An Investigation of Production Technologies of Byzantine Glazed Pottery from Corinth, Greece in the eleventh to thirteenth centuries
Volume 2: Figures, Tables and Appendices

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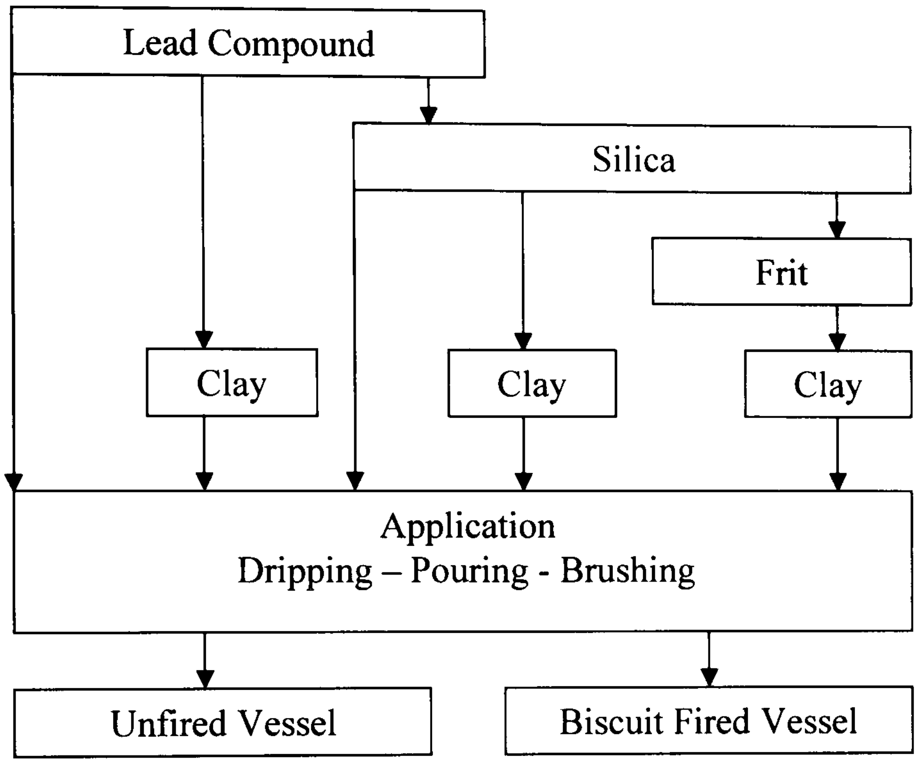


Figure 2.3.1 Summary of the principle methods of producing a high lead glaze (after Tite *et al.* 1998, 248).

