	8
KMI2B23	<3713330.75	2764443	****	<239.23	<13588.55	<30967.31	<56.30	<13743.05	<404.54	<235.30	<23.83	<101.33	
KMI2B24	<1913614.75	<1323717.88	****	<228.89	<13896.45	<33670.16	28.1	743	<262.65	<179.44	<44.90	<189.23	****
KMI401	<465740.88	<360829.97	<125.94	<44.92	<2546.08	<6615.95	<12.81	<53.27	<71.60	<65.61	<5.27	<18.37	<Inf
KMI402	<658313.75	553417	<177.11	<58.13	<3308.40	<8689.46	<14.73	<61.30	<101.47	<69.60	3.1	<29.05	<Inf
KMI403	<708377.19	<483352.97	<225.09	<61.66	<4111.39	<7489.50	<10.14	<50.43	<102.16	<59.31	<4.80	<28.42	<Inf
KMI404	<819132.25	417206	<156.74	<56.69	<3804.69	<7976.20	<10.76	<55.46	<73.68	<89.96	<7.30	<24.74	<Inf
KMI405	<818242.56	<420309.44	<160.75	<52.85	<3417.56	<7655.39	<13.29	<50.25	<87.97	<56.15	<9.14	<21.70	<Inf
KMI406	<831968.44	<479053.66	<145.48	<49.16	<3937.51	<5174.13	<19.61	<66.77	<76.62	<83.78	<4.84	<35.98	<Inf

KMI407	<914858.50	<355632.25	<176.02	<49.87	<3343.69	<8189.98	<9.13	7.2	<89.29	<64.43	<6.47	2.9	<Inf
KMI408	<907897.75	632134	<228.11	<59.17	<4138.66	<5711.79	<16.28	<62.23	<117.90	<63.64	<7.40	<17.06	<Inf
KMI409	<1268106.38	<447507.19	<220.32	<59.93	<4273.49	<6740.41	<11.83	<74.83	<86.93	<34.89	<8.64	<32.19	<Inf
KMI410	<1670305.38	<408724.59	<224.37	<66.30	<3992.78	<5893.08	<10.07	26.5	<114.35	<36.79	<10.57	<29.19	<Inf
KMI411	<1840451.25	<359582.03	<259.89	<60.33	<3712.86	<6332.77	<13.31	18.0	<79.48	<49.22	<8.69	<31.67	<Inf
KMI412	<2210157.75	<346799.31	<285.06	<58.17	<3731.74	<9382.87	<8.74	26.5	<74.36	<80.19	<6.70	<33.06	<Inf
KMI413	385266	<182051.33	<658.90	<70.99	<6180.90	<17400.32	<19.96	<88.94	<127.52	<130.94	<9.23	<39.25	<890.12
KMI414	<****	<192714.02	<553.69	<83.44	<6139.40	<10677.18	<20.15	<104.24	<148.69	<118.60	<18.79	<56.79	<1088.1
KMI415	<3687750.75	<218929.66	<394.51	<103.10	<7368.03	<10182.82	8.2	36.7	<174.46	<148.76	<10.60	40.8	<750.65
KMI416	<1221686.00	<161887.58	<348.24	<97.09	<6451.27	<10461.63	<27.81	74.7	<120.30	<88.11	<9.98	<43.13	<858.84
KMI417	<828240.63	<237792.16	<295.23	<115.68	<6707.58	<18230.29	<16.32	<182.35	<137.52	<181.58	<15.63	<67.99	<872.12
KMI418	669326	330927	<313.32	<105.98	<6774.96	<10773.38	<24.97	<256.42	<198.07	<129.13	6.3	<52.88	
KMI419	<336718.09	301154	<167.87	<88.08	<5635.17	<12390.34	<16.85	<155.76	<128.77	<142.80	<16.46	10.7	<588.87
KMI420	<373880.34	<202212.52	<122.21	<88.51	<6858.32	<5715.23	<21.63	<155.95	<119.84	<142.56	<19.09	<67.03	<466.64
KMI421	<275023.78	337982	<141.30	<96.93	<6788.91	<10170.71	3.6	34.0	<141.99	<163.75	<19.11	<69.85	<620.60
KMI422	<257561.28	<258318.84	<206.75	<91.93	<6527.22	<8921.51	<15.60	<147.35	<150.80	<115.93	<22.25	8.1	<533.37
KMI423	235804	<356023.25	<170.08	<105.18	<6644.34	<14215.25	4.2	<107.58	<163.46	<137.76	<11.53	<104.98	<491.36
KMI424	<231199.52	<364638.47	<164.65	<119.79	<7705.21	<10401.19	9.0	<161.38	<162.83	<102.97	<21.27	<39.90	<477.31

BROKEN HILL	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
BH21801	<1.14	44.7	5.4	0.2	79.7	7.7	<3.82	<0.39	0.4	<0.23	1.2	694425	906005	890770	
BH21802	<1.12	41.8	6.6	0.3	78.5	8.7	4.4	<0.36	<0.32	0.3	1.8	750669	913474	890770	
BH21803	<1.25	87.0	13.5	0.3	81.1	24.7	<3.94	<0.38	<0.40	<0.27	1.2	821106	911554	890770	
BH21804	<1.00	69.7	10.0	0.3	86.4	17.7	<3.91	<0.39	0.4	<0.25	1.2	804854	940737	890770	
BH21805	<1.21	69.7	13.0	0.2	83.5	18.1	<3.99	<0.40	<0.39	<0.28	1.3	725145	1035596	890770	
BH21806	<0.99	207	15.0	0.2	69.8	46.3	<3.23	<0.33	<0.28	<0.22	1.2	627183	813527	890770	
BH21807	1.3	235	12.2	0.2	85.0	41.8	<3.86	<0.39	<0.33	<0.27	1.5	808218	973303	890770	
BH21808	<1.00	204	19.6	0.3	74.6	161	<3.17	<0.35	<0.29	<0.22	1.2	636642	821452	890770	
BH21809	<1.14	271	17.4	0.3	83.1	137	<3.82	<0.37	<0.35	<0.25	1.4	666002	1006267	890770	
BH21810	<1.22	49.4	8.0	0.2	83.4	13.6	<3.72	<0.38	<0.36	<0.27	1.3	727700	921981	890770	

BH21811	<1.27	56.0	****	0.4	82.3	12.4	<3.76	<0.37	<0.34	<0.27	1.4	853659	965251	890770
BH21812	<1.21	48.2	7.4	0.2	88.6	6.6	<3.92	<0.41	<0.36	<0.28	1.4	754446	935317	890770
BH21813	<1.28	74.5	13.7	0.1	83.2	19.0	<4.32	<0.51	<0.48	<0.32	1.1	746380	1028413	890770
BH21814	<1.44	125	21.5	0.4	94.4	28.6	<4.42	<0.50	<0.42	<0.33	1.5	872073	1096142	890770
BH21815	<1.13	47.4	6.3	0.2	69.6	9.8	<3.41	<0.39	<0.35	<0.27	1.3	643537	783617	890770
BH21816	<1.31	137	12.8	0.3	85.9	38.3	4.5	<0.43	<0.41	<0.31	1.3	784099	1016567	890770
BH21817	<1.25	74.4	12.8	0.2	83.0	19.1	<4.20	<0.41	<0.39	<0.31	1.2	735411	956694	890770
BH21818	<1.27	68.3	8.3	0.2	85.4	8.9	<4.19	<0.45	<0.42	<0.32	1.1	752930	957027	890770
BH21819	<1.17	52.6	6.0	0.2	79.9	10.4	4.6	<0.44	<0.38	0.4	1.1	704458	918298	890770
BH21820	<1.07	71.8	9.9	0.2	86.4	13.6	<3.53	<0.42	<0.36	<0.27	1.1	816485	948228	890770
BH21821	<1.15	39.6	5.6	0.2	83.5	4.7	<4.21	<0.41	<0.38	<0.29	1.1	734173	939025	890770
BH21822	<1.27	70.7	5.2	0.2	93.6	8.9	<4.69	<0.49	<0.43	<0.33	1.3	860600	1033810	890770
BH21823	<1.06	65.4	6.1	0.2	86.4	8.1	<3.71	<0.39	<0.35	0.4	1.4	808163	1012165	890770
BH21824	1.2	83.7	11.7	0.2	90.6	15.3	<4.11	<0.40	<0.31	<0.27	1.2	810403	997907	890770
BH22101	<1.15	235	38.7	0.4	149	138	<3.79	<0.47	<0.36	<0.35	1.2	843143	936448	890770
BH22102	<1.31	387	37.1	0.5	152	193	<4.21	<0.54	<0.39	<0.38	1.3	898472	1046199	890770
BH22103	<1.19	368	39.5	0.5	145	223	<4.45	<0.50	0.5	<0.37	1.1	862640	1021619	890770
BH22104	<1.06	445	38.7	0.3	129	251	<3.89	<0.46	<0.34	<0.33	1.0	833367	930534	890770
BH22105	<1.04	363	44.3	0.3	133	203	<4.05	<0.49	<0.39	<0.39	1.3	878099	900201	890770
BH22106	<0.97	282	25.2	0.4	114	135	<4.01	<0.45	<0.35	<0.33	1.0	792183	845853	890770
BH22107	<1.08	261	23.1	0.4	130	132	<4.37	<0.43	<0.40	<0.37	1.3	818142	937292	890770
BH22108	<1.09	342	27.3	0.3	124	147	<4.02	<0.48	<0.36	0.5	1.3	845201	1020690	890770
BH22109	<1.17	325	23.9	0.4	125	141	<4.93	<0.46	<0.40	<0.41	1.3	864309	986622	890770
BH22111	<1.01	499	39.9	0.3	117	297	<4.39	<0.42	<0.37	<0.37	1.2	768578	953038	890770
BH22112	<0.92	433	31.3	0.3	113	221	<4.19	<0.44	<0.35	0.4	1.1	782025	911502	890770
BH22113	<1.02	338	27.6	0.4	126	174	<4.20	<0.46	<0.44	<0.37	1.4	820422	908004	890770
BH22114	<1.14	445	27.2	0.3	120	208	<4.44	<0.50	<0.39	<0.38	1.4	898628	1004372	890770
BH22115	<1.07	177	13.5	0.4	110	64.0	<4.09	<0.46	<0.38	<0.34	1.2	820644	916449	890770
BH22116	<1.12	527	29.1	0.4	122	231	<4.06	<0.46	<0.34	<0.35	1.4	817270	930227	890770
BH22117	<1.05	329	18.2	0.3	106	134	<3.96	<0.46	<0.40	<0.33	1.1	783217	975302	890770

BH22118	<1.12	233	11.5	0.4	118	91.3	<3.70	<0.48	<0.38	<0.34	1.3	706410	839527	890770
BH22119	<0.94	412	32.6	0.5	115	251	<3.19	<0.48	<0.37	<0.30	1.1	767318	806247	890770
BH22120	<0.88	663	56.4	0.4	120	405	<2.94	<0.42	<0.34	<0.27	1.2	717059	881050	890770
BH22121	<0.92	569	43.6	0.3	114	331	<2.97	<0.36	<0.34	<0.26	1.3	714194	905776	885572
BH22122	<0.80	340	24.4	0.2	104	143	<2.50	<0.33	<0.28	0.3	1.2	687953	801637	890770
BH22123	<0.86	613	54.1	0.4	116	315	2.5	<0.41	<0.30	<0.25	1.2	667959	881332	890770
BH22124	<0.77	281	27.6	0.4	108	128	<2.22	<0.35	<0.29	<0.22	1.2	604135	872699	890770
BH23301	<0.00	661	11.5	0.2	50.3	960	<0.00	<0.00	<0.074	<0.32	2.3	755551	900394	890770
BH23302	0.3	583	11.6	<0.092	49.3	892	<0.00	<0.00	0.0	<0.35	2.1	765678	904912	890770
BH23303	<0.00	662	12.5	0.1	54.4	923	<0.00	<0.00	0.0	<0.38	2.4	756408	955169	890770
BH23304	0.5	733	23.8	<0.111	49.6	1086	0.7	<0.094	<0.00	<0.42	2.3	802323	952331	890770
BH23305	<1.88	484	11.7	0.2	49.7	745	<0.00	0.0	<0.081	<0.36	2.4	766039	919536	890770
BH23306	<1.68	633	20.4	0.3	45.1	986	<0.00	0.0	<0.00	<0.35	2.2	751523	895402	890770
BH23307	<1.96	556	10.5	<0.124	49.0	792	<2.90	<0.00	<0.00	<0.37	2.4	759467	898458	890770
BH23308	<2.13	756	15.1	0.1	48.5	1073	<3.14	<0.00	0.0	<0.39	2.5	781734	902201	890770
BH23309	<0.00	777	17.5	0.1	49.4	1022	<0.00	<0.00	<0.081	<0.39	2.4	736096	927672	890770
BH23310	<1.99	714	11.9	0.1	46.8	1033	<2.91	0.0	0.0	<0.38	2.4	763640	913565	890770
BH23311	<1.73	712	28.4	<0.108	49.0	1093	1.2	0.0	<0.00	<0.33	2.3	764232	900154	890770
BH23312	<0.00	639	12.6	0.2	52.5	892	1.5	<0.081	0.0	0.4	2.4	763488	918142	890770
BH23313	0.8	647	13.8	0.2	49.2	923	0.5	<0.00	<0.068	<0.36	2.6	716589	906978	890770
BH23314	<2.26	658	12.9	<0.107	45.9	944	0.5	<0.078	0.0	<0.38	2.4	736824	916521	890770
BH23315	<2.34	730	20.0	0.2	52.4	1095	0.7	<0.00	<0.00	<0.40	2.6	766004	956235	890770
BH23316	<0.00	683	19.8	<0.130	50.8	1099	0.8	<0.00	<0.088	<0.44	2.9	778850	927486	890770
BH23317	<2.76	666	11.9	0.2	50.9	885	<0.00	<0.00	0.0	<0.44	2.7	763301	950376	890770
BH23318	<2.52	589	11.8	0.1	48.1	953	1.5	0.0	<0.131	<0.40	2.7	721223	945991	890770
BH23319	<2.59	698	22.4	0.1	49.7	1103	<0.00	<0.00	0.0	<0.39	2.7	751831	945447	890770
BH23320	<0.00	523	13.8	0.2	53.2	801	<3.43	<0.077	0.0	<0.36	2.7	739522	944623	890770
BH23321	<0.00	552	14.7	0.1	56.3	865	0.5	<0.092	<0.082	0.5	2.9	773719	977338	890770
BH23322	<2.99	697	22.9	0.1	51.9	980	0.6	<0.00	<0.084	<0.45	2.6	744840	931472	890770
BH23323	<0.00	637	17.4	0.2	54.6	1078	1.2	<0.083	0.0	<0.39	2.7	715123	931795	890770

BH23324	0.7	657	15.7	<0.156	61.2	1127	<2.79	<0.00	0.0	<0.47	2.8	772180	937010	890770	
BLEIKVASSLI	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
BV-101	0.9	1309	<5.97	0.6	303	1341	3.0	<0.00	<0.134	<0.78	255	863376	976477	890770	
BV-102	<6.21	1079	2.6	0.6	213	1048	1.9	<0.00	0.0	<0.84	256	870111	944201	890770	
BV-103	1.5	970	14.0	1.0	410	986	<0.00	<0.00	0.2	<0.95	228	860348	914253	890770	
BV-104	<0.00	1218	<9.47	1.3	424	1377	<13.36	<0.00	<0.00	<0.95	263	870209	918587	890770	
BV-105	<0.00	1303	11.0	1.2	365	1431	<7.88	<0.00	<0.00	<0.87	234	857019	937579	890770	
BV-106	<0.00	1475	14.9	1.1	493	1738	2.8	<0.207	<0.00	<1.21	289	890986	946921	890770	
BV-107	<6.00	1023	<8.91	0.7	249	854	<0.00	<0.00	<0.253	<0.96	254	847474	924062	890770	
BV-108	<7.98	1423	16.2	1.1	370	1397	1.9	<0.00	<0.00	<0.90	259	825248	942636	890770	
BV-109	1.1	1085	7.8	1.1	364	1063	<0.00	<0.00	0.1	<1.10	233	826219	932264	890770	
BV-110	<6.40	1247	22.2	0.9	328	1265	<7.96	0.0	<0.157	<1.11	259	821264	907462	890770	
BV-111	<6.03	1202	7.9	0.7	250	1096	1.4	<0.00	<0.00	<1.08	283	839068	898825	890770	
BV-112	<0.00	1126	7.2	0.9	364	1035	1.4	<0.163	0.0	<1.06	247	818462	888406	890770	
BV-113	1.9	1148	<11.10	0.4	76.5	896	3.7	0.1	0.0	<1.04	226	825333	896785	890770	
BV-114	<5.87	1369	10.3	0.9	344	1435	2.2	<0.00	<0.00	<0.99	259	845249	912601	890770	
BV-115	<7.77	1113	13.4	1.4	378	1108	<7.43	<0.00	0.0	<1.23	232	834621	888255	890770	
BV-116	<7.71	1134	10.4	1.2	381	1035	<0.00	<0.194	<0.00	<1.20	244	808441	864705	890770	
BV-117	<7.36	1457	25.7	0.9	451	1449	<13.78	0.0	<0.00	<1.13	262	865115	941088	890770	
BV-118	<0.00	1245	8.5	1.4	432	1278	1.8	<0.00	<0.00	<1.08	253	853096	878190	890770	
BV-119	<7.35	871	7.6	0.5	155	668	<0.00	<0.00	<0.00	<1.06	212	812322	918399	890770	
BV-120	3.5	1401	17.8	1.0	297	1292	<0.00	<0.00	<0.146	<1.03	258	837739	853358	890770	
BV-121	<8.85	1333	4.1	0.9	411	1221	<7.92	<0.00	<0.179	<1.18	253	862972	884173	890770	
BV-122	<7.97	1299	10.8	1.3	258	1125	<0.00	<0.00	<0.00	<1.04	280	862387	900011	890770	
BV-123	3.1	1117	160.16*	1.9	610	886	<9.49	0.0	<0.212	<0.99	159	773965	876088	890770	
BV-124	<6.50	1185	4.4	1.3	371	1084	1.6	<0.00	<0.00	<0.80	261	846954	903216	890770	
BV-97-301	<7.78	1281	38.5	2.1	748	759	1.2	<0.00	0.1	<0.87	109	847711	907867	890770	[illegible]
BV-97-302	<14.03	1393	29.5	2.1	650	750	<6.46	<0.00	<0.149	<0.91	109	848769	913568	890770	[illegible]
BV-97-303	2.4	1639	48.4	1.8	664	854	<8.41	<0.00	<0.196	<1.21	113	902307	947260	890770	[illegible]
BV-97-304	<0.00	1349	31.4	2.0	581	455	<0.00	<0.00	<0.00	<1.28	110	899621	875972	890770	[illegible]

