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Mineralogy and distribution of talc associated with Cu Mineralisation: A study of talc alteration in the Northern 3500 Orebody, Mount Isa, Queensland

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Mineralogy and distribution of talc associated with Cu Mineralisation: A study of talc alteration in the Northern 3500 Orebody, Mount Isa, Queensland

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Abstract

Copper mineralisation within the Mount Isa Mines deposit is associated with variable talc alteration. An understanding of the mineralogy and distribution of talc alteration associated with the northern 3500 orebody is important for future mining processes and could potentially be used for exploration targets around the Mount Isa area.

Mineralogical and geochemical investigations have shown one major type of talc mineralogy throughout the entire 3500 orebody. Variations in colour and texture are visible macroscopically and microscopically but there are no distinctive differences in mineralogy. The talc has minor iron (~4 wt% FeO), probably due to the moderate iron within the Mount Isa system. The same type of moderately Fe-rich talc is found within the 1100 oreobody (Waring, 1990), suggesting a similar style of talc alteration extends beyond the 3500 orebody.

The distribution of talc is reliant on the fluid pathway. The altering fluids have used selected faults within the 3500 orebody as pathways. The NSFW fault which roughly defines the eastern limit of mineralisation in the 3500 orebody is typically a strong wide shear zone with talc fill and is recognised as being a possible pathway for the fluids. Talc is dominant on the footwall of the 3500 orebody from south of 6700mN and dominant on the hangingwall, north of 6700mN. Within the siliceous core where mineralisation is at its greatest concentrations, talc is only located within faults.

Outside the siliceous core where copper mineralisation is lower, talc alteration is present within the rocks and varies in quantity.

The talc alteration has occurred after the formation of dolomite and pyrite. However, the timing of the talc alteration in relation to the copper mineralisation remains unknown.

Four methods of determining the most accurate and cost effective method for talc abundance estimates within the 3500 orebody are evaluated. The most effective method is through the calculation of stoichiometric equations from XRF assay data. These calculations can be used to create an accurate talc 3D numerical model that enables the distribution and numerical quantity of the talc to be viewed throughout the copper mine.

Introduction

Mount Isa, Northwest Queensland, hosts one of the world's largest Proterozoic disseminated copper deposits (Figure 1). Currently Mount Isa Mines has a production rate of over 6 million tonnes at 3.5% Cu.

Underground diamond drilling within the Northern 3500 orebody has identified some significant abundances of the phyllosilicate mineral talc, contained within and around the copper mineralisation. The talc is important from a geological, mining and process control perspective where high quantities of talc can create complications for all three systems. A study of the talc is essential to gather an understanding of its distribution throughout the copper system and what impacts its occurrence may have to future mining of the orebody.

In this study, diamond drillholes, numerical modelling and to a lesser extent underground mapping are used to determine the distribution of talc within the northern 3500 system. The logging of diamond drillholes provides extensive geotechnical and structural data that can be linked to the distribution of talc. Mount Isa Mines currently uses a series of solids (3D shapes) to define the distribution of talc within the 3500

orebody. The solids are generated by using visual estimates of talc presence (ie minor, moderate and strong) from geology drillhole logs. Any samples with the presence of talc were included in the talc solid. A talc 3D numerical model needs to be created which will include all recent diamond drilling, but it has been recognised that visual estimates of talc from drillhole logging may not be an accurate method of quantifying talc abundances. Therefore an accurate and economically viable method to estimate the talc needs to be determined to be able to create the numerical model of the talc. The 3D numerical model of the talc uses talc percentages to create a solid over the areas which contain talc. If the talc percentages are either highly under estimated or over estimated then this can have a major impact on the mining techniques used, the ground stability and the economic viability of mining such areas.

This study of talc alteration aims to investigate variations in talc mineralogy throughout the northern 3500 orebody, and to determine the relative timing of the talc alteration by analysing the relationship of the talc with the other minerals in the system. The talc mineralogy from the 3500 orebody is compared with that from the northern 3500 orebody to determine whether there is more than one type of talc. Northern 3500 orebody talc is compared to talc alteration in the 1100 orebody (Waring, 1990) to quantify the scale of alteration within the Mt Isa system. Finally in order to develop an accurate 3D numerical model of the talc alteration, different methods of quantifying the talc need to be tested to determine which is the most quantitatively correct and cost effective. The talc estimating methods to be compared include geochemical analysis, stoichiometric equations, mineral spectral scanning and visual estimations.

Geological Setting

Regional Geology

The Mount Isa Copper Mine lies within the Mount Isa Inlier in northwestern Queensland (Blake et al., 1990). The Mount Isa Inlier is separated into 3 tectonic divisions; the Western Fold Belt, the Kalkadoon-Leichhardt Belt and the Eastern Fold Belt (Figure 2). The Mount Isa Copper Mine lies within the Leichhardt River Fault Trough in the Western Fold Belt. The following descriptions of these sequences are

from Plumb et al., (1980); Blake (1987) and Blake et al., (1990) and can also be referred to in the time-space diagram (Figure 3).

The basement rocks (ca 1870 Ma) comprise mostly schists, gneisses and migmatites that have undergone deformation and metamorphism. The first phase of deformation of the basement rocks occurred before the Paleoproterozoic cover sequences were deposited.

Cover Sequence 1 (1880 – 1850 Ma) is composed of felsic volcanics, mostly confined to the Kalkadoon-Leichhardt Belt. A small area also outcrops in the western areas of the Leichhardt River Fault Trough (Western Fold Belt).

Cover Sequence 2 (1790 – 1760 Ma) contains sedimentary rocks (typically finer grained) and bimodal volcanics. In the Western Fold Belt the base unit is the Bottletree Formation, composed of felsic volcanics and conglomerates with basement clasts, dated at 1790 Ma (Page, 1981). This unit is overlain by the Haslingden Group, comprising the Mount Guide and Leander Quartzites, the Eastern Creek Volcanics and the Myally Subgroup. The Haslingden Group is conformably overlain by the younger Quilalar Formation (sandstone/carbonate). It is suggested by Blake et al., (1990) that the Bottletree Formation and the lower units in the Haslingden Group are part of a rift phase and the Quilalar Formation is a sag phase within this cover sequence.

Cover Sequence 3 (1680 – 1670 Ma) outcrops predominantly in the Western Fold Belt and unconformably and disconformably overlies Myally Subgroup and the Eastern Creek Volcanics (Cover Sequence 2). This cover sequence typically consists of fine-grained sedimentary rock with minor bimodal volcanics. The Carters Bore Rhyolite in the west is dated at 1680 Ma (Page, 1981) (and is thought by Blake et al., 1990) to be correlative to the Bigie Formation and Fiery Creek Volcanics in the north of the Western Fold Belt. Cover Sequence 3 is also thought to be a rift and sag phase (Blake et al., 1990).

Cover Sequence 4 begins with the Surprise Creek Formation which unconformably overlies Cover Sequence 3. The Mount Isa Group and the McNamara Group lie above the Surprise Creek Formation within the same cover sequence and have been dated at

1670 Ma (Page, 1981). The Mount Isa Group is typically a sandstone and shale rich package of sediments with some minor thin felsic tuff beds. The McNamara Group is a carbonate rich unit with stromatolites. The Carters Bore Rhyolite, Bigie Formation and Fiery Creek Volcanics have been considered as the rift phase with the Surprise Creek Formation, Mount Isa Group and McNamara Group all sediments formed from a sag phase.

In the Mount Isa region, the north-south trending Mount Isa Group outcrops as a narrow belt that ranges from one to ten kilometres wide and is about eighty kilometres long. The dip of these sediments range from 60^{o} to 80^{o} towards the west and they have an average thickness of 5000 meters (Neudert, 1983; Waring, 1990). The Mount Isa Group consists of eight formations; Warrina Park Quartzite, Moondarra Siltstone, Breakaway Shale, Native Bee Siltstone, Urquhart Shale, Spear Siltstone, Kennedy Siltstone and Magazine Shale (Neudert, 1983; Law, 1999). The Mount Isa Group hosts shales and siltstones as the major rock types, where the coarser grained sediments occur at the base of the sequence (Warrina Park Quartzite). Subdivision of the sequence to accommodate lower and upper groups is based on local unconformities existing at the contact of the Breakaway Shale and Native Bee Siltstone. There is also a clearly defined lithological change from predominantly siliceous to dolomitic rock types at this boundary as shown in Figure 4 (Neudert, 1983; Law, 1999). The Upper Mount Isa Group in the mine area is illustrated in Figure 5. Copper mineralisation at Mount Isa is hosted within the Mount Isa Group and is predominantly localised within the Urquhart Shale.

Regional Structure

The Mount Isa Group has experienced three major deformation events, as part of the Isan Orogeny (1590–1500 Ma) (O'Dea et al., 1997), as identified and described below by Wilson (1973); Winsor (1986); Bell et al., (1988); Bell (1991) and Law (1999).

The first deformation event (D_1) is represented by a north-south directed thrust system with east-west striking folds. The large scale north-south compression is represented by the Paroo Fault where the Eastern Creek Volcanics lie below the fault and the

Urquhart Shales above (Wilson, 1973; Bell et al., 1988, Bullock, 2001). During the deformational event, some east-west faults were formed.

The second event (D_2) produced the predominant north-south upright regional folds. D_2 is widespread and generated the dominant NW-SE trending faults that are present within the Urquhart Shale and in the mine area. The Urquhart Shale was tilted up during D_2 to give the bedding a steep westerly dip and the Paroo Fault (thrust plane) was pushed into its current position (Wilson, 1973; Bell et al., 1988; Bullock, 2001). Regional N-S trending folds were generated during D_2, producing the Isa Fold (Fachiney pers comm.).

The third deformation event (D_3) generated local upright folds (F_3) striking NNW-SSE. These folds developed at a low angle to the F_2 folds. In the Mount Isa mine area the Pb-Zn orebodies overlying the copper orebodies show the folding generated by D_3.

Bell et al., (1988) determined that copper mineralisation lies on the western limb of the Isa Fold (D_2 anticline) that has been truncated at depth by the Paroo Fault. The limb lies against the Paroo Fault and the Eastern Creek Volcanics sit underneath the Urquhart Shale. The eastern limb of the Isa Fold is unmineralised. It is most likely that the approximate time of copper mineralisation is 1523 Ma (Perkins et al., 1999). The Pb-Zn orebodies appear to have been folded by D_2 and D_3 and consistently overprinted by Cu related dolomite veins (Swager, 1983; Waring, 1990). It is widely accepted by Mount Isa geologists that the Cu mineralisation post dates the Pb-Zn mineralisation.

Geology of the Cu Deposit

Mine Geology

The Urquhart Shale is approximately 4000m thick at the mine (Figure 5) and is the major host for the copper mineralisation (Neudert, 1983). The metamorphic grade of the rocks in the mine is of lower greenschist facies (Neudert and Russel, 1981).

The Urquhart Shale contains a cyclic succession of carbonate rich and carbonate poor facies (Neurdert, 1983; Law 1999). The sediments within the Urquhart Shale are most

commonly silt-sized with varying proportions of ferroan dolomite, quartz, K-feldspar and mica, with minor additions of calcite, siderite, albite and chlorite. This sequence has thin interbedding of laminated to massive coarse siltstones with non-laminated mudstones/finer-grained siltstones (Neudert, 1983). The Urquhart Shale is generally quite high but variable in dolomite content (Neudert, 1983; Perkins, 1984).

Mount Isa Mines has four main copper orebodies; 1100, 1900, 3000 and 3500. The 1100 orebody began in 1960's along with the underground mining technique. Mining since then has progressed onto the 1900 orebody and northeastern lying 3000 and 3500 orebodies. The 3000 and 3500 orebodies are deep copper orebodies located from 1.2 to 2.2 kilometres below the surface. Future mining will continue north with extensions of the 3000 and 3500 orebodies from 6700mN to 7200mN. Development of the northern 3500 orebody will be challenging as there is limited knowledge of the fault structures, alteration assemblages and rock properties from a geotechnical basis.

Mine Structure

The descriptions of the mine structures related to the 3500 orebody have been obtained from Krois (2002) and through personal observations.

The 3500 orebody (5859mN – 7000mN) is intersected by seventeen major structures (Figure 6a), within two major structural trends:

1. Ten N-S striking, west dipping faults
2. Seven NNW striking, east dipping faults

Geological interpretation of these structures is based on extensive diamond drilling (@30m sections) and geological mapping (south of 6550mN). The areas north of 6550mN have not been structurally interpreted in as much detail as the areas further south due to restricted drilling and geological mapping available.

The faults impose a strong fabric to the orebody, dipping towards the west and following the same trends as those within the 3000 orebody. There is intense, extensive shearing and mineralisation forming where the faults join, particularly in the north-south orientation. The associated fault shearing generally extends for tens of metres both vertically and horizontally resulting in poor ground conditions.

In the southern section of the 3500 orebody, the north-south fault orientation is more pronounced than the NNW striking faults. A north-south shear zone originating at the Basement Contact Fault extends to the south and may form the initial ground preparation to the 3500 mineralisation.

NSFW Fault

The NSFW fault (one of the NS faults) defines the eastern limits to the mineralisation and fault structures in the 3500 orebody south of 6550mN. It has been proposed by geologists from Mount Isa Mines that the fault could be a combination of structures and mineralising events that have come together to form the eastern edge of the orebody. However further north it has been observed in both mapping and drillholes that this structure does not define the mineralisation on the footwall of the orebody. This is probably because each of the structural trends in the area has a controlling influence on the copper grade and therefore mineralisation tends to follow the faults away from the main FW zone. The NSFW fault is not as clearly defined throughout the northern 3500 orebody as the other faults identified. It tends to be seen as a shear zone with major associated talc fill rather than a large fault as observed in the southern areas of 3500 orebody.

NS striking faults

These faults generally dip west between 50^{o} and 70^{o} and flatten towards the Basement Contact Fault. They tend to strike approximately north-east in the southern area of 3500 orebody while in the north they strike north-south. It is suspected that some of these faults define large sections of the footwall structural zone in the north and are controlling structures for alteration and mineralisation. They are fairly continuous, thus defining a strong orebody fabric. The ten N-S striking faults have variable fault fills as identified with mapping and drillhole logging (rubble, dolomite, graphite, chalcopyrite and carbonaceous rubble).

NNW striking faults

The NNW striking faults are represented by confined or discrete structural zones within the 3500orebody. In the west and east they form broad structural zones up to 30m wide. In plan view they are observed to run approximately parallel to the Basement Contact Fault with an average dip between 80^{o} east and 70^{o} west. It is also suspected that some of these faults define large sections of the footwall structural zone at depth in the south of the orebody. Large structural zones can also occur when they intersect with the N-S striking faults. It has been noted by geologists at Mount Isa that the NNW striking faults are more affected by the N-S striking faults in the lower levels of the mine.

Basement Contact Zone

The Basement Contact Fault (Paroo Fault) has a general north-westerly strike and dips at 50^{o} to 60^{o} towards the northeast. It is structurally complex and its control on the mineralisation styles at Mount Isa (1100, 3000 and 3500 orebody) is still a contentious issue. The contact zone is bounded by the Upper Basement Contact (UBC) and Lower Basement Contact (LBC) as shown in Figure 6b. The contact zone typically contains slaty shales and buck quartz with the occasional graphitic mylonite within ramp areas, flexure zones and zones of varying thicknesses. The rock types below the Basement Contact Fault are referred to by mine geologists as “basement rocks” however, these do not correlate with the basement rocks as described in the regional geology of the Mount Isa Inlier. The local basement rocks in the mine are part of the Eastern Creek Volcanics (Cover Sequence 2) and are typically described as greenstones and quartzites. The Mount Isa Group lies unconformably above the Basement Contact Fault within the mine.

The Basement Contact Zone is the result of D_1 (Faichney pers. comm.) however, it is unknown if any other faults within the 3500 orebody are related to the faults generated during the three major deformation events during the Isan Orogeny.

Mine Alteration

Mount Isa Copper Orebodies have an alteration system referred to as the "silica-dolomite" (Neudert, 1983; Law, 1999). The dolomitic shale host rock has been altered to four different rock types which all represent a different level of alteration (Figure 7).

A description of these four rock types as described by Neudert (1983), Perkins (1990), and Law (1999) are as follows:

1. Recrystallised Shale
2. Irregularly Brecciated Dolomitic Shale
3. Siliceous Shale
4. Fractured Siliceous Shale

1. Recrystallised Shale

The recrystallised shales have a strongly bedded texture with often alternating bands of grey shale and light grey crystalline dolomite and recrystallised quartz. There is a gradual increase in the grain size of the dolomite and a colour change from a grey fine grained unaltered dolomitic shale to a lighter fine-medium grained recrystallised shale. Bands of silicified shale and or pyritic shale are common (Swager, 1983). In hand specimen this generally has a strongly coarse grained dolomitic bedded texture, making it easily to differentiate from both unaltered shale (located outside the silica-dolomite halo) and the siliceous shale (Figure 8a).

2. Irregularly Brecciated Dolomitic Shale

The irregularly brecciated dolomitic shale lies in the outer of the silica-dolomite zone and outside the siliceous core containing the siliceous shale and fractured siliceous shale. Waring (1990), has described this rock type as the remnants of the original dolomitic shale that has undergone further dolomitisation. It is set in a crystalline dolomite – quartz matrix with a strong dolomitic texture (Figure 8b). The quantity of quartz is highly variable and there are intense irregular dolomite veins throughout (Law, 1999).

3. Siliceous Shale

The siliceous shale (SS) is composed of interbanded granular quartz and dark carbonaceous (fine grained pyrite laminae) and siliceous shale. It is similar in colour

and composition to the fractured siliceous shale, and texturally it is dominated by a well preserved bedding (Figure 8c). It represents the complete silicification of the recrystallised shale (Hinde, 1994). Hard irregular cherty zones present within remnant bedding (composed mainly of fine grained pyrite and/or carbonaceous laminae) can also be observed within the siliceous shale but mostly adjacent to fractures, indicating formation from a more silty dolomite when silicified (Perkins, 1984).

4. Fractured Siliceous Shale

Mathias and Clark (1975) described this as brecciated siliceous shale, identical to what is now known as the fractured siliceous shale (FSS). It consists of a dark grey to black fractured siliceous shale and/or carbonaceous chert. Siliceous shale fragments have been deposited within a quartz-sulphide matrix (Figure 8d). Law (1999) describes the texture of this rock type as highly variable between a fractured chert comprising of angular clasts with chalcopyrite fractures (generally little associated movement) and a fractured chert with subangular to subrounded clasts in a sulphide matrix. Chalcopyrite, pyrite and minor pyrrhotite dominate the sulphide matrix. The core of the zoned silica-dolomite is represented by these rocks and located directly above the greenstone basement contact (Swager, 1983).

Talc Alteration

It is within the silica-dolomite that a secondary alteration phase is present, where dolomite has selectively been replaced by talc. The talc alteration occurs predominantly on the footwall of the 3500 orebody within the recrystallised dolomitic shales, pyritic shales (>5% fine grained pyrite) and in abundant patches along the hangingwall within the irregularly brecciated dolomitic shale and recrystallised dolomitic shale. The talc alteration is observed north of 6300mN where initially it only affects the footwall of the 3500 Orebody. Progression north from 6300mN sees an increase in talc intensity and spatial distribution.

The dolomite within the recrystallised shale and irregularly brecciated dolomitic shale generated by the silica-dolomite alteration is replaced by talc according to the following common talc reaction. Calcium and carbonate are removed from the dolomite during the alteration to talc, resulting in the generation of calcite:

$$3CaMg(CO_3)_2 + 4SiO_2 + H_2O \rightarrow Mg_3SiO_4O_{10}(OH)_2 + 3CaCO_3 + 3CO_2$$
dolomite *quartz* *talc* *calcite*

(Deer, Howie and Zussman, 1992)

Sample Collection and Analytical Methods

The northern 3500 orebody was sampled from various northings between 6700mN and 7200mN. The majority of the sampling was done using diamond drillhole core as rock samples from underground were not accessible. The one sample that was taken from underground was from production stope V647 (6470mN).
The Mount Isa Mines drillhole assay database (LIMS) was used for drillholes within the northern 3500 orebody. The database contains all of the X-Ray Flourescence (XRF) results from the sampling of diamond drillhole core. The XRF was carried out at the Mount Isa Mines chemical laboratories, where only major elements were analysed.

Fourteen thin and polished sections were prepared by Pontifex Pty Ltd. The samples were collected from varying localities within diamond drillholes intersecting 3500 orebody. The samples had a range of talc quantities and variable rocks types.

Two diamond drillholes; S669 ED2 (220221) and S699 (211135) at 6690mN and 6990mN respectively, were analysed using the CSIRO "Automated Mineralogical Logging of Core, Chips and Powders" as part of the AMIRA project P685. The analysis and results for this study were provided by geologists from CSIRO. The spectral scanner/mineral logger is an Operational Airborne Research Spectrometer (OARS) and was used on half diamond drillcore. It uses the principles of visible and infra-red spectral reflectance to identify different minerals and lithological units based on their molecular properties in the wavelength range from 450nm to 2500nm. In each drillhole the spectral reflectance was recorded downhole every 9mm until the end of the hole was reached. The instrument analyses the surface of the entire length of the drillhole to produce a downhole image of the mineralogy. The spectral scanning is

designed to pick up the signatures of selected minerals or elements as a measure of intensity.

Microprobe analyses were conducted using the Cameca SX51 with SAMx Analysis and Energy Dispersive X-ray detector (EDS) at Adelaide Microscopy, University of Adelaide. The 14 polished sections were carbon coated and analysed to identify the mineral chemistry of talc and dolomite. The EDS is a Lithium drifted Silicon (SiLi) detector with operating conditions at Liquid Nitrogen temperatures and a resolution of approximately 140eV.

Seven samples from each drillhole S669 ED2 (220221) and S699 ED2 (211135) were sent to the University of Ballarat where they were analysed using Qualitative X-Ray Diffraction and Quantitative X-Ray Diffraction (XRD). The qualitative XRD traces have been obtained with the Siemens D500 and D501 Diffractometers using Fe filtered CoKa radiation. The quantitative results were obtained using Siroquant ver. 2.55. The operating conditions were 40kV/30mA, 1º/min 1º/1º fixed slits and a scan rate of 0.02º/min. Each sample taken was composed of quarter core and was the same length as the original XRF samples (analysis completed by Mount Isa Mines). It is important to keep the sample lengths the same as the originals to enable a comparison between the XRD results and XRF.

Three samples were sent to the University of Ballarat where combined XRD and SEM analyses were completed. Sample 1 and sample 2 were derived from drillhole S705 ED5 and sample 3 was collected from stope V647, within the 3500 orebody. The first two samples were used to identify any difference in mineralogy between talc. Sample 1 is green talc whereas sample 2 is grey/white talc. The third sample from a stope (in production) is used to compare mineralogy with the first two samples. The samples were divided up so that 50% of each of the samples were used for XRD and the remaining 50% was used for the SEM. The SEM analysis was carried out on rock chip samples suspended within a resin to provide extra geochemical analyses.

Results

Thin Section Analysis

The talc is easily identified within the different thin sections and is found in strongly dolomitic rocks. The thin sections have only been able to identify the minerals within the system. The thin section analysis has been unable to confirm the relative timing of talc compared with mineralisation.

Thin section 200303282E (Figure 9a) shows the relative abundances of the minerals; talc, dolomite, chlorite, calcite and chalcopyrite. The talc has a moderate abundance and has a uniform texture throughout. The talc is elongated, homogeneous and shows second-order interference colours. Talc is intermingled with dolomite, calcite and chalcopyrite. Where talc has replaced dolomite, calcite forms in and around the outside of the talc, as part of the alteration process. The chalcopyrite is located within the dolomite rich areas and tends to be absent within the talc. No relationship between the talc and chalcopyrite can be determined from this thin section.

Thin section 200303392A (Figure 9b) shows a sharp interface between dolomite, calcite rich areas with areas strong in silica. The talc is moderately abundant within the dolomite rich section, however, where there is intense silicification, no talc is observed. Talc is present on the contact between the dolomite and silica but is unable to penetrate into the silica. Sulphides are present throughout the section and are distinctively more abundant in the siliceous than the dolomitic areas. The talc abundance is minor in comparison to section 200303282E but still texturally similar.

Thin section 200701B (Figure 9c) shows the talc elongated around the sulphide minerals (chalcopyrite). This indicates that talc could possibly have formed after mineralisation. In possible timing of mineral formation from oldest to youngest in this thin section may be as follows; dolomite, chalcopyrite and talc. There is also minor calcite present which is formed at the same time as the talc.

Geochemical Analyses

The microprobe results for polished section 200303282E is presented in Table 1 and the remaining results are presented in Appendix 1. The mineralogy of the talc as derived from the microprobe analyses indicates that there is only one major type of talc within the samples. The MgO ranges from 26% to 30% wt% and the FeO ranges from 3% to 6% wt%.

XRF

All of the diamond drillhole assay results used were taken from the Mount Isa Mines assay database. The assay results for diamond drillhole fan S699 are presented in Appendix 2. The results from one of these drillholes is illustrated in Table 2 where the talc, dolomite and chlorite quantities have been calculated using the stoichiometric equations.

The assay results for drillholes 211135 and 220221 are presented in Appendix 3, where the stoichiometric equations have also been applied to these drillholes.

Spectral Scanning

The mineral logger measured the intensity peaks for talc, dolomite, AlOH and index values for carbonate, Fe^{2+}, chlorite, quartz H_20, chalcopyrite and sphalerite (Appendix 4). During the scanning of the surface of the half diamond drillcore, intensity peaks were recorded representing the amount of reflectance of elements/minerals. Intensity peaks were measured every 9mm, making it difficult to compare these results with those from the XRD and XRF, which had a sample size ranging between 0.5 and 3 metres.

XRD

The minerals identified in the fourteen rock samples were talc, quartz, pyrite, clinochlore, dolomite, magnesite, chalcopyrite, pyrrhotite, muscovite and traces of orthoclase. The quantitative results for these samples are shown in Table 3. This analysis was used to primarily identify the quantity of talc and possible trends with quantities of other minerals. The results show a range of talc quantities throughout the samples from 2% to 59.5%. It is observed that when the talc quantities are relatively low (<10%), dolomite and quartz dominate the rock composition. The chalcopyrite is variable and there doesn't appear to be any correlation between talc and chalcopyrite

percentages. The magnesite trend is unique, as there appears to be no correlation between a change in the magnesite with any change in abundance of the other minerals. Minor amounts of muscovite and feldspar (orthoclase) have also been recognised. Their abundance is similar to the magnesite in the fact that they are randomly dispersed and the quantities are very low to minor with comparison to the other main mineral assemblages of talc, dolomite, chlorite, quartz, pyrite and chalcopyrite.

The combined XRD and SEM results for the three talc samples are presented in Tables 4 and 5 and Figure 10. The XRD analysis identified talc, chalcopyrite, chlorite, dolomite and pyrrhotite. The quantity of talc in the samples ranged from 32.8% to 98.3%. The talc contains a range of iron in the samples, from ~3.0% to ~4.5%, measured as a FeO wt%. The amount of FeO (Fe^{2+}) and MgO in each of the analysed areas shows the range in these elements within each sample.

Discussion

Talc mineralogy and geochemistry

In hand specimen, sample 1 and 2 had significant differences in both colour and distribution of talc. The talc in sample 1 was typically greener in colour, tended to have a softer texture with a more defined growth direction and only occurred around pyrite crystals and within small fractures/veins (Figure 11a, b). Sample 2 contained greyish white talc, with no apparent mineral growth direction and generally occurred in areas of higher talc alteration (Figure 11c, d). It was initially thought that the green colour associated with the first talc sample was due to either minor quantities of chlorite within the sample or higher concentrations of Fe. The mineralogy of the talc was analysed using XRD, SEM and microprobe analyses. The XRD and SEM results showed that there was no chlorite in either of the samples and no clear distinction between the concentrations of Fe in either of the first two samples, as both have values averaging between 3% and 6% wt% FeO. It appears that the difference in colour is not directly related to the Fe content or to the influence of chlorite within the samples. Talc can generally have a range of different colours including; white, green, brown, depending on the environment in which they have formed (MacKenzie & Guilford,

1980). Average FeO concentrations in talc are approximately 2 wt% (MacKenzie & Guilford, 1980). Talc alteration in and around the 3500 orebody has above average FeO. The rocks in the Mount Isa system (where mineralisation occurs) are generally enriched in iron due to the quantity of sulphides (pyrite, chalcopyrite, and pyrrhotite). This factor may increase the average iron content within the talc. In a study of the mineral composition of talc within the 1100 Orebody (Waring, 1990), it was determined that there were two different types of talc; a high Fe and low Fe talc. Waring refers to the low Fe talc as "common talc" which has an average FeO wt% of 2.83 and the high Fe talc is referred to as "ferroan talc" with an average of 8.44 wt% FeO. The common talc as observed by Waring was far more extensive than the ferroan talc. It has been interpreted by Waring that the presence or absence of talc within the silica-dolomite is an important factor in changes within the silica-dolomite formation conditions. Where there is a restriction in the occurrence of talc, there is a change in the reaction conditions; either a temperature change, CO_2 concentration change or a fluid that is H_2O dominant. The ferroan talc is primarily hosted in the areas where the silica-dolomite is interfingered with Pb-Zn mineralisation. However, the results obtained from the XRD and SEM of the mineralogy of talc in and around the 3500 orebody indicate that unlike the talc associated with the 1100 orebody, there is only one main type of talc. The talc associated with the 3500 orebody is very similar to the "common talc" defined by Waring. The possible reason that I was unable to detect any ferroan talc around the 3500 orebody could have been due to the absence of nearby Pb-Zn mineralisation or the lack of samples taken around the 3500 orebody.

Talc distribution

Observations from recent drilling, indicates that the talc is not structurally controlled but instead occurs as a dolomite replacement reaction. The drillholes show a fairly uniform trend in talc alteration, with the hangingwall and footwall of 3500 being the areas with the most intense alteration. The talc distribution interpreted from drilling south of 6700mN indicates that the footwall has a greater extent of alteration when compared with the hangingwall (Figure 12a).

The talc on the footwall tends to be almost stratiform as it is roughly parallel in both dip and strike with bedding. The dominant rock type in this area is recrystallised shale,

which may explain the orientation of the talc alteration due to the well developed bedding textures. The zone of talc on the footwall is generally quite narrow and elongated, and extends the entire length of the orebody from south (~6400mN) to north (7200mN). The talc distribution is restricted in width due to the rock types present on either side. On the western side, it is bounded by the siliceous core and on the eastern side it is bounded by the presence of pyritic shales. The siliceous core is dominated by silica with little to no dolomite therefore making it impossible for any talc alteration. The pyritic shales lie outside the silica-dolomite halo, indicating that it has not undergone any dolomitisation or silicification. With the absence of dolomite, no talc is able to form.

Law (1999) described the talc within the 3500 orebody as occurring mainly within the recrystallised shale. However, in the northern 3500 orebody, the dominant rock type in which talc is present changes from south to north. The talc alteration that Law observed is typical of the talc on the footwall. The talc on the hangingwall differs from that on the footwall. On the hangingwall (south of 6700mN), the talc tends to be spasmodic in distribution making it harder to constrain and has no general growth orientation. The dominant rock type in this area is irregularly brecciated dolomitic shale which has no bedding texture thus contributing to the random nature of the talc alteration. Drilling north of 6700mN, displays an increase in intensity and area of talc alteration on the hangingwall. The massive and pervasive texture of the talc on the hangingwall remains the same both south and north of 6700mN. The talc alteration north of 6700mN is generally more dominant in quantity and area on the hangingwall than the footwall of 3500 orebody (Figure 12b).
The distribution of the talc on the hangingwall, is restricted on the eastern side by the siliceous core. Therefore, the talc alteration can continue to extend towards the west and north-west (silica-dolomite rocks between the 3000 and 3500 orebodies) until it reaches a point where the composition of the fluids or the pressure/temperature are not optimum for talc alteration to occur.

The amount of magnesium present in the Urquhart Shale before the silica-dolomite alteration phase, determines the quantity of dolomite after this alteration. It is observed in figure 13a that the talc alteration is dependent on the presence of dolomite within the rocks. The trend in talc alteration tends to follow that of dolomite in the areas

outside the siliceous core (as shown in the areas with high quartz content). However, on the boundary of the siliceous core, the quantity talc alteration is at its highest (Figure 13b).

The rocks within the siliceous core have been completely silicified (no dolomite remaining). These rocks have had the greatest intensity of alteration during the silica-dolomite alteration phase. It is within these rocks that no talc alteration occurs and the copper grades are the highest (+4% Cu). But, the outer fringes of the siliceous core displays a change in the major rock types from being entirely siliceous, to a combination of silica-rich and dolomite-rich. It is in these rocks described above that the quantity of talc alteration is high and but there is also copper mineralisation present (~2% Cu). It is this area which creates the most problems for mining as the ground conditions become less stable and the talc causes dilution of the copper ore.

The paths for the fluids that have generated the talc alteration are thought to be similar to that of the copper mineralisation (Dare pers. comm.). It is possible that the talc fluids could have travelled along the Basement Contact Fault and then used selected faults within the 3500 orebody. Observations made from drillholes and mapping of the Basement Contact Fault show remnants of talc within the fault zone. The only talc present within the siliceous core is located within faults. The NSFW fault on the footwall of the orebody (Figure 6a) has strong talc fill and could also be the reason why we see so much talc along the footwall that runs parallel with the orebody. The hangingwall may have been accessed through the NNW striking faults. On the hangingwall directly outside the siliceous core, there appears to be a higher density of fracturing, allowing for an increase in the fluid flow to the area. The talc fluids have most probably travelled through these faults within the siliceous core and once the rocks become less silicified and more dolomitic then the talc is able to migrate through the fractures and replace the dolomite, causing a larger quantity of talc alteration.

Relative Timing of the talc

The relative timing of the talc within the system can be deduced by macroscopic observations from drillhole samples. It is in the areas where talc alteration is not as pervasive and does not overprint the other minerals that the relative timing can be

deduced. It is possible that there were a number of phases of fluids that have entered the system and contributed to the alteration process. In the early stages of alteration, talc tends to be located in small veins and/or fractures and around coarse grained pyrite crystals where the talc has begun to replace the dolomite. In the areas closer to the siliceous core the fracture density and abundance of coarse grained pyrite increases resulting in an increase in talc alteration. Where the talc had previously only partly replaced the dolomite, now all the dolomite has been replaced by talc. The talc forms pressure shadows around the coarse grained pyrite crystals (Figure 11a). The relationship between the talc and pyrite indicates that the talc has formed after the pyrite.

Within the Mount Isa Mines Cu mineralisation system it is widely accepted that the order of mineral deposition from oldest to youngest is as follows: pyrite, chlorite, dolomite, chlorite, and chalcopyrite. There are 3 generations of pyrite within the Urquhart Shale (Waring, 1990; Bullock, 2001). The first pyrite to form is fine-grained with a brown colour and occurred as fromboids within the shale layers. The second generation is also a fine-grained pyrite but has a brassy colour and is euhedral. This pyrite has been seen to overgrow pyrite 1. Pyrite 3 is mostly massive and shows recrystallisation textures (Waring, 1990; Bullock, 2001). Waring (1990) has indicated that there was formation of chlorite both before and after the dolomite was formed. However, in microscopic and macroscopic observations, I have been unable to distinguish the difference between the two. The macroscopic observations give no clear indication of the timing of talc compared with copper mineralisation. However, it would be reasonable to assume that they were introduced around the same time because of the relative size of the mineralisation and talc alteration. A large volume of fluids would have been needed for the mineralisation and as shown with the talc, the distribution is not restricted to the 3500 orebody but is present in the 1100 orebody, generating a wider scale alteration.
It is most likely that the talc has formed slightly after chalcopyrite as talc forms at a lower temperature than those needed for copper mineralisation (Chapman pers. comm.).

It is possible that the talc alteration could be used as an exploration target in areas around the Mount Isa Mine. The talc mineralogy shows that the area of alteration is

broader than first thought to include both the 1100 and 3500 orebodies. The talc alteration could be used to uncover copper mineralisation due to the distribution and relationship of the talc within and around the zones of mineralisation. The presence of silica-dolomite alteration is also a key component as the talc is derived from the initial presence of dolomite. The relative timing of the talc also indicates that the talc has formed at around the same time as the mineralisation.

Talc 3D numerical modelling

Mount Isa Mines process plants have currently been using a series of stoichiometric equations to estimate the percentage of talc, dolomite and chlorite in composite samples. The equations were originally derived from the mineralogy of talc within the 1100 orebody (Knights, 1975). The accuracy of these equations for talc in the 3500 orebody was unknown due to the lack of knowledge on the mineralogy of talc within the orebody.and possible differences it has with the talc in the 1100 orebody.

In the following section we evaluate the relative accuracy of four methods for estimating talc abundances in the northern 3500 orebody; quantitative XRD, visual estimates, spectral scanning, stoichiometric equation calculations from XRF data.

XRD

The results obtained from quantitative XRD are the most accurate determination of talc alteration percentage for the samples provided (Table 3), and would provide the most accurate data for the 3D modelling of talc distribution around the 3500 orebody. However, due to the cost of the XRD it is not economically viable to carry this out for every drillhole sample.

Visual Estimates

Previous geological logging of the diamond drillholes noted the abundance of talc alteration within distinct zones surrounding the siliceous mineralised core of the 3500 orebody. The talc observed within each geological sample has been grouped by mine geologists into either trace, weak, moderate and strong talc alteration but in the current project numerical quantities of talc are needed. So, it was essential to go back through the core and estimate the amount of talc using numerical ranges. The range used is as follows:

- 0-5% talc
- 5-10% talc
- 10-20% talc
- 20-40% talc
- 40-50% talc
- >50% talc

The visual talc estimations are not an accurate method of estimating quantity of talc within the drillcore. Estimation of talc can be accurate below 5 percent but talc above this threshold is greatly under estimated with respect to the quantitative XRD results, as shown in Appendix 5. These results show that talc can be visually estimated into the categories of minor, moderate and major, however, estimating relative percentages are unreliable. Therefore, visual percentages are not accurate enough to be used for talc 3D numerical modelling of the 3500 orebody at Mount Isa Mines.

Stoichiometric Calculations

This method of analysis uses routine assay data from drillcore. The calculation of talc, dolomite and chlorite percentages from the assay results is based on the conversion equations of elements to minerals. The calculations used are shown in equations 2, 3 and 4.

$$\%\ dolomite = \frac{\%CaO}{0.301} \qquad \text{equation 2}$$

$$\%\ talc = \frac{\left[\%MgO - \left(\frac{\%CaO}{30.1} \times 19.1\right) - \left(\frac{\%Al_2O_3}{28.4} \times 17.1\right)\right]}{0.266} \qquad \text{equation 3}$$

$$\%\ chlorite = \frac{\%Al_2O_3}{0.284} \qquad \text{equation 4}$$

The assays which are relevant for these calculations include; $CaO, MgO, AlOH$ *and* Al_2O_3. These calculations also have five associated assumptions as listed below:

1. Copper is only contained in chalcopyrite
2. Iron is present only as chalcopyrite and iron sulphides
3. Pyrite is the only iron sulphide
4. All CaO is in dolomite
5. All Al_2O_3 is in chlorite

The results for drillholes 211135 and 220221 gave a range of talc values from as low as less than 1% talc through to 93% talc. The accuracy of these results is quantified by comparison with those from the XRD (Appendix 3). The talc percentages obtained from the XRD showed that the talc derived from the calculations was being over estimated. The difference in values between these methods varied between 1% and 34%. The dolomite percentages from the calculations, like the talc, are generally over estimated with reference to the XRD but in a few of the samples, the dolomite has been underestimated. The same is true for the chlorite results. Potential sources of error in the stoichiometric equation calculations include the presence of the minor minerals such as magnesite, felspar and muscovite. These errors relate to the assumptions that have been applied to the stoichiometric equations. If there is muscovite and feldspar present then all of the Al_2O_3 cannot be assigned to the chlorite and if there is magnesite present then not all of the magnesium will be used in the dolomite and talc. Therefore in this case, the talc, chlorite and dolomite quantities would not be accurate. The quantity of the magnesite, feldspar and muscovite in the samples is generally so minor that no major problems will occur when it comes to estimating the quantity of talc. The assumptions assigned to the equations will therefore generate the most accurate results even with the presence of the other minerals.

Spectral Scanning

There are areas in the drillhole logs where talc has been observed along the bedding planes, however when comparing these observed talc characteristics with the results from the spectral scanning, there is negligible talc intensity recorded. This may indicate that in some cases talc is being logged where in fact it is absent or the spectral

scanner is missing patches of talc alteration. The accuracy of the spectral scanner is questionable due to analysis of only the surface of the drillcore.

The CSIRO spectral scanning was very useful in double-checking the conversion calculations by correlating the respective talc trends, ie peaks and troughs in talc alteration. But the spectral scanning is not suitable for current and future talc estimations as it does not generate quantitative results.
The results for the four different methods of talc quantification are shown in Figure 14. This shows visually the difference between the stoichiometric calculation and spectral scanning when compared with the XRD.

The most accurate method for determining the amount of talc alteration is through quantitative XRD. However, due to the costs associated with this analysis it is not the most effective short- or long term solution for the estimation of talc alteration. Therefore the stoichiometric formula is the most economically viable method to determine the quantity of talc within the northern 3500 orebody. No alterations need to be made to the equations and the assumptions that have been applied. The talc 3D model will therefore use the stoichiometric equations to estimate the talc percentage and will enable a more accurate prediction of the distribution of talc within the 3500 orebody.

Implications of talc abundance variations for mining and chemical processing

Ground stability and mining designs are strongly impacted where there is talc present. In the 3500 orebody where talc is present the ground conditions are generally of high stress, where deformation of the ground and the potential of ground failures are increased. The physical properties of the rocks within the northern 3500 orebody have not yet been tested due to a lack of mining development in these areas. But where the talc is present within the 3500 orebody, the rocks have failed extensively with deformation and buckling of the backs, floors and walls common. At this stage it is presumed that the ground support required for high talc areas is for the back and walls to be meshed and bolted and sprayed with fibrecrete (concrete with a fibrous texture to

increase strength). The stoping of the northern 3500 area when compared with that of the 3500 area will have;

- Smaller stopes spans (approx. 30m wide x 10m long x 25m high)
- Stopes retreat south from 7000mN
- Stopes retreat along strike and up dip
- No intersections with areas of high talc in the footwall and hangingwall

The amount of overbreak and the potential for ground failures will be reduced by the smaller stopes and the retreat sequence of mining.

The talc 3D model is heavily relied upon for predictions on the quantities of talc being mined. These predictions are fed through to the copper concentrator (processing plant) to allow them to be able to balance the concentrations of reagents in their floats. These reagents are critical for maximum recovery of copper from the chalcopyrite and to minimise the impact of the talc on this process.
Excess talc (>5%) causes problems for the copper concentrator as it is hydrophobic and displaces the copper in the floatation process. The talc therefore lowers the recovery of copper. To compensate for the higher talc percentages in the ore delivered to the concentrator, higher quantities of reagents per ton have to be added.

The concentrator operations are mainly interested in MgO percentage and aims to deliver 1.5% MgO to the smelter. The smelter has problems when the MgO % in the smelter feed goes above 1.5% due to excess talc. Percentages above 1.5% MgO in the feed causes slag MgO in the smelter to rise above 2.5 to 3%. As a result, the slag becomes viscous and higher in temperature. The high MgO also makes it difficult to tap the slag and reduces time between smelter rebuilds. The smelter is therefore required to run at higher temperatures, impacting on the economics of the smelter.

A reduction in the quantity of talc that is to be mined is best achieved by leaving a thin skin of ore around the outside of the Northern 3500 orebody. It is these outer fringes of ore where the copper grades are lower that there is a higher concentration of talc. The lower grade areas may contain copper grades that are economic, but when the detrimental effect of talc on mining and smelting operations is taken into account, it is

not worth extracting. The talc in these areas may cause not only ground stability problems but major issues with dilution of ore.

The Mount Isa Mines talc 3D model could be improved by eliminating the number of outstanding MgO, CaO or Al_2O_3 assay results for diamond drillholes. This will enable the formulas to estimate the talc concentration in all drillholes, therefore creating less smearing of talc across section. Less smearing will create a more accurate model of the talc in and around the 3500 orebody.

Conclusions

The Northern 3500 orebody is very important for future mining at Mount Isa. The mineralogy, distribution and relative timing of talc alteration help provide an understanding of the talc and its impact on the mining and processing.

The geochemistry of the talc as derived from XRD, XRF and microprobe indicate that there is only one major talc mineralogy. The Mount Isa system is high in iron due to the quantity of sulphides which explains why the FeO quantities were slightly higher than average in the talc. The difference in colour is probably due to slightly different environment conditions on formation. The results for the samples correlate well with the mineralogy of talc within the 1100 orebody (Waring, 1990). The talc within the 3500 orebody is very similar to the "common" talc discovered by Waring, indicating that the talc around 3500 is part of a larger alteration system.

Observations from diamond drillholes indicate that the talc has formed after dolomite and most probably around the same time as chalcopyrite. However, the exact time of the talc is still unknown. The order of mineral formation from oldest to youngest is as follows; pyrite, chlorite, dolomite, chlorite and chalcopyrite.

The northern 3500 has the talc alteration occur primarily on the footwall and hangingwall. The footwall talc is narrow and elongated in its distribution and is orientated parallel with the orebody and bedding. The hangingwall talc is massive and randomly orientated. The talc alteration in these two areas displays two major trends around the 3500 orebody:

1. South of 6700mN, the talc is more dominant on the footwall
2. North of 6700mN, the talc is more dominant on the hangingwall

The talc on the footwall is fairly consistent in its distribution throughout the entire northern 3500 orebody. On the hangingwall, the talc south of 6700mN is rather patchy and unable to be easily constrained whereas north of 6700mN the quantity of alteration has increased and is overall more pervasive and covers a larger area or rock than that on the footwall.

Talc 3D numerical modelling is essential to understand the distribution of talc with relation to the copper orebodies. The model requires a method to accurately quantify the amount of talc within the system. The XRD is the most accurate method to estimate the quantity of talc alteration, but is too expensive to be used for every drillhole sample. Visual estimates both severely under and over estimated the talc and could not give a reliable result as every geologist logging the drillholes has a different perception on the amount of talc. The spectral scanning is an apparatus that measures the wavelengths of different minerals and then determines the intensity (high, moderate, low) of each mineral. This method is not suitable for quantitatively measuring the talc because it is only a qualitative measure and it only analyses the surface of the core. The stoichiometric calculations have been the most accurate after XRD and in contrast to the XRD method, are economically viable. The calculations use the original assay results for MgO, CaO and Al_2O_3 which are applied to various equations that calculate the quantity of talc, chlorite and dolomite.

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Appendix 1

Microprobe Results for the following polished sections

Polished Section 200701B

Beam Current	20.53
Acc. Voltage	15.02
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)	
200701B	1	47.0646	17.8725	0.0571	30.3111	0.0009	0.0246	2.4765	61.2454	15.3051	0.0441	22.469	0.0005	0.0128	0.9232	0	29.6338	0.1079	64.844	0.0011	0.0345	3.186	Talc
200701B	2	47.5521	17.0605	0.1311	30.5296	0.0328	0.169	4.7205	61.2145	14.4527	0.1001	22.3877	0.0173	0.0869	1.7409	0	28.2875	0.2477	65.3116	0.0395	0.2365	6.0729	Talc
200701B	3	54.6761	0.0001	0.0098	47.9467	0.0037	0.0001	0.1446	66.6477	0.0001	0.0071	33.2927	0.0019	0.0001	0.0505	0	0.0002	0.0185	102.571	0.0045	0.0002	0.186	Quartz
200701B	4	55.9466	0.0001	0.0104	49.0883	0.0019	0.0095	0.0258	66.6605	0.0001	0.0074	33.3178	0.0009	0.0045	0.0088	0	0.0002	0.0197	105.014	0.0022	0.0132	0.0332	Quartz
200701B	5	52.0456	0.1722	0.1814	45.0676	0.0352	0.2546	1.1073	66.4083	0.1446	0.1373	32.7571	0.0184	0.1297	0.4048	0	0.2855	0.3428	96.4125	0.0424	0.3563	1.4246	Quartz
200701B	6	23.4696	10.5851	0.0316	13.6031	0.0245	0.0723	3.2954	59.8929	17.7761	0.0478	19.7747	0.0256	0.0737	2.4092	0	17.5508	0.0597	29.101	0.0295	0.1012	4.2394	Dolomite

Polished Section 211220A

Beam Current	20.5
Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)	
211220A	1	17.5664	11.6426	0.0048	0.0027	0.0321	21.1345	5.0771	49.9949	21.8054	0.008	0.0044	0.0374	24.0104	4.1395	0	19.3043	0.009	0.0058	0.0387	29.5709	6.5315	Dolomite
211220A	2	54.0903	0.0416	0.0602	47.217	0.0185	0.1976	0.4644	66.5565	0.0337	0.0439	33.0958	0.0093	0.0971	0.1637	0	0.069	0.1137	101.01	0.0223	0.2765	0.5974	Quartz
211220A	3	49.0192	2.2998	2.1403	39.2643	0.2643	0.0862	2.7237	65.2795	2.0155	1.6901	29.786	0.144	0.0458	1.0391	0	3.8133	4.0439	83.9977	0.3184	0.1206	3.5039	
211220A	4	45.4579	1.3154	17.057	23.9286	8.7997	0.1005	1.1152	61.4061	1.1693	13.6623	18.4129	4.8637	0.0542	0.4316	0	2.1811	32.2279	51.1901	10.6	0.1406	1.4347	Muscovite
211220A	5	55.0887	0.0059	0.0026	48.2788	0.0065	0.0284	0.2322	66.6318	0.0047	0.0019	33.2643	0.0032	0.0137	0.0805	0	0.0097	0.0049	103.282	0.0078	0.0397	0.2987	Quartz
211220A	6	18.3265	11.6114	0.0056	0.0001	0.0156	23.3582	4.7229	49.998	20.8464	0.009	0.0002	0.0174	25.4377	3.6913	0	19.2525	0.0105	0.0003	0.0188	32.6822	6.0759	Dolomite
211220A	7	45.5204	1.4214	17.8296	23.7664	6.7776	0.0223	0.8891	61.8459	1.2708	14.3637	18.3938	3.7677	0.0121	0.3461	0	2.3567	33.6878	50.8432	8.1641	0.0312	1.1438	Muscovite
211220A	8	53.6621	0.0001	0.0001	47.0759	0.0241	0.0026	0.08	66.6506	0.0001	0.0001	33.3072	0.0123	0.0013	0.0285	0	0.0002	0.0002	100.708	0.0291	0.0036	0.1029	Quartz
211220A	9	17.7819	13.0642	0.0048	0.0241	0.011	21.7113	1.6901	50.0182	24.1826	0.008	0.0387	0.0127	24.378	1.362	0	21.6613	0.009	0.0516	0.0133	30.3779	2.1743	Dolomite
211220A	10	41.2518	5.5588	14.8375	19.4425	5.5705	0.0543	3.7876	60.514	5.3661	12.906	16.2468	3.3435	0.0318	1.5917	0	9.2168	28.0343	41.593	6.7102	0.076	4.8727	
211220A	11	18.2263	13.0798	0.0022	0.0197	0.0047	21.8132	3.0936	50.015	23.6196	0.0035	0.0308	0.0053	23.8938	2.432	0	21.6872	0.0041	0.0422	0.0057	30.5205	3.9798	Dolomite
211220A	12	42.3153	12.2783	8.5018	20.5587	0.017	0.1718	11.0974	60.1049	11.4769	7.1605	16.6346	0.0099	0.0974	4.5157	0	20.3583	16.0636	43.981	0.0205	0.2404	14.2766	
211220A	13	17.9184	11.3048	0.0035	0.025	0.0001	21.6271	6.3335	50.0213	20.7678	0.0057	0.0398	0.0001	24.1001	5.0652	0	18.7441	0.0065	0.0535	0.0001	30.2602	8.148	Dolomite
211220A	14	37.706	10.7062	6.6457	17.9154	7.4048	0.1444	9.6568	58.2321	10.8807	6.0857	15.7609	4.6791	0.089	4.2725	0	17.7516	12.5566	38.3261	8.9197	0.2021	12.4233	Biotite
211220A	15	48.9415	1.289	13.1441	30.9247	4.8404	0.0052	0.6222	63.2643	1.0965	10.0747	22.7714	2.5601	0.0027	0.2304	0	2.1372	24.8348	66.1567	5.8306	0.0072	0.8004	

Polished Section 211226B

Beam Current	20.51
Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)	
211226B	1	47.5853	17.9342	0.0822	30.8349	0.0001	0.0231	1.9938	61.336	15.2124	0.0629	22.6406	0.0001	0.0119	0.7362	0	29.7362	0.1554	65.9647	0.0001	0.0323	2.565	Talc
211226B	2	41.3042	16.7559	8.1418	18.64	0.0073	0.0328	6.2315	59.364	15.8478	6.9385	15.2609	0.0043	0.0188	2.5657	0	27.7825	15.3833	39.8764	0.0087	0.0459	8.0167	
211226B	3	53.7479	0.0779	0.0296	46.7626	0.0074	0.0001	1.3708	66.4781	0.0634	0.0217	32.9472	0.0038	0.0001	0.4857	0	0.1292	0.056	100.038	0.0089	0.0002	1.7636	Quartz
211226B	4	46.4051	17.1138	0.0457	29.9639	0.0229	0.017	3.3278	61.2749	14.8709	0.0358	22.5382	0.0124	0.009	1.2588	0	28.3759	0.0864	64.1014	0.0276	0.0238	4.2811	Talc
211226B	5	53.9284	0.0001	0.0001	47.3151	0.0047	0.0155	0.0544	66.6565	0.0001	0.0001	33.314	0.0024	0.0077	0.0193	0	0.0002	0.0002	101.22	0.0056	0.0217	0.07	Quartz
211226B	6	46.3711	16.9343	0.015	30.0317	0.0055	0.0102	3.4694	61.3119	14.7346	0.0117	22.6194	0.003	0.0054	1.3141	0	28.0783	0.0283	64.2465	0.0066	0.0143	4.4633	Talc

211226B	7	54.8097	0.0036	0.2175	47.8752	0.0437	0.1017	0.0726	66.6039	0.0029	0.1567	33.1402	0.0217	0.0493	0.0253	0	0.006	0.4109	102.418	0.0527	0.1423	0.0933	Quartz
211226B	8	23.4094	10.5483	0.0264	7.1471	0.0001	19.0838	2.3875	54.772	16.2415	0.0366	9.5258	0.0001	17.8238	1.6003	0	17.4899	0.0498	15.2897	0.0001	26.7016	3.0714	Dolomite
211226B	9	45.3059	16.7146	0.0229	29.1982	0.0092	0.0476	3.4913	61.2454	14.8692	0.0183	22.4842	0.0051	0.0257	1.3521	0	27.7139	0.0432	62.4633	0.011	0.0666	4.4915	Talc
211226B	10	30.5291	9.7662	0.3464	19.9603	0.0091	0.0279	3.6326	61.5666	12.9607	0.4143	22.9298	0.0075	0.0224	2.0986	0	16.1931	0.6546	42.7008	0.011	0.039	4.6732	Talc
211226B	11	41.1602	16.2944	7.0752	19.374	0.0741	0.0419	7.1215	59.4786	15.4951	6.0623	15.9479	0.0438	0.0242	2.9481	0	27.0172	13.368	41.4464	0.0892	0.0586	9.1617	

Polished Section 220115A

Beam Current	20.56
Acc. Voltage	15.02
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)	
220115A	1	20.6219	5.2927	1.5863	4.9896	0.0261	4.8389	28.2974	54.3589	9.181	2.4793	7.4922	0.0282	5.0916	21.3688	0	8.7757	2.9971	10.6741	0.0315	6.7705	36.404	
220115A	2	40.4719	10.5908	8.3047	19.1469	8.2148	0.0269	9.1135	58.4387	10.0634	7.1104	15.7489	4.8533	0.0155	3.7699	0	17.5602	15.6912	40.9608	9.8954	0.0377	11.7243	Biotite
220115A	3	55.3537	0.0252	0.0001	48.5138	0.0001	0.0335	0.1831	66.6335	0.02	0.0001	33.2671	0.0001	0.0161	0.0631	0	0.0418	0.0002	103.785	0.0001	0.0469	0.2356	
220115A	4	35.5318	13.0175	9.3333	13.4243	0.0461	0.1019	11.5882	58.5764	14.1223	9.1235	12.6067	0.0311	0.0671	5.4729	0	21.5839	17.6347	28.7185	0.0556	0.1426	14.908	
220115A	5	38.3294	12.0319	11.51	14.6255	0.879	0.0297	11.5887	58.8824	12.1636	10.4845	12.7988	0.5525	0.0182	5.1001	0	19.9498	21.7472	31.2882	1.0589	0.0415	14.9087	
220115A	6	46.4354	0.2543	9.5462	30.6534	13.28	0.0001	0.4803	61.6705	0.2223	7.5176	23.1905	7.2164	0.0001	0.1827	0	0.4216	18.0368	65.5764	15.9968	0.0002	0.6179	K-feldspar
220115A	7	49.9555	3.6779	2.9568	38.0986	0.38	0.0508	4.8944	64.534	3.1266	2.2649	28.0361	0.2009	0.0262	1.8113	0	6.0981	5.5866	81.5038	0.4578	0.0711	6.2966	
220115A	8	48.0961	0.0108	10.048	31.8744	13.3913	0.0001	0.3432	61.8236	0.0091	7.6585	23.3394	7.043	0.0001	0.1264	0	0.0179	18.985	68.1885	16.1308	0.0002	0.4415	K-feldspar
220115A	9	16.6117	10.5192	0.0317	0.1463	0.0351	20.5308	4.5095	50.1291	20.8897	0.0567	0.2515	0.0433	24.7313	3.8985	0	17.4416	0.0599	0.3129	0.0422	28.7262	5.8014	
220115A	10	19.2525	13.1906	0.0004	0.0001	0.0187	23.9492	3.5181	49.9953	22.5412	0.0007	0.0002	0.0199	24.8255	2.6172	0	21.8709	0.0008	0.0003	0.0226	33.5092	4.526	
220115A	11	48.3335	2.4059	9.3857	32.0141	5.4425	0.0247	2.8126	62.9661	2.0626	7.2501	23.7576	2.901	0.0129	1.0497	0	3.9892	17.7336	68.4874	6.556	0.0346	3.6184	
220115A	12	37.9982	15.1203	11.3419	13.837	0.0233	0.1521	7.4363	58.6787	15.3656	10.3854	12.1721	0.0147	0.0937	3.2898	0	25.0705	21.4296	29.6014	0.0281	0.2128	9.5667	
220115A	13	18.5791	13.463	0.0568	0.1026	0.0001	21.8532	2.8928	50.1015	23.8914	0.0908	0.1577	0.0001	23.5237	2.2348	0	22.3227	0.1073	0.2196	0.0001	30.5764	3.7216	
220115A	14	39.9769	11.5616	11.5473	16.4663	1.2274	0.0389	10.722	59.3116	11.2881	10.1585	13.9165	0.7451	0.023	4.5572	0	19.1699	21.8178	35.2261	1.4785	0.0544	13.7936	
220115A	15	17.5769	11.8705	0.0002	0.0001	0.0047	21.1765	4.5758	49.9988	22.2207	0.0003	0.0002	0.0055	24.0457	3.7289	0	19.6821	0.0003	0.0003	0.0057	29.6297	5.8867	
220115A	16	16.757	10.4743	0.0124	0.0739	0.0001	20.8691	5.0211	50.0684	20.5952	0.022	0.1258	0.0001	24.8906	4.2979	0	17.3672	0.0235	0.1581	0.0001	29.1995	6.4595	
220115A	17	18.5707	0.0985	0.0004	0.0001	0.0109	46.1436	0.2923	49.9972	0.1744	0.0006	0.0002	0.012	49.5901	0.2255	0	0.1632	0.0007	0.0003	0.0131	64.5631	0.3761	

Polised Section 220216A

Beam Current	20.48
Acc. Voltage	15
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)	
220216A	1	18.1493	12.9066	0.0002	0.0343	0.011	22.6278	2.0312	50.0239	23.41	0.0003	0.0538	0.0124	24.8958	1.6038	0	21.4	0.0003	0.0733	0.0133	31.6603	2.6131	
220216A	2	16.6813	11.013	0.1046	0.3476	0.0001	20.4606	2.7138	50.3456	21.873	0.1872	0.5976	0.0001	24.65	2.3464	0	18.2603	0.1977	0.7436	0.0001	28.6281	3.4913	
220216A	3	46.8271	17.6694	0.0265	30.0601	0.011	0.0136	3.2152	61.1918	15.1947	0.0205	22.3764	0.0059	0.0071	1.2036	0	29.2972	0.05	64.3072	0.0133	0.019	4.1363	
220216A	4	46.6983	17.2768	0.0221	30.1998	0.0037	0.0264	3.1132	61.2937	14.9228	0.0172	22.5799	0.002	0.0138	1.1706	0	28.6462	0.0417	64.606	0.0044	0.0369	4.005	
220216A	5	31.6083	13.517	5.328	11.616	0.0122	7.8396	5.6145	57.4461	16.1664	5.7417	12.026	0.0091	5.6875	2.9233	0	22.4122	10.0668	24.85	0.0147	10.969	7.223	
220216A	6	39.6165	17.8083	11.489	14.3758	0.0001	0.1101	4.3864	58.5716	17.3263	10.0719	12.1073	0.0001	0.065	1.8579	0	29.5275	21.7076	30.754	0.0001	0.1541	5.643	
220216A	7	54.9976	0.0001	0.0069	48.2546	0.0001	0.0001	0.0543	66.6595	0.0001	0.0049	33.3165	0.0001	0.0001	0.0189	0	0.0002	0.0129	103.23	0.0001	0.0002	0.0699	
220216A	8	38.8351	16.4464	9.8696	14.7554	0.3001	0.005	8.2381	58.4864	16.2994	8.8135	12.6585	0.1849	0.003	3.5543	0	27.2692	18.6478	31.566	0.3615	0.007	10.5982	
220216A	9	41.0023	13.0525	7.4362	19.7481	8.2827	0.1224	5.4344	58.3704	12.2279	6.2771	16.0144	4.8245	0.0696	2.2163	0	21.642	14.0502	42.2467	9.9772	0.1713	6.9912	
220216A	10	16.3352	8.3228	0.0867	0.3218	0.0226	19.6309	8.9837	50.3148	16.8699	0.1584	0.5646	0.0285	24.1366	7.9272	0	13.7998	0.1639	0.6884	0.0272	27.4671	11.5573	

Polished Section 200303282A

Beam Current	21.18
Acc. Voltage	15
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)
200303282A	1	18.2649	11.066	0.0088	0.0118	0.0076	22.0474	7.5366	50.0106	19.9393	0.0142	0.0184	0.0085	24.0973	5.9117	0	18.3482	0.0166	0.0252	0.0091	30.8482	9.6957
200303282A	2	30.7499	3.5246	0.0046	21.108	0.0001	7.9378	4.2227	62.1531	4.6882	0.0055	24.3036	0.0001	6.4045	2.4451	0	5.8441	0.0086	45.156	0.0001	11.1063	5.4324
200303282A	3	56.1385	0.0039	0.0001	49.2346	0.0063	0.0017	0.145	66.6474	0.0031	0.0001	33.2963	0.0031	0.0008	0.0493	0	0.0065	0.0002	105.326	0.0076	0.0023	0.1865
200303282A	4	16.5827	9.9549	0.0137	0.0094	0.0001	20.65	6.1636	50.0142	19.7581	0.0245	0.0162	0.0001	24.8612	5.3256	0	16.5059	0.0259	0.0202	0.0001	28.893	7.9294
200303282A	5	17.1606	10.9203	0.0117	0.0039	0.0001	21.1584	5.2829	50.0083	20.9419	0.0202	0.0065	0.0001	24.6126	4.4104	0	18.1066	0.0221	0.0084	0.0001	29.6043	6.7964
200303282A	6	55.1121	0.0044	0.0158	48.3172	0.0117	0.0267	0.1225	66.6423	0.0035	0.0113	33.2818	0.0058	0.0129	0.0424	0	0.0072	0.0299	103.364	0.0141	0.0373	0.1576
200303282A	7	17.8738	12.0749	0.0084	0.0259	0.0046	21.6685	4.3292	50.0228	22.2385	0.0139	0.0413	0.0052	24.2072	3.471	0	20.021	0.0158	0.0554	0.0055	30.3181	5.5694
200303282A	8	37.5045	11.8824	11.7341	13.4818	0.0001	0.0929	13.4451	58.7381	12.2465	10.897	12.0278	0.0001	0.0581	6.0324	0	19.7018	22.1707	28.8414	0.0001	0.13	17.2968

Polished Section 200303282B

Beam Current	21.27
Acc. Voltage	15.02
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)
200303282B	1	36.3538	10.9473	10.7117	12.6301	0.0017	0.047	18.2001	58.3177	11.5566	10.1889	11.5415	0.0011	0.0301	8.3641	0	18.1514	20.239	27.0195	0.002	0.0658	23.414
200303282B	2	45.7494	15.5333	0.0568	29.4766	0.0001	0.0334	6.5667	61.2517	13.6857	0.0451	22.4809	0.0001	0.0179	2.5187	0	25.7553	0.1073	63.0589	0.0001	0.0468	8.4479
200303282B	3	44.383	15.7985	0.01	28.14	0.0001	0.0488	6.6276	61.0215	14.294	0.0081	22.039	0.0001	0.0268	2.6104	0	26.1951	0.0188	60.1994	0.0001	0.0683	8.5262
200303282B	4	36.7212	12.1125	8.0413	15.1639	0.0077	0.004	15.0761	58.8274	12.7693	7.6385	13.8381	0.005	0.0025	6.919	0	20.0833	15.1934	32.44	0.0093	0.0055	19.3951
200303282B	5	35.4331	10.8162	9.8867	12.6637	0.0001	0.018	17.757	58.3537	11.7221	9.6545	11.8802	0.0001	0.0118	8.3776	0	17.934	18.6803	27.0913	0.0001	0.0252	22.844
200303282B	6	16.9824	14.8047	0.0019	0.0014	0.0001	0.0983	25.1229	50.002	28.6855	0.0034	0.0024	0.0001	0.1155	21.191	0	24.5473	0.0036	0.0031	0.0001	0.1375	32.3201
200303282B	7	45.075	14.8882	0.1128	28.9315	0.007	0.0284	7.69	61.2122	13.3051	0.0908	22.3809	0.0039	0.0154	2.9917	0	24.6857	0.2131	61.8929	0.0084	0.0398	9.8931
200303282B	8	36.3706	10.9475	10.2764	13.0344	0.0008	0.0188	18.0422	58.4081	11.5694	9.7855	11.9238	0.0006	0.0121	8.3005	0	18.1517	19.4165	27.8842	0.001	0.0263	23.2109
200303282B	9	45.0536	14.9652	0.0822	28.9769	0.0079	0.0227	7.3607	61.2325	13.3847	0.0662	22.434	0.0044	0.0123	2.8659	0	24.8134	0.1553	61.9899	0.0095	0.0318	9.4694

Polised Section 200303282C

Beam Current	21.27
Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)
200303282C	1	2.2759	1.101	0.0613	0.0298	0.0095	3.5254	0.1873	50.3677	16.0349	0.8046	0.3762	0.0862	31.1431	1.1874	0	1.8256	0.1159	0.0638	0.0115	4.9326	0.2409
200303282C	2	12.4329	10.6749	0.0062	0.0187	0.0016	1.3227	16.9401	50.0244	28.2649	0.0147	0.0428	0.0026	2.1244	19.5262	0	17.6998	0.0117	0.0399	0.0019	1.8507	21.7931
200303282C	3	7.9701	7.5484	0.0463	0.2275	0.0186	1.0371	7.9748	50.4414	31.4377	0.1736	0.8201	0.0483	2.62	14.459	0	12.5158	0.0874	0.4866	0.0225	1.451	10.2594
200303282C	4	14.1275	12.1183	0.0062	0.0002	0.0001	0.1813	21.205	50.0034	28.2257	0.0131	0.0003	0.0002	0.2561	21.5012	0	20.0929	0.0118	0.0003	0.0001	0.2537	27.2797
200303282C	5	7.0755	0.1004	0.0205	0.1006	0.0001	16.8818	0.481	50.2248	0.469	0.0861	0.4067	0.0003	47.835	0.9781	0	0.1665	0.0386	0.2152	0.0001	23.6207	0.6188
200303282C	6	18.6273	12.0158	0.0192	2.8629	0.0008	0.2511	25.6248	52.2971	22.1999	0.032	4.5786	0.0009	0.2814	20.6101	0	19.923	0.0364	6.1245	0.001	0.3513	32.9657
200303282C	7	16.4499	12.7505	0.0119	0.0132	0.0222	0.192	27.7591	50.0099	25.5089	0.0214	0.0229	0.0276	0.233	24.1764	0	21.1412	0.0224	0.0283	0.0267	0.2686	35.7115
200303282C	8	16.5409	14.042	0.0002	0.0002	0.0001	0.1649	25.2517	50.0002	27.9328	0.0003	0.0003	0.0001	0.1989	21.8673	0	23.2826	0.0004	0.0003	0.0001	0.2307	32.4858
200303282C	9	27.3367	1.5261	1.9472	16.1063	4.6444	0.0219	18.4727	59.5941	2.1894	2.517	20.0011	4.1427	0.0191	11.5366	0	2.5305	3.679	34.4559	5.5945	0.0307	23.7647
200303282C	10	34.6004	2.1334	2.5489	20.1177	1.8714	0.0123	26.6052	60.313	2.4472	2.6345	19.9762	1.3347	0.0086	13.2859	0	3.5373	4.8159	43.0376	2.2542	0.0173	34.227
200303282C	11	15.7814	10.7182	0.0002	0.0002	0.0001	0.2067	30.1775	50.0002	22.347	0.0004	0.0003	0.0001	0.2615	27.3906	0	17.7715	0.0004	0.0003	0.0001	0.2893	38.8228
200303282C	12	14.9718	7.1921	0.0064	0.1936	0.0001	0.1648	34.7207	50.188	15.8656	0.0128	0.3697	0.0001	0.2205	33.3432	0	11.9251	0.0122	0.4142	0.0001	0.2306	44.6674
200303282C	13	36.8575	2.9301	2.7187	21.8602	0.8867	0.0001	25.9172	60.783	3.1799	2.6585	20.5359	0.5983	0.0001	12.2444	0	4.8583	5.1368	46.7653	1.0682	0.0002	33.3419

Polished Section 200303282D

Beam Current	21.13
Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)

200303282D	1	47.415	17.9356	0.0943	30.45	0.0107	0.0372	2.8623	61.2133	15.2377	0.0722	22.3934	0.0057	0.0192	1.0586	0	29.7385	0.1782	65.1412	0.0129	0.052	3.6823
200303282D	2	45.8067	17.0101	0.07	29.5626	0.0053	0.0628	2.9468	61.2769	14.9743	0.0555	22.5275	0.0029	0.0335	1.1293	0	28.204	0.1323	63.2428	0.0064	0.0879	3.791
200303282D	3	18.4417	23.2797	0.002	0.0046	0.0001	0.2403	10.5384	50.0043	41.539	0.0033	0.0071	0.0001	0.2601	8.1861	0	38.5994	0.0039	0.0098	0.0001	0.3362	13.5575
200303282D	4	38.8771	15.2513	11.3826	13.9468	0.0043	0.1523	9.654	58.5183	15.1069	10.1592	11.9584	0.0027	0.0915	4.1629	0	25.2877	21.5065	29.8361	0.0052	0.2132	12.4197
200303282D	5	46.922	17.6561	0.0862	30.1795	0.0001	0.1347	2.7555	61.2344	15.1631	0.0667	22.4355	0.0001	0.0702	1.0302	0	29.2751	0.1628	64.5627	0.0001	0.1885	3.5449
200303282D	6	38.4795	14.9404	11.4556	13.6738	0.0001	0.0177	10.0297	58.503	14.948	10.3272	11.8425	0.0001	0.0108	4.3685	0	24.7723	21.6445	29.2522	0.0001	0.0248	12.903
200303282D	7	18.6666	12.9596	0.0002	0.0063	0.0069	22.6498	3.799	50.003	22.8451	0.0003	0.0096	0.0075	24.2192	2.9154	0	21.4879	0.0003	0.0134	0.0083	31.691	4.8874
200303282D	8	47.4447	17.2784	0.0111	30.7487	0.0169	0.1411	3.3965	61.3188	14.6955	0.0085	22.6379	0.0089	0.0728	1.2576	0	28.6489	0.0209	65.7803	0.0204	0.1974	4.3695
200303282D	9	16.1956	9.1398	0.0046	0.0316	0.0075	20.059	7.4429	50.0276	18.5789	0.0084	0.0557	0.0095	24.7335	6.5864	0	15.1544	0.0087	0.0677	0.0091	28.0661	9.5752
200303282D	10	38.7348	14.9331	11.6917	13.7421	0.0001	0.0001	9.9573	58.5337	14.85	10.4762	11.8294	0.0001	0.0001	4.3106	0	24.7601	22.0907	29.3983	0.0001	0.0002	12.8098
200303282D	11	5.2343	0.3435	0.2049	0.4188	0.0092	0.0077	15.1632	51.4622	2.2225	1.1946	2.3456	0.0369	0.0302	42.7081	0	0.5696	0.3872	0.896	0.011	0.0108	19.5072

Polished Section 200303392A

Beam Current	21.25
Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)
200303392A	1	36.9449	13.4728	10.4751	13.4287	0.0069	0.1625	11.8563	58.5164	14.0427	9.8379	12.116	0.0045	0.1027	5.3798	0	22.3388	19.792	28.7279	0.0083	0.2273	15.2529
200303392A	2	17.1949	11.2482	0.005	0.0001	0.0001	20.9026	5.0416	50.0022	21.5251	0.0086	0.0002	0.0001	24.2636	4.2	0	18.6503	0.0095	0.0003	0.0001	29.2464	6.4859
200303392A	3	26.2909	12.2813	6.6458	8.3386	0.0001	0.0412	9.7093	57.3267	17.6225	8.5925	10.3573	0.0001	0.0359	6.065	0	20.3632	12.5568	17.8386	0.0001	0.0577	12.4908
200303392A	4	46.1325	17.494	0.0558	29.5413	0.0035	0.0131	3.1719	61.1665	15.264	0.0438	22.312	0.0019	0.007	1.2048	0	29.0063	0.1054	63.1973	0.0043	0.0184	4.0806
200303392A	5	16.3002	10.3811	0.0121	0.0001	0.0001	20.1292	4.9661	50.0056	20.9577	0.0219	0.0002	0.0001	24.65	4.3645	0	17.2127	0.0228	0.0003	0.0001	28.1643	6.3888