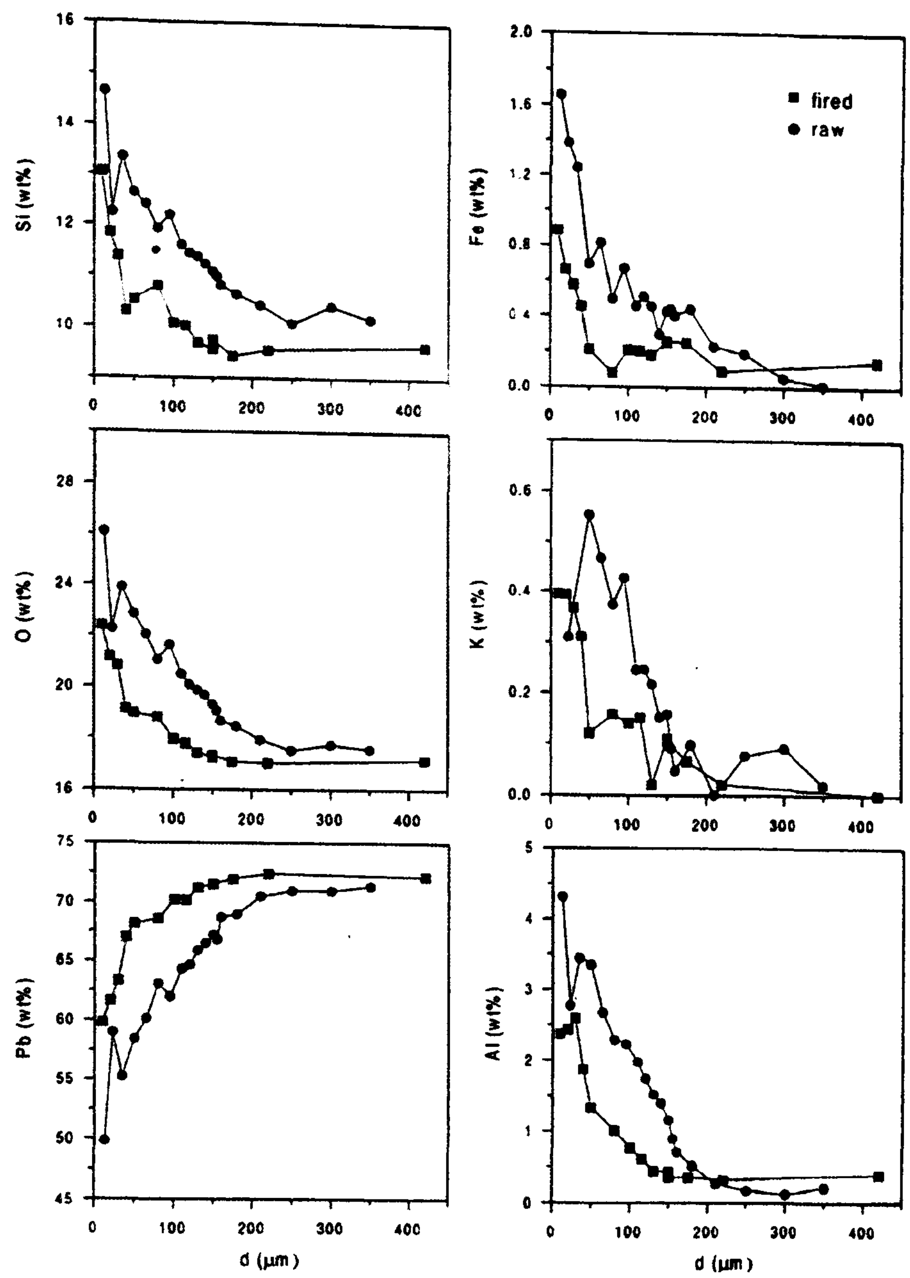
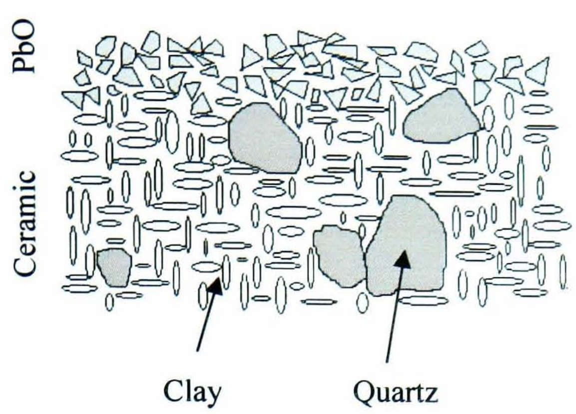
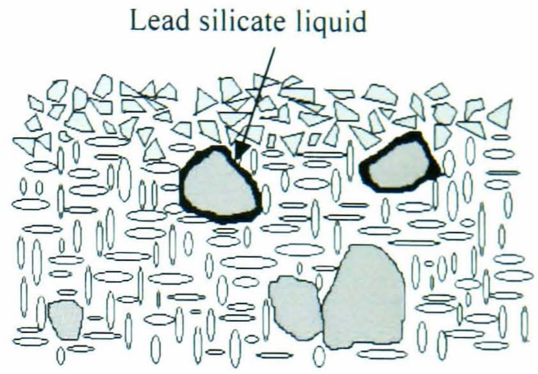


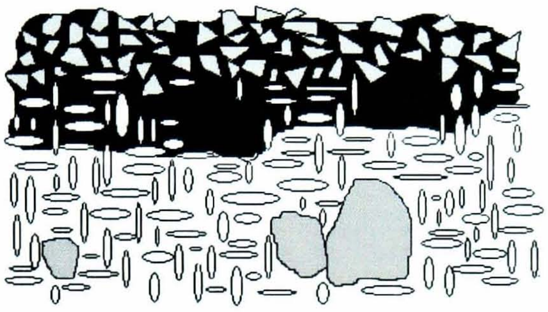
Figure 2.3.2 Diffusion profiles for a 70/30 wt% PbO/SiO_2 glaze raw and biscuit fired bodies. Diffusion of elements is greater for the glaze applied to the raw body (from Molera and Pradell *et al.* 2001, 1127).