BV-97-305	9.7	1545	52.5	1.5	585	706	5.1	<0.23	<0.00	<1.26	106	873241	915282	890770
BV-97-306	<0.00	1394	29.0	1.9	556	355	<10.26	<0.261	0.1	<1.49	105	873582	869253	890770
BV-97-307	<9.18	1480	37.7	1.9	671	748	6.0	0.1	0.0	<0.95	113	887011	908134	890770
BV-97-308	5.7	1363	32.9	1.8	577	673	4.5	<0.231	<0.308	<1.38	110	824590	905265	890770
BV-97-309	6.6	1479	60.4	0.9	584	726	2.6	<0.00	<0.00	<1.52	112	857582	892479	890770
BV-97-310	2.5	1537	67.4	2.4	675	841	2.0	<0.00	<0.00	<1.33	118	930134	919212	890770
BV-97-311	<0.00	1420	47.1	1.6	615	729	<11.42	<0.00	0.1	<1.47	116	902921	899784	890770
BV-97-312	<13.86	1569	38.1	2.0	587	832	2.1	<0.00	0.1	<1.50	118	875416	901186	890770
BV-97-313	<10.63	1318	54.8	1.7	566	680	<0.00	<0.00	0.0	<0.85	106	829009	879380	890770
BV-97-314	<0.00	1968	39.4	1.5	501	1870	3.0	<0.203	<0.00	<1.16	112	848154	918490	890770
BV-97-315	<9.62	1294	47.1	1.5	578	834	<0.00	<0.00	<0.00	<1.19	106	841744	876179	890770
BV-97-316	<12.05	1427	60.1	2.4	696	1751	<0.00	<0.00	<0.00	<1.48	120	872585	881454	890770
BV-97-317	<10.60	1567	97.9	1.7	596	883	<12.25	0.1	<0.00	<1.31	116	807270	838116	890770
BV-97-318	<0.00	1416	24.6	1.5	558	930	<8.83	<0.231	<0.213	<1.25	115	837441	885890	890770
BV-97-319	<0.00	1118	24.0	2.1	527	928	2.4	0.1	<0.20	<1.26	102	794416	876638	890770
BV-97-320	<8.77	1491	35.8	2.9	708	974	4.4	<0.00	<0.00	<0.80	114	834177	909781	890770
BV-97-321	<0.00	1477	43.6	2.3	635	861	<0.00	<0.189	<0.00	<1.14	122	846896	934952	890770
BV-97-322	<0.00	1134	31.9	1.3	545	906	<0.00	<0.00	<0.00	<1.22	116	810189	871597	890770
BV-97-323	<0.00	1553	73.0	2.2	757	902	2.4	<0.00	<0.00	<1.79	119	789503	895992	890770
BV-97-324	<13.49	1322	63.6	2.7	696	1569	2.9	<0.00	<0.263	<1.84	114	796607	910001	890770
V44601	<0.98	1041	6.2	0.5	179	266	<4.15	<0.45	<0.43	<0.36	111	827904	1010084	890770
V44602	<1.12	1102	5.7	0.8	224	376	6.7	<0.51	<0.47	<0.38	107	1043804	976024	890770
V44603	<1.10	1170	6.1	0.8	270	412	5.1	<0.52	<0.47	<0.39	108	813311	904231	890770
V44604	<1.09	1017	7.5	0.7	248	334	<3.94	<0.45	<0.41	<0.36	108	784006	859578	890770
V44605	<1.07	1274	8.3	1.0	322	554	4.1	<0.48	<0.44	<0.39	111	958487	1000367	890770
V44606	<1.08	1318	9.0	0.8	283	633	4.5	<0.46	<0.47	<0.38	123	821312	925381	890770
V44607	<1.07	1247	6.8	0.9	288	541	7.7	<0.46	<0.42	0.5	111	814868	948146	890770
V44608	<1.15	1236	11.4	1.0	329	596	4.7	<0.56	0.5	0.7	108	817373	1014482	890770
V44609	<1.47	1177	7.1	0.9	286	477	<5.27	<0.63	<0.52	<0.52	105	872821	941539	890770
V44610	<1.29	1181	9.4	0.8	293	410	<4.71	<0.53	<0.47	<0.46	105	807511	934132	890770

V44611	<1.12	1038	8.1	1.0	343	406	<3.79	<0.42	<0.37	<0.37	95.6	727030	774855	890770
V44612	<1.30	1307	12.0	1.0	335	705	<4.56	<0.56	<0.52	<0.46	109	828176	900837	890770
V53801	<1.53	1388	11.9	2.1	710	2159	<4.83	<0.60	<0.45	<0.47	159	774559	927912	890770
V53802	<1.24	1184	6.3	1.5	492	1253	<4.51	<0.53	<0.42	<0.46	139	809741	962656	890770
V53803	<1.16	1322	8.0	1.6	491	1437	<4.20	<0.50	<0.41	<0.44	159	813374	947906	890770
V53804	<1.25	1504	13.8	1.7	610	1709	<4.61	<0.54	<0.47	<0.46	173	827609	954267	890770
V53805	<1.41	1508	10.3	1.9	569	1719	7.9	<0.63	<0.47	<0.53	171	790317	916553	890770
V53806	<1.77	1124	8.8	1.5	482	1026	<5.80	0.7	<0.59	<0.61	141	861077	939600	890770
V53807	<1.36	1754	17.4	2.1	712	2019	<4.55	<0.55	<0.49	<0.50	185	880216	954749	890770
V53808	<1.42	1201	6.4	1.0	374	1133	<4.67	<0.58	<0.52	<0.49	171	799866	979362	890770
V53809	<1.65	1632	11.6	1.5	521	1626	6.1	<0.65	<0.59	<0.58	185	829851	1025383	890770
V53810	<1.57	1385	12.1	2.1	669	1381	<5.44	<0.69	<0.58	<0.59	201	821919	962628	890770
V53811	<1.33	1796	18.0	2.3	747	2007	<5.05	<0.56	<0.54	<0.52	177	784335	962512	890770
V53812	<1.50	1766	20.3	2.3	764	2439	5.1	<0.68	<0.71	<0.59	179	867147	982479	890770
V57-85201	<0.98	1143	7.7	0.5	144	601	7.0	<0.00	<0.00	<0.22	137	815959	884936	890770
V57-85202	<0.85	1195	29.8	0.4	127	309	7.4	0.0	<0.024	<0.192	170	813286	891655	890770
V57-85203	<0.91	1279	35.0	0.4	123	587	8.2	0.0	<0.00	<0.202	165	820882	891644	890770
V57-85204	<1.31	1005	33.9	0.5	142	274	8.4	<0.033	0.0	<0.20	146	833405	903469	890770
V57-85205	<1.00	1108	25.4	0.5	159	510	6.5	<0.00	<0.00	<0.228	144	849161	899677	890770
V57-85206	<0.00	1273	33.1	0.5	143	729	6.9	0.0	0.0	<0.22	156	856050	884772	890770
V57-85207	<1.04	1361	30.0	0.5	168	482	12.2	0.0	0.0	<0.24	156	830055	888755	890770
V57-85208	<1.11	1302	29.2	0.5	140	330	13.2	<0.00	<0.032	<0.26	147	832714	898946	890770
V57-85209	0.3	1087	36.5	0.5	133	148	8.7	<0.00	<0.00	<0.22	190	831063	887623	890770
V57-85210	0.5	1113	50.0	0.4	138	104	13.1	<0.00	0.0	<0.198	181	834315	872714	890770
V57-85211	<0.89	1380	32.2	0.4	142	755	4.7	<0.032	<0.00	<0.21	156	861879	892725	890770
V57-85212	<0.97	1156	44.3	0.5	121	265	8.3	0.0	<0.040	<0.22	189	846563	888914	890770
V57-85213	<0.30	1044	27.0	0.5	160	791	9.2	<0.0200	0.0	0.2	144	819738	900602	890770
V57-85214	<0.45	1225	29.8	0.6	160	408	11.4	<0.0204	<0.0146	<0.179	144	833410	910182	890770
V57-85215	0.1	1302	28.8	0.4	125	593	7.9	<0.00	<0.01	<0.173	145	866187	929721	890770
V57-85216	0.1	1303	19.9	0.4	143	543	9.0	<0.0219	<0.0158	<0.181	150	865560	920899	890770

V57-85217	<0.49	1220	25.4	0.5	158	288	11.2	<0.0207	0.0	<0.173	143	860187	918015	890770	
V57-85218	0.1	1353	23.6	0.4	128	594	8.5	<0.00	<0.0183	<0.161	147	866551	911917	890770	
V57-85219	<0.00	1243	37.5	0.5	134	550	10.8	<0.00	<0.00	<0.185	150	847391	930240	890770	
V57-85220	0.2	1150	49.1	0.4	128	565	7.3	0.0	<0.00	<0.165	158	858578	922445	890770	
V57-85221	<0.28	1118	46.9	0.3	115	485	9.1	<0.00	<0.00	<0.139	167	865528	917990	890770	
V57-85222	0.1	1065	37.4	0.4	124	155	8.1	<0.00	<0.033	<0.173	190	869692	935133	890770	
V57-85223	0.1	1156	37.0	0.3	123	1160	7.9	<0.021	0.0	<0.176	159	877563	933582	890770	
V57-85224	0.3	1326	33.7	0.6	166	634	9.1	<0.00	<0.0182	0.3	155	879585	945773	890770	
MOFJELLET	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
MO201	<0.99	1391	62.0	<0.087	<1.02	2445	39.4	<0.35	<0.31	<0.32	1.4	811651	1100008	890770	
MO202	<1.06	1353	71.6	<0.087	<0.93	2141	36.9	<0.32	<0.27	<0.30	1.5	950029	926036	890770	
MO203	<0.92	1228	60.2	<0.084	0.9	1880	38.4	<0.31	<0.27	<0.28	1.3	818736	878045	890770	
MO204	<1.08	1218	34.4	<0.095	<0.89	1786	34.3	<0.29	<0.29	<0.29	1.2	768803	849294	890770	
MO206	<1.06	1293	28.5	<0.093	<0.93	1714	38.1	<0.32	<0.30	<0.32	1.5	777186	857946	890770	
MO207	<1.03	1359	55.9	0.1	<0.93	1941	36.6	<0.37	<0.30	<0.32	1.5	890205	906230	890770	
MO208	<1.08	1323	67.0	<0.105	<0.92	1765	32.0	<0.38	<0.32	<0.33	1.5	783591	938310	890770	
MO209	<1.04	1297	59.2	<0.095	1.0	1675	32.9	<0.35	0.3	<0.31	1.4	769506	899715	890770	
MO210	<0.99	1490	137	<0.099	1.3	1890	32.5	<0.38	<0.31	0.4	1.6	778233	1137164	890770	
MO211	<1.01	1232	40.3	<0.094	<0.89	1619	32.8	<0.36	<0.30	<0.30	1.4	825613	931939	890770	
MO212	<0.96	1169	30.6	<0.091	<0.85	1550	32.0	<0.33	<0.29	<0.29	1.2	811420	862943	890770	
MO213	<0.89	1028	23.9	<0.095	<0.85	1161	26.4	<0.38	<0.24	0.4	1.2	807653	873561	890770	
MO214	<0.87	1054	28.0	<0.102	<0.84	1167	26.1	<0.36	<0.29	<0.31	1.1	805959	827942	890770	
MO215	<0.84	1054	32.9	<0.091	<0.75	1134	27.9	<0.34	<0.23	<0.29	1.3	779907	912642	890770	
MO216	<0.89	1040	34.3	<0.088	<0.84	1150	28.0	<0.38	<0.25	<0.31	1.2	939829	903651	890770	
MO217	<0.88	1107	27.1	<0.092	0.9	1128	25.4	<0.39	<0.25	<0.31	1.3	919854	863584	890770	
MO218	<0.84	995	30.5	<0.091	<0.74	1082	22.7	<0.35	<0.24	<0.29	1.3	762420	1096791	890770	
MO219	<0.82	975	23.3	<0.095	1.5	1084	31.0	<0.32	<0.23	<0.29	1.2	819292	958231	890770	
MO220	<0.85	1057	28.4	<0.093	<0.79	1088	21.8	<0.37	<0.25	<0.30	1.2	705176	844228	890770	
MO221	<0.84	980	14.5	<0.091	<0.76	992	21.6	<0.31	0.3	<0.29	1.0	679277	774772	890770	
MO222	<0.92	1004	29.4	<0.103	<0.82	1056	21.3	0.5	<0.25	<0.32	1.2	805990	898183	890770	

MO223	<0.93	1060	19.1	<0.095	1.1	1141	23.7	<0.41	<0.29	<0.34	1.4	852483	884633	890770
MO224	<0.58	760	16.5	<0.071	<0.62	759	20.3	<0.28	<0.188	0.3	1.0	707376	700055	890770
MO501	<0.82	1262	8.2	<0.097	0.7	2336	46.7	<0.36	<0.37	<0.25	1.6	814016	841727	890770
MO502	<0.86	1716	16.0	<0.093	<0.73	2191	46.7	<0.41	<0.38	<0.26	1.6	864019	873354	890770
MO503	<0.86	1292	48.2	<0.085	<0.65	2095	50.6	<0.33	<0.36	0.4	1.5	758888	866181	890770
MO504	<0.86	1359	8.2	<0.088	<0.71	2061	51.9	<0.36	<0.36	<0.25	1.4	763030	776258	890770
MO505	<1.06	1819	12.9	<0.103	<0.82	1998	51.2	<0.46	<0.42	<0.30	1.5	860594	892595	890770
MO506	<0.90	1599	17.8	<0.104	<0.79	2348	53.4	0.4	<0.41	<0.29	1.6	919839	844214	890770
MO507	<0.98	985	9.8	<0.099	<0.80	1032	40.1	<0.44	<0.42	<0.30	1.3	760019	884609	890770
MO508	<0.97	1469	44.6	<0.096	<0.77	3424	52.4	<0.38	<0.39	<0.28	1.5	792362	848867	890770
MO509	<1.03	1494	10.1	<0.108	<0.81	1776	51.9	<0.40	<0.41	<0.29	1.6	883740	913294	890770
MO510	1.0	1920	18.0	<0.111	<0.80	2382	56.3	<0.47	<0.47	<0.30	1.6	782669	971542	890770
MO511	<1.02	2032	15.2	<0.105	<0.83	4271	59.7	<0.45	<0.45	<0.31	1.5	786877	916974	890770
MO512	<1.02	1427	12.2	<0.109	<0.81	1790	57.6	<0.44	<0.40	<0.30	1.5	789878	955019	890770
MO1101	<0.39	1744	261	<0.032	0.7	2043	45.3	<0.00	0.0	0.9	1.3	828359	923500	890770
MO1102	0.1	3138	475	0.0	1.0	3678	48.8	<0.00	<0.0277	1.3	1.3	833734	936625	890770
MO1103	<0.44	2599	396	0.0	0.9	3076	58.4	<0.00	<0.00	1.1	1.2	824415	911899	890770
MO1104	0.1	2617	446	0.1	<0.70	3125	39.8	<0.00	0.0	0.6	1.4	818399	921853	890770
MO1105	0.2	2186	331	0.1	<0.76	2136	46.5	0.1	<0.0199	1.1	1.4	822991	908890	890770
MO1106	<0.56	4495	650	0.1	1.0	5574	52.9	<0.0207	<0.0201	1.9	1.4	820142	908604	890770
MO1107	<0.33	3977	592	0.0	1.1	4884	50.7	<0.00	0.0	1.1	1.4	820665	917748	890770
MO1108	0.1	3537	586	<0.038	1.3	4476	52.6	<0.029	2.2	4.7	1.4	807997	909144	890770
MO1109	<0.33	3000	504	0.1	1.2	3629	46.0	<0.00	<0.0200	0.7	1.4	823668	932185	890770
MO1110	<0.49	2195	375	0.1	1.4	2646	43.8	<0.00	<0.0297	1.1	1.5	820118	925855	890770
MO1111	<0.37	2410	410	0.0	0.7	2877	54.6	<0.00	<0.022	1.4	1.5	809190	900793	890770
MO1112	<0.51	4623	669	0.0	0.8	5552	55.2	<0.00	<0.0215	1.3	1.4	818723	905072	890770
MO1113	<0.39	3237	522	0.1	0.8	3873	51.3	<0.0207	<0.00	1.4	1.5	812119	926655	890770
MO1114	0.4	2197	376	0.1	1.5	2502	63.9	<0.00	<0.00	1.6	1.6	832002	928777	890770
MO1115	0.2	3380	591	0.1	1.4	3963	39.8	<0.0231	<0.024	1.0	1.6	840973	945646	890770
MO1116	<0.00	2785	471	0.1	1.5	3314	56.5	0.0	0.0	0.4	1.6	839226	933239	890770