Polished Section 200303392B

Beam Current	21.18
Acc. Voltage	15
Take Off Angle	40
Tilt Angle	0
Azimuth Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)
200303392B	1	32.2907	0.0001	11.8708	18.4011	3.1445	0.0001	0.4361	63.0392	0.0002	13.7414	20.4635	2.5118	0.0001	0.2439	0	0.0002	22.429	39.3652	3.7878	0.0002	0.5611
200303392B	2	14.2605	2.9275	0.0508	0.0913	0.0296	0.2038	42.228	50.1071	6.7691	0.1058	0.1827	0.0426	0.2858	42.5069	0	4.8539	0.096	0.1952	0.0357	0.2851	54.3255
200303392B	3	13.9737	2.7005	0.0002	0.0216	0.0001	0.2028	42.2049	50.0221	6.3616	0.0004	0.0441	0.0002	0.2898	43.2819	0	4.4776	0.0003	0.0462	0.0001	0.2838	54.2958
200303392B	4	14.2463	3.4875	0.0077	0.01	0.0069	0.2087	41.3581	50.0116	8.0568	0.0161	0.02	0.0099	0.2924	41.5933	0	5.7826	0.0146	0.0214	0.0083	0.292	53.2064
200303392B	5	36.0043	1.0467	3.0879	20.9094	2.5584	0.0155	28.6849	60.3031	1.1536	3.0667	19.9494	1.7533	0.0104	13.7636	0	1.7355	5.8344	44.7313	3.0818	0.0217	36.9025
200303392B	6	21.3921	0.0002	0.022	0.0149	0.0001	0.0089	74.5316	50.0175	0.0004	0.0305	0.0199	0.0001	0.0083	49.9233	0	0.0004	0.0415	0.0319	0.0001	0.0125	95.8834
200303392B	7	21.5179	0.0156	0.0188	0.0336	0.0007	0.0227	74.8517	50.0285	0.0238	0.026	0.0444	0.0007	0.021	49.8555	0	0.0258	0.0356	0.0718	0.0009	0.0317	96.2952
200303392B	8	21.5786	0.0002	0.0031	0.0458	0.0001	0.0001	75.1308	50.0313	0.0004	0.0043	0.0605	0.0001	0.0001	49.9034	0	0.0004	0.0059	0.0979	0.0001	0.0001	96.6542
200303392B	9	15.573	6.1191	0.0002	0.0029	0.0223	19.7413	12.7685	49.9954	12.9276	0.0003	0.0053	0.0293	25.2987	11.7433	0	10.1459	0.0003	0.0062	0.0268	27.6215	16.4264
200303392B	10	30.9537	0.0001	12.0666	17.3483	1.7671	0.0157	0.3098	63.4179	0.0002	14.6589	20.247	1.4814	0.0129	0.1819	0	0.0002	22.7989	37.113	2.1287	0.022	0.3986
200303392B	11	36.2964	3.5688	3.5669	20.3882	1.5994	0.0319	25.1587	60.2445	3.8981	3.5105	19.2768	1.0862	0.0212	11.9628	0	5.9173	6.7394	43.6162	1.9266	0.0447	32.3661
200303392B	12	29.3564	3.037	2.0898	14.5706	0.9296	0.1398	30.2052	58.7323	3.9984	2.4791	16.6055	0.761	0.1116	17.3121	0	5.0355	3.9484	31.1706	1.1198	0.1956	38.8583
200303392B	13	28.0926	0.003	10.1765	16.1974	1.7328	0.0124	0.7906	63.4203	0.0045	13.6224	20.8297	1.6005	0.0112	0.5113	0	0.005	19.2278	34.6508	2.0872	0.0174	1.0171
200303392B	14	35.1973	1.9812	2.7915	20.3246	3.2025	0.007	26.519	60.0182	2.2232	2.8225	19.7424	2.2344	0.0048	12.9546	0	3.285	5.2744	43.4802	3.8576	0.0098	34.1161
200303392B	15	14.3563	8.6429	0.0126	0.0184	0.0001	0.2524	29.7953	50.0247	19.8185	0.0261	0.0365	0.0002	0.3511	29.7429	0	14.3305	0.0239	0.0393	0.0001	0.3532	38.331
200303392B	16	30.6635	0.0021	11.8101	17.3365	1.7968	0.0001	0.1365	63.4624	0.0029	14.4933	20.4389	1.5216	0.0001	0.0809	0	0.0035	22.3143	37.0876	2.1644	0.0002	0.1756
200303392B	17	14.0974	10.2508	0.0033	0.0236	0.0071	0.2973	25.1388	50.023	23.9364	0.007	0.0477	0.0104	0.4211	25.5545	0	16.9965	0.0063	0.0505	0.0086	0.416	32.3405
200303392B	18	13.9222	10.0162	0.0002	0.0118	0.0166	0.3257	25.0762	50.0061	23.675	0.0004	0.0241	0.0244	0.467	25.803	0	16.6076	0.0004	0.0252	0.02	0.4557	32.26
200303392B	19	14.6233	4.3738	0.0002	0.0115	0.0281	18.8923	14.6076	50.0015	9.8415	0.0003	0.0224	0.0393	25.7861	14.3089	0	7.252	0.0003	0.0246	0.0338	26.4336	18.7923
200303392B	20	31.3768	0.0001	11.8884	17.699	2.1082	0.0001	0.7238	63.2875	0.0002	14.2184	20.3358	1.7398	0.0001	0.4182	0	0.0002	22.4622	37.8633	2.5394	0.0002	0.9311

Polished Section 200303392C

Beam Current	21.26

Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)
200303392C	1	14.2786	5.3668	0.0069	0.018	0.0061	0.2566	37.0589	50.0193	12.372	0.0143	0.0359	0.0088	0.3589	37.1909	0	8.8985	0.013	0.0385	0.0074	0.3591	47.6756
200303392C	2	56.2434	0.0039	0.0003	49.3357	0.0144	0.0001	0.105	66.6502	0.0031	0.0002	33.3038	0.007	0.0001	0.0356	0	0.0065	0.0006	105.543	0.0173	0.0002	0.1351
200303392C	3	34.3261	3.106	2.3678	19.5326	5.193	0.0258	23.9117	59.2995	3.5311	2.4254	19.2216	3.6706	0.0178	11.834	0	5.15	4.4737	41.7858	6.2554	0.0361	30.7619
200303392C	4	37.4057	3.3169	3.0996	21.797	4.8173	0.0001	23.2042	59.886	3.4945	2.9425	19.8787	3.1556	0.0001	10.6426	0	5.4996	5.8564	46.63	5.8028	0.0002	29.8517
200303392C	5	36.8732	3.2908	2.7625	21.6375	3.3461	0.2581	23.7774	60.1655	3.5336	2.6727	20.1116	2.2339	0.1681	11.1146	0	5.4564	5.2195	46.2888	4.0306	0.3612	30.5891
200303392C	6	14.8216	4.4403	0.0057	0.0001	0.0199	18.9873	15.0482	49.9961	9.8565	0.0114	0.0003	0.0275	25.5664	14.5418	0	7.3623	0.0108	0.0003	0.024	26.5665	19.3591

Appendix 2
Assay vaules and stoichiometric calculations for drillholes within the S699 drillfan

Drillhole 211117

Appendix 2																					
Assay values and stoichiometric calculations for drillholes within the S699 drillfan																					
mscode	**From**	**To**	**Sampno**	**Pb**	**Zn**	**Cu**	**Co**	**Fe**	**S**	**SiO2**	**Al2O3**	**CaO**	**As**	**Sb**	**MgO**	**Dolomite**	**Talc**	**Chlorite**	**Quartz**	**Chalcopyrite**	**Fe sulphides**	**Non sulphide gangue**
211117	0	2.7	940820	0.088	0	0.077	0.006	9.5	5.2	32.6	4.7	12.3	0.068	0	12.8	40.86	8.14	16.55	23.89	0.22	9.58	90.19
211117	2.7	3.9	940821	0.019	0	0.1	0.008	8.3	5.1	35.3	5.1	10.7	0.1	0.005	13.1	35.55	12.18	17.96	23.80	0.29	9.35	90.36
211117	3.9	6.4	940822	0	0	0.042	0.007	8.1	3.4	37	5.5	10.6	0.1	0.001	13	35.22	11.14	19.37	25.82	0.12	6.28	93.60
211117	6.4	9.2	940823	0.037	0.016	0.074	0.004	8.5	4.1	37.6	5.4	9.9	0.07	0	13.6	32.89	15.29	19.01	23.96	0.21	7.53	92.26
211117	9.2	11.1	940824	0.099	0	0.065	0.011	11.6	6.8	32.4	4.4	10.7	0.1	0	12.5	35.55	11.51	15.49	21.87	0.19	12.60	87.21
211117	11.1	13.3	940825	0.043	0	0.089	0.007	9.1	5.8	36.9	5.2	10.1	0.063	0	12.1	33.55	9.62	18.31	26.88	0.26	10.68	89.06
211117	13.3	14.5	940826	0.059	0.012	0.036	0.008	9	6.5	36.1	6.5	9.5	0.058	0.01	11.4	31.56	5.48	22.89	27.58	0.10	12.09	87.80
211117	14.5	16.8	940827	0	0	0.083	0.008	9.1	5.8	34.3	5.4	11.2	0.053	0.007	11.7	37.21	5.04	19.01	26.92	0.24	10.69	89.07
211117	16.8	19.4	940828	0.015	0	0.045	0.009	8.8	5.2	35.8	5.8	10	0.049	0.001	13.3	33.22	13.02	20.42	23.23	0.13	9.64	90.23
211117	19.4	21.7	940829	0	0	0.069	0.006	8.6	3.9	40.2	6	9.2	0.055	0.002	12.1	30.56	9.96	21.13	29.34	0.20	7.17	92.63
211117	21.7	23.2	940830	0.089	0	0.059	0.012	13.3	9.4	29.4	4.2	10.4	0.09	0	12	34.55	10.80	14.79	19.46	0.17	17.48	82.35
211117	23.2	24.9	940831	0.042	0	0.064	0.008	11.5	7.3	39	6.2	6.5	0.069	0	12.1	21.59	15.95	21.83	24.32	0.18	13.54	86.28
211117	24.9	27.7	940832	0.073	0.023	0.048	0.007	12	9.7	31	4.7	9.7	0.099	0	12.7	32.23	13.97	16.55	18.73	0.14	18.06	81.80
211117	27.7	28.9	940833	0.044	0	0.063	0.007	9.5	6	39.6	6.4	7.2	0.092	0	13.1	23.92	17.59	22.54	23.76	0.18	11.11	88.71
211117	28.9	29.4	940834	0.2	0.033	0.075	0.013	17.9	15.2	29	3	8.8	0.1	0.005	8.6	29.24	4.55	10.56	23.83	0.22	28.30	71.49
211117	29.4	30.5	940835	0.016	0	0.066	0.006	9.5	4.9	37	3.9	11.7	0.078	0.003	10.7	38.87	3.49	13.73	31.77	0.19	9.04	90.77
211117	30.5	32.6	940836	0	0	0.1	0.008	10.1	5.4	39.3	5.8	7.8	0.059	0	13.1	25.91	17.51	20.42	23.98	0.29	9.91	89.80
211117	32.6	34.5	940837	0	0	0.2	0.014	4.4	1.7	49	0.9	12.4	0.079	0	9.7	41.20	4.85	3.17	45.32	0.58	2.80	96.62
211117	34.5	37.1	940838	0	0	0.075	0.006	5.2	1.6	44.5	6.2	7.8	0.052	0	15.4	25.91	25.25	21.83	24.14	0.22	2.85	96.93
211117	37.1	40	940839	0	0	0.073	0.011	11.5	6.3	28.7	3.7	12.7	0.067	0	12.9	42.19	9.82	13.03	19.75	0.21	11.65	88.14
211117	40	41.8	940840	0	0	0.029	0.007	10.9	5.5	43	6.4	6.7	0.052	0.002	11.1	22.26	11.26	22.54	31.03	0.08	10.24	89.68
211117	41.8	44.7	940841	0	0	0.1	0.007	11.7	5.5	30.9	4.3	11.9	0.089	0	12.5	39.53	8.87	15.14	22.06	0.29	10.10	89.61
211117	44.7	47	940842	0	0	0.076	0.005	9.9	4.9	39.6	6	8	0.054	0	12.3	26.58	13.57	21.13	26.53	0.22	9.02	90.76
211117	47	48.9	940843	0.023	0	0.1	0.007	9.2	5.3	42.8	6.6	6.1	0.061	0	13.1	20.27	19.76	23.24	25.48	0.29	9.73	89.98
211117	48.9	51	940844	0	0	0.1	0.008	6.2	2.4	41.2	4.2	10.8	0.068	0	13.5	35.88	15.48	14.79	28.40	0.29	4.30	95.41
211117	51	52	940845	0.039	0	0.3	0.072	6.5	4	46.4	2.4	7.7	0.1	0	15.9	25.58	35.97	8.45	22.51	0.87	6.92	92.22
211117	52	54.7	940846	0	0	0.1	0.017	5.3	2	47.8	4.1	8.8	0.08	0	12.7	29.24	17.47	14.44	33.86	0.29	3.55	96.16
211117	54.7	57.7	940847	0	0	0.2	0.024	4	1.2	60.3	5.7	3.2	0.058	0	13	10.63	28.34	20.07	38.45	0.58	1.87	97.56
211117	57.7	59.5	940848	0	0	0.2	0.026	4.9	1.9	49.7	5.5	6.2	0.078	0	15.1	20.60	29.53	19.37	27.28	0.58	3.18	96.25
211117	59.5	61	940849	0.023	0	0.3	0.023	4.9	2.6	51.1	3.8	7.3	0.068	0	12.9	24.25	22.48	13.38	34.34	0.87	4.30	94.84
211117	61	64	940850	0	0	0.5	0.029	5.2	3.2	57.5	5.3	2.8	0.099	0	14	9.30	33.96	18.66	32.54	1.44	5.04	93.51
211117	64	66.4	940851	0	0	1.8	0.065	4.8	4	69.2	3.2	0.1	0.1	0.001	11	0.33	33.87	11.27	45.96	5.19	4.09	90.72
211117	66.4	68.1	940852	0	0	0.8	0.035	3.1	2.9	86.5	1.2	0.1	0.09	0.001	2	0.33	4.56	4.23	82.76	2.31	3.92	93.78
211117	68.1	70.5	940853	0	0	0.5	0.094	3.4	2.7	72.8	2.6	0.8	0.1	0	11	2.66	33.56	9.15	50.23	1.44	4.11	94.45
211117	70.5	72.6	940854	0.011	0	4.9	0.1	6.6	6.9	75.1	1.1	0.024	0.3	0.001	1.6	0.08	3.47	3.87	72.11	14.14	3.66	82.20
211117	72.6	75.6	940855	0	0	5.4	0.1	6.6	7.1	75.7	0.6	0.081	0.2	0	0.8	0.27	1.46	2.11	74.33	15.58	3.09	81.33
211117	75.6	77.1	940856	0.017	0	2	0.1	4	4	82.6	0.9	0.4	0.1	0	2.5	1.33	6.41	3.17	77.97	5.77	3.71	90.52
211117	77.1	78.7	940857	0	0	3.3	0.2	6	6.2	77.8	0.9	0.099	0.4	0	2.1	0.33	5.62	3.17	73.65	9.52	5.37	85.11
211117	78.7	81	940858	0.015	0	2.4	0.085	5.9	5.6	70.6	3.2	0.1	0.1	0	6.9	0.33	18.46	11.27	56.78	6.93	5.95	87.13
211117	81	82.8	940859	0	0	8.6	0.2	10.5	11.5	63.7	0.9	0.016	0.3	0	1.3	0.05	2.81	3.17	61.27	24.82	5.28	69.90
211117	82.8	84.8	940860	0	0	6.2	0.1	7.2	7.6	71.8	1.2	0.076	0.3	0	1.7	0.25	3.49	4.23	68.71	17.89	2.52	79.59
211117	84.8	87	940861	0	0	1.7	0.2	3.3	2.9	80.8	2.5	0.051	0.3	0.002	3.8	0.17	8.51	8.80	73.61	4.91	2.22	92.88
211117	87	88.7	940862	0	0	5.4	0.081	6.7	7	74.3	1.3	0.01	0.1	0	1.8	0.03	3.80	4.58	70.94	15.58	2.90	81.51
211117	88.7	90.6	940863	0	0	4.4	0.043	7.5	8.2	75.7	0.7	0.001	0.092	0	0.8	0.00	1.42	2.46	74.27	12.70	7.04	80.27
211117	90.6	93	940864	0	0	2.5	0.1	4.6	4.7	78.2	2.2	0.046	0.3	0.002	2.8	0.15	5.44	7.75	73.13	7.22	4.07	88.71
211117	93	94.2	940865	0.011	0	2.9	0.2	4.6	4.7	78.4	2.2	0.023	0.4	0.005	2.6	0.08	4.74	7.75	73.75	8.37	3.32	88.31
211117	94.2	96	940866	0	0	12	0.084	13.1	14.5	56	0.7	0.003	0.1	0.001	0.7	0.01	1.04	2.46	54.81	34.63	4.48	60.89
211117	96	99	940867	0.016	0	2.9	0.4	5	5.3	79.2	1.5	0.018	0.7	0.005	1.8	0.06	3.33	5.28	75.97	8.37	4.44	87.19
211117	99	100.8	940868	0	0	2.2	0.7	3.9	4.3	81.3	1.5	0.017	1.2	0.007	1.9	0.06	3.71	5.28	77.84	6.35	3.89	89.76
211117	100.8	102.4	940869	0.018	0	10.2	1.2	12.5	14.4	54.6	0.5	0	2.2	0.009	0.6	0.00	1.12	1.76	53.52	29.44	7.69	62.88
211117	102.4	105	940870	0.068	0	4.5	0.2	7.1	7.7	73.8	1.2	0.018	0.4	0	1.6	0.06	3.26	4.23	70.86	12.99	5.91	81.10
211117	105	107.2	940871	0.031	0	13.6	0.1	16.5	18.4	47.2	0.4	0	0.1	0.001	0.5	0.00	0.97	1.41	46.29	39.25	8.75	52.00
211117	107.2	108.6	940872	0.023	0	3.6	0.2	7.1	7.3	75.1	1.3	0.018	0.4	0.003	1.7	0.06	3.41	4.58	71.98	10.39	6.86	82.75
211117	108.6	110.4	940873	0.03	0	10.6	0.088	15.1	16.4	52.6	0.4	0	0.1	0.002	0.4	0.00	0.60	1.41	51.92	30.59	10.67	58.74
211117	110.4	113.4	940874	0.043	0	1.7	0.1	4.2	3.5	81.2	1.6	0.076	0.2	0	3.5	0.25	9.35	5.63	74.21	4.91	3.34	91.75

Appendix 2
Assay vaules and stoichiometric calculations for drillholes within the S699 drillfan

Drillhole 211117

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe sulphides	Non sulphide gangue
211117	113.4	115.1	940875	0	0	3.8	0.063	6.4	5.4	68.4	1.1	1.8	0.1	0	6.2	5.98	16.52	3.87	57.43	10.97	2.93	86.10
211117	115.1	116.7	940876	0.025	0	1.9	0.1	3.9	3.3	81.5	1.4	0.048	0.2	0.003	3.9	0.16	11.38	4.93	73.43	5.48	2.59	91.93
211117	116.7	118	940877	0	0	2.6	0.1	6.1	4.2	58.6	0.7	2.3	0.2	0	16	7.64	53.08	2.46	25.61	7.50	2.95	89.55
211117	118	120.9	940878	0	0	1.9	0.069	8.3	4.6	59.9	3	0.7	0.1	0	14.1	2.33	44.55	10.56	30.29	5.48	5.02	89.50
211117	120.9	123	940879	0	0	0.9	0.06	9.3	2.9	47.9	2.3	1.7	0.1	0	21.8	5.65	72.69	8.10	1.65	2.60	3.73	93.68
211117	123	126	940880	0	0	0.3	0.084	11.3	3.7	41.2	1.8	3.9	0.1	0	20.2	12.96	62.56	6.34	1.54	0.87	6.36	92.78
211117	126	128	940881	0.01	0	0.3	0.1	6.6	1.9	61.9	2.3	0.5	0.2	0	17.4	1.66	59.01	8.10	24.01	0.87	2.99	96.15
211117	128	129.9	940882	0	0	3.5	0.058	5.6	4.8	76.1	1.1	0.2	0.1	0.001	4	0.66	12.07	3.87	67.85	10.10	2.37	87.53
211117	129.9	132.9	940883	0	0	7.3	0.1	9.2	9.1	68.5	0.7	0.068	0.1	0	1.3	0.23	3.14	2.46	66.02	21.07	3.24	75.69
211117	132.9	135.8	940884	0	0	3	0.069	4.6	3.8	68	1.4	2.1	0.1	0.011	8.6	6.98	24.15	4.93	52.13	8.66	1.45	89.90
211117	135.8	138.7	940885	0	0	4	0.086	8.1	6.3	55.5	0.8	6.6	0.1	0	5.3	21.93	2.37	2.82	53.42	11.54	4.24	84.22
211117	138.7	141	940886	0	0	0.7	0.016	4.3	1.1	21.7	0.2	21.4	0.079	0	14.6	71.10	3.38	0.70	19.47	2.02	0.74	97.24
211117	141	143.5	940887	0	0	2.4	0.088	5	3.2	51.4	0.3	11.2	0.2	0	7	37.21	-1.08	1.06	51.82	6.93	1.46	91.62
211117	143.5	146.5	940888	0.022	0	5.3	0.1	9.8	7.2	31.8	0.3	13.9	0.2	0	8	46.18	-3.76	1.06	33.86	15.30	3.47	81.24
211117	146.5	149.3	940889	0	0	1.9	0.08	5.4	2.7	45	0.6	13.1	0.1	0	7.8	43.52	-3.29	2.11	46.53	5.48	1.46	93.05
211117	149.3	151.1	940890	0	0	1.8	0.035	6	2.9	45.1	1	12.6	0.095	0	8.2	41.86	-1.49	3.52	45.22	5.19	2.03	92.78
211117	151.1	154.1	940891	0.093	0	0.2	0.059	5.9	2.7	51.3	1.5	10.1	0.1	0.001	9.5	33.55	8.23	5.28	45.08	0.58	4.67	94.75
211117	154.1	156	940892	0.014	0	0.1	0.04	5.2	1.9	42	1.2	14.1	0.1	0	10.6	46.84	3.50	4.23	38.91	0.29	3.37	96.35
211117	156	158.2	940893	0	0	0.1	0.027	4.4	1.6	61.4	2.4	7.3	0.071	0	7.3	24.25	4.60	8.45	56.68	0.29	2.80	96.91
211117	158.2	159.7	940894	0	0	0.3	0.018	6.2	1.4	29.6	0.5	17.8	0.079	0	13.2	59.14	6.03	1.76	25.52	0.87	2.05	97.08
211117	159.7	162.1	940895	0	0	0.1	0.061	4.6	1	47.5	1.3	12.3	0.1	0	9.8	40.86	4.56	4.58	43.68	0.29	1.68	98.03
211117	162.1	165	940896	0	0	0.3	0.031	3.9	1.3	43	0.3	14.8	0.09	0	10.6	49.17	3.86	1.06	40.40	0.87	1.87	97.27
211117	165	167.1	940897	0	0	0.3	0.01	3.5	1	40.4	0.5	15.8	0.052	0	11	52.49	2.53	1.76	38.46	0.87	1.30	97.83
211117	167.1	169.8	940898	0	0	0.3	0.017	4.3	1.6	61	2.1	7.7	0.053	0	7.4	25.58	4.70	7.39	56.46	0.87	2.43	96.71
211117	169.8	171.6	940899	0	0	0.2	0.018	5.3	1.9	57.3	3.6	6.9	0.054	0	8.9	22.92	8.85	12.68	49.03	0.58	3.18	96.25
211117	171.6	173.9	940900	0	0	0.2	0.024	5.9	2.4	38.1	0.5	15.4	0.057	0	11.1	51.16	3.86	1.76	35.34	0.58	4.11	95.31
211117	173.9	176.9	940901	0	0	0.2	0.008	4	1.1	44.3	0.8	14.1	0.036	0	9.9	46.84	1.77	2.82	42.58	0.58	1.68	97.74
211117	176.9	179.6	940902	0.015	0	0.3	0.022	4.8	2.5	46.7	0.3	13.6	0.059	0.001	8.4	45.18	-1.54	1.06	47.40	0.87	4.11	95.02
211117	179.6	181.1	940903	0	0	0.5	0.009	2.8	1.3	58	0.2	10.9	0.042	0	7.1	36.21	0.24	0.70	57.70	1.44	1.49	97.07
211117	181.1	182.5	940904	0.033	0	0.2	0.02	7.7	4.1	43	0.8	13	0.053	0.001	8.5	43.19	-0.87	2.82	42.89	0.58	7.29	92.13
211117	182.5	184.7	940905	0	0	0.1	0.01	5.2	1.8	43.4	2.6	12.8	0.057	0	10.9	42.52	4.56	9.15	38.55	0.29	3.18	96.53
211117	184.7	186	940906	0.047	0	0.051	0.016	15.1	12.4	26.2	3.3	11.1	0.076	0.002	10.7	36.88	6.28	11.62	19.74	0.15	23.10	76.75
211117	186	187.6	940907	0.032	0	0.039	0.008	12.1	6.6	33.3	5.9	9.1	0.04	0	12.6	30.23	12.30	20.77	21.09	0.11	12.27	87.61
211117	187.6	190.4	940908	0.048	0.01	0.083	0.01	12	7.4	29.8	3.9	12	0.062	0	11.7	39.87	6.53	13.73	22.71	0.24	13.69	86.07
211117	190.4	193	940909	0.046	0.01	0.033	0.012	12.9	7.7	32.2	4.9	10.3	0.059	0.002	11	34.22	5.69	17.25	24.82	0.10	14.34	85.56
211117	193	194.6	940910	0.022	0	0.045	0.014	13.1	6.6	28.5	4.2	12.6	0.042	0.003	11	41.86	1.79	14.79	24.06	0.13	12.26	87.61
211117	194.6	197.6	940911	0.022	0	0.1	0.01	10.5	5.2	35.3	5.4	10.4	0.035	0	12.3	34.55	9.21	19.01	25.38	0.29	9.54	90.17
211117	197.6	199.8	940912	0.023	0.02	0.5	0.009	9	4.8	36.6	2.4	13.2	0.026	0.003	9.3	43.85	-1.96	8.45	35.89	1.44	8.04	90.52
211117	199.8	201.8	940913	0.014	0.015	0.3	0.009	7.9	3.8	32.9	1.7	15.8	0.041	0	10.5	52.49	-2.07	5.99	32.81	0.87	6.54	92.59
211117	201.8	204.6	940914	0.042	0.011	0.2	0.011	11.6	6.5	37.5	4.8	9	0.018	0.004	10.2	29.90	6.01	16.90	30.01	0.58	11.78	87.64
211117	204.6	206.6	940915	0	0	0.1	0.004	6.3	2	41	6.2	9.3	0.034	0	14.5	30.90	18.29	21.83	24.89	0.29	3.55	96.16
211117	206.6	209.6	940916	0.031	0.013	0.3	0.014	10	6.6	41.8	4.9	6.5	0.042	0	14.1	21.59	26.41	17.25	21.76	0.87	11.78	87.35
211117	209.6	211.4	940917	0	0.013	0.3	0.017	11.1	7.6	43.7	5.8	2.2	0.023	0	18.1	7.31	49.67	20.42	8.74	0.87	13.65	85.48
211117	211.4	213	940918	0	0.019	0.3	0.013	9.3	5.4	35	4.1	10.9	0.078	0	13.2	36.21	14.34	14.44	22.97	0.87	9.54	89.60
211117	213	214.7	940919	0.081	0.01	0.1	0.019	16.8	13.1	30	3.6	8.2	0.055	0	10.7	27.24	12.52	12.68	19.49	0.29	24.32	75.39
211117	214.7	216.8	940920	0	0.012	0.035	0.004	8.1	4.5	31.9	5.4	12.6	0.043	0.005	12.4	41.86	4.34	19.01	24.95	0.10	8.35	91.55
211117	216.8	219.8	940921	0.061	0.016	0.024	0.005	12.9	10.4	27.6	4.6	11.9	0.024	0.019	8.6	39.53	-6.47	16.20	27.89	0.07	19.41	80.52
211117	219.8	222.8	940922	0.034	0.018	0.012	0.005	9.8	7.6	29.4	4.9	13	0.019	0.019	9.7	43.19	-5.64	17.25	28.95	0.03	14.20	85.77
211117	222.8	225.6	940923	0.034	0.013	0	0.003	8.8	6.6	29.9	4.8	13.3	0.013	0.03	9.2	44.19	-8.01	16.90	30.97	0.00	12.35	87.65
211117	225.6	228.3	940924	0.045	0.026	0.04	0.003	6.2	4	42.6	6.3	9.7	0	0.041	7.7	32.23	-8.45	22.18	42.75	0.12	7.41	92.48
211117	228.3	231.2	940925	0.052	0.014	0.015	0.004	13.1	9.7	30.2	5	11.6	0	0.026	6.9	38.54	-13.05	17.61	34.19	0.04	18.12	81.84
211117	231.2	233.6	940926	0.016	0	0.097	0.005	13.1	3	35.7	2.7	9.7	0	0.006	7.8	32.23	0.07	9.51	33.51	0.28	5.43	94.29
211117	233.6	236.6	940927	0	0	0.065	0.008	26.6	7.4	21.8	3.5	4.7	0	0.013	6.4	15.61	4.93	12.32	16.01	0.19	13.72	86.09
211117	236.6	237.9	940928	0	0	0.014	0.003	11.4	4	31.7	6.3	12	0	0.037	7.1	39.87	-16.20	22.18	36.58	0.04	7.46	92.50
211117	237.9	240.9	940929	0	0	0	0.001	5.8	2	39.7	6.3	13	0	0.042	6.5	43.19	-20.84	22.18	47.42	0.00	3.74	96.26
211117	240.9	243.9	940930	0	0	0	0.001	5.1	1.6	38.5	6.6	13.1	0	0.044	7.3	43.52	-18.75	23.24	44.70	0.00	2.99	97.01
211117	243.9	245.6	940931	0	0	0.037	0.001	5.9	1.7	33.5	5.5	15.7	0	0.039	7.9	52.16	-20.20	19.37	41.47	0.11	3.11	96.78
211117	245.6	248.6	940932	0	0	0.011	0.001	7	2.6	34.2	5.9	14.9	0	0.039	7	49.50	-22.58	20.77	43.30	0.03	4.84	95.12
211117	248.6	251.6	940933	0	0	0.012	0.001	5.6	1.1	34.5	5.1	15.9	0	0.033	8	52.82	-19.40	17.96	42.29	0.03	2.04	97.93
211117	251.6	252.9	940934	0	0	0	0.001	4.3	0.3	38.1	5.8	14.7	0	0.039	7.8	48.84	-18.87	20.42	45.02	0.00	0.56	99.44

Appendix 2
Assay vaules and stoichiometric calculations for drillholes within the S699 drillfan

Drillhole 211117

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe sulphides	Non sulphide gangue
211117	252.9	255	940935	0	0	0	0.001	5.7	1.5	35.4	5.1	15.6	0	0.037	7.7	51.83	-19.81	17.96	43.45	0.00	2.81	97.19
211117	255	258	940936	0	0	0	0.001	4.1	0.4	34	5.2	16.4	0	0.036	8.8	54.49	-17.81	18.31	40.74	0.00	0.75	99.25
211117	258	260.4	940937	0	0	0	0	5.1	0.4	36.3	4.8	16.4	0	0.032	7.2	54.49	-22.92	16.90	46.48	0.00	0.75	99.25
211117	260.4	263.4	940938	0	0	0	0	5.9	0.4	35.2	4.5	16.6	0	0.024	7.2	55.15	-22.72	15.85	45.50	0.00	0.75	99.25
211117	263.4	266.4	940939	0	0	0	0	5.2	0.3	38.6	5.7	14.8	0	0.034	7.1	49.17	-21.52	20.07	47.21	0.00	0.56	99.44
211117	266.4	269.4	940940	0	0	0	0.001	5.1	0.1	37	5.3	13.4	0.012	0.016	12	44.52	1.15	18.66	32.08	0.00	0.19	99.81
211117	269.4	272.4	940941	0	0	0.02	0.001	5.3	0.7	38.2	4.8	12.9	0	0.014	11.1	42.86	0.09	16.90	34.32	0.06	1.27	98.67
211117	272.4	275.4	940942	0	0	0.019	0.002	3.8	0.8	58.5	11.7	2	0	0.038	8.7	6.64	1.45	41.20	48.30	0.05	1.46	98.48
211117	275.4	278.4	940943	0	0	0.019	0.002	4.4	1	59.7	11.6	0.2	0	0.024	11.2	0.66	15.37	40.85	41.08	0.05	1.84	98.11
211117	278.4	280.9	940944	0	0	0	0.003	4.2	0.8	60.1	10.8	0.1	0.022	0.009	13.4	0.33	25.69	38.03	35.81	0.00	1.50	98.50
211117	280.9	283.9	940945	0	0	0.039	0.003	4.7	0.9	59.9	9.9	0.4	0.012	0.006	13.3	1.33	26.64	34.86	35.75	0.11	1.61	98.28
211117	283.9	285.7	940946	0	0	0	0.002	3.8	0.063	57.3	10.9	0.2	0.011	0.007	16	0.66	35.00	38.38	27.24	0.00	0.12	99.88
211117	285.7	288.6	940947	0	0	0	0.002	4.9	0.7	58.8	11.2	0.1	0	0.012	12.3	0.33	20.65	39.44	37.27	0.00	1.31	98.69
211117	288.6	290.9	940948	0	0	0	0.003	5.5	1.4	58.2	10.7	0.1	0.01	0.006	12.9	0.33	24.04	37.68	35.00	0.00	2.62	97.38
211117	290.9	293.9	940949	0	0	0.013	0.003	5.8	2.1	56.9	11.1	0.2	0	0.011	12.7	0.66	22.14	39.08	34.54	0.04	3.90	96.06
211117	293.9	296.5	940950	0	0	0.037	0.005	7.4	3.5	59.5	9.6	0.2	0	0.01	9.3	0.66	12.75	33.80	44.07	0.11	6.48	93.41
211117	296.5	298.7	940951	0	0	0	0.001	2.2	1.2	71.1	11.3	0.2	0	0.077	1.5	0.66	-20.42	39.79	74.58	0.00	2.25	97.75
211117	298.7	300.8	940952	0	0	0	0.001	2.2	1.6	71.4	10.9	0.3	0	0.085	0.9	1.00	-22.01	38.38	76.17	0.00	2.99	97.01
211117	300.8	302.7	940953	0	0	0	0	0.8	0.4	70.4	12.3	0.2	0	0.1	0.7	0.66	-25.69	43.31	76.31	0.00	0.75	99.25
211117	302.7	305.7	940954	0	0	0	0	1.2	0.8	68.6	12.2	0.1	0	0.1	1	0.33	-24.09	42.96	73.61	0.00	1.50	98.50
211117	305.7	307.4	940955	0	0	0	0	1.2	0.4	66.1	12.6	0.1	0	0.096	2.9	0.33	-17.86	44.37	66.98	0.00	0.75	99.25
211117	307.4	309.9	940956	0	0	0	0.003	2.7	0.2	58.7	11.5	0.1	0.011	0.013	14.9	0.33	29.75	40.49	31.37	0.00	0.37	99.63
211117	309.9	312.2	940957	0	0	0	0.004	3	0.6	59.3	10.6	0.1	0.02	0.017	14.6	0.33	30.65	37.32	32.13	0.00	1.12	98.88
211117	312.2	314	940958	0	0	0	0.003	3	0.6	48	6.3	8	0.033	0.001	15.2	26.58	23.80	22.18	28.45	0.00	1.12	98.88
211117	314	316.7	940959	0	0	0.018	0.002	2.8	0.4	46.1	6.6	4.8	0.01	0.004	23.1	15.95	60.45	23.24	3.91	0.05	0.71	99.23
211117	316.7	319.9	940960	0	0	0.017	0.002	3.2	0.4	40.5	6.3	9.5	0.035	0	17.9	31.56	30.37	22.18	16.93	0.05	0.72	99.23
211117	319.9	322.9	940961	0	0	0	0.002	3	0.4	36.8	5.3	12.4	0.033	0	16.6	41.20	20.83	18.66	19.86	0.00	0.75	99.25
211117	322.9	325.9	940962	0	0	0	0.002	3.6	0.6	37.4	5.7	11.4	0.018	0	16.1	37.87	20.43	20.07	20.38	0.00	1.12	98.88
211117	325.9	328.5	940963	0	0	0	0.003	3.4	0.5	40.5	6.2	10.1	0.046	0	16.6	33.55	24.28	21.83	20.73	0.00	0.94	99.06
211117	328.5	331.5	940964	0	0	0.013	0.002	3.2	0.4	43	6.8	8.7	0.028	0	16.6	28.90	26.26	23.94	21.54	0.04	0.72	99.24
211117	331.5	333	940965	0	0	0	0.002	3.1	0.3	45.8	7	7.9	0.025	0.002	15.9	26.25	25.08	24.65	24.90	0.00	0.56	99.44
211117	333	334.7	940966	0	0	0.022	0.009	3.5	0.5	42.8	6	10.4	0.05	0	14.7	34.55	16.87	21.13	27.72	0.06	0.89	99.04
211117	334.7	336.6	940967	0	0	0	0.004	3.5	0.6	44	6.7	10.5	0	0.022	10.7	34.88	0.01	23.59	38.66	0.00	1.12	98.88
211117	336.6	338.6	940968	0	0	0.01	0.005	3.5	0.5	39	4.5	13.2	0.027	0.006	13.3	43.85	8.32	15.85	30.33	0.03	0.92	99.05
211117	338.6	341.6	940969	0	0	0.014	0.005	3.5	0.5	42.7	6.3	9.6	0.038	0	15.7	31.89	21.86	22.18	24.33	0.04	0.91	99.05
211117	341.6	344.6	940970	0	0	0.017	0.004	3.1	0.4	43.7	6.4	8.8	0.036	0	16.3	29.24	25.80	22.54	22.84	0.05	0.72	99.23
211117	344.6	346	940971	0	0	0	0.004	3.1	0.2	43.2	6.6	8.8	0.032	0	16.8	29.24	27.23	23.24	21.31	0.00	0.37	99.63
211117	346	347	940972	0	0	0	0.018	2.7	0.1	43.4	5.4	10	0.052	0	15.9	33.22	23.70	19.01	24.62	0.00	0.19	99.81
211117	347	348	940973	0	0	0.032	0.04	3	0.5	46.5	5.1	9.4	0.091	0	14.4	31.23	20.17	17.96	30.12	0.09	0.88	99.03
211117	348	349	940974	0	0	0.025	0.028	2.8	0.2	50.4	7.2	5.9	0.059	0	16	19.60	29.78	25.35	26.48	0.07	0.33	99.60
211117	349	350	940975	0	0	0.3	0.035	3.2	0.8	47.7	6.3	7.3	0.084	0	15.8	24.25	27.72	22.18	25.75	0.87	0.93	98.20
211117	350	351	940976	0	0	0.037	0.005	2.8	0.4	46.7	6.1	8.2	0.035	0	15.9	27.24	26.41	21.48	25.71	0.11	0.68	99.21
211117	351	352	940977	0	0	0.026	0.012	2.7	0.2	49.2	7.3	5.8	0.051	0	17.6	19.27	35.81	25.70	21.51	0.08	0.33	99.60
211117	352	353	940978	0	0	0.017	0.004	2.8	0.2	47.2	7.9	6.1	0.038	0	18	20.27	35.24	27.82	19.38	0.05	0.34	99.61
211117	353	354	940979	0	0	0.08	0.01	2.9	0.4	47.5	7.1	5.9	0.024	0	16.6	19.60	32.26	25.00	22.14	0.23	0.60	99.17
211117	354	355	940980	0	0	0.023	0.004	3.3	0.6	46.7	6.7	7.6	0.037	0	15.7	25.25	25.73	23.59	25.65	0.07	1.08	98.85
211117	355	356	940981	0	0	0.03	0.013	3	0.3	47.7	7.4	6.3	0.05	0	16.7	20.93	31.00	26.06	22.87	0.09	0.50	99.41
211117	356	358	940982	0	0	0.3	0.012	1	0.4	87.9	1.2	1.3	0.062	0	2.8	4.32	4.71	4.23	84.07	0.87	0.18	98.95
211117	358	359	940983	0	0	0.039	0.007	3.1	0.5	57.7	9.1	1.3	0.035	0	15.8	4.32	35.70	32.04	28.65	0.11	0.86	99.03
211117	359	360	940984	0	0	0.041	0.006	3.1	0.6	59	7.9	2.5	0.037	0	13.9	8.31	28.41	27.82	35.36	0.12	1.05	98.84
211117	360	361	940985	0	0	0.059	0.006	2.8	0.6	64.1	10.3	0.2	0.021	0.014	10.5	0.66	15.68	36.27	46.32	0.17	1.01	98.82
211117	361	362	940986	0	0	0.081	0.005	3.7	1.1	59	9.1	1.6	0.029	0.002	13.3	5.32	25.58	32.04	36.13	0.23	1.91	97.86
211117	362	363	940987	0	0	0.059	0.004	3.1	0.4	57	10.6	0.8	0.03	0.005	16	2.66	34.25	37.32	27.64	0.17	0.64	99.19
211117	363	364	940988	0	0	0.034	0.006	2.6	0.2	58.4	9.7	1	0.021	0.001	15.6	3.32	34.30	34.15	29.72	0.10	0.31	99.59
211117	364	365	940989	0	0	0.016	0.004	2.6	0.2	57.5	9.5	1.6	0.021	0.002	15.6	5.32	33.33	33.45	29.58	0.05	0.34	99.61
211117	365	366	940990	0	0	0.04	0.004	2.7	0.3	58.9	9.7	0.8	0.024	0	15	2.66	32.53	34.15	31.31	0.12	0.49	99.40
211117	366	367	940991	0	0	0.041	0.004	2.7	0.3	54.6	9.3	2.6	0.025	0	16.2	8.64	33.65	32.75	26.64	0.12	0.48	99.40
211117	367	369	940992	0	0	0.042	0.003	2.9	0.4	56.6	10.1	2.1	0.029	0.01	15	6.98	28.52	35.56	31.14	0.12	0.67	99.21
211117	369	372	940993	0	0	0.03	0.003	2.4	0.3	56.3	10.5	3.5	0	0.04	10.6	11.63	7.73	36.97	43.22	0.09	0.50	99.41

Assay values and stoichiometric calculations for Drillhole 211209

Appendix 2																					
Assay values and stoichiometric calculations for Drillhole 211209																					
mscode	**From**	**To**	**Sampno**	**Pb**	**Zn**	**Cu**	**Co**	**Fe**	**S**	**SiO2**	**Al2O3**	**CaO**	**As**	**Sb**	**MgO**	**Dolomite**	**Talc**	**Chlorite**	**Quartz**	**Chalcopyrite**	**Fe Sulphide**	**Non sulphide gangue**
211209	0	3	941620	0	0.011	0.1	0.004	6.6	3.3	34.8	5.7	13	0.049	0.009	12.4	41.20	2.70	20.07	28.61	0.29	5.99	93.73
211209	3	4.5	941621	0	0	0.1	0.003	7.2	2.8	37.4	6.2	10.8	0.058	0.003	12.9	42.86	8.70	21.83	27.15	0.29	5.05	94.66
211209	4.5	6.6	941622	0.035	0	0.1	0.005	8.9	4.8	37.9	6.7	9.1	0.042	0.012	12.1	40.20	8.61	23.59	27.30	0.29	8.79	90.92
211209	6.6	7.7	941623	0	0	0.084	0.008	9.5	4.5	40.2	5.5	8.9	0.1	0	12.2	40.53	12.18	19.37	28.38	0.24	8.26	91.50
211209	7.7	8.9	941624	0	0	0.099	0.006	10.6	5.5	25.9	3	15.5	0.09	0.001	12.8	42.52	4.35	10.56	20.85	0.29	10.10	89.61
211209	8.9	10.1	941625	0	0	0.06	0.002	5.9	1.7	38.7	5.8	11.1	0.042	0	14.2	47.18	13.78	20.42	25.67	0.17	3.07	96.76
211209	10.1	13.1	941626	0.061	0.012	0.1	0.007	9.5	5.2	33.4	5.2	11.3	0.1	0	12.9	42.86	9.77	18.31	23.29	0.29	9.54	90.17
211209	13.1	14.9	941627	0.052	0	0.087	0.007	10	6	35.2	5.1	10.4	0.098	0.001	12.4	41.20	10.26	17.96	24.87	0.25	11.06	88.69
211209	14.9	17.9	941628	0.046	0	0.066	0.004	7.2	3.9	37.3	5.1	11.5	0.067	0	13	43.19	9.89	17.96	27.20	0.19	7.17	92.64
211209	17.9	20.7	941629	0.068	0.019	0.048	0.009	9.2	7.1	34.5	6	10.9	0.057	0.015	10.4	34.55	-0.49	21.13	30.02	0.14	13.19	86.67
211209	20.7	23.7	941630	0.023	0	0.04	0.006	7.6	4.6	39.9	6.3	9.1	0.039	0.005	12.6	41.86	11.40	22.18	27.92	0.12	8.53	91.35
211209	23.7	26.7	941631	0	0	0.08	0.006	9.7	5.6	39.6	6.2	8.7	0.075	0.005	11.5	38.21	8.44	21.83	29.51	0.23	10.33	89.44
211209	26.7	29.7	941632	0.029	0	0.074	0.007	11.1	6.8	33.8	4.7	10.4	0.046	0	12.5	41.53	11.54	16.55	23.01	0.21	12.58	87.20
211209	29.7	32.7	941633	0.032	0	0.051	0.006	8.6	5.2	35.7	4.5	11.3	0.057	0	13.1	43.52	12.11	15.85	24.72	0.15	9.63	90.22
211209	32.7	35.7	941634	0.049	0	0.052	0.004	8.9	4.5	35.5	4.8	11.1	0.071	0	13.1	43.52	11.90	16.90	24.41	0.15	8.32	91.53
211209	35.7	37.3	941635	0.047	0	0.085	0.006	12.2	8.1	40.7	6.9	5.3	0.094	0	11.9	39.53	16.47	24.30	25.14	0.25	14.99	84.76
211209	37.3	40.3	941636	0.077	0.027	0.1	0.006	12	9.1	30.3	4.9	10.5	0.1	0.004	11.4	37.87	6.72	17.25	22.30	0.29	16.84	82.87
211209	40.3	43.3	941637	0.033	0.011	0.087	0.004	7.4	4.6	39.7	5.5	9.1	0.048	0	13.7	45.51	17.35	19.37	24.73	0.25	8.44	91.31
211209	43.3	46.3	941638	0.1	0.014	0.1	0.01	12.3	9.5	33.1	4.5	9.1	0.1	0	12.1	40.20	13.59	15.85	21.21	0.29	17.58	82.13
211209	46.3	49.3	941639	0.086	0	0.1	0.017	9	4.8	39.4	4.6	9.6	0.1	0	13	43.19	15.56	16.20	26.23	0.29	8.79	90.92
211209	49.3	52.3	941640	0	0	0.2	0.006	3.9	1.3	47.7	2.2	12.1	0.066	0	11.3	37.54	8.64	7.75	40.67	0.58	2.05	97.37
211209	52.3	55.3	941641	0.062	0	0.073	0.011	14.5	8.2	33.1	5.3	8	0.1	0	12.8	42.52	17.04	18.66	18.47	0.21	15.20	84.59
211209	55.3	58.3	941642	0.012	0	0.1	0.008	11.7	6.6	43.6	6.3	5	0.092	0	12.5	41.53	20.80	22.18	25.88	0.29	12.16	87.55
211209	58.3	61.3	941643	0.057	0	0.095	0.007	9.9	5.5	38.9	4.8	9.1	0.091	0	12.8	42.52	15.55	16.90	25.58	0.27	10.11	89.62
211209	61.3	64.3	941644	0.019	0	0.3	0.015	8.8	5.7	41.6	4.3	7.2	0.062	0	15.2	50.50	30.23	15.14	19.71	0.87	10.10	89.04
211209	64.3	67.3	941645	0	0	0.1	0.01	7.8	4.4	37.9	4.1	10.5	0.084	0	14.8	49.17	21.31	14.44	21.62	0.29	8.04	91.67
211209	67.3	70.3	941646	0	0	0.09	0.01	7.6	4.4	42.4	5.6	7.5	0.066	0	14.9	49.50	25.45	19.72	22.40	0.26	8.06	91.68
211209	70.3	72.7	941647	0.016	0	0.3	0.033	5.7	3.5	49.5	3.3	7.8	0.082	0	13.3	44.19	23.92	11.62	32.26	0.87	5.98	93.15
211209	72.7	73.5	941648	0	0	0.2	0.028	3.6	0.9	61.1	6.8	0.2	0.08	0	18.5	61.46	53.68	23.94	22.89	0.58	1.31	98.12
211209	73.5	76.1	941649	0	0	1.2	0.052	3	2.5	84.8	1.9	0.1	0.1	0	3	9.97	6.74	6.69	79.17	3.46	2.41	94.12
211209	76.1	79.1	941650	0	0	2.4	0.039	4.1	3.8	80.6	2.1	0.065	0.09	0.001	3.4	11.30	7.87	7.39	74.12	6.93	2.58	90.49
211209	79.1	81	941651	0	0	0.9	0.035	1.9	1.2	85.6	2.4	0.089	0.09	0.001	3.9	12.96	9.02	8.45	78.18	2.60	0.55	96.86
211209	81	82.6	941652	0	0	1.1	0.059	2.8	2.5	87.6	1.1	0.037	0.1	0	1.7	5.65	3.81	3.87	84.40	3.17	2.60	94.22
211209	82.6	85.6	941653	0	0	0.8	0.1	2.6	2.1	84.1	2.6	0.064	0.2	0.003	3.7	12.29	7.87	9.15	77.22	2.31	2.42	95.27
211209	85.6	88.6	941654	0	0	1	0.1	2.1	1.5	86.6	2.3	0.059	0.2	0.005	2.6	8.64	4.43	8.10	82.06	2.89	0.92	96.20
211209	88.6	90.2	941655	0	0	2.1	0.091	2.9	2.7	86.6	1.1	0.089	0.1	0	1.5	4.98	2.94	3.87	83.93	6.06	1.09	92.85
211209	90.2	93.2	941656	0	0	4.4	0.4	6.5	7	76.1	0.9	0.036	0.7	0.001	1.3	4.32	2.76	3.17	73.69	12.70	4.79	82.51
211209	93.2	96.2	941657	0	0	3.3	0.5	5.1	5.5	80.6	0.7	0.023	0.8	0.003	0.8	2.66	1.37	2.46	79.21	9.52	4.06	86.42
211209	96.2	99.1	941658	0	0	4.3	0.094	6.2	6.6	78.2	0.9	0.055	0.1	0	1.2	3.99	2.34	3.17	76.05	12.41	4.23	83.36
211209	99.1	102	941659	0	0	4	0.087	5.3	5.4	81	0.8	0.027	0.1	0	0.9	2.99	1.51	2.82	79.44	11.54	2.55	85.90
211209	102	105	941660	0.01	0	3.3	0.4	5.6	5.9	79	0.9	0.053	0.7	0.002	1.3	4.32	2.72	3.17	76.62	9.52	4.81	85.67
211209	105	108	941661	0	0	2.6	0.1	5.1	5.3	81.1	1	0.068	0.3	0.001	1.4	4.65	2.84	3.52	78.57	7.50	5.01	87.49
211209	108	111	941662	0.012	0	3.2	0.4	6.7	7.2	74.8	1	0.096	0.7	0.002	1.6	5.32	3.52	3.52	71.85	9.24	7.43	83.33
211209	111	114	941663	0.014	0	2.7	0.2	4.8	4.4	73.5	3.5	0.098	0.3	0	5.6	18.60	12.90	12.32	62.84	7.79	3.14	89.07
211209	114	117	941664	0.038	0	3.2	0.2	6.4	6.8	74.9	1.8	0.055	0.4	0.002	2.8	9.30	6.32	6.34	69.61	9.24	6.68	84.08
211209	117	120	941665	0.014	0	2.7	0.1	4.1	3.9	80.8	1.7	0.057	0.2	0	2.4	7.97	5.04	5.99	76.37	7.79	2.20	90.01
211209	120	123	941666	0	0	5.6	0.2	6.7	7.1	73.4	1.4	0.028	0.3	0.001	1.7	5.65	3.16	4.93	70.36	16.16	2.71	81.13
211209	123	126	941667	0.025	0	7.6	0.1	8.5	9.2	68.1	1.1	0.018	0.3	0.002	0.9	2.99	0.85	3.87	66.70	21.93	2.87	75.20
211209	126	129	941668	0.072	0	6.7	0.4	9.3	10.3	66.3	1.3	0.024	0.7	0.005	1.3	4.32	1.89	4.58	64.11	19.34	6.62	74.04
211209	129	132	941669	0	0	4	0.7	5.8	6.4	74.8	1.5	0.037	1.3	0.011	1.7	5.65	2.91	5.28	71.83	11.54	4.42	84.03

Assay values and stoichiometric calculations for Drillhole 211209

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe Sulphide	Non sulphide gangue
211209	132	135	941670	0	0	6.6	0.3	9.1	9.9	68.9	0.9	0.015	0.5	0.004	1.2	3.99	2.44	3.17	66.69	19.05	6.06	74.89
211209	135	138	941671	0.011	0	6.9	0.3	8.3	9.1	70.4	0.8	0.027	0.5	0.001	1.1	3.65	2.26	2.82	68.38	19.91	4.00	76.09
211209	138	141	941672	0	0	8.6	0.1	9.5	10.3	66	0.7	0.039	0.2	0	0.9	2.99	1.71	2.46	64.40	24.82	3.04	72.14
211209	141	144	941673	0	0	9.7	0.1	9.9	10.5	63.3	0.9	0.026	0.2	0	1.1	3.65	2.04	3.17	61.34	27.99	1.33	70.67
211209	144	147	941674	0	0	14.2	0.1	15.9	17.2	48.6	0.5	0	0.2	0.003	0.3	1.00	0.00	1.76	48.20	40.98	5.37	53.64
211209	147	148.5	941675	0	0	7.7	0.1	8.8	9.2	68.4	0.8	0.012	0.2	0	1.1	3.65	2.30	2.82	66.36	22.22	2.68	75.10
211209	148.5	151.5	941676	0.018	0	2.9	0.2	5.8	4.2	59.9	1.6	2.8	0.3	0	12.5	41.53	36.69	5.63	36.21	8.37	2.38	89.25
211209	151.5	154.5	941677	0	0	2.4	0.058	9.2	4	36.1	0.6	3.9	0.1	0	25.1	83.39	83.70	2.11	-15.52	6.93	2.95	90.12
211209	154.5	155.3	941678	0	0	1.4	0.062	7.5	3.6	27.5	0.2	10.8	0.2	0	24.3	80.73	65.14	0.70	-12.46	4.04	4.09	91.87
211209	155.3	158.3	941679	0.024	0	5.3	0.1	7.8	7.1	72	1.4	0.065	0.3	0	2.4	7.97	5.70	4.93	67.40	15.30	3.28	81.43
211209	158.3	161.3	941680	0	0	7.4	0.029	7.2	8	24.9	0.2	0.01	0.076	0	0.3	1.00	0.65	0.70	24.34	21.36	1.00	77.65
211209	161.3	164.3	941681	0	0	13.3	0.052	13.3	14.4	54.5	0.2	0.5	0.1	0	0.9	2.99	1.74	0.70	53.28	38.38	1.83	59.78
211209	164.3	167.3	941682	0	0	12.2	0.077	12.5	13.3	49.3	0.3	2.9	0.2	0	3.1	10.30	4.06	1.06	46.58	35.21	1.85	62.94
211209	167.3	168.8	941683	0	0	14	0.042	14	14.8	53.8	0.4	0.1	0.1	0	0.8	2.66	1.86	1.41	52.34	40.40	1.26	58.33
211209	168.8	169.7	941684	0	0	3.9	0.023	6.7	4.8	30.3	0.3	15.5	0.088	0	12.5	41.53	9.34	1.06	24.36	11.26	1.62	87.13
211209	169.7	170.5	941685	0	0	1.9	0.062	4.7	2.5	53.6	1.4	7.6	0.1	0	12.5	41.53	25.69	4.93	36.79	5.48	1.09	93.43
211209	170.5	173	941686	0	0	0.3	0.045	3.5	1.1	46.5	1.1	12.8	0.1	0	11.3	37.54	9.46	3.87	39.85	0.87	1.49	97.64
211209	173	174.1	941687	0	0	0.4	0.029	3.5	0.8	42.1	1	14.9	0.1	0	12.1	40.20	7.68	3.52	36.61	1.15	0.74	98.10
211209	174.1	174.9	941688	0	0	0.3	0.014	6	2.2	28.3	0.6	17.7	0.083	0	14.4	47.84	10.55	2.11	21.37	0.87	3.55	95.58
211209	174.9	177.3	941689	0	0	0.3	0.027	3.9	1.3	56.4	2.5	9.5	0.1	0.002	9.6	31.89	7.77	8.80	49.66	0.87	1.87	97.27
211209	177.3	178	941690	0	0	1.3	0.008	3.5	1.4	47.9	0.7	13.3	0.058	0	9.3	30.90	1.65	2.46	46.33	3.75	0.17	96.08
211209	178	179.3	941691	0.2	0.033	1.3	0.013	5	1.9	26.3	0.9	18	0.084	0	14.8	49.17	10.66	3.17	19.07	3.75	1.10	95.15
211209	179.3	180.9	941692	0.012	0	1.4	0.015	3.4	1.9	54.4	0.5	11.4	0.06	0	7.8	25.91	1.00	1.76	53.39	4.04	0.91	95.05
211209	180.9	183	941693	0.042	0	0.8	0.021	4.4	2.1	33.4	0.6	17.7	0.1	0	12.3	40.86	2.66	2.11	31.30	2.31	2.42	95.27
211209	183	184.4	941694	0	0	2.7	0.034	5.9	3.9	45.4	0.9	11.8	0.099	0	8.8	29.24	2.90	3.17	42.91	7.79	2.20	90.01
211209	184.4	186.9	941695	0.02	0	2.9	0.022	6.3	5	76.8	1	0.9	0.063	0	1.9	6.31	2.73	3.52	74.33	8.37	3.88	87.75
211209	186.9	187.9	941696	0	0	1	0.006	4	1.2	34	0.3	16.2	0.046	0	12.8	42.52	8.80	1.06	28.39	2.89	0.36	96.76
211209	187.9	190.1	941697	0	0	2.4	0.032	6.7	4.4	61.9	1.5	3.4	0.08	0	6.4	21.26	12.55	5.28	53.04	6.93	3.70	89.37
211209	190.1	191.7	941698	0	0	2.4	0.023	6.5	5.6	70.8	1.3	1.5	0.066	0.002	3.7	12.29	7.39	4.58	65.25	6.93	5.95	87.13
211209	191.7	192.7	941699	0	0	1	0.04	4.3	1.1	59.2	7.5	1.3	0.086	0.009	11.4	37.87	22.78	26.41	39.31	2.89	0.17	96.94
211209	192.7	193.8	941700	0	0	0.3	0.067	5.3	2.1	49.9	10.5	0.5	0.097	0.02	14.3	47.51	28.80	36.97	23.95	0.87	3.36	95.77
211209	193.8	196.8	941701	0	0	0.4	0.025	3.9	2	64.2	3.6	3.6	0.065	0.014	7.6	25.25	11.83	12.68	54.10	1.15	2.99	95.86
211209	196.8	198	941702	0	0	1.2	0.074	6.2	3.5	42	4.2	8.3	0.1	0.005	12.3	40.86	16.93	14.79	28.31	3.46	4.28	92.25
211209	198	199.8	941703	0	0	0.3	0.027	4.3	1.5	52.4	3	7.8	0.075	0.011	9.3	30.90	9.56	10.56	44.17	0.87	2.24	96.89
211209	199.8	201.8	941704	0.022	0	0.4	0.023	6.5	4	39.6	1.2	13.7	0.074	0.001	10.4	34.55	3.70	4.23	36.38	1.15	6.73	92.12
211209	201.8	202.9	941705	0.012	0	0.1	0.008	4.2	2.6	54.7	1.4	10.2	0.054	0	8.1	26.91	2.95	4.93	51.78	0.29	4.68	95.04
211209	202.9	205.9	941706	0.045	0	0.1	0.006	6.4	3.8	43.5	2.4	11.8	0.043	0	10.8	35.88	7.02	8.45	37.30	0.29	6.92	92.79
211209	205.9	207	941707	0.072	0	0.3	0.007	7.7	4.8	39.5	3.4	11.7	0.029	0.001	11.2	37.21	6.50	11.97	32.82	0.87	8.41	90.72

Assay values and stoichiometric calculations for Drillhole 211213

Appendix 2																					
Assay values and stoichiometric calculations for Drillhole 211213																					
mscode	**From**	**To**	**Sampno**	**Pb**	**Zn**	**Cu**	**Co**	**Fe**	**S**	**SiO2**	**Al2O3**	**CaO**	**As**	**Sb**	**MgO**	**Dolomite**	**Talc**	**Chlorite**	**Quartz**	**Chalcopyrite**	**Fe Sulphides**	**Non sulphide gangue**
211213	0	3	941799	0.025	0	0.1	0.005	10.4	5.4	31.3	4.3	12.1	0.066	0	12.6	40.20	8.77	15.14	22.52	0.29	9.91	89.80
211213	3	6	941800	0.071	0	0.054	0.007	11.4	6.4	35.1	5.2	9.5	0.067	0.002	12.1	31.56	11.06	18.31	24.21	0.16	11.87	87.97
211213	6	9	941801	0.057	0	0.073	0.009	11.6	7.1	35.1	4.9	9.6	0.067	0	11.9	31.89	10.74	17.25	24.64	0.21	13.15	86.64
211213	9	12	941802	0.033	0	0.082	0.005	7.8	4.6	38.7	5.9	9.9	0.038	0.006	12	32.89	8.14	20.77	29.03	0.24	8.45	91.31
211213	12	15	941803	0	0	0.046	0.006	8.3	3.8	43.6	6.6	7.1	0.045	0.003	12.9	23.59	16.62	23.24	28.19	0.13	7.02	92.84
211213	15	18	941804	0.026	0.011	0.2	0.011	8.5	5	35.1	5.1	10.5	0.1	0	14.2	34.88	16.79	17.96	20.78	0.58	8.98	90.45
211213	18	21	941805	0.054	0.017	0.3	0.017	11.6	8.3	27	3.8	12.3	0.1	0	13.4	40.86	12.43	13.38	16.38	0.87	14.96	84.17
211213	21	22.7	941806	0.064	0.017	0.063	0.009	10.1	7.5	34.6	5.3	9.7	0.1	0.002	14.4	32.23	19.00	18.66	18.77	0.18	13.91	85.91
211213	22.7	24.3	941807	0.081	0	0.1	0.012	11.5	7.8	31.7	3.5	12	0.1	0	12	39.87	8.56	12.32	23.68	0.29	14.40	85.31
211213	24.3	25.6	941808	0.042	0	0.1	0.01	9.2	4.8	42	6.5	6.6	0.1	0	13.8	21.93	21.42	22.89	23.74	0.29	8.79	90.92
211213	25.6	28.6	941809	0.014	0	0.1	0.009	7.2	3.7	38.6	3.3	11.7	0.093	0	13.2	38.87	14.24	11.62	27.27	0.29	6.73	92.98
211213	28.6	30.9	941810	0	0	0.1	0.012	4.1	1.4	43.3	3.7	11.6	0.088	0	13.5	38.54	14.70	13.03	31.37	0.29	2.43	97.28
211213	30.9	33.5	941811	0.082	0	0.1	0.014	8.5	4.2	37.1	4.3	10.7	0.086	0	13.8	35.55	16.62	15.14	23.52	0.29	7.67	92.04
211213	33.5	36.5	941812	0.015	0	0.1	0.01	7.6	2.7	40.6	4.2	10.8	0.1	0	12.7	35.88	12.47	14.79	29.64	0.29	4.86	94.85
211213	36.5	39.5	941813	0	0	0.08	0.01	12.8	6	40.2	6.2	5.5	0.1	0	14.1	18.27	25.85	21.83	19.47	0.23	11.07	88.69
211213	39.5	42.5	941814	0.015	0	0.7	0.037	9.7	6	42.4	3.9	7.9	0.1	0	12.3	26.25	18.57	13.73	27.95	2.02	9.90	88.08
211213	42.5	45.5	941815	0	0	0.4	0.048	4.2	1.8	62.8	2.4	5.5	0.1	0.001	10.3	18.27	20.17	8.45	48.57	1.15	2.61	96.23
211213	45.5	48	941816	0.023	0	0.5	0.035	4.4	2.1	65.2	2.6	3.6	0.1	0.001	12.1	11.96	31.02	9.15	44.18	1.44	2.99	95.57
211213	48	50.2	941817	0.01	0	0.8	0.037	4.6	2.3	67.5	4	0.6	0.1	0	12.9	1.99	38.01	14.08	41.09	2.31	2.79	94.90
211213	50.2	53.2	941818	0.04	0.012	1.8	0.057	7.4	4.9	67.2	4.2	0.4	0.1	0	8	1.33	19.61	14.79	51.87	5.19	5.77	89.04
211213	53.2	55.5	941819	0.014	0	0.5	0.04	5.1	2.6	68.4	4.9	0.7	0.1	0	10.4	2.33	26.34	17.25	48.41	1.44	3.92	94.64
211213	55.5	58.5	941820	0.046	0	1.4	0.083	6.5	4.2	69.9	2.7	1	0.1	0	8.2	3.32	22.33	9.51	54.11	4.04	5.22	90.74
211213	58.5	60.1	941821	0	0	0.6	0.026	3.7	1.6	63.1	3.3	3.2	0.1	0	14.7	10.63	40.16	11.62	35.94	1.73	1.86	96.41
211213	60.1	61.3	941822	0	0	2.2	0.016	3	2.3	84.6	1.1	0.4	0.071	0	2.2	1.33	4.83	3.87	80.78	6.35	0.15	93.50
211213	61.3	62.4	941823	0.017	0	0.6	0.036	4.8	3.2	62.7	3.2	3.1	0.1	0	12.3	10.30	31.60	11.27	40.84	1.73	4.85	93.41
211213	62.4	63.3	941824	0.036	0	2.9	0.2	7.2	6.2	58	0.5	3.9	0.5	0	11.4	12.96	32.42	1.76	37.79	8.37	6.13	85.51
211213	63.3	66	941825	0	0	0.5	0.052	3.4	1.9	72.4	3.1	2	0.1	0	8.9	6.64	21.67	10.92	56.69	1.44	2.61	95.95
211213	66	68.7	941826	0	0	0.3	0.1	4.8	3.7	67.1	3.1	2.1	0.2	0	10.2	6.98	26.32	10.92	48.55	0.87	6.36	92.78
211213	68.7	71.5	941827	0.089	0	1.6	0.3	3.7	3.4	84.5	1.2	0.085	0.5	0.003	2	0.28	4.60	4.23	80.73	4.62	3.34	92.04
211213	71.5	74.4	941828	0.026	0.01	2.9	0.2	7.2	7.4	78.2	0.6	0.083	0.3	0	1	0.28	2.20	2.11	76.38	8.37	8.37	83.26
211213	74.4	75.9	941829	0.2	0	2.7	0.079	6.3	5.5	68.4	0.7	3.7	0.1	0	4.6	12.29	6.88	2.46	63.64	7.79	5.19	87.01
211213	75.9	77.6	941830	0.1	0	2.1	0.1	6.5	5	69.9	1.2	2.2	0.2	0	6.8	7.31	17.60	4.23	58.19	6.06	5.39	88.55
211213	77.6	80.6	941831	0.087	0.013	1.8	0.098	8.2	4.6	46.7	0.8	6.8	0.2	0	15.8	22.59	41.37	2.82	20.79	5.19	5.21	89.60
211213	80.6	83.6	941832	0.033	0	0.2	0.1	13.9	7.5	38.6	0.3	8.7	0.2	0	12.4	28.90	25.18	1.06	22.97	0.58	13.65	85.77
211213	83.6	86.6	941833	0	0	0.1	0.05	7.9	3	45.3	1.5	10.8	0.1	0	13.6	35.88	21.97	5.28	30.68	0.29	5.42	94.29
211213	86.6	89.2	941834	0	0	0.3	0.04	12.6	4.5	42.9	2.3	3.6	0.1	0	18.7	11.96	56.51	8.10	6.54	0.87	7.85	91.28
211213	89.2	91.7	941835	0	0	0.3	0.016	8.2	1.5	35.4	1.8	5.2	0.1	0	21.6	17.28	64.72	6.34	-5.58	0.87	2.24	96.89
211213	91.7	93.1	941836	0.081	0	0.8	0.1	8.8	5.9	72.4	0.9	1.9	0.2	0.003	4.7	6.31	11.10	3.17	64.90	2.31	9.53	88.16
211213	93.1	96.1	941837	0.1	0	1.5	0.041	5.2	3.9	81.3	1.4	0.7	0.1	0.004	2.1	2.33	3.06	4.93	78.32	4.33	4.46	91.21
211213	96.1	99	941838	0.019	0	1	0.088	2.9	2.3	87.7	1.9	0.073	0.2	0.008	2	0.24	3.04	6.69	84.33	2.89	2.42	94.70
211213	99	102	941839	0.024	0	1.7	0.1	3.7	3.2	85	1.4	0.047	0.2	0	1.8	0.16	3.49	4.93	81.76	4.91	2.78	92.32
211213	102	105	941840	0.011	0	3.9	0.3	5.1	5.1	80.8	0.7	0.013	0.6	0	0.8	0.04	1.39	2.46	79.39	11.26	2.18	86.57
211213	105	108	941841	0.014	0	1.7	0.1	2.9	2.5	85.7	1.4	0.074	0.2	0.001	2	0.25	4.17	4.93	82.04	4.91	1.47	93.63
211213	108	109.3	941842	0.085	0	4.7	0.3	12.7	13.5	56.9	0.6	1.2	0.6	0.006	4.4	3.99	12.32	2.11	48.89	13.56	16.38	70.05
211213	109.3	112.1	941843	0	0	4.1	0.1	5.8	5.4	71.5	1	1.9	0.2	0	4.1	6.31	8.62	3.52	65.44	11.83	2.36	85.80
211213	112.1	112.8	941844	0.063	0.015	21	0.047	20.8	22.8	32.5	0.1	0.1	0.1	0	0.3	0.33	0.66	0.35	32.02	60.61	3.01	36.38
211213	112.8	114.5	941845	0	0	1.9	0.1	3.5	2.6	83.6	1.3	0.5	0.5	0.014	2.6	1.66	5.64	4.58	79.12	5.48	1.28	93.24
211213	114.5	115.4	941846	0	0	0.8	0.052	8.2	2.3	37.1	1	11.2	0.2	0	15.3	37.21	28.54	3.52	18.87	2.31	2.79	94.90
211213	115.4	117.2	941847	0	0	0.2	0.039	6.7	1.6	54.4	2.5	3.7	0.1	0	18.9	12.29	56.57	8.80	17.85	0.58	2.62	96.81
211213	117.2	119.4	941848	0	0	0.2	0.017	4.7	1.6	60.1	1.9	8.1	0.1	0	8.1	26.91	6.83	6.69	54.42	0.58	2.62	96.81
211213	119.4	120.8	941849	0.043	0	0.4	0.041	5.4	2.7	46.8	0.3	12.3	0.2	0.008	9.9	40.86	7.20	1.06	42.16	1.15	4.30	94.55

Assay values and stoichiometric calculations for Drillhole 211213

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe Sulphides	Non sulphide gangue
211213	120.8	123	941850	0	0	0.1	0.073	6.4	2.8	45.3	1	12.3	0.2	0	10.7	40.86	8.62	3.52	39.24	0.29	5.05	94.66
211213	123	125	941851	0	0	0.1	0.022	5.5	2.2	54	2	9.8	0.1	0	8.8	32.56	5.18	7.04	49.25	0.29	3.93	95.78
211213	125	127.8	941852	0	0	0.086	0.035	8.7	3.4	40.1	2.9	12.1	0.1	0.002	9.8	40.20	1.41	10.21	36.93	0.25	6.20	93.55
211213	127.8	129	941853	0.013	0	0.1	0.034	10.1	4.3	49.1	0.7	6.8	0.1	0	13.6	22.59	33.32	2.46	28.18	0.29	7.86	91.86
211213	129	131.6	941854	0.034	0	0.1	0.1	5.8	2.7	56.3	1	9.6	0.3	0.007	6.6	31.89	-0.35	3.52	55.72	0.29	4.86	94.85
211213	131.6	133.6	941855	0	0	0.062	0.018	13	1.4	44.1	0.3	3.9	0.094	0	11.1	12.96	31.75	1.06	24.46	0.18	2.50	97.32
211213	133.6	136.5	941856	0.025	0	0.056	0.015	7.2	2.3	42.6	2.6	12.8	0.1	0.003	10.3	42.52	2.30	9.15	39.12	0.16	4.20	95.64
211213	136.5	139.3	941857	0.012	0	0.2	0.018	4.6	1.9	45.4	0.3	14.4	0.1	0	9.3	47.84	-0.07	1.06	45.20	0.58	3.18	96.25
211213	139.3	140.3	941858	0.028	0.025	0.2	0.012	7.7	5.1	41.9	2.1	12	0.1	0	10	39.87	4.21	7.39	37.65	0.58	9.16	90.26
211213	140.3	141	941859	0.2	0.011	0.077	0.018	23.3	20.6	14.7	2	11.3	0.1	0.011	8.7	37.54	1.22	7.04	12.36	0.22	38.40	61.38
211213	141	144	941860	0.048	0	0.1	0.006	12.1	7.1	30	4.9	12.5	0.1	0.009	9.7	41.53	-4.44	17.25	28.82	0.29	13.09	86.62
211213	144	146.7	941861	0.06	0.01	0.072	0.005	13.8	8.2	27.3	4.1	12.9	0.097	0.01	8.9	42.86	-6.60	14.44	28.07	0.21	15.21	84.59
211213	146.7	147.5	941862	0.066	0.01	0.056	0.007	14.2	10.3	31.8	5.2	10.5	0.092	0.016	8	34.88	-6.74	18.31	31.78	0.16	19.16	80.67
211213	147.5	149.6	941863	0.056	0.02	0.1	0.008	14.3	9.2	25.4	3.9	12.5	0.1	0.006	9.4	41.53	-3.31	13.73	24.32	0.29	17.02	82.69
211213	149.6	151.2	941864	0.026	0	0.2	0.006	11.4	5.5	31.9	5.4	12.2	0.075	0.011	9.7	40.53	-4.86	19.01	30.57	0.58	9.91	89.51
211213	151.2	153	941865	0	0	0.025	0.006	12.7	6.2	32.2	4.7	11.9	0.083	0.009	9.2	39.53	-4.44	16.55	31.17	0.07	11.55	88.38
211213	153	156	941866	0.021	0	0.029	0.007	10.2	4.7	30.5	4.7	14.2	0.1	0.01	9.7	47.18	-8.05	16.55	31.68	0.08	8.74	91.18
211213	156	159	941867	0.036	0	0.031	0.006	8.3	3.8	31.4	4.7	15.3	0.083	0.018	9.4	50.83	-11.80	16.55	34.87	0.09	7.05	92.86
211213	159	162	941868	0.026	0	0.032	0.004	7.7	3.7	34.8	5.8	13.9	0.076	0.02	8.3	46.18	-15.08	20.42	39.40	0.09	6.86	93.05
211213	162	165	941869	0.094	0.012	0.033	0.008	8.4	4.8	35.6	5	12.3	0.074	0.014	10.1	40.86	-2.69	17.61	33.26	0.10	8.92	90.99
211213	165	168	941870	0.09	0.012	0.07	0.014	15.6	8.5	26.4	4.6	12.2	0.1	0.009	9.2	40.53	-4.93	16.20	25.75	0.20	15.77	84.03
211213	168	171	941871	0	0	0.2	0.012	11.5	3.9	36.9	6.1	10.2	0.1	0.005	9.9	33.89	-0.92	21.48	32.61	0.58	6.92	92.50
211213	171	174	941872	0.045	0.015	0.084	0.011	17.6	10.2	28.7	5.3	9.6	0.09	0.012	8.7	31.89	-2.19	18.66	25.82	0.24	18.92	80.83
211213	174	177	941873	0.028	0.01	0.037	0.007	10.8	7.7	29.9	4.6	13.3	0.077	0.019	9.1	44.19	-7.93	16.20	31.08	0.11	14.34	85.56
211213	177	180	941874	0.079	0.042	0.073	0.008	12.3	10.3	27.2	4.7	13	0.076	0.029	7.9	43.19	-11.95	16.55	30.76	0.21	19.13	80.66
211213	180	183	941875	0.2	0.1	0.026	0.006	12.8	11.2	28.5	4.5	12.3	0.049	0.035	6.8	40.86	-13.96	15.85	33.45	0.08	20.90	79.02
211213	183	186	941876	0.1	1	0.056	0.007	12	10.7	27.8	4.6	13.1	0.09	0.033	7	43.52	-15.35	16.20	33.52	0.16	19.91	79.93
211213	186	189	941877	0.4	0.8	0.018	0.006	10.6	9.1	27.2	4.3	13.7	0.069	0.034	7.8	45.51	-13.09	15.14	31.78	0.05	16.99	82.96
211213	189	190.4	941878	1.3	0.8	0.063	0.003	6.6	5.1	33.3	5.5	13.2	0.048	0.039	7.3	43.85	-16.50	19.37	39.00	0.18	9.42	90.40
211213	190.4	192.9	941879	0.021	0.031	0.015	0.004	7.7	5.2	35.7	5.3	13.1	0.045	0.041	6.8	43.52	-17.68	18.66	42.29	0.04	9.70	90.26
211213	192.9	194.7	941880	0.077	0.4	0.018	0.006	13.8	12	28.1	4.7	12.2	0.044	0.031	6.2	40.53	-16.43	16.55	34.40	0.05	22.42	77.53
211213	194.7	196.7	941881	0.049	0.015	0.018	0.006	11.2	6.4	21.3	3	17.8	0.068	0.014	10.2	59.14	-10.91	10.56	25.58	0.05	11.94	88.01
211213	196.7	199.1	941882	0.032	0.044	0.014	0.006	12.5	6.1	28.1	4.2	14.9	0.075	0.024	8.9	49.50	-11.59	14.79	31.84	0.04	11.39	88.57
211213	199.1	201.7	941883	0.1	0.4	0.075	0.003	5.7	2.9	38.2	6.7	13.4	0.04	0.051	7.1	44.52	-20.44	23.59	45.36	0.22	5.28	94.50
211213	201.7	203	941884	0	0	0.022	0.001	4.8	1.9	41.1	7.1	12.3	0.013	0.053	6.6	40.86	-20.60	25.00	48.04	0.06	3.51	96.42
211213	203	205.9	941885	0.015	0	0.01	0.002	4.9	1.9	36.7	6.1	14.9	0.028	0.04	7.8	49.50	-20.03	21.48	44.08	0.03	3.54	96.44
211213	205.9	208.4	941886	0	0	0	0.001	3.8	0.9	38.9	6.4	14.9	0.043	0.05	7.8	49.50	-20.71	22.54	46.46	0.00	1.68	98.32
211213	208.4	210.9	941887	0.013	0	0.02	0.002	7.2	3.1	33.2	5.3	16.3	0.037	0.037	8	54.15	-20.81	18.66	41.69	0.06	5.76	94.18
211213	210.9	212.3	941888	0.014	0	0	0.003	7.2	4	34.3	6	15.7	0.049	0.043	6.8	52.16	-25.47	21.13	45.09	0.00	7.48	92.52
211213	212.3	214.6	941889	0	0	0.02	0.003	4.8	1	35.4	5.2	17	0.043	0.037	7.6	56.48	-23.75	18.31	45.78	0.06	1.83	98.11
211213	214.6	217.2	941890	0	0	0.011	0.002	4.3	0.9	36.5	5.6	17.3	0.034	0.041	7	57.48	-27.63	19.72	48.93	0.03	1.66	98.31
211213	217.2	220.2	941891	0	0	0.012	0.002	3.8	0.4	40.3	5.4	15.5	0.033	0.038	7.3	51.50	-21.76	19.01	49.30	0.03	0.73	99.24
211213	220.2	221.7	941892	0	0	0.016	0.002	3.3	0.5	35.4	5	20	0.024	0.035	6.5	66.45	-34.59	17.61	52.56	0.05	0.91	99.05