(a) PbO on a quartz-rich fired clay body.

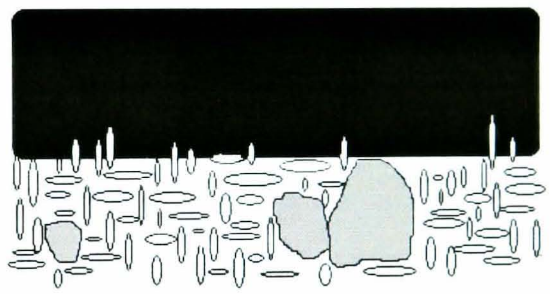


(b) At 700°C the PbO reacts with the quartz to form lead-silicate liquid.



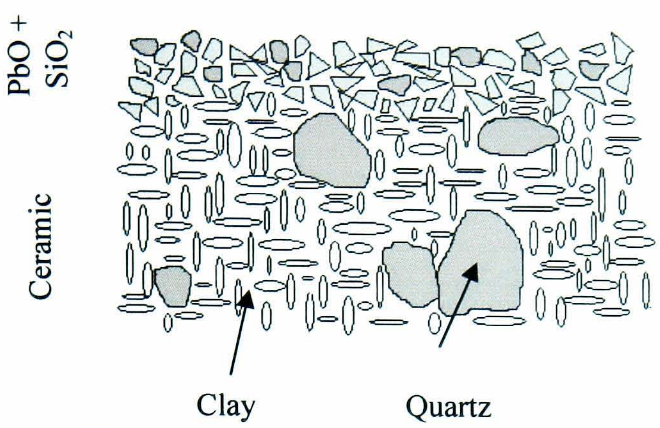
(c) At around 690°C the lead and quartz melt followed by the wicking of the liquid melt into the ceramic.

(d) The dissolution and mass transfer of clay minerals occurs above 700°C.

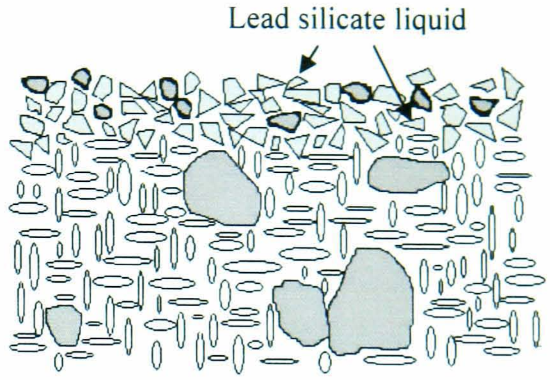


(e) At around 720°C the melt is complete. Above 750°C further wicking into the ceramic and dissolution occurs.

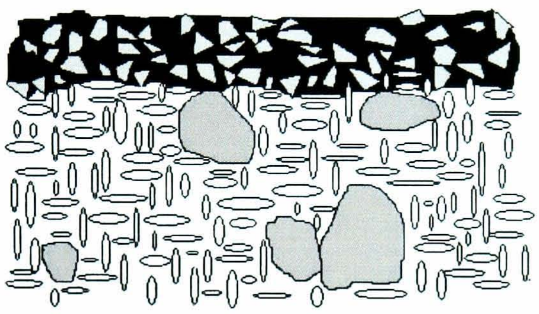
Figure 2.3.3 Mechanism of glaze formation when using lead oxide on a biscuit fired, quartz-rich ceramic body (after Walton 2004, 56)



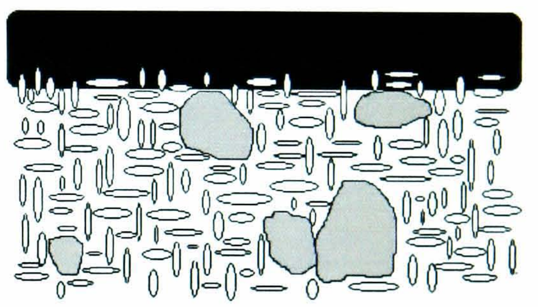
(a) Lead and silica mixture on a fired clay body.



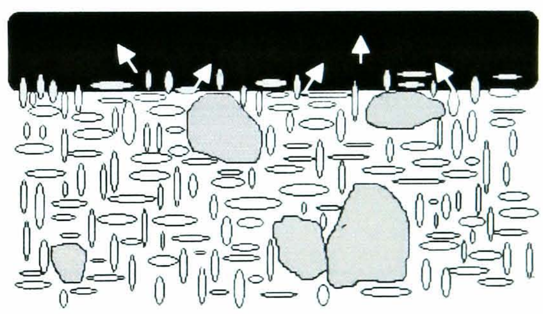
(b) As temperature reaches 690°C the quartz grains begin to react with the lead.