MO1117	<0.44	2005	350	0.1	1.0	2370	50.5	0.0	<0.0236	<0.28	1.7	878688	952044	890770
MO1118	<0.46	4713	826	0.1	0.9	5630	44.6	<0.00	<0.034	0.5	1.7	865837	958131	890770
MO1119	0.1	1888	319	0.1	<0.89	2148	36.8	<0.00	<0.0244	0.4	1.6	830198	935479	890770
MO1120	<0.45	1612	328	<0.029	1.8	1814	31.5	<0.00	<0.00	0.4	1.6	847587	967628	890770
MO1121	0.2	2818	495	0.1	1.2	3250	45.1	0.0	<0.035	1.2	1.7	865361	973516	890770
MO1122	0.4	2694	475	0.0	1.5	3196	37.1	<0.00	<0.00	1.7	1.7	847953	970295	890770
MO1123	0.2	4142	648	0.1	1.0	4621	46.7	<0.00	<0.025	1.7	1.8	887175	983560	890770
MO1124	0.1	3563	592	0.1	0.8	4068	45.2	<0.0224	0.0	<0.25	1.8	859986	960224	890770

BAITA BIHOR	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
BB5501	<7.10	14821	107	<0.125	4.0	13.5	995	<0.00	0.8	0.6	36.8	803852	1007088	890770	3[illegible]
BB5502	<7.52	14494	99.4	0.1	<3.09	7.2	1007	0.0	0.5	<0.47	36.3	835423	974396	890770	3[illegible]
BB5503	<5.73	16618	156	0.1	<3.00	11.3	1030	<0.135	0.4	0.6	41.9	820289	991124	890770	4[illegible]
BB5504	<0.00	14724	96.1	<0.141	3.1	6.2	987	0.1	0.2	<0.48	33.6	802568	962579	890770	3[illegible]
BB5505	<5.74	16135	110	0.0	<3.59	11.6	1013	<0.136	0.7	<0.51	37.0	809977	951172	890770	3[illegible]
BB5506	<4.46	14236	85.7	0.1	<2.38	7.9	866	0.0	0.5	<0.42	36.5	816743	929761	890770	3[illegible]
BB5507	2.4	16763	112	0.0	4.6	12.4	926	<0.00	0.5	<0.50	40.1	817847	931880	890770	4[illegible]
BB5508	0.9	15824	134	<0.122	<2.41	11.5	800	<0.114	0.5	<0.46	39.4	863052	945534	890770	3[illegible]
BB5509	<5.33	14360	166	0.0	<2.67	10.6	870	0.0	0.2	<0.53	38.6	804066	913500	890770	3[illegible]
BB5510	<0.00	15557	118	<0.141	<3.29	14.3	731	0.0	0.1	<0.55	38.7	827531	932775	890770	3[illegible]
BB5512	<5.14	10679	64.4	<0.192	<2.73	7.9	575	<0.00	<0.093	0.6	33.4	780708	861196	890770	2[illegible]
BB15801	<6.03	5292	101	<0.123	<2.78	2.2	383	<0.115	<0.00	<0.54	63.4	824870	893066	890770	1[illegible]
BB15802	<0.00	6039	38.7	<0.197	<2.87	0.3	415	<0.00	0.1	<0.61	86.4	828632	840434	890770	1[illegible]
BB15803	1.7	5420	82.1	<0.203	<2.97	1.7	346	0.0	<0.108	<0.64	61.7	806326	840810	890770	1[illegible]
BB15804	<10.62	6162	26.6	<0.00	<3.57	<0.64	405	<0.00	0.1	<0.67	93.0	807197	882273	890770	1[illegible]
BB15805	<4.51	4423	19.7	<0.23	<2.55	0.2	271	<0.00	0.6	<0.60	41.9	822832	897016	890770	1[illegible]
BB15806	0.9	6377	51.8	<0.188	<3.08	0.1	379	<0.00	<0.103	0.7	87.2	809230	872332	890770	1[illegible]
BB15807	<0.00	6307	44.8	<0.105	<2.31	1.7	344	0.0	0.2	<0.47	67.2	802778	875469	890770	1[illegible]
BB15808	<3.89	6639	32.5	<0.170	<2.45	0.7	353	<0.00	<0.134	0.6	71.0	801456	827567	890770	1[illegible]
BB15809	<3.58	6723	46.8	0.0	<2.67	1.2	342	0.0	0.2	0.6	67.5	781018	846483	890770	1[illegible]
BB15810	<4.11	6184	35.4	<0.129	<2.56	1.4	312	0.0	0.1	<0.56	59.2	772433	862056	890770	1[illegible]

BB15811	<0.00	6016	88.6	0.1	<3.22	2.4	386	<0.00	0.0	<0.62	58.4	783313	891884	890770	1
BB15812	<5.67	7100	12.1	<0.129	<2.99	<0.71	279	0.0	0.1	<0.57	75.1	804223	871336	890770	1
BBH16AB01	<0.78	4552	105	<0.050	<0.87	6.7	192	<0.00	0.0	<0.35	23.7	884552	897250	890770	10
BBH16AB02	<1.34	4429	83.1	<0.040	<0.90	2.3	201	<0.00	<0.021	<0.33	21.6	876318	891188	890770	10
BBH16AB03	0.3	4527	41.4	<0.044	<0.77	0.3	224	<0.0242	1.0	0.3	15.1	868254	886575	890770	9
BBH16AB04	<0.69	4662	33.9	<0.050	<0.67	<0.130	199	<0.00	0.8	0.3	15.8	865828	912951	890770	10
BBH16AB05	<0.72	4343	38.9	<0.026	<0.77	0.5	222	<0.0254	0.6	<0.31	15.0	880513	904478	890770	9
BBH16AB06	<0.75	4425	114	0.0	<0.78	9.3	190	<0.0263	0.0	<0.30	24.6	852669	889439	890770	1
BBH16AB07	<1.22	4482	128	<0.031	<0.82	12.9	188	<0.00	0.0	<0.34	25.0	875090	917908	890770	1
BBH16AB08	0.5	5061	74.5	<0.035	<0.94	15.5	218	<0.036	0.4	0.4	23.5	896661	925939	890770	1
BBH16AB09	<0.00	4309	174	<0.044	<0.80	31.0	183	<0.00	0.0	<0.29	22.6	868210	897216	890770	10
BBH16AB10	<1.03	4386	162	<0.025	1.2	14.7	200	<0.0257	0.1	<0.29	23.0	868791	900048	890770	1
BBH16AB11	<1.10	4605	48.9	<0.027	<0.82	2.3	242	<0.0277	0.5	<0.30	19.1	872331	926121	890770	10
BBH16AB12	<0.74	4385	93.2	0.0	<0.70	4.0	238	<0.00	0.0	<0.28	22.0	860460	906085	890770	10
BBH16AB13	<1.20	4402	61.8	<0.028	<0.88	2.8	241	<0.00	1.2	<0.30	19.4	854254	918778	890770	10
BBH16AB14	<0.00	4455	107	<0.054	<0.83	7.0	220	0.0	0.0	<0.30	22.5	860143	909238	890770	1
BBH16AB15	<1.42	4086	36.8	<0.038	<0.77	2.0	227	<0.00	0.7	<0.30	16.0	831929	910986	890770	9
BBH16AB16	<0.74	4272	98.5	<0.024	<0.82	7.2	241	<0.00	0.0	<0.28	20.8	841616	918475	890770	1
BBH16AB17	<0.81	4522	150	<0.027	<0.83	29.1	269	<0.00	<0.026	<0.29	23.6	849185	922681	890770	1
BBH16AB18	<1.17	4813	107	<0.00	<0.84	24.9	267	<0.00	0.2	<0.31	22.2	834211	913629	890770	1
BBH16AB19	<2.00	4519	149	<0.046	<0.77	23.1	259	0.0	<0.037	<0.30	24.0	838549	919402	890770	1
BBH16AB20	<0.00	4426	142	0.0	<0.84	24.1	226	<0.00	0.0	<0.31	24.9	854609	913751	890770	1
BBH16AB21	<0.73	4496	145	0.0	<0.82	34.2	223	<0.0242	0.0	<0.29	21.7	836589	903572	890770	1
BBH16AB22	<0.85	4748	168	<0.00	<0.90	41.8	253	<0.00	<0.027	<0.31	20.3	863645	904282	890770	1
BBH16AB23	0.2	5019	104	<0.041	<0.94	33.9	251	<0.00	0.5	<0.34	22.6	834456	907499	890770	1
BBH16AB24	<1.19	4748	103	<0.039	<0.88	3.8	246	0.0	0.1	<0.32	20.9	858780	921791	890770	1
BBH16B01	<4.79	847	55.9	<0.00	<2.88	2.3	166	0.0	0.0	<0.99	7.1	799754	863197	890770	
BBH16B02	<5.29	738	74.0	<0.214	<3.42	1.3	153	0.0	<0.00	<1.07	8.3	833417	882089	890770	
BBH16B03	<0.00	765	63.2	<0.00	<3.29	3.0	176	<0.00	<0.147	<1.09	8.1	813379	890718	890770	2
BBH16B04	<0.00	791	78.9	<0.198	<2.72	6.3	137	0.1	0.1	<1.01	7.2	847382	927315	890770	

BBH16B05	<7.22	866	65.3	<0.00	<3.54	1.4	194	<0.00	<0.00	<1.00	8.3	844016	923043	890770
BBH16B06	2.4	736	55.2	<0.145	<2.69	1.7	184	<0.00	<0.00	<0.96	8.1	830172	851714	890770
BBH16B07	1.0	708	44.0	<0.134	<2.96	<0.74	175	<0.00	<0.00	<0.92	8.5	812706	859141	890770
BBH16B08	<0.00	828	95.8	0.0	<2.50	2.7	177	<0.00	<0.00	<0.93	7.9	807497	866422	890770
BBH16B09	<5.30	795	98.2	0.0	<3.00	3.7	194	0.0	0.0	<0.97	7.8	843904	912289	890770
BBH16B10	<5.51	807	72.3	<0.00	<3.15	5.8	174	<0.00	<0.00	<1.01	7.1	825050	865899	890770
BBH16B11	<6.27	763	74.1	<0.125	<3.25	9.1	161	<0.00	0.0	<0.83	6.9	826666	859280	890770
BBH16B12	1.2	732	59.5	<0.187	<3.28	1.3	177	<0.00	<0.00	<0.89	8.0	822558	894509	890770
BBH16B13	1.2	675	21.3	<0.183	<2.80	0.4	166	<0.00	0.2	<0.76	13.8	887437	823663	890770
BBH16B14	<7.58	719	37.0	0.1	<2.40	<0.50	206	<0.127	<0.00	<0.72	9.7	797762	833427	890770
BBH16B15	<5.37	811	29.9	<0.153	<3.02	0.4	260	<0.00	<0.139	<0.84	9.7	800281	895863	890770
BBH16B16	<6.93	789	57.3	<0.197	<3.47	<0.56	230	<0.00	0.1	<0.77	8.7	798300	852458	890770
BBH16B17	0.9	843	49.1	<0.122	<2.52	1.2	233	<0.126	<0.00	<0.68	8.9	798496	850676	890770
BBH16B18	<6.57	825	62.5	0.1	<2.95	4.6	194	0.0	0.0	<0.72	7.6	807381	868393	890770
BBH16B19	<0.00	788	43.2	<0.00	<2.55	0.6	214	0.0	0.1	<0.66	8.4	801824	831861	890770
BBH16B20	1.0	884	43.8	<0.120	<2.60	<0.49	216	<0.00	<0.109	<0.65	9.9	809856	860545	890770
BBH16B21	<0.00	1459	64.8	<0.225	<2.97	<0.00	232	0.0	<0.118	<0.65	15.9	802201	870146	890770
BBH16B22	<4.94	1043	46.6	<0.138	<2.99	0.6	224	<0.147	0.1	<0.69	11.6	810828	909105	890770
BBH16B23	0.9	877	40.4	<0.00	<2.86	<0.79	232	0.0	<0.125	<0.69	9.3	755387	816480	890770
BBH16B24	<0.00	750	36.9	<0.00	<3.70	<0.60	249	0.0	0.1	<0.68	9.2	818392	840378	890770
BBH2001	0.1	3095	97.8	<0.0164	1.0	13.3	292	<0.0215	0.0	<0.143	22.4	812726	884512	890770
BBH2002	<0.36	3192	90.7	<0.0207	1.6	11.5	340	0.0	<0.019	0.2	23.0	809993	883236	890770
BBH2003	<0.25	3062	79.1	0.0	0.9	32.7	247	<0.00	<0.0181	<0.136	29.6	814224	893775	890770
BBH2004	<0.25	2964	92.3	<0.023	1.3	13.1	266	<0.00	0.0	0.2	18.8	808079	895438	890770
BBH2005	<0.00	2945	81.1	0.0	1.2	11.3	257	0.0	<0.0190	<0.128	19.9	802936	873551	890770
BBH2006	<0.00	2761	110	<0.0257	0.9	20.3	253	<0.00	0.0	0.1	13.8	805799	904244	890770
BBH2007	<0.49	2851	130	<0.018	1.1	13.4	288	<0.0307	<0.0193	<0.132	16.5	800708	910799	890770
BBH2008	<0.00	2916	112	<0.021	1.2	9.4	280	0.0	0.0	0.1	15.4	809127	907417	890770
BBH2009	0.1	2990	106	0.0	1.7	10.5	295	0.0	0.0	0.2	19.1	828579	916799	890770
BBH2010	<0.00	2670	82.0	<0.0137	0.8	12.0	256	0.0	<0.0198	0.1	21.1	802417	906915	890770

BBH2011	<0.00	2963	101	<0.0138	1.3	8.4	304	<0.0213	<0.028	<0.119	19.3	813719	911803	890770
BBH2012	<0.32	2842	71.2	<0.0254	0.6	26.0	266	0.0	0.0	<0.119	28.8	815404	905318	890770
BBH2013	0.4	2737	94.7	<0.016	1.6	8.3	268	<0.032	0.0	0.1	19.4	822781	906256	890770
BBH2014	<0.00	2612	64.0	<0.0239	1.0	11.9	232	<0.00	<0.022	<0.123	21.6	817525	899830	890770
BBH2015	<0.38	2590	59.7	<0.024	1.0	17.8	219	<0.023	0.0	<0.122	24.5	821873	891812	890770
BBH2016	0.3	2812	54.4	<0.0170	<0.68	14.0	246	<0.0236	0.1	<0.124	23.8	848846	907763	890770
BBH2017	<0.39	2689	71.0	<0.024	0.9	16.0	216	0.0	<0.00	0.2	24.0	798492	862661	890770
BBH2018	0.1	2753	69.4	0.0	0.6	15.4	239	<0.00	0.0	0.2	25.2	818777	892689	890770
BBH2019	<0.61	2758	72.2	<0.026	1.2	7.3	281	<0.00	0.0	<0.131	19.4	820690	879606	890770
BBH2020	<0.00	2694	74.0	<0.040	0.8	13.7	227	<0.00	<0.0194	<0.110	22.5	825102	878180	890770
BBH2021	<0.54	2711	107	0.0	1.1	7.9	252	<0.0223	0.0	<0.117	15.7	819763	876004	890770
BBH2022	<0.59	2568	122	<0.017	1.2	19.0	212	0.0	0.0	0.2	14.2	823550	875738	890770
BBH2023	<0.70	2599	118	<0.017	1.4	10.1	253	0.0	0.0	0.2	16.7	828454	864744	890770
BBH2024	0.2	2902	66.5	<0.033	1.0	14.6	264	<0.0318	0.0	<0.122	26.7	832260	883810	890770
BBH2501	<0.00	537	63.1	<0.0203	<0.74	260	42.6	<0.029	0.0	<0.167	9.6	793776	906589	890770
BBH2502	<0.52	560	64.9	<0.0191	<0.64	230	96.6	0.0	<0.0257	<0.156	9.2	791360	899494	890770
BBH2503	<0.50	659	45.2	0.0	<0.61	186	46.3	0.0	<0.00	<0.160	10.4	790705	899771	890770
BBH2504	<0.00	568	70.3	<0.038	<0.72	232	44.6	<0.034	0.0	0.2	9.8	801427	916445	890770
BBH2505	<0.54	559	59.0	<0.040	<0.65	235	49.0	<0.0279	0.0	0.2	11.6	821157	910362	890770
BBH2506	<0.00	533	76.7	<0.0217	<0.69	261	51.3	<0.00	<0.00	0.2	11.0	811312	904775	890770
BBH2507	0.3	503	77.3	<0.022	<0.72	256	66.2	<0.00	0.0	0.2	10.7	822249	910676	890770
BBH2508	0.4	490	74.2	<0.036	<0.66	189	128	<0.00	0.0	<0.175	10.1	819394	914900	890770
BBH2509	0.3	486	57.2	<0.020	<0.69	180	93.4	<0.0278	0.0	0.3	9.7	834994	928254	890770
BBH2510	0.1	581	73.9	<0.0315	<0.71	220	56.9	<0.00	0.0	0.2	7.8	817877	892928	890770
BBH2511	0.1	532	69.0	<0.02	<0.71	218	57.7	<0.00	<0.00	0.3	9.5	832461	894873	890770
BBH2512	0.2	527	70.4	<0.0304	<0.61	235	41.6	<0.0292	<0.00	<0.188	10.4	837583	909947	890770
BBH28A01	<4.62	500	178	0.2	<3.01	258	203	<0.00	<0.00	0.6	4.8	795443	837263	890770
BBH28A02	2.3	725	170	<0.00	<3.51	303	190	<0.00	0.2	1.2	16.2	818028	857774	890770
BBH28A03	<0.00	600	204	0.3	<3.08	231	323	<0.00	<0.00	0.7	3.0	831168	850308	890770
BBH28A04	<5.53	729	153	0.0	<3.50	333	157	<0.00	<0.00	1.6	20.0	817033	896978	890770