Assay values and stoichiometric calculations for Drillhole 211220

Appendix 2																						
Assay values an stoichiometric calculations for Drillhole 211220																						
mscode	**From**	**To**	**Sampno**	**Pb**	**Zn**	**Cu**	**Co**	**Fe**	**S**	**SiO2**	**Al2O3**	**CaO**	**As**	**Sb**	**MgO**	**Dolomite**	**Talc**	**Chlorite**	**Quartz**	**Chalcopyrite**	**Fe Sulphides**	**Non Sulphide Gangue**
211220	0	0.8	943627	0.035	0	0.044	0.005	6	3.3	42	7.6	8	0.043	0.017	12.8	26.58	11.83	26.76	7.78	0.13	6.09	93.78
211220	0.8	3	943628	0.034	0	0.1	0.006	11.8	6.5	30.2	4.1	12	0.076	0	12.3	39.87	8.33	14.44	10.45	0.29	11.97	87.74
211220	3	3.6	943629	0.034	0	0.072	0.006	9.4	4.3	47.3	9.6	2.9	0.089	0.002	12.6	9.63	18.72	33.80	1.83	0.21	7.91	91.88
211220	3.6	4.2	943630	0	0	0.055	0.005	9.1	4.2	44.5	7.2	5.9	0.076	0	12.2	19.60	15.49	25.35	9.46	0.16	7.75	92.09
211220	4.2	6	943631	0	0	0.051	0.004	8.5	4.8	36.6	5.9	10.1	0.079	0	12.9	33.55	11.05	20.77	8.85	0.15	8.88	90.97
211220	6	7.2	943632	0.066	0	0.054	0.014	12.1	7.9	36.3	5.6	7.9	0.1	0.003	11.7	26.25	12.46	19.72	8.74	0.16	14.68	85.17
211220	7.2	8.1	943633	0.015	0	0.065	0.008	13.4	7.1	34.4	5.5	9.7	0.2	0.008	9.9	32.23	1.63	19.37	13.81	0.19	13.16	86.65
211220	8.1	9.2	943634	0	0	0.048	0.005	10.7	5.4	35.9	6.5	9.3	0.039	0.009	11.3	30.90	5.58	22.89	9.38	0.14	10.01	89.85
211220	9.2	10.3	943635	0.093	0.014	0.051	0.007	11.9	7	32.7	4.9	10.5	0.066	0.005	11.3	34.88	6.34	17.25	11.35	0.15	13.00	86.85
211220	10.3	13.1	943636	0.04	0	0.06	0.008	10.3	5.6	35.4	4.9	10.4	0.074	0.002	11.7	34.55	8.08	17.25	12.98	0.17	10.36	89.46
211220	13.1	14.1	943637	0.028	0	0.035	0.004	6.8	3.5	35.3	5.2	13.1	0.039	0.017	9.9	43.52	-5.80	18.31	20.31	0.10	6.48	93.42
211220	14.1	16.2	943638	0.039	0	0.1	0.006	12.3	8.1	25.2	3.8	11.9	0.012	0.009	8.5	39.53	-5.03	13.38	14.67	0.29	14.97	84.75
211220	16.2	17.1	943639	0.091	0	0.068	0.011	17.3	12.4	26.8	4.1	9.4	0.053	0.003	10.6	31.23	8.14	14.44	7.16	0.20	23.07	76.73
211220	17.1	17.8	943640	0	0	0.037	0.007	8.6	4	46.8	8.3	4.6	0.066	0.004	12.5	15.28	17.23	29.23	6.82	0.11	7.41	92.48
211220	17.8	19.7	943641	0.028	0	0.058	0.013	13.9	8	31.1	4.8	9.9	0.095	0	11.5	32.89	8.75	16.90	8.63	0.17	14.86	84.97
211220	19.7	20.4	943642	0.021	0	0.047	0.011	9.7	5.7	33	4.8	11	0.083	0	13.6	36.54	14.02	16.90	7.31	0.14	10.58	89.29
211220	20.4	21	943643	0	0	0.056	0.006	9.2	3.9	36.4	5.8	9.7	0.061	0	13.8	32.23	15.61	20.42	6.21	0.16	7.19	92.65
211220	21	23	943644	0	0.011	0.2	0.011	7.7	3.8	36.8	5.5	10.3	0.079	0	14	34.22	15.61	19.37	7.67	0.58	6.73	92.69
211220	23	25.6	943645	0	0.012	0.3	0.008	7.5	3.5	41.4	4.4	9.9	0.07	0	12.6	32.89	13.79	15.49	17.25	0.87	5.98	93.15
211220	25.6	27	943646	0.013	0.019	0.097	0.015	11.1	7.3	37.6	6.5	6.5	0.1	0	13.8	21.59	21.66	22.89	1.25	0.28	13.47	86.25
211220	27	29.9	943647	0.026	0.033	0.6	0.025	9.6	6.5	29.4	4.1	12.2	0.1	0	13.9	40.53	13.87	14.44	6.26	1.73	11.03	87.24
211220	29.9	32	943648	0.026	0.015	0.072	0.01	8.9	6.4	43.7	7.4	4	0.1	0	14.7	13.29	28.97	26.06	-0.28	0.21	11.84	87.95
211220	32	33.9	943649	0.09	0.02	0.094	0.012	12.6	10.4	31.2	4.8	8.8	0.1	0.002	12.9	29.24	16.64	16.90	3.91	0.27	19.28	80.45
211220	33.9	36	943650	0.03	0.012	0.024	0.006	7.2	4.6	43.8	6.8	6.2	0.061	0	14.6	20.60	24.70	23.94	4.54	0.07	8.56	91.37
211220	36	37.3	943651	0.1	0.015	0.055	0.013	11.1	8.9	31.5	4.5	10	0.1	0.003	13.3	33.22	15.96	15.85	5.68	0.16	16.55	83.29
211220	37.3	38.9	943652	0.07	0.018	0.4	0.023	11.5	10	35.2	3.3	9.2	0.093	0.006	11.3	30.56	13.06	11.62	15.37	1.15	17.95	80.89
211220	38.9	41.6	943653	0.029	0.011	0.2	0.009	8.9	4.9	37.9	5.4	8.8	0.055	0	14.2	29.24	20.17	19.01	6.34	0.58	8.79	90.63
211220	41.6	42.6	943654	0	0	0.086	0.008	10.3	4.9	44.2	7.4	4.8	0.064	0	13.4	15.95	22.17	26.06	4.37	0.25	9.01	90.75
211220	42.6	43.3	943655	0	0	0.2	0.014	9	4.3	45	6.4	5.9	0.065	0	12.7	19.60	19.18	22.54	10.52	0.58	7.67	91.76
211220	43.3	44.7	943656	0	0	0.1	0.011	6.2	2.6	50.1	0.9	10.5	0.054	0	10.8	34.88	13.52	3.17	38.45	0.29	4.68	95.04
211220	44.7	47	943657	0	0	0.05	0.009	6.9	3.1	40.2	5.6	9.7	0.061	0	13.5	32.23	14.94	19.72	11.13	0.14	5.71	94.15
211220	47	49.8	943658	0	0	0.035	0.004	6.9	3	40.9	6.9	9.7	0.035	0.019	10.1	32.23	-0.79	24.30	16.86	0.10	5.55	94.35
211220	49.8	52	943659	0.2	0	0.3	0.012	12.2	6.2	29.7	3.6	12	0.08	0.003	12.8	39.87	11.35	12.68	9.87	0.87	11.03	88.10
211220	52	54	943660	0	0	0.1	0.006	9.5	3.7	31.2	4.8	11.4	0.067	0	15.8	37.87	21.34	16.90	1.03	0.29	6.73	92.98
211220	54	56	943661	0	0	0.031	0.006	14.2	5.8	40	7	1.6	0.05	0	19.8	5.32	54.77	24.65	-18.34	0.09	10.79	89.12
211220	56	57.8	943662	0	0	0.064	0.008	12.5	5.8	35.7	5.3	7.7	0.03	0	15	25.58	26.03	18.66	0.91	0.18	10.73	89.08
211220	57.8	58.5	943663	0	0	0.063	0.009	8.3	3.3	48.8	6.1	3.8	0.062	0	16.3	12.62	38.41	21.48	3.63	0.18	6.06	93.76
211220	58.5	59.9	943664	0	0	0.1	0.015	12.4	5.9	45.4	6.1	2.4	0.076	0	15.8	7.97	39.87	21.48	-0.66	0.29	10.85	88.86
211220	59.9	60.7	943665	0	0	0.5	0.02	6.3	2.3	64.4	5.4	1.2	0.081	0	11.4	3.99	27.77	19.01	28.19	1.44	3.36	95.20
211220	60.7	61.6	943666	0	0	0.4	0.008	4.5	1.5	56	1.3	8.6	0.034	0	11	28.57	17.90	4.58	40.26	1.15	2.05	96.79
211220	61.6	62.5	943667	0	0	0.1	0.035	9.4	4.2	57.4	3.2	2.1	0.095	0	14.4	6.98	41.88	11.27	20.32	0.29	7.67	92.04
211220	62.5	63.6	943668	0	0	0.072	0.018	6.2	2.1	57.4	3.8	4.4	0.078	0	13.4	14.62	31.28	13.38	24.68	0.21	3.79	96.00
211220	63.6	64.2	943669	0	0	0.047	0.01	3.6	0.7	59.6	3.3	7.4	0.062	0	9.2	24.58	9.46	11.62	41.97	0.14	1.22	98.64
211220	64.2	66.1	943670	0	0	0.056	0.009	3.5	0.4	49.6	3.5	10.1	0.049	0	12.1	33.55	13.47	12.32	28.82	0.16	0.64	99.20
211220	66.1	67.6	943671	0.055	0	2.3	0.026	7.5	5	56.4	2	4.5	0.092	0	10.3	14.95	23.46	7.04	34.80	6.64	5.01	88.35
211220	67.6	69	943672	0.011	0	1.2	0.021	4.8	2.7	67.5	2.7	3.1	0.071	0.001	8.2	10.30	17.32	9.51	47.18	3.46	2.79	93.75
211220	69	70.3	943673	0.092	0.01	2.4	0.059	7.9	5.1	60.9	4.5	0.1	0.1	0.001	12	0.33	34.69	15.85	23.63	6.93	5.01	88.06
211220	70.3	71.7	943674	0.1	0.011	3.1	0.1	7	5.1	63.1	2.8	1.2	0.2	0	9.9	3.99	28.02	9.86	35.90	8.95	3.69	87.36
211220	71.7	73.4	943675	0	0	1.2	0.022	6.8	2.8	42	0.3	3.4	0.087	0	25.4	11.30	86.70	1.06	-12.26	3.46	2.97	93.56
211220	73.4	75.3	943676	0	0	0.7	0.018	5	2.6	61.2	1.7	5.6	0.055	0	9.6	18.60	18.88	5.99	43.45	2.02	3.54	94.44
211220	75.3	75.9	943677	0	0	1	0.032	4.7	1.9	65.6	4.9	0.8	0.083	0	12.1	2.66	32.49	17.25	28.27	2.89	1.67	95.45
211220	75.9	78.2	943678	0	0	0.9	0.049	4.5	2.7	68	1.9	3.9	0.1	0	7.6	12.96	14.97	6.69	51.94	2.60	3.35	94.05
211220	78.2	79.1	943679	0	0	0.9	0.039	4.9	2.9	64.5	3.2	3.8	0.096	0	8.8	12.62	16.77	11.27	42.76	2.60	3.73	93.68
211220	79.1	79.8	943680	0	0	0.4	0.02	3.1	1.1	70.3	4.6	1	0.066	0	11.1	3.32	28.93	16.20	36.20	1.15	1.30	97.54

Assay values and stoichiometric calculations for Drillhole 211220

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe Sulphides	Non Sulphide Gangue
211220	79.8	81	943681	0	0	0.081	0.01	3.2	0.9	72	5.9	0.2	0.058	0	10.1	0.66	24.14	20.77	36.25	0.23	1.53	98.24
211220	81	82.6	943682	0.065	0	0.8	0.095	5.6	5.1	80	1.3	0.5	0.1	0	2.5	1.66	5.26	4.58	71.98	2.31	8.03	89.66
211220	82.6	84	943683	0	0	0.2	0.016	3.2	0.9	62.7	5.7	0.1	0.066	0	18.7	0.33	57.16	20.07	7.48	0.58	1.31	98.12
211220	84	85	943684	0.011	0	1.7	0.031	3.9	3.4	80.8	1.7	0.4	0.082	0	3.8	1.33	9.48	5.99	68.79	4.91	3.15	91.94
211220	85	87.6	943685	0.011	0	0.3	0.038	4.7	3	53.3	3.6	6.2	0.1	0	13.6	20.60	28.19	12.68	23.17	0.87	5.05	94.09
211220	87.6	89.4	943686	0	0	0.2	0.035	4.4	2.4	55.1	4.2	4.2	0.096	0.001	16.3	13.95	41.75	14.79	14.57	0.58	4.11	95.31
211220	89.4	91.1	943687	0	0	0.3	0.025	4.1	2.5	59.4	2.2	7.3	0.081	0	9.2	24.25	12.19	7.75	43.98	0.87	4.11	95.02
211220	91.1	92	943688	0	0	1.8	0.036	6	3	48.4	5.2	5.1	0.2	0	15	16.94	32.45	18.31	10.03	5.19	2.21	92.59
211220	92	93	943689	0.017	0	6.3	0.5	10.9	9.9	63.8	1.2	0.3	0.9	0.002	2.1	1.00	4.46	4.23	56.62	18.18	6.63	75.19
211220	93	94	943690	0.012	0	4.4	0.093	6.8	6.7	75.4	1	0.1	0.1	0	1.4	0.33	2.76	3.52	69.97	12.70	4.23	83.07
211220	94	95	943691	0	0	2.2	0.08	5.1	4.6	78.8	1.9	0.1	0.1	0.001	2.8	0.33	5.99	6.69	68.23	6.35	4.45	89.20
211220	95	95.8	943692	0.043	0	1.2	0.093	11.8	12.2	62.9	2.3	0.3	0.2	0.002	4	1.00	9.12	8.10	49.01	3.46	20.56	75.98
211220	95.8	96.4	943693	0.051	0	0.5	0.1	6.6	6.4	72.2	1.8	0.8	0.2	0.003	5.8	2.66	15.82	6.34	55.97	1.44	11.03	87.53
211220	95.8	96.4	943693	0.093	0.01	0.04	0.004	7.5	5	39.4	6	9.2	0.096	0.004	13.2	30.56	14.10	21.13	9.43	0.12	9.28	90.61
211220	96.4	97.3	943694	0.1	0.021	0.039	0.007	11.7	10.5	34	4.3	9.1	0.1	0.001	12.4	30.23	15.17	15.14	9.36	0.11	19.57	80.32
211220	96.4	97.3	943694	0.023	0	0.5	0.051	6.4	5.7	61.5	2.4	2	0.1	0.002	12.9	6.64	38.29	8.45	29.43	1.44	9.72	88.84
211220	97.3	98.1	943695	0.06	0.011	0.063	0.01	8.9	6.8	39.5	5.2	7.6	0.1		14.2	25.25	23.48	18.31	6.62	0.18	12.60	87.21
211220	97.3	98.1	943695	0.021	0	0.7	0.1	6.1	4.9	48.6	1.3	6.5	0.4	0	16.1	21.59	42.08	4.58	18.09	2.02	7.85	90.13
211220	98.1	98.7	943696	0	0	1.9	0.2	4.3	3.8	67.6	0.4	5.7	0.4	0.002	4.7	18.94	3.17	1.41	64.03	5.48	3.52	90.99
211220	98.1	98.7	943696	0.1	0	0.2	0.009	6.9	5	42.6	5.5	7.7	0.095		14.4	25.58	23.32	19.37	8.76	0.58	8.98	90.45
211220	98.7	99.8	943697	0.017	0	1.3	0.1	5.9	4.3	53.7	4.7	1.3	0.2	0	18.6	4.32	56.18	16.55	2.60	3.75	5.59	90.66
211220	99.8	100.6	943698	0	0	6.6	0.2	8	8.3	70.2	0.8	0.2	0.4	0	1.4	0.66	2.98	2.82	65.34	19.05	3.07	77.88
211220	100.6	101.7	943699	0.013	0	2.3	0.1	5	4.6	79.1	1.9	0.056	0.2	0.001	2.8	0.19	6.09	6.69	68.46	6.64	4.26	89.10
211220	101.7	102.7	943700	0	0	5.4	0.4	7.7	7.9	68.1	1.9	0.059	0.8	0	3	0.20	6.84	6.69	57.01	15.58	4.59	79.83
211220	102.7	105	943701	0	0	2.6	0.3	3.8	3.8	83.1	0.9	0.1	0.6	0.001	1.4	0.33	2.99	3.17	77.88	7.50	2.20	90.30
211220	105	106.2	943702	0	0	3.1	0.2	4.5	4.2	73.5	1.5	0.092	0.3	0	7.5	0.31	24.58	5.28	52.97	8.95	2.01	89.05
211220	106.2	108	943703	0	0	4.3	0.3	6	6.2	75.5	0.6	0.1	0.6	0.001	2.9	0.33	9.31	2.11	67.48	12.41	3.48	84.11
211220	108	109	943704	0	0	7	0.1	8.7	9.4	70	0.2	0.4	0.2	0	0.5	1.33	0.47	0.70	68.78	20.20	4.37	75.43
211220	109	110	943705	0	0	3.5	0.1	4.2	4.1	82.3	0.5	0.6	0.2	0.002	1	1.99	1.20	1.76	79.58	10.10	1.06	88.84
211220	110	111	943706	0	0	3.5	0.1	4.6	4.7	82.1	0.4	0.5	0.2	0	0.7	1.66	0.53	1.41	80.14	10.10	2.19	87.71
211220	111	112	943707	0	0	3.2	0.1	4.6	4.6	82.9	0.4	0.4	0.2	0	0.5	1.33	0.02	1.41	81.25	9.24	2.57	88.20
211220	112	113.2	943708	0	0	5	0.069	6.2	6.3	76.8	0.7	0.3	0.1	0	1.1	1.00	1.84	2.46	72.99	14.43	2.35	83.22
211220	113.2	114	943709	0	0	6.6	0.099	8	8.4	72.9	0.4	0.057	0.1	0	0.4	0.19	0.46	1.41	70.98	19.05	3.26	77.70
211220	114	115	943710	0.011	0	3.4	0.081	7.2	6.6	77.6	0.8	0.066	0.1	0	1.1	0.22	2.17	2.82	73.23	9.81	5.93	84.26
211220	115	116.1	943711	0.021	0	7	0.1	11.7	11.9	63.8	0.9	0.043	0.1	0.001	1.4	0.14	3.12	3.17	58.50	20.20	9.05	70.75
211220	116.1	118.1	943712	0.024	0	4.8	0.092	8	7.3	67	1	1.8	0.1	0	3.5	5.98	6.60	3.52	59.22	13.85	4.60	81.55
211220	118.1	119.1	943713	0.014	0	2.7	0.043	5.9	3.9	49.7	0.9	1.9	0.1	0	25.6	6.31	89.67	3.17	-8.48	7.79	2.20	90.01
211220	119.1	120	943714	0	0	0.3	0.029	3	0.6	25.4	0.1	19.6	0.1	0	17.7	65.12	19.56	0.35	12.87	0.87	0.56	98.58
211220	120	122.6	943715	0	0	0.6	0.096	2.8	1	52.4	0.4	9.7	0.2	0	14.1	32.23	28.96	1.41	33.07	1.73	0.74	97.53
211220	122.6	124.3	943716	0	0	0.4	0.056	8.5	4.2	54.5	1.8	2.5	0.1	0	18.5	8.31	59.51	6.34	11.57	1.15	7.10	91.74
211220	124.3	125	943717	0	0	0.7	0.077	13.3	9	47.2	0.7	0.06	0.1	0	22.5	0.20	82.86	2.46	-6.12	2.02	15.52	82.46
211220	125	127.3	943718	0	0	0.4	0.067	8.5	4.3	58.1	1.9	0.077	0.1	0	20.3	0.26	71.83	6.69	7.29	1.15	7.29	91.56
211220	127.3	128.9	943719	0	0	0.3	0.051	6	2.8	71.6	2.4	0.1	0.1	0	11.4	0.33	37.19	8.45	40.20	0.87	4.67	94.46
211220	128.9	131.2	943720	0	0	0.1	0.026	6.2	2.3	66	4.4	0.2	0.092	0	13.5	0.66	40.32	15.49	25.65	0.29	4.11	95.60
211220	131.2	133.2	943721	0	0	0.097	0.015	14.7	7.4	33.8	4.7	3.8	0.04	0	21.4	12.62	60.75	16.55	-20.09	0.28	13.66	86.06
211220	133.2	135.9	943722	0	0	0.098	0.016	17	8.6	32	3.8	4.1	0.058	0	20.2	13.62	57.56	13.38	-16.77	0.28	15.90	83.81
211220	135.9	138	943723	0.2	0.032	0.05	0.017	7.4	3.8	59.2	1.9	6.7	0.09	0.003	7.4	22.26	7.54	6.69	47.68	0.14	7.02	92.84
211220	138	139.5	943724	0.071	0	0.1	0.013	12.2	6.7	52.8	2.7	4.8	0.037	0	8.9	15.95	15.90	9.51	33.35	0.29	12.35	87.37
211220	139.5	140.6	943725	0.021	0	0.1	0.012	17	9.2	21.6	3.6	11.2	0.1	0	15.1	37.21	21.90	12.68	-4.68	0.29	17.02	82.69
211220	140.6	143	943726	0.019	0	0.1	0.01	15.7	8	22.8	3.5	12.4	0.1	0	13.3	41.20	12.50	12.32	2.61	0.29	14.78	84.93
211220	143	145	943727	0.015	0	0.044	0.01	10.3	4.5	30.5	3.2	14.3	0.075	0	11.1	47.51	0.37	11.27	18.78	0.13	8.34	91.54
211220	145	147.9	943728	0.021	0	0.065	0.015	11.4	5.4	36.2	3.3	11.5	0.074	0	10	38.21	2.69	11.62	22.71	0.19	9.98	89.83
211220	147.9	150	943729	0.015	0	0.072	0.034	16.9	9.1	26.7	1.9	11.6	0.077	0	11.9	38.54	12.76	6.69	11.99	0.21	16.89	82.90
211220	150	151	943730	0.024	0	0.051	0.021	12.9	6.4	40.9	4	7.8	0.1	0	11	25.91	13.69	14.08	18.22	0.15	11.88	87.98
211220	151	153	943731	0.027	0	0.1	0.082	27.8	9.4	27.4	1.1	4.3	0.2	0	10.9	14.29	28.23	3.87	6.05	0.29	17.40	82.31
211220	153	156	943732	0	0	0.1	0.026	9.2	4.5	52.2	1.1	8.1	0.096	0	8.8	26.91	11.27	3.87	41.21	0.29	8.23	91.48
211220	156	159	943733	0	0	0.077	0.012	4.8	1.4	57.5	4.4	7.2	0.073	0	8.4	23.92	4.44	15.49	39.07	0.22	2.47	97.30
211220	159	161.3	943734	0	0	0.5	0.025	8.4	4.1	39.9	3.1	11.3	0.091	0	10.7	37.54	6.25	10.92	24.94	1.44	6.73	91.83

Assay values and stoichiometric calculations for Drillhole 211220

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe Sulphides	Non Sulphide Gangue
211220	161.3	162.3	943735	0	0	0.1	0.023	9	4.8	43.2	4.3	8.8	0.081	0.001	11	29.24	10.63	15.14	21.34	0.29	8.79	90.92
211220	162.3	164.8	943736	0	0	0.4	0.007	3	1.6	74.8	0.4	5.2	0.041	0	3.7	17.28	0.60	1.41	72.80	1.15	2.24	96.61
211220	164.8	165.6	943737	0	0	0.086	0.003	2.1	0.2	62.8	0.4	10.2	0.062	0	6.7	33.89	-0.05	1.41	61.20	0.25	0.21	99.54
211220	165.6	168	943738	0	0	0.2	0.016	5.5	2.2	46.7	0.4	13.1	0.061	0	9.2	43.52	2.43	1.41	43.58	0.58	3.74	95.68
211220	168	169.7	943739	0.053	0.013	1.1	0.1	10.8	6.7	50.6	0.9	7.8	0.3	0.002	6.3	25.91	3.04	3.17	45.35	3.17	10.46	86.37
211220	169.7	171.3	943740	0.05	0.01	0.9	0.074	11.5	7	62.8	1.6	3.2	0.1	0.004	4	10.63	3.78	5.63	54.63	2.60	11.40	86.01
211220	171.3	173	943741	0	0	0.3	0.037	16.9	7.8	35.5	0.9	5.9	0.088	0	16.1	19.60	44.41	3.17	4.97	0.87	14.03	85.11
211220	173	174.4	943742	0	0	0.086	0.05	19.2	8	28	1	6.8	0.1	0	17.2	22.59	46.18	3.52	-3.96	0.25	14.80	84.95
211220	174.4	175.7	943743	0	0	0.3	0.1	10.2	5.1	54.3	2.2	4	0.4	0	11.7	13.29	29.46	7.75	28.33	0.87	8.98	90.16
211220	175.7	177.9	943744	0	0	0.09	0.041	6	2.1	65.1	3.9	3.9	0.1	0	7.5	12.96	10.06	13.73	44.99	0.26	3.76	95.98
211220	177.9	180.4	943745	0	0	0.3	0.1	6	2.5	67.8	3.9	3	0.2	0.001	6.5	9.97	8.45	13.73	48.68	0.87	4.11	95.02
211220	180.3	181.4	943746	0	0.017	2.5	0.1	15.3	9.8	56.9	1.2	2.8	0.2	0.001	3	9.30	1.88	4.23	51.30	7.22	13.62	79.17
211220	181.4	183.5	943747	0.018	0	1.4	0.07	5.1	2.2	56.4	2.3	8.6	0.1	0.001	7	28.57	0.59	8.10	47.71	4.04	1.47	94.49
211220	183.5	184.1	943748	0.1	0.042	3.4	0.1	18	12.3	37.8	1.3	6.7	0.2	0.006	5.6	22.26	2.13	4.58	31.70	9.81	16.59	73.59
211220	184.1	185	943749	0.043	0.015	2.4	0.1	8.5	5	44.3	0.9	10.7	0.4	0.003	7.9	35.55	2.14	3.17	39.60	6.93	4.82	88.25
211220	185	186.9	943750	0.023	0.01	1	0.097	11.1	6.4	56.2	1.9	5.3	0.1	0.002	5.5	17.61	3.73	6.69	47.00	2.89	10.09	87.03
211220	186.9	189	943751	0	0	0.3	0.048	5.7	2.8	61	3	6	0.1	0.001	7	19.93	5.21	10.56	47.03	0.87	4.67	94.46
211220	189	191.4	943752	0	0	0.5	0.055	7.3	3.7	64.1	3.3	3.8	0.1	0.001	6.7	12.62	8.65	11.62	46.97	1.44	5.98	92.58
211220	191.4	193.1	943753	0	0	0.3	0.049	6.8	3.2	53.1	1.8	8.8	0.1	0	8.5	29.24	6.89	6.34	42.33	0.87	5.42	93.71
211220	193.1	195.7	943754	0	0.01	0.9	0.1	8.5	4.4	45.8	1.5	10.2	0.2	0	8.8	33.89	5.35	5.28	37.02	2.60	6.53	90.87
211220	195.7	197.7	943755	0	0	0.6	0.048	5	2.2	53.9	1	9.8	0.1	0	8.2	32.56	5.19	3.52	46.98	1.73	2.98	95.29
211220	197.7	199.6	943756	0	0	0.1	0.05	4.9	1.9	52.9	1.1	10.3	0.1	0	8.9	34.22	6.40	3.87	44.89	0.29	3.37	96.35
211220	199.6	202.5	943757	0	0	0.3	0.058	10.5	5.5	48.3	1	8.1	0.1	0	8.8	26.91	11.50	3.52	37.53	0.87	9.72	89.41
211220	202.5	204.5	943758	0	0	0.1	0.045	12.9	5.9	50.1	1.8	3.3	0.057	0	14.5	10.96	42.56	6.34	17.53	0.29	10.85	88.86
211220	204.5	207	943759	0	0	0.3	0.036	5.3	2.1	57.4	1.8	7.5	0.082	0	9.8	24.92	14.88	6.34	41.75	0.87	3.36	95.77
211220	207	208.6	943760	0	0	0.3	0.089	7.5	3.7	53.2	1.4	6.9	0.3	0	11.5	22.92	23.60	4.93	33.62	0.87	6.36	92.78
211220	208.6	211.4	943761	0	0	0.1	0.06	6.9	3.3	55	1.8	8.4	0.1	0	8	27.91	5.96	6.34	44.79	0.29	5.99	93.73
211220	211.4	214.4	943762	0	0.01	0.5	0.05	7.8	4.1	44.9	1.2	11.4	0.1	0	9.2	37.87	4.68	4.23	37.59	1.44	6.73	91.83
211220	214.4	216.7	943763	0	0	0.061	0.018	4.6	1.7	50.3	1.7	11	0.1	0	9.8	36.54	6.75	5.99	39.96	0.18	3.07	96.76
211220	216.7	219	943764	0	0	0.077	0.019	7.4	3.3	42.8	3.1	10.8	0.077	0	11.6	35.88	10.83	10.92	25.04	0.22	6.03	93.75
211220	219	220.9	943765	0.014	0	0.2	0.071	8.3	4	34.9	1.5	13.4	0.2	0	13.6	44.52	15.77	5.28	19.76	0.58	7.11	92.32
211220	220.9	222.4	943766	0.05	0	0.047	0.085	10.3	5.7	30.5	1.9	13.5	0.2	0.001	13.7	44.85	15.00	6.69	14.42	0.14	10.58	89.29
211220	222.4	224	943767	0.1	0.01	0.2	0.1	12.3	7.7	35.5	1.8	11.2	0.5	0.003	9.9	37.21	6.43	6.34	25.01	0.58	14.03	85.39
211220	224	226	943768	0.075	0.013	1	0.3	10.1	6	34.8	1.3	12.4	1.2	0.01	10.8	41.20	8.08	4.58	25.06	2.89	9.34	87.78
211220	226	228	943769	0.026	0.015	0.9	0.1	10.2	6.1	45.9	2	7.7	0.4	0.001	11.3	25.58	19.59	7.04	26.67	2.60	9.71	87.69
211220	228	229.4	943770	0.072	0.028	1	0.078	12.2	8.2	37.6	0.9	8.4	0.1	0.008	14.5	27.91	32.44	3.17	14.39	2.89	13.45	83.66
211220	229.4	230.4	943771	0.061	0.097	2.8	0.1	11.6	9.1	51.4	0.5	5.8	0.2	0.002	6.1	19.27	7.96	1.76	44.55	8.08	11.74	80.18
211220	230.4	231.2	943772	0.1	0.1	1.8	0.2	18.8	13.6	40.4	0.4	5.2	0.7	0.017	7	17.28	13.01	1.41	30.82	5.19	22.05	72.76
211220	231.2	232.5	943773	0.043	0.096	3.4	0.073	9.2	8	70.9	0.5	1.3	0.2	0.007	1.5	4.32	1.41	1.76	68.05	9.81	8.55	81.64
211220	232.5	233.4	943774	0.06	0.072	2.9	0.027	9.5	7.3	70.2	0.9	1.3	0.081	0.009	2.4	4.32	3.88	3.17	64.43	8.37	8.18	83.45
211220	233.4	234.1	943775	0	0.054	1.7	0.013	13	7.6	38.3	1.4	5.9	0.022	0	16.9	19.60	46.29	4.93	4.86	4.91	11.01	84.08
211220	234.1	235.9	943776	0	0.04	1.2	0.013	7.2	3.7	36.8	1.4	10.8	0.069	0.001	17.5	35.88	36.86	4.93	9.12	3.46	4.66	91.88
211220	235.9	237.3	943777	0	0.022	0.6	0.007	7.2	3.5	30.8	1	13.6	0.04	0	17.6	45.18	31.46	3.52	7.83	1.73	5.42	92.85
211220	237.3	238.7	943778	0	0.027	0.6	0.017	9.1	4.6	30.2	1.4	14.5	0.086	0	13.9	48.17	14.50	4.93	16.19	1.73	7.47	90.79
211220	238.7	240.5	943779	0	0	0.1	0.008	4.9	1.8	56.8	4.8	6	0.055	0	10.6	19.93	14.67	16.90	30.71	0.29	3.18	96.53
211220	240.5	243	943780	0	0	0.1	0.009	7.1	3.1	35.7	2.3	14	0.063	0	12.4	46.51	8.01	8.10	22.48	0.29	5.61	94.10
211220	243	245.2	943781	0	0	0.092	0.007	7	2.9	35.2	2.6	13.8	0.053	0	13.1	45.85	10.44	9.15	19.44	0.27	5.25	94.48
211220	245.2	246.8	943782	0	0	0.1	0.007	9.2	4.1	34.8	3.7	12.1	0.05	0	12.8	40.20	10.88	13.03	14.90	0.29	7.48	92.23
211220	248.9	249.7	943784	0.043	0	0.064	0.005	10.4	6	34.4	6.7	7.3	0.08	0.008	16	24.25	27.57	23.59	-6.26	0.18	11.10	88.71
211220	249.7	250.3	943785	0.1	0.01	0.054	0.007	15.8	12.1	25.2	3.8	9.3	0.09	0.004	13.6	30.90	20.34	13.38	-0.83	0.16	22.54	77.31
211220	250.3	251	943786	0.1	0	0.1	0.005	14	8.4	28.6	4.9	10.2	0.068	0.005	12.5	33.89	11.57	17.25	4.05	0.29	15.53	84.18
211220	251	253.6	943787	0	0	0.051	0.003	11	4.6	31.3	3.9	12.6	0.1	0.002	11.6	41.86	4.72	13.73	14.46	0.15	8.51	91.34
211220	253.6	256.3	943788	0.014	0.01	0.066	0.005	13.5	6.1	34	5.4	8.1	0.1	0.001	12.8	26.91	16.57	19.01	4.63	0.19	11.29	88.52
211220	256.3	258	943789	0.3	0.032	0.066	0.014	25.2	22.1	16.5	2.2	5.9	0.078	0.003	11.5	19.60	24.18	7.75	-6.25	0.19	41.22	58.59

Appendix 3

Assay and stoichiometric calculations for drillhole 211135

Appendix 3																							
Assay and stoichiometric calculations for Drillhole 21135																							
																		Stoichiometric Calculations			Quantitative XRD		
Sample Status	Sample No	Date Registered	Sample Name	Ag g/t	Au g/t	Pb %	Zn %	Cu %	Fe %	S %	Co %	As %	CaO %	MgO %	Al2O3 %	SiO2 %	Sb %		Dolomite	Talc	Chlorite	Dolomite	Talc	Chlorite
A	941477	12/02/2002	EM ORE			0.021	< 0.01	0.092	8.11	4.52	0.005	0.040	9.70	12.4	6.23	36.8	0.005		32.23	9.37	21.94			
A	941478	12/02/2002	EM ORE	-	-	0.013	< 0.01	0.052	9.67	4.62	0.006	0.068	9.11	12.3	5.53	38.8	0.001		30.27	11.99	19.47			
A	941479	12/02/2002	EM ORE	-	-	0.110	< 0.01	0.076	11.6	7.30	0.007	0.059	10.5	12.1	4.47	32.2	0.000		34.88	10.32	15.74			
A	941480	12/02/2002	EM ORE	-	-	0.038	0.012	0.054	7.66	4.30	0.005	0.041	12.2	12.9	4.83	33.9	0.000		40.53	8.46	17.01			
A	941481	12/02/2002	EM ORE	-	-	0.027	< 0.01	0.079	10.6	7.29	0.010	0.044	12.0	11.7	4.24	30.7	0.005		39.87	5.76	14.93			
A	941482	12/02/2002	EM ORE	-	-	0.029	< 0.01	0.108	11.8	7.86	0.012	0.056	9.43	11.7	4.67	34.5	0.000		31.33	10.92	16.44			
A	941483	12/02/2002	EM ORE	-	-	0.036	0.028	0.228	11.1	8.21	0.010	0.060	9.93	12.1	4.51	33.3	0.000		32.99	11.59	15.88			
A	941484	12/02/2002	EM ORE	-	-	0.074	0.010	0.157	10.8	6.90	0.009	0.073	12.4	12.9	4.05	28.4	0.000		41.20	9.75	14.26			
A	941485	12/02/2002	EM ORE	-	-	0.052	0.020	0.043	10.7	8.09	0.006	0.076	10.5	12.8	4.47	31.7	0.000		34.88	12.95	15.74			
A	941486	12/02/2002	EM ORE	-	-	0.112	0.015	0.058	14.3	10.9	0.013	0.132	8.58	10.4	4.40	32.9	0.001		28.50	8.67	15.49			
A	941487	12/02/2002	EM ORE	-	-	0.023	< 0.01	0.026	8.76	5.52	0.007	0.064	20.7	13.6	0.958	16.7	0.000		68.77		3.37			
A	941488	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.106	8.30	4.07	0.006	0.064	10.8	11.4	4.42	39.9	0.000		35.88	7.09	15.56			
A	941489	12/02/2002	EM ORE	-	-	< 0.01	0.012	0.369	8.06	4.00	0.018	0.066	11.4	12.0	3.36	39.0	0.000		37.87	10.31	11.83			
A	941490	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.060	4.52	1.91	0.004	< 0.01	7.42	14.2	5.32	42.4	0.000		24.65	23.64	18.73			
A	941491	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.161	3.15	0.387	0.004	0.040	21.2	13.8	0.200	25.9	0.000		70.43	0.85	0.70			
A	941492	12/02/2002	EM ORE	-	-	0.030	< 0.01	0.171	9.19	4.66	0.011	0.055	11.2	13.0	3.89	35.4	0.000		37.21	13.35	13.70	3.60	32.50	9.60
A	941493	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.023	10.0	5.08	0.005	0.043	10.8	13.5	5.45	32.7	0.000		35.88	12.65	19.19			
A	941494	12/02/2002	EM ORE	-	-	0.065	< 0.01	0.080	10.9	5.56	0.007	0.055	9.94	11.8	3.94	38.0	0.001		33.02	11.73	13.87			
A	941495	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.069	5.97	2.21	0.004	0.040	10.9	15.4	5.65	37.0	0.000		36.21	19.10	19.89			
A	941496	12/02/2002	EM ORE	-	-	0.037	< 0.01	0.200	13.4	8.26	0.025	0.124	9.38	13.1	4.02	32.0	0.000		31.16	17.77	14.15	7.50	32.70	16.50
A	941497	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.323	6.14	2.96	0.014	0.058	7.97	13.1	3.35	48.0	0.000		26.48	22.65	11.80			
A	941498	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.357	5.76	2.56	0.030	0.083	5.17	14.5	4.62	52.0	0.000		17.18	31.72	16.27	15.60	18.10	9.00
A	941499	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.173	4.69	1.72	0.021	0.066	10.2	12.6	3.12	45.7	0.000		33.89	15.97	10.99			
A	941500	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.223	8.06	3.97	0.021	0.107	4.76	16.5	6.27	45.1	0.000		15.81	36.48	22.08			
A	941501	12/02/2002	EM ORE	-	-	0.020	< 0.01	0.661	5.07	3.16	0.033	0.081	5.30	14.3	3.40	53.7	0.000		17.61	33.42	11.97			
A	941502	12/02/2002	EM ORE	-	-	0.014	< 0.01	3.25	5.80	4.95	0.056	0.107	0.971	5.08	1.99	71.8	0.000		3.23	12.28	7.01			
A	941503	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.774	4.77	3.73	0.051	0.101	3.41	8.94	2.83	64.4	0.000		11.33	19.07	9.96			
A	941504	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	1.42	2.99	3.04	0.652	1.14	0.240	1.39	0.786	84.9	0.001		0.80	2.87	2.77			
A	941505	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	1.79	5.20	4.95	0.176	0.315	0.145	3.32	2.04	77.9	0.001		0.48	7.52	7.18			
A	941506	12/02/2002	EM ORE	-	-	0.037	< 0.01	0.361	7.18	6.79	0.053	0.188	2.86	9.12	3.19	61.0	0.000		9.50	20.24	11.23			
A	941507	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	2.52	5.13	4.89	0.146	0.263	0.247	4.48	2.61	74.2	0.000		0.82	10.34	9.19			
A	941508	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	11.7	12.3	13.6	0.163	0.246	0.013	0.429	0.379	58.3	0.000		0.04	0.72	1.33			
A	941509	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	1.43	4.36	4.65	0.118	0.212	0.138	0.681	0.480	85.2	0.006		0.46	1.14	1.69			
A	941510	12/02/2002	EM ORE	-	-	0.024	< 0.01	0.788	7.15	7.41	0.108	0.216	0.079	3.66	2.21	73.7	0.004		0.26	8.57	7.78			
A	941511	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	3.18	5.07	5.15	0.064	0.121	0.016	1.19	0.905	81.1	0.000		0.05	2.39	3.19			
A	941512	12/02/2002	EM ORE	-	-	0.014	< 0.01	1.14	4.36	4.16	0.130	0.224	0.054	3.56	2.33	79.6	0.004		0.18	7.98	8.20			
A	941513	12/02/2002	EM ORE	-	-	0.015	< 0.01	3.05	5.24	5.24	0.192	0.331	0.034	3.37	2.26	75.7	0.002		0.11	7.47	7.96			
A	941514	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	6.89	8.09	8.58	0.186	0.330	0.038	1.46	1.17	69.5	0.002		0.13	2.75	4.12			
A	941515	12/02/2002	EM ORE	-	-	0.067	< 0.01	3.72	8.08	8.21	0.336	0.573	0.413	5.82	0.930	66.7	0.002		1.37	18.79	3.27	12.10	1.20	1.80
A	941516	12/02/2002	EM ORE	-	-	0.043	< 0.01	2.45	6.09	5.46	0.332	0.671	2.06	7.89	2.06	64.7	0.004		6.84	20.08	7.25			
A	941517	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	2.37	7.44	3.42	0.070	0.175	4.92	28.3	0.476	25.2	0.000		16.35	93.58	1.68	59.50	6.60	0.90
A	941518	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	2.74	6.95	4.32	0.075	0.217	14.6	21.5	0.222	22.2	0.000		48.50	45.50	0.78			
A	941519	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.437	9.51	4.13	0.049	0.160	0.108	17.4	4.95	54.9	0.000		0.36	53.95	17.43			
A	941520	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.888	12.8	6.60	0.060	0.115	2.72	20.0	2.19	42.9	0.000		9.04	63.74	7.71			
A	941521	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.743	9.81	4.60	0.067	0.098	1.86	18.1	1.43	52.7	0.000		6.18	60.37	5.04			
A	941522	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.245	7.25	2.57	0.056	0.114	0.303	14.4	2.90	64.9	0.000		1.01	46.85	10.21			
A	941523	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.507	6.08	1.94	0.028	0.092	13.4	14.1	1.21	37.9	0.000		44.52	18.30	4.26	14.4	34.8	5.5

Appendix 3

Assay and stoichiometric calculations for drillhole 211135

																		Stoichiometric Calculations			Quantitative XRD		
Sample Status	Sample No	Date Registered	Sample Name	Ag g/t	Au g/t	Pb %	Zn %	Cu %	Fe %	S %	Co %	As %	CaO %	MgO %	Al2O3 %	SiO2 %	Sb %	Dolomite	Talc	Chlorite	Dolomite	Talc	Chlorite
A	941524	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.835	6.22	2.49	0.039	0.093	12.1	10.7	1.08	44.6	0.000	40.20	8.92	3.80			
A	941525	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.370	10.4	2.95	0.039	0.093	2.72	21.1	1.45	46.6	0.000	9.04	69.55	5.11			
A	941526	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	1.06	3.10	1.59	0.056	0.135	0.722	4.10	1.38	83.1	0.000	2.40	10.57	4.86			
A	941527	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.588	2.15	0.798	0.046	0.097	1.29	6.70	0.924	80.7	0.001	4.29	20.02	3.25	18.30	8.60	1.70
A	941528	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	1.12	5.10	2.75	0.072	0.148	0.128	4.42	3.00	77.9	0.000	0.43	9.52	10.56			
A	941529	12/02/2002	EM ORE	-	0.01	< 0.01	< 0.01	0.739	3.12	1.41	0.033	0.081	0.144	4.33	2.70	82.1	0.000	0.48	9.82	9.51			
A	941530	12/02/2002	EM ORE	-	0.02	0.032	< 0.01	2.14	5.38	4.06	0.058	0.113	0.174	1.84	1.03	81.7	0.003	0.58	4.17	3.63			
A	941531	12/02/2002	EM ORE	-	0.02	0.057	< 0.01	1.81	5.24	3.17	0.154	0.311	2.68	11.6	1.99	62.9	0.001	8.90	32.71	7.01			
A	941532	12/02/2002	EM ORE	-	0.01	0.017	< 0.01	4.58	5.34	5.30	0.162	0.320	0.00	0.835	0.749	79.2	0.005	0.00	1.44	2.64			
A	941533	12/02/2002	EM ORE	-	0.05	0.041	< 0.01	9.26	11.9	12.9	0.252	0.487	1.03	1.30	0.587	56.9	0.004	3.42	1.10	2.07			
A	941534	12/02/2002	EM ORE	-	0.02	0.159	< 0.01	1.88	10.5	7.07	0.114	0.229	15.5	10.6	0.418	27.1	0.000	51.50	1.93	1.47			
A	941535	12/02/2002	EM ORE	-	< 0.01	0.038	< 0.01	0.380	4.90	1.79	0.060	0.151	19.9	14.5	0.389	24.6	0.000	66.11	6.16	1.37			
A	941536	12/02/2002	EM ORE	-	0.01	0.036	< 0.01	0.390	5.70	2.64	0.041	0.098	12.2	9.42	1.13	46.3	0.009	40.53	3.75	3.98			
A	941537	12/02/2002	EM ORE	-	0.01	0.096	< 0.01	0.319	7.45	3.99	0.039	0.091	10.9	8.27	1.40	47.9	0.002	36.21	1.92	4.93			
A	941538	12/02/2002	EM ORE	-	< 0.01	0.053	< 0.01	0.131	4.93	2.44	0.017	0.061	9.89	7.99	1.59	54.8	0.004	32.86	2.85	5.60			
A	941539	12/02/2002	EM ORE	-	< 0.01	< 0.01	< 0.01	0.193	3.49	1.07	0.019	0.059	13.8	9.44	0.680	47.0	0.001	45.85	1.03	2.39			
A	941540	12/02/2002	EM ORE	-	< 0.01	0.040	0.074	0.105	3.97	0.728	0.009	0.054	18.4	11.3	0.127	34.7	0.000	61.13		0.45			
A	941541	12/02/2002	EM ORE	-	< 0.01	0.021	< 0.01	0.079	6.91	2.83	0.011	0.035	12.5	9.31	1.91	43.5	0.000	41.53	0.86	6.73			
A	941542	12/02/2002	EM ORE	-	< 0.01	< 0.01	< 0.01	0.194	3.60	0.468	0.004	0.045	18.5	13.1	0.102	31.9	0.000	61.46	4.88	0.36			
A	941543	12/02/2002	EM ORE	-	0.01	0.020	< 0.01	0.143	4.37	2.41	0.014	0.062	9.86	6.75	0.752	58.0	0.001	32.76	0.15	2.65			
A	941544	12/02/2002	EM ORE	-	0.01	< 0.01	< 0.01	0.235	4.50	1.84	0.011	0.040	12.7	8.11	0.546	50.1	0.000	42.19		1.92			
A	941545	12/02/2002	EM ORE	-	< 0.01	< 0.01	< 0.01	0.173	4.39	0.713	0.005	0.035	18.4	11.9	0.345	32.3	0.000	61.13	0.06	1.21			
A	941546	12/02/2002	EM ORE	-	< 0.01	0.036	< 0.01	0.127	11.7	7.74	0.010	0.053	11.3	10.3	4.00	32.9	0.005	37.54	2.71	14.08			
A	941547	12/02/2002	EM ORE	-	< 0.01	0.031	< 0.01	0.108	12.9	6.50	0.004	0.020	11.5	9.68	4.33	32.3	0.003	38.21		15.25			
A	941548	12/02/2002	EM ORE	-	< 0.01	0.051	< 0.01	0.160	14.6	8.29	0.007	0.061	11.8	9.89	4.80	27.5	0.008	39.20		16.90			
A	941549	12/02/2002	EM ORE	-	0.01	0.049	0.022	0.278	10.8	6.88	0.006	0.051	15.6	11.5	2.35	25.4	0.001	51.83	0.70	8.27			
A	941550	12/02/2002	EM ORE	-	-	0.056	0.011	0.062	13.4	8.65	0.008	0.037	10.6	9.33	4.85	31.3	0.009	35.22		17.08			
A	941551	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.029	9.89	4.19	0.009	0.035	11.4	10.4	5.59	34.6	0.008	37.87		19.68			
A	941552	12/02/2002	EM ORE	-	-	0.094	< 0.01	0.041	7.44	3.31	0.005	< 0.01	12.6	10.3	6.18	33.6	0.015	41.86		21.76			
A	941553	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	0.081	10.3	4.90	0.007	0.012	12.6	11.0	4.57	32.5	0.008	41.86	0.95	16.09			
A	941554	12/02/2002	EM ORE	-	-	0.061	< 0.01	0.070	9.47	5.40	0.007	0.025	13.7	10.3	4.88	29.7	0.013	45.51		17.18			
A	941555	12/02/2002	EM ORE	-	-	0.028	< 0.01	0.080	10.0	6.02	0.011	0.033	11.6	10.6	4.98	33.6	0.006	38.54	0.90	17.54			
A	941556	12/02/2002	EM ORE	-	-	0.015	< 0.01	0.058	11.6	5.40	0.008	0.021	11.7	10.6	5.88	30.9	0.008	38.87		20.70			
A	941557	12/02/2002	EM ORE	-	-	0.011	< 0.01	0.115	12.1	5.46	0.008	0.014	13.5	10.2	3.84	29.0	0.005	44.85		13.52			
A	941558	12/02/2002	EM ORE	-	-	0.049	< 0.01	0.098	15.7	9.84	0.012	0.028	10.9	9.36	4.15	28.9	0.005	36.21		14.61			
A	941559	12/02/2002	EM ORE	-	-	0.042	0.013	0.042	12.6	9.80	0.011	0.059	10.4	10.0	4.36	31.7	0.006	34.55	2.92	15.35			
A	941560	12/02/2002	EM ORE	-	-	0.078	0.025	0.020	10.7	8.52	0.005	< 0.01	12.8	8.17	4.87	28.9	0.027	42.52		17.15			
A	941561	12/02/2002	EM ORE	-	-	0.064	0.058	0.019	11.6	9.98	0.004	< 0.01	11.9	6.96	4.91	30.0	0.034	39.53		17.29			
A	941562	12/02/2002	EM ORE	-	-	0.519	0.597	0.016	8.06	6.07	0.003	< 0.01	13.2	7.26	5.63	32.3	0.043	43.85		19.82			
A	941563	12/02/2002	EM ORE	-	-	0.058	0.049	0.071	6.37	3.93	0.002	< 0.01	13.8	7.94	5.50	34.6	0.038	45.85		19.37			
A	941564	12/02/2002	EM ORE	-	-	0.033	0.019	< 0.01	9.20	7.23	0.003	< 0.01	11.0	6.52	6.02	35.5	0.040	36.54		21.20			
A	941565	12/02/2002	EM ORE	-	-	0.089	0.048	0.030	14.1	11.4	0.004	< 0.01	12.4	6.73	3.51	28.1	0.020	41.20		12.36			
A	941566	12/02/2002	EM ORE	-	-	0.035	0.031	0.049	12.7	8.34	0.009	0.030	14.6	9.91	3.88	23.6	0.013	48.50		13.66			
A	941567	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	< 0.01	5.90	2.31	0.002	< 0.01	14.4	8.54	6.12	34.1	0.031	47.84		21.55			
A	941568	12/02/2002	EM ORE	-	-	0.015	< 0.01	< 0.01	5.64	2.58	0.001	< 0.01	13.1	7.80	6.45	36.8	0.042	43.52		22.71			
A	941569	12/02/2002	EM ORE	-	-	< 0.01	< 0.01	< 0.01	4.20	1.30	0.001	< 0.01	14.2	10.5	5.08	34.9	0.030	47.18		17.89			
A	941570	12/02/2002	EM ORE	-	-	0.011	< 0.01	0.017	5.03	1.60	0.001	< 0.01	14.2	10.2	5.62	33.6	0.034	47.18		19.79			

Appendix 3

Assay and stoichiometric calculations for Drillhole 220221

																		Stoichiometric Calculations			Quantitative XRD		
Sample Status	**Sample No**	**Date Registered**	**Sample Name**	**Ag g/t**	**Au g/t**	**Pb %**	**Zn %**	**Cu %**	**Fe %**	**S %**	**Co %**	**As %**	**CaO %**	**MgO %**	**Al2O3 %**	**SiO2 %**	**Sb %**	**Talc**	**Dolomite**	**Chlorite**	**Talc**	**Dolomite**	**Chlorite**
A	944629	12/04/2002	EM ORE			0.013	< 0.010	0.931	5.82	3.11	0.018	0.064	12.5	12.4	3.33	38.2	0.000	9.26	41.53	11.73			
A	944630	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.884	5.76	2.04	0.021	0.094	23.8	14.9	0.273	14.6	0.000		79.07	0.96			
A	944631	12/04/2002	EM ORE	-	-	0.028	< 0.010	0.939	5.84	1.51	0.102	0.214	23.6	15.7	0.254	13.4	0.000	2.15	78.41	0.89			
A	944632	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.298	7.26	2.35	0.081	0.168	18.8	15.9	0.749	22.6	0.000	13.23	62.46	2.64			
A	944633	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.264	3.90	0.958	0.034	0.096	13.3	11.1	2.02	44.6	0.000	5.43	44.19	7.11			
A	944634	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.499	5.32	1.32	0.033	0.103	23.1	14.6	0.450	17.4	0.000		76.74	1.58			
A	944635	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.577	5.80	1.61	0.218	0.415	24.3	15.0	0.200	12.9	0.000		80.73	0.70			
A	944636	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.407	4.38	0.801	0.064	0.145	19.9	12.6	0.523	28.6	0.000		66.11	1.84			
A	944637	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.087	2.25	0.239	0.023	0.076	11.2	6.85	0.128	59.8	0.000		37.21	0.45			
A	944638	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.013	1.06	0.050	0.007	0.057	4.82	2.98	0.098	81.6	0.000		16.01	0.35			
A	944639	12/04/2002	EM ORE	-	-	0.033	< 0.010	0.180	8.28	5.84	0.052	0.137	17.9	12.0	0.687	25.4	0.000	0.86	59.47	2.42			
A	944640	12/04/2002	EM ORE	-	-	0.029	< 0.010	0.110	9.18	6.23	0.019	0.077	13.2	11.8	4.64	29.6	0.010	2.37	43.85	16.34			
A	944641	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.270	4.92	2.10	0.011	0.053	10.5	11.5	4.80	44.8	0.003	7.32	34.88	16.90			
A	944642	12/04/2002	EM ORE	-	-	0.086	0.027	1.05	13.4	12.2	0.226	0.337	12.2	7.88	0.540	32.3	0.002		40.53	1.90			
A	944643	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.144	3.75	1.36	0.009	0.062	13.0	8.61	0.370	51.5	0.000	0.52	43.19	1.30			
A	944644	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.352	4.56	2.53	0.012	0.047	9.60	8.50	2.92	52.8	0.004	2.44	31.89	10.28			
A	944645	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.166	4.99	2.30	0.013	0.065	11.5	10.6	4.45	43.5	0.010	2.34	38.21	15.67			
A	944646	12/04/2002	EM ORE	-	-	0.030	< 0.010	0.125	12.2	9.96	0.019	0.078	14.2	11.1	2.74	24.3	0.003	1.65	47.18	9.65			
A	944647	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.151	6.85	4.16	0.011	0.048	9.24	10.3	4.99	44.5	0.005	5.38	30.70	17.57			
A	944648	12/04/2002	EM ORE	-	-	0.019	< 0.010	0.139	9.38	6.88	0.019	0.063	6.79	10.4	8.00	40.0	0.019	4.79	22.56	28.17			
A	944649	12/04/2002	EM ORE	-	-	0.039	0.010	0.398	10.1	7.83	0.042	0.109	12.9	9.96	2.04	33.9	0.001	2.05	42.86	7.18			
A	944650	12/04/2002	EM ORE	-	-	0.021	< 0.010	0.223	7.04	4.41	0.030	0.077	11.4	11.0	3.54	40.2	0.001	6.15	37.87	12.46			
A	944651	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.050	5.19	2.13	0.010	0.070	8.93	11.8	5.25	47.1	0.002	11.17	29.67	18.49			
A	944652	12/04/2002	EM ORE	-	-	0.021	< 0.010	0.097	8.35	4.95	0.010	0.055	13.0	11.2	4.29	32.9	0.004	1.38	43.19	15.11			
A	944653	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.125	5.51	1.91	0.004	0.036	10.7	11.1	6.21	41.5	0.011	2.15	35.55	21.87			
A	944654	12/04/2002	EM ORE	-	-	0.012	< 0.010	0.091	8.44	4.92	0.012	0.068	10.5	11.4	4.88	38.8	0.000	6.76	34.88	17.18			
A	944655	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.162	5.84	2.58	0.011	0.064	10.6	12.2	4.85	42.3	0.002	9.60	35.22	17.08			
A	944656	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.242	7.65	4.96	0.017	0.071	6.68	14.0	6.87	41.5	0.000	21.15	22.19	24.19			
A	944657	12/04/2002	EM ORE	-	-	0.048	< 0.010	0.542	8.82	8.29	0.042	0.100	5.38	6.71	3.34	54.2	0.005	4.83	17.87	11.76			
A	944658	12/04/2002	EM ORE	-	-	0.021	< 0.010	0.054	3.02	2.40	0.011	0.049	0.143	2.03	3.21	85.1	0.008	0.02	0.48	11.30			
A	944659	12/04/2002	EM ORE	-	-	0.023	< 0.010	0.124	3.68	3.26	0.011	0.037	0.126	2.21	5.24	79.7	0.019		0.42	18.45			
A	944660	12/04/2002	EM ORE	-	-	0.041	< 0.010	0.116	5.99	5.80	0.024	0.050	0.130	2.82	5.62	73.2	0.019		0.43	19.79			
A	944661	12/04/2002	EM ORE	-	-	0.024	< 0.010	0.123	3.83	3.65	0.011	0.041	0.127	2.47	5.81	77.7	0.021		0.42	20.46			
A	944662	12/04/2002	EM ORE	-	-	0.050	< 0.010	0.585	8.83	8.41	0.027	0.078	0.207	7.73	5.31	61.6	0.004	16.55	0.69	18.70			
A	944663	12/04/2002	EM ORE	-	-	0.029	< 0.010	0.276	8.52	6.41	0.019	0.070	3.63	11.4	5.18	52.9	0.000	22.47	12.06	18.24			
A	944664	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.288	3.78	1.50	0.042	0.088	2.24	13.3	5.27	63.2	0.000	32.73	7.44	18.56			
A	944665	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	1.16	6.02	3.51	0.038	0.102	9.44	10.4	2.90	48.8	0.000	10.01	31.36	10.21			
A	944666	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.512	4.87	2.38	0.033	0.096	7.32	10.1	3.71	54.9	0.000	12.11	24.32	13.06	2.00	29.00	6.90
A	944667	12/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.389	4.83	2.92	0.040	0.100	5.26	9.93	4.14	58.9	0.000	15.41	17.48	14.58			
A	944668	12/04/2002	EM ORE	-	-	0.020	< 0.010	1.30	5.70	3.81	0.060	0.130	10.5	9.10	1.89	47.8	0.000	4.88	34.88	6.65			
A	944669	12/04/2002	EM ORE	-	-	0.037	< 0.010	1.13	7.41	5.72	0.072	0.172	10.1	8.79	1.87	46.2	0.000	4.72	33.55	6.58			
A	944670	12/04/2002	EM ORE	-	-	0.018	< 0.010	0.385	5.38	3.43	0.049	0.153	9.82	11.0	3.18	47.9	0.000	10.73	32.62	11.20			
A	944671	15/04/2002	EM ORE	-	-	0.022	< 0.010	2.46	6.44	5.12	0.044	0.115	6.33	7.10	2.26	57.4	0.000	6.48	21.03	7.96			
A	944672	15/04/2002	EM ORE	-	-	0.028	< 0.010	1.16	5.69	3.67	0.039	0.140	9.12	9.15	2.61	50.8	0.000	6.73	30.30	9.19			
A	944673	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	6.86	10.0	8.75	0.019	0.073	8.65	7.45	1.19	41.3	0.000	4.68	28.74	4.19			
A	944674	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	4.12	6.30	6.27	0.106	0.214	0.564	2.76	1.57	74.1	0.000	5.48	1.87	5.53			

Assay and stoichiometric calculations for drillhole 220221

																		Stoichiometric Calculations			Quantitative XRD		
Sample Status	**Sample No**	**Date Registered**	**Sample Name**	**Ag g/t**	**Au g/t**	**Pb %**	**Zn %**	**Cu %**	**Fe %**	**S %**	**Co %**	**As %**	**CaO %**	**MgO %**	**Al2O3 %**	**SiO2 %**	**Sb %**	**Talc**	**Dolomite**	**Chlorite**	**Talc**	**Dolomite**	**Chlorite**
A	944675	15/04/2002	EM ORE	-	-	0.036	< 0.010	1.70	6.85	6.69	0.043	0.108	0.193	2.70	1.76	76.5	0.000	5.71	0.64	6.20			
A	944676	15/04/2002	EM ORE	-	-	0.058	< 0.010	1.69	7.83	7.93	0.246	0.400	0.125	3.21	2.15	72.9	0.002	6.90	0.42	7.57			
A	944677	15/04/2002	EM ORE	-	-	0.047	< 0.010	1.74	6.88	6.56	0.287	0.464	0.193	7.35	3.30	68.3	0.000	19.70	0.64	11.62			
A	944678	15/04/2002	EM ORE	-	-	0.028	< 0.010	1.12	6.86	5.57	0.073	0.189	7.39	8.62	2.18	53.3	0.000	9.84	24.55	7.68			
A	944679	15/04/2002	EM ORE	-	-	0.030	< 0.010	1.64	7.98	7.17	0.050	0.133	5.42	6.35	1.87	58.1	0.000	6.71	18.01	6.58			
A	944680	15/04/2002	EM ORE	-	-	0.026	< 0.010	0.866	4.96	3.45	0.049	0.125	5.21	8.04	2.90	62.2	0.001	11.23	17.31	10.21			
A	944681	15/04/2002	EM ORE	-	-	0.068	< 0.010	0.836	13.2	12.2	0.056	0.148	10.5	11.2	2.75	29.6	0.000	10.83	34.88	9.68			
A	944682	15/04/2002	EM ORE	-	-	0.039	< 0.010	1.84	6.58	5.05	0.086	0.192	8.95	10.3	1.70	49.1	0.000	13.52	29.73	5.99			
A	944683	15/04/2002	EM ORE	-	-	0.014	< 0.010	4.12	6.54	6.06	0.139	0.242	0.602	8.20	0.780	68.7	0.000	27.63	2.00	2.75			
A	944684	15/04/2002	EM ORE	-	-	0.050	< 0.010	1.42	7.08	6.30	0.075	0.151	4.32	7.63	2.54	60.6	0.002	12.63	14.35	8.94			
A	944685	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	5.90	9.12	7.51	0.027	0.073	9.71	11.9	1.28	36.2	0.000	18.68	32.26	4.51			
A	944686	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	1.44	9.18	4.31	0.020	0.063	11.3	16.1	0.979	32.4	0.000	31.35	37.54	3.45	28.90	35.20	3.50
A	944687	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	1.30	10.8	4.50	0.025	0.072	5.81	22.6	1.96	36.7	0.000	66.67	19.30	6.90			
A	944688	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	1.87	9.42	3.83	0.036	0.094	13.7	17.0	0.563	25.5	0.000	29.95	45.51	1.98	29.00	41.20	2.00
A	944689	15/04/2002	EM ORE	-	-	0.024	< 0.010	2.16	9.19	5.78	0.089	0.225	4.06	13.4	1.47	52.4	0.000	37.36	13.49	5.18			
A	944690	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	1.11	5.72	2.44	0.101	0.277	14.2	19.1	0.067	30.7	0.000	37.78	47.18	0.24			
A	944691	15/04/2002	EM ORE	-	-	0.049	< 0.010	0.848	8.82	6.48	0.139	0.329	2.38	9.38	2.17	62.1	0.003	24.67	7.91	7.64			
A	944692	15/04/2002	EM ORE	-	-	0.094	0.019	1.23	10.5	8.77	0.128	0.320	3.07	10.4	2.08	55.1	0.010	27.07	10.20	7.32	20.90	10.50	7.20
A	944693	15/04/2002	EM ORE	-	-	0.127	0.010	0.224	17.4	13.0	0.022	0.102	3.30	15.5	4.15	34.9	0.002	41.00	10.96	14.61			
A	944694	15/04/2002	EM ORE	-	-	0.148	0.015	0.223	20.0	12.6	0.017	0.053	0.994	17.7	4.61	33.9	0.000	53.74	3.30	16.23	52.00	2.40	16.80
A	944695	15/04/2002	EM ORE	-	-	0.117	0.013	0.208	19.8	14.5	0.019	0.042	2.40	13.3	5.44	32.1	0.000	31.96	7.97	19.15			
A	944696	15/04/2002	EM ORE	-	-	0.139	0.036	0.260	15.4	13.0	0.014	0.067	9.50	10.8	3.42	28.3	0.001	10.20	31.56	12.04	3.60	29.00	9.40
A	944697	15/04/2002	EM ORE	-	-	0.019	0.021	0.307	5.35	2.36	0.014	0.079	9.86	8.86	2.09	52.7	0.000	5.06	32.76	7.36			
A	944698	15/04/2002	EM ORE	-	-	0.057	0.029	0.045	17.1	8.92	0.010	0.020	7.76	12.5	4.73	31.1	0.000	17.77	25.78	16.65	3.30	33.30	9.60
A	944699	15/04/2002	EM ORE	-	-	0.039	0.017	0.030	11.9	7.48	0.006	< 0.010	9.52	9.54	5.85	34.0	0.018		31.63	20.60			
A	944700	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.023	5.59	2.81	0.002	0.014	12.4	10.9	6.12	36.0	0.027		41.20	21.55			
A	944701	15/04/2002	EM ORE	-	-	0.069	0.013	0.015	3.35	0.802	0.002	< 0.010	12.6	10.8	6.78	38.6	0.031		41.86	23.87			
A	944702	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.014	4.95	2.38	0.002	< 0.010	12.5	10.8	6.82	35.4	0.036		41.53	24.01			
A	944703	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	< 0.010	4.89	2.43	0.002	0.010	13.4	9.96	6.48	34.7	0.035		44.52	22.82			
A	944704	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	< 0.010	4.52	1.53	0.002	0.019	14.6	10.7	5.39	34.4	0.022		48.50	18.98			
A	944705	15/04/2002	EM ORE	-	-	0.010	< 0.010	< 0.010	4.43	1.80	0.002	0.010	12.5	8.55	6.77	40.2	0.035		41.53	23.84			
A	944706	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	< 0.010	4.30	1.28	0.002	0.029	16.0	9.62	5.58	34.0	0.026		53.16	19.65			
A	944707	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	< 0.010	3.20	0.541	0.001	< 0.010	14.0	9.20	6.08	38.6	0.029		46.51	21.41			
A	944708	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.020	3.67	0.972	0.002	< 0.010	13.6	8.99	6.33	38.9	0.028		45.18	22.29			
A	944709	15/04/2002	EM ORE	-	-	< 0.010	< 0.010	0.042	3.36	0.427	0.002	0.030	13.1	13.1	5.25	38.1	0.011	6.11	43.52	18.49			

Appendix 4 - Drillhole 211135

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
0	0.0814	0.0814	0.0	3.0		0.131							0.0103				
0.0814	0.167	0.0856	0.0	3.0		0.135		0.0105					0.0074				518
0.167	0.267	0.1	0.0	3.0		0.119							0.00534				
0.267	0.37	0.103	0.0	3.0		0.125		0.0076					0.00633				
0.37	0.467	0.097	0.0	3.0		0.109		0.00748	2.214				0.00601				563
0.467	0.565	0.098	0.0	3.0		0.151		0.00723	2.074				0.00607				666
0.565	0.663	0.098	0.0	3.0		0.128		0.00533					0.00718				
0.663	0.763	0.1	0.0	3.0		0.105		0.00457					0.00757				
0.763	0.863	0.1	0.0	3.0		0.122							0.00969				
0.863	0.963	0.1	0.0	3.0		0.126							0.00934				518
0.963	1.063	0.1	0.0	3.0		0.115							0.00672				
1.063	1.163	0.1	0.0	3.0		0.126							0.0081				
1.163	1.263	0.1	0.0	3.0		0.119		0.00577					0.00725				
1.263	1.359	0.096	0.0	3.0		0.123		0.00286					0.00654				
1.359	1.469	0.11	0.0	3.0	0-5%	0.109		0.00693					0.0075				
1.469	1.566	0.097	0.0	3.0		0.105		0.00371					0.00697				
1.566	1.666	0.1	0.0	3.0		0.0882		0.00782					0.00523				
1.666	1.766	0.1	0.0	3.0		0.0911		0.00238					0.00854				
1.766	1.866	0.1	0.0	3.0		0.103		0.00567					0.00584				
1.866	1.968	0.102	0.0	3.0		0.105		0.00756					0.00766				
1.968	2.066	0.098	0.0	3.0		0.108		0.0075					0.00756				
2.066	2.165	0.099	0.0	3.0		0.119							0.00787				
2.165	2.264	0.099	0.0	3.0		0.116		0.00272					0.00607				
2.264	2.361	0.097	0.0	3.0		0.118		0.0481	2.758	1			0.00672				
2.361	2.461	0.1	0.0	3.0		0.107							0.00727				
2.461	2.561	0.1	0.0	3.0		0.122							0.00847				
2.561	2.661	0.1	0.0	3.0		0.134		0.00545					0.00833				525
2.661	2.74	0.079	0.0	3.0		0.127							0.00748				520
2.74	2.875	0.135	0.0	3.0		0.144		0.00399					0.0116				
2.875	2.964	0.089	0.0	3.0		0.109		0.00347					0.00756				
2.964	3.064	0.1	3.0	6.0		0.106		0.00359					0.00656				
3.064	3.165	0.101	3.0	6.0		0.134		0.00284					0.00752				
3.165	3.264	0.099	3.0	6.0		0.138		0.00414		1			0.00883				
3.264	3.36	0.096	3.0	6.0		0.119		0.00407					0.00672				
3.36	3.463	0.103	3.0	6.0		0.128							0.0128				
3.463	3.562	0.099	3.0	6.0		0.11				1			0.0124				
3.562	3.661	0.099	3.0	6.0		0.0938							0.0109				
3.661	3.762	0.101	3.0	6.0		0.11		0.00675					0.0117				
3.762	3.872	0.11	3.0	6.0		0.136		0.00547					0.00949				
3.872	3.954	0.082	3.0	6.0		0.136		0.00377					0.0108				
3.954	4.063	0.109	3.0	6.0		0.116		0.00712					0.0065				
4.063	4.166	0.103	3.0	6.0		0.135		0.0012	2.086				0.00869				626
4.166	4.267	0.101	3.0	6.0		0.154		0.00434	2.096				0.0117				675
4.267	4.364	0.097	3.0	6.0		0.121		0.00344					0.00692				
4.364	4.462	0.098	3.0	6.0		0.132		0.00401					0.00616				
4.462	4.562	0.1	3.0	6.0		0.145		0.00629	2.09				0.00841				737
4.562	4.662	0.1	3.0	6.0		0.139		0.00759					0.00866				
4.662	4.763	0.101	3.0	6.0		0.148		0.00637					0.01				546
4.763	4.865	0.102	3.0	6.0		0.169		0.00644	2.091				0.00975			1	806
4.865	4.963	0.098	3.0	6.0		0.149		0.00586					0.0098				561
4.963	5.062	0.099	3.0	6.0		0.131		0.00462					0.00907				596
5.062	5.114	0.052	3.0	6.0		0.136											555
5.114	5.267	0.153	3.0	6.0		0.141		0.00754					0.00778				
5.267	5.361	0.094	3.0	6.0		0.149			2.127				0.00903				517
5.361	5.463	0.102	3.0	6.0		0.154		0.00755	2.123				0.00938				515
5.463	5.565	0.102	3.0	6.0		0.116		0.00545					0.0078				511
5.565	5.663	0.098	3.0	6.0		0.119		0.00423					0.00706				547
5.663	5.761	0.098	3.0	6.0		0.132		0.00951					0.00829				516
5.761	5.86	0.099	3.0	6.0		0.137		0.00872					0.00793				
5.86	5.964	0.104	3.0	6.0		0.137		0.00818					0.00765				
5.964	6.063	0.099	6.0	9.0		0.129		0.00878					0.00691				
6.063	6.162	0.099	6.0	9.0		0.136		0.00758					0.00863				
6.162	6.265	0.103	6.0	9.0		0.141		0.00585	2.09				0.0096				824
6.265	6.364	0.099	6.0	9.0		0.139		0.00623					0.009				550
6.364	6.467	0.103	6.0	9.0		0.152		0.00457					0.00777				576
6.467	6.57	0.103	6.0	9.0		0.148		0.0106					0.00714				
6.57	6.664	0.094	6.0	9.0		0.122		0.00899					0.00523				522
6.664	6.764	0.1	6.0	9.0		0.128		0.00897					0.00538				522
6.764	6.863	0.099	6.0	9.0		0.132		0.00746					0.0049				
6.863	6.965	0.102	6.0	9.0		0.111		0.00958		0.868			0.0042				
6.965	7.066	0.101	6.0	9.0		0.113		0.00924					0.00476				638
7.066	7.162	0.096	6.0	9.0		0.131		0.00604					0.00609				608
7.162	7.262	0.1	6.0	9.0		0.131		0.000602					0.00682				542
7.262	7.365	0.103	6.0	9.0		0.118		0.0062					0.00749				
7.365	7.464	0.099	6.0	9.0		0.13		0.00397					0.00915				
7.464	7.563	0.099	6.0	9.0		0.142		0.00431					0.0101				608
7.563	7.662	0.099	6.0	9.0		0.15		0.000756					0.0106				512
7.662	7.762	0.1	6.0	9.0		0.131							0.00875				541
7.762	7.864	0.102	6.0	9.0		0.123							0.0102				525
7.864	7.963	0.099	6.0	9.0		0.13							0.00795				
7.963	8.065	0.102	6.0	9.0		0.13		0.00792					0.0106				
8.065	8.164	0.099	6.0	9.0		0.132							0.0109				516
8.164	8.264	0.1	6.0	9.0		0.132							0.00962				566
8.264	8.363	0.099	6.0	9.0		0.136							0.00983				577
8.363	8.465	0.102	6.0	9.0		0.131		0.0154					0.00939				
8.465	8.564	0.099	6.0	9.0		0.115		0.0049					0.00826				
8.564	8.663	0.099	6.0	9.0		0.111		0.00577					0.00691				
8.663	8.766	0.103	6.0	9.0		0.123		0.00484					0.00813				512
8.766	8.865	0.099	6.0	9.0		0.121		0.00687					0.0099				528
8.865	8.964	0.099	6.0	9.0		0.122		0.00635					0.0115				
8.964	9.08	0.116	9.0	11.1		0.082		0.00776					0.00761				
9.08	9.164	0.084	9.0	11.1		0.0813		0.00735					0.00793				
9.164	9.263	0.099	9.0	11.1		0.0763		0.00839					0.00773				
9.263	9.363	0.1	9.0	11.1		0.0796		0.00755					0.00757				
9.363	9.461	0.098	9.0	11.1		0.087		0.00689					0.00664				
9.461	9.563	0.102	9.0	11.1		0.0971		0.0115					0.00683				683
9.563	9.664	0.101	9.0	11.1		0.0935		0.00864					0.00741				528
9.664	9.764	0.1	9.0	11.1		0.104		0.00552		0.725			0.00688				541
9.764	9.852	0.088	9.0	11.1		0.0888		0.00681					0.0065				
9.852	10.065	0.213	9.0	11.1		0.0923	0.0259	0.0107		1			0.00842				
10.065	10.172	0.107	9.0	11.1		0.128		0.00711					0.00868				511
10.172	10.266	0.094	9.0	11.1		0.124							0.00819				516
10.266	10.364	0.098	9.0	11.1		0.105		0.00688					0.00749				
10.364	10.463	0.099	9.0	11.1		0.125							0.00797				525
10.463	10.544	0.081	9.0	11.1		0.106		0.00718					0.00855				
10.544	10.663	0.119	9.0	11.1		0.104		0.00252					0.00701				
10.663	10.762	0.099	9.0	11.1		0.105		0.00447	2.161	1			0.00977				676
10.762	10.864	0.102	9.0	11.1		0.119		0.00531					0.00875				
10.864	10.966	0.102	9.0	11.1		0.135		0.00431					0.00696				519
10.966	11.058	0.092	9.0	11.1		0.104		0.0053					0.00779				
11.058	11.16	0.102	11.1	14.0		0.107		0.00469									610
11.16	11.278	0.118	11.1	14.0		0.12		0.00462					0.00845				522