BBH28A05	<5.80	746	181	0.2	<4.03	284	195	<0.00	<0.00	1.8	16.1	811413	848793	890770		
BBH28A06	<6.45	763	195	<0.249	<3.42	392	169	<0.00	<0.00	1.5	21.2	850717	909664	890770		
BBH28A07	<9.57	670	185	0.1	<3.45	264	252	<0.00	<0.131	<0.79	10.9	915109	934442	890770		
BBH28A08	<0.00	595	221	<0.17	<3.10	229	302	0.1	0.0	1.1	7.5	851656	909712	890770		
BBH28A09	<5.77	661	173	0.2	<2.61	284	310	0.0	0.0	<0.86	12.8	863164	976748	890770		
BBH28A10	<8.99	680	193	0.2	<3.01	306	180	<0.00	<0.00	<0.88	13.2	891879	901074	890770		
BBH28A11	1.2	687	238	<0.24	<3.84	332	217	0.0	<0.202	1.6	15.4	883891	955742	890770		
BBH28A12	1.5	806	213	0.0	<2.97	356	150	0.0	<0.00	1.8	20.7	903250	918724	890770		
BBH28A13	<9.10	474	192	<0.24	<2.52	238	231	<0.00	0.0	<0.85	5.1	857213	889166	890770		
BBH28A14	3.3	542	184	<0.170	<3.86	150	320	0.0	<0.00	1.1	6.3	935918	990428	890770		
BBH28A15	<0.00	689	198	0.1	<3.39	294	190	<0.00	0.0	1.6	11.2	901971	984268	890770		
BBH28A16	4.1	720	251	<0.31	3.8	259	189	<0.00	<0.13	1.0	8.6	897737	977519	890770		
BBH28A17	<0.00	742	234	<0.00	<3.20	299	142	0.0	0.0	<0.92	12.2	883407	969552	890770		
BBH28A18	<6.40	763	223	0.1	<3.32	242	213	<0.297	<0.150	1.4	9.1	894259	988796	890770		
BBH28A19	<7.93	729	154	<0.154	<3.27	345	164	<0.00	<0.132	1.7	15.4	894474	911029	890770		
BBH28A20	3.3	792	168	<0.222	<2.87	390	106	<0.00	<0.00	<0.93	19.7	870690	946900	890770		
BBH28A21	1.7	725	213	0.1	<2.65	322	105	0.0	<0.118	<0.74	20.9	836797	950023	890770		
BBH28A22	1.4	827	230	<0.31	<3.99	361	137	0.1	<0.00	1.0	18.7	852681	980904	890770		
BBH28A23	<9.49	769	230	<0.37	<6.11	378	72.1	<0.00	<0.00	2.6	23.7	813998	946903	890770		
BBH28A24	<8.31	798	192	<0.00	<3.25	370	81.9	<0.161	0.0	1.9	21.3	867331	1001274	890770		
BBH3201	0.1	3513	73.6	<0.032	0.8	31.7	293	<0.0269	0.0	0.3	14.1	824399	897435	890770	[illegible]
BBH3202	<0.00	3873	66.8	<0.0254	<0.65	28.0	317	<0.00	0.1	<0.22	14.2	818558	900361	890770	[illegible]
BBH3203	<0.91	3725	72.7	<0.0240	<0.71	37.5	316	<0.00	0.1	<0.206	13.3	819332	893140	890770	[illegible]
BBH3204	<0.00	3754	66.3	<0.036	0.9	34.9	333	<0.00	0.0	<0.196	15.5	817527	897040	890770	[illegible]
BBH3205	0.4	3767	63.2	<0.035	<0.63	29.3	321	<0.00	0.0	<0.192	14.7	828894	910243	890770	[illegible]
BBH3206	0.3	3854	73.6	<0.025	0.9	36.1	300	<0.00	0.0	0.2	15.4	817638	913978	890770	[illegible]
BBH3207	0.3	3787	63.5	<0.025	<0.76	30.8	292	<0.0292	0.0	<0.180	15.9	792009	900056	890770	[illegible]
BBH3208	<0.74	4125	30.5	<0.028	1.2	14.2	326	<0.033	0.0	<0.198	16.5	806287	895284	890770	[illegible]
BBH3209	<0.60	4007	76.3	0.0	<0.66	28.3	309	<0.00	0.1	<0.163	16.4	812231	896335	890770	[illegible]
BBH3210	<0.00	3475	64.2	0.0	<0.55	39.1	301	<0.00	0.1	<0.155	14.9	795912	871985	890770	[illegible]

BBH3211	0.3	3723	68.0	0.0	<0.73	37.4	352	<0.029	0.0	0.2	16.0	808920	882797	890770	[illegible]
BBH3212	<0.00	3692	63.9	<0.049	<0.60	26.5	304	<0.00	0.0	<0.136	16.1	811624	907512	890770	[illegible]
LANGBAN	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
SWAS5901	<0.00	937	25.2	0.1	40.0	929	2.8	0.0	0.0	<0.53	1.9	787226	932419	890770	
SWAS5902	<1.95	816	20.0	0.1	36.4	792	2.8	<0.00	<0.00	<0.62	2.0	762188	925803	890770	
SWAS5903	<1.64	908	40.1	0.1	18.8	966	2.9	<0.092	<0.060	<0.50	2.1	787287	918861	890770	
SWAS5904	<3.05	971	42.2	<0.085	19.3	1062	1.6	0.0	<0.00	<0.55	2.0	791377	903245	890770	
SWAS5905	0.4	822	40.8	<0.082	15.9	1210	<2.08	0.0	0.0	<0.51	1.9	794795	912926	890770	
SWAS5906	<0.00	745	37.2	0.2	62.1	905	3.0	<0.070	0.0	<0.53	1.8	794179	937012	890770	
SWAS5907	<0.00	576	32.6	0.6	191.18*	588	<1.68	0.0	<0.00	0.4	2.0	775402	916414	890770	
SWAS5908	<1.62	751	77.9	0.1	14.3	1123	2.0	0.0	0.0	<0.46	1.8	747809	879710	890770	
SWAS5909	<1.95	738	58.5	<0.115	12.7	918	3.4	<0.00	<0.085	<0.53	1.9	742656	917401	890770	
SWAS5910	0.7	783	66.5	0.0	13.0	868	1.2	<0.00	<0.00	<0.51	1.9	763534	946373	890770	
SWAS5911	<1.77	687	57.3	0.1	13.5	833	<2.87	<0.058	0.0	<0.47	1.8	727401	888647	890770	
SWAS5912	<0.00	728	63.0	0.1	13.6	1002	3.3	0.0	<0.060	<0.54	1.9	760139	901920	890770	
SWAS6001	<3.53	1249	24.7	0.8	292	1271	0.7	<0.00	0.0	<0.88	6.6	825643	1090954	890770	
SWAS6002	<3.85	1073	15.9	0.6	219	1225	<0.00	<0.00	0.0	<0.93	7.0	832325	1074235	890770	
SWAS6003	1.2	1192	29.0	1.1	324	1243	<4.17	<0.228	0.0	0.9	4.6	805840	1012253	890770	
SWAS6004	<3.35	1228	37.2	0.6	320	1336	<5.53	<0.00	<0.00	<0.92	6.9	787855	1060938	890770	
SWAS6005	<3.42	1139	37.4	0.9	310	1181	<4.06	<0.150	<0.00	<0.87	5.2	751770	976148	890770	
SWAS6006	<0.00	1221	51.2	0.8	334	1164	<4.56	<0.00	<0.138	<0.92	5.2	825526	1016515	890770	
SWAS6007	<0.00	964	26.0	0.4	173	1048	<0.00	<0.00	<0.00	<0.96	11.6	825635	997633	890770	
SWAS6008	<3.53	1078	13.3	0.4	244	1129	1.0	0.0	<0.00	<0.89	5.0	768710	965112	890770	
SWAS6009	<0.00	800	16.5	0.5	149	888	<0.00	<0.00	<0.00	1.1	14.1	823113	950293	890770	
SWAS6010	<0.00	1168	25.4	1.1	328	1178	<4.92	<0.00	<0.00	<0.73	5.8	783889	1043936	890770	
SWAS6011	<3.74	1128	9.5	0.7	261	1170	1.0	0.0	<0.132	<0.94	5.2	799400	976414	890770	
SWAS6012	<3.80	1149	17.4	0.8	298	1175	<0.00	0.1	<0.133	<0.94	6.3	789609	978145	890770	
SWAS6013	<0.00	1028	15.0	0.7	244	1092	0.7	<0.00	0.0	<0.83	6.1	722990	934433	890770	
SWAS6014	<5.01	891	10.0	0.8	210	1013	<0.00	<0.00	<0.00	<0.77	7.9	749630	944033	890770	
SWAS6015	<4.03	1060	20.4	0.6	200	1108	0.8	<0.00	<0.00	0.9	7.6	759269	911542	890770	

SWAS6016	<0.00	681	20.6	0.4	74.8	751	0.9	<0.154	<0.00	<0.81	16.9	733595	1043124	890770	
SWAS6017	0.9	780	19.6	0.2	87.5	911	<0.00	0.1	<0.00	<0.75	14.5	705381	979803	890770	
SWAS6018	<0.00	1131	45.4	1.0	317	1175	<4.14	0.0	<0.150	<0.87	5.1	710893	977549	890770	
SWAS6019	<0.00	1059	78.3	0.8	302	1056	0.8	<0.00	<0.00	<0.67	3.8	703311	932987	890770	
SWAS6020	<3.55	1032	70.7	0.8	292	1084	0.7	<0.138	<0.126	<0.70	4.1	714689	906744	890770	
SWAS6021	3.0	1118	120	0.8	351	1230	<0.00	<0.00	<0.00	<0.78	3.8	744298	1002662	890770	
SWAS6022	<3.71	1065	86.3	1.0	315	1095	<5.51	<0.00	<0.00	<0.71	3.7	743245	1018155	890770	
SWAS6023	1.5	975	30.2	0.5	211	1145	0.6	0.0	<0.197	<0.72	6.2	731766	991086	890770	
SWAS6024	<5.23	605	25.1	<0.180	22.5	734	0.6	<0.00	<0.138	<0.70	17.1	787556	1047966	890770	
ELATSITE	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
ELS15701	<4.11	1158	7.6	<0.151	<2.72	<0.53	106	0.0	<0.00	<0.70	3.5	786050	960151	890770	[illegible]
ELS15702	<4.09	595	12.1	<0.149	<3.06	<0.53	140	<0.00	<0.00	<0.72	2.9	778222	956002	890770	
ELS15703	<4.14	282	16.8	0.0	<2.98	1.9	118	<0.121	<0.00	<0.67	2.8	808224	955473	890770	
ELS15704	<7.61	457	23.1	0.0	<2.74	1.4	92.5	<0.00	0.0	<0.73	2.7	779677	975124	890770	
ELS15705	1.9	233	27.5	<0.31	<4.14	32.2	128	<0.00	0.0	<0.87	2.9	809126	961702	890770	
ELS15706	1.4	221	22.2	<0.210	<3.77	12.7	159	<0.238	0.0	<0.93	2.5	761420	1044829	890770	
ELS15707	<0.00	285	21.3	<0.208	<3.91	21.9	148	<0.00	<0.207	<0.93	3.0	792455	992146	890770	
ELS15708	1.5	657	15.6	<0.20	<4.10	8.9	155	<0.161	0.1	<0.84	3.0	787392	985958	890770	
ELS15709	<5.82	297	30.2	<0.00	<3.94	5.5	70.7	<0.00	<0.144	<0.80	2.9	777342	1010786	890770	
ELS15710	<5.90	181	39.8	0.0	<3.42	2.0	45.4	<0.160	<0.146	<0.75	3.0	767302	1002701	890770	
ELS15711	1.2	281	38.0	<0.00	<3.74	1.4	85.5	0.0	<0.189	<0.71	3.0	748349	985216	890770	
ELS15712	<5.40	703	20.8	<0.00	<3.53	<0.69	110	<0.00	0.1	<0.67	3.2	727074	971445	890770	
ELS15713	<7.55	673	40.3	0.1	<2.84	7.1	129	<0.00	0.0	<0.64	3.3	775502	981100	890770	
ELS15714	<0.00	861	30.7	<0.00	<3.49	4.6	157	<0.156	0.3	<0.77	3.5	793505	959819	890770	[illegible]
ELS15715	<5.91	1148	17.7	<0.26	<3.85	7.9	228	<0.00	0.1	<0.70	3.4	795617	1050693	890770	[illegible]
ELS15716	<9.95	1452	33.9	<0.217	<4.07	10.1	189	<0.00	0.0	<0.81	3.6	775847	966454	890770	[illegible]
ELS15717	2.2	357	39.3	<0.62	<5.96	25.5	134	<0.253	0.1	<1.18	3.1	823346	1012477	890770	
ELS15718	4.1	983	23.1	<0.37	<4.98	6.9	179	<0.00	0.1	<1.02	3.0	816860	1004117	890770	[illegible]
ELS15719	1.9	1244	41.0	<0.221	<4.07	17.3	161	<0.00	0.1	<0.90	3.5	846980	995842	890770	[illegible]
ELS15720	<10.62	484	63.7	<0.39	<4.81	11.3	188	0.1	<0.00	<1.00	3.1	823702	973644	890770	

ELS15721	<8.51	881	60.2	0.0	<4.83	10.9	150	<0.213	0.2	<1.04	3.0	783468	963286	890770
ELS15722	<0.00	930	33.4	<0.33	<3.97	4.8	170	<0.00	0.0	<0.91	3.5	865034	966155	890770	[illegible]
ELS15723	<0.00	124	29.5	<0.22	<4.88	54.4	210	<0.00	<0.173	<0.93	2.9	827673	952670	890770
ELS15724	<6.71	339	18.2	<0.20	<3.68	21.7	183	<0.00	0.0	<0.86	3.0	844074	950095	890770

LEGA DEMBI	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
7011A01	0.2	154	71.8	<0.035	<1.42	103	16.9	<0.053	0.0	<0.58	1.4	916858	1043952	890770	
7011A02	<0.00	180	83.2	<0.00	<1.78	100	26.2	<0.062	<0.061	<0.66	1.4	889190	999382	890770	
7011A03	0.3	155	88.1	<0.070	<1.80	105	25.5	0.0	0.0	<0.65	1.4	865455	1008567	890770	
7011A04	<1.17	171	83.2	0.0	<1.68	91.2	26.5	0.0	0.0	<0.65	1.4	914273	1038166	890770	
7011A05	<1.77	166	89.4	<0.076	<1.76	86.2	29.4	<0.00	<0.047	<0.66	1.5	904864	1034029	890770	
7011A06	0.9	183	94.0	<0.084	<1.84	82.4	27.1	<0.00	<0.074	<0.71	1.8	944134	1102853	890770	
7011A07	<0.00	176	103	<0.059	<1.63	85.5	26.4	<0.00	<0.045	<0.61	1.5	921384	1085193	890770	
7011A08	<0.00	222	92.3	<0.047	<1.91	103	29.9	0.0	0.0	<0.68	1.8	949751	1114593	890770	
7011A09	<1.44	162	82.3	<0.051	<1.81	111	30.4	<0.00	0.1	<0.71	1.7	986393	1118569	890770	
7011A10	<0.00	190	51.6	<0.058	<2.07	106	27.1	<0.00	0.1	<0.82	1.9	1001921	1163893	890770	
7011A11	<1.14	212	91.2	0.0	<1.55	107	28.5	<0.00	0.0	<0.55	2.0	1023348	1193035	890770	
7011A12	0.3	237	107	<0.070	<1.75	117	35.6	0.0	<0.00	<0.66	1.9	1059700	1222911	890770	
7011A13	<1.99	219	112	<0.119	<1.83	104	38.6	<0.068	0.0	<0.61	2.0	1054496	1219135	890770	
7011A14	<2.83	203	112	<0.106	<2.26	99.2	34.4	<0.00	0.0	<0.70	2.0	997160	1203329	890770	
7011A15	<1.42	152	110	<0.053	<2.05	95.1	36.1	<0.00	0.1	<0.60	1.7	978247	1152578	890770	
7011A16	<2.55	227	118	0.0	<2.28	85.7	40.7	0.0	<0.077	<0.72	1.9	1025395	1177440	890770	
7011A17	<0.00	182	97.9	<0.081	<1.96	89.4	32.2	<0.073	<0.00	<0.58	1.8	978644	1165994	890770	
7011A18	<1.59	221	116	<0.101	<1.93	91.4	22.1	<0.074	<0.00	<0.57	2.1	962570	1141778	890770	
7011A19	<2.14	231	220	0.0	<1.86	98.7	34.1	0.0	0.0	<0.56	1.8	963095	1116502	890770	<0.12
7011A20	<2.24	129	88.5	<0.082	<2.08	81.5	23.3	<0.00	<0.065	<0.56	1.9	912156	1070739	890770	
7011A21	0.3	169	79.0	<0.073	<1.66	98.6	25.0	<0.00	0.1	<0.51	1.9	929272	1130318	890770	
7011A22	<2.44	193	86.8	<0.063	<2.18	102	21.6	<0.00	<0.099	0.7	1.7	925154	1093405	890770	
7011A23	0.8	188	105	<0.059	<2.03	92.0	26.5	<0.00	<0.066	<0.57	1.7	900985	1071276	890770	
7011A24	<1.23	192	95.7	<0.045	<1.60	88.1	18.6	<0.00	<0.050	<0.42	1.7	871381	1054240	890770	

BAIA DE ARIES	Mo95	Ag107	Cd111	In115	Sn118	Sb121	Te125	W182	Au197	Hg202	Tl205	Pb206	Pb207	Pb208	Bi209
BDA99-101	1.0	415	58.8	<0.259	<4.82	418	67.5	0.0	<0.00	<1.11	3.5	839507	887872	891141	
BDA99-103	<0.00	457	45.8	<0.19	<5.54	465	53.6	<0.225	<0.165	<1.13	7.7	826860	918758	891141	
BDA99-104	<11.46	414	34.9	<0.182	<4.86	463	42.7	<0.217	<0.00	<1.14	6.7	880246	924737	891141	
BDA99-105	<0.00	348	40.9	<0.201	<5.77	506	431	0.0	<0.31	<1.19	2.6	795580	880456	891141	
BDA99-106	<5.39	372	49.9	<0.17	<4.87	411	29.0	0.0	<0.00	<1.01	3.9	813005	870973	891141	
BDA99-107	<6.55	434	58.5	0.1	<6.34	431	159	0.1	<0.178	<1.17	2.4	833894	918250	891141	
BDA99-108	<9.12	400	65.7	<0.00	<5.94	375	383	<0.00	0.1	<1.16	2.6	809911	878764	891141	
BDA99-109	<5.65	474	59.9	0.0	<5.12	422	93.0	<0.00	0.2	<0.94	3.5	813205	891278	891141	
BDA99-110	<5.88	437	69.7	<0.235	<5.04	522	141	<0.204	0.0	<0.93	2.5	793249	854738	891141	
BDA99-111	<7.20	382	48.0	<0.141	<4.38	434	439	<0.00	<0.19	<0.87	2.7	804621	854738	891141	
BDA99-112	<6.49	424	61.7	<0.176	<4.35	454	14.5	<0.31	<0.168	<1.02	6.4	797424	867585	891141	
BDA99-501	<0.77	598	39.6	<0.037	<1.71	883	30.3	<0.00	<0.060	<0.31	1.6	802489	926645	890770	
BDA99-502	<1.23	315	38.6	<0.083	<1.76	353	92.4	<0.00	0.0	0.4	3.7	780534	949744	890770	
BDA99-503	0.1	337	51.3	<0.039	<1.84	379	38.6	0.0	<0.062	0.4	2.6	828054	953297	890770	
BDA99-504	<0.92	420	50.4	<0.043	<1.86	485	46.4	<0.00	<0.068	<0.36	1.9	828836	989747	890770	
BDA99-505	0.2	363	46.6	<0.060	<1.93	389	455	<0.00	0.8	0.4	1.6	826463	936477	890770	
BDA99-506	0.7	369	52.3	<0.043	<1.88	385	212	<0.00	<0.067	<0.36	1.8	821162	929838	890770	
BDA99-507	0.4	585	53.5	<0.108	<2.44	619	198	<0.00	<0.00	<0.45	2.1	843958	946175	890770	
BDA99-508	<0.00	630	43.1	<0.102	<2.51	775	289	<0.00	2.4	0.5	5.1	769406	891773	890770	
BDA99-509	0.8	826	49.1	<0.048	<1.96	983	244	<0.122	7.72*	<0.39	2.2	816798	906616	890770	
BDA99-510	0.2	331	41.7	<0.068	<2.10	323	469	0.0	<0.00	<0.39	1.5	832900	945685	890770	
BDA99-511	<1.24	304	44.9	<0.074	<2.38	276	354	<0.00	0.1	<0.41	2.1	871682	943900	890770	
BDA99-512	<2.15	547	56.3	<0.052	<2.11	526	56.8	<0.089	<0.076	<0.41	2.5	817834	913033	890770	
BDA99-513	0.3	679	47.5	0.1	<2.35	672	73.2	<0.102	0.3	<0.45	2.1	838996	921112	890770	
BDA99-514	0.6	634	56.3	0.1	<2.52	548	40.6	<0.00	0.0	<0.44	2.0	893195	928280	890770	
BDA99-515	<1.80	427	43.6	0.1	<2.68	451	35.9	<0.00	<0.092	<0.46	6.2	836762	925798	890770	
BDA99-516	0.3	514	50.3	<0.106	<2.72	546	43.6	0.0	0.1	0.6	2.5	852681	894468	890770	
BDA99-517	<0.00	577	53.2	<0.100	<2.67	575	34.5	<0.00	0.0	0.6	2.3	833669	906281	890770	

BDA99-518	<0.00	462	48.6	<0.129	<2.67	358	45.5	<0.00	<0.00	<0.48	2.6	856549	932941	890770	259.5
BDA99-519	<1.95	511	70.0	<0.073	<2.84	508	51.0	0.0	0.0	0.5	2.4	857583	910881	890770	
BDA99-520	0.3	453	52.6	0.1	<2.99	449	29.3	<0.00	<0.00	<0.50	2.7	846572	923174	890770	
BDA99-521	0.3	479	41.6	<0.064	<2.17	538	6.3	0.0	<0.085	<0.40	13.9	809546	914537	890770	
BDA99-522	<3.31	643	55.9	<0.151	<3.28	643	51.3	0.0	<0.115	<0.53	2.5	855672	904322	890770	
BDA99-523	0.7	534	45.4	<0.081	<2.90	507	32.3	<0.00	0.3	<0.49	2.3	839831	926863	890770	
BDA99-524	0.8	528	54.5	<0.087	<2.81	499	26.2	<0.128	0.0	<0.51	3.6	876027	921342	890770	
BDA99-901	<2.82	2194	39.0	0.1	<2.93	148	12.9	<0.00	0.0	<0.53	11.8	866004	933142	890770	[illegible]
BDA99-902	<3.06	1497	39.0	0.0	<2.97	199	45.9	<0.00	<0.185	<0.54	6.7	906618	973924	890770	[illegible]
BDA99-903	0.6	1295	32.5	<0.138	<3.30	232	28.0	<0.130	<0.00	<0.52	10.9	883010	934361	890770	[illegible]
BDA99-904	1.2	931	44.7	<0.197	<3.65	369	30.2	<0.00	0.1	<0.59	3.6	892762	967913	890770	
BDA99-905	0.5	605	52.8	0.1	<2.98	383	27.5	<0.00	<0.123	<0.51	2.7	832692	869094	890770	
BDA99-906	1.0	620	50.3	0.1	<3.11	462	35.1	<0.00	<0.128	<0.56	2.5	804759	853900	890770	
BDA99-907	<2.49	927	53.5	0.2	<2.72	488	40.5	0.0	<0.00	<0.42	9.1	882301	904776	890770	
BDA99-908	<2.92	750	42.2	<0.100	<2.64	781	76.7	0.0	0.1	<0.48	2.8	877555	921369	890770	
BDA99-909	<0.00	1028	43.6	<0.098	<2.93	344	103	<0.00	11.0	0.6	11.7	870611	905408	890770	
BDA99-910	0.5	943	43.1	<0.142	<3.04	300	38.2	<0.00	<0.00	<0.47	5.1	847797	921011	890770	
BDA99-911	<4.76	1760	26.6	<0.093	<2.97	251	16.5	<0.00	0.0	<0.45	38.8	838631	874731	890770	[illegible]
BDA99-912	0.5	813	61.9	<0.101	<2.78	306	59.9	<0.00	<0.162	<0.48	2.5	838351	871073	890770	
EFEMCUKURU	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
N501	<3.96	1181	30.3	0.2	<4.08	1601	<11.19	<0.00	0.0	<0.92	2.9	818386	899175	890770	
N502	<4.14	1416	33.3	0.2	<3.79	1805	3.9	0.0	<0.00	<0.95	3.0	810025	876600	890770	
N503	<4.04	831	35.5	0.3	<4.10	1007	2.4	<0.149	<0.147	<0.87	2.5	783983	833156	890770	
N504	<4.35	884	27.1	0.4	<3.75	1113	<0.00	<0.157	0.0	<0.93	2.8	830089	856511	890770	
N505	<0.00	944	23.2	0.3	<4.15	1261	1.1	0.0	<0.00	<0.94	2.6	819209	865018	890770	
N506	1.0	954	27.3	0.5	<5.14	1214	4.2	<0.00	0.0	<1.10	2.6	804089	840004	890770	
N507	<4.47	1926	26.0	0.2	<3.74	868	<6.11	<0.150	0.1	<0.89	2.8	766728	871556	890770	2781.
N508	1.4	1299	32.8	0.4	<4.12	1489	<0.00	0.0	0.0	<0.84	2.9	824724	846212	890770	
N509	<4.77	1471	26.4	0.3	<4.55	1834	2.4	<0.00	<0.00	<0.88	2.7	814992	849911	890770	
N510	1.4	1384	27.8	0.5	<4.04	1672	0.8	<0.00	<0.00	<0.82	2.6	794281	878719	890770	

N511	0.8	1267	33.7	0.4	<3.60	1609	<0.00	<0.117	0.1	<0.73	2.4	789292	843720	890770	
N512	<6.06	978	30.9	0.6	<3.71	1190	<6.34	<0.00	0.0	<0.77	2.5	837402	849643	890770	
N513	<3.79	873	23.9	0.4	<2.43	1137	<3.52	<0.00	0.0	<0.59	2.5	813684	874791	890770	
N514	0.8	809	21.6	0.5	<3.29	945	0.8	<0.00	<0.00	<0.69	2.4	785506	852097	890770	
N515	1.8	1246	14.0	0.3	<2.95	1321	<0.00	<0.00	0.0	<0.72	2.6	782022	851402	890770	
N516	1.5	1211	18.8	0.2	<2.67	679	<0.00	<0.00	0.0	<0.65	2.8	754876	842894	890770	1320.
N517	<4.12	996	30.8	0.0	<2.88	1103	1.6	<0.00	0.0	<0.60	3.0	814126	848061	890770	
N518	<0.00	774	29.2	<0.137	<2.83	1031	0.9	<0.00	0.0	<0.67	3.0	787519	902135	890770	
N519	0.8	1455	20.5	0.0	<3.31	1927	1.7	<0.00	<0.00	<0.64	3.1	776396	903517	890770	
N520	<6.55	1042	25.5	<0.136	<3.22	1335	0.9	<0.121	<0.00	<0.65	2.7	721237	851895	890770	
N521	<7.51	1474	28.1	0.0	<3.08	1979	1.2	<0.00	0.0	<0.76	3.0	758713	879382	890770	
N522	<0.00	1182	18.7	<0.26	<2.77	1562	<6.29	<0.00	0.0	<0.69	3.2	774851	937307	890770	
N523	2.0	1056	15.1	<0.19	<3.63	1462	<8.24	<0.00	<0.00	<0.88	2.7	750504	901065	890770	
N524	<0.00	1295	19.5	0.0	<3.19	1777	<0.00	<0.00	<0.00	<0.71	3.1	750663	913788	890770	
S401	<7.51	1093	13.8	<0.140	29.2	1553	<0.00	<0.00	<0.096	0.7	4.6	751179	909016	890770	
S402	<0.00	1072	12.5	0.1	25.5	1468	<0.00	<0.133	0.0	<0.66	4.3	749799	919808	890770	
S403	<0.00	484	9.1	0.1	15.6	594	1.9	<0.00	0.3	<0.71	3.4	736775	877971	890770	
S404	2.6	857	13.1	0.1	20.6	1086	<5.30	<0.00	<0.00	<0.64	4.2	742146	896878	890770	
S405	<6.03	386	8.8	0.0	11.0	501	<0.00	<0.148	0.2	<0.72	3.3	711447	875273	890770	
S406	<9.77	415	14.6	<0.18	10.8	529	<0.00	<0.00	0.2	<0.81	3.4	765701	900371	890770	
S407	<7.22	719	16.4	<0.184	19.3	954	7.4	0.0	0.1	<0.57	4.2	787116	912339	890770	
S408	<0.00	714	<8.73	<0.00	13.6	951	2.7	<0.122	<0.00	<0.57	4.3	765830	934192	890770	
S409	<0.00	502	<8.65	0.0	8.1	650	1.1	<0.00	<0.099	<0.54	3.4	764893	884083	890770	
S410	<7.59	433	13.5	<0.190	11.6	601	4.1	<0.00	<0.111	<0.59	3.4	784548	885190	890770	
S411	<5.42	400	<10.67	<0.19	8.4	502	<5.26	<0.128	0.1	<0.58	3.3	804821	924768	890770	
S412	1.2	747	20.9	0.0	9.6	951	3.1	<0.00	<0.00	<0.59	4.2	766972	864107	890770	
HERJA	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
HJ1301	<1.72	1706	14.8	<0.071	<2.32	852	56.9	<0.00	0.0	<0.55	6.6	797533	832288	890770	[illegible]
HJ1302	0.6	2964	25.1	0.0	1.9	782	97.4	<0.00	<0.00	<0.48	3.3	850577	912724	890770	[illegible]
HJ1303	<1.51	2363	16.3	<0.06	<1.98	511	70.4	<0.00	<0.00	<0.48	3.8	801785	944820	890770	[illegible]