Depth		Al	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
11.278	11.364	0.086	11.1	14.0		0.113		0.00599					0.00933				
11.364	11.465	0.101	11.1	14.0		0.112		0.00275					0.00876				661
11.465	11.566	0.101	11.1	14.0		0.118		0.00464					0.00991				663
11.566	11.667	0.101	11.1	14.0		0.123		0.00433					0.00756				
11.667	11.762	0.095	11.1	14.0		0.116		0.00607					0.00982				
11.762	11.979	0.217	11.1	14.0		0.134		0.00452					0.00692				
11.979	12.065	0.086	11.1	14.0		0.12		0.00153					0.00746				620
12.065	12.166	0.101	11.1	14.0		0.105		0.00449					0.00682				
12.166	12.267	0.101	11.1	14.0		0.121		0.00935	2.117	1			0.00824				
12.267	12.364	0.097	11.1	14.0		0.118		0.00619	2.114				0.00404				691
12.364	12.461	0.097	11.1	14.0		0.0824		0.00511					0.00321				
12.461	12.555	0.094	11.1	14.0	0-5%	0.128		0.00339					0.00591				
12.555	12.684	0.129	11.1	14.0		0.101		0.00725					0.00493				
12.684	12.766	0.082	11.1	14.0		0.115		0.00878					0.00761				
12.766	12.863	0.097	11.1	14.0		0.122		0.00436					0.00854				
12.863	12.96	0.097	11.1	14.0		0.126		0.0105					0.00904				
12.96	13.061	0.101	11.1	14.0		0.124		0.00879					0.0075				
13.061	13.162	0.101	11.1	14.0		0.124		0.00479					0.00877				
13.162	13.252	0.09	11.1	14.0		0.129		0.00262					0.0087				
13.252	13.388	0.136	11.1	14.0		0.116		0.00375					0.00536				
13.388	13.462	0.074	11.1	14.0		0.125		0.00427					0.00593				681
13.462	13.561	0.099	11.1	14.0		0.132		0.000494					0.00763				
13.561	13.661	0.1	11.1	14.0		0.0931		0.00108	2.125				0.0052				674
13.661	13.777	0.116	11.1	14.0		0.117							0.0058				
13.777	13.863	0.086	11.1	14.0		0.128		0.00175					0.00566				
13.863	13.971	0.108	11.1	14.0		0.123		0.00313					0.00641				
13.971	14.069	0.098	14.0	16.4		0.111		0.00495		1			0.00955				
14.069	14.163	0.094	14.0	16.4		0.111		0.00165		1			0.00651				
14.163	14.262	0.099	14.0	16.4		0.129		0.00597	2.106				0.00889				599
14.262	14.363	0.101	14.0	16.4		0.139		0.00623	2.114				0.0081				553
14.363	14.437	0.074	14.0	16.4		0.0985		0.00501					0.00663				
14.437	14.567	0.13	14.0	16.4		0.112							0.0056				
14.567	14.662	0.095	14.0	16.4		0.0927							0.00683				
14.662	14.764	0.102	14.0	16.4		0.126		0.00419					0.00606				670
14.764	14.866	0.102	14.0	16.4		0.131							0.00934				538
14.866	14.964	0.098	14.0	16.4		0.137		0.00655					0.00939				517
14.964	15.062	0.098	14.0	16.4		0.13		0.00562					0.00873				
15.062	15.161	0.099	14.0	16.4	0-5%	0.127		0.0102					0.00802				559
15.161	15.262	0.101	14.0	16.4		0.121		0.00527					0.00613				
15.262	15.364	0.102	14.0	16.4		0.129		0.0071					0.00751				
15.364	15.466	0.102	14.0	16.4		0.11		0.00577	2.154				0.00447				526
15.466	15.564	0.098	14.0	16.4		0.0925		0.007					0.00435				512
15.564	15.663	0.099	14.0	16.4		0.131		0.0113					0.00749				714
15.663	15.761	0.098	14.0	16.4		0.127		0.007	2.141				0.00728				546
15.761	15.855	0.094	14.0	16.4		0.133		0.00429					0.00564				534
15.855	15.961	0.106	14.0	16.4		0.132		0.00168					0.00823				
15.961	16.063	0.102	14.0	16.4		0.126		0.00352					0.0077				
16.063	16.162	0.099	14.0	16.4		0.114		0.00336	2.075				0.00934				536
16.162	16.263	0.101	14.0	16.4		0.147		0.0136		1			0.00977				
16.263	16.362	0.099	14.0	16.4		0.126		0.00305					0.00918				
16.362	16.464	0.102	16.4	18.1		0.138		0.00542					0.00948				
16.464	16.565	0.101	16.4	18.1		0.118		0.00899					0.00753				
16.565	16.663	0.098	16.4	18.1		0.123							0.00724				
16.663	16.762	0.099	16.4	18.1		0.102		0.00951					0.00723				
16.762	16.862	0.1	16.4	18.1		0.107		0.00582					0.00743				
16.862	16.965	0.103	16.4	18.1		0.104		0.0102					0.00598				
16.965	17.064	0.099	16.4	18.1		0.106		0.0384	2.867	1			0.00573				
17.064	17.163	0.099	16.4	18.1		0.129		0.00457					0.00739				
17.163	17.263	0.1	16.4	18.1	0-5%	0.105		0.00452					0.00577				
17.263	17.363	0.1	16.4	18.1		0.108		0.00477					0.00668				542
17.363	17.462	0.099	16.4	18.1		0.111		0.00734					0.00404				558
17.462	17.565	0.103	16.4	18.1		0.0945		0.0125	2.614	1			0.00571				547
17.565	17.662	0.097	16.4	18.1		0.081		0.00516	2.137				0.00577				
17.662	17.765	0.103	16.4	18.1		0.0965		0.00585					0.00328				
17.765	17.863	0.098	16.4	18.1		0.121		0.00792	2.124				0.00505				
17.863	17.967	0.104	16.4	18.1		0.146		0.00557					0.00482				531
17.967	18.063	0.096	16.4	18.1		0.128		0.00445					0.00728				606
18.063	18.162	0.099	18.1	19.4		0.151	0.0206	0.00545					0.00599				653
18.162	18.25	0.088	18.1	19.4		0.137		0.00525					0.00798				528
18.25	18.365	0.115	18.1	19.4		0.118		0.00424					0.00543				571
18.365	18.464	0.099	18.1	19.4		0.112		0.00391					0.00575				
18.464	18.563	0.099	18.1	19.4		0.12		0.00393					0.00525				
18.563	18.663	0.1	18.1	19.4		0.132		0.0057					0.0049				
18.663	18.763	0.1	18.1	19.4	0-5%	0.127		0.00392					0.0047				
18.763	18.862	0.099	18.1	19.4		0.137		0.00322					0.00708				617
18.862	18.964	0.102	18.1	19.4		0.126		0.00413					0.00708				610
18.964	19.064	0.1	18.1	19.4		0.124		0.00741					0.00545				522
19.064	19.164	0.1	18.1	19.4		0.116		0.00487	2.296				0.00502				543
19.164	19.263	0.099	18.1	19.4		0.102		0.000804	2.145				0.00649				611
19.263	19.363	0.1	18.1	19.4		0.108		0.00526					0.00532				
19.363	19.441	0.078	19.4	21.8		0.127		0.00222					0.00925				574
19.441	19.574	0.133	19.4	21.8		0.132		0.00428					0.00606				524
19.574	19.664	0.09	19.4	21.8		0.103		0.00405					0.00611				
19.664	19.765	0.101	19.4	21.8		0.128		0.00318					0.00707				
19.765	19.863	0.098	19.4	21.8		0.119		0.00458					0.00725				684
19.863	19.963	0.1	19.4	21.8		0.115		0.00786					0.00737				513
19.963	20.061	0.098	19.4	21.8		0.124		0.00899					0.00623				548
20.061	20.164	0.103	19.4	21.8		0.116		0.0119					0.00816				661
20.164	20.265	0.101	19.4	21.8		0.125		0.0115					0.00868				629
20.265	20.364	0.099	19.4	21.8		0.13		0.00569					0.00811				513
20.364	20.464	0.1	19.4	21.8		0.12		0.00643					0.00574				
20.464	20.563	0.099	19.4	21.8	0-5%	0.104		0.00696					0.00575				
20.563	20.663	0.1	19.4	21.8		0.11		0.00789					0.0068				
20.663	20.761	0.098	19.4	21.8		0.108		0.00047					0.00653				
20.761	20.862	0.101	19.4	21.8		0.112	0.0215	0.00576					0.00642				
20.862	20.965	0.103	19.4	21.8		0.119	0.0253	0.000937					0.00778				518
20.965	21.064	0.099	19.4	21.8		0.102		0.00461					0.0101				
21.064	21.164	0.1	19.4	21.8		0.131		0.00527					0.011				
21.164	21.264	0.1	19.4	21.8		0.118		0.00356					0.0111				
21.264	21.36	0.096	19.4	21.8		0.132		0.00731					0.0108				
21.36	21.463	0.103	19.4	21.8		0.122		0.00693					0.00629				
21.463	21.565	0.102	19.4	21.8		0.154	0.0216	0.0091					0.00587				
21.565	21.665	0.1	19.4	21.8		0.154	0.0216	0.00938					0.00584				
21.665	21.764	0.099	19.4	21.8		0.127	0.0206	0.00419					0.00585				
21.764	21.864	0.1	21.8	23.1		0.133		0.0055					0.00545				608
21.864	21.946	0.082	21.8	23.1		0.127							0.00674				551
21.946	22.061	0.115	21.8	23.1		0.131		0.00779					0.00989				
22.061	22.161	0.1	21.8	23.1		0.128		0.00483					0.00861				
22.161	22.262	0.101	21.8	23.1		0.144							0.00715				690
22.262	22.362	0.1	21.8	23.1		0.137		0.00561					0.00615				680
22.362	22.462	0.1	21.8	23.1		0.128							0.00696				657
22.462	22.564	0.102	21.8	23.1		0.135		0.0169					0.00781				578
22.564	22.665	0.101	21.8	23.1		0.138			2.134				0.00956				523
22.665	22.765	0.1	21.8	23.1		0.138		0.00833					0.00977				689
22.765	22.865	0.1	21.8	23.1		0.134		0.00933	2.178				0.00646				693

Depth		Al	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
22.865	22.965	0.1	21.8	23.1		0.139		0.00395	2.115				0.00751				657
22.965	23.059	0.094	21.8	23.1		0.153		0.0084					0.00643				541
23.059	23.162	0.103	23.1	23.7		0.176							0.011				560
23.162	23.264	0.102	23.1	23.7		0.146		0.0164					0.0078				
23.264	23.365	0.101	23.1	23.7		0.135		0.0171	2.142	1			0.00794				789
23.365	23.464	0.099	23.1	23.7		0.144		0.0111					0.00962				
23.464	23.562	0.098	23.1	23.7		0.14		0.014					0.011				
23.562	23.662	0.1	23.1	23.7		0.145		0.0137					0.0108				
23.662	23.762	0.1	23.7	25.5		0.146		0.00707					0.0127				
23.762	23.854	0.092	23.7	25.5		0.149		0.00685	2.107				0.0126				772
23.854	23.967	0.113	23.7	25.5		0.126		0.0101					0.0127				
23.967	24.063	0.096	23.7	25.5		0.128							0.0111				
24.063	24.162	0.099	23.7	25.5		0.126		0.00731					0.0108				
24.162	24.222	0.06	23.7	25.5		0.124		0.00696					0.00798				
24.222	24.368	0.146	23.7	25.5		0.135		0.00999					0.0071				
24.368	24.465	0.097	23.7	25.5		0.142		0.0112					0.00827				
24.465	24.565	0.1	23.7	25.5		0.154		0.00856					0.00915				
24.565	24.664	0.099	23.7	25.5		0.159		0.0048					0.00792				
24.664	24.764	0.1	23.7	25.5		0.17		0.0032	2.104				0.00797				640
24.764	24.862	0.098	23.7	25.5		0.186		0.00739	2.078				0.0135				764
24.862	24.962	0.1	23.7	25.5		0.135		0.0107	2.109				0.0126				783
24.962	25.065	0.103	23.7	25.5		0.151		0.00378					0.0117				
25.065	25.164	0.099	23.7	25.5		0.136							0.0105				
25.164	25.264	0.1	23.7	25.5		0.149							0.00978				558
25.264	25.36	0.096	23.7	25.5		0.127							0.0117				
25.36	25.467	0.107	23.7	25.5		0.16		0.00831					0.00685				
25.467	25.562	0.095	25.5	27.9		0.157			2.183				0.00917				
25.562	25.661	0.099	25.5	27.9		0.148			2.11				0.00974				802
25.661	25.763	0.102	25.5	27.9		0.141							0.00847				
25.763	25.865	0.102	25.5	27.9		0.135		0.00325	2.104				0.00699				
25.865	25.964	0.099	25.5	27.9		0.117							0.00756				
25.964	26.068	0.104	25.5	27.9		0.14		0.012					0.00855				
26.068	26.165	0.097	25.5	27.9		0.126		0.00288					0.00906				
26.165	26.264	0.099	25.5	27.9		0.115		0.000885					0.00724				
26.264	26.363	0.099	25.5	27.9		0.115		0.00354					0.00597				
26.363	26.462	0.099	25.5	27.9		0.131		0.00746					0.00744				
26.462	26.564	0.102	25.5	27.9		0.136	0.0411	0.00828					0.00851				
26.564	26.653	0.089	25.5	27.9	0-5%	0.172	0.0211	0.0247		0.93			0.00691				564
26.653	26.761	0.108	25.5	27.9		0.156		0.0163		1			0.0121				
26.761	26.863	0.102	25.5	27.9		0.186	0.0205	0.0217		1			0.0127				
26.863	26.966	0.103	25.5	27.9		0.156	0.0216	0.0231		1			0.0135				
26.966	27.074	0.108	25.5	27.9		0.134		0.016					0.00971				
27.074	27.163	0.089	25.5	27.9		0.164	0.04	0.0264	2.469	1			0.0104				
27.163	27.262	0.099	25.5	27.9		0.14		0.0117					0.0127				
27.262	27.364	0.102	25.5	27.9		0.121		0.00802					0.00948				
27.364	27.463	0.099	25.5	27.9		0.133		0.00696					0.00925				
27.463	27.562	0.099	25.5	27.9		0.157	0.0545	0.0108	2.133				0.00884				729
27.562	27.663	0.101	25.5	27.9		0.115							0.00736				
27.663	27.766	0.103	25.5	27.9		0.111		0.0201					0.00859				
27.766	27.865	0.099	25.5	27.9		0.125							0.00806				
27.865	27.962	0.097	27.9	29.2		0.115		0.00421					0.0116				
27.962	28.064	0.102	27.9	29.2		0.0987		0.00591					0.00868				
28.064	28.164	0.1	27.9	29.2		0.0959		0.00438					0.00745				
28.164	28.263	0.099	27.9	29.2		0.114		0.00491					0.00893				
28.263	28.363	0.1	27.9	29.2		0.111		0.00592					0.00998				
28.363	28.462	0.099	27.9	29.2		0.114		0.0109					0.0092				
28.462	28.564	0.102	27.9	29.2	0-5%	0.118	0.0305	0.00903					0.0097				
28.564	28.663	0.099	27.9	29.2		0.11		0.00729					0.00957				
28.663	28.762	0.099	27.9	29.2		0.104	0.0293	0.00794					0.00676				
28.762	28.864	0.102	27.9	29.2		0.125		0.00582					0.00718				
28.864	28.964	0.1	27.9	29.2		0.133		0.00866					0.00831				510
28.964	29.051	0.087	27.9	29.2		0.134		0.00891					0.00672				
29.051	29.164	0.113	27.9	29.2		0.161		0.00868					0.00658				
29.164	29.263	0.099	29.2	30.3		0.139							0.00813				
29.263	29.363	0.1	29.2	30.3		0.177		0.0515		1			0.009				
29.363	29.463	0.1	29.2	30.3		0.188		0.0249		1			0.00961				
29.463	29.568	0.105	29.2	30.3		0.172		0.0164					0.00857				
29.568	29.67	0.102	29.2	30.3		0.169		0.0132					0.00698				
29.67	29.764	0.094	29.2	30.3		0.159		0.018					0.00816				
29.764	29.864	0.1	29.2	30.3		0.168		0.0167					0.00885				
29.864	29.964	0.1	29.2	30.3		0.166		0.00889					0.00895				
29.964	30.076	0.112	29.2	30.3		0.17		0.00531					0.00858				
30.076	30.163	0.087	29.2	30.3		0.172	0.0222	0.031	2.611	1			0.008				
30.163	30.255	0.092	29.2	30.3		0.195	0.0223	0.0454	2.559	0.979			0.00595				
30.255	30.362	0.107	30.3	33.1		0.124		0.00333					0.00716				
30.362	30.465	0.103	30.3	33.1		0.107		0.0039					0.00583				
30.465	30.565	0.1	30.3	33.1		0.128		0.0114					0.00642				
30.565	30.664	0.099	30.3	33.1		0.127		0.00174					0.00828				
30.664	30.764	0.1	30.3	33.1		0.154		0.00503	2.11				0.00892				
30.764	30.861	0.097	30.3	33.1		0.14	0.0227		2.111				0.00798				
30.861	30.963	0.102	30.3	33.1		0.128	0.0218						0.00997				
30.963	31.063	0.1	30.3	33.1		0.0899		0.00556	2.108				0.00928				851
31.063	31.163	0.1	30.3	33.1		0.104		0.0032					0.0092				
31.163	31.262	0.099	30.3	33.1		0.121	0.0217	0.00139	2.105				0.00811				573
31.262	31.362	0.1	30.3	33.1		0.149	0.023	0.00596	2.102				0.0134				834
31.362	31.462	0.1	30.3	33.1		0.127		0.00299					0.00917				
31.462	31.564	0.102	30.3	33.1		0.155							0.00932				
31.564	31.664	0.1	30.3	33.1	0-5%	0.15		0.00405	2.115				0.0093				
31.664	31.764	0.1	30.3	33.1		0.142		0.00238					0.00829				517
31.764	31.863	0.099	30.3	33.1		0.144		0.0041					0.00892				
31.863	31.963	0.1	30.3	33.1		0.134		0.00874					0.00886				
31.963	32.061	0.098	30.3	33.1		0.152	0.0413	0.013					0.00838				
32.061	32.165	0.104	30.3	33.1		0.139		0.00903					0.00662				
32.165	32.265	0.1	30.3	33.1		0.133	0.0253	0.00927					0.0067				529
32.265	32.365	0.1	30.3	33.1		0.153	0.0507	0.0108					0.00786				
32.365	32.464	0.099	30.3	33.1		0.14		0.00894					0.00984				
32.464	32.564	0.1	30.3	33.1		0.141	0.0312	0.0109					0.0115				
32.564	32.665	0.101	30.3	33.1		0.149	0.0297	0.00182					0.0107				
32.665	32.763	0.098	30.3	33.1		0.137	0.0244	0.00418					0.0087				
32.763	32.863	0.1	30.3	33.1		0.136		0.00557					0.0103				
32.863	32.962	0.099	30.3	33.1		0.104		0.0067	2.051				0.0099				814
32.962	33.069	0.107	30.3	33.1		0.139		0.00943					0.0105				
33.069	33.162	0.093	33.1	36.0		0.132		0.00781					0.0108				
33.162	33.261	0.099	33.1	36.0		0.132		0.0072					0.00947				
33.261	33.363	0.102	33.1	36.0		0.132		0.00736					0.00646				
33.363	33.464	0.101	33.1	36.0		0.15		0.00556					0.00648				539
33.464	33.564	0.1	33.1	36.0		0.158		0.00296					0.0052				
33.564	33.665	0.101	33.1	36.0		0.157		0.00521	2.038				0.00831				777
33.665	33.763	0.098	33.1	36.0		0.166		0.00423	2.044				0.00642				793
33.763	33.851	0.088	33.1	36.0		0.169		0.000201					0.00746				
33.851	33.964	0.113	33.1	36.0		0.144		0.00378					0.00723				
33.964	34.066	0.102	33.1	36.0		0.154		0.00446					0.00964				
34.066	34.164	0.098	33.1	36.0		0.182		0.0372	2.858	1			0.00861				
34.164	34.262	0.098	33.1	36.0		0.163		0.046	2.737	1			0.00832				
34.262	34.363	0.101	33.1	36.0		0.15		0.00578					0.0112				

Depth		Al	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
34.363	34.455	0.092	33.1	36.0		0.162		0.00912					0.0123				
34.455	34.565	0.11	33.1	36.0	0-5%	0.145		0.00342					0.00673				
34.565	34.664	0.099	33.1	36.0		0.159		0.00444					0.00855				
34.664	34.762	0.098	33.1	36.0		0.173		0.00603	2.12				0.0071				
34.762	34.863	0.101	33.1	36.0		0.158		0.00871	2.041				0.0068				
34.863	34.964	0.101	33.1	36.0		0.136		0.00944					0.00551				618
34.964	35.06	0.096	33.1	36.0		0.159		0.00915					0.00795				
35.06	35.163	0.103	33.1	36.0		0.146		0.009					0.00881				520
35.163	35.262	0.099	33.1	36.0		0.149		0.00837					0.00878				
35.262	35.363	0.101	33.1	36.0		0.154		0.00769	2.116				0.0107				541
35.363	35.464	0.101	33.1	36.0		0.165		0.00917					0.0106				
35.464	35.562	0.098	33.1	36.0		0.149		0.0105					0.0089				
35.562	35.661	0.099	33.1	36.0		0.156		0.0113					0.0109				
35.661	35.764	0.103	33.1	36.0		0.146		0.00268					0.00765				522
35.764	35.863	0.099	33.1	36.0		0.153		0.00416					0.00631				
35.863	35.964	0.101	33.1	36.0		0.174		0.00512					0.00791				
35.964	36.063	0.099	36.0	39.0		0.149		0.00628					0.0079				
36.063	36.163	0.1	36.0	39.0		0.145		0.00511					0.00683				
36.163	36.229	0.066	36.0	39.0		0.115		0.00325					0.00594				
36.229	36.361	0.132	36.0	39.0		0.169		0.00339	2.112				0.00993				729
36.361	36.462	0.101	36.0	39.0		0.196	0.0215	0.00587	2.096				0.012				852
36.462	36.563	0.101	36.0	39.0		0.212		0.0048	2.09				0.00908				824
36.563	36.663	0.1	36.0	39.0		0.186		0.00581	2.115				0.0104				815
36.663	36.764	0.101	36.0	39.0		0.155		0.00778	2.084				0.00835				684
36.764	36.862	0.098	36.0	39.0		0.141		0.00387					0.00718				
36.862	36.962	0.1	36.0	39.0		0.146		0.005	2.1				0.00775				
36.962	37.062	0.1	36.0	39.0		0.132		0.00178					0.00703				
37.062	37.163	0.101	36.0	39.0		0.147		0.0018					0.00645				
37.163	37.263	0.1	36.0	39.0		0.145			2.106				0.00486				772
37.263	37.36	0.097	36.0	39.0		0.194		0.00461	2.108				0.00941				796
37.36	37.463	0.103	36.0	39.0		0.157		0.00552	2.109				0.00781				805
37.463	37.562	0.099	36.0	39.0		0.155		0.00901	2.085				0.00921				727
37.562	37.663	0.101	36.0	39.0		0.137		0.00794					0.00552				
37.663	37.763	0.1	36.0	39.0		0.116		0.00275					0.00541				
37.763	37.864	0.101	36.0	39.0		0.126		0.00721					0.00909				
37.864	37.964	0.1	36.0	39.0		0.138		0.00905					0.00655				579
37.964	38.064	0.1	36.0	39.0		0.129		0.00716					0.00841				
38.064	38.162	0.098	36.0	39.0		0.129		0.00336					0.00914				
38.162	38.263	0.101	36.0	39.0		0.138		0.00357					0.00782				690
38.263	38.363	0.1	36.0	39.0		0.0873		0.00197					0.00564				
38.363	38.464	0.101	36.0	39.0		0.126		0.00331	2.083				0.00916				847
38.464	38.567	0.103	36.0	39.0		0.139		0.00959	2.106				0.00864				636
38.567	38.657	0.09	36.0	39.0		0.135		0.00472					0.00969				
38.657	38.763	0.106	36.0	39.0		0.108		0.0063					0.00946				
38.763	38.861	0.098	36.0	39.0		0.116		0.00278					0.00579				
38.861	38.963	0.102	36.0	39.0		0.0822		0.00897					0.00483				
38.963	39.063	0.1	39.0	40.5		0.0654		0.00521					0.00779				
39.063	39.163	0.1	39.0	40.5		0.105		0.00459					0.00818				555
39.163	39.256	0.093	39.0	40.5		0.13	0.0224	0.00737					0.0103				593
39.256	39.378	0.122	39.0	40.5		0.115		0.00437					0.00653				
39.378	39.465	0.087	39.0	40.5		0.118		0.00617					0.00689				
39.465	39.565	0.1	39.0	40.5		0.126	0.0248	0.004					0.00708				536
39.565	39.665	0.1	39.0	40.5		0.125		0.00338					0.00727				
39.665	39.765	0.1	39.0	40.5		0.144		0.0038					0.00741				
39.765	39.865	0.1	39.0	40.5		0.131		0.0047					0.00605				
39.865	39.958	0.093	39.0	40.5		0.109		0.00373					0.00555				
39.958	40.059	0.101	39.0	40.5		0.131	0.0235	0.0146					0.00686				511
40.059	40.161	0.102	39.0	40.5		0.141							0.00696				
40.161	40.261	0.1	39.0	40.5		0.139		0.00754					0.00654				
40.261	40.371	0.11	39.0	40.5		0.115		0.0106					0.00573				
40.371	40.464	0.093	39.0	40.5		0.16	0.0448						0.00661				
40.464	40.553	0.089	40.5	43.5		0.193	0.0314		2.15				0.012				574
40.553	40.687	0.134	40.5	43.5		0.183		0.0115	2.093				0.0139				793
40.687	40.763	0.076	40.5	43.5		0.17			2.11				0.0159				630
40.763	40.865	0.102	40.5	43.5		0.15		0.0124	2.108				0.014				679
40.865	40.964	0.099	40.5	43.5		0.137		0.0106					0.0104				
40.964	41.062	0.098	40.5	43.5		0.156		0.0102					0.0103				
41.062	41.164	0.102	40.5	43.5		0.16		0.0129					0.0128				
41.164	41.253	0.089	40.5	43.5		0.133		0.00653					0.00979				
41.253	41.364	0.111	40.5	43.5		0.139		0.00739					0.0111				
41.364	41.463	0.099	40.5	43.5		0.162		0.00666					0.0118				
41.463	41.565	0.102	40.5	43.5		0.157		0.00441					0.0118				
41.565	41.663	0.098	40.5	43.5		0.165		0.00418					0.00982				549
41.663	41.762	0.099	40.5	43.5		0.168		0.00307					0.0105				
41.762	41.864	0.102	40.5	43.5		0.139		0.00432					0.011				
41.864	41.969	0.105	40.5	43.5	0-5%	0.222		0.0094					0.0102				
41.969	42.064	0.095	40.5	43.5		0.186	0.0414	0.0128					0.00971				855
42.064	42.166	0.102	40.5	43.5		0.145		0.00757					0.00871				
42.166	42.265	0.099	40.5	43.5		0.136	0.0225	0.00484					0.00836				
42.265	42.363	0.098	40.5	43.5		0.145		0.00812					0.00932				
42.363	42.462	0.099	40.5	43.5		0.135		0.00645					0.0098				
42.462	42.551	0.089	40.5	43.5		0.116		0.0094					0.0089				
42.551	42.662	0.111	40.5	43.5		0.11		0.016	2.076				0.00749				771
42.662	42.764	0.102	40.5	43.5		0.101		0.0135					0.00799				
42.764	42.866	0.102	40.5	43.5		0.0931	0.0391	0.0141	2.116				0.00625				
42.866	42.965	0.099	40.5	43.5		0.119							0.0104				
42.965	43.061	0.096	40.5	43.5		0.132		0.0146					0.0112				
43.061	43.164	0.103	40.5	43.5		0.124	0.0318	0.0156					0.00916				568
43.164	43.263	0.099	40.5	43.5		0.13	0.0224	0.0166					0.00898				
43.263	43.362	0.099	40.5	43.5		0.141	0.0206						0.0107				
43.362	43.466	0.104	40.5	43.5		0.186	0.0502	0.0259					0.0107				
43.466	43.565	0.099	43.5	46.5		0.15	0.0449						0.00761				550
43.565	43.665	0.1	43.5	46.5		0.15	0.0318						0.00708				
43.665	43.747	0.082	43.5	46.5		0.126	0.0383	0.00511					0.00533				
43.747	43.862	0.115	43.5	46.5		0.122	0.0224	0.00542					0.00699				
43.862	43.964	0.102	43.5	46.5		0.127	0.0301	0.00863					0.00925				
43.964	44.064	0.1	43.5	46.5		0.142		0.00673					0.00917				
44.064	44.164	0.1	43.5	46.5		0.138		0.0045					0.00925				
44.164	44.263	0.099	43.5	46.5		0.126		0.00439					0.00975				
44.263	44.361	0.098	43.5	46.5		0.134		0.00874					0.0105				
44.361	44.463	0.102	43.5	46.5		0.147	0.0549	0.0108					0.00761				536
44.463	44.562	0.099	43.5	46.5		0.148		0.0119					0.00593				
44.562	44.664	0.102	43.5	46.5		0.133	0.0303	0.0094					0.00563				
44.664	44.765	0.101	43.5	46.5		0.124		0.0094					0.00503				
44.765	44.864	0.099	43.5	46.5		0.119		0.00989					0.00501				
44.864	44.954	0.09	43.5	46.5	5-10%	0.125		0.0108					0.00443				
44.954	45.064	0.11	43.5	46.5		0.0901							0.00735				
45.064	45.163	0.099	43.5	46.5		0.121		0.00582					0.00875				
45.163	45.262	0.099	43.5	46.5		0.137		0.00693					0.00723				688
45.262	45.364	0.102	43.5	46.5		0.129							0.00687				541
45.364	45.466	0.102	43.5	46.5		0.128							0.00691				
45.466	45.564	0.098	43.5	46.5		0.125	0.0233						0.00504				
45.564	45.666	0.102	43.5	46.5		0.124		0.0139					0.0102				679
45.666	45.764	0.098	43.5	46.5		0.132		0.0149					0.0108				
45.764	45.863	0.099	43.5	46.5		0.143		0.0132	2.1				0.0107				684

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
45.863	45.962	0.099	43.5	46.5		0.125		0.0132					0.0112				
45.962	46.064	0.102	43.5	46.5		0.162	0.0336	0.00603	2.125				0.0139				
46.064	46.166	0.102	43.5	46.5		0.106	0.0326	0.00962	2.094				0.0115				699
46.166	46.276	0.11	43.5	46.5		0.143	0.0302						0.00813				
46.276	46.366	0.09	43.5	46.5		0.143	0.0325	0.014	2.072				0.00589				695
46.366	46.464	0.098	43.5	46.5		0.137	0.0417						0.00576				
46.464	46.564	0.1	46.5	49.5		0.149	0.0392		2.083				0.00722				
46.564	46.661	0.097	46.5	49.5		0.125	0.0427	0.0158					0.00655				
46.661	46.763	0.102	46.5	49.5		0.118	0.03	0.0159					0.00487				568
46.763	46.865	0.102	46.5	49.5		0.101		0.00302					0.00744				
46.865	46.964	0.099	46.5	49.5		0.116	0.0376	0.00793					0.00743				
46.964	47.065	0.101	46.5	49.5		0.107	0.0214	0.00569					0.00783				
47.065	47.164	0.099	46.5	49.5		0.114		0.00635					0.00867				
47.164	47.263	0.099	46.5	49.5		0.126	0.0328	0.00535					0.00621				522
47.263	47.364	0.101	46.5	49.5		0.155	0.0327	0.0111					0.00631				
47.364	47.464	0.1	46.5	49.5		0.154	0.0369	0.00755					0.0063				
47.464	47.563	0.099	46.5	49.5		0.138	0.0224	0.00777					0.00559				
47.563	47.661	0.098	46.5	49.5		0.134	0.0285	0.0071					0.00559				
47.661	47.763	0.102	46.5	49.5		0.126	0.0307	0.00413					0.00851				543
47.763	47.861	0.098	46.5	49.5		0.118		0.00599					0.00829				
47.861	47.965	0.104	46.5	49.5	5-10%	0.11	0.0246	0.00964	2.39				0.00634				696
47.965	48.065	0.1	46.5	49.5		0.134	0.0349		2.079				0.00492				747
48.065	48.164	0.099	46.5	49.5		0.119	0.0438	0.0053					0.00355				
48.164	48.263	0.099	46.5	49.5		0.14	0.0339		2.09				0.00439				651
48.263	48.362	0.099	46.5	49.5		0.158	0.0343	0.0286	2.434	1			0.00559				630
48.362	48.473	0.111	46.5	49.5		0.131	0.0433	0.00569					0.00746				
48.473	48.558	0.085	46.5	49.5		0.121		0.00624					0.00671				
48.558	48.663	0.105	46.5	49.5		0.116							0.00716				
48.663	48.763	0.1	46.5	49.5		0.0975							0.00715				
48.763	48.863	0.1	46.5	49.5		0.082							0.00628				688
48.863	48.963	0.1	46.5	49.5		0.128	0.0516						0.0077				592
48.963	49.063	0.1	46.5	49.5		0.145	0.0323						0.00927				
49.063	49.163	0.1	46.5	49.5		0.151	0.0503						0.00828				
49.163	49.266	0.103	46.5	49.5		0.117		0.00332					0.00893				
49.266	49.367	0.101	46.5	49.5		0.111		0.00322					0.00904				
49.367	49.467	0.1	46.5	49.5		0.0977		0.00295					0.00861				
49.467	49.564	0.097	49.5	52.5		0.0985		0.00322					0.00898				
49.564	49.663	0.099	49.5	52.5		0.101		0.00146					0.00962				
49.663	49.761	0.098	49.5	52.5		0.115		0.00111					0.0103				575
49.761	49.866	0.105	49.5	52.5		0.101		0.00356					0.00852				
49.866	49.964	0.098	49.5	52.5		0.139	0.0342	0.00751					0.00794				
49.964	50.063	0.099	49.5	52.5		0.107		0.00416					0.00574				
50.063	50.162	0.099	49.5	52.5		0.136		0.00841					0.00594				
50.162	50.262	0.1	49.5	52.5		0.129		0.00417					0.00754				
50.262	50.357	0.095	49.5	52.5		0.143		0.00569	2.091				0.00661				677
50.357	50.463	0.106	49.5	52.5		0.14		0.00807					0.00549				
50.463	50.565	0.102	49.5	52.5		0.116		0.00756					0.00369				
50.565	50.664	0.099	49.5	52.5		0.142		0.0101					0.00447				
50.664	50.762	0.098	49.5	52.5		0.128		0.00734					0.00693				
50.762	50.864	0.102	49.5	52.5		0.136	0.0398	0.00439					0.00636				
50.864	50.948	0.084	49.5	52.5	0-5%	0.132		0.00171					0.00621				
50.948	51.07	0.122	49.5	52.5		0.104		0.00915					0.00644				516
51.07	51.163	0.093	49.5	52.5		0.0856	0.0481	0.00607					0.00523				688
51.163	51.261	0.098	49.5	52.5		0.082		0.0071					0.00775				
51.261	51.363	0.102	49.5	52.5		0.108	0.0387	0.00801	2.097				0.00764				744
51.363	51.465	0.102	49.5	52.5		0.112		0.00966					0.00683				
51.465	51.564	0.099	49.5	52.5		0.125		0.00659					0.00932				
51.564	51.665	0.101	49.5	52.5		0.112	0.0241	0.00715					0.00921				
51.665	51.764	0.099	49.5	52.5		0.0652		0.00444					0.00828				
51.764	51.862	0.098	49.5	52.5		0.0835		0.00498					0.00931				
51.862	51.964	0.102	49.5	52.5		0.0962	0.024	0.00868					0.011				
51.964	52.066	0.102	49.5	52.5		0.141	0.0228	0.00541					0.0115				541
52.066	52.166	0.1	49.5	52.5		0.124	0.032	0.00139					0.009				
52.166	52.266	0.1	49.5	52.5		0.131		0.0152		1			0.0103				
52.266	52.364	0.098	49.5	52.5		0.101	0.0369		2.282				0.00766				
52.364	52.463	0.099	49.5	52.5		0.138	0.0246						0.0081				
52.463	52.564	0.101	52.5	55.5		0.12		0.00614					0.00686				
52.564	52.663	0.099	52.5	55.5		0.108							0.00824				519
52.663	52.765	0.102	52.5	55.5		0.103							0.00547				
52.765	52.866	0.101	52.5	55.5		0.16	0.0362		2.088				0.0108				619
52.866	52.966	0.1	52.5	55.5		0.135	0.0236	0.00367					0.0102				521
52.966	53.066	0.1	52.5	55.5		0.118		0.00533					0.00642				
53.066	53.166	0.1	52.5	55.5		0.105		0.00204					0.0074				
53.166	53.262	0.096	52.5	55.5		0.129		0.00717	2.106				0.00993				744
53.262	53.346	0.084	52.5	55.5		0.141							0.00999				
53.346	53.463	0.117	52.5	55.5		0.154	0.0227	0.00253					0.0081				
53.463	53.564	0.101	52.5	55.5		0.132	0.0366	0.00627					0.00696				
53.564	53.665	0.101	52.5	55.5		0.124		0.0081	2.1				0.00677				783
53.665	53.766	0.101	52.5	55.5		0.109		0.00781					0.00873				527
53.766	53.864	0.098	52.5	55.5		0.156		0.024	2.684	1			0.00889				524
53.864	53.951	0.087	52.5	55.5	10-20%	0.124		0.0097					0.0052				
53.951	54.065	0.114	52.5	55.5		0.08		0.00382					0.00507				
54.065	54.163	0.098	52.5	55.5		0.124	0.0344	0.00266					0.00792				636
54.163	54.261	0.098	52.5	55.5		0.0987		0.000964					0.00684				
54.261	54.362	0.101	52.5	55.5		0.0855							0.00637				
54.362	54.463	0.101	52.5	55.5		0.0988		0.00116					0.00662				
54.463	54.564	0.101	52.5	55.5		0.118	0.0675	0.000157					0.00716				711
54.564	54.664	0.1	52.5	55.5		0.0863		0.0038					0.00626				
54.664	54.762	0.098	52.5	55.5		0.0804		0.00378					0.00588				
54.762	54.863	0.101	52.5	55.5		0.111		0.00416					0.00737				
54.863	54.964	0.101	52.5	55.5		0.124	0.0238	0.00797					0.00698				543
54.964	55.065	0.101	52.5	55.5		0.136	0.0214	0.025	2.819	1			0.00842				514
55.065	55.166	0.101	52.5	55.5		0.11	0.0487	0.011	2.603	1			0.00625				707
55.166	55.265	0.099	52.5	55.5		0.111	0.0343	0.00332					0.00881				555
55.265	55.364	0.099	52.5	55.5		0.103		0.00361					0.00817				
55.364	55.465	0.101	52.5	55.5		0.133		0.00677					0.0096				520
55.465	55.564	0.099	55.5	58.1		0.115		0.00543					0.0081				
55.564	55.662	0.098	55.5	58.1		0.0923		0.0051					0.00807				
55.662	55.763	0.101	55.5	58.1		0.103							0.00787				
55.763	55.874	0.111	55.5	58.1		0.118	0.024						0.00744				
55.874	55.965	0.091	55.5	58.1		0.117	0.0454		2.389	0.483			0.00713				
55.965	56.063	0.098	55.5	58.1		0.109							0.00978				582
56.063	56.164	0.101	55.5	58.1		0.128	0.0227	0.0109					0.0091				530
56.164	56.265	0.101	55.5	58.1		0.122	0.0368						0.00871				
56.265	56.355	0.09	55.5	58.1		0.13							0.00818				575
56.355	56.467	0.112	55.5	58.1		0.13		0.00638					0.00874				541
56.467	56.562	0.095	55.5	58.1		0.104		0.00155					0.00862				
56.562	56.663	0.101	55.5	58.1		0.115	0.0318	0.00708					0.01				
56.663	56.765	0.102	55.5	58.1	20-40%	0.0865		0.0041					0.00936				
56.765	56.857	0.092	55.5	58.1		0.0959		0.00756					0.0115				
56.857	56.915	0.058	55.5	58.1		0.117							0.0111				
56.915	57.062	0.147	55.5	58.1		0.137	0.0407	0.00733					0.00766				548
57.062	57.163	0.101	55.5	58.1		0.131	0.0215	0.00923					0.00802				548
57.163	57.264	0.101	55.5	58.1		0.118		0.00486					0.00886				518
57.264	57.362	0.098	55.5	58.1		0.0691		0.00577					0.00748				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
57.362	57.463	0.101	55.5	58.1		0.0989	0.0209						0.00841				
57.463	57.566	0.103	55.5	58.1		0.0915	0.0264						0.00772				547
57.566	57.665	0.099	55.5	58.1		0.0893							0.00563				
57.665	57.763	0.098	55.5	58.1		0.0997		0.00381					0.00825				
57.763	57.862	0.099	55.5	58.1		0.0841							0.00791				
57.862	57.963	0.101	55.5	58.1		0.0924	0.048	0.00605	2.135				0.00638				513
57.963	58.064	0.101	55.5	58.1		0.132	0.0394	0.0102					0.00952				558
58.064	58.15	0.086	58.1	59.4		0.137							0.0111				
58.15	58.262	0.112	58.1	59.4		0.137		0.0037					0.00956				
58.262	58.363	0.101	58.1	59.4		0.153							0.00887				593
58.363	58.465	0.102	58.1	59.4		0.165							0.00942				588
58.465	58.563	0.098	58.1	59.4		0.19			2.064				0.00864				654
58.563	58.66	0.097	58.1	59.4		0.173		0.00327					0.00903		1		605
58.66	58.764	0.104	58.1	59.4	0-5%	0.208							0.0101		1		629
58.764	58.864	0.1	58.1	59.4		0.213	0.0291	0.00614					0.0119		1		604
58.864	58.964	0.1	58.1	59.4		0.119		0.00617					0.00638				
58.964	59.064	0.1	58.1	59.4		0.18		0.0286	2.305	0.808		0.0833	0.0063				
59.064	59.165	0.101	58.1	59.4		0.233		0.0377	2.593	0.912		0.103	0.00809				
59.165	59.264	0.099	58.1	59.4		0.291		0.0912	2.753	0.875		0.0646	0.00701				676
59.264	59.364	0.1	58.1	59.4		0.12	0.0446	0.0155	2.543	1			0.0106				
59.364	59.466	0.102	59.4	60.9		0.194		0.0708	3.147	1			0.00721				617
59.466	59.564	0.098	59.4	60.9		0.159		0.0592	2.925	1		0.0469	0.00571				547
59.564	59.663	0.099	59.4	60.9		0.0994	0.0278	0.0178	2.747	1		0.0655	0.00669				
59.663	59.764	0.101	59.4	60.9		0.128	0.0455	0.00887					0.00878				531
59.764	59.865	0.101	59.4	60.9		0.127	0.0273	0.0071					0.0113				
59.865	59.964	0.099	59.4	60.9		0.123	0.0375	0.00734	2.117				0.00867				535
59.964	60.071	0.107	59.4	60.9		0.163		0.0405	2.79	1			0.00801				
60.071	60.163	0.092	59.4	60.9	5-10%	0.0837		0.00846					0.00936				
60.163	60.262	0.099	59.4	60.9		0.154		0.0361	2.476	1			0.00937				
60.262	60.356	0.094	59.4	60.9		0.143		0.0259		0.837			0.0113				
60.356	60.467	0.111	59.4	60.9		0.169		0.0848	2.633	1			0.0078				
60.467	60.563	0.096	59.4	60.9		0.118	0.0226	0.0531	2.796	1			0.0069				
60.563	60.664	0.101	59.4	60.9		0.169	0.0279	0.0889	2.92	1			0.0076				550
60.664	60.765	0.101	59.4	60.9		0.125	0.0243	0.035	2.735	1			0.00565				
60.765	60.858	0.093	59.4	60.9		0.149	0.0208						0.00897				
60.858	60.966	0.108	60.9	63.9		0.165	0.0273	0.0143		1		0.0554	0.0139				610
60.966	61.064	0.098	60.9	63.9		0.136		0.0109					0.0132				
61.064	61.163	0.099	60.9	63.9		0.178		0.00922					0.0117				
61.163	61.264	0.101	60.9	63.9		0.14		0.00562					0.00985				
61.264	61.363	0.099	60.9	63.9		0.137		0.008					0.0121				
61.363	61.463	0.1	60.9	63.9		0.135		0.00856					0.014				
61.463	61.563	0.1	60.9	63.9		0.154		0.0132					0.0109				587
61.563	61.662	0.099	60.9	63.9		0.131		0.0169					0.0119				590
61.662	61.764	0.102	60.9	63.9		0.133		0.0148					0.0119				
61.764	61.865	0.101	60.9	63.9		0.111		0.0104					0.0103				
61.865	61.964	0.099	60.9	63.9		0.147		0.0124				0.0511	0.0118				
61.964	62.063	0.099	60.9	63.9		0.2		0.00672			0.553	0.0879	0.0127				560
62.063	62.164	0.101	60.9	63.9		0.16		0.00168				0.0934	0.00972				
62.164	62.263	0.099	60.9	63.9		0.131		0.00576					0.0104				571
62.263	62.362	0.099	60.9	63.9		0.179		0.00166				0.0506	0.0136				554
62.362	62.466	0.104	60.9	63.9		0.204		0.0128				0.0601	0.0132				585
62.466	62.562	0.096	60.9	63.9		0.146						0.074	0.0111				602
62.562	62.64	0.078	60.9	63.9		0.13		0.0129					0.0067				580
62.64	62.772	0.132	60.9	63.9		0.133	0.0222	0.00403					0.009				540
62.772	62.864	0.092	60.9	63.9		0.123		0.00826					0.00617				
62.864	62.955	0.091	60.9	63.9		0.146		0.0059					0.00837				
62.955	63.075	0.12	60.9	63.9		0.134		0.00483					0.00638				
63.075	63.166	0.091	60.9	63.9		0.129		0.006					0.00722				
63.166	63.263	0.097	60.9	63.9		0.143		0.0082					0.00892				
63.263	63.364	0.101	60.9	63.9		0.131		0.00832					0.00693				
63.364	63.464	0.1	60.9	63.9		0.121		0.0107					0.00786				
63.464	63.565	0.101	60.9	63.9		0.136		0.0127					0.00966				535
63.565	63.666	0.101	60.9	63.9		0.136		0.0141					0.0114				519
63.666	63.76	0.094	60.9	63.9		0.135		0.0147					0.0116				
63.76	63.867	0.107	60.9	63.9		0.176		0.0129					0.00968				
63.867	63.968	0.101	63.9	65.5		0.135		0.0124					0.00718				
63.968	64.064	0.096	63.9	65.5		0.14		0.00574					0.00776				
64.064	64.163	0.099	63.9	65.5		0.112		0.00766					0.00575				
64.163	64.263	0.1	63.9	65.5		0.102		0.00802					0.00416				
64.263	64.362	0.099	63.9	65.5		0.112							0.00511				
64.362	64.462	0.1	63.9	65.5		0.109		0.00225					0.00614				
64.462	64.564	0.102	63.9	65.5		0.124		0.00242					0.00702				
64.564	64.663	0.099	63.9	65.5		0.106		0.00373					0.00645				
64.663	64.763	0.1	63.9	65.5		0.106		0.00187					0.00619				
64.763	64.862	0.099	63.9	65.5		0.117		0.00232					0.00781				
64.862	64.962	0.1	63.9	65.5		0.113		0.00265					0.00815				
64.962	65.09	0.128	63.9	65.5		0.135		0.0118					0.00741				
65.09	65.166	0.076	63.9	65.5		0.123		0.00829					0.00945				
65.166	65.263	0.097	63.9	65.5		0.122		0.00685					0.00658				
65.263	65.363	0.1	63.9	65.5		0.166		0.00957				0.0626	0.00619				521
65.363	65.465	0.102	63.9	65.5		0.174	0.0374	0.0079				0.0587	0.0074				
65.465	65.564	0.099	65.5	67.4		0.12	0.0549	0.00557					0.00776				
65.564	65.662	0.098	65.5	67.4		0.11	0.0684	0.00225					0.00582				
65.662	65.763	0.101	65.5	67.4		0.117	0.0322						0.00421				
65.763	65.863	0.1	65.5	67.4		0.113		0.00317					0.00314				
65.863	65.963	0.1	65.5	67.4		0.102		0.00871					0.00424				
65.963	66.078	0.115	65.5	67.4		0.122		0.0041					0.00626				
66.078	66.165	0.087	65.5	67.4		0.109		0.0265	2.559	0.969		0.0878	0.00453				592
66.165	66.264	0.099	65.5	67.4		0.114		0.0235	2.589	0.888		0.048	0.00266				
66.264	66.362	0.098	65.5	67.4		0.118		0.0131		0.885			0.00511				
66.362	66.46	0.098	65.5	67.4	0-5%	0.112		0.00535					0.00512				516
66.46	66.562	0.102	65.5	67.4		0.128		0.00674					0.00581				
66.562	66.663	0.101	65.5	67.4		0.0837		0.0045					0.00355				
66.663	66.764	0.101	65.5	67.4		0.112		0.00496					0.00542				518
66.764	66.865	0.101	65.5	67.4		0.0872		0.00455					0.00532				
66.865	66.918	0.053	65.5	67.4		0.0798		0.00311									
66.918	67.091	0.173	65.5	67.4		0.134		0.00238					0.00354				
67.091	67.165	0.074	65.5	67.4		0.0917							0.00521				
67.165	67.263	0.098	65.5	67.4		0.0904							0.00496				
67.263	67.362	0.099	65.5	67.4		0.123							0.00899				518
67.362	67.461	0.099	67.4	69.5		0.101							0.00651				
67.461	67.56	0.099	67.4	69.5		0.0953							0.00614				521
67.56	67.653	0.093	67.4	69.5		0.0748							0.00428				
67.653	67.757	0.104	67.4	69.5		0.0773							0.00654				
67.757	67.869	0.112	67.4	69.5		0.106							0.00696				
67.869	67.963	0.094	67.4	69.5		0.123		0.0166				0.0544	0.0065				
67.963	68.063	0.1	67.4	69.5		0.105		0.00217					0.00603				620
68.063	68.177	0.114	67.4	69.5		0.0986		0.00151					0.00692				523
68.177	68.265	0.088	67.4	69.5		0.106		0.00104					0.0042				
68.265	68.365	0.1	67.4	69.5		0.168	0.0223	0.00547					0.00651				576
68.365	68.464	0.099	67.4	69.5		0.112		0.00236					0.00419				533
68.464	68.564	0.1	67.4	69.5		0.0683		0.00397					0.00306				
68.564	68.663	0.099	67.4	69.5		0.0988		0.00154					0.00386				623
68.663	68.763	0.1	67.4	69.5		0.0848		0.00277					0.00459				
68.763	68.862	0.099	67.4	69.5		0.114							0.00543				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
68.862	68.963	0.101	67.4	69.5		0.0867		0.00304					0.00454				
68.963	69.065	0.102	67.4	69.5		0.0725		0.00333					0.00504				578
69.065	69.165	0.1	67.4	69.5				0.00407					0.00455				
69.165	69.264	0.099	67.4	69.5		0.0847		0.00634					0.00422				
69.264	69.364	0.1	67.4	69.5		0.0948		0.00312					0.00609				549
69.364	69.462	0.098	67.4	69.5		0.117		0.00558					0.00634				
69.462	69.563	0.101	69.5	72.3		0.124		0.00599					0.00634				552
69.563	69.662	0.099	69.5	72.3		0.178		0.0088					0.00776		1		569
69.662	69.762	0.1	69.5	72.3		0.124		0.00509					0.00641				559
69.762	69.865	0.103	69.5	72.3		0.132		0.0069					0.00965				558
69.865	69.958	0.093	69.5	72.3		0.188		0.00859					0.0109				609
69.958	70.059	0.101	69.5	72.3		0.174		0.00776					0.0102				582
70.059	70.163	0.104	69.5	72.3		0.153		0.00931					0.0122		1		648
70.163	70.263	0.1	69.5	72.3		0.254		0.0068							1		611
70.263	70.363	0.1	69.5	72.3		0.228									1		595
70.363	70.462	0.099	69.5	72.3		0.166		0.00286					0.00548				584
70.462	70.562	0.1	69.5	72.3		0.22		0.00603							1		603
70.562	70.659	0.097	69.5	72.3		0.334		0.00875							1		640
70.659	70.764	0.105	69.5	72.3		0.164							0.00997				574
70.764	70.864	0.1	69.5	72.3		0.236							0.0084		1		617
70.864	70.964	0.1	69.5	72.3		0.243									1		604
70.964	71.063	0.099	69.5	72.3		0.188							0.00921				583
71.063	71.163	0.1	69.5	72.3		0.131							0.00642				549
71.163	71.262	0.099	69.5	72.3		0.177							0.00859				580
71.262	71.364	0.102	69.5	72.3		0.165		0.00352					0.00604				578
71.364	71.465	0.101	69.5	72.3		0.185		0.00429					0.00775				551
71.465	71.564	0.099	69.5	72.3		0.172		0.00274					0.00884				562
71.564	71.664	0.1	69.5	72.3		0.146		0.00441					0.0056				527
71.664	71.764	0.1	69.5	72.3		0.127		0.00667					0.00465				
71.764	71.863	0.099	69.5	72.3		0.137		0.00279					0.00555				
71.863	71.959	0.096	69.5	72.3		0.152		0.00596					0.00547				618
71.959	72.06	0.101	69.5	72.3		0.227		0.00402					0.0053		1		595
72.06	72.165	0.105	69.5	72.3		0.124		0.00443					0.00749				565
72.165	72.268	0.103	69.5	72.3		0.119		0.00299					0.00736				
72.268	72.363	0.095	72.3	73.7		0.143		0.004					0.00896				
72.363	72.462	0.099	72.3	73.7		0.135		0.0016					0.00998				
72.462	72.52	0.058	72.3	73.7		0.121							0.0131				
72.52	72.669	0.149	72.3	73.7		0.175							0.0116				558
72.669	72.762	0.093	72.3	73.7		0.162		0.00476					0.0104				
72.762	72.862	0.1	72.3	73.7		0.153							0.0104				565
72.862	72.961	0.099	72.3	73.7		0.138		0.00852					0.0105				
72.961	73.061	0.1	72.3	73.7		0.144		0.00549					0.0112				553
73.061	73.161	0.1	72.3	73.7		0.161							0.0129				
73.161	73.262	0.101	72.3	73.7		0.161							0.00741				566
73.262	73.363	0.101	72.3	73.7		0.142							0.00689				
73.363	73.459	0.096	72.3	73.7		0.23		0.0141		1		0.0764	0.00734				
73.459	73.572	0.113	72.3	73.7		0.294		0.000722				0.0921	0.00644				689
73.572	73.665	0.093	72.3	73.7		0.365	0.02					0.144	0.00565				849
73.665	73.763	0.098	73.7	74.6		0.0912		0.00291					0.00677				
73.763	73.864	0.101	73.7	74.6		0.105		0.00196					0.00788				
73.864	73.964	0.1	73.7	74.6		0.123		0.00143					0.0103				
73.964	74.063	0.099	73.7	74.6		0.103		0.00268					0.00975				
74.063	74.163	0.1	73.7	74.6		0.0965							0.00839				
74.163	74.263	0.1	73.7	74.6		0.105	0.0266	0.00275					0.00703				529
74.263	74.364	0.101	73.7	74.6		0.0974		0.00602					0.00729				521
74.364	74.463	0.099	73.7	74.6		0.102		0.00671					0.00949				
74.463	74.563	0.1	73.7	74.6		0.103		0.00553					0.00769				
74.563	74.663	0.1	74.6	75.9		0.1		0.00762					0.00721				
74.663	74.765	0.102	74.6	75.9		0.135		0.00791					0.00898				560
74.765	74.864	0.099	74.6	75.9		0.121		0.0031					0.00843				
74.864	74.963	0.099	74.6	75.9		0.124		0.00262					0.00795				549
74.963	75.063	0.1	74.6	75.9		0.0711		0.00131					0.00683				
75.063	75.162	0.099	74.6	75.9		0.14		0.0044					0.00905				570
75.162	75.274	0.112	74.6	75.9		0.136							0.00616				539
75.274	75.364	0.09	74.6	75.9		0.106											
75.364	75.463	0.099	74.6	75.9		0.117							0.0068				
75.463	75.565	0.102	74.6	75.9		0.105							0.00624				535
75.565	75.658	0.093	74.6	75.9		0.152		0.00242					0.00596				585
75.658	75.765	0.107	74.6	75.9		0.0984		0.00401					0.00731				586
75.765	75.863	0.098	74.6	75.9		0.12		0.0047					0.00653				622
75.863	75.964	0.101	75.9	77.1		0.0997		0.00852					0.00746				
75.964	76.063	0.099	75.9	77.1		0.101		0.00752					0.0086				
76.063	76.164	0.101	75.9	77.1		0.121		0.00763					0.00789				
76.164	76.263	0.099	75.9	77.1		0.101		0.00869					0.00735				
76.263	76.364	0.101	75.9	77.1		0.108							0.00767				
76.364	76.464	0.1	75.9	77.1		0.112							0.00767				545
76.464	76.561	0.097	75.9	77.1		0.0978		0.0059					0.00584				
76.561	76.627	0.066	75.9	77.1		0.108							0.00629				
76.627	76.77	0.143	75.9	77.1		0.117							0.00572				578
76.77	76.864	0.094	75.9	77.1		0.0999							0.00471				527
76.864	76.964	0.1	75.9	77.1		0.105		0.00109					0.00563				
76.964	77.066	0.102	75.9	77.1		0.0969							0.00351				
77.066	77.164	0.098	77.1	78.3		0.122							0.00444				587
77.164	77.264	0.1	77.1	78.3		0.168							0.00773		1		616
77.264	77.363	0.099	77.1	78.3		0.12							0.0107				584
77.363	77.463	0.1	77.1	78.3		0.099							0.00977				545
77.463	77.563	0.1	77.1	78.3		0.0876		0.00782					0.00869				
77.563	77.663	0.1	77.1	78.3		0.0981		0.00516					0.00542				586
77.663	77.763	0.1	77.1	78.3		0.127		0.00771					0.00703				616
77.763	77.857	0.094	77.1	78.3		0.147							0.00783				570
77.857	77.963	0.106	77.1	78.3		0.136		0.00162					0.00503				539
77.963	78.063	0.1	77.1	78.3		0.126		0.00122					0.00817				
78.063	78.163	0.1	77.1	78.3		0.122							0.0067				
78.163	78.265	0.102	77.1	78.3		0.126							0.0062				
78.265	78.366	0.101	78.3	80.3		0.145		0.0004					0.00708				563
78.366	78.463	0.097	78.3	80.3		0.17		0.00166					0.00555				567
78.463	78.562	0.099	78.3	80.3		0.145		0.00355					0.00362				603
78.562	78.664	0.102	78.3	80.3		0.202		0.00369					0.0103		1		572
78.664	78.766	0.102	78.3	80.3		0.185		0.002					0.00766		1		603
78.766	78.865	0.099	78.3	80.3		0.13							0.00548				558
78.865	78.965	0.1	78.3	80.3		0.191		0.0038					0.00898		1		595
78.965	79.07	0.105	78.3	80.3		0.158		0.00802					0.00797				601
79.07	79.166	0.096	78.3	80.3		0.224		0.00973					0.00648		1		611
79.166	79.265	0.099	78.3	80.3		0.303		0.00997							1		626
79.265	79.365	0.1	78.3	80.3		0.21		0.0103					0.00866		1		603
79.365	79.464	0.099	78.3	80.3		0.116		0.00767					0.00807				
79.464	79.564	0.1	78.3	80.3		0.122		0.0076					0.00722				548
79.564	79.674	0.11	78.3	80.3		0.149		0.00619					0.00781				586
79.674	79.765	0.091	78.3	80.3		0.133		0.00594					0.00793				
79.765	79.864	0.099	78.3	80.3		0.127		0.00572					0.00614				
79.864	79.964	0.1	78.3	80.3		0.14		0.00713					0.00551				591
79.964	80.069	0.105	78.3	80.3		0.122		0.00591					0.0037		1		579
80.069	80.154	0.085	78.3	80.3		0.135		0.0066					0.00503				557
80.154	80.261	0.107	78.3	80.3		0.14		0.00282					0.00892				538
80.261	80.361	0.1	80.3	83.0		0.138		0.00584					0.0103				568

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
80.361	80.463	0.102	80.3	83.0		0.124		0.00609					0.00881				613
80.463	80.564	0.101	80.3	83.0		0.0924		0.00389					0.00677				
80.564	80.662	0.098	80.3	83.0		0.109		0.00506					0.00741				
80.662	80.763	0.101	80.3	83.0		0.102		0.00388					0.00586				
80.763	80.865	0.102	80.3	83.0		0.133		0.0019					0.00698				573
80.865	80.962	0.097	80.3	83.0		0.111		0.00553					0.00729				547
80.962	81.063	0.101	80.3	83.0		0.116		0.00503					0.00829				557
81.063	81.161	0.098	80.3	83.0		0.118		0.00638					0.0102				
81.161	81.263	0.102	80.3	83.0		0.103		0.00204					0.00963				
81.263	81.364	0.101	80.3	83.0		0.109		0.00561					0.00982				
81.364	81.462	0.098	80.3	83.0		0.118		0.00761					0.00527				556
81.462	81.563	0.101	80.3	83.0	0-5%	0.11		0.00763					0.00718				548
81.563	81.665	0.102	80.3	83.0		0.14		0.0062					0.00548				552
81.665	81.762	0.097	80.3	83.0		0.138		0.00567					0.0107				596
81.762	81.837	0.075	80.3	83.0		0.0973		0.00303					0.00588				512
81.837	82.065	0.228	80.3	83.0		0.125		0.00803					0.00883				563
82.065	82.164	0.099	80.3	83.0		0.11		0.0062					0.00707				531
82.164	82.262	0.098	80.3	83.0		0.148	0.024	0.00646					0.00991				565
82.262	82.364	0.102	80.3	83.0		0.121							0.0102				560
82.364	82.465	0.101	80.3	83.0		0.175	0.0282	0.00861					0.00727		1		624
82.465	82.563	0.098	80.3	83.0		0.157	0.0317	0.0163					0.0105				579
82.563	82.662	0.099	80.3	83.0		0.134	0.0264	0.00961					0.00949				537
82.662	82.771	0.109	80.3	83.0		0.201	0.075	0.178	2.835	1		0.0699	0.0108				547
82.771	82.865	0.094	80.3	83.0		0.188	0.0611						0.0104				
82.865	82.962	0.097	80.3	83.0		0.144	0.0207			1			0.00937				
82.962	83.064	0.102	83.0	84.0		0.14		0.00605					0.00832				536
83.064	83.162	0.098	83.0	84.0		0.0907	0.0533	0.00694					0.00657				550
83.162	83.266	0.104	83.0	84.0		0.129		0.00665					0.00662				523
83.266	83.363	0.097	83.0	84.0		0.124		0.00643					0.0069				524
83.363	83.463	0.1	83.0	84.0	0-5%	0.149	0.0267						0.00665				580
83.463	83.564	0.101	83.0	84.0		0.14	0.0619	0.00615					0.00663				
83.564	83.665	0.101	83.0	84.0		0.164	0.0662	0.0118		0.767			0.00677				536
83.665	83.773	0.108	83.0	84.0		0.132	0.0751						0.00679				524
83.773	83.864	0.091	83.0	84.0		0.171	0.0714	0.0665	2.381	0.939			0.00793				520
83.864	83.964	0.1	83.0	84.0		0.151	0.0746						0.00919				
83.964	84.063	0.099	84.0	86.7		0.157	0.0798						0.00701				555
84.063	84.163	0.1	84.0	86.7		0.163	0.0595						0.00922				
84.163	84.263	0.1	84.0	86.7		0.213	0.0746						0.0149				525
84.263	84.364	0.101	84.0	86.7		0.156	0.0709						0.00953				
84.364	84.465	0.101	84.0	86.7		0.168	0.0405						0.00799				537
84.465	84.564	0.099	84.0	86.7		0.187	0.068						0.00941				582
84.564	84.664	0.1	84.0	86.7		0.16	0.0555						0.00936				533
84.664	84.764	0.1	84.0	86.7		0.155	0.0434	0.0174					0.00438				569
84.764	84.863	0.099	84.0	86.7		0.131	0.0358	0.0169					0.00465				
84.863	84.963	0.1	84.0	86.7		0.137	0.0584	0.0383	2.811	1			0.00779				578
84.963	85.062	0.099	84.0	86.7		0.135	0.0472	0.0105					0.00971				550
85.062	85.166	0.104	84.0	86.7		0.193	0.0636			0.738			0.00926				611
85.166	85.265	0.099	84.0	86.7	30-40%	0.194	0.0689			1			0.0111				538
85.265	85.364	0.099	84.0	86.7		0.176	0.0611						0.0104				554
85.364	85.464	0.1	84.0	86.7		0.172	0.047			1			0.0106				548
85.464	85.564	0.1	84.0	86.7		0.195	0.0452						0.0115				
85.564	85.663	0.099	84.0	86.7		0.217	0.055						0.00981				556
85.663	85.763	0.1	84.0	86.7		0.232	0.0658						0.0125				553
85.763	85.862	0.099	84.0	86.7		0.231	0.0505						0.00969		1		616
85.862	85.965	0.103	84.0	86.7		0.205	0.0632						0.00849				555
85.965	86.059	0.094	84.0	86.7		0.192	0.0576		2.133				0.00919				758
86.059	86.265	0.206	84.0	86.7		0.2	0.0868						0.00563				
86.265	86.37	0.105	84.0	86.7		0.188	0.0742						0.0071				542
86.37	86.463	0.093	84.0	86.7		0.16	0.0593						0.00741				545
86.463	86.565	0.102	84.0	86.7		0.184	0.0445	0.0129	2.15				0.00651				596
86.565	86.665	0.1	84.0	86.7		0.183	0.0645						0.00753				562
86.665	86.761	0.096	86.7	88.3		0.187	0.0688						0.009				
86.761	86.865	0.104	86.7	88.3		0.211	0.0704	0.0851	2.701	1			0.00481				
86.865	86.965	0.1	86.7	88.3		0.161	0.0615	0.0208	2.17	1			0.00532				511
86.965	87.064	0.099	86.7	88.3		0.155	0.0384	0.0174					0.00536				575
87.064	87.163	0.099	86.7	88.3		0.169	0.0466			1			0.00557				
87.163	87.262	0.099	86.7	88.3		0.175	0.0677						0.00565				741
87.262	87.358	0.096	86.7	88.3		0.144	0.0477						0.00491				535
87.358	87.466	0.108	86.7	88.3	10-20%	0.185	0.0473						0.00929				558
87.466	87.562	0.096	86.7	88.3		0.167	0.0445			1			0.00738				600
87.562	87.664	0.102	86.7	88.3		0.166	0.0579			0.915			0.00996				
87.664	87.766	0.102	86.7	88.3		0.233	0.0915			0.345			0.0122				
87.766	87.865	0.099	86.7	88.3		0.193	0.0709						0.00898				
87.865	87.946	0.081	86.7	88.3		0.173	0.0581			0.494			0.00859				
87.946	88.072	0.126	86.7	88.3		0.151	0.0464	0.0418	2.648	1			0.00726				
88.072	88.165	0.093	86.7	88.3		0.192	0.0606						0.00906				638
88.165	88.264	0.099	86.7	88.3		0.154	0.0498	0.0134					0.00762				532
88.264	88.363	0.099	88.3	89.6		0.184	0.0354						0.00692				
88.363	88.463	0.1	88.3	89.6		0.148	0.0308	0.000545					0.00606				
88.463	88.554	0.091	88.3	89.6		0.15		0.0075					0.00766				
88.554	88.671	0.117	88.3	89.6		0.161	0.0508	0.00839					0.00903				
88.671	88.765	0.094	88.3	89.6		0.179	0.0367	0.00682					0.012				
88.765	88.865	0.1	88.3	89.6		0.165	0.0333	0.00421					0.0121				
88.865	88.965	0.1	88.3	89.6	50+%	0.146	0.0361	0.00365					0.0112				
88.965	89.065	0.1	88.3	89.6		0.155	0.0321	0.0058					0.0107				
89.065	89.156	0.091	88.3	89.6		0.158	0.0536	0.00333					0.00998				551
89.156	89.262	0.106	88.3	89.6		0.207	0.072						0.00972				
89.262	89.359	0.097	88.3	89.6		0.182	0.0497						0.0102				
89.359	89.462	0.103	88.3	89.6		0.147	0.0618						0.0109				596
89.462	89.573	0.111	88.3	89.6		0.198	0.0471						0.0114				
89.573	89.661	0.088	89.6	91.9		0.203	0.0495						0.00786				
89.661	89.76	0.099	89.6	91.9		0.205	0.0555						0.0102				
89.76	89.864	0.104	89.6	91.9		0.173	0.0353	0.00913					0.00971				
89.864	89.964	0.1	89.6	91.9		0.2	0.0363	0.0054	2.069				0.00753				550
89.964	90.064	0.1	89.6	91.9		0.153	0.0535	0.00856	2.049				0.00984		1		661
90.064	90.163	0.099	89.6	91.9		0.16	0.0388		2.088				0.00866				759
90.163	90.263	0.1	89.6	91.9		0.178	0.0494						0.00996				
90.263	90.37	0.107	89.6	91.9		0.147	0.0313	0.0165	2.607				0.00887				698
90.37	90.466	0.096	89.6	91.9		0.2	0.0526		2.086				0.0123				762
90.466	90.566	0.1	89.6	91.9		0.144	0.0356						0.00941				
90.566	90.666	0.1	89.6	91.9		0.187	0.0447						0.0132				
90.666	90.766	0.1	89.6	91.9	40-50%	0.189	0.0392	0.0174	2.553	1			0.0112				599
90.766	90.866	0.1	89.6	91.9		0.187	0.0477		2.097				0.00973				668
90.866	90.918	0.052	89.6	91.9		0.177	0.0268										764
90.918	91.07	0.152	89.6	91.9		0.179	0.0525						0.0107				
91.07	91.165	0.095	89.6	91.9		0.217	0.0864						0.0082				648
91.165	91.263	0.098	89.6	91.9		0.193	0.045						0.00809				
91.263	91.365	0.102	89.6	91.9		0.145	0.046						0.00863				784
91.365	91.466	0.101	89.6	91.9		0.161	0.0512						0.00688				
91.466	91.562	0.096	89.6	91.9		0.162	0.0442						0.00562		1		604
91.562	91.664	0.102	89.6	91.9		0.178	0.0626	0.0154	2.042				0.0103				674
91.664	91.763	0.099	89.6	91.9		0.193	0.051						0.00807				524
91.763	91.864	0.101	89.6	91.9		0.191	0.052						0.0122				
91.864	91.966	0.102	91.9	92.9		0.162	0.112						0.0101				766