HJ1304	<0.00	1835	21.8	0.0	2.4	2538	2.2	<0.00	<0.00	<0.45	1.7	844755	881667	890770	
HJ1305	0.7	1907	20.5	<0.062	<1.86	2673	1.9	0.0	<0.00	<0.45	1.7	852183	874572	890770	
HJ1306	<1.72	1760	21.7	<0.067	<2.18	2404	0.7	<0.00	0.0	<0.49	1.7	804919	877952	890770	
HJ1307	<1.69	1899	16.9	0.0	<2.22	1756	16.9	<0.081	<0.00	<0.47	2.2	814784	899810	890770	
HJ1308	<2.61	1014	20.0	<0.121	2.2	1344	5.5	<0.122	<0.00	<0.54	1.9	825994	882998	890770	
HJ1309	0.5	1827	19.7	0.1	2.2	2486	<2.06	<0.00	<0.068	<0.49	1.9	842378	911316	890770	
HJ1310	0.3	1392	21.4	0.0	2.6	1851	0.4	0.0	<0.00	<0.50	2.2	850450	917453	890770	
HJ1311	<2.07	1706	19.7	<0.106	2.1	2038	11.0	<0.00	<0.074	<0.52	2.0	807116	865277	890770	
HJ1312	<2.26	1698	19.8	0.0	<2.22	2348	<2.42	<0.00	<0.00	<0.53	2.0	784398	913550	890770	
HJ1313	<0.00	1963	22.7	<0.083	4.4	2339	16.1	<0.00	0.0	<0.54	2.4	832950	957742	890770	
HJ1314	<2.89	1856	25.9	<0.093	<2.30	1984	17.5	<0.00	<0.083	<0.62	2.3	812968	896005	890770	
HJ1315	<2.74	1809	20.9	0.0	2.8	2111	8.5	<0.00	<0.078	<0.61	2.3	815538	955121	890770	
HJ1316	<2.93	1598	20.5	0.1	2.6	1514	6.5	<0.00	<0.083	<0.68	2.3	829124	911321	890770	
HJ1317	<3.35	2037	17.6	<0.149	<2.71	1474	31.0	<0.112	<0.00	<0.72	2.3	826886	955080	890770	
HJ1318	<0.00	1288	23.1	0.0	<2.70	1443	11.3	<0.00	<0.00	<0.75	2.5	815433	904602	890770	
HJ1319	<3.86	2098	28.1	0.1	<2.84	2346	12.6	<0.00	<0.108	<0.78	2.7	858682	961336	890770	
HJ1320	1.5	2434	17.3	0.1	2.9	1662	26.0	<0.00	<0.142	<0.78	2.4	859176	956384	890770	[illegible]
HJ1321	<5.17	1992	19.9	<0.11	<2.29	2343	2.2	<0.00	<0.10	<0.80	2.4	808706	911008	890770	
HJ1322	<5.78	2223	27.1	0.1	<2.53	2400	0.8	0.1	<0.00	<0.90	2.2	826494	946270	890770	
HJ1323	<0.00	2529	26.0	<0.172	<2.76	2873	15.0	<0.00	<0.110	<0.86	2.5	823032	958571	890770	
HJ1324	0.8	1608	25.6	<0.125	4.9	1562	6.0	<0.129	<0.00	<0.90	2.3	834378	925653	890770	
HJ1401	<8.28	3812	16.3	<0.204	4.1	4091	<4.81	<0.00	<0.122	<0.71	5.6	789406	960157	890770	
HJ1402	1.0	3899	20.9	<0.156	<4.17	4452	<6.22	<0.00	0.1	<0.98	5.9	826077	940687	890770	
HJ1403	1.1	2764	24.0	<0.28	<4.35	2937	2.1	0.0	<0.00	<1.02	3.9	790433	948337	890770	
HJ1404	<6.21	2656	14.0	<0.31	5.3	3011	1.1	<0.00	<0.00	<0.95	3.9	834715	941442	890770	
HJ1405	<5.56	2293	16.3	<0.197	<4.25	2614	<5.11	0.1	<0.00	<0.85	3.7	824300	953071	890770	
HJ1406	<5.90	2212	14.0	<0.00	<3.79	2435	<7.52	0.0	0.0	<0.90	3.4	802357	911065	890770	
HJ1407	1.0	2174	12.7	0.0	<3.86	2276	8.9	<0.00	0.1	<0.83	3.9	834473	988444	890770	351.6
HJ1408	2.3	2363	14.2	<0.162	<3.85	2695	4.9	<0.00	0.0	<0.97	4.5	813035	971954	890770	
HJ1409	<8.76	2070	19.0	0.1	<3.84	2173	6.2	0.0	<0.152	<0.98	3.3	812993	1004995	890770	

HJ1410	1.1	3106	13.0	0.1	4.5	3431	2.6	<0.00	<0.133	<0.83	4.7	798210	928615	890770	
HJ1411	2.3	3316	17.0	0.1	<4.05	3732	<0.00	0.0	<0.252	<0.96	4.6	867478	989900	890770	
HJ1412	<8.76	3120	19.0	<0.278	<3.98	3395	<4.93	<0.00	0.0	<0.98	4.8	826406	954098	890770	<0.23
HJ1413	<6.11	3323	20.7	<0.179	<4.82	3755	<5.73	<0.259	<0.00	<1.08	5.5	868462	932193	890770	
HJ1414	<0.00	2808	12.7	<0.157	5.9	3767	<5.19	<0.00	0.0	<0.95	5.5	817813	916664	890770	
HJ1415	<0.00	2992	17.6	0.1	5.0	3434	1.1	<0.00	<0.160	<1.00	4.3	809030	910371	890770	
HJ1416	1.1	3480	12.0	<0.183	8.0	4168	<0.00	<0.187	<0.00	<1.08	5.4	840007	948017	890770	
HJ1417	<5.18	2738	15.2	<0.29	<4.32	3263	3.6	<0.00	0.0	<1.01	5.0	878408	982879	890770	
HJ1418	<0.00	2846	14.8	<0.00	<4.54	3601	1.2	0.0	0.1	<1.22	4.7	836025	909360	890770	
HJ1419	1.2	2620	18.8	<0.262	<5.04	3125	<7.29	<0.189	<0.172	<1.18	6.2	833686	915113	890770	239.9
HJ1420	<4.89	2103	21.4	<0.171	<3.90	2674	1.3	<0.175	<0.00	<1.08	3.9	801754	901229	890770	
HJ1421	2.7	2614	19.4	<0.264	<4.79	3417	<7.99	<0.191	0.0	<1.05	4.2	836563	890302	890770	
HJ1422	1.0	3528	15.0	<0.00	<5.82	4630	<0.00	<0.00	<0.00	<1.22	5.5	829508	897582	890770	<0.20
HJ1423	1.8	1769	24.4	<0.249	<4.91	2386	9.3	<0.179	0.1	<1.09	3.7	845086	911928	890770	
HJ1424	<4.64	2065	10.0	<0.31	<5.46	2701	1.5	<0.00	0.1	<1.11	3.4	846420	898013	890770	
TOROIAGA	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
EMERIC201	2.1	3080	91.3	<0.124	7.3	2299	94.9	<0.00	0.0	<0.69	3.2	843621	931072	890770	[illegible]
EMERIC202	<0.00	2928	86.7	0.1	4.2	2399	112	<0.00	0.0	<0.68	3.9	793651	889061	890770	
EMERIC203	1.0	2587	82.9	<0.148	<3.61	2497	121	0.0	0.1	0.9	4.2	832191	971875	890770	
EMERIC205	<0.00	3485	77.5	0.0	5.8	3018	125	<0.163	0.1	<0.97	5.9	832901	958032	890770	[illegible]
EMERIC206	1.2	3520	91.8	<0.24	4.4	2743	95.3	<0.00	0.1	<0.89	4.1	845282	968218	890770	[illegible]
EMERIC207	<5.67	3108	100	<0.159	4.9	2641	102	<0.149	0.1	<0.87	3.5	844375	964099	890770	
EMERIC208	1.8	3027	59.5	<0.17	5.3	2456	148	<0.00	<0.148	<0.89	4.2	844925	965619	890770	[illegible]
EMERIC209	<4.58	2703	85.4	<0.127	4.4	2242	109	<0.00	<0.114	<0.74	3.5	874158	990530	890770	
EMERIC210	4.2	3120	97.3	<0.22	<3.90	2875	80.7	<0.00	0.0	<0.85	3.1	904801	966602	890770	
EMERIC211	1.2	2669	97.3	<0.142	<3.41	2732	86.5	<0.00	0.0	<0.77	3.7	868737	999404	890770	
EMERIC212	<0.00	3259	93.3	<0.183	5.4	3090	137	<0.00	0.0	<0.70	5.5	835653	955682	890770	
EMERIC213	3.2	2589	77.3	0.0	<3.21	1975	137	<0.137	0.1	<0.87	3.8	862204	976679	890770	
EMERIC214	<5.35	3771	59.4	0.1	<3.28	2186	202	<0.145	<0.00	<0.92	5.5	841151	930202	890770	[illegible]
EMERIC215	<0.00	2945	45.4	<0.205	<3.80	1861	154	0.0	0.1	1.3	10.6	856204	1018846	890770	[illegible]

EMERIC216	1.1	2745	71.3	<0.219	6.1	2286	157	<0.134	<0.00	<0.84	3.8	830652	936589	890770
EMERIC217	1.2	2754	62.2	<0.148	3.7	2059	131	<0.00	<0.162	<0.77	3.4	860472	925761	890770
EMERIC218	<6.18	4047	54.1	<0.29	<4.87	2234	191	<0.177	<0.00	<1.09	7.8	882559	1003021	890770
EMERIC219	<5.40	3789	48.4	<0.184	6.9	2244	225	<0.00	<0.00	<0.98	6.0	851203	1001567	890770
EMERIC220	<5.19	2651	48.2	0.0	<3.47	1834	164	<0.00	<0.134	<0.97	3.5	799551	1002410	890770
EMERIC221	<5.92	3089	59.9	0.2	4.7	1949	269	<0.00	<0.00	<0.79	3.2	796589	946862	890770
EMERIC222	<4.16	2592	49.3	<0.15	4.3	2100	215	<0.00	<0.00	<0.78	3.5	775212	922030	890770
EMERIC223	<0.00	2698	53.0	<0.115	2.6	2307	199	0.0	<0.00	<0.65	4.6	777799	949466	890770
EMERIC224	<3.66	3120	34.0	0.1	3.2	2479	175	<0.00	0.0	<0.71	5.4	794308	965351	890770
T1A01	0.8	3415	61.6	<0.122	4.0	2451	135	<0.00	<0.00	<0.64	6.3	768066	908011	890770
T1A02	0.9	2977	98.7	0.3	<4.59	2214	142	<0.00	<0.177	<0.77	3.1	751673	931123	890770
T1A03	<0.00	2842	92.5	0.1	<3.49	2325	69.7	<0.136	0.0	0.7	2.7	741555	881023	890770
T1A04	2.1	2526	73.9	0.0	<3.71	1843	155	<0.151	<0.155	<0.72	2.5	758157	938831	890770
T1A05	<5.55	2478	61.2	<0.16	<4.62	1636	156	<0.00	<0.00	<0.83	2.9	798344	876406	890770
T1A06	0.9	3197	82.0	<0.193	<3.94	2126	132	<0.00	0.0	<0.69	3.0	718278	845681	890770
T1A07	<0.00	3255	89.1	0.3	<4.11	2534	104	<0.169	<0.173	<0.75	3.4	837151	941349	890770
T1A08	<4.64	3452	60.7	<0.138	5.1	1922	165	<0.00	<0.00	<0.69	3.3	789146	889855	890770
T1A09	<0.00	2259	50.0	0.0	<3.00	1267	151	<0.00	0.0	0.5	1.8	487049	553121	890770
T1A10	<4.76	2807	86.2	<0.142	<3.92	1945	158	<0.215	<0.156	<0.70	3.6	847087	940428	890770
T1A11	2.1	3917	91.2	<0.131	4.2	1828	319	0.0	<0.00	<0.66	3.1	839304	927938	890770
T1A12	<0.00	2969	58.9	0.2	<3.36	2147	179	<0.126	0.0	<0.59	4.0	823592	907737	890770
T1A13	<4.40	3528	85.1	0.2	<3.37	2197	436	<0.00	0.6	1.0	3.7	893138	949950	890770
T1A14	1.6	2489	72.1	0.1	3.5	1916	145	<0.00	<0.00	<0.67	3.0	870947	947229	890770
T1A15	<5.23	3533	62.0	<0.151	<2.97	2394	160	<0.00	<0.00	<0.61	5.4	877837	936677	890770
T1A16	0.9	3490	60.9	<0.188	3.2	2558	173	0.0	0.1	<0.67	6.5	921100	976749	890770
T1A17	2.3	3246	87.2	0.3	<3.58	2390	126	<0.00	0.0	0.7	2.7	812924	915844	890770
T1A18	<4.57	3251	62.0	<0.130	<3.02	2589	228	<0.00	0.0	<0.67	4.1	844474	946791	890770
T1A19	<5.41	3088	87.6	0.1	4.5	2320	147	<0.164	<0.158	<0.79	2.8	846104	1004126	890770
T1A20	1.0	4172	76.0	<0.159	5.1	3058	195	<0.00	<0.00	<0.80	3.9	854570	963862	890770
T1A21	<0.00	2713	72.6	<0.25	3.6	1954	203	<0.156	0.1	<0.71	3.1	842838	1006063	890770

T1A22	<8.89	3679	85.5	<0.17	<4.97	1914	303	<0.00	0.1	<0.92	3.1	772714	939426	890770	
T1A23	0.7	3242	64.2	0.1	<3.41	3046	174	0.0	<0.124	1.1	4.3	848294	961190	890770	
T1A24	<5.12	2856	81.7	<0.199	<3.77	2028	181	0.0	<0.00	<0.78	2.4	778962	903393	890770	
TOR19701	<3.70	1117	79.0	<0.122	<3.79	1140	45.1	0.0	0.0	<0.59	2.4	815806	875981	890770	
TOR19702	1.6	1179	86.2	<0.099	6.5	1170	22.7	<0.113	<0.113	<0.44	2.1	859889	915098	890770	
TOR19703	0.6	1307	73.0	0.1	6.9	1283	26.9	<0.118	<0.00	<0.49	2.0	796721	859687	890770	
TOR19704	<0.00	1339	103	<0.230	5.1	1403	14.6	<0.153	<0.00	0.8	2.2	836073	904889	890770	
TOR19705	<4.86	1345	78.4	0.1	6.6	1307	27.1	<0.127	<0.127	<0.56	2.5	788226	904578	890770	
TOR19706	<3.75	998	59.8	0.2	4.7	1038	19.9	<0.138	<0.00	<0.58	2.2	798359	906568	890770	
TOR19707	<4.68	1239	58.6	0.2	<3.81	1363	24.1	<0.00	<0.00	<0.70	2.8	768913	920773	890770	
TOR19708	<0.00	1338	51.3	<0.209	<3.33	1351	32.6	0.0	<0.00	<0.55	2.9	792840	931126	890770	
TOR19709	2.2	1095	81.0	0.2	4.9	1319	17.2	<0.00	0.0	<0.53	2.4	770634	876734	890770	
TOR19710	<5.43	1108	74.1	0.1	4.6	1333	16.4	<0.00	0.0	<0.58	2.3	741873	838947	890770	
TOR19711	0.8	1065	93.8	0.2	3.8	1292	32.7	<0.00	<0.148	<0.61	2.4	800177	931714	890770	
TOR19712	0.9	1089	95.0	<0.130	6.6	1289	11.9	0.0	<0.222	<0.65	2.4	732136	859060	890770	
KOCHBULAK	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
3001	<0.57	443	51.2	0.4	<0.61	487	46.7	<0.00	<0.028	7.0	3.0	849916	939922	890770	
3002	0.1	341	4.6	<0.027	<0.75	364	34.3	0.0	0.1	0.4	3.1	845658	943435	890770	
3004	0.2	329	6.2	<0.0261	<0.81	277	36.8	<0.026	0.1	<0.22	3.1	844834	954548	890770	
3005	0.4	378	4.3	<0.025	<0.71	299	47.4	<0.00	0.2	0.2	3.1	849183	930234	890770	
3006	<0.89	196	6.2	0.0	<0.64	158	21.7	0.0	0.2	<0.19	2.8	846447	918388	890770	
3007	<0.70	261	3.8	<0.037	<0.70	200	29.7	<0.026	0.1	<0.20	2.8	815279	896674	890770	
3008	<0.00	445	34.6	<0.024	<0.80	401	40.7	<0.0243	0.0	7.4	3.1	820280	907436	890770	
3009	<0.93	333	5.8	<0.024	<0.59	249	31.0	<0.00	0.2	<0.19	2.8	826137	913642	890770	
3010	<0.00	393	4.6	<0.00	1.0	208	26.1	<0.00	0.2	0.2	3.0	846844	883963	890770	
3011	0.5	295	5.3	<0.026	<0.81	194	28.4	0.0	0.1	<0.19	2.8	813261	904269	890770	
3012	0.6	270	5.4	<0.00	<0.95	205	31.7	<0.034	0.1	<0.24	2.8	823824	881620	890770	
3013	<1.06	280	11.7	0.0	<0.71	238	35.7	<0.00	0.0	<0.179	2.7	827581	905032	890770	
3014	0.3	188	6.7	<0.043	<0.74	149	25.8	<0.00	0.4	<0.179	2.3	787491	903692	890770	
3015	<0.00	379	6.7	<0.027	<0.74	135	26.3	<0.027	0.1	0.2	2.8	823787	894462	890770	