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
91.966	92.065	0.099	91.9	92.9		0.16	0.086	0.0137					0.0114				659
92.065	92.161	0.096	91.9	92.9		0.179	0.0583						0.0112				
92.161	92.272	0.111	91.9	92.9		0.165	0.056	0.00501					0.00697				652
92.272	92.365	0.093	91.9	92.9	20-40%	0.165	0.0202	0.00337					0.00468				
92.365	92.464	0.099	91.9	92.9		0.185	0.0489	0.00379					0.00836				
92.464	92.563	0.099	91.9	92.9		0.17	0.0445						0.00488				
92.563	92.653	0.09	91.9	92.9		0.224	0.0635						0.00272				
92.653	92.758	0.105	91.9	92.9		0.186	0.0555	0.00444					0.00661				568
92.758	92.864	0.106	91.9	92.9		0.181	0.0623		2.115				0.00477				
92.864	92.961	0.097	92.9	94.6		0.151	0.0438						0.00672				
92.961	93.064	0.103	92.9	94.6		0.172	0.0381						0.00773				
93.064	93.166	0.102	92.9	94.6		0.165	0.0594	0.0287	2.651	1			0.00529				
93.166	93.265	0.099	92.9	94.6		0.169	0.0423	0.00801		1			0.00426				
93.265	93.364	0.099	92.9	94.6		0.176	0.0504	0.00895					0.00543				
93.364	93.463	0.099	92.9	94.6		0.223	0.0726						0.00819				
93.463	93.566	0.103	92.9	94.6		0.178	0.022						0.0072				533
93.566	93.663	0.097	92.9	94.6		0.156	0.0571						0.00615				
93.663	93.762	0.099	92.9	94.6	20-40%	0.173	0.0422						0.00853				
93.762	93.861	0.099	92.9	94.6		0.171	0.0451	0.00985					0.0092				
93.861	93.964	0.103	92.9	94.6		0.198	0.0483						0.00812				
93.964	94.066	0.102	92.9	94.6		0.17	0.0376						0.00694				
94.066	94.162	0.096	92.9	94.6		0.18	0.0366	0.0093					0.00867				
94.162	94.263	0.101	92.9	94.6		0.155	0.032	0.012					0.0104				
94.263	94.365	0.102	92.9	94.6		0.157	0.0407	0.0135					0.00826				
94.365	94.464	0.099	92.9	94.6		0.184	0.0296						0.0112				
94.464	94.563	0.099	92.9	94.6		0.19	0.0587						0.00864				
94.563	94.662	0.099	94.6	96.0		0.186	0.0441						0.00903				
94.662	94.761	0.099	94.6	96.0		0.176	0.0383						0.0091				
94.761	94.865	0.104	94.6	96.0		0.177	0.0387						0.00842				578
94.865	94.962	0.097	94.6	96.0		0.171	0.0341	0.0106					0.0106				568
94.962	95.064	0.102	94.6	96.0		0.179	0.0546						0.00858				
95.064	95.166	0.102	94.6	96.0		0.187							0.0101				
95.166	95.265	0.099	94.6	96.0	0-5%	0.167	0.0213	0.00903					0.0103				
95.265	95.364	0.099	94.6	96.0		0.158		0.00951					0.0101				
95.364	95.471	0.107	94.6	96.0		0.174	0.0247						0.00914				
95.471	95.565	0.094	94.6	96.0		0.166	0.0331						0.00714				
95.565	95.664	0.099	94.6	96.0		0.169		0.00553					0.00906				
95.664	95.763	0.099	94.6	96.0		0.171		0.0171		1			0.00716				534
95.763	95.856	0.093	94.6	96.0		0.158	0.0358	0.0108					0.00702				
95.856	95.965	0.109	94.6	96.0		0.151	0.0297						0.00972				
95.965	96.172	0.207	96.0	96.7		0.131		0.00468		1			0.00824				
96.172	96.265	0.093	96.0	96.7		0.145		0.0049		1			0.00996				
96.265	96.363	0.098	96.0	96.7	0-5%	0.154		0.00561	2.116	1			0.00908				538
96.363	96.462	0.099	96.0	96.7		0.156		0.0103		1			0.00828				548
96.462	96.565	0.103	96.0	96.7		0.161		0.0109					0.00721				556
96.565	96.665	0.1	96.0	96.7		0.172	0.0435	0.00697					0.00712				536
96.665	96.764	0.099	96.7	98.5		0.188	0.0299						0.00527				538
96.764	96.862	0.098	96.7	98.5		0.207	0.0389	0.0146					0.00494				563
96.862	96.963	0.101	96.7	98.5		0.224	0.046		2.091				0.00523				666
96.963	97.064	0.101	96.7	98.5		0.201	0.0422		2.143				0.00623				618
97.064	97.162	0.098	96.7	98.5		0.132	0.0637		2.138				0.00414				585
97.162	97.272	0.11	96.7	98.5		0.148	0.0849		2.11				0.00821				620
97.272	97.364	0.092	96.7	98.5		0.141	0.0505	0.00952					0.0111				
97.364	97.465	0.101	96.7	98.5		0.17	0.059						0.0107				
97.465	97.563	0.098	96.7	98.5	10-20%	0.177	0.0587		2.055				0.0101				693
97.563	97.664	0.101	96.7	98.5		0.158	0.0473	0.0134					0.00977				
97.664	97.762	0.098	96.7	98.5		0.178	0.0562	0.0172					0.0108				737
97.762	97.863	0.101	96.7	98.5		0.201	0.0502						0.00911				
97.863	97.964	0.101	96.7	98.5		0.166	0.0434						0.00879				
97.964	98.062	0.098	96.7	98.5		0.164	0.0341	0.0109					0.00783				
98.062	98.163	0.101	96.7	98.5		0.192	0.0661		2.518	1			0.00735				564
98.163	98.264	0.101	96.7	98.5		0.178	0.0538						0.0105				627
98.264	98.362	0.098	96.7	98.5		0.162	0.0586	0.006					0.00677				541
98.362	98.463	0.101	96.7	98.5		0.177	0.0754	0.0136					0.00557				523
98.463	98.562	0.099	98.5	99.8		0.133	0.0718	0.00713					0.0055				
98.562	98.662	0.1	98.5	99.8		0.145		0.00796					0.00649				
98.662	98.761	0.099	98.5	99.8		0.148	0.0517	0.0114					0.00649				611
98.761	98.861	0.1	98.5	99.8		0.145		0.00851					0.00707				559
98.861	98.969	0.108	98.5	99.8		0.131	0.0382						0.00979				524
98.969	99.063	0.094	98.5	99.8		0.149	0.0315	0.0132					0.00827				
99.063	99.163	0.1	98.5	99.8	0-5%	0.117		0.0118					0.00764				
99.163	99.258	0.095	98.5	99.8		0.0991	0.0341	0.00863	2.389				0.00832				565
99.258	99.368	0.11	98.5	99.8		0.131	0.0357						0.0132				581
99.368	99.467	0.099	98.5	99.8		0.16	0.0369						0.012				
99.467	99.565	0.098	98.5	99.8		0.162	0.0572	0.00217					0.011				545
99.565	99.665	0.1	98.5	99.8		0.12		0.00295					0.00767				
99.665	99.765	0.1	98.5	99.8		0.148	0.0954	0.00438					0.00723				530
99.765	99.864	0.099	99.8	100.8		0.173	0.0879	0.00481					0.00865				
99.864	99.964	0.1	99.8	100.8		0.202	0.0791			0.398			0.00435				
99.964	100.075	0.111	99.8	100.8		0.189	0.0582						0.00765				530
100.075	100.164	0.089	99.8	100.8		0.179	0.0538	0.0165					0.00844				
100.164	100.264	0.1	99.8	100.8	10-20%	0.169	0.0627	0.0141					0.0077				
100.264	100.364	0.1	99.8	100.8		0.128	0.0779	0.00601					0.00699				
100.364	100.464	0.1	99.8	100.8		0.151	0.0427	0.00959					0.007				
100.464	100.555	0.091	99.8	100.8		0.151		0.0122					0.00848				
100.555	100.702	0.147	99.8	100.8				0.00494									
100.702	100.764	0.062	99.8	100.8		0.162		0.00107					0.00603				
100.764	100.863	0.099	100.8	102.3		0.122		0.00327					0.00534				
100.863	100.964	0.101	100.8	102.3		0.112	0.0273						0.0056				
100.964	101.062	0.098	100.8	102.3		0.123		0.00147					0.00525				
101.062	101.163	0.101	100.8	102.3		0.13		0.00308					0.00668				576
101.163	101.267	0.104	100.8	102.3		0.0946			2.148				0.00465				567
101.267	101.366	0.099	100.8	102.3		0.121							0.0065				
101.366	101.457	0.091	100.8	102.3		0.135		0.000703	2.099				0.00836				
101.457	101.566	0.109	100.8	102.3	0-5%	0.122							0.00539				
101.566	101.665	0.099	100.8	102.3		0.163	0.0233		2.08				0.00761		1		593
101.665	101.766	0.101	100.8	102.3		0.112		0.00321					0.00902				
101.766	101.863	0.097	100.8	102.3		0.111		0.00512					0.00481				540
101.863	101.961	0.098	100.8	102.3		0.101		0.00445					0.00493				623
101.961	102.065	0.104	100.8	102.3		0.103		0.00572					0.00555				
102.065	102.163	0.098	100.8	102.3		0.113		0.00335					0.00795				690
102.163	102.264	0.101	100.8	102.3		0.108		0.00199					0.00694				
102.264	102.366	0.102	102.3	103.8		0.121		0.00316					0.0092				
102.366	102.465	0.099	102.3	103.8		0.106		0.00243	2.136				0.00821				
102.465	102.563	0.098	102.3	103.8		0.117		0.00426					0.00717				
102.563	102.664	0.101	102.3	103.8		0.137	0.0257	0.00392					0.00856				
102.664	102.765	0.101	102.3	103.8		0.114		0.00156					0.0078				
102.765	102.86	0.095	102.3	103.8		0.129		0.00293					0.00496				
102.86	102.972	0.112	102.3	103.8		0.12							0.00683				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
102.972	103.062	0.09	102.3	103.8	0-5%	0.109							0.00703				
103.062	103.163	0.101	102.3	103.8		0.123							0.00774				524
103.163	103.263	0.1	102.3	103.8		0.122		0.0035					0.00705				
103.263	103.364	0.101	102.3	103.8		0.128		0.00465					0.00675				
103.364	103.463	0.099	102.3	103.8		0.116		0.00229	2.146				0.00775				
103.463	103.563	0.1	102.3	103.8		0.117		0.00289	2.172				0.0056				
103.563	103.664	0.101	102.3	103.8		0.0896		0.00362					0.00489				
103.664	103.762	0.098	102.3	103.8		0.136		0.0044					0.00539				
103.762	103.861	0.099	103.8	106.2		0.137		0.00289	2.132				0.00513				
103.861	103.962	0.101	103.8	106.2		0.13		0.0058	2.144				0.00699				
103.962	104.073	0.111	103.8	106.2		0.123							0.00578				
104.073	104.163	0.09	103.8	106.2		0.131							0.00923				514
104.163	104.261	0.098	103.8	106.2		0.104							0.00476				854
104.261	104.362	0.101	103.8	106.2		0.13			2.158				0.00753				554
104.362	104.464	0.102	103.8	106.2		0.111			2.14				0.00919				
104.464	104.563	0.099	103.8	106.2		0.116	0.0227		2.195				0.00587		1		657
104.563	104.663	0.1	103.8	106.2		0.147							0.00718				554
104.663	104.761	0.098	103.8	106.2		0.165		0.00166	2.11				0.00787				586
104.761	104.85	0.089	103.8	106.2		0.125							0.00803				
104.85	104.963	0.113	103.8	106.2		0.141							0.00653				524
104.963	105.064	0.101	103.8	106.2		0.148		0.00302					0.00614				561
105.064	105.164	0.1	103.8	106.2		0.131		0.00244					0.00737				517
105.164	105.218	0.054	103.8	106.2		0.144											517
105.218	105.366	0.148	103.8	106.2		0.113		0.0029					0.00887				
105.366	105.463	0.097	103.8	106.2		0.108		0.00429					0.00605				
105.463	105.563	0.1	103.8	106.2		0.141		0.0065					0.0088				541
105.563	105.663	0.1	103.8	106.2		0.124		0.00375					0.00893				
105.663	105.764	0.101	103.8	106.2		0.116		0.00868					0.00924				535
105.764	105.865	0.101	103.8	106.2		0.13		0.00879		0.558			0.00676				579
105.865	105.966	0.101	103.8	106.2		0.13	0.0317						0.00752				
105.966	106.063	0.097	103.8	106.2		0.104	0.0304						0.00901				
106.063	106.164	0.101	103.8	106.2		0.102	0.0293						0.00836				
106.164	106.265	0.101	106.2	109.5		0.156	0.0503	0.0668	2.707	0.83			0.00867				541
106.265	106.364	0.099	106.2	109.5		0.0803	0.0211	0.00293					0.00907				545
106.364	106.462	0.098	106.2	109.5		0.0907	0.0253						0.0099				609
106.462	106.566	0.104	106.2	109.5		0.0984	0.0776	0.00214					0.00533				
106.566	106.662	0.096	106.2	109.5		0.0739		8.80E-05					0.00616				
106.662	106.763	0.101	106.2	109.5		0.098	0.0223	0.00574					0.00411				
106.763	106.865	0.102	106.2	109.5		0.108	0.0231	0.00285					0.0057				
106.865	106.964	0.099	106.2	109.5		0.103		0.00802					0.00532				560
106.964	107.065	0.101	106.2	109.5		0.137		0.00481					0.0079		1		611
107.065	107.164	0.099	106.2	109.5		0.136		0.0051					0.00804				
107.164	107.262	0.098	106.2	109.5		0.145		0.00528					0.0122				530
107.262	107.364	0.102	106.2	109.5		0.149							0.0123		1		567
107.364	107.465	0.101	106.2	109.5		0.112		0.00573					0.00777				
107.465	107.564	0.099	106.2	109.5		0.127		0.00498					0.00795				548
107.564	107.666	0.102	106.2	109.5		0.127		0.00378					0.00604				562
107.666	107.764	0.098	106.2	109.5		0.0976		0.00698					0.00875				
107.764	107.862	0.098	106.2	109.5	0-5%	0.133		0.00502					0.00949				579
107.862	107.964	0.102	106.2	109.5		0.157		0.00555					0.0109				518
107.964	108.063	0.099	106.2	109.5		0.117		0.0076					0.00784				515
108.063	108.164	0.101	106.2	109.5		0.123		0.00555					0.0085				560
108.164	108.265	0.101	106.2	109.5		0.128		0.00648					0.00941				545
108.265	108.364	0.099	106.2	109.5		0.123		0.00811					0.0113				529
108.364	108.462	0.098	106.2	109.5		0.114		0.00742					0.00894				532
108.462	108.564	0.102	106.2	109.5		0.117		0.00574					0.00786				556
108.564	108.666	0.102	106.2	109.5		0.12		0.00935					0.00727				
108.666	108.757	0.091	106.2	109.5		0.149		0.00529					0.00747				576
108.757	108.865	0.108	106.2	109.5		0.117		0.00538					0.00528				572
108.865	108.964	0.099	106.2	109.5		0.108		0.00353					0.00592				520
108.964	109.063	0.099	106.2	109.5		0.107		0.00517					0.00439				
109.063	109.161	0.098	106.2	109.5		0.101		0.00258					0.0051				
109.161	109.263	0.102	106.2	109.5		0.216		0.00506				0.0638	0.00506		1		606
109.263	109.366	0.103	106.2	109.5		0.216		0.0053				0.0555	0.0069				
109.366	109.465	0.099	106.2	109.5		0.113		0.00585					0.0066				519
109.465	109.563	0.098	109.5	112.3		0.11		0.00425					0.00303		1		617
109.563	109.663	0.1	109.5	112.3		0.376	0.0222								1		633
109.663	109.752	0.089	109.5	112.3		0.208	0.0264						0.00414		1		635
109.752	109.967	0.215	109.5	112.3		0.175		0.00343	2.027				0.00525		1		621
109.967	110.063	0.096	109.5	112.3		0.107		0.005					0.00785				552
110.063	110.163	0.1	109.5	112.3		0.201		0.006					0.00403		1		587
110.163	110.263	0.1	109.5	112.3		0.164		0.00335					0.00903		1		608
110.263	110.364	0.101	109.5	112.3		0.171		0.00551					0.00805		1		604
110.364	110.463	0.099	109.5	112.3		0.169		0.0058					0.00554		1		603
110.463	110.564	0.101	109.5	112.3		0.203	0.0254	0.00471					0.00574		1		609
110.564	110.659	0.095	109.5	112.3		0.102		0.00352					0.00583				566
110.659	110.769	0.11	109.5	112.3		0.11		0.0047					0.00649				560
110.769	110.866	0.097	109.5	112.3		0.138		0.00593					0.00916				535
110.866	110.965	0.099	109.5	112.3		0.206		0.00814					0.0154		1		579
110.965	111.065	0.1	109.5	112.3		0.144		0.00693					0.011				564
111.065	111.17	0.105	109.5	112.3		0.094		0.0045					0.0101				
111.17	111.263	0.093	109.5	112.3		0.0896		0.00875					0.00488				
111.263	111.363	0.1	109.5	112.3		0.195		0.00945		1		0.0592	0.00531				648
111.363	111.463	0.1	109.5	112.3		0.206		0.12	3.346	0.908		0.0602					569
111.463	111.563	0.1	109.5	112.3		0.143		0.039	2.746	1			0.00561				522
111.563	111.664	0.101	109.5	112.3		0.143		0.00826					0.015				574
111.664	111.764	0.1	109.5	112.3		0.142		0.00861	2.138				0.0145				
111.764	111.87	0.106	109.5	112.3		0.119		0.0062	2.187				0.0123				
111.87	111.964	0.094	109.5	112.3		0.134		0.0101	2.161				0.0134				540
111.964	112.065	0.101	109.5	112.3		0.128		0.0122					0.0116				
112.065	112.161	0.096	109.5	112.3		0.127		0.013					0.00744				538
112.161	112.263	0.102	109.5	112.3		0.148	0.0308	0.0114					0.0107				
112.263	112.364	0.101	112.3	113.2		0.138		0.0108					0.00795				
112.364	112.466	0.102	112.3	113.2		0.124		0.00971					0.00932				
112.466	112.563	0.097	112.3	113.2		0.143	0.0237	0.00875					0.0103				
112.563	112.664	0.101	112.3	113.2		0.152		0.00942					0.0107				550
112.664	112.751	0.087	112.3	113.2		0.157		0.00835	2.075				0.00986				592
112.751	112.859	0.108	112.3	113.2		0.118		0.00518					0.0115				511
112.859	112.964	0.105	112.3	113.2		0.144	0.038	0.0102		0.779			0.0109				
112.964	113.061	0.097	112.3	113.2		0.132		0.0125		1			0.0124				
113.061	113.162	0.101	112.3	113.2		0.143		0.00603					0.0112				
113.162	113.264	0.102	113.2	116.2		0.144		0.007					0.0125				
113.264	113.36	0.096	113.2	116.2		0.149		0.0108		0.754			0.009				
113.36	113.476	0.116	113.2	116.2		0.161		0.00601					0.0116				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
113.476	113.563	0.087	113.2	116.2		0.159	0.0228	0.00748					0.0134				
113.563	113.665	0.102	113.2	116.2		0.149	0.0317	0.0122					0.0116				
113.665	113.765	0.1	113.2	116.2		0.147		0.00876					0.0108				
113.765	113.863	0.098	113.2	116.2		0.14		0.00584					0.00667				
113.863	113.965	0.102	113.2	116.2		0.119		0.0056					0.00925				
113.965	114.061	0.096	113.2	116.2		0.121		0.00193					0.00941				
114.061	114.163	0.102	113.2	116.2		0.121		0.00686					0.00733				
114.163	114.264	0.101	113.2	116.2		0.147		0.0168		1			0.00854				
114.264	114.361	0.097	113.2	116.2		0.154		0.0145	2.618	1			0.00992				
114.361	114.463	0.102	113.2	116.2		0.142		0.00656					0.0121				
114.463	114.564	0.101	113.2	116.2		0.148		0.0123					0.00973				
114.564	114.651	0.087	113.2	116.2		0.144		0.0103					0.0108				
114.651	114.866	0.215	113.2	116.2		0.145		0.00883					0.00702				
114.866	114.963	0.097	113.2	116.2		0.139		0.00845					0.0103				
114.963	115.063	0.1	113.2	116.2		0.137		0.0131					0.00976				
115.063	115.163	0.1	113.2	116.2		0.127		0.00953					0.00774				534
115.163	115.264	0.101	113.2	116.2		0.136		0.00907					0.00778				
115.264	115.364	0.1	113.2	116.2		0.138		0.00556					0.00825				
115.364	115.464	0.1	113.2	116.2		0.136		0.00501					0.0069				
115.464	115.561	0.097	113.2	116.2		0.139		0.00687					0.00786				
115.561	115.661	0.1	113.2	116.2		0.126		0.00871					0.00849				
115.661	115.761	0.1	113.2	116.2		0.203		0.0498	2.591	0.929			0.00945				
115.761	115.862	0.101	113.2	116.2		0.181		0.0262		1			0.00968				
115.862	115.955	0.093	113.2	116.2		0.139		0.00613					0.00917				
115.955	116.064	0.109	113.2	116.2		0.144		0.0322		1			0.00998				
116.064	116.165	0.101	113.2	116.2		0.16		0.0223	2.64	1			0.00874				
116.165	116.266	0.101	116.2	118.5		0.204		0.0207		1			0.00936				
116.266	116.366	0.1	116.2	118.5		0.148	0.0254	0.00936					0.00763				
116.366	116.464	0.098	116.2	118.5		0.232		0.038	2.569	1			0.00729				
116.464	116.561	0.097	116.2	118.5		0.209		0.038	2.562	1			0.0107				516
116.561	116.664	0.103	116.2	118.5		0.192		0.037	2.678	1			0.0113				
116.664	116.765	0.101	116.2	118.5		0.146		0.00442					0.0137				
116.765	116.866	0.101	116.2	118.5		0.155		0.0078					0.00985				
116.866	116.962	0.096	116.2	118.5		0.143	0.0303	0.0111					0.00967				
116.962	117.061	0.099	116.2	118.5		0.141		0.0108		1			0.00924				
117.061	117.162	0.101	116.2	118.5		0.0994		0.00504					0.0094				
117.162	117.263	0.101	116.2	118.5		0.118		0.00372	2.126				0.0119				847
117.263	117.366	0.103	116.2	118.5		0.113		0.00481					0.0111				
117.366	117.463	0.097	116.2	118.5		0.116		0.00708					0.00867				
117.463	117.561	0.098	116.2	118.5		0.118		0.00682					0.00921				
117.561	117.661	0.1	116.2	118.5		0.109							0.0104				
117.661	117.762	0.101	116.2	118.5		0.109							0.00903				
117.762	117.863	0.101	116.2	118.5		0.106		0.00667					0.0102				
117.863	117.966	0.103	116.2	118.5		0.114		0.0051					0.00826				
117.966	118.064	0.098	116.2	118.5		0.0872		0.00441					0.00733				
118.064	118.161	0.097	116.2	118.5		0.161		0.00841					0.0101				
118.161	118.262	0.101	116.2	118.5		0.161		0.0135	2.264	1			0.00985				634
118.262	118.347	0.085	116.2	118.5		0.205		0.00937					0.0102				596
118.347	118.444	0.097	116.2	118.5		0.127		0.00229					0.0102				
118.444	118.563	0.119	118.5	119.7		0.147		0.00349	2.099				0.0109				686
118.563	118.664	0.101	118.5	119.7		0.151		0.00474					0.00905				
118.664	118.764	0.1	118.5	119.7		0.15		0.00207	2.484	1			0.0103				522
118.764	118.864	0.1	118.5	119.7		0.12		0.00965					0.0116				
118.864	118.965	0.101	118.5	119.7		0.141		0.00788		1			0.00995				
118.965	119.063	0.098	118.5	119.7		0.129		0.0107					0.00994				
119.063	119.162	0.099	118.5	119.7		0.132		0.00804					0.01				
119.162	119.262	0.1	118.5	119.7		0.145							0.0104				
119.262	119.363	0.101	118.5	119.7		0.133		0.00568					0.00843				515
119.363	119.463	0.1	118.5	119.7		0.173		0.0257	2.433	0.979			0.0106				528
119.463	119.563	0.1	118.5	119.7		0.283		0.077	2.728	0.885		0.045	0.00625				
119.563	119.64	0.077	118.5	119.7		0.23		0.0867	2.751	0.847			0.00859				
119.64	119.764	0.124	119.7	121.6		0.122			2.548				0.00626				
119.764	119.865	0.101	119.7	121.6		0.108		0.0212	2.581	1			0.00669				
119.865	119.957	0.092	119.7	121.6		0.118		0.0151					0.00636				
119.957	120.07	0.113	119.7	121.6		0.116							0.00631				
120.07	120.164	0.094	119.7	121.6		0.142							0.00767				536
120.164	120.263	0.099	119.7	121.6		0.142		0.009					0.00735				548
120.263	120.363	0.1	119.7	121.6		0.13		0.0101					0.0107				
120.363	120.463	0.1	119.7	121.6		0.14		0.00694					0.00972				
120.463	120.564	0.101	119.7	121.6		0.135		0.00945					0.00763				
120.564	120.662	0.098	119.7	121.6		0.133		0.00973					0.00874				
120.662	120.763	0.101	119.7	121.6		0.145		0.0124					0.00945				
120.763	120.864	0.101	119.7	121.6		0.135		0.0109					0.0101				
120.864	120.964	0.1	119.7	121.6		0.132		0.0128					0.00933				
120.964	121.062	0.098	119.7	121.6		0.136		0.0134					0.00819				
121.062	121.163	0.101	119.7	121.6		0.141		0.00917					0.00777				
121.163	121.264	0.101	119.7	121.6		0.13		0.00979					0.00711				
121.264	121.364	0.1	119.7	121.6		0.13		0.00977					0.00755				
121.364	121.462	0.098	119.7	121.6		0.134		0.0129					0.0067				
121.462	121.563	0.101	119.7	121.6		0.144		0.0113					0.012				
121.563	121.664	0.101	121.6	124.3		0.137		0.0124					0.0125				
121.664	121.762	0.098	121.6	124.3		0.143		0.0155	2.512				0.0113				
121.762	121.863	0.101	121.6	124.3		0.151		0.0103					0.0122				
121.863	121.964	0.101	121.6	124.3		0.175		0.026		0.827			0.0118				
121.964	122.062	0.098	121.6	124.3		0.215		0.0395	2.635	0.897		0.104	0.0147				542
122.062	122.176	0.114	121.6	124.3		0.189		0.078	3.353	0.942			0.00678				567
122.176	122.264	0.088	121.6	124.3		0.149		0.0129					0.00771				
122.264	122.365	0.101	121.6	124.3		0.206		0.0712	2.922	0.926			0.00532				
122.365	122.463	0.098	121.6	124.3		0.186		0.0329	2.522	1			0.00847				
122.463	122.564	0.101	121.6	124.3		0.164		0.0171					0.00997				
122.564	122.665	0.101	121.6	124.3		0.146		0.0078					0.00688				545
122.665	122.764	0.099	121.6	124.3		0.148		0.0114					0.0083				
122.764	122.863	0.099	121.6	124.3		0.164		0.017					0.0147				
122.863	122.965	0.102	121.6	124.3		0.184		0.025	2.485	1			0.0148				
122.965	123.079	0.114	121.6	124.3		0.117		0.0171					0.0118				
123.079	123.163	0.084	121.6	124.3		0.134		0.0196					0.0123				
123.163	123.265	0.102	121.6	124.3		0.168		0.0328	2.763	1			0.0126				
123.265	123.365	0.1	121.6	124.3		0.134		0.0163					0.0105				
123.365	123.469	0.104	121.6	124.3		0.127							0.00729				
123.469	123.564	0.095	121.6	124.3		0.111		0.00666					0.00765				
123.564	123.662	0.098	121.6	124.3		0.145		0.0233	2.644	1			0.0085				
123.662	123.765	0.103	121.6	124.3		0.209		0.0733	2.992	1			0.00959				
123.765	123.864	0.099	121.6	124.3		0.124		0.00936					0.00585				
123.864	123.962	0.098	121.6	124.3		0.114		0.0104					0.00583				
123.962	124.061	0.099	121.6	124.3		0.126		0.0066					0.00898				
124.061	124.166	0.105	121.6	124.3		0.137		0.0048					0.0124				
124.166	124.267	0.101	121.6	124.3		0.177		0.0282		1			0.0121				541
124.267	124.364	0.097	124.3	126.0		0.249		0.0539	2.598	0.99		0.0662					538
124.364	124.458	0.094	124.3	126.0		0.279		0.0546	2.522	1		0.0721	0.0105				577
124.458	124.608	0.15	124.3	126.0		0.146							0.00684				
124.608	124.661	0.053	124.3	126.0		0.158		0.012		1			0.00507				
124.661	124.761	0.1	124.3	126.0		0.139		0.00174					0.00555				
124.761	124.862	0.101	124.3	126.0		0.148		0.0169		0.755			0.00677				
124.862	124.962	0.1	124.3	126.0		0.164		0.0129					0.00612				
124.962	125.061	0.099	124.3	126.0		0.167		0.00949	2.861	0.497			0.00812				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
125.061	125.165	0.104	124.3	126.0		0.167		0.0124		0.527			0.0139				
125.165	125.265	0.1	124.3	126.0		0.154		0.00524					0.0136				
125.265	125.365	0.1	124.3	126.0		0.158		0.00683					0.0157				
125.365	125.465	0.1	124.3	126.0		0.156		0.004					0.0138				
125.465	125.565	0.1	124.3	126.0		0.195		0.0155	2.517	0.777			0.016				
125.565	125.651	0.086	124.3	126.0		0.186		0.0498	2.791	1			0.013				
125.651	125.762	0.111	124.3	126.0		0.166		0.00919					0.0142				
125.762	125.857	0.095	124.3	126.0		0.179							0.0133				
125.857	125.955	0.098	124.3	126.0		0.127		0.0172	2.48	1			0.0101				538
125.955	126.064	0.109	126.0	127.1		0.143		0.00855					0.0119				546
126.064	126.165	0.101	126.0	127.1		0.129		0.0032					0.0116				
126.165	126.265	0.1	126.0	127.1		0.137		0.00609					0.00838				
126.265	126.363	0.098	126.0	127.1		0.162		0.0199	2.602	1			0.00844				
126.363	126.464	0.101	126.0	127.1		0.159		0.00705					0.0107				
126.464	126.564	0.1	126.0	127.1		0.142		0.00827					0.00872				
126.564	126.665	0.101	126.0	127.1		0.133		0.00799					0.007				
126.665	126.766	0.101	126.0	127.1		0.127		0.00861					0.00745				
126.766	126.866	0.1	126.0	127.1		0.12		0.0121	2.768	1			0.00524				
126.866	126.964	0.098	126.0	127.1		0.124		0.00798					0.00709				
126.964	127.065	0.101	126.0	127.1		0.135		0.0103					0.00899				
127.065	127.166	0.101	127.1	129.0		0.155		0.0154					0.00767				553
127.166	127.263	0.097	127.1	129.0		0.179		0.0194		0.927			0.00818				
127.263	127.361	0.098	127.1	129.0		0.17		0.0374	2.819	1			0.0078				
127.361	127.464	0.103	127.1	129.0		0.17		0.0068				0.0423	0.0102				
127.464	127.565	0.101	127.1	129.0		0.18		0.0206					0.00939				
127.565	127.666	0.101	127.1	129.0		0.155		0.00502					0.00768				
127.666	127.764	0.098	127.1	129.0		0.153							0.0107				562
127.764	127.863	0.099	127.1	129.0		0.163	0.0326	0.00586					0.00943				
127.863	127.933	0.07	127.1	129.0		0.173							0.0104				
127.933	128.066	0.133	127.1	129.0		0.154		0.00481					0.0116				
128.066	128.163	0.097	127.1	129.0		0.146		0.00325					0.00989				
128.163	128.261	0.098	127.1	129.0		0.159							0.00878				
128.261	128.362	0.101	127.1	129.0		0.166		0.00996					0.0101				
128.362	128.463	0.101	127.1	129.0		0.16		0.00668					0.0115				
128.463	128.564	0.101	127.1	129.0		0.144	0.0308	0.0106					0.00916				
128.564	128.664	0.1	127.1	129.0		0.152	0.0273	0.00671					0.0106				
128.664	128.761	0.097	127.1	129.0		0.148		0.00837		1			0.0115				
128.761	128.862	0.101	127.1	129.0		0.171		0.0112		1			0.0131				540
128.862	128.959	0.097	127.1	129.0		0.139		0.0116					0.00962				
128.959	129.063	0.104	129.0	132.0		0.128		0.0099					0.0074				530
129.063	129.156	0.093	129.0	132.0		0.117		0.00407					0.00595				
129.156	129.264	0.108	129.0	132.0		0.125		0.0056					0.00773				
129.264	129.365	0.101	129.0	132.0		0.13		0.00277					0.00833				
129.365	129.462	0.097	129.0	132.0		0.148		0.00966		1			0.00917				
129.462	129.563	0.101	129.0	132.0		0.135		0.00572					0.00722				
129.563	129.663	0.1	129.0	132.0		0.117		0.004					0.00896				
129.663	129.761	0.098	129.0	132.0		0.117		0.00345					0.00679				525
129.761	129.864	0.103	129.0	132.0		0.11		0.00132					0.00511				
129.864	129.965	0.101	129.0	132.0		0.129		0.00452					0.00597				
129.965	130.062	0.097	129.0	132.0		0.12		0.00672					0.00586				
130.062	130.163	0.101	129.0	132.0		0.121		0.00667					0.00747				
130.163	130.263	0.1	129.0	132.0		0.133		0.00353					0.00652				
130.263	130.358	0.095	129.0	132.0		0.119		0.00634					0.00595				
130.358	130.467	0.109	129.0	132.0		0.126		0.00549					0.0101				
130.467	130.565	0.098	129.0	132.0		0.117	0.0213	0.00551					0.00756				
130.565	130.662	0.097	129.0	132.0		0.124		0.0118					0.00911				
130.662	130.763	0.101	129.0	132.0		0.143		0.0087					0.00952				
130.763	130.863	0.1	129.0	132.0		0.14		0.0132					0.00972				
130.863	130.961	0.098	129.0	132.0		0.124	0.0251	0.00674					0.00991				
130.961	131.064	0.103	129.0	132.0		0.126		0.00578					0.00895				
131.064	131.167	0.103	129.0	132.0		0.114		0.00668					0.00594				
131.167	131.262	0.095	129.0	132.0		0.122		0.00194					0.00625				
131.262	131.363	0.101	129.0	132.0		0.126							0.00582				
131.363	131.463	0.1	129.0	132.0		0.126							0.00809				
131.463	131.558	0.095	129.0	132.0		0.14		0.00751					0.00697				
131.558	131.664	0.106	129.0	132.0		0.132		0.011					0.0132				
131.664	131.765	0.101	129.0	132.0		0.126		0.00408					0.01				
131.765	131.862	0.097	129.0	132.0		0.116		0.00867					0.00903				
131.862	131.96	0.098	129.0	132.0		0.152							0.0104				
131.96	132.079	0.119	132.0	133.2		0.133		0.0102					0.0078				
132.079	132.162	0.083	132.0	133.2		0.129		0.0082					0.0085				
132.162	132.261	0.099	132.0	133.2		0.127	0.0225	0.00654					0.0114				
132.261	132.362	0.101	132.0	133.2		0.13	0.0215	0.00324					0.0116				
132.362	132.462	0.1	132.0	133.2		0.142	0.02						0.00906				
132.462	132.562	0.1	132.0	133.2		0.148	0.0208	0.011					0.0102				
132.562	132.662	0.1	132.0	133.2		0.141		0.0102					0.0108				
132.662	132.763	0.101	132.0	133.2		0.128		0.00476					0.00939				
132.763	132.866	0.103	132.0	133.2		0.153		0.00893					0.00603				
132.866	132.966	0.1	132.0	133.2		0.159		0.0124					0.00541				
132.966	133.066	0.1	132.0	133.2		0.207		0.0125					0.00549				
133.066	133.163	0.097	132.0	133.2		0.181	0.0548	0.013					0.00423				
133.163	133.261	0.098	133.2	134.9		0.175		0.0154					0.00527				
133.261	133.363	0.102	133.2	134.9		0.162	0.0217	0.0133					0.00519				
133.363	133.464	0.101	133.2	134.9		0.145		0.00337					0.00651				551
133.464	133.564	0.1	133.2	134.9		0.162		0.0126					0.00864				
133.564	133.665	0.101	133.2	134.9		0.169	0.0229	0.0123					0.00766				
133.665	133.765	0.1	133.2	134.9		0.155							0.0107				
133.765	133.865	0.1	133.2	134.9		0.161		0.0127					0.0109				
133.865	133.924	0.059	133.2	134.9		0.165							0.0111				
133.924	134.069	0.145	133.2	134.9		0.156		0.00738					0.00654				
134.069	134.165	0.096	133.2	134.9		0.157		0.00772					0.00748				
134.165	134.264	0.099	133.2	134.9		0.164		0.0139					0.0102				
134.264	134.365	0.101	133.2	134.9		0.171		0.0206		0.938			0.00886				
134.365	134.463	0.098	133.2	134.9		0.149		0.00815					0.00719				558
134.463	134.562	0.099	133.2	134.9		0.165							0.00896				
134.562	134.663	0.101	133.2	134.9		0.163		0.00805					0.0104				
134.663	134.764	0.101	133.2	134.9		0.16		0.0237		1			0.00952				
134.764	134.863	0.099	133.2	134.9		0.133		0.0143					0.00995				550
134.863	134.963	0.1	134.9	137.9		0.156		0.0099		1			0.00926				529
134.963	135.062	0.099	134.9	137.9		0.157		0.0101					0.00847				
135.062	135.164	0.102	134.9	137.9		0.145		0.00708					0.00698				
135.164	135.259	0.095	134.9	137.9		0.164		0.0257	2.657	1			0.00743				543
135.259	135.367	0.108	134.9	137.9		0.362		0.128	2.888	0.878		0.0625	0.00421				556
135.367	135.466	0.099	134.9	137.9		0.289		0.0566	2.418	0.971	1	0.109	0.00537				767
135.466	135.564	0.098	134.9	137.9		0.101		0.00414					0.00695				558
135.564	135.663	0.099	134.9	137.9		0.121		0.0027	2.203				0.00815				599
135.663	135.762	0.099	134.9	137.9		0.132		0.00645	2.191				0.00812				697
135.762	135.845	0.083	134.9	137.9		0.141		0.00204					0.0074				
135.845	135.962	0.117	134.9	137.9		0.131		0.00861	2.18				0.00884				716
135.962	136.064	0.102	134.9	137.9		0.116		0.00514	2.172				0.00644				635
136.064	136.166	0.102	134.9	137.9		0.129		0.0103					0.00773				525
136.166	136.265	0.099	134.9	137.9		0.15		0.00908					0.00798				
136.265	136.363	0.098	134.9	137.9		0.167		0.0045					0.00735				
136.363	136.462	0.099	134.9	137.9		0.165		0.00379					0.00812				
136.462	136.564	0.102	134.9	137.9		0.166		0.00476					0.00673				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
136.564	136.663	0.099	134.9	137.9		0.166		0.00629					0.00747				533
136.663	136.761	0.098	134.9	137.9		0.168		0.00224					0.00947				
136.761	136.863	0.102	134.9	137.9		0.15		0.00932					0.00891				
136.863	136.965	0.102	134.9	137.9		0.159		0.00594			1		0.00766				
136.965	137.064	0.099	134.9	137.9		0.15		0.00711					0.0104				
137.064	137.165	0.101	134.9	137.9		0.15		0.00916					0.00689				539
137.165	137.264	0.099	134.9	137.9		0.143		0.00654					0.00766				
137.264	137.363	0.099	134.9	137.9		0.149		0.0044	2.09				0.00957				576
137.363	137.462	0.099	134.9	137.9		0.145		0.00501					0.00847				
137.462	137.564	0.102	134.9	137.9		0.154		0.00669					0.00955				
137.564	137.665	0.101	134.9	137.9		0.141		0.00526					0.00827				
137.665	137.768	0.103	134.9	137.9		0.146		0.00852					0.0088				
137.768	137.866	0.098	134.9	137.9		0.146		0.0076					0.00757				
137.866	137.957	0.091	137.9	139.3		0.147		0.00555					0.00559				
137.957	138.063	0.106	137.9	139.3		0.135		0.00807	2.068				0.00604				801
138.063	138.164	0.101	137.9	139.3		0.13		0.011					0.00624				525
138.164	138.264	0.1	137.9	139.3		0.138		0.0103	2.095				0.00786				825
138.264	138.366	0.102	137.9	139.3		0.14		0.00236	2.095				0.00752				695
138.366	138.464	0.098	137.9	139.3		0.138		0.00266					0.00647				
138.464	138.564	0.1	137.9	139.3		0.234		0.004	2.091				0.00714				826
138.564	138.664	0.1	137.9	139.3		0.162		0.00357	2.187				0.00971				747
138.664	138.764	0.1	137.9	139.3		0.139		0.00421					0.00816				
138.764	138.856	0.092	137.9	139.3		0.13		0.00738					0.0075				
138.856	138.945	0.089	137.9	139.3		0.148		0.00826					0.0101				
138.945	139.064	0.119	137.9	139.3		0.143		0.0199	2.862	0.794			0.0085				650
139.064	139.163	0.099	137.9	139.3		0.142		0.00577	2.095				0.00956				820
139.163	139.261	0.098	137.9	139.3		0.134		0.0085					0.00922				535
139.261	139.363	0.102	139.3	140.9		0.163		0.00575					0.0108				555
139.363	139.464	0.101	139.3	140.9		0.191		0.00841	2.08				0.0112				718
139.464	139.563	0.099	139.3	140.9		0.193		0.00894	2.078				0.0101				734
139.563	139.662	0.099	139.3	140.9		0.151		0.00561					0.012				
139.662	139.763	0.101	139.3	140.9		0.205			2.082	1			0.0102				654
139.763	139.864	0.101	139.3	140.9		0.141							0.00799				543
139.864	139.962	0.098	139.3	140.9		0.134		0.00825	2.074				0.00798				760
139.962	140.063	0.101	139.3	140.9		0.134		0.00865					0.00879				533
140.063	140.164	0.101	139.3	140.9		0.151		0.0101					0.00833				570
140.164	140.268	0.104	139.3	140.9		0.145		0.00195					0.00685				517
140.268	140.362	0.094	139.3	140.9		0.155		0.00464					0.00919				
140.362	140.462	0.1	139.3	140.9		0.144		0.0032					0.00792				
140.462	140.563	0.101	139.3	140.9		0.146		0.00325					0.00889				
140.563	140.664	0.101	139.3	140.9		0.154		0.00802	2.106				0.0108				577
140.664	140.765	0.101	139.3	140.9		0.141		0.0131					0.00985				546
140.765	140.865	0.1	139.3	140.9		0.148		0.0222	2.504				0.0111				569
140.865	140.976	0.111	140.9	141.7		0.146		0.0155					0.00899				543
140.976	141.064	0.088	140.9	141.7		0.136		0.0168					0.0086				565
141.064	141.165	0.101	140.9	141.7		0.138		0.0178					0.00745				
141.165	141.263	0.098	140.9	141.7		0.125		0.014					0.00527				
141.263	141.363	0.1	140.9	141.7		0.143		0.0132					0.00733				573
141.363	141.459	0.096	140.9	141.7		0.109		0.0132					0.00734				555
141.459	141.565	0.106	140.9	141.7		0.0957		0.00894					0.00462				
141.565	141.666	0.101	140.9	141.7		0.116		0.00542					0.0065				516
141.666	141.763	0.097	141.7	144.7		0.129		0.00571					0.00812				541
141.763	141.862	0.099	141.7	144.7		0.142		0.00691					0.00745				
141.862	141.963	0.101	141.7	144.7		0.131		0.00599					0.00713				512
141.963	142.061	0.098	141.7	144.7		0.151		0.00527	2.105				0.0106				633
142.061	142.162	0.101	141.7	144.7		0.146		0.00761					0.0107				684
142.162	142.263	0.101	141.7	144.7		0.137		0.00619					0.0086				
142.263	142.365	0.102	141.7	144.7		0.166	0.0249	0.00704					0.0113				
142.365	142.463	0.098	141.7	144.7		0.15		0.00661	2.066				0.0108				
142.463	142.561	0.098	141.7	144.7		0.135		0.00423					0.0103				
142.561	142.671	0.11	141.7	144.7		0.203		0.01	2.08				0.00983				796
142.671	142.764	0.093	141.7	144.7		0.159		0.00924					0.01				515
142.764	142.862	0.098	141.7	144.7		0.152		0.00727					0.00714				
142.862	142.963	0.101	141.7	144.7		0.161		0.00582					0.0107				
142.963	143.064	0.101	141.7	144.7		0.166		0.00656					0.00791				554
143.064	143.164	0.1	141.7	144.7		0.149		0.00848					0.0105				615
143.164	143.264	0.1	141.7	144.7		0.128		0.00708					0.00838				586
143.264	143.365	0.101	141.7	144.7		0.165		0.00673	2.148				0.013				671
143.365	143.463	0.098	141.7	144.7		0.158		0.00742					0.011				537
143.463	143.562	0.099	141.7	144.7		0.159		0.00703					0.0116				518
143.562	143.663	0.101	141.7	144.7		0.192		0.00932	2.057				0.011				806
143.663	143.725	0.062	141.7	144.7		0.146		0.0141					0.00911				
143.725	143.868	0.143	141.7	144.7		0.162		0.00782					0.0111				553
143.868	143.95	0.082	141.7	144.7		0.171		0.00727	2.104				0.0101				649
143.95	144.069	0.119	141.7	144.7		0.186		0.00621	2.091				0.0127				779
144.069	144.163	0.094	141.7	144.7		0.172		0.00892	2.093				0.0103				813
144.163	144.263	0.1	141.7	144.7		0.186		0.00555	2.11				0.0108				584
144.263	144.354	0.091	141.7	144.7		0.17		0.00576					0.00915				518
144.354	144.466	0.112	141.7	144.7		0.173		0.00259					0.0146				
144.466	144.563	0.097	141.7	144.7		0.162		0.00368					0.0142				532
144.563	144.661	0.098	141.7	144.7		0.202	0.0216	0.00452					0.0143				
144.661	144.762	0.101	144.7	147.7		0.212		0.00614					0.0122				548
144.762	144.866	0.104	144.7	147.7		0.183		0.0036					0.0122				
144.866	144.959	0.093	144.7	147.7		0.172		0.00688					0.00643				
144.959	145.07	0.111	144.7	147.7		0.182		0.00541			0.708		0.00809				
145.07	145.168	0.098	144.7	147.7		0.167							0.00591				
145.168	145.263	0.095	144.7	147.7		0.183		0.00885	2.112				0.00812				773
145.263	145.362	0.099	144.7	147.7		0.183		0.00677					0.012				
145.362	145.464	0.102	144.7	147.7		0.187		0.00725					0.0104				
145.464	145.565	0.101	144.7	147.7		0.179							0.00945				
145.565	145.665	0.1	144.7	147.7		0.176		0.00361	2.12				0.00997				
145.665	145.765	0.1	144.7	147.7		0.191		0.00316	2.118				0.0116				823
145.765	145.864	0.099	144.7	147.7		0.18		0.00369	2.143				0.0105				674
145.864	145.962	0.098	144.7	147.7		0.173		0.00426					0.0108				
145.962	146.064	0.102	144.7	147.7		0.167		0.00578					0.00971				
146.064	146.163	0.099	144.7	147.7		0.178		0.00798					0.00873				
146.163	146.255	0.092	144.7	147.7		0.182		0.00765					0.00966				534
146.255	146.366	0.111	144.7	147.7		0.182		0.00308	2.127				0.0114				
146.366	146.464	0.098	144.7	147.7		0.182		0.00441					0.00988				
146.464	146.563	0.099	144.7	147.7		0.172		0.0102	2.161				0.00991				
146.563	146.665	0.102	144.7	147.7		0.167		0.0107					0.00831				
146.665	146.763	0.098	144.7	147.7		0.169		0.0107					0.0109				
146.763	146.862	0.099	144.7	147.7		0.169		0.0107	2.177				0.0123				567
146.862	146.96	0.098	144.7	147.7		0.167		0.00709	2.097				0.0082				
146.96	147.071	0.111	144.7	147.7		0.153		0.00613					0.00812				
147.071	147.163	0.092	144.7	147.7		0.169		0.00534					0.00793				
147.163	147.265	0.102	144.7	147.7		0.173		0.00525					0.0069				
147.265	147.363	0.098	144.7	147.7		0.196		0.00693					0.00738				
147.363	147.462	0.099	144.7	147.7		0.154		0.00356					0.00864				
147.462	147.576	0.114	144.7	147.7		0.174		0.00576					0.011				
147.576	147.665	0.089	144.7	147.7		0.146		0.00625					0.00755				538
147.665	147.764	0.099	147.7	150.7		0.16		0.004					0.00936				
147.764	147.864	0.1	147.7	150.7		0.14		0.00385					0.00984				
147.864	147.963	0.099	147.7	150.7		0.15							0.0104				
147.963	148.066	0.103	147.7	150.7		0.12		0.00786					0.00793				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
148.066	148.17	0.104	147.7	150.7		0.127		0.00588					0.00925				
148.17	148.263	0.093	147.7	150.7		0.123		0.0047					0.0069				
148.263	148.362	0.099	147.7	150.7		0.119		0.00423	2.104				0.00655				
148.362	148.458	0.096	147.7	150.7		0.116		0.00386					0.00742				
148.458	148.565	0.107	147.7	150.7		0.102							0.00794				528
148.565	148.661	0.096	147.7	150.7		0.127		0.00235					0.00826				
148.661	148.763	0.102	147.7	150.7		0.128		0.00194					0.00826				
148.763	148.864	0.101	147.7	150.7		0.134		0.00211					0.008				512
148.864	148.962	0.098	147.7	150.7		0.135		0.00417					0.00786				515
148.962	149.063	0.101	147.7	150.7		0.15		0.00337					0.00903				540
149.063	149.165	0.102	147.7	150.7		0.127		0.00554					0.00944				
149.165	149.266	0.101	147.7	150.7		0.129		0.0105					0.00441				549
149.266	149.364	0.098	147.7	150.7		0.127		0.00827	2.113				0.00509				
149.364	149.462	0.098	147.7	150.7		0.156		0.00512					0.00676				
149.462	149.563	0.101	147.7	150.7		0.144		0.0102					0.00688				
149.563	149.664	0.101	147.7	150.7		0.127		0.00952					0.00728				
149.664	149.76	0.096	147.7	150.7		0.132		0.00917	2.136				0.00602				572
149.76	149.869	0.109	147.7	150.7		0.117		0.0074					0.00795				
149.869	149.964	0.095	147.7	150.7		0.105		0.00546					0.00739				
149.964	150.066	0.102	147.7	150.7		0.0668		0.00784					0.00552				
150.066	150.166	0.1	147.7	150.7		0.136		0.0111					0.0101				
150.166	150.262	0.096	147.7	150.7		0.144		0.0142					0.00781				
150.262	150.349	0.087	147.7	150.7		0.139		0.0102					0.00708				
150.349	150.461	0.112	147.7	150.7		0.129		0.00835					0.00662				
150.461	150.563	0.102	147.7	150.7		0.115		0.00701					0.00976				
150.563	150.664	0.101	147.7	150.7		0.133		0.00615					0.00711				
150.664	150.763	0.099	150.7	152.5		0.157		0.00517					0.0076				531
150.763	150.865	0.102	150.7	152.5		0.135		0.00257					0.00919				
150.865	150.954	0.089	150.7	152.5		0.126		0.00295					0.00836				516
150.954	151.064	0.11	150.7	152.5		0.135		0.00957					0.00596				
151.064	151.163	0.099	150.7	152.5		0.142		0.0126	2.098				0.0052				521
151.163	151.261	0.098	150.7	152.5		0.123		0.0137					0.00564				
151.261	151.363	0.102	150.7	152.5		0.134		0.0151					0.00569				
151.363	151.464	0.101	150.7	152.5		0.15		0.0138					0.00757				
151.464	151.557	0.093	150.7	152.5		0.141		0.0122					0.00701				567
151.557	151.664	0.107	150.7	152.5		0.13		0.0087					0.00751				515
151.664	151.765	0.101	150.7	152.5		0.141		0.00857					0.00859				
151.765	151.864	0.099	150.7	152.5		0.143		0.0102					0.00878				521
151.864	151.962	0.098	150.7	152.5		0.129		0.00646					0.00795				
151.962	152.064	0.102	150.7	152.5		0.16		0.00818					0.00897				
152.064	152.162	0.098	150.7	152.5		0.144		0.00669					0.0085				534
152.162	152.263	0.101	150.7	152.5		0.158		0.00793	2.082				0.00903				732
152.263	152.365	0.102	150.7	152.5		0.142		0.00513					0.00839				
152.365	152.466	0.101	150.7	152.5		0.167		0.00633					0.00662				
152.466	152.564	0.098	152.5	155.5		0.139		0.00635					0.00586				
152.564	152.662	0.098	152.5	155.5		0.127		0.00737					0.00817				
152.662	152.762	0.1	152.5	155.5		0.117		0.00521					0.00904				539
152.762	152.864	0.102	152.5	155.5		0.112		0.00229					0.00803				
152.864	152.972	0.108	152.5	155.5		0.121							0.00501				
152.972	153.063	0.091	152.5	155.5		0.132		0.00653					0.00638				
153.063	153.164	0.101	152.5	155.5		0.138		0.00835					0.00637				564
153.164	153.228	0.064	152.5	155.5		0.079							0.00549				
153.228	153.366	0.138	152.5	155.5		0.141		0.00553					0.00467				
153.366	153.462	0.096	152.5	155.5		0.125		0.00416					0.00567				
153.462	153.562	0.1	152.5	155.5		0.111							0.00573				
153.562	153.662	0.1	152.5	155.5		0.116		0.00578					0.00747				516
153.662	153.762	0.1	152.5	155.5		0.107							0.00708				
153.762	153.863	0.101	152.5	155.5		0.129			2.186				0.00633				574
153.863	153.964	0.101	152.5	155.5		0.102		0.00236	2.165				0.00671				571
153.964	154.062	0.098	152.5	155.5		0.108		0.00181					0.00711				
154.062	154.162	0.1	152.5	155.5		0.123		0.00244					0.00725				
154.162	154.262	0.1	152.5	155.5		0.126		0.00191					0.00833				
154.262	154.362	0.1	152.5	155.5		0.132		0.00259					0.00825				
154.362	154.463	0.101	152.5	155.5		0.125		0.00391					0.00787				
154.463	154.563	0.1	152.5	155.5		0.143		0.00626	2.104				0.0123				750
154.563	154.679	0.116	152.5	155.5		0.182		0.00638	2.085				0.0103				750
154.679	154.762	0.083	152.5	155.5		0.113		0.00396	2.128				0.00803				530
154.762	154.862	0.1	152.5	155.5		0.127		0.00361					0.00902				
154.862	154.962	0.1	152.5	155.5		0.109		0.0041					0.00767				
154.962	155.063	0.101	152.5	155.5		0.128		0.00628					0.00729				
155.063	155.163	0.1	152.5	155.5		0.172		0.00617	2.124				0.0124				817
155.163	155.263	0.1	152.5	155.5		0.131		0.00363	2.143				0.0092				
155.263	155.365	0.102	152.5	155.5		0.13		0.00624					0.00887				
155.365	155.466	0.101	152.5	155.5		0.153		0.00813					0.00764				
155.466	155.565	0.099	155.5	158.5		0.178		0.0105					0.00879				
155.565	155.664	0.099	155.5	158.5		0.142		0.00738					0.0102				
155.664	155.763	0.099	155.5	158.5		0.135		0.00703					0.0102				
155.763	155.862	0.099	155.5	158.5		0.144		0.00964					0.00932				547
155.862	155.965	0.103	155.5	158.5		0.146		0.00787	2.084				0.00898				614
155.965	156.063	0.098	155.5	158.5		0.139		0.0021	2.099				0.00682				641
156.063	156.158	0.095	155.5	158.5		0.141		0.00549					0.00691				547
156.158	156.262	0.104	155.5	158.5		0.13		0.00538					0.0053				
156.262	156.361	0.099	155.5	158.5		0.144		0.0078					0.00542				514
156.361	156.46	0.099	155.5	158.5		0.126		0.00687					0.00731				534
156.46	156.562	0.102	155.5	158.5		0.141							0.00983				
156.562	156.661	0.099	155.5	158.5		0.132							0.00729				
156.661	156.763	0.102	155.5	158.5		0.141		0.00207					0.00729				
156.763	156.866	0.103	155.5	158.5		0.136							0.00598				
156.866	156.965	0.099	155.5	158.5		0.139		0.000593					0.00614				545
156.965	157.061	0.096	155.5	158.5		0.124		0.00281					0.00559				
157.061	157.166	0.105	155.5	158.5		0.125		0.005					0.00885				
157.166	157.267	0.101	155.5	158.5		0.132		0.0084					0.00843				
157.267	157.364	0.097	155.5	158.5		0.144		0.00889					0.00776				
157.364	157.465	0.101	155.5	158.5		0.137		0.0064	2.129				0.00783				672
157.465	157.563	0.098	155.5	158.5		0.151		0.00629	2.112				0.00716				572
157.563	157.663	0.1	155.5	158.5		0.136		0.00903					0.00688				617
157.663	157.764	0.101	155.5	158.5		0.155		0.004					0.009				527
157.764	157.863	0.099	155.5	158.5		0.147		0.00831					0.00865				
157.863	157.962	0.099	155.5	158.5		0.173		0.00918	2.132				0.0133				640
157.962	158.061	0.099	155.5	158.5		0.161		0.0104					0.0096				531
158.061	158.152	0.091	155.5	158.5		0.149		0.00963					0.00738				543
158.152	158.368	0.216	155.5	158.5		0.157		0.00459					0.00908				546
158.368	158.465	0.097	155.5	158.5		0.205		0.00719					0.00874				551
158.465	158.565	0.1	158.5	159.8		0.206		0.00374	2.208				0.00979				551
158.565	158.664	0.099	158.5	159.8		0.215		0.00866	2.182				0.0104				548
158.664	158.763	0.099	158.5	159.8		0.183		0.00513					0.00806				536
158.763	158.862	0.099	158.5	159.8		0.152		0.00821					0.00679				
158.862	158.963	0.101	158.5	159.8		0.192		0.00849					0.00867				
158.963	159.06	0.097	158.5	159.8		0.161		0.00266					0.00881				
159.06	159.172	0.112	158.5	159.8		0.182		0.00263									
159.172	159.261	0.089	158.5	159.8		0.176		0.00161					0.00769				
159.261	159.364	0.103	158.5	159.8		0.179		0.00488					0.0102				
159.364	159.466	0.102	158.5	159.8		0.189		0.00481					0.00638				
159.466	159.564	0.098	158.5	159.8		0.175		0.00457	2.075				0.0043				773
159.564	159.664	0.1	158.5	159.8		0.157		0.00705					0.00466				511

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
159.664	159.766	0.102	158.5	159.8		0.193		0.00765		1			0.00937				559
159.766	159.865	0.099	159.8	162.0		0.194		0.0063	2.139				0.00537				594
159.865	159.964	0.099	159.8	162.0		0.196	0.0201	0.00501					0.00579				
159.964	160.063	0.099	159.8	162.0		0.145		0.00919	2.176				0.00856				553
160.063	160.164	0.101	159.8	162.0		0.134		0.00893		1			0.00644				
160.164	160.264	0.1	159.8	162.0		0.167		0.016		1			0.00827				
160.264	160.363	0.099	159.8	162.0		0.167		0.00768					0.00909				
160.363	160.463	0.1	159.8	162.0		0.211		0.007					0.00649				
160.463	160.562	0.099	159.8	162.0		0.199		0.00791					0.00822				
160.562	160.661	0.099	159.8	162.0		0.194		0.00353					0.00831				
160.661	160.761	0.1	159.8	162.0		0.179		0.00617					0.0092				562
160.761	160.862	0.101	159.8	162.0		0.179		0.0091	2.135				0.00927				567
160.862	160.961	0.099	159.8	162.0		0.242		0.0691	2.723	0.642	0.835		0.00505				579
160.961	161.063	0.102	159.8	162.0		0.292		0.0526	2.541	0.976		0.075	0.00561				818
161.063	161.166	0.103	159.8	162.0		0.196		0.0106	2.149				0.00933				778
161.166	161.265	0.099	159.8	162.0		0.201		0.0136		0.899		0.0782	0.00725				
161.265	161.365	0.1	159.8	162.0		0.311		0.0885	2.854	0.88		0.154	0.0019				553
161.365	161.466	0.101	159.8	162.0		0.417		0.104	2.669	0.932		0.125					562
161.466	161.564	0.098	159.8	162.0		0.229		0.101	3.14	0.781			0.0185				544
161.564	161.664	0.1	159.8	162.0		0.193		0.00612	2.203	0.794	0.611		0.008				
161.664	161.763	0.099	159.8	162.0		0.192		0.00679	2.14				0.0108				
161.763	161.862	0.099	159.8	162.0		0.162		0.00812	2.143				0.00853				
161.862	161.952	0.09	159.8	162.0		0.142		0.00653	2.093				0.00501				703
161.952	162.062	0.11	162.0	165.0		0.148		0.00547					0.00714				627
162.062	162.163	0.101	162.0	165.0		0.15		0.00513	2.181				0.00689				696
162.163	162.265	0.102	162.0	165.0		0.144		0.00448	2.149				0.00439				649
162.265	162.364	0.099	162.0	165.0		0.143		0.00488					0.0055				
162.364	162.462	0.098	162.0	165.0		0.164		0.00536					0.00653				533
162.462	162.562	0.1	162.0	165.0		0.18		0.00523	2.115				0.00705				588
162.562	162.662	0.1	162.0	165.0		0.229		0.0521	2.784	0.863			0.00733				561
162.662	162.763	0.101	162.0	165.0		0.169		0.007	2.283	1			0.0104				627
162.763	162.865	0.102	162.0	165.0		0.163		0.00804					0.0102				522
162.865	162.963	0.098	162.0	165.0		0.161		0.0108	2.13				0.00886				541
162.963	163.062	0.099	162.0	165.0		0.156		0.00712	2.117				0.00757				591
163.062	163.114	0.052	162.0	165.0		0.108		0.0108					0.00341				
163.114	163.27	0.156	162.0	165.0		0.188			2.127				0.0082				600
163.27	163.365	0.095	162.0	165.0		0.161							0.00691				634
163.365	163.464	0.099	162.0	165.0		0.147		0.00711					0.00531				520
163.464	163.563	0.099	162.0	165.0		0.165		0.0117	2.491	1			0.00722				524
163.563	163.665	0.102	162.0	165.0		0.167		0.00688					0.00864				511
163.665	163.763	0.098	162.0	165.0		0.196		0.00661	2.088				0.00797				596
163.763	163.867	0.104	162.0	165.0		0.166		0.00521					0.00623				
163.867	163.963	0.096	162.0	165.0		0.163		0.0062					0.00757				569
163.963	164.062	0.099	162.0	165.0		0.148		0.0053					0.00628				
164.062	164.164	0.102	162.0	165.0		0.164		0.00559					0.007				
164.164	164.262	0.098	162.0	165.0		0.144		0.00387					0.00495				
164.262	164.364	0.102	162.0	165.0		0.139		0.00287					0.00544				
164.364	164.462	0.098	162.0	165.0		0.149		0.0133					0.00887				626
164.462	164.561	0.099	162.0	165.0		0.139		0.0136	2.086				0.00743				778
164.561	164.663	0.102	162.0	165.0		0.165		0.0126	2.076				0.0132				783
164.663	164.765	0.102	162.0	165.0		0.145		0.0129					0.0102				
164.765	164.864	0.099	162.0	165.0		0.143		0.0128	2.176				0.00848				665
164.864	164.961	0.097	162.0	165.0		0.116		0.0121					0.00522				532
164.961	165.064	0.103	165.0	168.0		0.0909		0.0104					0.00775				519
165.064	165.166	0.102	165.0	168.0		0.121		0.00791					0.00674				
165.166	165.266	0.1	165.0	168.0		0.116		0.00558					0.00974				524
165.266	165.366	0.1	165.0	168.0		0.125		0.00639					0.0053				
165.366	165.466	0.1	165.0	168.0		0.144		0.00378					0.00774				
165.466	165.566	0.1	165.0	168.0		0.129		0.00487					0.00932				
165.566	165.661	0.095	165.0	168.0		0.12		0.00566					0.0105				
165.661	165.763	0.102	165.0	168.0		0.15		0.0046					0.0134				555
165.763	165.863	0.1	165.0	168.0		0.12		0.00292					0.00945				
165.863	165.963	0.1	165.0	168.0		0.121		0.00323					0.00939				
165.963	166.06	0.097	165.0	168.0		0.117		0.00406					0.00837				
166.06	166.163	0.103	165.0	168.0		0.116		0.00484					0.00988				512
166.163	166.263	0.1	165.0	168.0		0.102		0.00513					0.00955				
166.263	166.366	0.103	165.0	168.0		0.105		0.00246					0.005				
166.366	166.466	0.1	165.0	168.0		0.103		0.00991					0.00495				535
166.466	166.566	0.1	165.0	168.0		0.116		0.00362					0.0055				577
166.566	166.666	0.1	165.0	168.0		0.107							0.00548				561
166.666	166.766	0.1	165.0	168.0		0.115		0.00774					0.00546				548
166.766	166.866	0.1	165.0	168.0		0.101		0.00824					0.00601				566
166.866	166.965	0.099	165.0	168.0		0.112		0.00559					0.00798				564
166.965	167.063	0.098	165.0	168.0		0.115		0.007					0.00704				
167.063	167.163	0.1	165.0	168.0		0.105		0.00482					0.00544				
167.163	167.263	0.1	165.0	168.0		0.116		0.00858					0.00605				513
167.263	167.363	0.1	165.0	168.0		0.111		0.00929					0.00547				
167.363	167.463	0.1	165.0	168.0		0.115		0.00838					0.00631				
167.463	167.566	0.103	165.0	168.0		0.106		0.009					0.00682				556
167.566	167.666	0.1	165.0	168.0		0.113		0.00697					0.00766				538
167.666	167.766	0.1	165.0	168.0		0.115		0.00661	2.182				0.00642				619
167.766	167.863	0.097	165.0	168.0		0.114		0.00605					0.00793				563
167.863	167.968	0.105	165.0	168.0		0.143		0.00515					0.00603				523
167.968	168.04	0.072	168.0	171.0		0.111		0.00771					0.00366				522
168.04	168.168	0.128	168.0	171.0		0.116		0.0174					0.00882				528
168.168	168.262	0.094	168.0	171.0		0.0995		0.0099					0.00743				520
168.262	168.366	0.104	168.0	171.0		0.128		0.00403	2.117				0.00734				614
168.366	168.465	0.099	168.0	171.0		0.126		0.00349	2.097				0.00598				596
168.465	168.564	0.099	168.0	171.0		0.11		0.0034					0.00404				585
168.564	168.655	0.091	168.0	171.0		0.109		0.00833					0.00494				613
168.655	168.765	0.11	168.0	171.0		0.108		0.0111					0.00394				767
168.765	168.864	0.099	168.0	171.0		0.104							0.00665				
168.864	168.962	0.098	168.0	171.0		0.0976		0.01					0.00555				
168.962	169.062	0.1	168.0	171.0		0.109		0.0142					0.00839				
169.062	169.164	0.102	168.0	171.0		0.12		0.00926					0.00504				535
169.164	169.267	0.103	168.0	171.0		0.13		0.00679					0.00359				626
169.267	169.367	0.1	168.0	171.0		0.117		0.00951	2.176				0.00575				
169.367	169.463	0.096	168.0	171.0		0.109		0.00862					0.00539				
169.463	169.566	0.103	168.0	171.0		0.113		0.00758					0.00566				
169.566	169.664	0.098	168.0	171.0		0.122		0.00951					0.0064				
169.664	169.763	0.099	168.0	171.0		0.108		0.00951					0.00463				
169.763	169.862	0.099	168.0	171.0		0.0933		0.0122					0.00474				511
169.862	169.964	0.102	168.0	171.0		0.089		0.0061					0.00608				561
169.964	170.063	0.099	168.0	171.0		0.094		0.00615					0.00504				538
170.063	170.162	0.099	168.0	171.0		0.0981		0.0061					0.00475				531
170.162	170.261	0.099	168.0	171.0		0.11							0.00867				548
170.261	170.363	0.102	168.0	171.0		0.097		0.0109					0.00715				571
170.363	170.463	0.1	168.0	171.0		0.108		0.00657					0.00796				534
170.463	170.566	0.103	168.0	171.0		0.091		0.00553	2.205				0.00626				626
170.566	170.666	0.1	168.0	171.0		0.0996		0.00163					0.00757				
170.666	170.765	0.099	168.0	171.0		0.107		0.00274					0.00687				
170.765	170.867	0.102	168.0	171.0		0.106		0.00313					0.00696				
170.867	170.957	0.09	168.0	171.0		0.121		0.00397					0.00652				
170.957	171.063	0.106	171.0	174.0		0.139		0.0059					0.00872				528
171.063	171.166	0.103	171.0	174.0		0.115		0.00483	2.21				0.00594				707

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
171.166	171.265	0.099	171.0	174.0		0.108		0.00286					0.00742				
171.265	171.363	0.098	171.0	174.0		0.095		0.00476					0.00456				528
171.363	171.464	0.101	171.0	174.0		0.105		0.00496		0.742			0.00611				
171.464	171.564	0.1	171.0	174.0		0.0975		0.00504					0.00496				
171.564	171.663	0.099	171.0	174.0		0.0963		0.0062					0.00585				581
171.663	171.763	0.1	171.0	174.0		0.0866		0.00576					0.00543				
171.763	171.864	0.101	171.0	174.0		0.0985		0.00797					0.00657				
171.864	171.965	0.101	171.0	174.0		0.113		0.0113					0.00618				540
171.965	172.063	0.098	171.0	174.0		0.0998		0.0101					0.00512				515
172.063	172.163	0.1	171.0	174.0		0.105		0.0111					0.00532				513
172.163	172.264	0.101	171.0	174.0		0.105		0.00922					0.00579				
172.264	172.365	0.101	171.0	174.0		0.102		0.0116					0.00788				571
172.365	172.463	0.098	171.0	174.0		0.0953		0.00862					0.00683				555
172.463	172.564	0.101	171.0	174.0		0.103		0.00859					0.0103				522
172.564	172.664	0.1	171.0	174.0		0.0935		0.00875					0.00813				
172.664	172.762	0.098	171.0	174.0		0.108		0.0085	2.222				0.00837				720
172.762	172.817	0.055	171.0	174.0		0.115		0.0103					0.00704				732
172.817	172.969	0.152	171.0	174.0		0.105		0.00481					0.00693				709
172.969	173.062	0.093	171.0	174.0		0.0873		0.00344					0.00916				
173.062	173.162	0.1	171.0	174.0		0.0918		0.00456					0.00693				
173.162	173.261	0.099	171.0	174.0		0.114		0.00275					0.00671				515
173.261	173.361	0.1	171.0	174.0		0.0995		0.00343					0.00652				
173.361	173.461	0.1	171.0	174.0		0.0878		0.000888					0.00785				
173.461	173.561	0.1	171.0	174.0		0.109			2.171				0.00693				599
173.561	173.661	0.1	171.0	174.0		0.0902		0.00342					0.00322				
173.661	173.762	0.101	171.0	174.0		0.179		0.00782	2.283	0.795	0.808		0.00369				615
173.762	173.861	0.099	171.0	174.0		0.111		0.0122	2.354	0.679	0.641		0.00416				519
173.861	173.972	0.111	171.0	174.0		0.108		0.000785					0.00511				
173.972	174.046	0.074	174.0	177.0		0.0905							0.00486				
174.046	174.165	0.119	174.0	177.0		0.0837		0.00392					0.00645				687
174.165	174.262	0.097	174.0	177.0		0.109		0.0056					0.0081				609
174.262	174.361	0.099	174.0	177.0		0.106		0.00673					0.00835				645
174.361	174.464	0.103	174.0	177.0		0.0981		0.00859					0.009				596
174.464	174.566	0.102	174.0	177.0		0.1		0.00622					0.00622				674
174.566	174.658	0.092	174.0	177.0		0.111		0.00377					0.00705				645
174.658	174.761	0.103	174.0	177.0		0.122		0.00489					0.00507				724
174.761	174.861	0.1	174.0	177.0		0.112		0.00611					0.0058				
174.861	174.969	0.108	174.0	177.0		0.0881		0.00348					0.00327				
174.969	175.065	0.096	174.0	177.0		0.0925		0.00491					0.00412				
175.065	175.165	0.1	174.0	177.0		0.116		0.00665	2.095				0.00527				709
175.165	175.265	0.1	174.0	177.0		0.1		0.00583					0.0055				
175.265	175.366	0.101	174.0	177.0		0.0956		0.00516					0.00427				
175.366	175.465	0.099	174.0	177.0		0.0917		0.00881					0.00434				
175.465	175.565	0.1	174.0	177.0		0.0981		0.00881					0.00444				
175.565	175.664	0.099	174.0	177.0		0.101		0.00838					0.00463				
175.664	175.763	0.099	174.0	177.0		0.112		0.00807					0.00644				
175.763	175.875	0.112	174.0	177.0		0.119		0.00842	2.105				0.00693				677
175.875	175.965	0.09	174.0	177.0		0.107		0.0123					0.00701				
175.965	176.064	0.099	174.0	177.0		0.103		0.0119					0.00775				
176.064	176.163	0.099	174.0	177.0		0.117		0.0117					0.00778				
176.163	176.263	0.1	174.0	177.0		0.106		0.00669					0.0064				529
176.263	176.359	0.096	174.0	177.0		0.106		0.00706					0.00751				598
176.359	176.47	0.111	174.0	177.0		0.0932		0.00868					0.00657				
176.47	176.563	0.093	174.0	177.0		0.1		0.00662					0.00588				
176.563	176.663	0.1	174.0	177.0		0.105		0.00454					0.00565				
176.663	176.762	0.099	174.0	177.0		0.0856							0.00423				
176.762	176.844	0.082	174.0	177.0		0.0936		0.00694					0.0081				
176.844	177.004	0.16	177.0	180.0		0.109											639
177.004	177.062	0.058	177.0	180.0		0.0923							0.00705				544
177.062	177.161	0.099	177.0	180.0		0.093		0.00331					0.00654				
177.161	177.264	0.103	177.0	180.0		0.106		0.00425					0.00788				
177.264	177.366	0.102	177.0	180.0		0.0976		0.0073					0.00826				
177.366	177.465	0.099	177.0	180.0		0.0924		0.00638					0.00741				
177.465	177.518	0.053	177.0	180.0		0.0939							0.00558				
177.518	177.667	0.149	177.0	180.0		0.106		0.00445					0.0108				809
177.667	177.763	0.096	177.0	180.0		0.0932		0.00076					0.00863				
177.763	177.862	0.099	177.0	180.0		0.0876		0.00161					0.00554				
177.862	177.965	0.103	177.0	180.0		0.108		0.000523					0.00632				
177.965	178.064	0.099	177.0	180.0		0.105		0.00198					0.00744				528
178.064	178.163	0.099	177.0	180.0		0.111		0.00539					0.00628				
178.163	178.265	0.102	177.0	180.0		0.108		0.0025					0.00963				551
178.265	178.364	0.099	177.0	180.0		0.105							0.012				
178.364	178.464	0.1	177.0	180.0		0.12							0.0148				563
178.464	178.563	0.099	177.0	180.0		0.112							0.0111				573
178.563	178.665	0.102	177.0	180.0		0.106							0.0113				
178.665	178.764	0.099	177.0	180.0		0.0986							0.0138				
178.764	178.862	0.098	177.0	180.0		0.0881		0.00596					0.00752				
178.862	178.962	0.1	177.0	180.0		0.0964		0.00581					0.00755				
178.962	179.065	0.103	177.0	180.0		0.102		0.00653					0.00925				
179.065	179.164	0.099	177.0	180.0		0.102		0.00204					0.00583				516
179.164	179.263	0.099	177.0	180.0		0.106		0.0044					0.00643				
179.263	179.362	0.099	177.0	180.0		0.0964		0.00464					0.0076				
179.362	179.462	0.1	177.0	180.0		0.0941		0.00496					0.00701				
179.462	179.564	0.102	177.0	180.0		0.0875		0.0105					0.0078				
179.564	179.663	0.099	177.0	180.0		0.0877		0.00731					0.0087				
179.663	179.765	0.102	177.0	180.0		0.0868		0.00727					0.00865				
179.765	179.861	0.096	177.0	180.0				0.00443					0.00612				
179.861	179.963	0.102	177.0	180.0		0.12		0.00483					0.00767				
179.963	180.054	0.091	180.0	183.0		0.0901		0.00225					0.00645				
180.054	180.163	0.109	180.0	183.0		0.0957		0.00424	2.206				0.00488				699
180.163	180.265	0.102	180.0	183.0		0.0804							0.0054				
180.265	180.364	0.099	180.0	183.0		0.0887		0.00277					0.00471				
180.364	180.464	0.1	180.0	183.0		0.104		0.00221					0.00621				
180.464	180.563	0.099	180.0	183.0		0.107		0.00286					0.00602				
180.563	180.663	0.1	180.0	183.0		0.11		0.00359					0.00822				
180.663	180.763	0.1	180.0	183.0		0.0819		0.00426					0.00912				
180.763	180.863	0.1	180.0	183.0		0.0888		0.00458					0.00722				
180.863	180.965	0.102	180.0	183.0		0.123		0.00385					0.00883				520
180.965	181.064	0.099	180.0	183.0		0.11		0.00605					0.00891				
181.064	181.149	0.085	180.0	183.0		0.111		0.00687					0.0074				686
181.149	181.276	0.127	180.0	183.0		0.105		0.00453					0.00702				552
181.276	181.364	0.088	180.0	183.0		0.104		0.00831					0.00668				
181.364	181.463	0.099	180.0	183.0		0.1		0.00695					0.00587				520
181.463	181.562	0.099	180.0	183.0		0.102		0.00598					0.00759				
181.562	181.664	0.102	180.0	183.0		0.0876		0.00694					0.00851				512
181.664	181.786	0.122	180.0	183.0		0.0868		0.00346					0.00505				
181.786	181.865	0.079	180.0	183.0		0.108		0.00612					0.00683				
181.865	181.967	0.102	180.0	183.0		0.108		0.00154					0.00706				512
181.967	182.066	0.099	180.0	183.0		0.125							0.00677				647
182.066	182.163	0.097	180.0	183.0		0.105		0.00121					0.00718				657
182.163	182.262	0.099	180.0	183.0		0.0975		0.000701					0.00762				566
182.262	182.468	0.206	180.0	183.0		0.131		0.00264					0.00703				685
182.468	182.562	0.094	180.0	183.0		0.117		0.00412					0.00637				608
182.562	182.662	0.1	180.0	183.0		0.0915		0.00475					0.00414				557
182.662	182.762	0.1	180.0	183.0		0.0972		0.00819					0.00421				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inten	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
182.762	182.862	0.1	180.0	183.0		0.0912		0.00814					0.00413				
182.862	182.962	0.1	180.0	183.0		0.107		0.00146					0.00484				
182.962	183.066	0.104	183.0	186.0		0.126		0.00179	2.108				0.00675				589
183.066	183.166	0.1	183.0	186.0		0.0969		0.00417					0.0058				
183.166	183.266	0.1	183.0	186.0		0.117		0.00205	2.164				0.00606				629
183.266	183.366	0.1	183.0	186.0		0.109		0.00258					0.00789				602
183.366	183.457	0.091	183.0	186.0		0.108		0.00399					0.00766				524
183.457	183.575	0.118	183.0	186.0		0.0952		0.00295					0.00656				
183.575	183.663	0.088	183.0	186.0		0.125		0.00556					0.00892				641
183.663	183.763	0.1	183.0	186.0		0.118		0.00612					0.00827				514
183.763	183.863	0.1	183.0	186.0		0.142		0.00449					0.00885				546
183.863	183.963	0.1	183.0	186.0		0.133		0.00889					0.00923				
183.963	184.063	0.1	183.0	186.0		0.137		0.00775					0.00863				563
184.063	184.165	0.102	183.0	186.0		0.129		0.0101					0.00697				
184.165	184.266	0.101	183.0	186.0		0.166		0.0111	2.101				0.00809				744
184.266	184.366	0.1	183.0	186.0		0.125		0.00356	2.138				0.00705				515
184.366	184.466	0.1	183.0	186.0		0.133		0.00657	2.084				0.00591				514
184.466	184.566	0.1	183.0	186.0		0.135		0.00971					0.00775				
184.566	184.666	0.1	183.0	186.0		0.115		0.00384					0.00614				
184.666	184.768	0.102	183.0	186.0		0.107		0.00566					0.00424				
184.768	184.863	0.095	183.0	186.0		0.117		0.00271					0.00314				
184.863	184.963	0.1	183.0	186.0		0.124		0.0034					0.00657				
184.963	185.063	0.1	183.0	186.0		0.128		0.00239					0.00619				
185.063	185.163	0.1	183.0	186.0		0.129		0.00274					0.00734				
185.163	185.263	0.1	183.0	186.0		0.126		0.00668					0.00611				
185.263	185.364	0.101	183.0	186.0		0.13		0.00501					0.00802				
185.364	185.466	0.102	183.0	186.0		0.124		0.00582					0.00596				
185.466	185.566	0.1	183.0	186.0		0.144		0.00437					0.00568				
185.566	185.666	0.1	183.0	186.0		0.147		0.0101					0.00637				
185.666	185.766	0.1	183.0	186.0		0.173		0.00369					0.00656				866
185.766	185.866	0.1	183.0	186.0		0.166		0.013					0.00617				
185.866	185.95	0.084	183.0	186.0		0.171		0.0116					0.00589				
185.95	186.066	0.116	186.0	189.0		0.166		0.00271					0.00657				545
186.066	186.165	0.099	186.0	189.0		0.169		0.0112					0.00723				
186.165	186.263	0.098	186.0	189.0		0.152		0.00385					0.00855				
186.263	186.364	0.101	186.0	189.0		0.148		0.0045					0.0107				517
186.364	186.465	0.101	186.0	189.0		0.155		0.00189	2.116				0.0112				646
186.465	186.561	0.096	186.0	189.0		0.123		0.00343					0.00789				578
186.561	186.664	0.103	186.0	189.0		0.182		0.00427	2.144				0.0104				553
186.664	186.762	0.098	186.0	189.0		0.161		0.00341					0.00803				
186.762	186.863	0.101	186.0	189.0		0.176		0.00415	2.127				0.0125				512
186.863	186.964	0.101	186.0	189.0		0.174		0.00699	2.141				0.00908				546
186.964	187.062	0.098	186.0	189.0		0.16		0.00279					0.00855				583
187.062	187.273	0.211	186.0	189.0		0.167		0.00606					0.0109				538
187.273	187.365	0.092	186.0	189.0		0.137		0.00751					0.0144				
187.365	187.466	0.101	186.0	189.0		0.141		0.01					0.0092				
187.466	187.564	0.098	186.0	189.0		0.164		0.0107					0.00907				577
187.564	187.662	0.098	186.0	189.0		0.185		0.00971					0.0109				538
187.662	187.763	0.101	186.0	189.0		0.152		0.00837	2.137				0.00782				602
187.763	187.864	0.101	186.0	189.0		0.153		0.00732					0.0101				568
187.864	187.962	0.098	186.0	189.0		0.145		0.00431					0.00658				539
187.962	188.064	0.102	186.0	189.0		0.156		0.00506					0.00945				539
188.064	188.165	0.101	186.0	189.0		0.145		0.00625					0.00802				528
188.165	188.263	0.098	186.0	189.0		0.117		0.00607					0.00604				
188.263	188.361	0.098	186.0	189.0		0.153		0.00936					0.00821				547
188.361	188.465	0.104	186.0	189.0		0.137		0.00707					0.00562				632
188.465	188.563	0.098	186.0	189.0		0.173		0.00606					0.00749				
188.563	188.661	0.098	186.0	189.0		0.17		0.00219					0.00733				
188.661	188.762	0.101	186.0	189.0		0.169		0.00797					0.00782				538
188.762	188.864	0.102	186.0	189.0		0.155		0.00555	2.144				0.00873				512
188.864	188.965	0.101	186.0	189.0		0.138		0.00588					0.0169				527
188.965	189.081	0.116	189.0	192.0		0.148		0.00752					0.00659			1	
189.081	189.163	0.082	189.0	192.0		0.14		0.00576					0.00795				
189.163	189.264	0.101	189.0	192.0		0.154		0.0089					0.0128				
189.264	189.365	0.101	189.0	192.0		0.145		0.00703					0.00972				
189.365	189.463	0.098	189.0	192.0		0.149		0.00914					0.0163				572
189.463	189.561	0.098	189.0	192.0		0.145		0.00863					0.00943				
189.561	189.669	0.108	189.0	192.0		0.138		0.00263					0.0102				533
189.669	189.763	0.094	189.0	192.0		0.138		0.00254					0.0129				
189.763	189.861	0.098	189.0	192.0		0.156		0.00366					0.0176				
189.861	189.962	0.101	189.0	192.0		0.156		0.00582					0.013				552
189.962	190.063	0.101	189.0	192.0		0.14		0.00609					0.0113				
190.063	190.164	0.101	189.0	192.0		0.122		0.00383	2.191				0.00925				783
190.164	190.265	0.101	189.0	192.0		0.116		0.00595					0.00575				
190.265	190.363	0.098	189.0	192.0		0.113		0.00806					0.00548				
190.363	190.464	0.101	189.0	192.0		0.115		0.00841					0.00572				
190.464	190.565	0.101	189.0	192.0		0.094		0.00663					0.00441				
190.565	190.663	0.098	189.0	192.0		0.0945		0.00724					0.00636				
190.663	190.746	0.083	189.0	192.0		0.121		0.0117	2.03				0.00503				686
190.746	190.868	0.122	189.0	192.0		0.123		0.00249	2.193	0.811			0.00386				616
190.868	190.963	0.095	189.0	192.0		0.184			2.295	0.841			0.00462				546
190.963	191.061	0.098	189.0	192.0		0.0985		0.00378	2.341	0.528			0.00522				517
191.061	191.162	0.101	189.0	192.0		0.109		0.00417					0.00516				
191.162	191.263	0.101	189.0	192.0		0.0959		0.00182					0.00711				
191.263	191.36	0.097	189.0	192.0		0.0895		0.00238					0.00621				
191.36	191.462	0.102	189.0	192.0		0.107		0.00716	2.127				0.00486				781
191.462	191.563	0.101	189.0	192.0		0.107		0.0116					0.00608				
191.563	191.664	0.101	189.0	192.0		0.111		0.00629					0.00699				
191.664	191.765	0.101	189.0	192.0		0.0907		0.00723					0.00552				
191.765	191.863	0.098	189.0	192.0		0.108		0.00697					0.00845				
191.863	191.949	0.086	189.0	192.0		0.114		0.00785					0.00691				
191.949	192.073	0.124	192.0	195.0		0.133		0.00616					0.01				524
192.073	192.164	0.091	192.0	195.0		0.134		0.00983		1			0.0114				
192.164	192.265	0.101	192.0	195.0		0.114		0.00734					0.00896				519
192.265	192.365	0.1	192.0	195.0		0.124		0.00845					0.00893				596
192.365	192.462	0.097	192.0	195.0		0.099		0.00691					0.00978				
192.462	192.56	0.098	192.0	195.0		0.119		0.00599					0.0103				557
192.56	192.663	0.103	192.0	195.0		0.081		0.00554					0.00563				
192.663	192.763	0.1	192.0	195.0		0.08		0.00753					0.00729				
192.763	192.864	0.101	192.0	195.0		0.087		0.0077					0.00558				547
192.864	192.964	0.1	192.0	195.0		0.0784		0.00907					0.00618				
192.964	193.065	0.101	192.0	195.0		0.0897		0.00545					0.00666				
193.065	193.159	0.094	192.0	195.0		0.11		0.0065					0.00672				
193.159	193.265	0.106	192.0	195.0		0.0928		0.00485					0.00618				
193.265	193.362	0.097	192.0	195.0		0.103		0.00651	2.133				0.00757				516
193.362	193.463	0.101	192.0	195.0		0.0909		0.00439					0.00634				
193.463	193.563	0.1	192.0	195.0		0.0965		0.00621					0.00704				
193.563	193.664	0.101	192.0	195.0		0.0983		0.00664					0.00626				
193.664	193.764	0.1	192.0	195.0		0.111		0.00628					0.00913				
193.764	193.864	0.1	192.0	195.0		0.115		0.00781					0.00875				
193.864	193.965	0.101	192.0	195.0		0.146		0.00868	2.103				0.0111				
193.965	194.065	0.1	192.0	195.0		0.102							0.00733				
194.065	194.162	0.097	192.0	195.0		0.103							0.00682				
194.162	194.263	0.101	192.0	195.0		0.097		0.00651					0.00639				
194.263	194.361	0.098	192.0	195.0		0.0954		0.00551					0.00639				

Depth		AI	split length		Observed talc %	full albedo	talc intensity	dolomite inten	Fe2+ inter	carbonate in	chlorite inde	quartz H2O	AlOH intens	FeOX norml	chalcopyrite ir	sphalerite ind	VNIR peak wvl
geo from	geo to		geo from	geo to													
194.361	194.463	0.102	192.0	195.0		0.0984		0.00372		1			0.00558				
194.463	194.564	0.101	192.0	195.0		0.106		0.00165					0.00581				
194.564	194.664	0.1	192.0	195.0		0.146		0.00413	2.083				0.00646				674
194.664	194.764	0.1	192.0	195.0		0.103		0.0058					0.00556				
194.764	194.865	0.101	192.0	195.0		0.1		0.00964					0.00585				
194.865	194.957	0.092	192.0	195.0		0.129		0.00424					0.00714				
194.957	195.063	0.106	195.0	198.0		0.115		0.00293					0.00605				530
195.063	195.163	0.1	195.0	198.0		0.138		0.00427					0.00632				513
195.163	195.264	0.101	195.0	198.0		0.114		0.00965	2.771	1			0.00611				557
195.264	195.364	0.1	195.0	198.0		0.116		0.00136					0.00599				
195.364	195.464	0.1	195.0	198.0		0.136		0.00876					0.00795				
195.464	195.561	0.097	195.0	198.0		0.141		0.0115					0.00884				
195.561	195.661	0.1	195.0	198.0		0.113		0.0112	2.145				0.00593				644
195.661	195.761	0.1	195.0	198.0		0.105		0.0154					0.00634				540
195.761	195.861	0.1	195.0	198.0		0.0841		0.0146					0.00599				
195.861	195.961	0.1	195.0	198.0		0.0995		0.0118					0.00523				
195.961	196.062	0.101	195.0	198.0		0.11		0.0166					0.00572				515
196.062	196.174	0.112	195.0	198.0		0.0857		0.00915					0.00585				
196.174	196.265	0.091	195.0	198.0		0.0825		0.00367					0.00641				
196.265	196.365	0.1	195.0	198.0		0.108		0.0102					0.00801				
196.365	196.465	0.1	195.0	198.0		0.129		0.0102	2.11				0.00888				
196.465	196.565	0.1	195.0	198.0		0.0792		0.00836					0.00536				
196.565	196.665	0.1	195.0	198.0		0.0917		0.0105	2.147				0.00557				
196.665	196.724	0.059	195.0	198.0		0.0799							0.00536				
196.724	196.862	0.138	195.0	198.0		0.117		0.00513					0.00713				534
196.862	196.964	0.102	195.0	198.0		0.111		0.00725					0.00491				540
196.964	197.065	0.101	195.0	198.0		0.107		0.00642					0.00624				577
197.065	197.164	0.099	195.0	198.0		0.0949		0.00515					0.00569				
197.164	197.263	0.099	195.0	198.0		0.108		0.00548					0.00679				573
197.263	197.363	0.1	195.0	198.0		0.106		0.00985					0.00835				
197.363	197.463	0.1	195.0	198.0		0.107		0.0129					0.00905				
197.463	197.565	0.102	195.0	198.0		0.112		0.0125					0.00705				
197.565	197.664	0.099	195.0	198.0		0.157		0.0165					0.00828				511
197.664	197.762	0.098	195.0	198.0		0.124		0.0118					0.00878				
197.762	197.856	0.094	195.0	198.0		0.12		0.0098					0.00756				555
197.856	197.953	0.097	195.0	198.0		0.159		0.00884					0.0105				541
197.953	198.065	0.112	198.0	201.0		0.173		0.00763					0.00815				
198.065	198.163	0.098	198.0	201.0		0.0996		0.00503					0.00562				
198.163	198.262	0.099	198.0	201.0		0.125		0.0053					0.0075				
198.262	198.363	0.101	198.0	201.0		0.111		0.00602					0.00871				
198.363	198.457	0.094	198.0	201.0		0.121							0.00749				
198.457	198.562	0.105	198.0	201.0		0.108		0.0103					0.00521				
198.562	198.664	0.102	198.0	201.0		0.113		0.0115					0.00731				
198.664	198.765	0.101	198.0	201.0		0.108		0.0105					0.00689				
198.765	198.863	0.098	198.0	201.0		0.0985		0.0108					0.00711				
198.863	198.962	0.099	198.0	201.0		0.12		0.0125	2.3	1			0.0084				
198.962	199.059	0.097	198.0	201.0		0.112		0.00471					0.00765				525
199.059	199.161	0.102	198.0	201.0		0.119		0.00338					0.00611				
199.161	199.263	0.102	198.0	201.0		0.0934		0.00262					0.00515				
199.263	199.364	0.101	198.0	201.0		0.108		0.00364					0.00517				
199.364	199.465	0.101	198.0	201.0		0.11		0.0033					0.00483				
199.465	199.564	0.099	198.0	201.0		0.0939		0.00423					0.00404				
199.564	199.663	0.099	198.0	201.0		0.0881		0.00396					0.00411				
199.663	199.763	0.1	198.0	201.0		0.103		0.00765					0.00356				587
199.763	199.861	0.098	198.0	201.0		0.0939		0.00354					0.0052				553
199.861	199.963	0.102	198.0	201.0		0.0861		0.0134	2.149				0.0052				
199.963	200.063	0.1	198.0	201.0		0.0775		0.00175					0.00633				
200.063	200.166	0.103	198.0	201.0		0.11		0.00464					0.0073				
200.166	200.266	0.1	198.0	201.0		0.102		0.00611					0.00569				
200.266	200.365	0.099	198.0	201.0		0.103							0.00509				
200.365	200.463	0.098	198.0	201.0		0.105							0.00614				
200.463	200.562	0.099	198.0	201.0		0.096		0.00312					0.00535				
200.562	200.663	0.101	198.0	201.0		0.103		0.00612					0.00476				
200.663	200.764	0.101	198.0	201.0		0.094							0.00644				
200.764	200.865	0.101	198.0	201.0		0.0936		0.00366					0.00663				561
200.865	200.955	0.09	198.0	201.0		0.156		0.00533					0.00925				550

Appendix 4 - Drillhole 220221

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	chlorite index	copyrite in	halerite ind	NIR peak w
	geo from	geo to													
0.0649	0.0	2.6		0.101			0.0112								521
0.164	0.0	2.6		0.133			0.0217								
0.264	0.0	2.6		0.166			0.0281								511
0.363	0.0	2.6		0.0899											
0.463	0.0	2.6		0.154			0.0317	1	2.615						
0.563	0.0	2.6		0.136			0.0428	1	2.523						538
0.665	0.0	2.6		0.114			0.0234								
0.764	0.0	2.6		0.0873					2.26						
0.863	0.0	2.6		0.116											519
0.963	0.0	2.6		0.112											514
1.062	0.0	2.6		0.115											
1.165	0.0	2.6		0.147			0.033								538
1.265	0.0	2.6		0.166		0.00464	0.0334								
1.358	0.0	2.6		0.101											
1.462	0.0	2.6		0.148			0.0151								
1.562	0.0	2.6		0.142			0.0218								
1.665	0.0	2.6		0.146			0.0202								
1.764	0.0	2.6		0.124			0.0203		2.731						
1.864	0.0	2.6		0.126			0.0282	1	2.836						547
1.963	0.0	2.6		0.14	0.028		0.0131						1		603
2.049	0.0	2.6		0.128	0.0265		0.0175								543
2.164	0.0	2.6		0.11			0.0145								
2.264	0.0	2.6		0.0798	0.0225										
2.363	0.0	2.6		0.0865	0.0214										
2.454	0.0	2.6		0.0888			0.0386		2.36						533
2.562	0.0	2.6		0.128	0.0222		0.0196		2.162						
2.662	2.6	5.6		0.215			0.036	0.978	2.497	0.0751					
2.763	2.6	5.6		0.176	0.0235		0.112	0.947	3.046						559
2.863	2.6	5.6		0.257			0.174	1	3.22						551
2.964	2.6	5.6		0.211			0.0823	0.878	2.88						546
3.065	2.6	5.6		0.188			0.0482	0.927	2.652						557
3.163	2.6	5.6		0.259			0.175	1	3.246						
3.261	2.6	5.6		0.153			0.03								
3.362	2.6	5.6		0.21			0.0692	1	2.963						560
3.462	2.6	5.6		0.2			0.0529	1	2.995						
3.563	2.6	5.6		0.21			0.0306	0.945	2.576			0.581			
3.664	2.6	5.6		0.203			0.0236	1	2.494						
3.762	2.6	5.6		0.203			0.0179								
3.869	2.6	5.6		0.208			0.0303	0.872	2.612						
3.963	2.6	5.6		0.196			0.0363								
4.061	2.6	5.6		0.193	0.026	0.00610	0.033	1	2.646						
4.166	2.6	5.6		0.214			0.0373								542
4.263	2.6	5.6		0.206			0.0289								
4.364	2.6	5.6		0.205	0.0343		0.0249								
4.465	2.6	5.6		0.195	0.0266		0.0268								
4.567	2.6	5.6		0.175			0.0174	1							520
4.666	2.6	5.6		0.188			0.0286	1							559
4.764	2.6	5.6		0.196			0.0181								643
4.862	2.6	5.6		0.201			0.0253								522
4.963	2.6	5.6		0.176			0.0197								525
5.064	2.6	5.6		0.19	0.0202		0.0128	0.808							531
5.143	2.6	5.6		0.165			0.0122								520
5.263	2.6	5.6		0.184			0.0085	1							
5.363	2.6	5.6		0.169	0.0232		0.0079								
5.462	2.6	5.6		0.187	0.0291		0.0218	1							
5.564	2.6	5.6		0.19			0.0208	1							518
5.67	5.6	7.2		0.184											
5.757	5.6	7.2		0.173			0.0019								547
5.867	5.6	7.2		0.196			0.0402								
5.965	5.6	7.2		0.178			0.042		2.662						
6.063	5.6	7.2		0.186			0.024								514
6.162	5.6	7.2		0.173			0.0194								
6.262	5.6	7.2		0.178			0.0221								546
6.358	5.6	7.2		0.166			0.0183								
6.471	5.6	7.2		0.164	0.0219	0.0059	0.0073								533
6.562	5.6	7.2		0.171	0.0202		0.0177								534
6.664	5.6	7.2		0.198			0.029	1							
6.763	5.6	7.2		0.197			0.025	1							
6.863	5.6	7.2		0.176			0.0234								
6.962	5.6	7.2		0.171			0.0196								
7.06	5.6	7.2		0.15	0.0289		0.0028								529
7.163	5.6	7.2		0.146	0.0234		0.0101								
7.263	7.2	10.2		0.139			0.0141								
7.361	7.2	10.2		0.148	0.0221		0.0122								
7.463	7.2	10.2		0.148			0.0054								511
7.564	7.2	10.2		0.159			0.0048								
7.665	7.2	10.2		0.162			0.0146								590
7.763	7.2	10.2		0.155			0.0126								
7.865	7.2	10.2		0.159			0.0185								522
7.963	7.2	10.2		0.166			0.0249	1							
8.062	7.2	10.2		0.166			0.0196								
8.158	7.2	10.2		0.172			0.0176								560
8.266	7.2	10.2		0.163	0.0404		0.016								
8.362	7.2	10.2		0.182	0.0408		0.0033								
8.464	7.2	10.2		0.179	0.0331		0.0029								
8.565	7.2	10.2		0.193	0.0227		0.002								
8.664	7.2	10.2		0.175	0.0305		0.0027								
8.771	7.2	10.2		0.156	0.0302	0.01725	0.0037								546
8.863	7.2	10.2		0.195	0.0242		0.0195								528
8.964	7.2	10.2		0.203	0.0503		0.0224								
9.062	7.2	10.2		0.218	0.0443										
9.164	7.2	10.2		0.201			0.019		2.052						742
9.265	7.2	10.2		0.176	0.0439		0.0179								
9.363	7.2	10.2		0.147	0.0238		0.0259								559
9.461	7.2	10.2		0.144	0.0286		0.0152								537
9.563	7.2	10.2		0.156	0.0503		0.0073								515
9.664	7.2	10.2		0.141			0.0061								
9.767	7.2	10.2		0.159			0.0076								
9.861	7.2	10.2		0.159			0.0154								
9.925	7.2	10.2		0.153			0.0173								
10.07	7.2	10.2		0.155	0.0324		0.0123								
10.166	7.2	10.2		0.169			0.0152								
10.264	10.2	13.1		0.165	0.0201		0.0173								
10.363	10.2	13.1		0.16			0.0183								
10.46	10.2	13.1		0.181			0.0162								

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
10.56	10.2	13.1		0.158			0.0093								
10.667	10.2	13.1		0.164			0.0014								
10.763	10.2	13.1		0.149			0.0015								
10.861	10.2	13.1		0.146			0.0105								
10.963	10.2	13.1		0.174			0.0256	1							
11.065	10.2	13.1		0.144			0.0067								
11.161	10.2	13.1		0.148			0.0029								
11.264	10.2	13.1		0.165			0.0173								
11.357	10.2	13.1		0.144			0.0216								
11.467	10.2	13.1		0.15			0.0235								
11.563	10.2	13.1		0.16			0.024								532
11.662	10.2	13.1		0.101		0.00069	0.0194								
11.763	10.2	13.1		0.113			0.0171								513
11.864	10.2	13.1		0.143			0.019								
11.974	10.2	13.1		0.148			0.0087								
12.062	10.2	13.1		0.144			0.009								
12.163	10.2	13.1		0.157			0.0164								
12.265	10.2	13.1		0.15			0.0135								
12.364	10.2	13.1		0.151			0.0166								520
12.46	10.2	13.1		0.17			0.011								
12.566	10.2	13.1		0.142			0.0144	1							
12.664	10.2	13.1		0.164			0.017								
12.763	10.2	13.1		0.155			0.0199								
12.862	10.2	13.1		0.138			0.0147								
12.959	10.2	13.1		0.132			0.0208								577
13.064	10.2	13.1		0.141			0.0246								
13.163	13.1	14.3		0.155			0.019								
13.264	13.1	14.3		0.157			0.0122								
13.363	13.1	14.3		0.155			0.0251								535
13.456	13.1	14.3		0.155			0.0204								
13.562	13.1	14.3		0.168	0.0212		0.0204								560
13.661	13.1	14.3		0.171		0.00347	0.0158								510
13.764	13.1	14.3		0.174			0.0201								
13.865	13.1	14.3		0.177			0.0239	1							
13.962	13.1	14.3		0.187			0.0214								525
14.062	13.1	14.3		0.159			0.0129								533
14.16	13.1	14.3		0.171			0.0118								519
14.265	13.1	14.3		0.18	0.0204		0.0175	1	2.626						519
14.363	14.3	16.6		0.173			0.0075								524
14.462	14.3	16.6		0.19			0.0151	1							
14.542	14.3	16.6		0.156			0.0136								560
14.663	14.3	16.6		0.188											520
14.763	14.3	16.6		0.168			0.0308								
14.863	14.3	16.6		0.167			0.0234								
14.964	14.3	16.6		0.178											519
15.067	14.3	16.6		0.176			0.0133								572
15.159	14.3	16.6		0.175			0.0127								
15.263	14.3	16.6		0.179			0.0145								
15.363	14.3	16.6		0.19			0.0359	0.78	2.619						
15.464	14.3	16.6		0.167		0.00305	0.0147								571
15.564	14.3	16.6		0.173	0.024		0.0182								
15.67	14.3	16.6		0.199			0.0261								
15.766	14.3	16.6		0.18			0.0415								523
15.863	14.3	16.6		0.188			0.0381	1							
15.963	14.3	16.6		0.189			0.0247								539
16.064	14.3	16.6		0.168			0.0141								
16.164	14.3	16.6		0.173			0.0191								
16.264	14.3	16.6		0.165			0.0089								546
16.363	14.3	16.6		0.155	0.02		0.0074								512
16.463	14.3	16.6		0.159	0.0261		0.0039								
16.564	14.3	16.6		0.168			0.0058								
16.664	16.6	18.8		0.199			0.0107								
16.763	16.6	18.8		0.185			0.0093								
16.862	16.6	18.8		0.148			0.0053								515
16.966	16.6	18.8		0.172	0.0204		0.0135								535
17.062	16.6	18.8		0.156			0.0307	0.925							554
17.162	16.6	18.8		0.142			0.0057								
17.264	16.6	18.8		0.153			0.0069								
17.363	16.6	18.8		0.158			0.0178								
17.454	16.6	18.8		0.166			0.0194								
17.564	16.6	18.8		0.17			0.0177		2.657						
17.662	16.6	18.8		0.167		0.00576	0.0219	1							
17.762	16.6	18.8		0.143			0.0131								
17.855	16.6	18.8		0.159			0.0167	1							575
17.966	16.6	18.8		0.195			0.0307	1	2.663						
18.054	16.6	18.8		0.206			0.0384	0.965	2.8	0.0525					634
18.176	16.6	18.8		0.178			0.0259	1	2.984						571
18.263	16.6	18.8		0.332			0.136	0.977	2.935	0.072					563
18.362	16.6	18.8		0.175	0.0273		0.0286	0.911	2.675						554
18.464	16.6	18.8		0.167	0.0289		0.0137								
18.563	16.6	18.8		0.17			0.0262								513
18.665	16.6	18.8		0.178	0.0502		0.0294	0.928	2.644						
18.767	16.6	18.8		0.234			0.0378	0.879	2.613	0.0814					565
18.863	18.8	21.7		0.463			0.0381			0.137					
18.962	18.8	21.7		0.3			0.0451	1	2.496	0.111					
19.064	18.8	21.7		0.175			0.0182	1							
19.163	18.8	21.7		0.227			0.0574	1	2.972						
19.262	18.8	21.7		0.186			0.0794	1	3.025						
19.343	18.8	21.7		0.292			0.279	0.908	4.272						617
19.464	18.8	21.7		0.272			0.199	1	3.547						562
19.565	18.8	21.7		0.179			0.0523	0.832	2.714						
19.664	18.8	21.7		0.17			0.0167	1	2.631						
19.762	18.8	21.7		0.176			0.0215								
19.864	18.8	21.7		0.172			0.0126								
19.963	18.8	21.7		0.266			0.0947	0.776	2.766						
20.076	18.8	21.7		0.51			0.0477	0.93	2.728	0.143					560
20.161	18.8	21.7		0.531			0.0171			0.163					
20.26	18.8	21.7		0.547			0.0141			0.18					
20.366	18.8	21.7		0.54			0.0123			0.168					667
20.464	18.8	21.7		0.491			0.0183			0.181					
20.561	18.8	21.7		0.331			0.0849	0.947	2.674	0.0939					
20.651	18.8	21.7		0.353			0.0309	1		0.13					
20.764	18.8	21.7		0.427			0.0474	1	2.746	0.164					
20.859	18.8	21.7		0.288			0.054	1	2.641	0.0504					563
20.961	18.8	21.7		0.307			0.16	0.841	3.182						557
21.063	18.8	21.7		0.489			0.0545	0.943	2.523	0.162					631
21.165	18.8	21.7		0.347			0.104	0.916	3.06	0.126					565
21.254	18.8	21.7		0.463			0.0267			0.161					

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	hlorite index	copyrite ind	halerite ind	NIR peak w
	geo from	geo to													
21.37	18.8	21.7		0.252			0.0636	0.902	2.961	0.105					569
21.462	18.8	21.7		0.397			0.112	0.956	2.711	0.109					613
21.564	18.8	21.7		0.523			0.0591	0.838	2.486	0.156					
21.663	18.8	21.7		0.502			0.144	1	2.949	0.142					581
21.762	21.7	23.0		0.432			0.118	0.927	2.8	0.114					617
21.863	21.7	23.0		0.354			0.0859	0.968	2.691	0.138					522
21.958	21.7	23.0		0.4			0.12	0.936	2.947	0.147					569
22.061	21.7	23.0		0.514			0.0088			0.169					675
22.173	21.7	23.0		0.528			0.0889	1	2.376	0.155					724
22.264	21.7	23.0		0.354			0.0552	1	2.727	0.131					
22.363	21.7	23.0		0.457			0.0306	1	2.486	0.155					
22.464	21.7	23.0		0.442			0.0729	1	2.528	0.124					565
22.565	21.7	23.0		0.316			0.049	0.826	2.807	0.148					514
22.666	21.7	23.0		0.379			0.0581	1	2.635	0.116					588
22.763	21.7	23.0		0.439			0.0462	1	2.421	0.158					753
22.861	21.7	23.0		0.424		0.00217	0.102	1	2.56	0.136					663
22.966	21.7	23.0		0.29			0.125	0.965	2.824						
23.064	21.7	23.0		0.145											
23.157	21.7	23.0		0.146			0.0108								
23.273	21.7	23.0		0.159			0.0166								525
23.362	21.7	23.0		0.15			0.0116								
23.464	21.7	23.0		0.151			0.0198								
23.565	21.7	23.0		0.152	0.0262		0.0216								
23.659	21.7	23.0		0.154			0.0166								
23.764	21.7	23.0		0.139	0.0237		0.0176								
23.863	21.7	23.0		0.158			0.0245								
23.967	21.7	23.0		0.168			0.0283	0.935							
24.06	23.0	26.0		0.181			0.0244								
24.262	23.0	26.0		0.161			0.0415	1	2.836						
24.363	23.0	26.0		0.346			0.116	0.896	2.917	0.106					556
24.464	23.0	26.0		0.3			0.16	1	3.227	0.0605					556
24.565	23.0	26.0		0.278			0.0731	0.959	2.732	0.0569					515
24.663	23.0	26.0		0.237			0.143	0.895	3.538						555
24.754	23.0	26.0		0.19			0.0751	1	2.98						
24.864	23.0	26.0		0.149			0.0189								
24.962	23.0	26.0		0.141			0.0227								
25.063	23.0	26.0		0.139		0.00135	0.0158								553
25.17	23.0	26.0		0.15			0.0391	1	2.608						598
25.265	23.0	26.0		0.141			0.0133								535
25.363	23.0	26.0		0.144			0.021								512
25.465	23.0	26.0		0.136			0.0134								532
25.563	23.0	26.0		0.121			0.0214								567
25.661	23.0	26.0		0.157	0.0256		0.0103								538
25.762	23.0	26.0		0.149			0.0135		2.465						552
25.863	23.0	26.0		0.117											545
25.973	23.0	26.0		0.143			0.0375	0.688	2.524						
26.064	26.0	29.0		0.194	0.0223										
26.163	26.0	29.0		0.182	0.0228		0.0344		2.43						530
26.262	26.0	29.0		0.138	0.0204		0.0231								
26.364	26.0	29.0		0.122			0.0071								
26.463	26.0	29.0		0.144			0.0099								522
26.576	26.0	29.0		0.139			0.0167								
26.663	26.0	29.0		0.143			0.0198								538
26.765	26.0	29.0		0.143			0.02								
26.864	26.0	29.0		0.138			0.0236								530
26.959	26.0	29.0		0.143			0.0203								529
27.063	26.0	29.0		0.141			0.019								528
27.161	26.0	29.0		0.147			0.0095								526
27.263	26.0	29.0		0.151			0.0115								525
27.365	26.0	29.0		0.142			0.0075								518
27.464	26.0	29.0		0.126			0.0149								
27.563	26.0	29.0		0.119		0.00358	0.0128								518
27.66	26.0	29.0		0.138			0.0177								557
27.763	26.0	29.0		0.115											572
27.862	26.0	29.0		0.126			0.0133								
27.964	26.0	29.0		0.113											
28.063	26.0	29.0		0.14			0.0095								
28.159	26.0	29.0		0.13			0.0051								610
28.264	26.0	29.0		0.112			0.0121								590
28.365	26.0	29.0		0.111	0.0212		0.0124								
28.464	26.0	29.0		0.0996											
28.563	26.0	29.0		0.154			0.0184								
28.663	26.0	29.0		0.124			0.0304								
28.742	26.0	29.0		0.136			0.0336								
28.911	26.0	29.0		0.151											
28.964	26.0	29.0		0.13	0.0207		0.0045								
29.063	29.0	31.6		0.136			0.0045								
29.165	29.0	31.6		0.139	0.0213		0.0081								543
29.264	29.0	31.6		0.147			0.0161								514
29.363	29.0	31.6		0.12	0.021										
29.464	29.0	31.6		0.128	0.0222		0.0131								510
29.565	29.0	31.6		0.122			0.0098								540
29.664	29.0	31.6		0.131	0.0213		0.0091								518
29.763	29.0	31.6		0.144	0.0243		0.006								
29.863	29.0	31.6		0.14	0.022		0.0073								817
29.964	29.0	31.6		0.113			0.0067								534
30.064	29.0	31.6		0.13											
30.163	29.0	31.6		0.125			0.0069								516
30.265	29.0	31.6		0.131			0.0133								
30.364	29.0	31.6		0.128		0.00586	0.012								
30.462	29.0	31.6		0.129			0.003								568
30.563	29.0	31.6		0.13			0.0083								
30.665	29.0	31.6		0.123			0.015								512
30.764	29.0	31.6		0.118			0.0114								538
30.855	29.0	31.6		0.092											
30.964	29.0	31.6		0.11			0.0556	0.833	2.887						547
31.08	29.0	31.6		0.11			0.0018								521
31.164	29.0	31.6		0.119			0.0084								
31.263	29.0	31.6		0.101											
31.364	29.0	31.6		0.127			0.0074								
31.463	29.0	31.6		0.134			0.0044								
31.562	29.0	31.6		0.126	0.0202		0.019								
31.662	31.6	33.6		0.142	0.0213		0.0273	1	2.628						530
31.764	31.6	33.6		0.159			0.0298								574
31.865	31.6	33.6		0.178			0.0312		2.175						627
31.964	31.6	33.6		0.138			0.045		2.083						715
32.063	31.6	33.6		0.124	0.023		0.0296								528
32.162	31.6	33.6		0.144			0.0248								525

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	hlorite index	copyrite ind	halerite ind	NIR peak w
	geo from	geo to													
32.264	31.6	33.6		0.115	0.022		0.0011								760
32.363	31.6	33.6		0.118			0.0019								516
32.463	31.6	33.6		0.123			0.0211								
32.563	31.6	33.6		0.15	0.0224	0.00665	0.0147								512
32.665	31.6	33.6		0.132			0.0168								543
32.763	31.6	33.6		0.117			0.0131								559
32.864	31.6	33.6		0.114											524
32.978	31.6	33.6		0.132											533
33.069	31.6	33.6		0.121											561
33.163	31.6	33.6		0.125			0.0054								607
33.261	31.6	33.6		0.132	0.0221		0.0094								585
33.341	31.6	33.6		0.141			0.0096								526
33.464	31.6	33.6		0.142			0.0067								
33.564	31.6	33.6		0.154	0.0222		0.0095								
33.664	33.6	36.0		0.16			0.0126								
33.764	33.6	36.0		0.157	0.0222		0.0092								554
33.865	33.6	36.0		0.172			0.0073								
33.965	33.6	36.0		0.146	0.0291		0.0072								552
34.064	33.6	36.0		0.177			0.0266								
34.164	33.6	36.0		0.185			0.021								
34.264	33.6	36.0		0.186			0.0165								
34.364	33.6	36.0		0.177			0.0173								
34.464	33.6	36.0		0.185			0.0167								
34.565	33.6	36.0		0.168			0.0156								
34.669	33.6	36.0		0.156	0.0237		0.0093								533
34.764	33.6	36.0		0.184		0.00313	0.0167								526
34.864	33.6	36.0		0.175			0.0082								
34.964	33.6	36.0		0.167			0.0143								
35.064	33.6	36.0		0.162			0.0108								510
35.165	33.6	36.0		0.162			0.0167								523
35.265	33.6	36.0		0.154			0.0053		2.094						640
35.364	33.6	36.0		0.148			0.0158								
35.464	33.6	36.0		0.143			0.0076								
35.564	33.6	36.0		0.144			0.004								516
35.655	33.6	36.0		0.149			0.0075								
35.764	33.6	36.0		0.159			0.0089								
35.865	33.6	36.0		0.15			0.0161								
35.954	33.6	36.0		0.164			0.0189								
36.066	36.0	39.0		0.179			0.0288		2.294						553
36.164	36.0	39.0		0.154			0.0179								
36.265	36.0	39.0		0.14			0.0233								
36.366	36.0	39.0		0.133			0.0224								
36.466	36.0	39.0		0.135			0.0084								
36.564	36.0	39.0		0.139			0.0113								
36.662	36.0	39.0		0.147			0.0103		2.201						
36.763	36.0	39.0		0.109	0.0228		0.0116								
36.864	36.0	39.0		0.14			0.015								571
36.965	36.0	39.0		0.17	0.0219		0.0308	1	2.504						541
37.067	36.0	39.0		0.148	0.0257		0.016								526
37.163	36.0	39.0		0.126			0.0168								
37.261	36.0	39.0		0.13			0.0111								517
37.362	36.0	39.0		0.13			0.0144								512
37.463	36.0	39.0		0.143			0.0139								
37.556	36.0	39.0		0.133		0.00696	0.0087								
37.667	36.0	39.0		0.126											
37.765	36.0	39.0		0.127			0.0075								
37.864	36.0	39.0		0.118	0.0241		0.0166								526
37.962	36.0	39.0		0.131			0.0123								568
38.063	36.0	39.0		0.14			0.0068								522
38.164	36.0	39.0		0.141			0.0115								518
38.243	36.0	39.0		0.114			0.013								518
38.364	36.0	39.0		0.119	0.0204		0.0183								539
38.465	36.0	39.0		0.111	0.0216		0.0153								
38.562	36.0	39.0		0.121			0.0231								
38.663	36.0	39.0		0.11	0.0233										
38.763	36.0	39.0		0.111	0.0268										
38.864	36.0	39.0		0.11											
38.957	36.0	39.0		0.104	0.0222										
39.067	39.0	41.4		0.112	0.0207										
39.164	39.0	41.4		0.123	0.0206										
39.264	39.0	41.4		0.0977	0.0201										
39.363	39.0	41.4		0.142			0.0038								517
39.463	39.0	41.4		0.14			0.01								
39.566	39.0	41.4		0.135			0.0322								538
39.665	39.0	41.4		0.103											
39.765	39.0	41.4		0.119			0.026								
39.864	39.0	41.4		0.175			0.0333								
39.964	39.0	41.4		0.196			0.0289								
40.064	39.0	41.4		0.145			0.0217								
40.163	39.0	41.4		0.115		0.00713									
40.262	39.0	41.4		0.121	0.021										
40.362	39.0	41.4		0.124	0.0219										513
40.462	39.0	41.4		0.156	0.0232										546
40.562	39.0	41.4		0.154			0.0169								
40.665	39.0	41.4		0.146	0.0213		0.0061								512
40.765	39.0	41.4		0.0996	0.0224										
40.864	39.0	41.4		0.101											
40.963	39.0	41.4		0.103											
41.063	39.0	41.4		0.115			0.0167								
41.163	39.0	41.4		0.133			0.0104								535
41.262	39.0	41.4		0.106			0.0112								
41.365	39.0	41.4		0.129			0.013								521
41.461	41.4	42.3		0.129			0.0127								563
41.562	41.4	42.3		0.131			0.0131								532
41.663	41.4	42.3		0.121			0.0143								553
41.765	41.4	42.3		0.141			0.013								555
41.864	41.4	42.3		0.131			0.011								556
41.947	41.4	42.3		0.129			0.0148								
42.065	41.4	42.3		0.126			0.0076								525
42.158	41.4	42.3		0.106											515
42.264	41.4	42.3		0.115			0.0054								
42.363	42.3	44.9		0.123			0.0071								
42.462	42.3	44.9		0.118			0.0075								
42.564	42.3	44.9		0.102			0.0109								
42.665	42.3	44.9		0.0875											
42.762	42.3	44.9		0.104											
42.863	42.3	44.9		0.127			0.0106								528
42.961	42.3	44.9		0.111			0.0136								

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
43.064	42.3	44.9		0.122			0.0153								
43.129	42.3	44.9		0.147			0.0193								514
43.261	42.3	44.9		0.125			0.0156								
43.363	42.3	44.9		0.122			0.0055								
43.464	42.3	44.9		0.13			0.0037								541
43.562	42.3	44.9		0.108			0.0033								
43.663	42.3	44.9		0.115			0.0035								
43.765	42.3	44.9		0.127											552
43.862	42.3	44.9		0.123			0.0054								525
43.963	42.3	44.9		0.141			0.0176								
44.064	42.3	44.9		0.131			0.0093								
44.162	42.3	44.9		0.134			0.0101								
44.264	42.3	44.9		0.134			0.0132								
44.365	42.3	44.9		0.135			0.0205								520
44.48	42.3	44.9		0.136			0.0044								537
44.563	42.3	44.9		0.133			0.0071								
44.664	42.3	44.9		0.136			0.0073								539
44.763	42.3	44.9		0.12			0.0149								
44.864	42.3	44.9		0.135			0.0086								528
44.959	44.9	46.6		0.123			0.0037								513
45.063	44.9	46.6		0.202			0.0944	1	2.938						548
45.163	44.9	46.6		0.164			0.0177								527
45.265	44.9	46.6		0.126			0.0129								515
45.363	44.9	46.6		0.124	0.0325		0.0125								541
45.464	44.9	46.6		0.105	0.0258		0.0049								534
45.565	44.9	46.6		0.119	0.0277		0.0116								514
45.661	44.9	46.6		0.0973	0.0237										
45.763	44.9	46.6		0.109		0.00645	0.022								533
45.865	44.9	46.6		0.109											545
45.963	44.9	46.6		0.122											
46.064	44.9	46.6		0.124			0.0164								511
46.166	44.9	46.6		0.159			0.0234								
46.263	44.9	46.6		0.117			0.0119								575
46.364	44.9	46.6		0.128			0.0143								
46.467	44.9	46.6		0.109			0.0105								
46.561	44.9	46.6		0.131											
46.664	46.6	49.3		0.145			0.0157								
46.766	46.6	49.3		0.145			0.0108		2.373						528
46.861	46.6	49.3		0.146			0.0107		2.366						543
46.967	46.6	49.3		0.118	0.0251		0.0075								
47.065	46.6	49.3		0.122			0.0051								
47.163	46.6	49.3		0.123											
47.264	46.6	49.3		0.115											
47.365	46.6	49.3		0.126											
47.463	46.6	49.3		0.135											522
47.563	46.6	49.3		0.123			0.0127								517
47.664	46.6	49.3		0.125											
47.762	46.6	49.3		0.146			0.0184								
47.864	46.6	49.3		0.141			0.0128								516
47.971	46.6	49.3		0.117		0.00168	0.0192								
48.063	46.6	49.3		0.117											
48.144	46.6	49.3		0.122	0.0202										539
48.263	46.6	49.3		0.129			0.0166								529
48.363	46.6	49.3		0.238			0.106	0.911	2.924						536
48.463	46.6	49.3		0.203			0.0476	0.968	2.768						516
48.563	46.6	49.3		0.169			0.0313	0.864	2.572						539
48.665	46.6	49.3		0.124			0.0137								515
48.76	46.6	49.3		0.13			0.0065								
48.871	46.6	49.3		0.12			0.0134								
48.962	46.6	49.3		0.136			0.0186								
49.062	46.6	49.3		0.141			0.0127								
49.162	46.6	49.3		0.144			0.0118								536
49.262	46.6	49.3		0.139			0.0135								
49.362	49.3	52.3		0.114											554
49.463	49.3	52.3		0.127			0.0081								
49.561	49.3	52.3		0.127	0.023		0.0139								
49.661	49.3	52.3		0.155	0.0208		0.008								
49.762	49.3	52.3		0.146			0.0191								
49.862	49.3	52.3		0.142			0.0229								
49.962	49.3	52.3		0.121	0.0231		0.0321								
50.062	49.3	52.3		0.114											
50.162	49.3	52.3		0.105											
50.262	49.3	52.3		0.125			0.009								545
50.362	49.3	52.3		0.109			0.014								
50.462	49.3	52.3		0.121			0.017								
50.563	49.3	52.3		0.121			0.0095								
50.664	49.3	52.3		0.118			0.0103								522
50.762	49.3	52.3		0.108											
50.86	49.3	52.3		0.105	0.0284	0.00490			2.338						
50.963	49.3	52.3		0.139			0.01								
51.065	49.3	52.3		0.131			0.0491	0.819	2.537	0.078					
51.163	49.3	52.3		0.18			0.0615	1	2.417	0.0638					540
51.262	49.3	52.3		0.11	0.0224		0.0104								
51.362	49.3	52.3		0.116											518
51.463	49.3	52.3		0.0866											
51.563	49.3	52.3		0.114	0.0292										
51.663	49.3	52.3		0.111			0.0114								
51.76	49.3	52.3		0.13			0.0143								
51.874	49.3	52.3		0.105											
51.963	49.3	52.3		0.112			0.0086								
52.063	49.3	52.3		0.15			0.0094								
52.163	49.3	52.3		0.184			0.0097								
52.264	49.3	52.3		0.157			0.0086								
52.363	52.3	55.2		0.126			0.0047								575
52.464	52.3	55.2		0.115	0.0278		0.0095								
52.563	52.3	55.2		0.129	0.0205		0.0122								
52.664	52.3	55.2		0.114			0.0087								
52.765	52.3	55.2		0.106											
52.845	52.3	55.2		0.124											
52.964	52.3	55.2		0.121			0.0149								
53.065	52.3	55.2		0.124			0.0061								512
53.164	52.3	55.2		0.116	0.0247		0.0075								515
53.262	52.3	55.2		0.135			0.0108								512
53.364	52.3	55.2		0.121	0.0234		0.0074								510
53.456	52.3	55.2		0.117			0.0076								
53.56	52.3	55.2		0.133											530
53.662	52.3	55.2		0.135			0.0105								
53.763	52.3	55.2		0.118		0.00490	0.0113								

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
53.865	52.3	55.2		0.126											
53.965	52.3	55.2		0.124	0.0246										
54.062	52.3	55.2		0.119											
54.161	52.3	55.2		0.123	0.0212		0.009								
54.264	52.3	55.2		0.108											
54.363	52.3	55.2		0.122			0.0141								
54.461	52.3	55.2		0.125			0.0115								
54.563	52.3	55.2		0.172			0.0836	0.96	2.872						
54.665	52.3	55.2		0.169			0.0516	0.814	2.818						
54.763	52.3	55.2		0.107			0.0032								
54.861	52.3	55.2		0.107			0.0108								
54.962	52.3	55.2		0.0983											
55.064	52.3	55.2		0.104			0.0027								
55.166	52.3	55.2		0.113											
55.264	55.2	58.0		0.164			0.0129								
55.364	55.2	58.0		0.112											568
55.466	55.2	58.0		0.109	0.0259										544
55.564	55.2	58.0		0.159			0.0737	0.933	2.838						556
55.664	55.2	58.0		0.135			0.0171								516
55.765	55.2	58.0		0.156			0.0141								
55.865	55.2	58.0		0.15			0.0139								522
55.963	55.2	58.0		0.121			0.0152								511
56.059	55.2	58.0		0.109			0.0188								
56.162	55.2	58.0		0.123			0.0202								
56.263	55.2	58.0		0.123			0.0212								
56.363	55.2	58.0		0.114			0.0175								
56.463	55.2	58.0		0.116			0.0275								535
56.557	55.2	58.0		0.12			0.0213								544
56.663	55.2	58.0		0.112		0.00093	0.0115								517
56.765	55.2	58.0		0.117			0.0114								
56.864	55.2	58.0		0.134			0.0159								531
56.974	55.2	58.0		0.154			0.0172								553
57.065	55.2	58.0		0.168			0.0444	0.929	2.814						551
57.169	55.2	58.0		0.162			0.0637	1	3.072						556
57.264	55.2	58.0		0.166			0.0293	1	2.639						544
57.365	55.2	58.0		0.14			0.0141								535
57.462	55.2	58.0		0.148			0.0184								562
57.562	55.2	58.0		0.116			0.0127		2.099						753
57.663	55.2	58.0		0.123			0.0136		2.128						538
57.749	55.2	58.0		0.106											563
57.864	55.2	58.0		0.166			0.0089								572
57.963	55.2	58.0		0.129			0.0236								
58.064	58.0	60.0		0.117			0.0219		2.442						518
58.161	58.0	60.0		0.139			0.0093								555
58.264	58.0	60.0		0.124											518
58.363	58.0	60.0		0.145			0.0179								537
58.463	58.0	60.0		0.129			0.0133								
58.563	58.0	60.0		0.103											
58.663	58.0	60.0		0.133			0.0252								551
58.763	58.0	60.0		0.111											
58.863	58.0	60.0		0.136			0.032	0.933	2.581						568
58.95	58.0	60.0		0.111			0.0632	1							
59.062	58.0	60.0		0.11		0.00251	0.0207								
59.162	58.0	60.0		0.0966			0.0106								
59.262	58.0	60.0		0.122			0.0218								552
59.362	58.0	60.0		0.103											
59.462	58.0	60.0		0.0975											
59.561	58.0	60.0		0.153			0.134	0.881	2.805						571
59.661	58.0	60.0		0.117	0.0219		0.0095								
59.761	58.0	60.0		0.111	0.0282		0.0132		2.649						554
59.861	58.0	60.0		0.0944					2.397						
59.967	58.0	60.0		0.126			0.0654	1	2.708						
60.059	60.0	63.0		0.158	0.0225		0.0234	1	2.489						578
60.164	60.0	63.0		0.127			0.0141								648
60.263	60.0	63.0		0.122											
60.362	60.0	63.0		0.1					2.232						
60.463	60.0	63.0		0.129											
60.564	60.0	63.0		0.081					2.194						
60.665	60.0	63.0		0.088					2.251						
60.764	60.0	63.0		0.0784	0.0225										
60.863	60.0	63.0		0.14			0.013								
60.964	60.0	63.0		0.0764											
61.066	60.0	63.0		0.107											
61.164	60.0	63.0		0.122	0.02		0.0039								
61.263	60.0	63.0		0.12	0.0241										
61.364	60.0	63.0		0.0964	0.0233			1	2.686						
61.465	60.0	63.0		0.108											
61.563	60.0	63.0		0.122		0.00530	0.0227	1	3.118						550
61.662	60.0	63.0		0.0774				1	2.92						
61.763	60.0	63.0		0.113			0.107	1	3.029						546
61.865	60.0	63.0		0.166			0.09	1	2.843						622
61.95	60.0	63.0		0.105			0.014								519
62.064	60.0	63.0		0.133			0.0091								523
62.165	60.0	63.0		0.106					2.29						512
62.265	60.0	63.0		0.119			0.0017								530
62.363	60.0	63.0		0.134			0.004								
62.463	60.0	63.0		0.085											
62.564	60.0	63.0		0.138	0.0251		0.0141		2.238						
62.662	60.0	63.0		0.0945			0.0178		2.515						
62.762	60.0	63.0		0.107	0.0216		0.0117		2.162						
62.863	60.0	63.0		0.0889											
62.969	60.0	63.0		0.131			0.0946	1							568
63.063	63.0	65.6		0.0984			0.0177								
63.164	63.0	65.6		0.0894					2.193						
63.264	63.0	65.6		0.108					2.857						
63.365	63.0	65.6		0.0958											
63.464	63.0	65.6		0.113			0.0124								
63.565	63.0	65.6		0.124			0.0144								
63.663	63.0	65.6		0.149	0.027		0.0177								
63.762	63.0	65.6		0.121			0.0154		2.156						827
63.862	63.0	65.6		0.111			0.0216		3.108						568
63.962	63.0	65.6		0.11											
64.062	63.0	65.6		0.113			0.0198								
64.163	63.0	65.6		0.109			0.0053								
64.263	63.0	65.6		0.111			0.0201								529
64.363	63.0	65.6		0.126		0.00104	0.0177								
64.464	63.0	65.6		0.12			0.0046								
64.564	63.0	65.6		0.134			0.0125								

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
64.665	63.0	65.6		0.141			0.0159								521
64.766	63.0	65.6		0.119			0.0175								
64.865	63.0	65.6		0.112			0.0201								
64.961	63.0	65.6		0.124			0.0133								536
65.065	63.0	65.6		0.112			0.0163								
65.166	63.0	65.6		0.0898											
65.273	63.0	65.6		0.141			0.0083								558
65.368	63.0	65.6		0.101			0.0075								
65.464	63.0	65.6		0.0904											
65.567	63.0	65.6		0.127											561
65.663	65.6	67.5		0.142											527
65.759	65.6	67.5		0.116			0.0017								
65.86	65.6	67.5		0.153			0.0074								515
65.961	65.6	67.5		0.118			0.0087								514
66.062	65.6	67.5		0.119											523
66.162	65.6	67.5		0.117	0.0209		0.0007								
66.263	65.6	67.5		0.119			0.002								512
66.364	65.6	67.5		0.0881											
66.465	65.6	67.5		0.119	0.022										
66.609	65.6	67.5				0.00629									
66.662	65.6	67.5		0.108	0.0266										572
66.762	65.6	67.5		0.107											537
66.862	65.6	67.5		0.105											
66.962	65.6	67.5		0.119											
67.062	65.6	67.5		0.125	0.0254										527
67.162	65.6	67.5		0.112	0.0246		0.0288								
67.261	65.6	67.5		0.106											
67.362	65.6	67.5		0.107			0.0172								
67.462	65.6	67.5		0.141			0.0218								
67.562	67.5	69.9		0.146			0.0227								519
67.659	67.5	69.9		0.157			0.014								545
67.75	67.5	69.9		0.135			0.0141								548
67.861	67.5	69.9		0.13	0.024		0.024								536
67.961	67.5	69.9		0.11	0.0213		0.0293								529
68.061	67.5	69.9		0.111	0.022		0.0147								596
68.162	67.5	69.9		0.115	0.0248										562
68.262	67.5	69.9		0.104	0.0266		0.0156								535
68.361	67.5	69.9		0.112	0.0226		0.0159		2.326						
68.461	67.5	69.9		0.124			0.0155								
68.561	67.5	69.9		0.107											
68.661	67.5	69.9		0.102											
68.761	67.5	69.9		0.096		0.00589			2.283						
68.855	67.5	69.9		0.108											
68.981	67.5	69.9		0.113			0.0204								
69.069	67.5	69.9		0.0979											
69.163	67.5	69.9		0.1											
69.261	67.5	69.9		0.1											
69.361	67.5	69.9		0.0992											523
69.461	67.5	69.9		0.0998											
69.563	67.5	69.9		0.102											
69.666	67.5	69.9		0.0913											
69.765	67.5	69.9		0.101											
69.866	67.5	69.9		0.113											
69.966	69.9	72.8		0.141	0.0213		0.0114								
70.066	69.9	72.8		0.107											
70.162	69.9	72.8		0.0991	0.0206										
70.265	69.9	72.8		0.0958											
70.365	69.9	72.8		0.0907											
70.466	69.9	72.8		0.0935											
70.566	69.9	72.8		0.0828											
70.666	69.9	72.8		0.104											
70.766	69.9	72.8		0.109			0.0117								
70.865	69.9	72.8		0.109											
70.965	69.9	72.8		0.11			0.0115								
71.065	69.9	72.8		0.113			0.0047								
71.165	69.9	72.8		0.0915											
71.265	69.9	72.8		0.103											
71.344	69.9	72.8		0.0967		0.00301									
71.462	69.9	72.8		0.102											
71.563	69.9	72.8		0.106											
71.664	69.9	72.8		0.106											
71.765	69.9	72.8		0.105											
71.863	69.9	72.8		0.104											
71.961	69.9	72.8		0.103											
72.062	69.9	72.8		0.112											
72.164	69.9	72.8		0.102											
72.263	69.9	72.8		0.0902											
72.364	69.9	72.8		0.0887	0.0236										
72.465	69.9	72.8		0.0843	0.0217										
72.56	69.9	72.8		0.0892											
72.663	69.9	72.8		0.0948											
72.761	69.9	72.8		0.107											
72.863	72.8	73.8		0.0998											
72.963	72.8	73.8		0.115	0.0231		0.0089								
73.064	72.8	73.8		0.0948											
73.165	72.8	73.8		0.0974											
73.265	72.8	73.8		0.105		0.00231									
73.366	72.8	73.8		0.0941											
73.464	72.8	73.8		0.108											
73.562	72.8	73.8		0.0957											
73.663	72.8	73.8		0.0989											
73.754	72.8	73.8		0.0923											
73.863	73.8	75.8		0.117			0.0097								556
73.965	73.8	75.8		0.101											598
74.063	73.8	75.8		0.0988											
74.161	73.8	75.8		0.108											
74.263	73.8	75.8		0.104											527
74.364	73.8	75.8		0.107			0.0048								
74.464	73.8	75.8		0.108											
74.565	73.8	75.8		0.101			0.0107								
74.663	73.8	75.8		0.166			0.0193			0.0836					
74.761	73.8	75.8		0.104											
74.859	73.8	75.8		0.109			0.0136								
74.955	73.8	75.8		0.0985											
75.067	73.8	75.8		0.111											
75.165	73.8	75.8		0.0989											
75.263	73.8	75.8		0.107			0.0018								
75.361	73.8	75.8		0.113											517

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
75.463	73.8	75.8		0.133			0.0069								
75.564	73.8	75.8		0.121			0.0078								
75.664	73.8	75.8		0.0979											
75.767	73.8	75.8		0.098											
75.865	75.8	78.0		0.112			0.0103								531
75.965	75.8	78.0		0.0923	0.0228										
76.045	75.8	78.0		0.0941	0.0233										
76.162	75.8	78.0		0.103			0.0135								
76.263	75.8	78.0		0.105											
76.363	75.8	78.0		0.0985											
76.464	75.8	78.0		0.0945											
76.565	75.8	78.0		0.102											
76.662	75.8	78.0		0.103			0.0074								518
76.762	75.8	78.0		0.101											
76.863	75.8	78.0				0.00847									
76.963	75.8	78.0		0.0908											
77.064	75.8	78.0		0.0991											
77.162	75.8	78.0		0.114											
77.263	75.8	78.0		0.0971											
77.363	75.8	78.0													
77.466	75.8	78.0		0.106	0.0203		0.007								
77.563	75.8	78.0		0.0944	0.0251										
77.664	75.8	78.0		0.104	0.0228		0.0124								
77.765	75.8	78.0		0.0941	0.0251										
77.863	75.8	78.0		0.0993	0.0248		0.0051								
77.96	75.8	78.0		0.133	0.0221		0.0082								
78.072	78.0	79.6		0.0952											
78.163	78.0	79.6													
78.262	78.0	79.6		0.0875											
78.364	78.0	79.6		0.104	0.023		0.0251								523
78.463	78.0	79.6		0.109	0.0263		0.0151								528
78.563	78.0	79.6		0.111			0.0143								557
78.665	78.0	79.6		0.114											
78.763	78.0	79.6		0.0962			0.0066								
78.862	78.0	79.6		0.113		0.00606									585
78.964	78.0	79.6		0.106											
79.063	78.0	79.6		0.113	0.0224										
79.162	78.0	79.6		0.105	0.0252										522
79.264	78.0	79.6		0.095											519
79.363	78.0	79.6		0.0988			0.0076								511
79.462	78.0	79.6		0.0988											
79.564	78.0	79.6		0.0797											
79.665	79.6	82.6		0.134	0.0229		0.0132								517
79.761	79.6	82.6		0.119	0.027		0.0105								522
79.862	79.6	82.6		0.0996											
79.963	79.6	82.6		0.106											
80.065	79.6	82.6		0.0988											
80.164	79.6	82.6		0.156			0.0538	1	2.835						
80.263	79.6	82.6		0.139			0.0196	1							513
80.368	79.6	82.6		0.115	0.0276										536
80.467	79.6	82.6		0.103	0.0247										
80.564	79.6	82.6		0.154	0.0238										
80.663	79.6	82.6		0.078	0.0292										
80.759	79.6	82.6		0.113	0.0453										542
80.852	79.6	82.6		0.105	0.0283										
81.009	79.6	82.6													
81.063	79.6	82.6		0.144			0.0067								525
81.164	79.6	82.6		0.142		0.00925	0.0049								510
81.264	79.6	82.6		0.118	0.0281										527
81.364	79.6	82.6		0.125			0.0165								
81.464	79.6	82.6		0.121			0.0114								
81.564	79.6	82.6		0.132			0.0097								525
81.662	79.6	82.6		0.106			0.0253								
81.762	79.6	82.6		0.127			0.0188								
81.862	79.6	82.6		0.131			0.0193								
81.962	79.6	82.6		0.142			0.023								513
82.062	79.6	82.6		0.147	0.0206		0.081	1	2.66	0.0755					561
82.162	79.6	82.6		0.168			0.024	1		0.0725					
82.266	79.6	82.6		0.141			0.0185								544
82.364	79.6	82.6		0.0943											
82.464	79.6	82.6		0.0993			0.0361	1							
82.564	79.6	82.6		0.11			0.0179	1							
82.665	82.6	84.4		0.112											
82.765	82.6	84.4		0.116			0.0194								
82.864	82.6	84.4		0.0995	0.0214										
82.965	82.6	84.4		0.102	0.023		0.0325								
83.065	82.6	84.4		0.112	0.023		0.0183								
83.165	82.6	84.4		0.117	0.0262		0.0089								
83.266	82.6	84.4		0.104			0.0087								
83.366	82.6	84.4		0.1											
83.468	82.6	84.4		0.11											
83.565	82.6	84.4		0.101		0.00647									
83.666	82.6	84.4		0.0986	0.0229										
83.766	82.6	84.4		0.1			0.0224								
83.866	82.6	84.4		0.116			0.0247								
83.964	82.6	84.4		0.0997											
84.062	82.6	84.4		0.118			0.0271								511
84.166	82.6	84.4													
84.266	82.6	84.4		0.0938											
84.364	82.6	84.4		0.107											
84.461	84.4	85.5		0.129			0.0553	1	2.531						560
84.561	84.4	85.5		0.163			0.0471								512
84.669	84.4	85.5		0.124			0.0147								523
84.764	84.4	85.5		0.113				0.676							
84.861	84.4	85.5		0.113			0.005								
84.961	84.4	85.5		0.112		0.004									
85.062	84.4	85.5		0.141											539
85.162	84.4	85.5		0.126											547
85.261	84.4	85.5		0.128			0.0031								539
85.323	84.4	85.5		0.0934											
85.475	84.4	85.5		0.125	0.044										544
85.564	85.5	87.0		0.137	0.0233		0.0068								572
85.643	85.5	87.0		0.127	0.0204		0.0124								532
85.764	85.5	87.0		0.135			0.0101								
85.865	85.5	87.0		0.156			0.018								520
85.962	85.5	87.0		0.115											
86.063	85.5	87.0		0.113											
86.163	85.5	87.0		0.133			0.0168								

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	chlorite index	copyrite in	halerite ind	NIR peak w
	geo from	geo to													
86.264	85.5	87.0	0-5%	0.122		0.00762	0.0209								
86.351	85.5	87.0		0.12			0.0087								
86.494	85.5	87.0		0.112			0.0108								
86.564	85.5	87.0		0.112	0.0237										
86.662	85.5	87.0		0.114	0.026										
86.762	85.5	87.0		0.133											
86.863	85.5	87.0		0.138	0.0209		0.0056								
86.968	85.5	87.0		0.116			0.0209								524
87.063	87.0	88.5		0.13			0.0104								542
87.163	87.0	88.5		0.12			0.0205								
87.264	87.0	88.5		0.111			0.0214								
87.364	87.0	88.5		0.116			0.013								511
87.465	87.0	88.5		0.0981											
87.565	87.0	88.5		0.107	0.0233		0.0186								
87.665	87.0	88.5		0.0935	0.0236										
87.762	87.0	88.5		0.11	0.0301	0.01174									
87.863	87.0	88.5		0.122	0.0709										535
87.963	87.0	88.5		0.104			0.0079								569
88.064	87.0	88.5		0.131	0.0282		0.0044								562
88.164	87.0	88.5		0.107											
88.264	87.0	88.5		0.117			0.0107								
88.364	87.0	88.5		0.109			0.0174								
88.462	87.0	88.5		0.119			0.0147								
88.562	88.5	90.4		0.116			0.0229								518
88.663	88.5	90.4		0.127											541
88.763	88.5	90.4		0.0983											518
88.863	88.5	90.4		0.136	0.0202		0.0123	0.796	2.85						522
88.964	88.5	90.4		0.135			0.016								539
89.065	88.5	90.4		0.15			0.0098								606
89.165	88.5	90.4		0.151			0.0148	1							547
89.263	88.5	90.4		0.17			0.0224	1	2.571						
89.364	88.5	90.4		0.164			0.017								
89.464	88.5	90.4		0.151		0.00574									
89.55	88.5	90.4		0.161			0.0116								516
89.706	88.5	90.4		0.178			0.0014								
89.762	88.5	90.4		0.145			0.0093								512
89.863	88.5	90.4		0.164	0.0211		0.0185	1							
89.964	88.5	90.4		0.17	0.0218		0.0044								546
90.064	88.5	90.4		0.148	0.0229		0.0077								526
90.165	88.5	90.4		0.144			0.0166								
90.263	88.5	90.4		0.116			0.0097								
90.362	88.5	90.4		0.0971	0.0231										
90.474	90.4	92.6		0.121			0.0118								
90.564	90.4	92.6		0.123			0.0152								534
90.665	90.4	92.6		0.115			0.0111								516
90.762	90.4	92.6		0.12			0.0133								
90.887	90.4	92.6		0.116			0.0102								542
90.964	90.4	92.6		0.12			0.006								540
91.063	90.4	92.6		0.113											557
91.164	90.4	92.6		0.129			0.0098								585
91.266	90.4	92.6		0.121			0.0079								521
91.353	90.4	92.6		0.129	0.0253		0.0035								529
91.475	90.4	92.6		0.133		0.00314	0.0219								523
91.543	90.4	92.6		0.108			0.0286								
91.664	90.4	92.6		0.162			0.0388	1	2.67						540
91.763	90.4	92.6		0.146			0.0243								513
91.862	90.4	92.6		0.146	0.0238		0.0242								577
91.96	90.4	92.6		0.13	0.02		0.0101								588
92.063	90.4	92.6		0.124											557
92.164	90.4	92.6		0.14			0.0202								
92.263	90.4	92.6		0.158			0.0168								519
92.362	90.4	92.6		0.159			0.0135								
92.459	90.4	92.6		0.154											
92.563	90.4	92.6		0.147			0.0227								546
92.664	92.6	94.2		0.144			0.0248								542
92.77	92.6	94.2		0.129			0.0258								
92.869	92.6	94.2		0.131			0.0261								
92.963	92.6	94.2		0.133			0.0215								
93.069	92.6	94.2		0.13			0.0161								
93.174	92.6	94.2		0.125			0.0113								
93.263	92.6	94.2		0.149			0.0185								
93.362	92.6	94.2		0.125			0.0189								
93.463	92.6	94.2		0.122		0.00154	0.0241								515
93.564	92.6	94.2		0.138			0.0135								533
93.664	92.6	94.2		0.106			0.0195								
93.764	92.6	94.2		0.14			0.0207								526
93.861	92.6	94.2		0.122			0.0173								685
93.964	92.6	94.2		0.139			0.0136								523
94.065	92.6	94.2		0.122			0.0099								591
94.17	92.6	94.2		0.116	0.0246		0.0064								
94.26	94.2	96.2		0.135			0.0087								549
94.362	94.2	96.2		0.112											542
94.463	94.2	96.2		0.104			0.0017								
94.564	94.2	96.2		0.139			0.0058								592
94.665	94.2	96.2		0.125			0.0039								555
94.765	94.2	96.2		0.13			0.0155								537
94.863	94.2	96.2		0.171			0.0212		2.306						608
94.961	94.2	96.2		0.162			0.0139		2.069						604
95.062	94.2	96.2		0.127			0.0145								
95.163	94.2	96.2		0.138	0.0212		0.0117								542
95.243	94.2	96.2		0.123	0.0228	0.00572	0.0156								
95.362	94.2	96.2		0.101											
95.463	94.2	96.2		0.119			0.0124								
95.564	94.2	96.2		0.105	0.0206										
95.664	94.2	96.2		0.141											523
95.765	94.2	96.2		0.176									1		569
95.863	94.2	96.2		0.145	0.0239										520
95.963	94.2	96.2		0.139	0.0258		0.016								558
96.095	94.2	96.2		0.137			0.0117								607
96.164	94.2	96.2		0.112			0.0138								550
96.265	96.2	97.4		0.109			0.0221								
96.363	96.2	97.4		0.118			0.0241								
96.464	96.2	97.4		0.109	0.0205		0.021								
96.564	96.2	97.4		0.128			0.0241								
96.663	96.2	97.4		0.112			0.0118								
96.764	96.2	97.4		0.111			0.021								
96.865	96.2	97.4		0.111		0.00171									
96.963	96.2	97.4		0.145			0.0159								526

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
97.062	96.2	97.4		0.14			0.0204								524
97.162	96.2	97.4		0.128											
97.263	96.2	97.4		0.148			0.0245								633
97.364	96.2	97.4		0.177			0.0354	1	2.716						563
97.465	97.4	99.2		0.192			0.0189								558
97.564	97.4	99.2		0.202			0.0235								567
97.66	97.4	99.2		0.201			0.0223								580
97.762	97.4	99.2		0.207			0.0077								588
97.863	97.4	99.2		0.21			0.0229						1		573
97.965	97.4	99.2		0.205			0.0237								590
98.063	97.4	99.2		0.243			0.0134						1		582
98.152	97.4	99.2		0.184			0.0138								557
98.284	97.4	99.2		0.127			0.0143								517
98.362	97.4	99.2		0.193		0.00681	0.0192						1		577
98.464	97.4	99.2		0.133			0.0161								588
98.565	97.4	99.2		0.112	0.0211										
98.663	97.4	99.2		0.109	0.0209		0.0241								
98.725	97.4	99.2		0.14			0.0233								535
98.876	97.4	99.2		0.148			0.0153								543
98.96	97.4	99.2		0.145	0.0353		0.0354								
99.064	97.4	99.2		0.176	0.0453		0.0319								659
99.162	97.4	99.2		0.148			0.0208						1		627
99.262	99.2	100.9		0.102	0.0273										
99.363	99.2	100.9		0.103	0.0254										
99.462	99.2	100.9		0.115			0.0125								532
99.563	99.2	100.9		0.12			0.0032								554
99.663	99.2	100.9		0.123			0.0131								
99.764	99.2	100.9		0.13			0.0205								
99.865	99.2	100.9		0.136			0.0087								604
99.965	99.2	100.9		0.119			0.0071								546
100.045	99.2	100.9		0.0799		0.0031									
100.164	99.2	100.9		0.221			0.0049						1		605
100.264	99.2	100.9		0.111			0.0097								513
100.364	99.2	100.9		0.101											
100.464	99.2	100.9		0.114			0.0015								537
100.564	99.2	100.9		0.118			0.0039								512
100.664	99.2	100.9		0.14			0.0146								533
100.762	99.2	100.9		0.206			0.0133						0.528		616
100.865	99.2	100.9		0.121			0.0138								
100.965	100.9	103.4		0.0992											
101.063	100.9	103.4		0.104											521
101.161	100.9	103.4		0.138			0.0209								572
101.262	100.9	103.4		0.124			0.0175								
101.367	100.9	103.4		0.12	0.0221		0.0112								
101.463	100.9	103.4		0.0972			0.0103								
101.564	100.9	103.4		0.0943											
101.665	100.9	103.4		0.103											559
101.764	100.9	103.4		0.132	0.0909										551
101.852	100.9	103.4		0.0921	0.0228										
101.962	100.9	103.4		0.113											561
102.061	100.9	103.4		0.136			0.0049								591
102.164	100.9	103.4		0.116		0.00814	0.0082								561
102.265	100.9	103.4		0.148	0.0242										587
102.363	100.9	103.4		0.121	0.0219		0.0009								530
102.456	100.9	103.4		0.108											
102.561	100.9	103.4		0.109											
102.662	100.9	103.4		0.139			0.0155								539
102.765	100.9	103.4		0.117	0.0215		0.0149								
102.864	100.9	103.4		0.107											
102.965	100.9	103.4		0.117			0.0084								
103.068	100.9	103.4		0.122											529
103.164	100.9	103.4		0.124											534
103.257	100.9	103.4		0.143			0.0263								557
103.363	100.9	103.4		0.114			0.0257								522
103.465	103.4	106.2		0.109											523
103.548	103.4	106.2		0.108											
103.669	103.4	106.2		0.117			0.0137								543
103.763	103.4	106.2		0.111			0.0023								
103.863	103.4	106.2		0.111			0.0064		2.181						541
103.956	103.4	106.2		0.101			0.0122								
104.063	103.4	106.2		0.14			0.0119								574
104.165	103.4	106.2		0.13			0.0115								539
104.264	103.4	106.2		0.103											527
104.364	103.4	106.2		0.144											547
104.464	103.4	106.2		0.121	0.0315										580
104.564	103.4	106.2		0.0989											
104.664	103.4	106.2		0.0861											
104.742	103.4	106.2		0.0882											
104.861	103.4	106.2		0.109		0.00798									553
104.95	103.4	106.2		0.107	0.0211										539
105.064	103.4	106.2		0.096											566
105.162	103.4	106.2		0.111	0.0209										565
105.263	103.4	106.2		0.114	0.0266										551
105.367	103.4	106.2		0.107			0.017								565
105.462	103.4	106.2		0.109	0.0226										
105.563	103.4	106.2		0.106	0.0282										584
105.664	103.4	106.2		0.113	0.0221										547
105.762	103.4	106.2		0.0949	0.0216										
105.863	103.4	106.2		0.108											526
105.958	103.4	106.2		0.115	0.0289										550
106.073	103.4	106.2		0.106			0.0096					0.564			559
106.163	103.4	106.2		0.138			0.0166								576
106.265	106.2	108.2		0.116	0.0346										
106.365	106.2	108.2		0.0994	0.0275										
106.466	106.2	108.2		0.119			0.0158								523
106.563	106.2	108.2		0.108											
106.677	106.2	108.2		0.118			0.0145								
106.766	106.2	108.2		0.121			0.0156								525
106.864	106.2	108.2		0.104											
106.961	106.2	108.2		0.104			0.0138								554
107.062	106.2	108.2		0.12			0.0231								
107.159	106.2	108.2		0.117	0.0243		0.0166								520
107.266	106.2	108.2		0.12	0.0237	0.0074	0.0157		2.093						682
107.362	106.2	108.2		0.0928											
107.462	106.2	108.2		0.108			0.0077								572
107.563	106.2	108.2		0.109											
107.663	106.2	108.2		0.11											535
107.761	106.2	108.2		0.118			0.0043								534