3016	<0.00	352	12.3	<0.055	<0.71	298	35.6	<0.00	0.0	0.9	2.8	809034	898651	890770	
3017	<0.00	502	8.6	0.0	<0.70	59.3	26.6	<0.036	0.1	0.2	2.9	812417	903203	890770	1036.9
3018	<1.19	264	9.7	<0.027	<0.82	73.3	23.8	<0.00	0.1	<0.187	2.7	823942	904282	890770	
3019	0.4	125	12.0	<0.029	<0.92	202	1.9	<0.00	0.0	0.3	2.4	810349	905162	890770	
3021	<0.71	324	6.5	0.0	<0.71	339	25.5	<0.00	0.2	0.2	2.7	823136	922737	890770	
3020	<0.76	284	4.5	<0.043	<0.67	180	27.7	0.0	0.3	<0.177	2.7	833161	916884	890770	
3022	<0.78	206	7.2	<0.036	<0.66	118	33.1	0.0	0.2	<0.172	2.5	817851	917913	890770	
3023	<0.77	476	3.6	<0.00	<0.65	257	33.1	<0.00	0.1	<0.170	2.9	822947	915752	890770	
3024	<0.82	302	120.22*	0.1	<0.64	504.64*	34.8	<0.037	0.2	6.13*	2.5	816462	927927	890770	
3801	<0.93	348	32.9	0.0	<0.80	1021	0.6	<0.00	0.4	<0.170	2.8	822509	938706	890770	
3802	0.3	159	3.7	<0.052	<0.70	152	2.0	<0.0268	0.0	<0.161	2.6	810454	920720	890770	
3803	<1.02	240	3.9	<0.035	<0.73	166	13.6	<0.00	0.4	<0.177	3.0	818337	956912	890770	
3804	<1.03	278	10.0	<0.035	<0.93	201	78.5	<0.00	0.4	0.3	2.9	823468	930330	890770	
3805	<1.30	529	34.4	<0.031	2.8	557	345.46*	<0.00	0.2	<0.161	4.6	814581	904727	890770	
3806	0.3	328	29.8	<0.073	<0.81	599	17.9	0.0	0.3	0.3	3.2	810527	923116	890770	
3807	<1.05	422	7.4	<0.049	<0.72	1572	1.2	<0.00	0.1	<0.181	2.9	812063	924973	890770	
3808	0.5	331	66.2	0.3	<0.71	1164	21.7	<0.040	0.1	0.9	3.1	807157	919381	890770	
3809	<1.08	190	9.3	0.1	<0.89	531	<0.00	<0.044	0.1	0.2	2.7	817887	922189	890770	
3810	<1.42	100	3.3	<0.046	<0.89	102	0.3	<0.00	0.0	<0.186	2.3	791688	916231	890770	
3811	<0.96	464	20.7	0.0	<0.82	955	4.6	0.0	0.1	<0.168	2.8	794728	905170	890770	
3812	<0.88	295	9.0	<0.028	<0.81	1171	3.8	0.0	0.1	0.2	3.0	810070	913512	890770	
4701	<1.10	707	247	1.2	0.9	1105	231	0.0	3.3	<0.25	5.8	781075	868354	890770	
4702	<2.04	744	250	1.3	1.2	932	126	<0.00	0.1	<0.26	5.6	779915	857577	890770	
4703	<0.00	648	142	0.3	1.2	1029	91.4	0.0	0.5	<0.25	5.9	799938	870541	890770	
4704	<0.00	776	200	0.8	1.9	1031	474	<0.045	3.9	<0.26	5.8	773277	852939	890770	
4705	0.3	622	122	0.2	2.7	1055	179	<0.00	0.7	0.3	5.2	805757	876270	890770	
4706	<1.26	692	135	0.3	1.8	1007	125	<0.00	0.5	<0.26	5.2	773899	852773	890770	
4707	1.2	487	71.1	0.1	1.3	890	63.4	<0.00	0.5	2.1	4.9	766746	861892	890770	
4708	<1.20	632	234	1.0	1.2	1029	82.0	<0.00	0.2	<0.27	5.3	762335	837915	890770	
4709	<1.09	501	122	0.1	1.6	929	69.0	<0.0301	0.4	0.8	5.0	790376	866837	890770	

4710	<1.09	584	196	1.7	2.1	1042	76.3	<0.00	0.4	<0.23	5.4	778109	869271	890770	
4711	<1.17	281	14.8	0.1	1.1	337	114	<0.046	0.6	<0.25	3.1	795406	893183	890770	
4712	<1.63	30.6	2.6	0.0	1.4	25.6	0.3	0.0	0.1	<0.26	2.4	804710	897059	890770	
4713	<1.92	768	223	1.3	3.7	1142	374	<0.0304	2.3	<0.24	5.3	822667	924371	890770	
4714	0.2	554	162	0.5	2.1	927	77.6	<0.035	0.4	<0.26	5.1	822505	928192	890770	
4715	0.4	554	68.7	0.2	3.0	787	76.1	0.0	0.1	<0.25	3.5	806257	904552	890770	
4716	<0.00	645	236	1.0	<0.75	1074	28.9	0.0	0.2	<0.25	4.7	830249	921424	890770	
4717	0.7	311	19.6	<0.050	<1.12	492	4.2	<0.041	0.1	<0.29	2.6	862184	939729	890770	
4718	<0.00	284	166	0.9	0.8	3846.06*	25.7	<0.00	0.1	<0.28	6.0	842408	928042	890770	
4719	<2.60	256	26.1	<0.059	<1.09	1573	<2.70	<0.070	0.1	<0.34	2.9	858232	945424	890770	
4720	<1.63	693	196	0.5	1.0	1080	28.8	<0.00	0.3	<0.31	5.5	883855	973111	890770	
4721	<1.99	572	144	0.1	<0.94	996	30.8	0.0	0.2	0.6	4.8	864673	947282	890770	
4722	<1.32	529	117	0.3	2.2	807	42.1	0.0	0.2	<0.24	4.8	868885	963031	890770	44.6*
4723	0.9	439	232	0.9	<0.90	1633	24.9	<0.039	0.1	<0.27	5.9	889278	1011291	890770	
4724	<1.53	240	158	0.3	<0.83	8140.35*	17.7	<0.040	0.2	<0.28	5.4	862527	963271	890770	
VORTA	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
DM301	<1.60	72.5	2.2	<0.038	<0.80	23.0	4.2	0.0	0.0	<0.24	2.2	816885	870768	890770	<0.04
DM302	0.3	266	1.3	0.0	<0.88	126	6.0	<0.00	0.1	<0.25	2.3	827535	886470	890770	
DM303	<1.39	274	40.8	<0.038	<0.93	253	5.0	0.0	0.0	<0.23	2.2	827097	881110	890770	<0.04
DM304	<0.00	314	44.4	<0.00	<0.73	319	5.0	<0.00	0.0	<0.23	2.0	823090	871796	890770	
DM305	0.5	305	34.3	0.0	<0.86	287	7.4	<0.00	0.0	<0.24	2.0	789091	864901	890770	
DM306	<0.90	315	40.9	<0.052	<0.87	301	11.9	<0.00	0.0	<0.27	2.2	852227	917751	890770	<0.05
DM307	<0.87	247	37.5	<0.029	<0.92	233	5.2	<0.00	<0.028	0.3	2.1	828410	892936	890770	<0.05
DM308	<0.79	305	35.5	<0.026	<0.86	284	7.0	<0.0301	0.1	<0.24	2.1	826323	890497	890770	<0.04
DM309	0.4	320	51.4	0.0	<0.79	328	8.7	<0.00	0.1	<0.25	2.1	817105	893897	890770	
DM310	0.5	359	34.5	<0.028	<0.80	323	5.6	<0.00	0.0	<0.24	2.2	824228	899084	890770	
DM311	0.3	314	38.8	<0.00	<0.88	262	7.9	<0.00	0.1	0.3	2.1	806765	878308	890770	<0.04
DM312	<1.20	300	23.2	<0.028	<0.69	280	3.7	<0.00	0.1	<0.25	2.2	826821	908379	890770	
DM313	<1.07	274	31.0	0.0	<0.91	208	3.5	<0.038	0.0	<0.30	2.0	823753	902736	890770	
DM314	<0.67	292	24.0	<0.031	<0.71	292	6.3	<0.024	0.1	<0.21	2.1	836537	904653	890770	<0.04

DM315	0.4	279	2.5	<0.071	<0.75	167	4.3	<0.034	0.0	<0.25	2.1	820958	899530	890770	
DM316	0.4	211	40.6	<0.042	<0.86	193	5.7	<0.00	0.1	<0.25	2.0	811219	886644	890770	<0.04
DM317	<0.88	336	40.0	<0.029	<0.78	348	7.9	<0.00	0.1	<0.24	2.0	795952	863660	890770	<0.04
DM318	0.2	279	38.9	0.0	<0.82	309	6.1	<0.00	0.1	<0.219	2.1	821246	875525	890770	<0.04
DM319	0.2	254	9.5	<0.031	<0.77	313	5.7	<0.033	0.0	<0.240	2.2	830821	886317	890770	
DM320	<0.00	342	46.2	0.0	<0.87	363	5.2	<0.00	0.1	<0.252	2.1	829286	895962	890770	
DM321	<1.01	241	18.5	<0.00	<0.86	234	3.7	<0.00	<0.029	<0.25	2.2	831035	887089	890770	
DM322	<0.74	174	6.0	0.0	<0.73	144	8.6	<0.00	0.1	<0.202	2.3	830522	888306	890770	
DM323	<0.84	268	19.6	<0.041	<0.78	256	7.6	<0.00	0.0	<0.210	2.2	824286	916236	890770	<0.04
DM324	0.1	232	36.3	<0.031	<0.82	197	4.1	<0.00	0.0	0.2	2.1	837913	880518	890770	<0.05
DMV99-2201	<6.23	61.1	11.0	<0.103	<2.43	78.9	1.7	<0.00	<0.00	<0.54	2.7	865903	946374	890770	
DMV99-2202	<3.66	115	10.7	<0.181	<2.58	104	8.7	0.0	0.0	<0.56	2.8	862211	934646	890770	
DMV99-2203	<4.57	114	11.0	<0.00	<3.35	1519	2.6	<0.00	<0.00	<0.68	2.9	907904	980605	890770	
DMV99-2204	1.7	129	5.5	<0.122	<3.04	568	15.4	0.0	<0.113	<0.64	2.6	814322	928110	890770	<0.12
DMV99-2205	<4.89	152	<4.03	<0.00	<3.60	122	16.1	0.0	<0.00	<0.69	2.9	863581	1125627	890770	
DMV99-2206	0.9	170	8.6	<0.167	<2.74	1234	5.0	<0.123	<0.155	<0.60	2.9	849225	959537	890770	<0.13
DMV99-2207	<3.54	234	5.5	<0.099	<2.71	376	18.3	<0.00	0.1	<0.49	2.8	821035	961124	890770	<0.09
DMV99-2208	<3.78	70.5	6.1	0.1	<2.70	189	<5.28	<0.00	<0.00	<0.52	2.9	889694	987308	890770	
DMV99-2209	<0.00	187	11.9	0.0	<2.16	932	7.0	0.0	0.0	<0.56	2.7	842182	934741	890770	
DMV99-2210	<4.62	59.7	0.7	<0.127	<2.31	118	11.8	<0.00	0.0	<0.43	2.6	849820	956500	890770	
DMV99-2211	<4.89	139	6.8	0.1	<2.32	552	10.4	0.0	0.0	<0.46	2.7	833339	972026	890770	<0.08
DMV99-2212	<0.00	81.3	2.6	<0.132	<3.04	0.8	2.2	<0.140	<0.00	<0.63	2.8	854003	998397	890770	<0.10
DMV99-2213	2.0	159	6.6	<0.00	<3.34	830	10.2	0.0	<0.00	<0.55	2.8	841904	990277	890770	
DMV99-2214	<6.50	326	7.9	<0.121	<2.95	129	26.7	<0.00	0.0	0.7	2.6	845966	936841	890770	
DMV99-2215	1.2	132	<6.44	0.0	<3.58	186	11.6	<0.19	0.0	<0.65	2.8	851222	974357	890770	<0.10
DMV99-2216	1.0	174	3.5	<0.176	<3.13	178	10.7	0.0	<0.00	<0.55	2.7	841698	997465	890770	<0.11
DMV99-2217	2.1	221	<6.73	0.0	<3.97	355	19.5	0.0	0.0	<0.56	2.7	804387	962237	890770	
DMV99-2218	6.3	134	0.8	<0.11	<2.80	112	19.1	<0.00	<0.083	<0.47	2.9	812954	941889	890770	
DMV99-2219	15.4	95.0	2.0	0.0	<2.42	28.6	23.0	<0.00	<0.076	<0.43	2.9	832515	980120	890770	
DMV99-2220	<6.29	58.9	6.3	<0.161	<2.77	52.2	8.4	0.0	<0.00	<0.43	2.7	837049	1018547	890770	<0.13

DMV99-2221	<0.00	74.4	3.6	<0.188	<3.48	129	13.3	0.0	0.0	<0.47	2.6	820753	994929	890770	<0.14
DMV99-2222	<4.71	121	3.6	<0.169	<2.86	69.0	23.0	<0.00	<0.00	<0.45	2.7	793066	944937	890770	<0.12
DMV99-2223	17.2	84.3	3.2	<0.100	2.3	106	22.4	<0.098	<0.065	<0.37	2.8	800774	967710	890770	
DMV99-2224	5.8	128	6.2	<0.00	<2.78	469	21.8	<0.113	0.0	<0.43	2.8	798196	1014754	890770	<0.10
SULLIVAN	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
SULLIVAN01	<0.00	935	34.7	1.6	510	1315	0.2	<0.00	0.0	<0.25	11.6	790936	976022	890770	
SULLIVAN02	<0.82	970	34.8	1.6	528	1326	<0.71	<0.0263	0.0	<0.28	11.3	810177	985508	890770	
SULLIVAN03	0.1	911	29.3	1.2	415	1212	0.3	0.0	0.0	<0.27	11.3	801398	982861	890770	
SULLIVAN04	<0.63	832	29.5	1.2	419	1180	0.2	<0.00	<0.0246	<0.30	10.8	794575	992514	890770	
SULLIVAN05	<0.88	974	35.9	1.5	492	1269	0.5	<0.027	<0.0242	<0.31	11.2	798390	976007	890770	
SULLIVAN06	<0.59	882	28.7	1.5	486	1175	0.2	<0.00	0.0	<0.30	11.4	805900	998859	890770	
SULLIVAN07	0.4	942	35.7	1.5	487	1254	<0.69	<0.0254	<0.032	<0.29	11.6	799084	983815	890770	
SULLIVAN08	<0.70	813	29.1	1.4	480	1155	0.3	<0.00	<0.0190	<0.27	11.3	798083	983155	890770	
SULLIVAN09	<0.64	968	31.8	1.6	494	1260	<0.74	<0.00	<0.00	<0.32	11.5	834591	1031840	890770	
SULLIVAN10	0.1	953	38.2	1.4	498	1279	<0.00	<0.00	0.0	<0.35	12.0	792841	1000612	890770	
SULLIVAN11	<1.00	829	26.1	1.1	374	1108	0.4	<0.00	<0.00	<0.36	12.5	779901	998923	890770	
SULLIVAN12	0.1	929	29.8	1.2	361	1194	<0.00	<0.00	<0.00	<0.39	13.2	789205	1012126	890770	
SULLIVAN13	<1.22	662	15.5	0.7	262	935	0.2	<0.00	<0.0297	<0.50	11.2	778411	980228	890770	
SULLIVAN14	0.2	659	15.6	1.1	279	884	<0.00	<0.032	0.0	<0.45	12.0	806901	1019930	890770	
SULLIVAN15	0.5	681	23.7	0.9	311	923	<0.00	<0.00	0.0	<0.42	12.2	758359	993693	890770	
SULLIVAN16	<0.78	499	17.3	0.6	255	743	0.2	<0.0297	<0.00	<0.42	9.9	771283	976677	890770	
SULLIVAN17	0.4	623	19.8	1.0	277	881	<0.00	<0.00	0.0	<0.43	13.5	791350	978523	890770	
SULLIVAN18	0.3	755	17.4	0.9	298	1065	<0.00	<0.038	0.0	0.4	13.5	811129	983567	890770	
SULLIVAN19	<0.68	716	23.8	1.0	307	974	<0.00	0.0	<0.039	<0.37	13.0	782334	970445	890770	
SULLIVAN20	<0.67	749	26.9	1.2	332	1059	0.4	<0.00	<0.0221	<0.35	13.4	783915	966282	890770	
SULLIVAN21	<0.78	772	27.2	1.4	446	1107	<0.00	0.0	0.0	<0.33	12.5	793332	962319	890770	
SULLIVAN22	0.3	740	27.4	1.5	461	1097	0.3	0.0	0.0	<0.37	11.3	798444	965600	890770	
SULLIVAN23	<0.00	795	37.5	1.6	467	1138	0.2	0.0	0.0	<0.36	11.7	770156	953550	890770	
SULLIVAN24	<0.67	736	25.3	1.5	456	1087	0.1	<0.0252	0.0	<0.35	11.8	802288	965123	890770	
ZINKGRUVAN	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**