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	chlorite index	copyrite in	halerite ind	NIR peak w
	geo from	geo to													
107.872	106.2	108.2		0.131			0.0109								582
107.955	106.2	108.2		0.136	0.0379		0.0156								514
108.067	106.2	108.2		0.0955											524
108.164	106.2	108.2		0.122			0.0163								
108.263	108.2	110.5		0.117			0.0109								
108.36	108.2	110.5		0.115			0.0175								518
108.466	108.2	110.5		0.121			0.0168		2.461						521
108.565	108.2	110.5		0.111	0.0221		0.0173		2.199						524
108.665	108.2	110.5		0.243	0.0244		0.136	1	2.876	0.119					
108.764	108.2	110.5		0.131			0.0492	0.914	2.341						522
108.863	108.2	110.5		0.111			0.0333		2.354						551
108.966	108.2	110.5		0.0904			0.0126								
109.064	108.2	110.5		0.112			0.0588	1	2.521						538
109.166	108.2	110.5		0.136	0.0237		0.0192								528
109.265	108.2	110.5		0.134			0.0137								525
109.365	108.2	110.5		0.117		0.00631	0.0062								527
109.431	108.2	110.5		0.103											
109.565	108.2	110.5		0.113											
109.664	108.2	110.5		0.116											
109.765	108.2	110.5		0.1					2.254						
109.863	108.2	110.5		0.11											
109.949	108.2	110.5		0.125			0.0084								516
110.063	108.2	110.5		0.128	0.0231										550
110.163	108.2	110.5		0.121			0.0167								525
110.264	108.2	110.5		0.121	0.0265		0.015								528
110.365	108.2	110.5		0.0997	0.0253				2.208						
110.463	108.2	110.5		0.103			0.0178								
110.563	110.5	112.4		0.131			0.0162		2.098						
110.662	110.5	112.4		0.123			0.0121								
110.768	110.5	112.4		0.147			0.0166								555
110.863	110.5	112.4		0.104			0.0064								
110.964	110.5	112.4		0.106	0.0279										
111.069	110.5	112.4		0.115			0.0202								545
111.162	110.5	112.4		0.145			0.0442	1	2.733						559
111.262	110.5	112.4		0.129			0.0391		2.463						530
111.362	110.5	112.4		0.121	0.0214		0.0122								
111.462	110.5	112.4		0.135		0.00525	0.0192								546
111.563	110.5	112.4		0.131			0.0177								539
111.663	110.5	112.4		0.115	0.0268		0.0088								
111.764	110.5	112.4		0.131			0.0151								528
111.861	110.5	112.4		0.112	0.0236		0.0127								519
111.979	110.5	112.4		0.122			0.0082								540
112.064	110.5	112.4		0.14			0.0079								548
112.159	110.5	112.4		0.127			0.0068								532
112.302	110.5	112.4		0.14			0.0031								544
112.363	110.5	112.4		0.13			0.0097								515
112.461	112.4	114.4		0.131	0.0265		0.0117								
112.57	112.4	114.4		0.107											556
112.664	112.4	114.4		0.126			0.0055								546
112.764	112.4	114.4		0.129											
112.863	112.4	114.4		0.115											
112.954	112.4	114.4		0.119			0.0103								538
113.181	112.4	114.4		0.116			0.0168								558
113.262	112.4	114.4		0.14			0.0163								514
113.364	112.4	114.4		0.118			0.0147								525
113.463	112.4	114.4		0.111	0.02	0.00382	0.0239								
113.563	112.4	114.4		0.119	0.026		0.0204								526
113.664	112.4	114.4		0.11			0.0173								
113.763	112.4	114.4		0.106			0.0274								
113.862	112.4	114.4		0.116			0.0252								
113.977	112.4	114.4		0.0962											
114.064	112.4	114.4		0.0947											
114.142	112.4	114.4		0.1											
114.261	112.4	114.4		0.12			0.0183								525
114.371	112.4	114.4		0.125			0.0044								
114.465	114.4	115.8		0.102											549
114.564	114.4	115.8		0.106			0.0224								
114.664	114.4	115.8		0.104											
114.763	114.4	115.8		0.12			0.0132								543
114.865	114.4	115.8		0.136			0.0338	1							539
114.964	114.4	115.8		0.134			0.0154								541
115.064	114.4	115.8		0.132			0.0192								542
115.163	114.4	115.8		0.147		0.00371	0.0192								574
115.263	114.4	115.8		0.129			0.0115								536
115.361	114.4	115.8		0.123			0.0103		2.081						711
115.467	114.4	115.8		0.118			0.0158								613
115.542	114.4	115.8		0.0951	0.0284										693
115.684	114.4	115.8		0.149	0.0235		0.0189								592
115.763	114.4	115.8		0.137			0.0111								519
115.862	115.8	118.8		0.155			0.0205	0.823	2.504						555
115.965	115.8	118.8		0.135			0.014								535
116.072	115.8	118.8		0.145			0.0053		2.303						579
116.163	115.8	118.8		0.161			0.0038								541
116.262	115.8	118.8		0.158			0.0034								540
116.362	115.8	118.8		0.141			0.0042								
116.465	115.8	118.8		0.157			0.0093								554
116.564	115.8	118.8		0.126			0.0182								520
116.666	115.8	118.8		0.132			0.017								521
116.765	115.8	118.8		0.157			0.0625	1	2.907						539
116.865	115.8	118.8		0.137			0.0272								544
116.955	115.8	118.8		0.206	0.0234		0.131	0.974	3.533						555
117.088	115.8	118.8		0.364			0.109	0.886	2.62	0.102					
117.164	115.8	118.8		0.345			0.184	1	3.19	0.107					567
117.267	115.8	118.8	0-5%	0.289			0.131	0.96	2.897	0.0792					565
117.364	115.8	118.8		0.174	0.0249	0.01138	0.11	1	2.849						
117.464	115.8	118.8		0.147			0.0911	1	2.774						569
117.564	115.8	118.8		0.186			0.0832	1	2.926						553
117.663	115.8	118.8		0.226			0.128	1	3.036	0.112					
117.763	115.8	118.8		0.201			0.0765	0.971	2.83						
117.866	115.8	118.8		0.0967			0.0138								523
117.964	115.8	118.8		0.109	0.0316		0.0238								
118.063	115.8	118.8		0.128	0.0202		0.0174								539
118.163	115.8	118.8		0.179	0.0479		0.0158								543
118.263	115.8	118.8		0.194	0.0397		0.0333								562
118.362	115.8	118.8		0.15	0.0314		0.023								540
118.438	115.8	118.8		0.149	0.031										518
118.578	115.8	118.8		0.149	0.0248										559
118.663	115.8	118.8		0.135	0.0307		0.0203								538

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
118.765	115.8	118.8		0.17	0.0359		0.0087								525
118.851	118.8	120.0		0.129											
118.979	118.8	120.0		0.142	0.0312										539
119.051	118.8	120.0		0.0931											
119.162	118.8	120.0		0.173	0.0392		0.0171								524
119.262	118.8	120.0		0.19	0.0417		0.0155								
119.362	118.8	120.0	0-5%	0.146	0.0311	0.02164	0.0197								
119.462	118.8	120.0		0.122	0.0229		0.016								
119.527	118.8	120.0		0.135	0.0278		0.0279								550
119.68	118.8	120.0		0.134	0.0387		0.0099								
119.764	118.8	120.0		0.136			0.0187								
119.864	118.8	120.0		0.137	0.0271		0.0219								574
119.956	118.8	120.0		0.14			0.016								729
120.066	120.0	122.2		0.136	0.0348		0.0157								535
120.148	120.0	122.2		0.115	0.0223										
120.268	120.0	122.2		0.112			0.0255								529
120.365	120.0	122.2		0.115			0.0181								562
120.462	120.0	122.2		0.122	0.0236		0.0125								
120.562	120.0	122.2		0.105	0.0211		0.0172								
120.662	120.0	122.2		0.112			0.0186								
120.762	120.0	122.2		0.117			0.0147								
120.864	120.0	122.2		0.114			0.0176								517
120.964	120.0	122.2		0.106	0.0217										
121.064	120.0	122.2	0-5%	0.127		0.00828	0.0183								
121.164	120.0	122.2		0.124			0.0042								
121.264	120.0	122.2		0.123			0.0185								
121.362	120.0	122.2		0.12	0.0217										531
121.475	120.0	122.2		0.115			0.0312		2.375						517
121.563	120.0	122.2		0.118			0.0296		2.431						
121.664	120.0	122.2		0.11					2.44						
121.764	120.0	122.2		0.131					2.382						526
121.864	120.0	122.2		0.102					2.435						
121.964	120.0	122.2		0.123					2.435						561
122.064	120.0	122.2		0.106					2.262						
122.163	120.0	122.2		0.17	0.037		0.0145								565
122.263	122.2	123.0		0.131	0.0275		0.0205								549
122.363	122.2	123.0		0.131	0.0358		0.0149	1							
122.463	122.2	123.0		0.185	0.0393		0.0271	1	2.475						
122.548	122.2	123.0	0-5%	0.147		0.01649	0.0153								517
122.67	122.2	123.0		0.199	0.0293		0.116	0.957	3.019	0.0761					545
122.765	122.2	123.0		0.228			0.0949	1	3.092				1		590
122.865	122.2	123.0		0.264			0.113	1	2.932			1			588
122.959	122.2	123.0		0.189											
123.076	123.0	125.2		0.142											518
123.162	123.0	125.2		0.115											542
123.267	123.0	125.2		0.128			0.027								520
123.363	123.0	125.2		0.141			0.0212								515
123.462	123.0	125.2		0.161			0.0226								527
123.562	123.0	125.2		0.174	0.0231		0.0278								530
123.663	123.0	125.2		0.16			0.0263	1	2.852						525
123.764	123.0	125.2		0.141			0.0218								537
123.857	123.0	125.2		0.116											
123.964	123.0	125.2		0.158			0.0336								522
124.065	123.0	125.2	0-5%	0.16		0.01616									524
124.163	123.0	125.2		0.189			0.0246		2.159						544
124.264	123.0	125.2		0.185			0.0904	1	2.823						570
124.378	123.0	125.2		0.131			0.033								533
124.464	123.0	125.2		0.175	0.0264		0.0307	1	2.612						530
124.565	123.0	125.2		0.185	0.0372		0.0269								511
124.663	123.0	125.2		0.177	0.0331		0.0249								
124.762	123.0	125.2		0.175	0.0392		0.0203								
124.863	123.0	125.2		0.155	0.0558		0.0167	1	2.463						528
124.964	123.0	125.2		0.15	0.0385		0.0186								
125.064	123.0	125.2		0.218	0.0697		0.0153								538
125.165	123.0	125.2		0.142	0.0326		0.0143								536
125.266	125.2	126.9		0.158			0.0343								517
125.355	125.2	126.9		0.184	0.0519		0.0269								
125.464	125.2	126.9		0.187	0.0357		0.0247		2.06						698
125.568	125.2	126.9		0.131	0.0346		0.0215								555
125.666	125.2	126.9		0.16	0.0332		0.0186								553
125.765	125.2	126.9		0.182	0.047		0.0305	1	2.813						
125.863	125.2	126.9		0.168	0.0375		0.0165		2.074						653
125.96	125.2	126.9		0.182	0.0352		0.024		2.176						
126.063	125.2	126.9	10-20%	0.195	0.0551	0.02767	0.0148								561
126.165	125.2	126.9		0.162	0.0317		0.028								513
126.26	125.2	126.9		0.167	0.0251		0.0256								512
126.36	125.2	126.9		0.189			0.0239								512
126.461	125.2	126.9		0.146	0.0293		0.0204								
126.56	125.2	126.9		0.198	0.0304		0.0178								
126.66	125.2	126.9		0.174			0.0254								542
126.76	125.2	126.9		0.146			0.0246								
126.86	125.2	126.9		0.186	0.0237		0.0345								560
126.933	126.9	129.4		0.145	0.0291		0.0294								
127.104	126.9	129.4		0.194	0.0551										
127.167	126.9	129.4		0.164	0.0291		0.0281								522
127.266	126.9	129.4		0.148			0.0207								
127.366	126.9	129.4		0.147	0.0411										
127.47	126.9	129.4		0.135	0.0458		0.0215								
127.566	126.9	129.4		0.183			0.0296								
127.666	126.9	129.4		0.156			0.023								532
127.766	126.9	129.4		0.142			0.0328								575
127.864	126.9	129.4		0.15	0.0437		0.0148								543
127.964	126.9	129.4		0.173	0.041		0.0267								533
128.047	126.9	129.4		0.166	0.0313		0.0186								547
128.185	126.9	129.4	5-10%	0.187	0.0347	0.03228	0.0219								518
128.264	126.9	129.4		0.177	0.0458		0.0484								548
128.364	126.9	129.4		0.181	0.0701		0.0172								525
128.464	126.9	129.4		0.156	0.043										542
128.564	126.9	129.4		0.136	0.036			1							542
128.651	126.9	129.4		0.109	0.0225										

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	chlorite index	copyrite in	halerite ind	NIR peak w
	geo from	geo to													
128.761	126.9	129.4		0.181	0.0476		0.0243								535
128.861	126.9	129.4		0.156	0.0327		0.0308								510
128.963	126.9	129.4		0.179			0.0325								535
129.023	126.9	129.4		0.158			0.0241								783
129.17	126.9	129.4		0.173	0.0848		0.0321								543
129.267	126.9	129.4		0.164	0.0342		0.0238		2.502						529
129.361	126.9	129.4		0.172	0.0393		0.019								
129.462	129.4	131.5		0.195	0.0479		0.0145		2.061						724
129.584	129.4	131.5		0.201	0.0734										626
129.664	129.4	131.5		0.167	0.0382		0.0226								540
129.763	129.4	131.5		0.106	0.0329		0.0212								563
129.866	129.4	131.5		0.131	0.0223		0.0198								540
129.963	129.4	131.5		0.121	0.0357										
130.063	129.4	131.5		0.109	0.0438										
130.165	129.4	131.5		0.147	0.0357		0.0129								562
130.264	129.4	131.5		0.162	0.0318		0.0162		2.017				1		590
130.363	129.4	131.5		0.107			0.0075								524
130.465	129.4	131.5	5-10%	0.134	0.0354	0.0341	0.0094								538
130.564	129.4	131.5		0.149	0.0214		0.0056								534
130.663	129.4	131.5		0.146	0.0246		0.0069								
130.765	129.4	131.5		0.152	0.029		0.0081								553
130.864	129.4	131.5		0.152	0.0329		0.0236								
130.963	129.4	131.5		0.123	0.032		0.0216								530
131.065	129.4	131.5		0.12	0.03		0.018								
131.144	129.4	131.5		0.132	0.0724				2.159						
131.283	129.4	131.5		0.136			0.0248								552
131.363	129.4	131.5		0.169	0.0334		0.0242								
131.434	129.4	131.5		0.191	0.0433										
131.58	131.5	133.0		0.179	0.0337										536
131.665	131.5	133.0		0.125	0.0631										
131.764	131.5	133.0		0.156											521
131.867	131.5	133.0		0.173											614
131.963	131.5	133.0		0.135	0.0355										514
132.028	131.5	133.0		0.189	0.0449										
132.166	131.5	133.0		0.165			0.0177								512
132.262	131.5	133.0	0-5%	0.157	0.0469	0.01915	0.0241								
132.362	131.5	133.0		0.157			0.0267								516
132.464	131.5	133.0		0.184			0.0252								521
132.563	131.5	133.0		0.18	0.0632		0.0399								529
132.662	131.5	133.0		0.17			0.0413								552
132.778	131.5	133.0		0.169			0.0194								634
132.863	131.5	133.0		0.166			0.0194								567
132.962	131.5	133.0		0.143			0.0197								543
133.064	133.0	136.0		0.115			0.0158								569
133.163	133.0	136.0		0.1	0.0223		0.0076								
133.262	133.0	136.0		0.11											
133.335	133.0	136.0													
133.462	133.0	136.0		0.0973	0.02										
133.564	133.0	136.0		0.109			0.0196								522
133.666	133.0	136.0		0.112	0.0327										
133.765	133.0	136.0		0.107											
133.864	133.0	136.0		0.12											
133.963	133.0	136.0		0.11											525
134.064	133.0	136.0		0.121	0.0219		0.0309		2.123						622
134.166	133.0	136.0		0.109			0.0197								552
134.265	133.0	136.0		0.119			0.0176								570
134.364	133.0	136.0		0.117			0.0247								
134.463	133.0	136.0		0.101											
134.562	133.0	136.0	5-10%	0.106		0.01476	0.0239								558
134.664	133.0	136.0		0.1			0.0161		2.313						
134.764	133.0	136.0		0.123											
134.863	133.0	136.0		0.127											
134.947	133.0	136.0		0.159			0.014								
135.089	133.0	136.0		0.172											516
135.163	133.0	136.0		0.11					2.278						
135.265	133.0	136.0		0.152	0.0432		0.0227								519
135.363	133.0	136.0		0.191	0.0544										537
135.462	133.0	136.0		0.194	0.0508		0.012								
135.561	133.0	136.0		0.189	0.0358		0.0092								538
135.663	133.0	136.0		0.157	0.0309		0.0092								514
135.765	133.0	136.0		0.174	0.0502										537
135.853	133.0	136.0		0.143	0.0334		0.0121								557
135.965	133.0	136.0		0.168	0.0471										534
136.065	136.0	138.0		0.152	0.0515		0.0171								560
136.137	136.0	138.0		0.184	0.0488		0.0191								815
136.275	136.0	138.0		0.192	0.0555		0.0189								
136.361	136.0	138.0		0.157	0.038		0.0269								535
136.463	136.0	138.0		0.149	0.0315		0.0226								537
136.562	136.0	138.0		0.179			0.0358								513
136.661	136.0	138.0		0.169			0.0332								536
136.764	136.0	138.0		0.155			0.0307								519
136.866	136.0	138.0		0.159			0.0277								517
136.962	136.0	138.0	0-5%	0.157		0.02258									587
137.066	136.0	138.0		0.195	0.0259		0.0116								523
137.163	136.0	138.0		0.172	0.0344		0.0119								546
137.263	136.0	138.0		0.142	0.03		0.0112								
137.362	136.0	138.0		0.164	0.0301		0.0205	1							526
137.462	136.0	138.0		0.155			0.025								530
137.564	136.0	138.0		0.135	0.0303		0.0201								538
137.665	136.0	138.0		0.159	0.0377		0.022								543
137.765	136.0	138.0		0.132			0.0286								536
137.864	136.0	138.0		0.141	0.0379		0.0263								522
137.961	136.0	138.0		0.139			0.0157								548
138.049	138.0	139.6		0.135	0.0312		0.0153								604
138.164	138.0	139.6		0.161			0.0106								546
138.265	138.0	139.6		0.145	0.0312		0.012								544
138.363	138.0	139.6		0.152			0.0069								523
138.464	138.0	139.6		0.169	0.043		0.0115								538
138.565	138.0	139.6		0.149	0.0424		0.0197								578
138.659	138.0	139.6		0.137	0.0339										673
138.719	138.0	139.6	10-20%	0.187	0.0378	0.02678									

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	chlorite index	copyrite in	halerite ind	NIR peak w
	geo from	geo to													
138.863	138.0	139.6	[illegible]	0.175	0.0296	[illegible]	0.0077		2.081						553
138.964	138.0	139.6		0.2	0.0286		0.004								
139.065	138.0	139.6		0.198	0.0257		0.0059		2.101						
139.163	138.0	139.6		0.161	0.0418		0.0085								
139.261	138.0	139.6		0.146	0.0246		0.0128		2.082						705
139.365	138.0	139.6		0.164	0.0345		0.0094								632
139.468	138.0	139.6		0.179	0.0241		0.0175		2.134						605
139.565	138.0	139.6		0.169			0.013								
139.663	139.6	141.8		0.171			0.0194								568
139.763	139.6	141.8		0.158	0.0469		0.0165								
139.864	139.6	141.8		0.173	0.0302		0.0142								525
139.964	139.6	141.8		0.169	0.053		0.0264								771
140.064	139.6	141.8		0.189	0.0636										
140.162	139.6	141.8		0.208	0.0575				2.075						769
140.263	139.6	141.8		0.169	0.0506		0.0418								
140.364	139.6	141.8		0.182	0.0567				2.083						723
140.465	139.6	141.8		0.173	0.0383		0.0342		2.071						627
140.564	139.6	141.8		0.155	0.0272		0.0196								588
140.662	139.6	141.8	10-20%	0.187	0.041	0.03907	0.0206		2.092						627
140.753	139.6	141.8		0.21	0.0608		0.0172		2.085						614
140.897	139.6	141.8		0.17			0.023								
140.964	139.6	141.8		0.164	0.0409		0.0205								622
141.086	139.6	141.8		0.182	0.0729		0.0146		2.083						783
141.165	139.6	141.8		0.186	0.0266		0.0145		2.09						674
141.265	139.6	141.8		0.17			0.0201								524
141.363	139.6	141.8		0.171			0.0161		2.109						568
141.464	139.6	141.8		0.177	0.0405		0.0231								522
141.564	139.6	141.8		0.199	0.0607		0.0289		2.101						593
141.662	139.6	141.8		0.142	0.0433		0.0226								539
141.754	139.6	141.8		0.161	0.0488		0.0136		2.121						533
141.894	141.8	144.3		0.141	0.031		0.0106								538
141.963	141.8	144.3		0.192	0.0292		0.0143		2.101						631
142.06	141.8	144.3		0.182	0.0515		0.0096								527
142.162	141.8	144.3		0.19	0.0367		0.0198								612
142.264	141.8	144.3		0.155	0.0317		0.0204	1							543
142.36	141.8	144.3		0.133			0.0153								599
142.462	141.8	144.3		0.17	0.0288		0.009		2.097						694
142.562	141.8	144.3		0.117	0.0597										655
142.662	141.8	144.3		0.102	0.0586				2.175						782
142.743	141.8	144.3		0.0854	0.0246										
142.864	141.8	144.3		0.0883	0.0327										
142.965	141.8	144.3		0.134			0.0108								611
143.063	141.8	144.3	5-10%	0.145	0.0217	0.02159	0.0034								528
143.164	141.8	144.3		0.116			0.0066								526
143.264	141.8	144.3		0.135	0.0239		0.0151								534
143.362	141.8	144.3		0.121			0.0135								549
143.462	141.8	144.3		0.129			0.0038								553
143.562	141.8	144.3		0.115			0.0189								567
143.663	141.8	144.3		0.0944			0.0216		2.24						548
143.764	141.8	144.3		0.0824					2.192						
143.862	141.8	144.3		0.128	0.0341		0.0168		2.077						604
143.961	141.8	144.3		0.141			0.0132	0.521	2.107						620
144.074	141.8	144.3		0.168	0.0211		0.0091		2.09						794
144.163	141.8	144.3		0.125	0.0258		0.018		2.149						638
144.264	141.8	144.3		0.0944	0.0287				2.271						591
144.364	144.3	145.9		0.142	0.0271		0.0075		2.144						682
144.465	144.3	145.9		0.135	0.0276		0.0123								541
144.563	144.3	145.9		0.138	0.0234		0.0106								545
144.663	144.3	145.9		0.128	0.0288		0.0234								586
144.763	144.3	145.9		0.13			0.0278								612
144.864	144.3	145.9		0.134			0.0196								546
144.965	144.3	145.9		0.115			0.0126								540
145.063	144.3	145.9	0-5%	0.127		0.00815	0.0193								548
145.164	144.3	145.9		0.149			0.0194								
145.264	144.3	145.9		0.13			0.0214								531
145.364	144.3	145.9		0.13			0.0157		2.462						532
145.465	144.3	145.9		0.131			0.0125								533
145.562	144.3	145.9		0.143	0.0235		0.0104								
145.663	144.3	145.9		0.152			0.0169								
145.764	144.3	145.9		0.148			0.009								528
145.863	144.3	145.9		0.131			0.0107								559
145.964	145.9	146.8		0.144			0.0088								
146.062	145.9	146.8		0.144			0.0079								
146.163	145.9	146.8		0.166			0.0111								
146.264	145.9	146.8		0.146			0.01								
146.364	145.9	146.8		0.146			0.0139								
146.46	145.9	146.8		0.132			0.0194								
146.562	145.9	146.8		0.129			0.0251								
146.617	145.9	146.8		0.113											
146.766	145.9	146.8		0.18			0.0177					1			532
146.865	146.8	148.1		0.177			0.0177		2.09						603
146.962	146.8	148.1		0.168			0.0182					1			654
147.083	146.8	148.1		0.152			0.0121								674
147.163	146.8	148.1		0.144			0.0162		2.082						712
147.264	146.8	148.1		0.188	0.0292		0.012		2.067						672
147.361	146.8	148.1		0.171	0.0326		0.0177		2.053						625
147.496	146.8	148.1	0-5%	0.174	0.044	0.01281	0.0104		2.055						707
147.543	146.8	148.1		0.176	0.04		0.0163								535
147.664	146.8	148.1		0.168			0.0175					1			518
147.766	146.8	148.1		0.128	0.0207		0.0244					1			754
147.865	146.8	148.1		0.152			0.0286		2.149			1			646
147.964	146.8	148.1		0.151			0.0167		2.106						744
148.065	146.8	148.1		0.127			0.0117								565
148.161	148.1	150.1		0.159			0.0214								595
148.266	148.1	150.1		0.142	0.0367		0.0183								524
148.364	148.1	150.1		0.175			0.0234								526
148.464	148.1	150.1		0.177			0.0284		2.133						537
148.564	148.1	150.1		0.166	0.0479		0.0272								549
148.657	148.1	150.1		0.144			0.019		2.181						633
148.764	148.1	150.1		0.14			0.0238	1	2.078						525
148.864	148.1	150.1		0.143			0.0211								512
148.964	148.1	150.1		0.133			0.0249	1	2.666						522
149.064	148.1	150.1	0-5%	0.101	0.0261	0.00554		1	2.311						578

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	IOH intensit	hlorite index	lcopyrite in	halerite ind	NIR peak w
	geo from	geo to													
149.136	148.1	150.1	[illegible]	0.115		[illegible]	0.088	1	2.861						579
149.264	148.1	150.1		0.0845					2.322						
149.364	148.1	150.1		0.0904					2.415						
149.464	148.1	150.1		0.0926											535
149.565	148.1	150.1		0.0834					2.193						
149.662	148.1	150.1		0.0797					2.273						
149.765	148.1	150.1		0.0922			0.0163		2.163						661
149.864	148.1	150.1		0.0793					2.262						
149.962	148.1	150.1		0.086					2.168						
150.07	148.1	150.1		0.0831											
150.157	150.1	151.8		0.0829											
150.287	150.1	151.8		0.113											
150.363	150.1	151.8		0.117			0.0114								
150.463	150.1	151.8		0.0974											
150.564	150.1	151.8		0.085											
150.664	150.1	151.8		0.0995			0.0194								
150.765	150.1	151.8		0.124			0.0283		2.142						601
150.869	150.1	151.8		0.125			0.014								575
150.965	150.1	151.8	0-5%	0.0979		0.00125									
151.065	150.1	151.8		0.12											
151.163	150.1	151.8		0.123			0.006								
151.261	150.1	151.8		0.102											
151.361	150.1	151.8		0.102	0.0213		0.0155								573
151.422	150.1	151.8		0.122											
151.562	150.1	151.8		0.118			0.0088								
151.662	150.1	151.8		0.0981											
151.763	150.1	151.8		0.116			0.0197								
151.861	151.8	153.0		0.0947											
151.931	151.8	153.0		0.126											521
152.071	151.8	153.0		0.104											
152.173	151.8	153.0		0.0934											
152.264	151.8	153.0		0.0935											
152.356	151.8	153.0		0.0992											
152.457	151.8	153.0		0.0935											
152.559	151.8	153.0		0.0916											
152.66	151.8	153.0		0.0954											
152.762	151.8	153.0		0.106											
152.863	151.8	153.0		0.108											
152.965	151.8	153.0													
153.067	153.0	154.5		0.0912											
153.168	153.0	154.5		0.106											
153.27	153.0	154.5													
153.371	153.0	154.5		0.118											
153.432	153.0	154.5		0.0842											
153.585	153.0	154.5		0.101											
153.656	153.0	154.5		0.155			0.0115								
153.757	153.0	154.5		0.152			0.01								
153.859	153.0	154.5		0.126			0.012								
153.961	153.0	154.5		0.132			0.0147								
154.06	153.0	154.5		0.121			0.0271								
154.159	153.0	154.5		0.0974											
154.261	153.0	154.5		0.0851											
154.363	153.0	154.5		0.12			0.0086								
154.464	153.0	154.5		0.116											
154.566	154.5	156.0		0.134			0.0144								
154.667	154.5	156.0		0.118			0.017								
154.769	154.5	156.0		0.121			0.0161								
154.87	154.5	156.0		0.144			0.0063								
154.97	154.5	156.0		0.129			0.0086								
155.057	154.5	156.0		0.0901					2.159						519
155.164	154.5	156.0		0.113			0.0107								
155.265	154.5	156.0		0.104											535
155.364	154.5	156.0		0.106			0.0305								
155.461	154.5	156.0		0.104			0.01								
155.564	154.5	156.0		0.113			0.0082								
155.663	154.5	156.0		0.11					2.159						
155.764	154.5	156.0		0.107											
155.862	154.5	156.0		0.113			0.0248								533
155.956	154.5	156.0		0.122			0.0326	1							
156.067	156.0	159.0		0.139			0.0085								
156.162	156.0	159.0		0.101											
156.268	156.0	159.0		0.0905											
156.364	156.0	159.0		0.087											
156.463	156.0	159.0		0.082											
156.561	156.0	159.0		0.0813											689
156.663	156.0	159.0		0.068											
156.765	156.0	159.0		0.0706											
156.863	156.0	159.0		0.0796											
156.942	156.0	159.0		0.0969											
157.063	156.0	159.0		0.103	0.0218										
157.163	156.0	159.0		0.0701	0.0224				2.304						
157.264	156.0	159.0		0.0745					2.317						
157.364	156.0	159.0		0.092											
157.462	156.0	159.0		0.111											572
157.562	156.0	159.0		0.0917		0.00147									
157.662	156.0	159.0		0.0878											
157.762	156.0	159.0		0.123			0.0163								538
157.863	156.0	159.0													
157.964	156.0	159.0		0.0906					2.293						
158.062	156.0	159.0		0.0988			0.0071								
158.163	156.0	159.0		0.127			0.0374	1	2.475						
158.264	156.0	159.0		0.125			0.007								
158.365	156.0	159.0		0.105											
158.465	156.0	159.0		0.099			0.0116								
158.563	156.0	159.0		0.0966											
158.663	156.0	159.0		0.0835											
158.763	156.0	159.0		0.1											
158.863	156.0	159.0		0.104											
158.959	156.0	159.0		0.101											
159.063	159.0	162.0		0.0926											
159.162	159.0	162.0		0.0923											
159.267	159.0	162.0		0.129			0.0051								
159.363	159.0	162.0		0.12			0.0067								
159.463	159.0	162.0		0.089											
159.563	159.0	162.0		0.0947											
159.663	159.0	162.0		0.0995			0.0088								
159.762	159.0	162.0		0.0713					2.225						
159.861	159.0	162.0		0.0897											

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	hlorite index	copyrite in	halerite ind	NIR peak w
	geo from	geo to													
159.963	159.0	162.0		0.0805											
160.063	159.0	162.0		0.0816	0.0212										
160.158	159.0	162.0		0.0871	0.0245										
160.262	159.0	162.0		0.109	0.0271		0.0077								527
160.362	159.0	162.0		0.0758	0.0206										
160.466	159.0	162.0		0.0963		0.00379									
160.563	159.0	162.0		0.0826											
160.663	159.0	162.0		0.0991			0.0105								560
160.763	159.0	162.0		0.0722											
160.862	159.0	162.0		0.0674											
160.965	159.0	162.0		0.0671					2.192						
161.064	159.0	162.0		0.1											
161.163	159.0	162.0		0.109			0.0152								521
161.263	159.0	162.0		0.113			0.0127								533
161.362	159.0	162.0		0.106			0.0111		2.202						
161.465	159.0	162.0		0.127			0.0148								552
161.565	159.0	162.0		0.0931			0.0188								
161.642	159.0	162.0		0.0953											
161.763	159.0	162.0		0.106	0.0203										
161.865	159.0	162.0		0.101											
161.949	159.0	162.0		0.107											786
162.066	162.0	165.0		0.122			0.0093								
162.165	162.0	165.0		0.13			0.0268								
162.264	162.0	165.0		0.12	0.0258		0.0072								
162.364	162.0	165.0		0.107			0.0073								
162.463	162.0	165.0		0.102			0.0118		2.196						
162.565	162.0	165.0		0.122			0.0145								
162.664	162.0	165.0		0.122			0.0115								
162.762	162.0	165.0		0.115			0.0114								
162.861	162.0	165.0		0.0947											
162.965	162.0	165.0		0.0948											
163.064	162.0	165.0		0.0958											
163.163	162.0	165.0		0.0879	0.0202										
163.264	162.0	165.0		0.108											
163.363	162.0	165.0		0.111	0.0259										
163.45	162.0	165.0		0.116	0.0219		0.0092								
163.563	162.0	165.0		0.124		0.00313	0.0064								
163.664	162.0	165.0		0.117			0.0048								
163.763	162.0	165.0		0.137			0.0046								
163.862	162.0	165.0		0.132			0.0209								
163.964	162.0	165.0		0.128			0.0111								
164.06	162.0	165.0		0.107			0.0632	1	2.294						
164.163	162.0	165.0		0.123											
164.262	162.0	165.0		0.111											
164.364	162.0	165.0		0.118											
164.463	162.0	165.0		0.106											
164.562	162.0	165.0		0.0997											
164.652	162.0	165.0		0.0973											
164.767	162.0	165.0		0.108											
164.863	162.0	165.0		0.0968											
164.957	162.0	165.0		0.0953											
165.064	165.0	168.0		0.0976											
165.157	165.0	168.0		0.0994			0.0058								
165.264	165.0	168.0		0.103											
165.365	165.0	168.0		0.108			0.0206								
165.463	165.0	168.0		0.105											
165.563	165.0	168.0		0.105											515
165.663	165.0	168.0		0.103											
165.763	165.0	168.0		0.11			0.0088								
165.863	165.0	168.0		0.0989											
165.977	165.0	168.0		0.0896											
166.064	165.0	168.0		0.0944											
166.165	165.0	168.0		0.0901											
166.264	165.0	168.0		0.101											
166.364	165.0	168.0		0.0894											
166.464	165.0	168.0		0.106											
166.542	165.0	168.0		0.122		0.00068									
166.662	165.0	168.0		0.112			0.0077								
166.764	165.0	168.0		0.0994											
166.866	165.0	168.0		0.102											
166.965	165.0	168.0		0.104											
167.063	165.0	168.0		0.105											
167.162	165.0	168.0		0.106											
167.263	165.0	168.0		0.132											
167.365	165.0	168.0		0.145											
167.464	165.0	168.0		0.129											
167.563	165.0	168.0		0.13			0.0122								
167.661	165.0	168.0		0.131	0.0204		0.0093								
167.763	165.0	168.0		0.102					2.17						
167.874	165.0	168.0		0.106											571
167.954	165.0	168.0		0.113											
168.074	168.0	171.0		0.103											
168.163	168.0	171.0		0.106											
168.264	168.0	171.0		0.098											
168.365	168.0	171.0		0.105			0.0117								
168.465	168.0	171.0		0.107											
168.566	168.0	171.0		0.102											
168.663	168.0	171.0		0.102											
168.761	168.0	171.0		0.102											
168.862	168.0	171.0		0.103											
168.963	168.0	171.0		0.124											
169.064	168.0	171.0		0.106											
169.164	168.0	171.0		0.109	0.0222		0.0238								
169.265	168.0	171.0		0.109	0.0221		0.0238								
169.365	168.0	171.0		0.0973											
169.463	168.0	171.0		0.0991											
169.561	168.0	171.0		0.109		0.00371	0.0271								
169.666	168.0	171.0		0.117			0.0196								
169.764	168.0	171.0		0.103	0.0242										
169.863	168.0	171.0		0.11	0.0223										
169.962	168.0	171.0		0.108			0.0187								
170.062	168.0	171.0		0.0986											
170.168	168.0	171.0		0.118			0.0193								
170.278	168.0	171.0		0.111			0.0265								
170.366	168.0	171.0		0.105											
170.464	168.0	171.0		0.0941											
170.562	168.0	171.0		0.118			0.004								
170.663	168.0	171.0		0.115			0.0286		2.154						587

Depth	split length		Observed talc %	full albedo	talc intensity	Av talc intensity	dolomite intensity	carbonate index	e2+ intensit	quartz H2O	OH intensit	chlorite index	copyrite ind	halerite ind	NIR peak w
	geo from	geo to													
170.764	168.0	171.0		0.114			0.032								
170.878	168.0	171.0		0.0941	0.0204										576
170.955	168.0	171.0		0.0906											
171.063	171.0	174.0		0.107											519
171.163	171.0	174.0		0.123			0.0299								
171.262	171.0	174.0		0.088											
171.362	171.0	174.0		0.108					2.194						
171.442	171.0	174.0		0.069											
171.559	171.0	174.0		0.111			0.0096								
171.659	171.0	174.0		0.122											
171.766	171.0	174.0		0.113			0.0053								
171.864	171.0	174.0		0.117			0.0119								
171.96	171.0	174.0		0.104											
172.076	171.0	174.0		0.107	0.0261										
172.165	171.0	174.0		0.112	0.0269										
172.264	171.0	174.0		0.113	0.0241										
172.363	171.0	174.0		0.102	0.0226										
172.462	171.0	174.0		0.0981											
172.563	171.0	174.0		0.0971	0.022	0.00861									
172.663	171.0	174.0		0.102			0.0172								
172.763	171.0	174.0		0.105											
172.862	171.0	174.0		0.123			0.0217								
172.964	171.0	174.0		0.125			0.0342	1							
173.065	171.0	174.0		0.123	0.0248		0.0144								
173.158	171.0	174.0		0.11											
173.266	171.0	174.0		0.124											
173.364	171.0	174.0		0.135	0.022										
173.466	171.0	174.0		0.122	0.0239										
173.565	171.0	174.0		0.122	0.0233		0.0089								
173.663	171.0	174.0		0.123	0.0219										
173.759	171.0	174.0		0.117	0.0206		0.0176								
173.869	171.0	174.0		0.109			0.0103								
173.959	171.0	174.0		0.106											

Appendix 5
211135 Drillhole log with visual talc estimates

Appendix 5
211135 Drillhole log with visual talc estimates

| Mine & MS Code | Hole Name | Sequence | Hole Level | Hole Length | Latitude (Northing) | Departure (Easting) | R.L. | Hole Bearing (degrees) | Hole Dip (degrees) | Date Started | Date Finished | Core recovery | Survey Method | Water? | | Core Size | Start Depth | Start Depth | 3rd Rod/Core Start Depth | 4th Rod/Core Start Depth | | | Logged By | Plug Status | | |

Appendix 5
211135 Drillhole log with visual talc estimates

| Mine & | Hole | | Hole | Hole | Latitude | Departure | R.L. | Hole Bearing | Hole Dip | Date | Date | Core | Survey | Water? | | Core Size | Start | Start | 3rd | Start | 4th | Start | | Logged | Plug | | |

Appendix 5 - 220221 Drillhole log with visual talc estimates

Mine & MS Code	Hole Name	Sequence	Hole Level	Hole Length	Latitude (Northing)	Departure (Easting)	R.L.	Hole Bearing (degrees)	Hole Dip (degrees)	Started (ddmmyy)	Finished (ddmmyy)	Percentage Recovery	Survey Method	Water?	Connector MS Code	1st Rod/Core Size	Start Depth	Start Depth	3rd Rod/Core Size	Start Depth	4th Rod/Core Size	Start Depth		Logged By	Plug Status
ISA220221	S669 ED	02	29E	0174.0	6690.0	1917.5	1950.0	090	-20	200202	220202	99	I	N		BQ								LMD	FC

MS Code	From (metres)	To (metres)	Recovery (metres)	Sample Number	Visual Ag	Visual Pb	Visual Zn	Visual Cu	Orebody Code	Formation Code	Major, Minor Rocktype	Mineralogy	Rock Colour	Bedding	%F. G. Pyrite	%C. G. Pyrite	% Pyrrhotite	Fold Axis Position(m)	Veining Strength	Vein Mineralogy	Leaching	Breccia	Fault Position (m)	Major, Minor Fault Fill	Fault Thickness (cm)	Core to Fault Angle	Fault Type	Shearing	Core to Bedding Angle	Smooth Bedding Partings	Rough Bedding Partings	Broken Joints	Unbroken Joints	Joint Type	Metallurgical Characteristics	Core Disposition	REMARKS	Visual Talc Estimate (%)	QXRD (%)
220221	0.0	2.6	2.4	944629				0.1	3500	U	RI		LG	M		1			W	D		2.3	AD	13	15	T	M	25	3	6	1			B	A	54 Core loss at start of hole		
220221	2.6	5.6	3.0	944630				0.3	3500	U	I	D	LG										2.6	QZ	50	30									B	A	99 Uniformly altered to dolomite		
220221	5.6	7.2	1.6	944631				0.2	3500	U	I	D	LG																					B	A	97 uniformly altered to dolomite		
220221	7.2	10.2	3.0	944632				0.1	3500	U	IR	T	LG	M			5												20					C	A	86 Talc as dol replacement		
220221	10.2	13.1	2.9	944633				0.2	3500	U	IR		LG	M															25		1				B	A	70 Well dolomitised		
220221	13.1	14.3	1.2	944634				0.0	3500	U	I		LG						W	D												1			B	A	97 Homogeneous		
220221	14.3	16.6	2.3	944635				0.4	3500	U	I		LG																						B	A	94 Minor feldspar in veins		
220221	16.6	18.8	2.2	944636				0.1	3500	U	I		G										17.1	D	3	35						1			B	A	80 Minor graphite at fault		
220221	18.8	21.7	2.9	944637				0.0	3500	U	KI	Q	W						W	D			20.0	QZ	170	40									A	A	78 Some feldspar in I unit veins		
220221	21.7	23.0	1.3	944638				0.0	3500	U	K	Q	W										21.7	QZ	130	45									A	A	50 Entire unit is quartz		
220221	23.0	26.0	3.0	944639				0.0	3500	U	R		G	M	4	2	1		W	D			24.3	QZ	40	60	B		65	1	3	2			B	A	83 Some beds pyritic		
220221	26.0	29.0	3.0	944640				0.0	3500	U	R		G	M	2	1			W	D								M	65	8	15	1			B	A	31 Frequent bedding breaks		
220221	29.0	31.6	2.6	944641				0.0	3500	U	R		G	M	1	6			W	D			30.9	D	5	75	T	M	70	5	12				B	A	62 Graphite developing		
220221	31.6	33.6	2.0	944642				0.2	3500	U	PR		G	M	12	1	1												50			2			C	A	88 Cu concentrated in dolomite veins		
220221	33.6	36.0	2.4	944643				0.1	3500	U	IR		G	M	2	2													55			3			B	A	87 Minor silicification		
220221	36.0	39.0	3.0	944644				0.2	3500	U	R		G	M					M	D									70	1	8	1			B	A	52 Core broken		
220221	39.0	41.4	2.4	944645				0.1	3500	U	R		G	M		1			W	D									75	8	7	1			B	A	63 Minor graphite in some beds		
220221	41.4	42.3	0.9	944646				0.0	3500	U	PR		SG	M	16	3			W	D									70	1	6				C	A	30 Pyritic/graphitic beds with dolomitic beds		
220221	42.3	44.9	2.6	944647				0.0	3500	U	R		G	M	2	2			W	D									50			3			B	A	70 Some very dolomitic units interbedded with less		
220221	44.9	46.6	1.7	944648				0.0	3500	U	R		DG	M	1	8			W	D									65	3	7				B	A	67 Graphitic		
220221	46.6	49.3	2.7	944649				0.0	3500	U	IR		G	M	1	1			W	D			48.3	QZ	6	45	T		60	2	5	1			B	A	84 Thin graphitic beds and thicker dolomite beds		
220221	49.3	52.3	3.0	944650				0.0	3500	U	R		G	M		2			W	D			51.0	QZ	3	75	T		60	8	10	1			B	A	20 Frequent bedding breaks		
220221	52.3	55.2	2.9	944651				0.0	3500	U	R		DG	M		2			W	D									70	10	8		1		B	A	36 Bedding breaks		
220221	55.2	58.0	2.8	944652				0.0	3500	U	R		G	M	1	5			M	D								W	70	10	9	1			B	A	18 Bad ground		
220221	58.0	60.0	2.0	944653				0.0	3500	U	R		G	M		6			M	D									70	12	10				B	A	00 Bedding breaks, bad ground		
220221	60.0	63.0	2.9	944654				0.0	3500	U	GR		G	M	1	5							61.2	AD	80	70	T	S	75	10	5				B	A	00		
220221	63.0	65.6	2.6	944655				0.0	3500	U	RI		G	M		2			W	D								S	60		3	2			B	A	20 Sheared and broken ground		
220221	65.6	67.5	1.9	944656				0.0	3500	U	R		DG	M	1	3			W	D								M	70	10	10	1			B	A	21 Sheared and broken ground		
220221	67.5	69.9	2.4	944657				0.1	3500	U	PR		SG	M	13	2			W	D								M	75	20	13				C	A	49 Some strong shearing and graphite		
220221	69.9	72.8	2.9	944658				0.0	3500	U	R		G	M	2	1			M	D									70	6	4	1			B	A	78 Minor graphite amd fine dol veins		
220221	72.8	73.8	1.0	944659				0.0	3500	U	R		G	M		1			W	D									70	3	3				B	A	60 Minor graphite and fine dolomite veining		
220221	73.8	75.8	2.0	944660				0.1	3500	U	PR		G	M	6	1			M	D									75	7	6				C	A	68 Microfaulting, and minor graphite		
220221	75.8	78.0	2.2	944661				0.0	3500	U	R		DG	M	1				M	D			77.7	D	1	45	T		75	2	7				B	A	66 Graphitic with very fine dol veining		
220221	78.0	79.6	1.6	944662				0.2	3500	U	PR		DG	M	5	2												W	80	10	15	1			C	A	58 Graphitic where sheared		
220221	79.6	82.6	2.9	944663				0.0	3500	U	R		G	M		4							82.1	QZ	24	75	T	M	70	7	4	2	1	B	A	19 Very sheared @ 80.7 - 80.8m. Mnr graphite		
220221	82.6	84.4	1.8	944664				0.1	3500	U	R		DG	M	1	2			W	D									70	10	12	3	1	B	A	04 Graphitic with frequent bedding breaks		
220221	84.4	85.5	1.1	944665				0.4	3500	U	R	D	G	M		2													70	2	1	1		B	A	51 Minor silicification		
220221	85.5	87.0	1.5	944666				0.1	3500	U	R	T	LG	M		4			M	D									75	4	5	1		C	A	85 Talc as dol alt in bedding, mnr silicification	0-5%	2.0%
220221	87.0	88.5	1.5	944667				0.2	3500	U	R		NG	M		8			M	D								W	70	15	13	2		B	A	46 Very graphitic, Mnr Bx in dolomite rich areas		
220221	88.5	90.4	1.9	944668				0.5	3500	U	R		LG	M	1	3			M	D			88.7	D	1	45	T		75	2	2	2		B	A	90 Well altered to dol, mnr graphite in some beds		
220221	90.4	92.6	2.2	944669				0.3	3500	U	R		LG	M	4	5			W	D									68	3	6	1		B	A	83 Very dolomitic, rare microfaulting		
220221	92.6	94.2	1.6	944670				0.1	3500	U	R		G	M	1	3			W	D								W	75	2	8	2	1	B	A	63 Very graphitic at shear, and in some beds		
220221	94.2	96.2	2.0	944671				1.0	3500	U	RC		LG	M		1	1		M	D									70	3	2	2	1	B	A	65 Minor brecciation		
220221	96.2	97.4	1.2	944672				0.4	3500	U	R		G	M		1							96.3	QD	1	60	T		65	4	2	2	1	B	A	84 Minor Bx, minor graphite in some beds		
220221	97.4	99.2	1.8	944673				3.2	3500	U	FC		LG	M		1													70	2	1	2		A	A	84 becoming graphitic at end of split		
220221	99.2	100.9	1.7	944674				2.4	3500	U	FC		G	M		3													75		2	2		A	A	70 Some graphite and minor microfaulting		
220221	100.9	103.4	2.5	944675				1.4	3500	U	CR		DG	M	4	3	1		W	D									70	3	3	2		C	A	89 Some very graphitic beds		
220221	103.4	106.2	2.8	944676				1.2	3500	U	CR		G	M	2	2													70	2	2			C	A	82 Minor graphitic beds		
220221	106.2	108.2	2.0	944677				0.6	3500	U	PR		G	M	8	2													75	3	7	2		C	A	78 Becoming very graphitic at end of split		
220221	108.2	110.5	2.3	944678				0.2	3500	U	R		DG	M		1							108.8	QZ	17	30	T	M	65	8	10	2		B	A	18 Graphitic at shearing and in beds. Bad ground.		
220221	110.5	112.4	1.9	944679				0.6	3500	U	R		DG	M	2	3												W	75	10	12	1		B	A	29 Minor shearing and bedding breaks		
220221	112.4	114.4	2.0	944680				0.1	3500	U	R		G	M	1	2			M	D									75	6	8	2		B	A	60 Some graphitic beds and weak silicification		
220221	114.4	115.8	1.4	944681				0.1	3500	U	PR		G	M	10	10			W	D									75	8	7	3	1	C	A	38 Fine course grained pyrite, mnr graphitic beds		
220221	115.8	118.8	3.0	944682				0.9	3500	U	IR	T	G	M	3	2							116.9	QZ	33	60	T	M	70	3	1		1	C	A	57 Talc as dol repl. graph at base of flt in shr	0-5%	
220221	118.8	120.0	1.2	944683				1.0	3500	U	I	T	LG																			2		C	A	89 Talc rich as dol repl. Breaks in talc rich area	0-5%	
220221	120.0	122.2	2.2	944684				0.2	3500	U	R	T	DG	M	2	1			W	D									80	4	7	1		C	A	66 Mnr talc in beds. High graph. Mnr sil.	0-5%	
220221	122.2	123.0	0.8	944685				1.4	3500	U	RI	T	LG	M		2							122.7	QH	17	40	T	W	77		1	1		C	A	30 Cu mostly in flt. Talc as dol repl.	0-5%	
220221	123.0	125.2	2.2	944686				0.5	3500	U	I	T	G			3							124.4	QH	3	35						2		C	A	79 Talc as dol repl. Cu conc in small fault	0-5%	28.9%
220221	125.2	126.9	1.7	944687				0.4	3500	U	RI	T	G	M		1			W	D								M	65	6	10	2		C	A	53 High talc as dol repl and conc in shear	10-20%	
220221	126.9	129.4	2.5	944688				0.1	3500	U	I	T	LG			1	1		W	D			128.1	ST	1	60					3			C	A	48 High talc as dol repl.	5-10%	29.0%
220221	129.4	131.5	2.1	944689				0.3	3500	U	R	T	G	M	2	4	3		W	D			131.2	SD	4	65	T	M	45	2	8	3		C	A	50 Mnr flt @ 130.0 for 4cm and AT fill	5-10%	
220221	131.5	133.0	1.5	944690				0.2	3500	U	I	T	DG			2	4						131.9	D	1	65		W			3		C	A	60 Talc in shr and as dol repl in bx	0-5%	
220221	133.0	136.0	3.0	944691				0.1	3500	U	R	T	G	M		8	1		W	D								M	65	5	10	1		C	A	29 Talc in beds as dol repl. Many breaks from shr	5-10%	
220221	136.0	138.0	2.0	944692				0.4	3500	U	R	T	LG	M	2	4	4											M	60	4	6	6	2	C	A	43 Talc as dol repl. Broken ground	0-55	20.9%
220221	138.0	139.6	1.6	944693				0.0	3500	U	PR	T	G	M	8	2	14											W	65	10	15	3	2	C	A	26 Freq bedding brks. Talc in beds as dol repl.	10-20%	
220221	139.6	141.8	2.2	944694				0.2	3500	U	R	T	G	M	3	1	20												65	4	8	1		C	A	68 High Po, talc in bedding as repl.	10-20%	52.0%
220221	141.8	144.3	2.5	944695				0.1	3500	U	R	T	LG	M	3	9	4						142.6	TA	22	50	T	S	75	3	6	8	2	C	A	40 Very sheared and jointed below fault.	5-10%	
220221	144.3	145.9	1.6	944696				0.0	3500	U	YR		DG	M	45	3	1												80	10	7			C	A	20 Frequent bedding breaks	0-5%	3.6%
220221	145.9	146.8	0.9	944697				0.1	3500	U		T	LG			1	4		W	D												3		B	A	78 Minor silicification		
220221	146.8	148.1	1.3	944698				0.0	3500	U	RI	T	NG	M	1	1	15		W	Q								W	75	8	10	2		C	A	44 Shearing at end of split with bedding brks.	0-5%	3.3%

Mine &	Hole		Hole	Hole	Latitude	Departure	R.L.	Hole Beari	Hole Dip	Started (ddmmyy)	Finished (ddmmyy)	Percentage Recovery	Survey Method	Water?	Connector MS Code	1st Rod/Core Size	Start Depth	Start Depth	3rd Rod/Core Size	Start Depth	4th Rod/Core Size	Start Depth		Logged	Plug													
MS Code	Name	Sequence	Level	Length	(Northing)	(Easting)		(degrees)	(degrees)															By	Status													
ISA220221	S669 ED	02	29E	0174.0	6690.0	1917.5	1950.0	090	-20	200202	220202	99	I	N		BQ								LMD	FC													

MS Code	From	To	Recovery	Sample	Visual	Visual	Visual	Visual	Orebody	Formation Code	Major. Minor Rocktype	Mineralogy	Rock Colour	Bedding	%F.G. Pyrite	%C.G. Pyrite	% Pyrrhotite	Fold Axis Position(m)	Veining Strength	Vein Mineralogy	Leaching	Breccia	Fault Position (m)	Major. Minor Fault Fill	Fault Thickness (cm)	Core to Fault Angle	Fault Type	Shearing	Core to Bedding Angle	Smooth Bedding Partings	Rough Bedding Partings	Broken Joints	Unbroken Joints	Joint Type	Metallurgical Characteristics	Core Disposition	REMARKS	Visual Talc Estimate (%)	QXRD (%)
220221	148.1	150.1	1.9	944699				0.0	3500	U	RI	T	G	M		2	2		W	D			149.7	D	3	35	T	S	75	30	20	8	3		C	A	04 Very sheared, ass with flt. Talc in f as repl.	0-5	
220221	150.1	151.8	1.7	944700				0.0	3500	U	R		NG	M		4			W	D								W	70	3	10				B	A	39 Bedding breaks with mnr shearing. High graphite		
220221	151.8	153.0	1.2	944701				0.0	3500	U	R		G	M		3			W	D									80	10	6	1	1		B	A	28 Bedding breaks, very minor graphite		
220221	153.0	154.5	1.5	944702				0.0	3500	U	R		NG	M	2	4			M	D									75	8	5				B	A	56 High graphite content		
220221	154.5	156.0	1.5	944703				0.0	3500	U	R		G	M		1			S	D			155.9	B	2	30	T	W	80	3	8	2	2		B	A	41 Becoming slightly graphitic at end of split		
220221	156.0	159.0	3.0	944704				0.0	3500	U	R		N	M	2	4	2		M	D									70	7	12				B	A	72 Very graphitic		
220221	159.0	162.0	3.0	944705				0.0	3500	U	R		N	M		4	1												80	15	15				B	A	70 Very graphitic		
220221	162.0	165.0	3.0	944706				0.0	3500	U	R		LG	M		1			S	D									80	13	10	9	4		B	A	33 Freq joint and bedding breaks.		
220221	165.0	168.0	3.0	944707				0.0	3500	U	R		G	M		2			M	D									85	15	10	3	1		B	A	55 CGPy in dol veins. Freq brks		
220221	168.0	171.0	3.0	944708				0.0	3500	U	R		G	M		1			M	D			170.6	D	2	40	T	W	85	20	15	3	1		B	A	21 Mnr shr after mnr fault. Freq brks		
220221	171.0	174.0	3.0	944709				0.0	3500	U	R		G	M		2			W	D			171.3	B	5	80	T	M	85	18	15	3			B	A	38 Minor graphite. EOH		

Table 1

Microprobe results from polished section 200303282E.

Beam Current	21.26
Acc. Voltage	15.01
Take Off Angle	40
Tilt Angle	0
Azimut Angle	0

Label	No	W%(O)	W%(Mg)	W%(Al)	W%(Si)	W%(K)	W%(Ca)	W%(Fe)	A%(O)	A%(Mg)	A%(Al)	A%(Si)	A%(K)	A%(Ca)	A%(Fe)	Ox%(O)	Ox%(Mg)	Ox%(Al)	Ox%(Si)	Ox%(K)	Ox%(Ca)	Ox%(Fe)	
200303282E	1	47.1693	17.623	0.0167	30.3193	0.0001	0.0245	3.508	61.2092	15.0491	0.0129	22.412	0.0001	0.0127	1.3041	0	29.2202	0.0316	64.8617	0.0001	0.0343	4.513	talc
200303282E	2	48.8484	18.422	0.0133	31.4301	0.0071	0.0001	3.156	61.221	15.1935	0.0099	22.4388	0.0036	0.0001	1.1331	0	30.545	0.0252	67.2381	0.0085	0.0002	4.0602	talc
200303282E	3	17.6643	12.2484	0.0067	0.0092	0.0001	21.0123	4.1884	50.0102	22.8199	0.0113	0.0148	0.0001	23.7467	3.3971	0	20.3086	0.0127	0.0197	0.0001	29.4	5.3883	dolomite
200303282E	4	18.4759	13.0931	0.0002	0.001	0.003	23.9878	0.9862	50	23.3173	0.0003	0.0015	0.0033	25.9131	0.7646	0	21.7093	0.0003	0.0021	0.0036	33.5631	1.2687	dolomite
200303282E	5	16.5575	7.5431	0.004	0.0047	0.0001	25.1518	5.3918	50.0058	14.9916	0.0071	0.0081	0.0001	30.3222	4.665	0	12.507	0.0075	0.0101	0.0001	35.1919	6.9365	dolomite
200303282E	6	12.1742	5.3999	0.0735	2.9266	0.0001	10.3337	3.8258	53.7267	15.6822	0.1924	7.3574	0.0002	18.2043	4.8369	0	8.9534	0.1389	6.2609	0.0001	14.4587	4.9218	
200303282E	7	38.2032	16.3224	10.7699	13.8433	0.0173	0.1495	7.1493	58.4762	16.4413	9.7749	12.0704	0.0109	0.0914	3.135	0	27.0637	20.349	29.6148	0.0209	0.2092	9.1974	
200303282E	8	44.544	16.0276	0.4502	28.1331	0.0001	0.0366	5.3406	61.0788	14.4625	0.366	21.9746	0.0001	0.02	2.0979	0	26.5749	0.8506	60.1847	0.0001	0.0512	6.8706	talc
200303282E	9	46.2029	16.7554	0.0331	29.7268	0.0001	0.0318	4.4235	61.2264	14.6115	0.026	22.4398	0.0001	0.0168	1.6793	0	27.7816	0.0626	63.5941	0.0001	0.0446	5.6907	talc
200303282E	10	16.8124	9.7263	0.0078	0.0001	0.0001	21.3845	6.5224	50.0035	19.0366	0.0138	0.0002	0.0001	25.3883	5.5574	0	16.1269	0.0148	0.0003	0.0001	29.9206	8.391	dolomite
200303282E	11	15.0916	9.6434	0.0107	0.0078	0.0008	0.6311	29.5837	50.0123	21.0302	0.0211	0.0146	0.0011	0.8348	28.0859	0	15.9894	0.0203	0.0166	0.0009	0.883	38.0589	
200303282E	12	32.0256	15.1157	0.0134	19.0246	0.0088	0.0418	1.3038	60.1851	18.6936	0.0149	20.3662	0.0068	0.0314	0.7019	0	25.0629	0.0253	40.699	0.0107	0.0585	1.6773	talc

Table 2

Stoichiometric calculations for drillhole 211130 from drillfan S699; showing talc, chlorite and dolomite quantities

mscode	From	To	Sampno	Pb	Zn	Cu	Co	Fe	S	SiO2	Al2O3	CaO	As	Sb	MgO	Dolomite	Talc	Chlorite	Quartz	Chalcopyrite	Fe Sulphides	Non sulphide gangue
211130	0	3	941216	0	0.016	0.095	0.003	6.3	3.5	39.7	6.7	9.6	0.028	0.013	12.5	41.53	8.93	23.59	28.91	0.27	6.37	93.36
211130	3	6	941217	0.02	0.014	0.1	0.006	7.9	3.7	41	6.6	8.6	0.1	0.001	12.7	42.19	12.29	23.24	28.24	0.29	6.73	92.98
211130	6	9	941218	0.028	0.01	0.1	0.004	8	3.6	39	6.9	9.4	0.051	0.008	11.8	39.20	6.32	24.30	29.65	0.29	6.55	93.16
211130	9	12	941219	0	0.01	0.1	0.007	11.8	6.2	35.5	5.4	9.1	0.076	0	11.9	39.53	10.81	19.01	24.60	0.29	11.41	88.30
211130	12	14.7	941220	0	0.01	0.057	0.002	6.3	2.2	38.6	6.1	10.4	0.042	0	14.1	46.84	14.39	21.48	24.95	0.16	4.01	95.83
211130	14.7	16.9	941221	0.06	0.016	0.2	0.008	11.3	7.1	30.7	4.8	11	0.1	0	12.4	41.20	9.51	16.90	21.07	0.58	12.91	86.52
211130	16.9	18	941222	0.091	0.016	0.2	0.006	11.4	6.1	35.4	5.8	8.7	0.078	0	11.8	39.20	10.48	20.42	24.38	0.58	11.03	88.39
211130	18	21	941223	0.039	0.012	0.065	0.006	8	4.3	38.1	5.6	9.9	0.083	0.001	12.6	41.86	11.08	19.72	26.88	0.19	7.92	91.89
211130	21	24	941224	0.016	0.011	0.098	0.003	7	3.3	34.7	5.3	12.2	0.039	0.002	12.8	42.52	7.02	18.66	26.19	0.28	5.99	93.73
211130	24	26.3	941225	0	0	0.1	0.003	5.6	3	35.8	5.2	13.1	0.016	0.015	10.2	33.89	-4.68	18.31	34.52	0.29	5.42	94.29
211130	26.3	27	941226	0.045	0.012	0.069	0.008	9.4	6.8	29.5	4.6	13.2	0.071	0.007	11.2	37.21	0.20	16.20	25.71	0.20	12.59	87.21
211130	27	30	941227	0.017	0.016	0.053	0.005	7.4	4.4	38.5	7.1	9.3	0.059	0.008	12.4	41.20	8.36	25.00	27.74	0.15	8.13	91.72
211130	30	30.7	941228	0.1	0.012	0.081	0.03	22.7	22.9	11.6	1.3	11.8	0.056	0.006	8.5	28.24	0.86	4.58	10.04	0.23	42.69	57.08
211130	30.7	32.7	941229	0	0	0.047	0.004	5.1	1.7	43	5.3	10.5	0.058	0	13.4	44.52	13.33	18.66	30.64	0.14	3.09	96.77
211130	32.7	35.2	941230	0.017	0	0.05	0.01	10.2	6.6	38.4	5.5	8.3	0.1	0	12.1	40.20	13.24	19.37	25.93	0.14	12.25	87.60
211130	35.2	37.3	941231	0	0.01	0.019	0.003	5.6	1.8	40.4	6.9	9.2	0.039	0	15.1	50.17	19.20	24.30	23.18	0.05	3.33	96.61
211130	37.3	39.8	941232	0.019	0	0.052	0.003	7.4	3.4	42.4	8	6.5	0.024	0.001	13.6	45.18	17.51	28.17	25.33	0.15	6.26	93.59
211130	39.8	41.5	941233	0.1	0.011	0.1	0.01	15.1	11.1	26.3	4.1	10.5	0.077	0	11.6	38.54	9.28	14.44	17.37	0.29	20.58	79.13
211130	41.5	43.1	941234	0.018	0.021	0.055	0.005	7.5	4.2	34.3	5.1	11.7	0.046	0	14.4	47.84	14.68	17.96	21.27	0.16	7.75	92.09
211130	43.1	43.8	941235	0.057	0.016	0.054	0.006	10.1	6.6	38.8	5.7	8	0.041	0	12.7	42.19	15.76	20.07	24.64	0.16	12.25	87.60
211130	43.8	45	941236	0	0	0.072	0.003	9	3.8	43.2	7.9	5.3	0.02	0	13.8	45.85	21.35	27.82	23.87	0.21	6.97	92.82
211130	45	46.1	941237	0.038	0	0.1	0.006	11.4	6.8	46.2	7.9	3.3	0.053	0	11.1	36.88	15.97	27.82	30.15	0.29	12.53	87.18
211130	46.1	47.2	941238	0.04	0.011	0.083	0.007	9.9	6.3	37.4	7	7.3	0.09	0	13.2	43.85	16.36	24.65	21.83	0.24	11.63	88.13
211130	47.2	48	941239	0.035	0	0.067	0.007	8.5	5.2	30.9	2.2	15.1	0.082	0	12	39.87	4.11	7.75	26.64	0.19	9.60	90.20
211130	48	49.9	941240	0.021	0	0.048	0.004	7	3.3	37.3	5.3	11	0.064	0	13.7	45.51	13.27	18.66	24.98	0.14	6.08	93.78
211130	49.9	53	941241	0.024	0.016	0.3	0.005	7.1	3.5	34.6	5.3	11.7	0.1	0	13.8	45.85	11.97	18.66	23.07	0.87	5.98	93.15
211130	53	53.9	941242	0.049	0.016	0.4	0.018	11.5	9.5	33.6	5.6	7.9	0.1	0	12.7	42.19	16.22	19.72	19.23	1.15	17.02	81.83
211130	53.9	54.7	941243	0.011	0.012	0.1	0.009	4.6	1.4	33.3	4.6	14.1	0.091	0	15.3	50.83	13.47	16.20	21.41	0.29	2.43	97.28
211130	54.7	56	941244	0.035	0.037	0.8	0.008	6.7	4	27.3	3.9	14.8	0.07	0	14.7	48.84	11.13	13.73	17.40	2.31	5.97	91.72
211130	56	58.3	941245	0.015	0.019	0.2	0.007	6.9	4.5	41.5	6.6	7.9	0.078	0.004	12.8	42.52	14.33	23.24	27.49	0.58	8.04	91.38
211130	58.3	59	941246	0.019	0.026	0.5	0.01	10.1	6.9	38.7	6.4	6.8	0.2	0	12	39.87	14.40	22.54	24.81	1.44	11.97	86.59
211130	59	61.6	941247	0.1	0.036	0.5	0.014	12.2	10.5	28.6	3.5	11.5	0.1	0.001	11.8	39.20	9.00	12.32	20.31	1.44	18.70	79.86
211130	61.6	62.2	941248	0.025	0.011	0.2	0.006	7.3	4.7	29.1	2	15.9	0.06	0	12.5	41.53	4.54	7.04	24.74	0.58	8.42	91.01
211130	62.2	64.6	941249	0.022	0.01	0.099	0.007	6.7	3.8	40.6	6.7	7.6	0.053	0	14.9	49.50	22.72	23.59	21.39	0.29	6.92	92.79
211130	64.6	65.9	941250	0.015	0	0.2	0.009	3.7	1.7	39.6	1.5	14.5	0.054	0	12	39.87	7.13	5.28	34.05	0.58	2.80	96.62
211130	65.9	67.7	941251	0.014	0	0.1	0.004	5.7	2.5	43.6	5.8	8.3	0.052	0	14.3	47.51	20.83	20.42	26.26	0.29	4.49	95.22
211130	67.7	69.6	941252	0.029	0	0.1	0.005	7.1	3.9	43.4	7.2	6	0.063	0	15.3	50.83	26.91	25.35	21.23	0.29	7.11	92.60
211130	69.6	70.2	941253	0.086	0	0.3	0.006	8.3	5.6	30.7	4.6	11.8	0.062	0	15.1	50.17	18.21	16.20	15.92	0.87	9.91	89.22
211130	70.2	71.4	941254	0.042	0	0.1	0.005	6.7	3.3	38.2	6.2	8.6	0.059	0	16.5	54.82	27.48	21.83	16.48	0.29	5.99	93.73
211130	71.4	72.3	941255	0.052	0.01	0.1	0.007	8.3	5.5	48	6.6	4	0.059	0	13.9	46.18	27.77	23.24	25.78	0.29	10.10	89.61
211130	72.3	73.4	941256	0.045	0	0.068	0.008	10.7	7.5	32.4	3.8	10.8	0.054	0	13	43.19	14.51	13.38	20.51	0.20	13.90	85.90
211130	73.4	76.5	941257	0.028	0	0.1	0.017	4.8	2.4	45.4	4.1	8.7	0.046	0	13.7	45.51	21.47	14.44	29.02	0.29	4.30	95.41
211130	76.5	78.4	941258	0.043	0.01	0.7	0.028	6.6	4.3	40.4	1.2	13.1	0.1	0	11.8	39.20	10.39	4.23	33.09	2.02	6.72	91.26
211130	78.4	81	941259	0	0	0.048	0.008	5.3	2.2	38	6.5	9.6	0.097	0	16.8	55.81	25.54	22.89	17.22	0.14	4.03	95.84
211130	81	83.2	941260	0.018	0	0.051	0.008	4.7	2.3	35.3	4.4	13.1	0.059	0	15.3	50.83	16.31	15.49	21.83	0.15	4.21	95.65
211130	83.2	83.8	941261	0.034	0	0.086	0.007	6.1	3.5	42.5	5.8	7.6	0.05	0	15.9	52.82	28.52	20.42	20.46	0.25	6.39	93.37
211130	83.8	84.5	941262	0.012	0	0.07	0.005	5.2	2.4	57.1	7.2	1.5	0.035	0	15.3	50.83	37.64	25.35	28.37	0.20	4.36	95.44
211130	84.5	87.2	941263	0.024	0	0.1	0.013	8.5	6.4	45.5	5.5	4.3	0.061	0	15.8	52.49	36.69	19.37	18.71	0.29	11.78	87.93
211130	87.2	88	941264	0.014	0	0.3	0.017	4.7	2.5	31.8	1.5	15.4	0.088	0.013	17.2	57.14	24.53	5.28	15.62	0.87	4.11	95.02
211130	88	90.6	941265	0	0	0.2	0.009	5.7	3.3	48.2	5.5	5.6	0.062	0	16	53.16	34.34	19.37	22.84	0.58	5.80	93.63
211130	90.6	92.5	941266	0	0	0.045	0.009	7.2	4.3	35.3	5.6	9.9	0.083	0	16.5	54.82	25.74	19.72	15.12	0.13	7.96	91.91
211130	92.5	94.4	941267	0.045	0	0.1	0.006	5.7	2.5	30.4	3.5	14.6	0.054	0	15.3	50.83	14.77	12.32	18.59	0.29	4.49	95.22

Table 2

Stoichiometric calculations for drillhole 211130 from drillfan S699; showing talc, chlorite and dolomite quantities

211130	94.4	96.7	941268	0.017	0	0.2	0.016	5.2	2.7	47.2	4.9	6.6	0.069	0	15.9	52.82	32.94	17.25	23.18	0.58	4.67	94.75
211130	96.7	98.2	941269	0.045	0	0.7	0.033	4	2.7	52	1.4	7.5	0.073	0	15.2	50.50	36.08	4.93	28.84	2.02	3.73	94.25
211130	98.2	99.7	941270	0.019	0	0.2	0.025	2.6	0.8	67.4	5.7	0.2	0.077	0	14.4	47.84	40.76	20.07	37.96	0.58	1.12	98.30
211130	99.7	102.4	941271	0	0	1.1	0.04	2.9	2.6	85.9	1.4	0.1	0.095	0	2.2	7.31	4.86	4.93	81.81	3.17	2.79	94.04
211130	102.4	104.5	941272	0.03	0	0.2	0.027	2.4	1.3	77.5	4.8	0.1	0.076	0.003	7.8	25.91	18.22	16.90	62.55	0.58	2.05	97.37
211130	104.5	107.2	941273	0.011	0	0.6	0.065	3.4	3.2	86.5	1.4	0.038	0.1	0	1.8	5.98	3.51	4.93	83.24	1.73	4.85	93.41
211130	107.2	108.7	941274	0.011	0	0.6	0.04	2.5	2	82.6	2.8	0.1	0.092	0	4.3	14.29	9.59	9.86	74.51	1.73	2.61	95.66
211130	108.7	110.1	941275	0	0	0.3	0.038	3	1.9	73.3	5.4	0.1	0.092	0	8.8	29.24	20.62	19.01	56.40	0.87	2.99	96.15
211130	110.1	110.9	941276	0	0	4.2	0.065	6.4	6.7	76.7	1.4	0.018	0.1	0	1.9	6.31	3.93	4.93	73.18	12.12	4.61	83.27
211130	110.9	111.8	941277	0	0	1.3	0.02	2.3	2	89.1	1.1	0.017	0.065	0	1.1	3.65	1.60	3.87	87.24	3.75	1.29	94.96
211130	111.8	114	941278	0	0	0.4	0.085	1.5	0.8	85.1	3	0.059	0.1	0.001	4.5	14.95	9.99	10.56	76.61	1.15	0.74	98.10
211130	114	115.3	941279	0	0	1.1	0.1	2.5	1.8	82.6	2.7	0.066	0.2	0	4.2	13.95	9.52	9.51	74.63	3.17	1.29	95.53
211130	115.3	116.2	941280	0	0	0.5	0.075	2.2	1.4	83.6	2.9	0.088	0.1	0.003	4.5	14.95	10.14	10.21	75.09	1.44	1.68	96.88
211130	116.2	119.1	941281	0	0	3.1	0.062	5	5.1	81.8	0.8	0.08	0.1	0.002	1.1	3.65	2.13	2.82	79.86	8.95	3.69	87.36
211130	119.1	119.9	941282	0	0	2.6	0.034	5	5.1	82.7	0.9	0.051	0.082	0	1.3	4.32	2.73	3.17	80.32	7.50	4.63	87.86
211130	119.9	121.2	941283	0	0	1.1	0.057	2.3	2.1	86.2	1.5	0.04	0.1	0	2.1	6.98	4.40	5.28	82.32	3.17	1.85	94.97
211130	121.2	124	941284	0	0	2.9	0.052	4	4	83.2	1.1	0.047	0.1	0.002	1.7	5.65	3.79	3.87	80.01	8.37	2.01	89.62
211130	124	126.7	941285	0	0	2	0.1	3.6	3.5	82.4	1.7	0.058	0.2	0	2.6	8.64	5.79	5.99	77.51	5.77	2.77	91.46
211130	126.7	128.6	941286	0.01	0	1.1	0.04	3.1	2.9	85.9	1.5	0.057	0.095	0.001	2.3	7.64	5.12	5.28	81.58	3.17	3.35	93.48
211130	128.6	130	941287	0	0	2.6	0.058	5.6	6	80.2	1.1	0.038	0.09	0	1.5	4.98	3.06	3.87	77.46	7.50	6.32	86.18
211130	130	132	941288	0.011	0	1.1	0.047	3	2.9	86.3	1.3	0.081	0.096	0	1.9	6.31	4.01	4.58	82.82	3.17	3.35	93.48
211130	132	133.4	941289	0	0	0.2	0.02	2	1.3	81.7	3.5	0.1	0.051	0	5.4	17.94	12.14	12.32	71.50	0.58	2.05	97.37
211130	133.4	135.6	941290	0.015	0	2.2	0.057	5.4	5	68.9	4.8	0.1	0.093	0	6.8	22.59	14.46	16.90	56.25	6.35	5.20	88.45
211130	135.6	138	941291	0.01	0	0.5	0.074	3.3	2.6	77.2	4.3	0.092	0.1	0.002	6.1	20.27	12.98	15.14	65.85	1.44	3.92	94.64
211130	138	139.1	941292	0	0	0.4	0.021	1.8	1.5	86.9	2.3	0.062	0.057	0.003	3.2	10.63	6.68	8.10	80.99	1.15	2.05	96.79
211130	139.1	141	941293	0.015	0	0.4	0.047	3.5	3.3	78.5	4	0.1	0.075	0.006	4.9	16.28	9.13	14.08	69.74	1.15	5.42	93.43
211130	141	144	941294	0	0	0.4	0.024	2.3	1.9	84.3	2.6	0.07	0.064	0	4.1	13.62	9.36	9.15	76.51	1.15	2.80	96.05
211130	144	146.3	941295	0	0	0.5	0.032	2.9	2.6	81.8	2.5	0.086	0.056	0	4.1	13.62	9.55	8.80	73.98	1.44	3.92	94.64
211130	146.3	148.5	941296	0.01	0	0.4	0.027	3.2	2.8	82.5	2.6	0.078	0.064	0.001	3.9	12.96	8.59	9.15	75.18	1.15	4.48	94.36
211130	148.5	150.3	941297	0.011	0	0.4	0.046	4	3.7	78.3	3.4	0.1	0.075	0.003	4.9	16.28	10.49	11.97	69.19	1.15	6.17	92.68
211130	150.3	151.8	941298	0.014	0	0.8	0.042	4.5	4.3	79.3	2.6	0.1	0.072	0.003	3.8	12.62	8.16	9.15	72.24	2.31	6.53	91.16
211130	151.8	153.7	941299	0.016	0	0.6	0.067	2.7	2.4	86.2	1.6	0.1	0.1	0	2.4	7.97	5.16	5.63	81.77	1.73	3.36	94.91
211130	153.7	155.9	941300	0.018	0	3	0.4	4.3	4.3	80.7	1.3	0.2	0.7	0	1.9	6.31	3.72	4.58	77.39	8.66	2.38	88.96
211130	155.9	158.3	941301	0	0	2.9	0.066	4.6	4.4	81.5	1	0.3	0.1	0	1.3	4.32	1.91	3.52	79.54	8.37	2.76	88.87
211130	158.3	159	941302	0.021	0	1.6	0.059	3.4	2.3	81.9	2.1	0.3	0.097	0	2.9	9.63	5.43	7.39	76.91	4.62	1.28	94.10
211130	159	162	941303	0.01	0	3.4	0.047	7.4	6.6	74.4	1.5	0.2	0.086	0	2.2	7.31	4.40	5.28	70.52	9.81	5.93	84.26
211130	162	163.6	941304	0	0	4.1	0.023	6.8	5.7	74.4	1.6	0.2	0.05	0	2.5	8.31	5.30	5.63	69.89	11.83	2.92	85.24
211130	163.6	166.3	941305	0	0	1.4	0.025	2.9	2	84.2	1.9	0.2	0.062	0	2.9	9.63	6.12	6.69	78.95	4.04	1.10	94.86
211130	166.3	167.7	941306	0	0.014	7.2	0.049	10.5	9.8	60.5	2	0.5	0.071	0	3.5	11.63	7.44	7.04	54.36	20.78	4.74	74.48
211130	167.7	169.9	941307	0	0	2.7	0.1	4.7	3.8	77.9	2.2	0.1	0.1	0.001	3	9.97	6.06	7.75	72.45	7.79	2.01	90.20
211130	169.9	171	941308	0	0	1	0.055	2.9	1.5	77	5.7	0.1	0.098	0.012	4.7	15.61	4.53	20.07	69.70	2.89	0.92	96.20
211130	171	172.8	941309	0	0	2	0.061	9.3	9.1	64.5	4.1	0.1	0.063	0.007	3.7	12.29	4.39	14.44	58.55	5.77	13.25	80.98
211130	172.8	173.4	941310	0	0.01	1.2	0.054	4.5	1.4	49.8	15.3	0.2	0.048	0.049	9.3	30.90	-0.15	53.87	37.71	3.46	0.35	96.18
211130	173.4	174.5	941311	0	0	0.7	0.034	3.2	1.9	64.7	11.5	0.2	0.022	0.047	4.7	15.61	-8.84	40.49	60.95	2.02	2.23	95.75
211130	174.5	176.6	941312	0	0	1.2	0.028	3.8	1.6	62.4	9.1	0.3	0.054	0.011	10.4	34.55	17.78	32.04	44.29	3.46	0.73	95.81
211130	176.6	179.2	941313	0	0	0.7	0.046	3.2	1.3	66.7	6.6	1.2	0.086	0.003	10.2	33.89	20.54	23.24	48.90	2.02	1.11	96.87
211130	179.2	181.2	941314	0.017	0	0.6	0.06	7.5	6.3	36.8	1.4	13	0.1	0.044	11	36.54	7.17	4.93	31.30	1.73	10.65	87.61
211130	181.2	184.2	941315	0	0	0.3	0.009	2.2	1.1	76.9	3.8	1.4	0.05	0.007	6.7	22.26	13.25	13.38	65.78	0.87	1.49	97.64
211130	184.2	186	941316	0	0	0.036	0.009	4.3	3.4	76.8	4.5	0.2	0.049	0.003	4.9	16.28	7.76	15.85	68.48	0.10	6.29	93.60
211130	186	189	941317	0	0	0.1	0.027	6.2	5.7	60.1	10.6	0.4	0.027	0.042	4.1	13.62	-9.53	37.32	57.49	0.29	10.48	89.24
211130	189	189.9	941318	0	0	0.027	0.02	4.1	2.1	60.7	12.2	0.4	0	0.037	7	23.26	-2.25	42.96	52.37	0.08	3.88	96.04
211130	189.9	192.6	941319	0	0	0.02	0.002	1.8	0.8	70.4	11.1	0.2	0	0.044	3.5	11.63	-12.44	39.08	69.17	0.06	1.46	98.48
211130	192.6	194.6	941320	0	0	0.052	0.013	4	2.3	64.3	10.7	0.2	0	0.035	5.6	18.60	-3.64	37.68	58.01	0.15	4.20	95.65
211130	194.6	196	941321	0	0	0.041	0.004	2.9	1.2	67.4	10.5	0.4	0	0.032	5.4	17.94	-4.42	36.97	61.75	0.12	2.17	97.71

Table 2

Stoichiometric calculations for drillhole 211130 from drillfan S699; showing talc, chlorite and dolomite quantities

211130	196	198.7	941322	0.039	0	0.027	0.016	3.4	1.5	62.3	11.5	1	0.01	0.038	6.3	20.93	-4.73	40.49	56.04	0.08	2.76	97.17
211130	198.7	201.6	941323	0	0	0.044	0.007	5.3	3.4	65.9	7.6	0.9	0.02	0.013	6.8	22.59	6.21	26.76	56.06	0.13	6.28	93.60
211130	201.6	203.2	941324	0	0	0.041	0.009	5.4	3.3	68.6	6.4	0.2	0.042	0.001	8	26.58	15.11	22.54	54.27	0.12	6.10	93.79
211130	203.2	206.1	941325	0	0	0.059	0.01	4.3	2.8	74.7	4.8	0.4	0.04	0.002	5.3	17.61	8.11	16.90	65.93	0.17	5.13	94.70
211130	206.1	208.8	941326	0	0	0.066	0.005	4.3	2.3	63.1	9.2	1.2	0	0.023	6.5	21.59	0.75	32.39	55.32	0.19	4.18	95.63
211130	208.8	210.4	941327	0	0	0.039	0.013	3.7	2.5	63.7	10.5	1.4	0.012	0.04	4.1	13.62	-11.69	36.97	62.49	0.11	4.60	95.28
211130	210.4	213.2	941328	0	0	0.041	0.004	2.6	1.4	66.6	10.5	1.2	0	0.04	3.6	11.96	-13.10	36.97	66.25	0.12	2.54	97.34
211130	213.2	215.8	941329	0	0	0.063	0.004	2.5	1.1	73.3	6.9	1.9	0.016	0.032	3	9.97	-8.87	24.30	73.23	0.18	1.94	97.88
211130	215.8	217.3	941330	0	0	0.022	0.002	1.5	0.6	84.9	3.1	0.8	0.036	0.012	1.6	5.32	-2.91	10.92	84.21	0.06	1.08	98.86
211130	217.3	219	941331	0	0	0.042	0.004	7.8	4.1	47.5	12.3	1.4	0	0.016	11.8	39.20	13.18	43.31	29.66	0.12	7.59	92.29
211130	219	221	941332	0	0	0.019	0.002	5.7	1.3	53.4	12.9	0.4	0	0.01	12.5	41.53	16.84	45.42	32.85	0.05	2.40	97.55
211130	221	228	941333	0	0	0.019	0.003	5.7	1.3	53.2	12.8	0.4	0	0.011	12.4	41.20	16.69	45.07	32.82	0.05	2.40	97.55

Table 3

Quantitative XRD results for the combined 14 samples from drillhole 220221 and drillhole 211135

Minerals	Drillhole 220221						
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Chalcopyrite	1.90%	5.50%	4.50%	3.70%	1.50%	1.00%	0.60%
Chlorite	6.90%	3.50%	2.00%	7.20%	**16.80%**	9.40%	9.60%
Dolomite	29.00%	35.20%	41.20%	10.50%	2.40%	29.00%	33.30%
Pyrite	4.80%	0.00%	0.00%	12.80%	8.60%	28.80%	3.20%
Quartz	**54.70%**	17.20%	10.40%	42.70%	5.10%	20.30%	26.60%
Talc	2.00%	28.90%	29.00%	20.90%	**52.00%**	3.60%	3.30%
Magnesite	0.20%	6.30%	9.80%	0.00%	0.10%	0.80%	1.30%
Pyrrhotite-3C 7:8	0.50%	3.40%	3.00%	2.30%	13.50%	3.00%	17.90%
Muscovite	0.00%	0.00%	0.00%	0.00%	0.00%	4.20%	4.10%
Orthoclase 1	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Minerals	Drillhole 211135						
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Chalcopyrite	0.90%	0.80%	1.90%	**13.30%**	6.70%	3.50%	2.10%
Chlorite	9.60%	16.50%	9.00%	1.80%	0.90%	5.50%	1.70%
Dolomite	32.50%	32.70%	18.10%	1.20%	6.60%	34.80%	8.60%
Pyrite	2.50%	5.10%	3.20%	12.00%	0.00%	1.40%	0.80%
Quartz	39.70%	27.60%	47.20%	**58.60%**	0.80%	32.30%	**65.70%**
Talc	3.60%	7.50%	15.60%	12.10%	**59.50%**	14.40%	18.30%
Magnesite	0.10%	0.00%	0.30%	0.10%	**24.00%**	1.90%	0.60%
Pyrrhotite-3C 7:8	8.70%	9.60%	3.00%	0.50%	0.60%	4.30%	1.10%
Muscovite	2.40%	0.30%	1.70%	0.30%	1.00%	1.50%	1.10%
Orthoclase 1	0.00%	0.00%	0.00%	0.00%	0.00%	0.40%	0.00%

Table 4

Quantitative XRD results for the 3 high talc samples. Sample 1 represents green talc, sample 2 is grey talc and sample 3 is from stope V647

Mineral	Sample 1	Sample 2	Sample 3
Chalcopyrite	1.20%	0.30%	3.90%
Chlorite	0.00%	0.00%	12.40%
Dolomite	4.90%	0.00%	46.10%
Quartz	16.70%	0.90%	1.60%
Pyrrhotite-4C	-0.90%	0.50%	3.30%
Talc (monoclinic)	76.30%	98.30%	32.80%

Table 5

Results from SEM analysis of the 3 high talc samples. * Beam has analysed area of talc intergrown with chlorite. Note the corresponding higher FeO.

	MgO	Al2O3	SiO2	MnO	FeO	Total
Sample 1						
talc1 4 Point 1	30.11	-0.16	61.18	-0.24	**3.08**	93.97
talc1 4 Point 2	31.84	0.04	61.02	0.19	**3.01**	96.1
talc1 4 Point 3	31.57	-0.17	62.96	-0.04	**2.24**	96.56
talc1 4 Point 4	31	-0.14	60.94	0.15	**3.6**	95.55
talc1 4 Point 6	29.94	0	60.02	-0.06	**4.09**	93.99
talc1 4 Point 7	30.92	-0.08	60.26	0.08	**3**	94.18
talc1 4 Point 8	31.75	-0.31	60.91	0.12	**3.33**	95.8
talc1 4 Point 9	32.3	-0.02	60.1	-0.04	**2.98**	95.32
talc1 4 Point 10	31.09	-0.27	61.96	0.17	**3.28**	96.23
Sample 2						
Talc2 1 Point 1	30.37	0.03	61.75	-0.06	**3.56**	95.65
Talc2 1 Point 2	31.14	-0.09	60.54	-0.17	**3.51**	94.93
Talc2 1 Point 4	30.72	0.13	60.86	-0.1	**3.78**	95.39
Talc2 1 Point 5	30.78	-0.07	60.73	0.2	**3.93**	95.57
Talc2 1 Point 6	29.74	-0.04	60.96	-0.18	**3.45**	93.93
Talc2 1 Point 7	30.27	0.13	60.61	-0.1	**3.18**	94.09
Talc2 1 Point 8	29.76	0.06	60.29	0.09	**3.33**	93.53
Talc2 1 Point 9	31.62	-0.12	61.86	0	**3.57**	96.93
Talc2 1 Point 10	30.18	-0.01	60.47	-0.14	**3.03**	93.53
Talc2 1 Point 11	29.62	0.19	61.34	0.06	**3.46**	94.67
Sample 3						
Talc3 1 Point 2	30.28	-0.2	61	0.02	**4.06**	95.16
Talc3 1 Point 3	28.42	0.16	59.82	0.09	**4.64**	93.13
Talc3 1 Point 4	30.15	-0.09	61.12	-0.25	**4.47**	95.4
Talc3 1 Point 5	29.77	-0.05	62.75	0	**4.38**	96.85
Talc3 1 Point 6	28.83	0.14	62.28	-0.12	**4.05**	95.18
Talc3 1 Point 8	28.29	0.09	60.32	-0.09	**3.96**	92.57
Talc3 1 Point 9	29.76	***4.85**	56.37	0.1	***5.74**	96.82
Talc3 1 Point 11	30.75	-0.12	60.46	0.19	**4.54**	95.82
Talc3 2 Point 2	31.31	0.02	60.49	-0.18	**4.24**	95.88
Talc3 2 Point 3	28.72	0.19	61.2	0.05	**4.77**	94.93
Talc3 2 Point 4	30.69	-0.2	62.1	-0.1	**3.82**	96.31
Talc3 2 Point 5	30.32	-0.17	61.59	-0.02	**4.55**	96.27
Talc3 2 Point 6	30.18	-0.17	61.47	0.12	**4.05**	95.65
Talc3 2 Point 8	28.25	-0.19	60.38	0.01	**4.06**	92.51
Talc3 2 Point 9	30.11	***3.98**	57.34	0.06	***5.71**	97.2
Talc3 2 Point 11	31.14	-0.15	61.88	-0.07	**4.12**	96.92
Intergrown chlorite						
Talc3 2 Point 7	28.02	***12.07**	41.16	0.02	***7.79**	89.06
Talc3 2 Point 1	27.05	***11.94**	39.32	0.08	***9.26**	87.65
Talc3 1 Point 1	26.66	***11.91**	38.67	0.08	***9.06**	86.38
Talc3 1 Point 7	28.71	***14.15**	38.29	-0.07	***8.9**	89.98

FIGURE CAPTIONS

Figure 1: Location of Mount Isa Inlier and regional geology map of the Mount Isa region (Bullock, 2001; Heinrich et al., 1989; Painter et al., 1999).

Figure 2: Simplified tectonic map of the Proterozoic Mount Isa Inlier showing the three structural belts (Blake, 1987).

Figure 3: Time-space diagram of the stratigraphy in the Western Fold Belt. Modified after M.G. O'Dea et al., 1997.

Figure 4: Subdivison of the Mount Isa Group into upper and lower groups based on their dolomitic content (Neudert, 1983; Law, 1999).

Figure 5: Cross section of the Mount Isa Mines at 6207mN showing the position of the Upper Mount Isa Group units, fault structures and the silica-dolomite halo with regards to the position of the orebodies.

Figure 6a: Cross section of the 3500 orebody showing the orientation of the N-S, NNW fault structures and Basement Contact Zone (Paroo Fault).

Figure 6b: Photo showing the Basement Contact Zone within the mine (distance between yellow paint marks is 1 metre).

Figure 7: Cross section of the 3000 and 3500 copper orebodies showing the distribution of the major rocktypes in the silica-dolomite alteration halo.

Figure 8a: Photo of recrystallised shale in diamond drillcore. The dolomitic and bedded texture are the dominant features within this rock type.

Figure 8b: Photo of irregularly brecciated dolomitic shale in diamond drillcore showing the strongly dolomitic and brecciated texture.

Figure 8c: Photo showing siliceous and bedded features within siliceous shale.

Figure 8d: Photo showing the siliceous and fractured texture within the fractured siliceous shale.

Figure 9a: Thin section 200303282E, distiguishes talc from the other minerals; dolomite and calcite (x10 mag)

Figure 9b: Thin section 200303393A showing a strong boundary between the dolomite rich areas (containing talc) with the silicified areas (no talc) (x10 mag)

Figure 9c: Thin section 200701B showing the distribution of talc within a sample where the overall talc alteration is weak (x10 mag).

Figure 10a: SEM map of talc sample 2 (almost pure talc) showing patches of light and dark talc corresponding with high and low FeO with a range of 3% to 4% wt FeO.

Figure 10b: SEM map of talc sample 3 showing the relationship between talc, dolomite and chlorite.

Figure 10c: SEM Ca map showing the dolomite rich areas (bright colours) in talc sample 3.

Figure 10d: SEM Mg map showing the talc rich areas (red) in talc sample 3.

Figure 10e: SEM Al map showing the chlorite rich areas (green) in talc sample 3.

Figure 10f: SEM Si map showing the quartz rich areas (red spots) in talc sample 3.

Figure 11a: Distribution of green talc around pyrite crystals. The pressure shadows are used to define the relative timing of the talc.

Figure 11b: Green talc is also found within veins/fractures.

Figure 11c,d: The grey talc is more abundant and massive in its distribution as shown on the hangingwall of 3500.

Figure 12a: At northing 6600mN, the distribution of the talc shows that the alteration on the footwall of 3500 is more dominant than on the hangingwall.

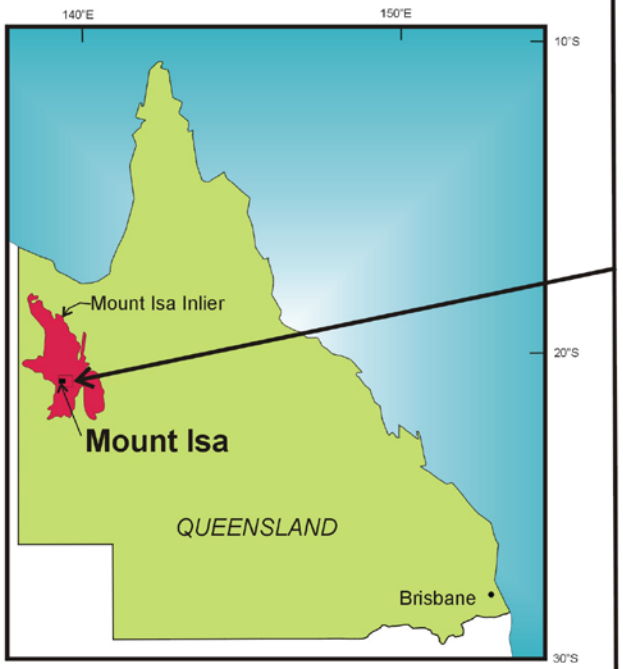
Figure 12b: At northing 6800mN, the distribution of the talc has changed. The talc is now more slightly more dominant on the hangingwall.

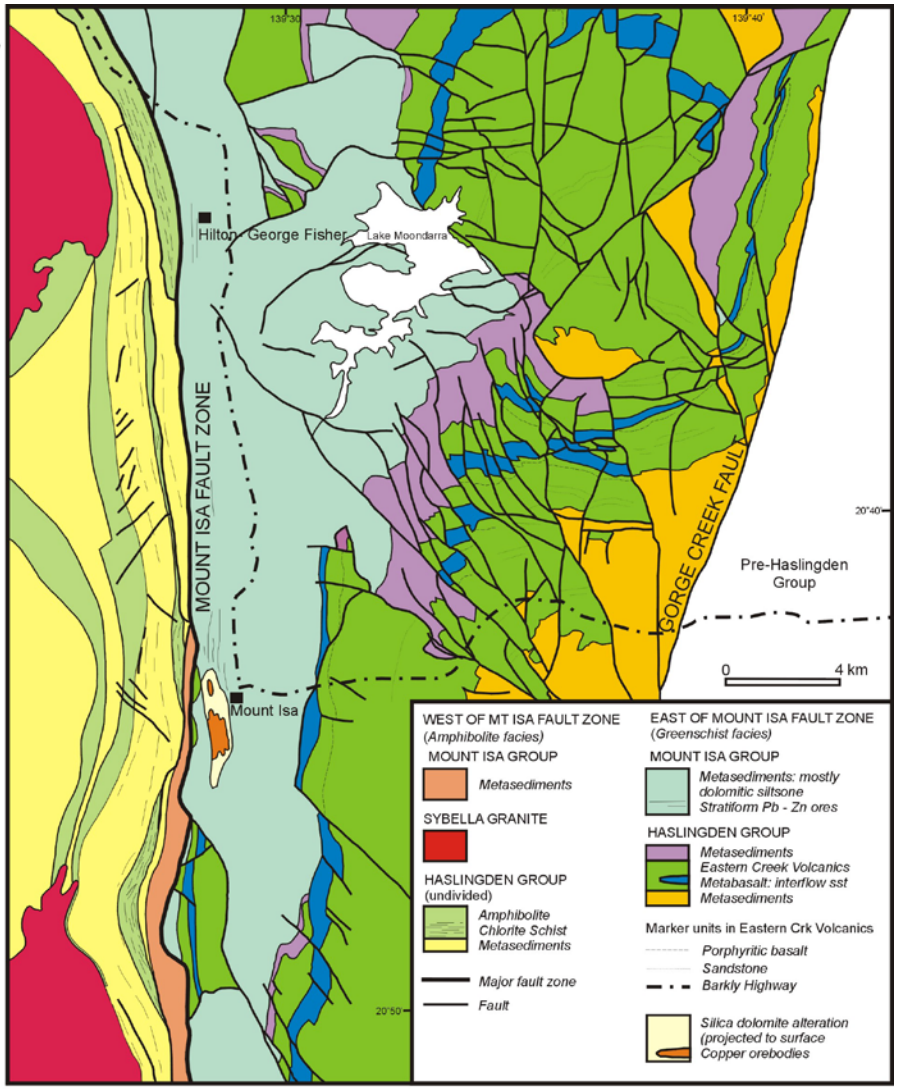
Figure 13a: Drillhole 211135 (at northing 6990mN) shows the variability of dolomite within the silica-dolomite halo. The talc alteration is dependent on the dolomite as shown with the line trace.

Figure 13b: Drillhole 211213 (at northing 6990mN) shows the increase in talc on the boundary of the siliceous core and the dolomitic rocks. The talc distribution is more dominant on the hangingwall than that on the footwall.

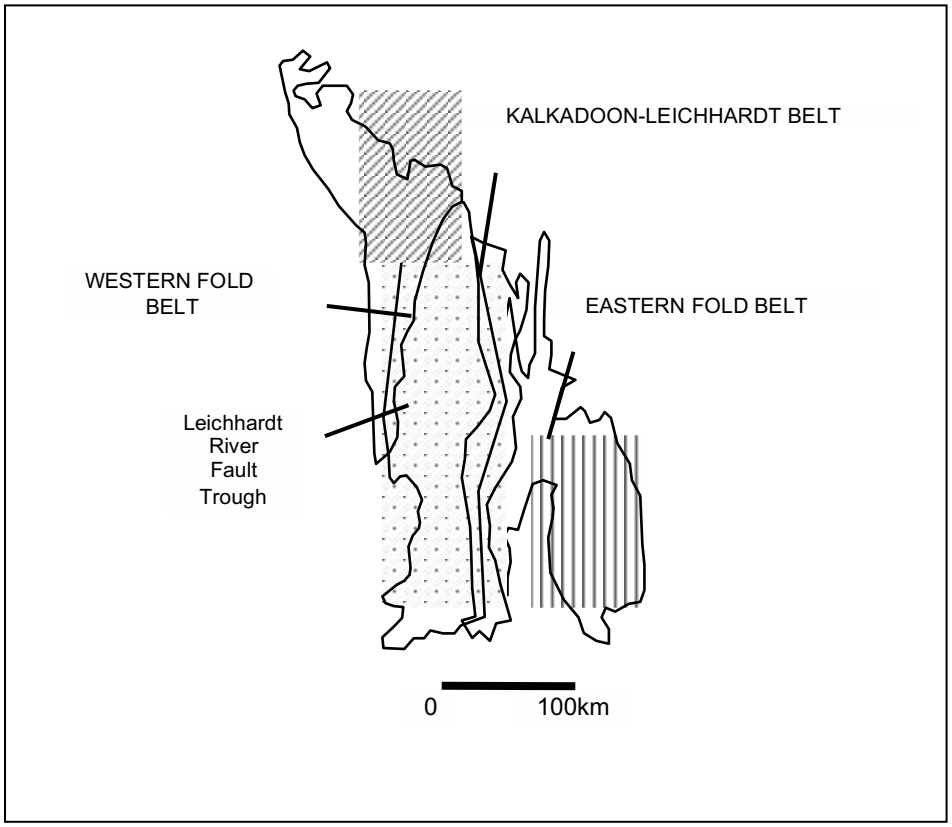
Figure 14: Results from element to mineral conversions in drillhole 211135. The peaks in the talc values correlate with troughs in the dolomite values.

Location Map and Regional Geology
Mount Isa, Queensland





Bullock (2002), Modifed after Heinrich et al., (1995)
Painter et al., (1999)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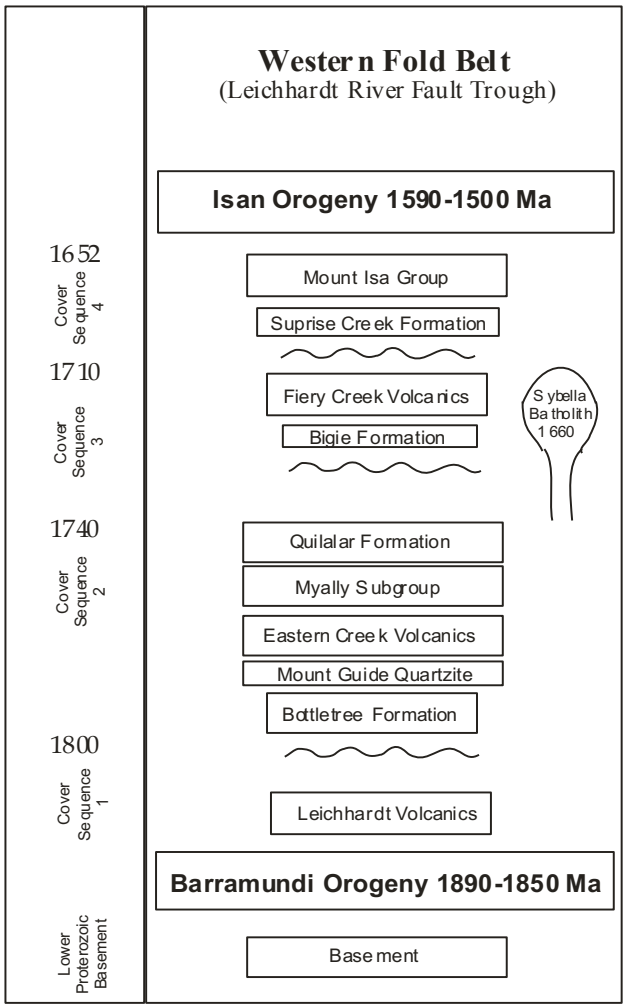
WESTERN FOLD BELT
EASTERN FOLD BELT
Leichhardt River Fault Trough
0
100km

Figure 2


Western Fold Belt
(Leichhardt River Fault Trough)
Isan Orogeny 1590-1500 Ma
1652
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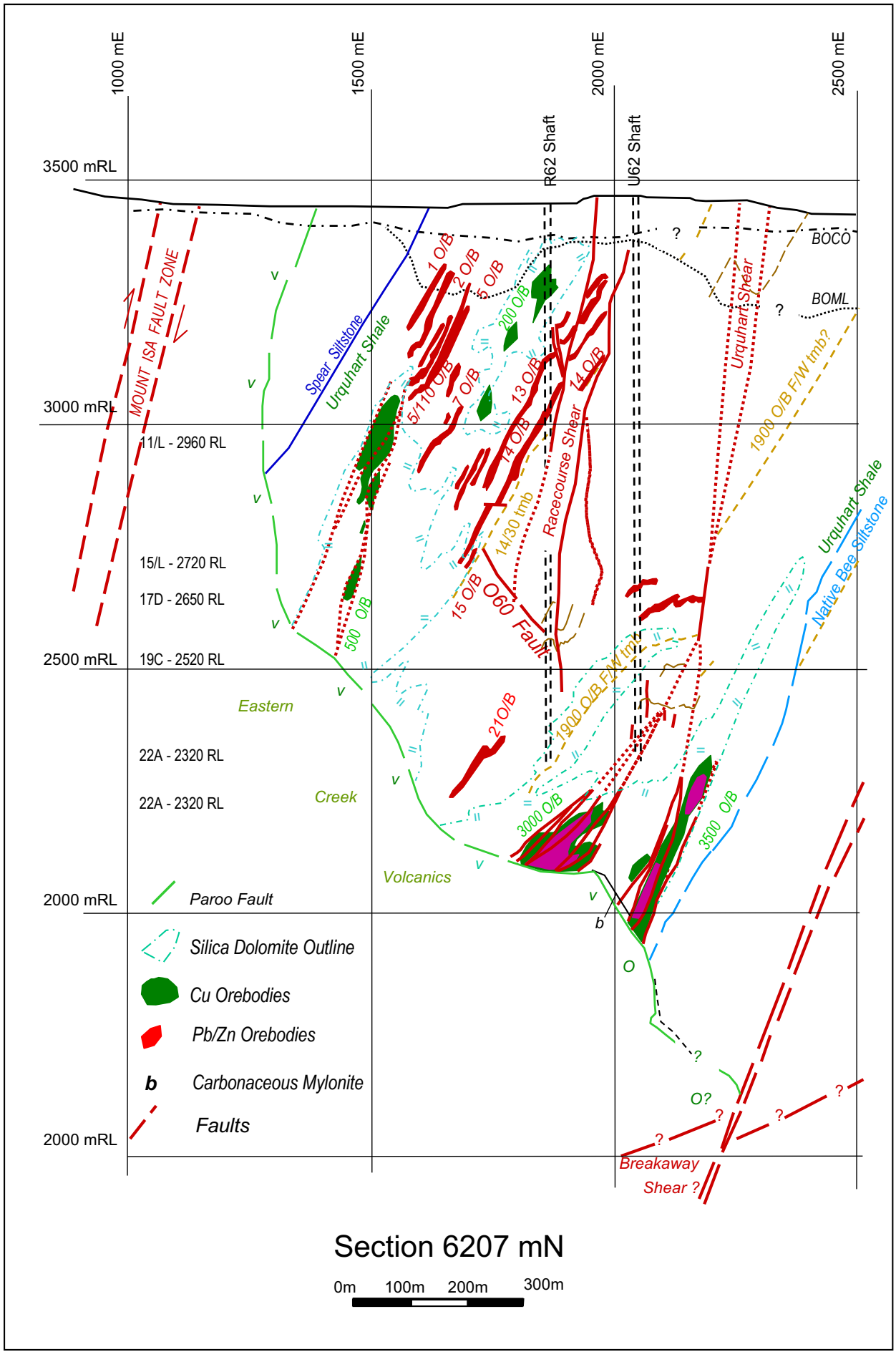
Mount Isa Group
Suprise Creek Formation
1710
Cover Sequence 3
Fiery Creek Volcanics
Bigie Formation
Sybella Batholith 1660
1740
Cover Sequence 2
Quilalar Formation
Myally Subgroup
Eastern Creek Volcanics
Mount Guide Quartzite
Bottletree Formation
1800
Cover Sequence 1
Leichhardt Volcanics
Barramundi Orogeny 1890-1850 Ma
Lower Proterozoic Basement
Basement

Figure 3

Mount Isa Group	Magazine Shale	Upper Mount Isa Group (Dolomitic)
	Kennedy Siltstone	
	Spear Siltstone	
	Urquhart Shale	
	Native Bee Siltstone	
	Breakaway Shale	Lower Mount Isa Group (Siliceous)
	Moondarra Siltstone	
	Warrina Park Quartzite	

Figure 4


1000 mE
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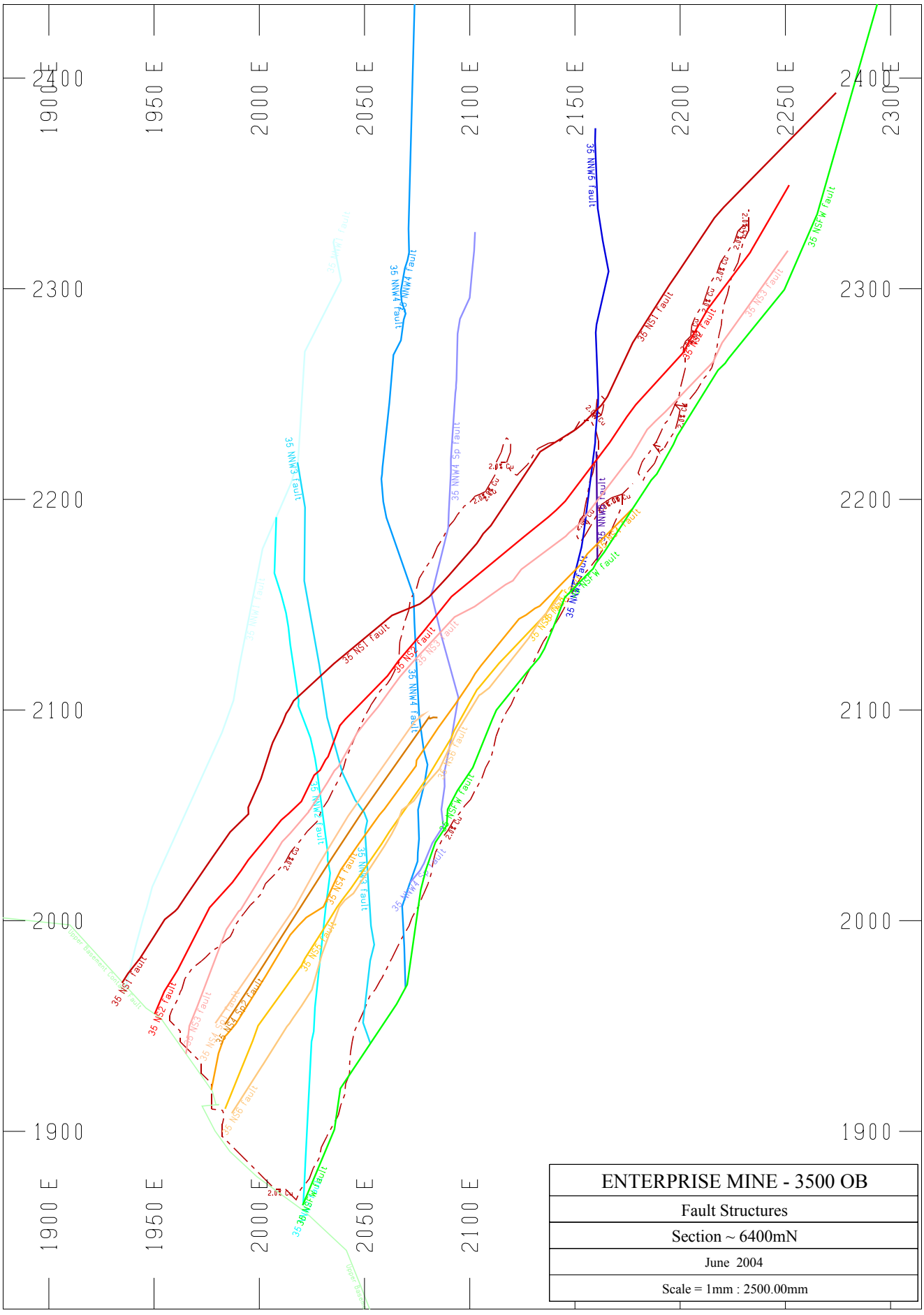
2000 mE
2500 mE
R62 Shaft
U62 Shaft
3500 mRL
3000 mRL
2500 mRL
2000 mRL
2000 mRL
11/L - 2960 RL
15/L - 2720 RL
17D - 2650 RL
19C - 2520 RL
22A - 2320 RL
22A - 2320 RL
MOUNT ISA FAULT ZONE
Spear Siltstone
Urquhart Shale
BOCO
BOML
Urquhart Shear
1900 O/B F/W tmb?
1 O/B
2 O/B
5 O/B
200 O/B
5/110 O/B
7 O/B
13 O/B
14 O/B
14 O/B
14/30 tmb
Racecourse Shear
15 O/B
O60 Fault
500 O/B
21O/B
1900 O/B F/W tmb?
3000 O/B
3500 O/B
Urquhart Shale
Native Bee Siltstone
Eastern
Creek
Volcanics
Breakaway
Shear ?
Paroo Fault
Silica Dolomite Outline
Cu Orebodies
Pb/Zn Orebodies
Carbonaceous Mylonite
Faults
Section 6207 mN
0m
100m
200m
300m

Figure 5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35 NS2 Fault
35 NS3 Fault
35 NS4 Fault
35 NS5 Fault
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35 NS995 Fault
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35 NS998 Fault
35 NS999 Fault
35 NS1000 Fault
ENTERPRISE MINE - 3500 OB
Fault Structures
Section ~ 6400mN
June 2004
Scale = 1mm : 2500.00mm

Figure 6a

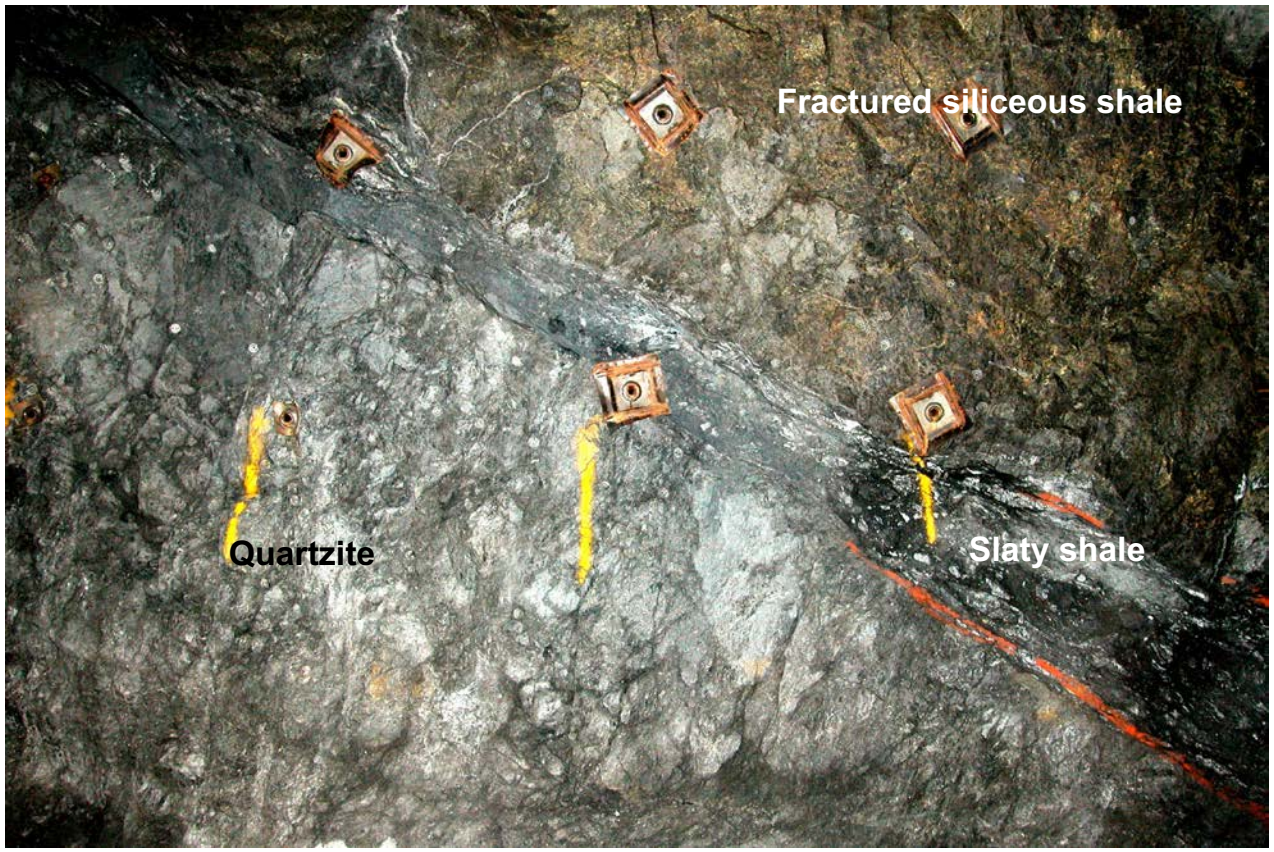
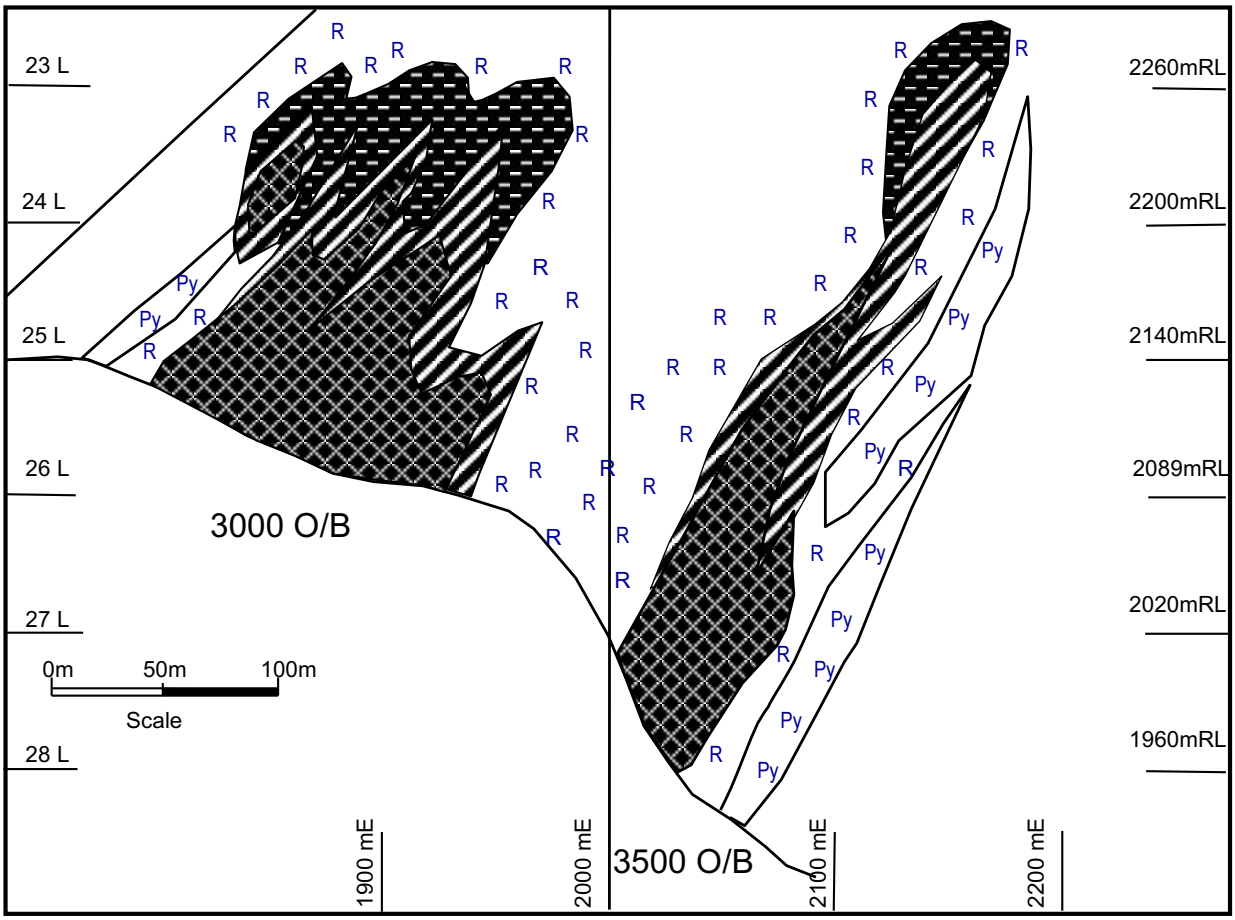


Figure 6b



LEGEND

Fractured siliceous shale

Siliceous shale

Recrystallised shale

Irregularly brecciated dolomitic shale

Pyritic shale (> 10% fine grained pyrite)

Figure 7

Figure 8a

Figure 8b

Figure 8c

Figure 8d

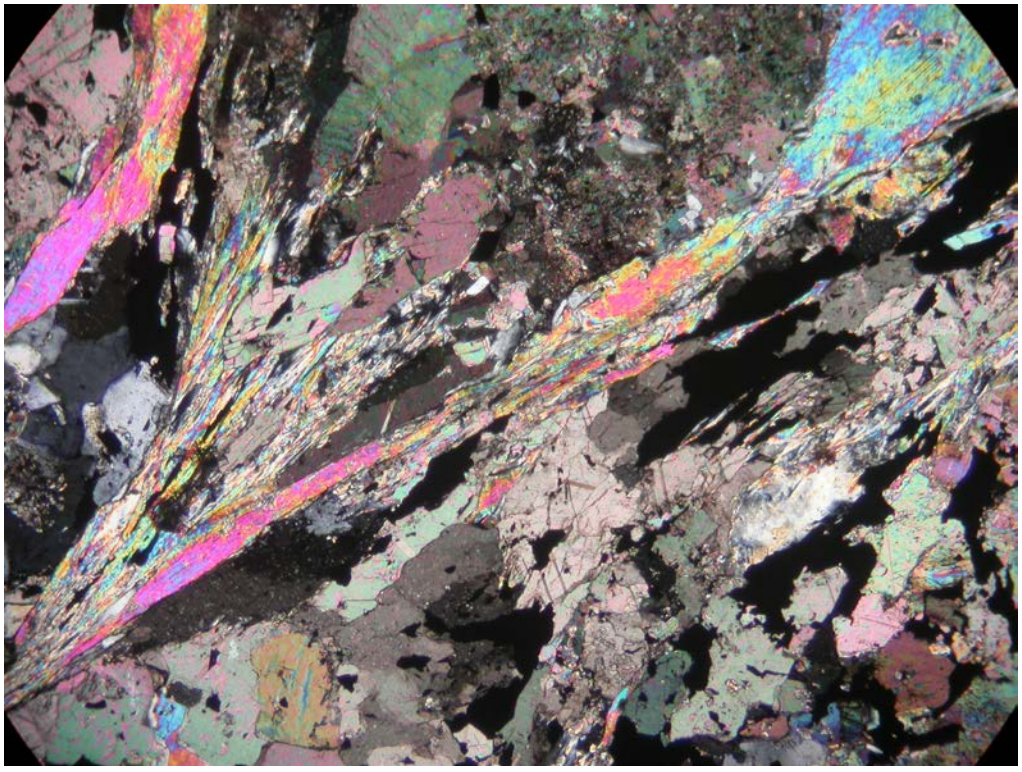


Figure 9a

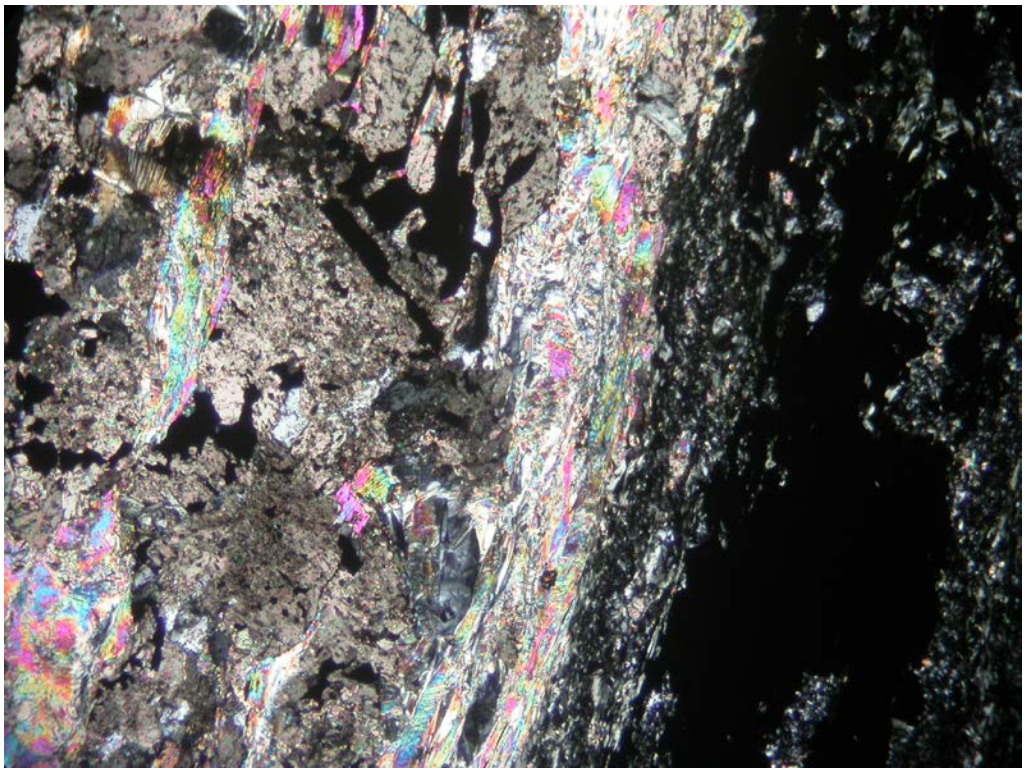


Figure 9b

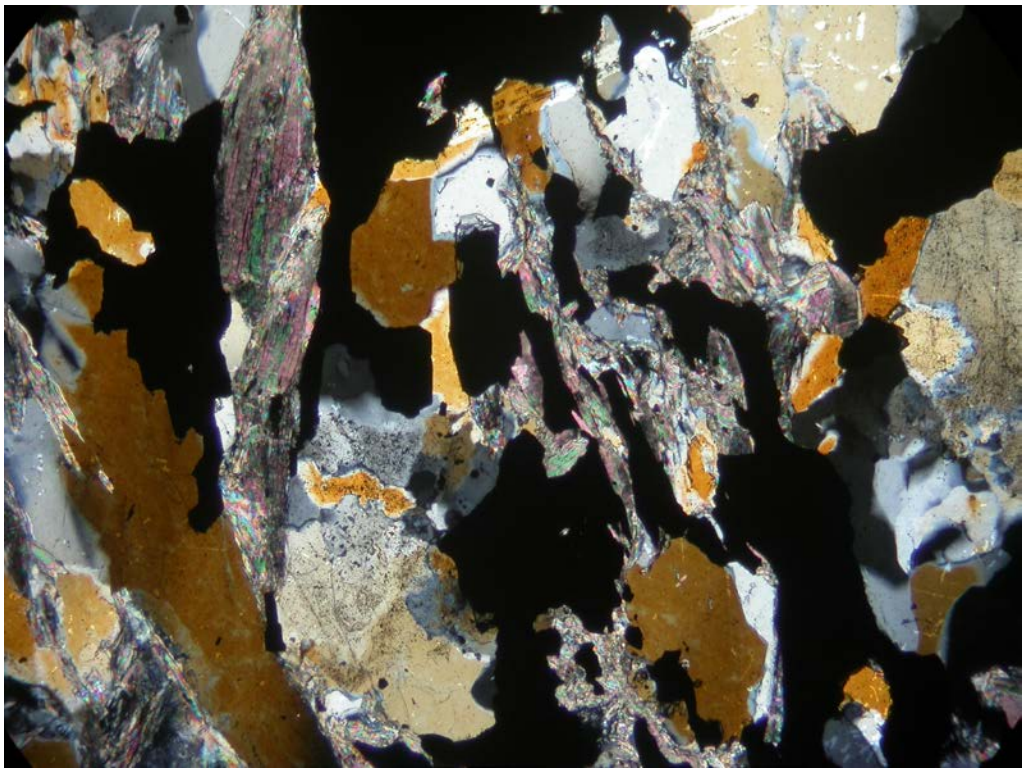


Figure 9c

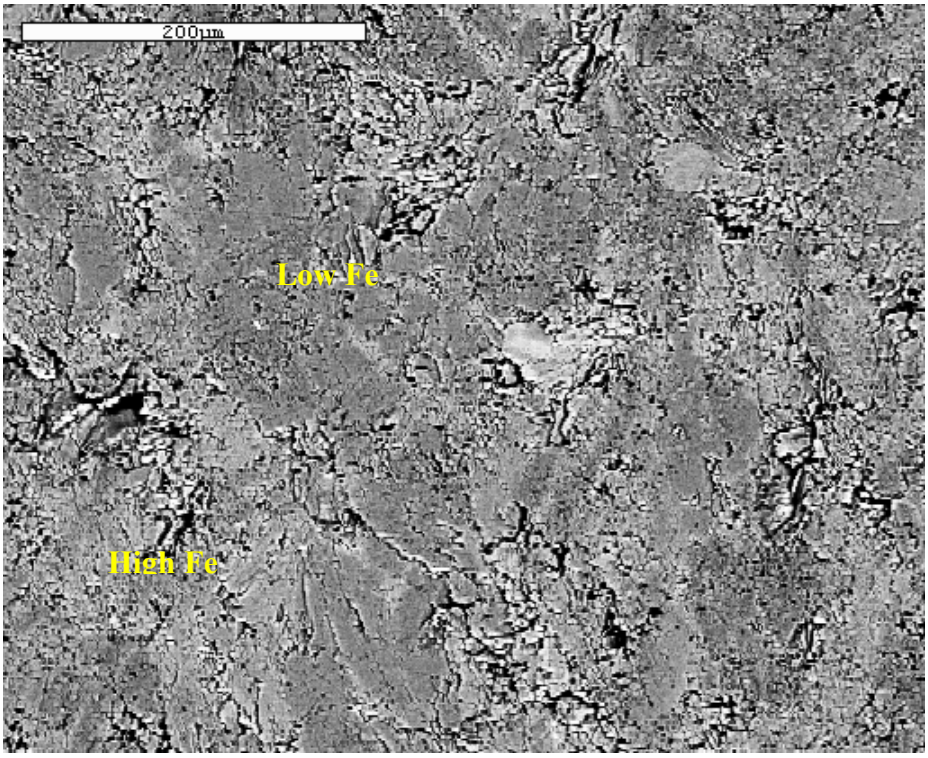


Figure 10a

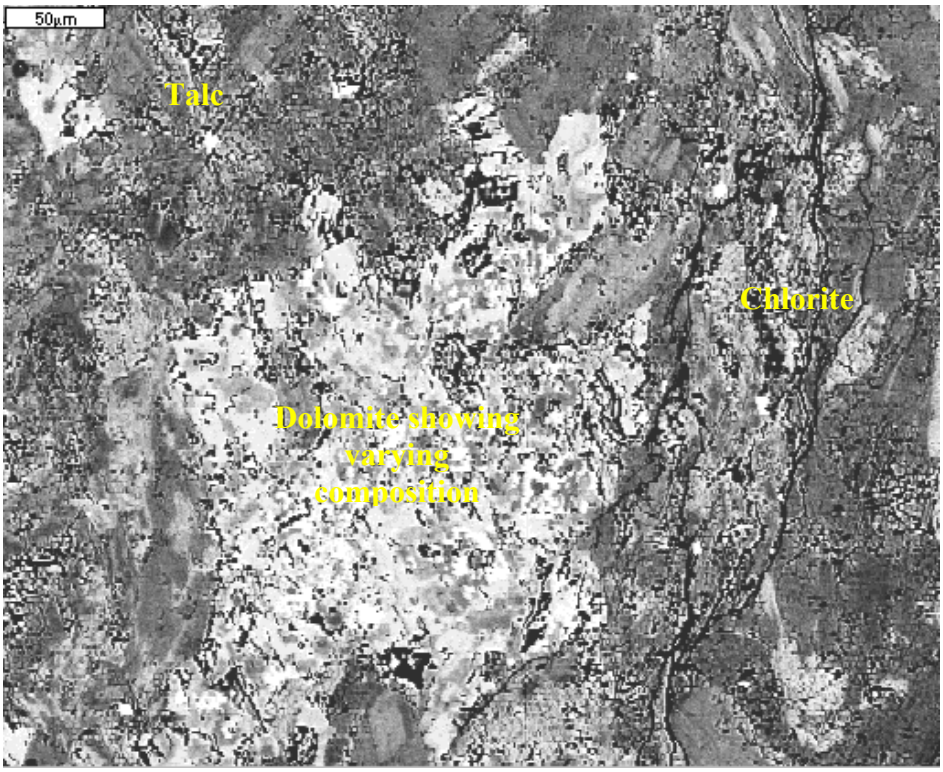


Figure 10b

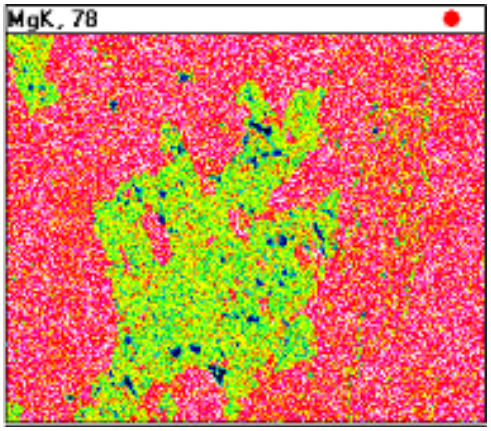


Figure 10c

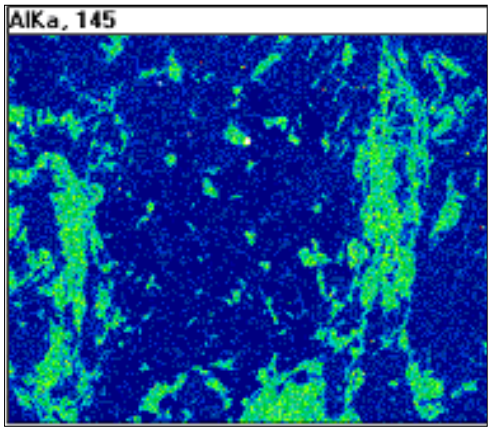


Figure 10d

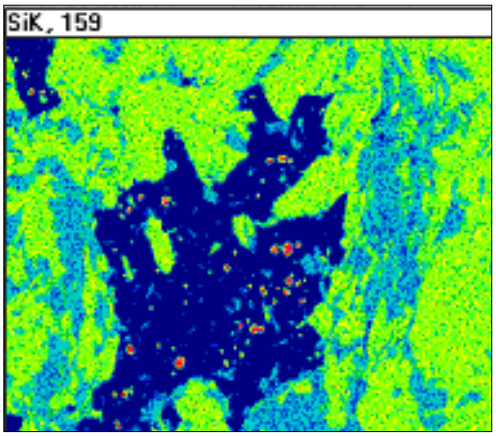


Figure 10e

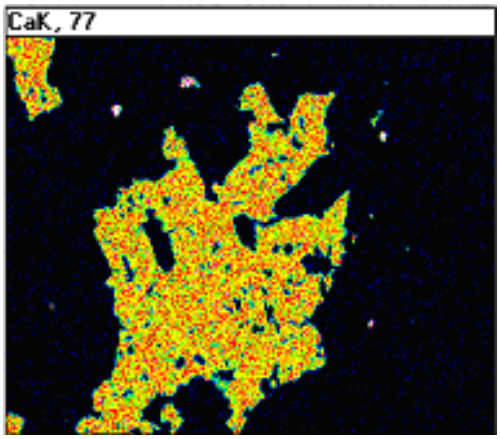


Figure 10f

Figure 11a

Figure 11b

Figure 11c

Figure 11d

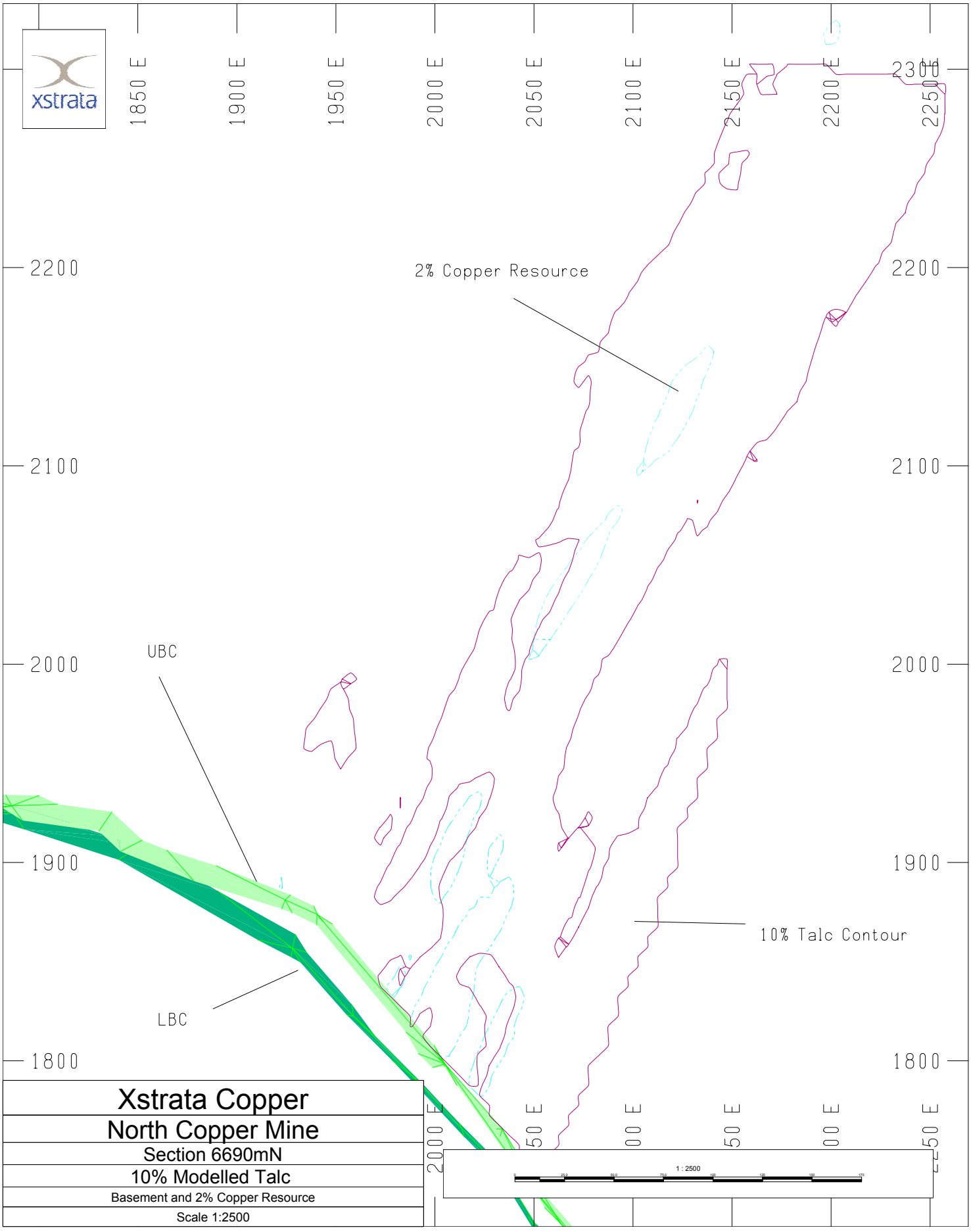

1850 E
1900 E
1950 E
2000 E
2050 E
2100 E
2150 E
2200 E
2250 E
2200
2100
2000
1900
1800
2% Copper Resource
UBC
LBC
10% Talc Contour
Xstrata Copper
North Copper Mine
Section 6690mN
10% Modelled Talc
Basement and 2% Copper Resource
Scale 1:2500
1 : 2500

Figure 12a

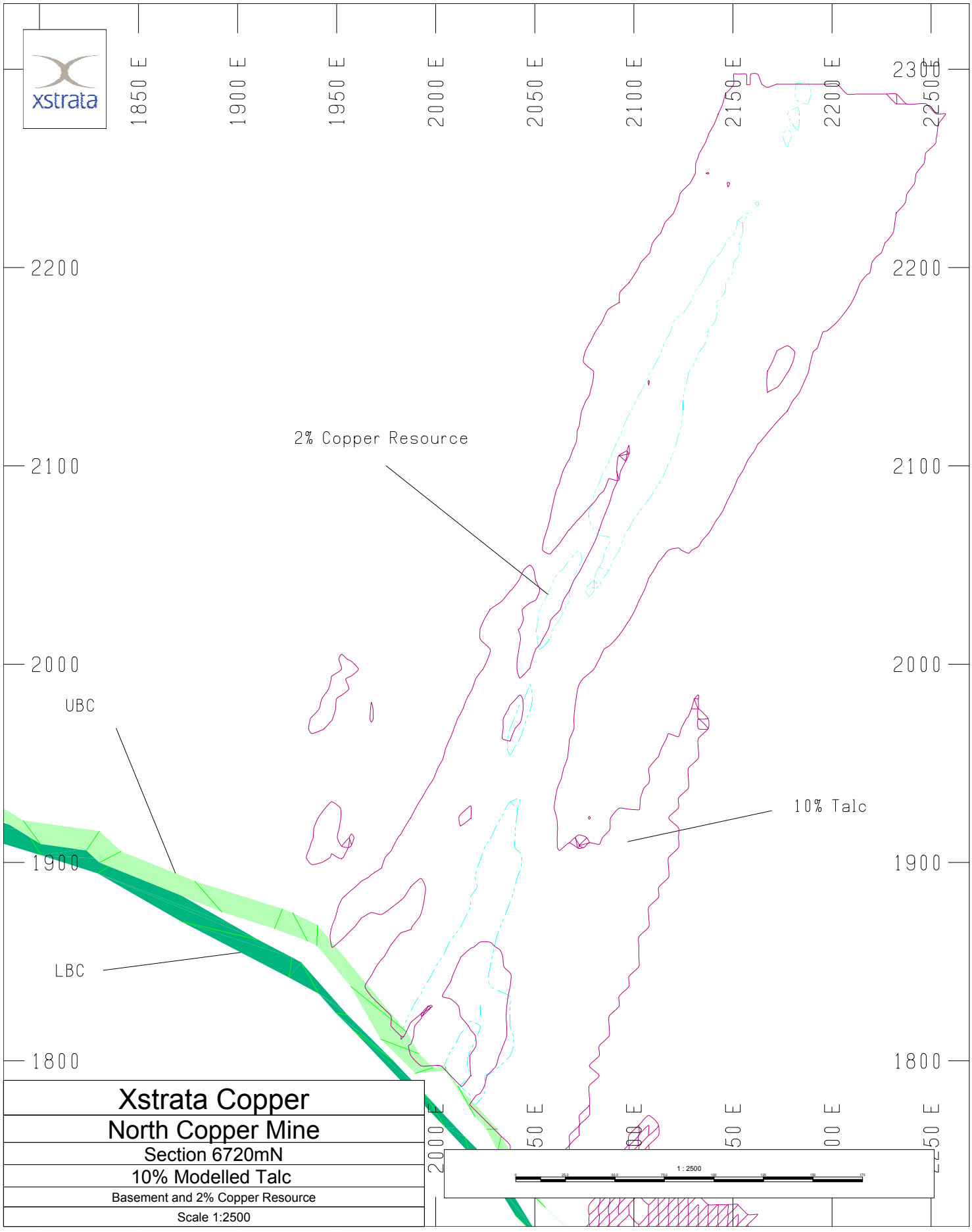

1850 E
1900 E
1950 E
2000 E
2050 E
2100 E
2150 E
2200 E
2250 E
2300
2200
2100
2000
1900
1800
2% Copper Resource
UBC
10% Talc
LBC
Xstrata Copper
North Copper Mine
Section 6720mN
10% Modelled Talc
Basement and 2% Copper Resource
Scale 1:2500
1 : 2500

Figure 12b

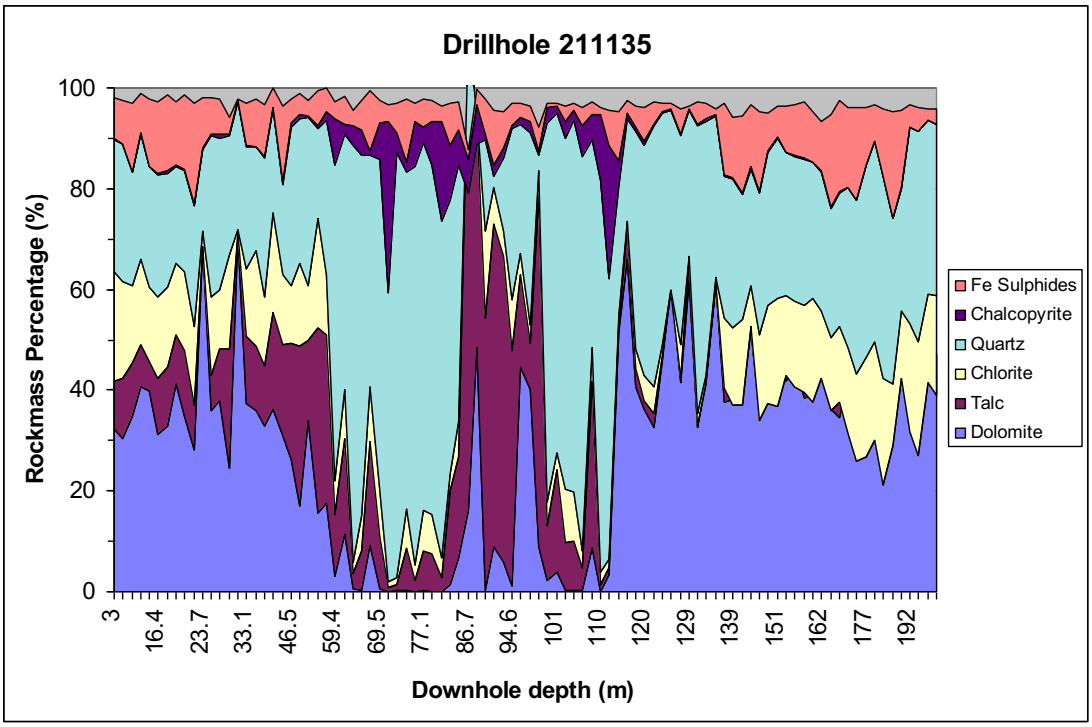


Figure 13a

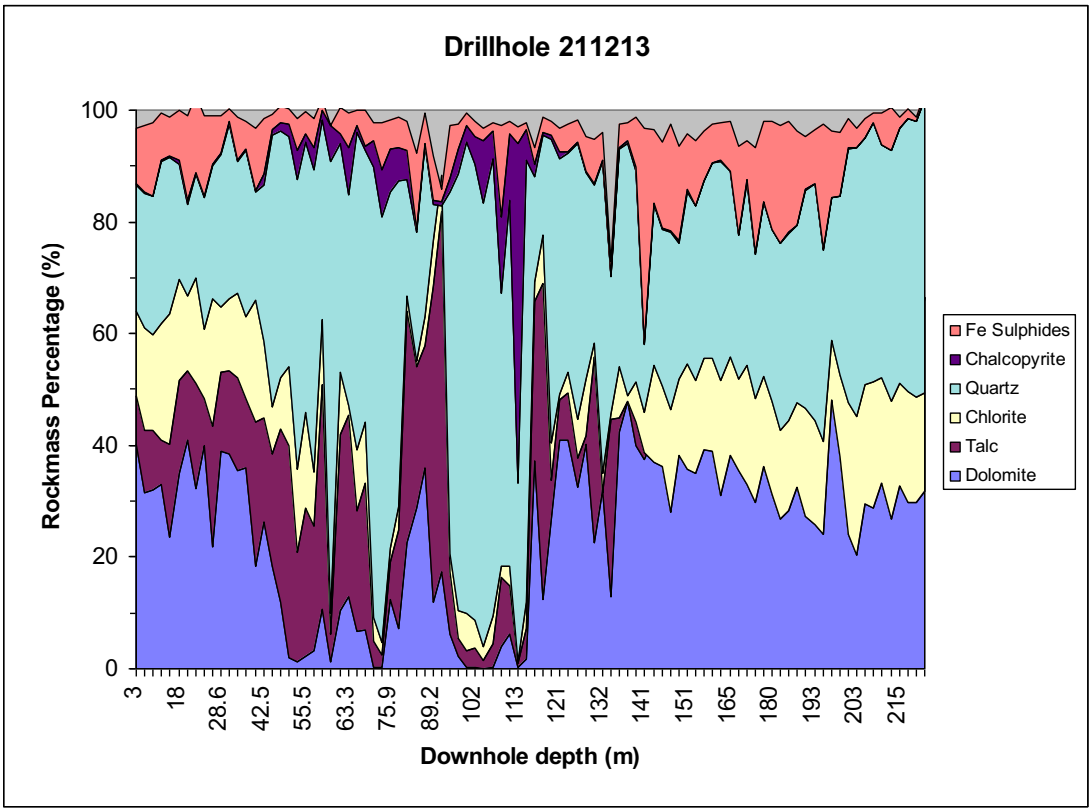


Figure 13b

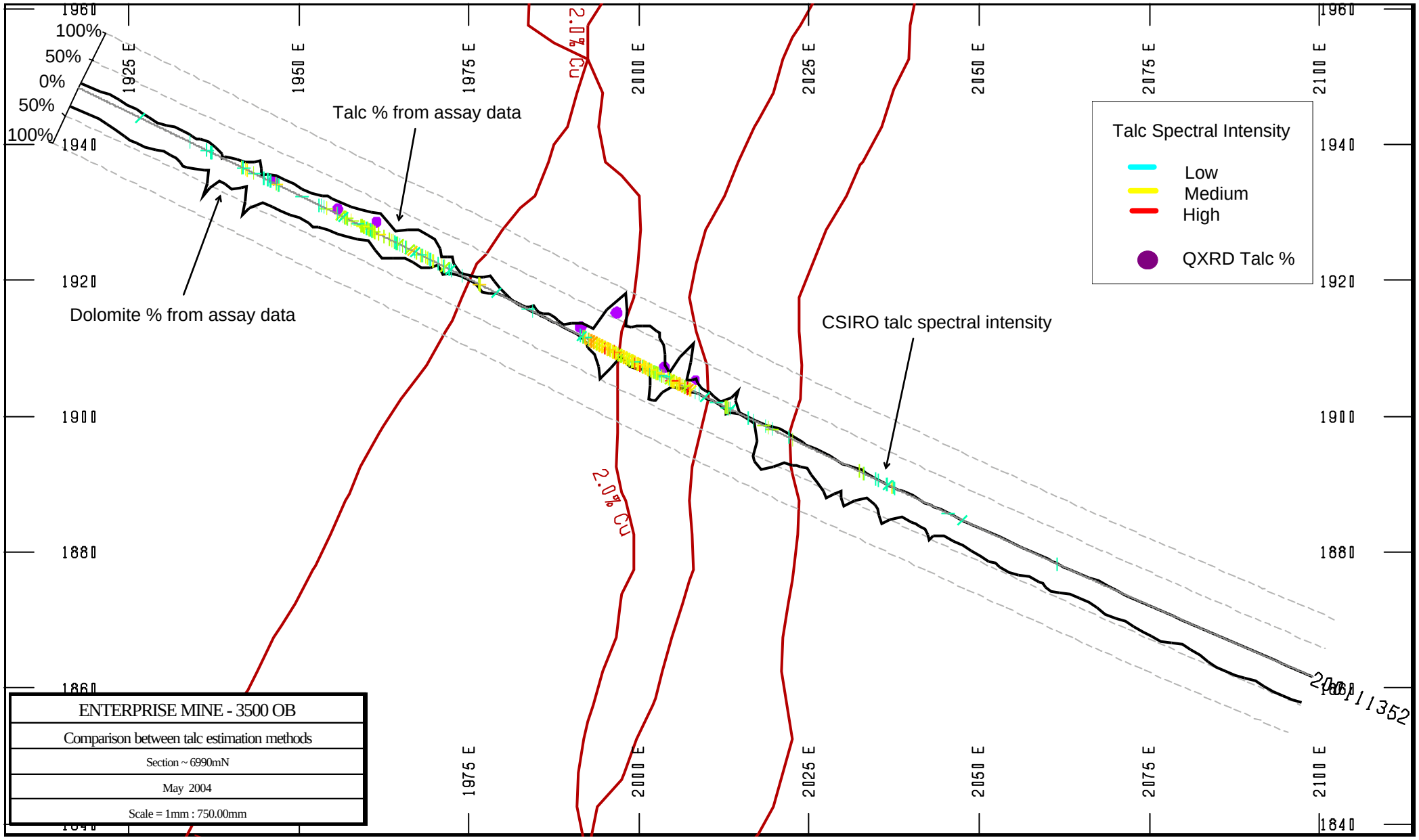

100%
50%
0%
50%
100%
Talc % from assay data
Dolomite % from assay data
CSIRO talc spectral intensity
2.0% Cu
Talc Spectral Intensity
Low
Medium
High
QXRD Talc %
1925 E
1950 E
1975 E
2000 E
2025 E
2050 E
2075 E
2100 E
1960
1940
1920
1900
1880
1860
1840
ENTERPRISE MINE - 3500 OB
Comparison between talc estimation methods
Section ~ 6990mN
May 2004
Scale = 1mm : 750.00mm

Figure 14