ZN99201	<0.50	716	14.8	<0.052	3.5	731	<2.10	<0.048	0.0	<0.27	1.6	746969	1033205	890770	
ZN99202	0.3	699	13.0	<0.041	5.0	702	0.2	<0.00	<0.00	<0.25	1.6	711009	962846	890770	
ZN99203	<0.59	717	13.4	<0.038	3.9	704	<1.32	0.0	<0.053	<0.29	1.6	731317	993366	890770	
ZN99204	<0.51	754	12.6	<0.047	4.6	670	0.5	0.0	<0.00	<0.25	1.5	734498	974085	890770	
ZN99205	<0.56	724	17.8	<0.057	4.7	685	<1.18	0.0	<0.048	<0.27	1.5	722305	947102	890770	
ZN99206	<0.46	700	16.4	<0.046	4.7	659	<0.00	0.0	<0.054	<0.23	1.5	705346	973568	890770	
ZN99207	0.1	711	15.6	<0.040	4.7	697	<0.00	<0.00	<0.00	<0.23	1.6	714780	955443	890770	
ZN99208	0.1	745	15.7	<0.025	5.3	682	<0.00	<0.00	<0.043	<0.24	1.7	724734	956511	890770	
ZN99209	<0.72	731	12.5	<0.054	5.0	707	<1.28	0.0	<0.053	<0.31	1.7	708143	941220	890770	
ZN99210	<0.66	756	12.6	<0.041	4.2	664	<0.00	<0.00	<0.048	<0.29	1.7	720435	974436	890770	
ZN99211	<0.00	735	11.5	0.0	4.4	712	<1.07	<0.050	<0.045	<0.29	1.6	697352	943401	890770	
ZN99212	<1.07	771	15.5	<0.045	4.7	684	<1.19	<0.00	<0.00	<0.31	1.7	690391	911432	890770	
ZN99213	<0.00	647	18.0	<0.040	5.1	757	<0.00	0.0	0.0	<0.59	1.6	796409	932255	890770	
ZN99214	<0.44	610	13.3	<0.043	4.9	781	<1.03	<0.00	<0.00	<0.58	1.5	796551	958505	890770	
ZN99215	<0.53	619	16.3	<0.071	4.6	762	<1.18	<0.00	<0.00	<0.62	1.5	814958	963547	890770	
ZN99216	<0.00	590	10.4	<0.048	5.3	768	0.2	<0.077	<0.00	<0.64	1.7	811131	989884	890770	
ZN99217	0.2	658	15.0	<0.062	5.3	755	<0.00	<0.00	0.0	<0.63	1.8	849761	1021092	890770	
ZN99218	<1.58	596	18.2	<0.072	3.0	774	<1.56	<0.079	0.0	<0.79	1.6	828077	994403	890770	
ZN99219	<0.58	636	12.3	<0.052	4.4	708	<1.10	<0.00	0.0	<0.57	1.5	827060	1009044	890770	
ZN99220	0.1	666	14.1	<0.075	3.8	722	0.5	0.0	<0.00	<0.61	1.5	834794	1019514	890770	
ZN99221	<0.00	601	12.7	<0.063	5.0	743	0.3	<0.094	<0.089	<0.66	1.6	848206	1041567	890770	
ZN99222	<0.77	578	10.8	<0.053	4.6	750	0.3	<0.067	<0.044	<0.50	2.1	830010	1002965	890770	
ZN99223	<0.00	622	14.6	<0.060	3.1	710	<0.98	<0.00	<0.049	<0.47	1.7	818045	1022896	890770	
ZN99224	0.1	653	12.1	<0.055	4.6	779	0.4	0.0	<0.050	<0.50	1.8	825601	1052727	890770	
MT ISA	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
5984BC101	<1.39	889	8.4	0.2	6.2	1160	<5.25	<0.59	<0.44	0.4	46.4	826127	960418	940685	
5984BC102	<1.37	866	8.6	<0.137	6.8	1191	<5.41	<0.60	<0.42	<0.43	49.6	826127	1048102	1028231	
5984BC103	<0.99	693	5.9	<0.084	3.8	964	<3.70	<0.42	<0.27	<0.30	37.4	826127	801711	735415	
5984BC104	<1.19	825	5.8	<0.113	6.2	1177	<4.23	<0.47	<0.33	<0.37	44.6	826127	947876	974133	
5984BC105	<1.51	928	7.7	<0.120	6.7	1248	<4.70	<0.57	<0.39	<0.44	49.4	826127	1082613	1092180	

5984BC106	<1.19	832	7.2	<0.121	6.2	1142	<4.08	<0.50	<0.44	<0.40	45.7	826127	1076047	943642
5984BC107	<1.07	799	9.4	<0.109	5.6	1109	<4.06	<0.44	<0.38	<0.37	43.6	826127	943356	864288
5984BC108	<1.18	779	8.2	<0.117	5.8	1092	<4.37	<0.50	<0.41	<0.41	45.4	826127	1051281	1005407
5984BC109	<1.40	958	78.57*	1.2	5.5	1377	<4.75	<0.57	<0.46	0.8	51.9	826127	1121385	998895
5984BC110	<1.30	910	8.4	<0.124	5.5	1271	<3.83	<0.53	<0.47	<0.44	55.2	826127	1056977	981043
5984BC111	<1.21	907	7.9	<0.118	5.6	1214	<4.27	<0.51	<0.41	<0.42	47.8	826127	1064562	980598
5984BC112	<1.33	1056	10.1	<0.121	5.3	1454	<3.99	<0.53	<0.40	<0.43	54.2	826127	1056019	926492
5984BC201	<0.78	840	5.2	<0.085	7.1	1226	<2.83	<0.26	<0.25	<0.30	37.6	820169	910819	890770
5984BC203	0.9	797	6.9	<0.100	4.6	1190	<2.92	<0.30	<0.31	<0.32	37.6	787374	983283	890770
5984BC204	<0.93	754	6.6	<0.107	5.3	1200	<3.09	<0.25	<0.30	0.4	35.4	811444	1057382	890770
5984BC205	<0.84	838	5.5	<0.092	4.9	1262	<2.65	<0.30	<0.30	<0.30	38.6	685440	842844	890770
5984BC206	<0.91	814	5.3	<0.092	12.9	1212	<2.47	<0.30	<0.33	<0.30	35.4	812149	940802	890770
5984BC207	<0.87	810	7.7	<0.104	8.1	1174	<2.75	<0.31	<0.37	0.4	32.8	794190	964697	890770
5984BC208	<0.95	834	7.2	<0.111	4.8	1170	<3.04	<0.32	<0.37	<0.33	36.7	759185	908062	890770
5984BC209	<0.87	949	7.2	<0.093	5.8	1260	<2.40	<0.31	<0.33	<0.29	39.1	790229	974809	890770
5984BC210	<0.83	871	8.0	<0.099	4.1	1204	<2.38	<0.31	<0.38	<0.31	35.6	786852	947273	890770
5984BC211	<0.84	655	5.7	<0.095	4.7	888	<2.40	<0.32	<0.34	0.4	28.5	809789	954484	890770
5984BC212	<0.74	748	6.6	<0.083	3.9	1015	<2.28	<0.26	<0.31	<0.26	32.7	797845	944249	890770
5990C101	<3.81	1117	13.2	<0.126	3.1	1603	<0.00	<0.00	<0.00	0.6	30.4	772975	1021190	890770
5990C102	1.1	1381	15.3	<0.150	5.2	1811	<0.00	<0.00	<0.00	0.9	29.5	757280	1064991	890770
5990C103	1.8	1627	14.9	<0.092	3.0	2003	<0.00	<0.00	<0.00	<0.49	29.2	738362	966902	890770
5990C104	<3.30	1671	10.3	<0.091	4.5	1946	<0.00	<0.00	<0.00	<0.47	30.2	729755	977612	890770
5990C105	<0.00	1344	9.5	<0.077	2.7	1707	1.0	<0.00	0.0	<0.38	28.7	751559	970820	890770
5990C106	<2.98	1367	10.9	0.0	4.1	1699	<0.00	0.0	<0.00	<0.43	28.9	745257	993422	890770
5990C107	<3.29	1331	8.4	0.1	3.8	1629	<2.92	0.0	<0.092	<0.48	27.1	729775	929524	890770
5990C108	1.0	1247	13.3	<0.00	4.3	1647	1.8	<0.124	<0.00	<0.54	27.1	748269	943586	890770
5990C109	0.9	1425	5.5	<0.095	6.2	1698	0.8	<0.114	0.0	<0.48	29.2	789956	987735	890770
5990C110	<3.44	1195	9.2	0.0	4.6	1489	<3.22	<0.120	<0.00	<0.48	27.0	751076	955231	890770
5990C111	<0.00	1383	13.3	<0.125	<2.83	1756	<2.91	<0.00	<0.00	<0.47	29.7	719692	928536	890770
5990C112	<0.00	1504	10.9	<0.081	11.1	1822	0.7	<0.00	<0.00	<0.44	28.1	737844	925124	890770

5990C113	1.3	1481	6.6	<0.126	<2.73	1834	<0.00	<0.00	<0.00	<0.46	28.1	747968	945299	890770	
5990C114	<0.00	1492	11.4	<0.095	4.9	1798	<0.00	<0.00	<0.00	<0.51	28.8	758883	939595	890770	
5990C115	1.6	2261	14.7	<0.096	<2.87	2836	0.8	<0.114	<0.00	<0.50	30.2	792514	1009304	890770	
5990C116	1.3	1465	12.8	<0.166	3.9	1785	<4.09	<0.00	0.0	<0.45	27.7	769719	966361	890770	
5990C117	0.7	1610	13.5	<0.124	4.3	1981	<3.06	0.0	<0.00	<0.49	28.2	795068	955953	890770	
5990C118	<3.77	1888	11.8	0.0	5.5	2299	1.6	<0.00	<0.108	<0.59	30.5	786725	1041512	890770	
5990C119	<3.03	2038	16.4	<0.089	4.3	2560	<0.00	<0.00	<0.086	<0.47	28.8	750584	987561	890770	
5990C120	<5.11	1286	8.1	<0.123	<2.44	1635	<0.00	<0.00	0.0	<0.47	28.1	769833	949964	890770	
5990C121	<3.38	1200	11.0	<0.00	3.3	1543	<0.00	<0.00	<0.094	<0.53	28.0	763081	1016332	890770	
5990C122	<2.49	1488	7.9	<0.073	5.4	1819	<0.00	0.0	0.0	<0.40	30.7	790378	1010856	890770	
5990C123	<3.21	2355	19.0	<0.134	6.1	3032	<4.63	<0.00	<0.00	<0.49	32.1	797808	978735	890770	
5990C124	<0.00	1360	10.4	0.1	<3.02	1758	<0.00	<0.00	<0.00	<0.57	29.2	804534	1018170	890770	
KAPP MINERAL	**Mo95**	**Ag107**	**Cd111**	**In115**	**Sn118**	**Sb121**	**Te125**	**W182**	**Au197**	**Hg202**	**Tl205**	**Pb206**	**Pb207**	**Pb208**	**Bi209**
KMI2B01	<0.48	104	9.7	0.0	1.3	123	<1.86	<0.226	<0.167	<0.30	0.9	924032	949361	890770	
KMI2B02	<2.09	238	3.6	<0.191	7.9	71.4	<7.62	<0.42	<0.59	0.7	1.3	914708	981268	890770	
KMI2B03	<0.55	184	5.9	<0.046	3.7	113	<2.13	<0.168	<0.220	0.3	1.1	879568	928337	890770	
KMI2B04	<0.98	214	10.0	<0.083	<1.58	140	3.0	<0.28	<0.31	<0.28	0.9	881086	913838	890770	
KMI2B05	<0.84	172	9.7	<0.074	1.6	147	<3.04	<0.30	<0.26	<0.27	0.9	852150	909523	890770	
KMI2B06	<1.01	129	8.4	<0.075	<1.64	108	<2.99	<0.34	<0.28	<0.31	0.9	822888	902951	890770	
KMI2B07	<0.64	118	9.1	<0.063	<1.49	97.0	<2.79	<0.22	<0.234	<0.29	0.7	792743	821512	890770	
KMI2B08	<1.26	141	8.7	<0.089	<1.95	126	<3.94	<0.36	<0.34	<0.41	0.9	807630	863139	890770	
KMI2B09	<1.17	147	8.7	<0.087	<1.91	128	<5.27	<0.31	<0.30	<0.38	1.0	806855	878882	890770	
KMI2B10	<1.06	140	8.8	<0.084	<1.68	129	<3.88	<0.29	<0.28	<0.36	0.8	820086	896331	890770	
KMI2B11	<1.00	139	9.1	<0.081	<1.67	145	<3.63	<0.33	<0.32	<0.36	0.9	802107	845736	890770	
KMI2B12	<0.95	109	7.7	0.1	<1.71	123	<3.70	<0.30	<0.26	<0.38	0.8	799905	869543	890770	
KMI2B13	4.2	107	9.6	<0.287	<3.68	130	<0.00	<0.158	<0.135	<1.15	2.9	777699	908614	890770	
KMI2B14	<0.00	95.2	6.0	<0.00	<3.80	104	<0.00	0.0	<0.00	<1.22	2.7	786782	931061	890770	
KMI2B15	<8.95	129	9.8	0.1	<5.02	129	<0.00	0.1	<0.00	<1.47	3.0	751730	888618	890770	
KMI2B16	1.8	87.1	10.8	<0.233	<4.12	106	<9.50	<0.00	<0.00	<1.18	3.0	779100	875186	890770	

KMI2B17	<0.00	79.3	8.0	<0.244	<4.49	110	1.8	<0.00	<0.00	<1.31	3.0	767984	848964	890770
KMI2B18	<9.14	107	<4.93	<0.00	<3.40	147	<0.00	0.0	<0.00	<1.03	2.6	796547	922300	890770
KMI2B19	<8.43	102	<6.54	<0.264	<4.44	144	<7.44	<0.00	0.0	<1.35	3.0	775315	876623	890770
KMI2B20	3.5	86.5	13.8	0.2	<3.73	95.4	1.5	<0.00	0.1	<1.10	2.8	784154	881405	890770
KMI2B21	<0.00	95.2	<8.32	0.2	<4.33	104	<0.00	<0.177	<0.144	<1.26	3.2	824829	957716	890770
KMI2B22	<0.00	99.2	18.0	0.1	<3.52	126	<0.00	0.0	0.0	<1.27	3.1	769785	857232	890770
KMI2B23	<0.00	81.3	2.7	<0.30	<3.20	115	<5.84	<0.161	<0.00	<1.13	3.1	808107	899097	890770
KMI2B24	3.1	87.1	10.3	<0.00	<3.99	114	<6.26	0.0	<0.138	<1.17	2.8	772685	885436	890770
KMI401	0.4	230	10.1	0.0	<3.45	253	<7.39	<0.00	0.1	<0.63	1.5	784620	902220	890770
KMI402	<0.00	227	11.2	<0.160	<3.80	254	<6.47	<0.00	<0.00	<0.77	1.6	792500	909647	890770
KMI403	<2.90	184	8.4	<0.157	<4.17	201	<6.08	<0.00	<0.00	<0.82	1.6	796138	894050	890770
KMI404	1.8	172	9.6	<0.097	<3.63	175	<0.00	0.0	0.0	<0.75	1.5	803712	914442	890770
KMI405	<0.00	140	7.7	<0.104	<3.86	160	<0.00	<0.00	<0.136	<0.78	1.6	779412	870189	890770
KMI406	0.5	159	8.5	0.1	<3.54	191	<5.31	<0.00	0.0	<0.77	1.5	812392	902037	890770
KMI407	<2.75	251	10.6	0.0	<3.24	264	0.9	<0.00	<0.00	<0.72	1.5	751918	872755	890770
KMI408	<3.14	286	9.6	<0.116	<4.00	316	1.8	<0.235	0.0	1.0	1.8	827789	947081	890770
KMI409	<2.99	240	17.9	<0.110	<4.21	260	2.2	<0.00	0.0	<0.82	1.7	800117	958284	890770
KMI410	<0.00	251	11.2	0.1	<3.63	261	<0.00	<0.00	0.0	<0.87	1.8	837915	893140	890770
KMI411	0.6	261	11.2	<0.109	<3.53	258	<0.00	<0.00	0.0	<0.82	1.8	842526	926550	890770
KMI412	1.1	226	8.4	<0.102	<3.37	253	<0.00	<0.00	0.0	<0.77	1.8	838738	938360	890770
KMI413	<4.08	138	20.9	<0.208	<4.18	192	0.6	<0.226	<0.00	<0.80	1.9	710653	911663	890770
KMI414	<0.00	174	9.6	0.0	<4.90	201	0.7	<0.00	<0.00	<0.92	2.0	769142	953115	890770
KMI415	<4.54	235	8.2	<0.28	4.9	273	<0.00	<0.179	<0.161	<0.89	2.1	731068	924339	890770
KMI416	<4.20	230	12.4	0.1	<4.54	261	<0.00	<0.00	<0.00	<0.86	1.9	757779	914717	890770
KMI417	0.8	232	10.4	<0.234	<4.30	276	<0.00	<0.182	<0.224	<0.88	2.0	751180	924855	890770
KMI418	<0.00	243	12.1	0.0	<4.84	245	<4.41	<0.197	<0.00	<0.91	2.0	782011	925198	890770
KMI419	<3.80	240	11.9	<0.138	3.8	276	0.6	<0.153	<0.128	<0.79	2.0	720114	906395	890770
KMI420	<5.30	253	8.0	<0.00	<3.79	292	<3.54	0.0	<0.124	<0.76	1.9	824082	906839	890770
KMI421	<4.25	257	9.8	0.1	<4.08	280	<0.00	<0.00	<0.00	<0.92	2.1	826393	940247	890770
KMI422	<4.21	245	14.1	<0.152	<4.09	293	1.9	<0.00	<0.00	<0.90	2.0	826878	934576	890770

KMI423	<4.27	269	7.7	<0.219	<4.48	286	0.8	<0.174	<0.00	<0.90	2.2	822011	933223	890770
KMI424	<4.46	206	7.9	<0.32	<5.37	289	<0.00	<0.00	<0.00	<1.01	2.1	828329	920806	890770

* Micro inclusion inferred as being responsible for anomalous value