(c) The preferential reaction between the lead and silica components continue on the surface of the vessel.



(d) At around 700°C a high viscosity lead silicate liquid forms on the vessel surface.

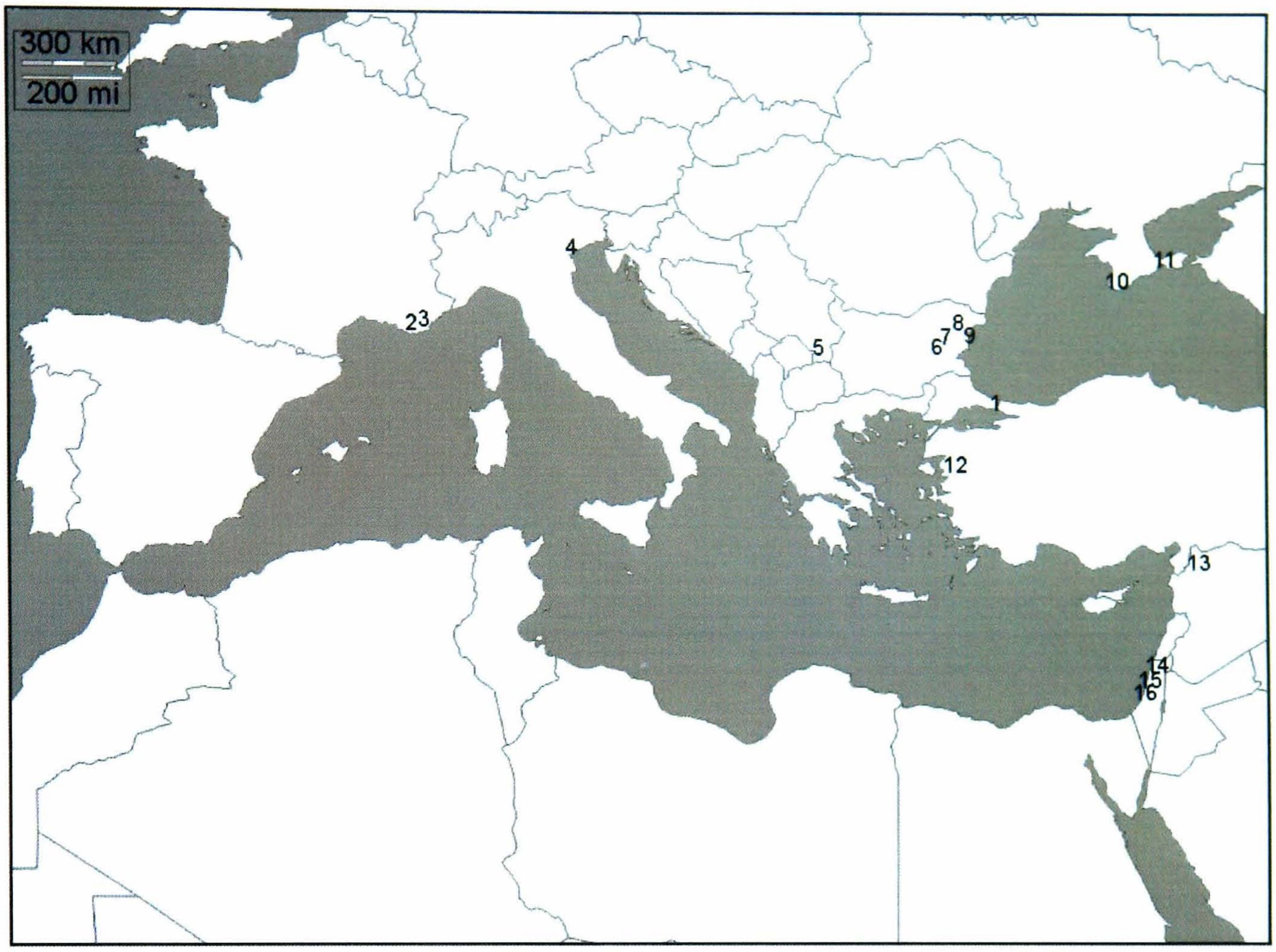


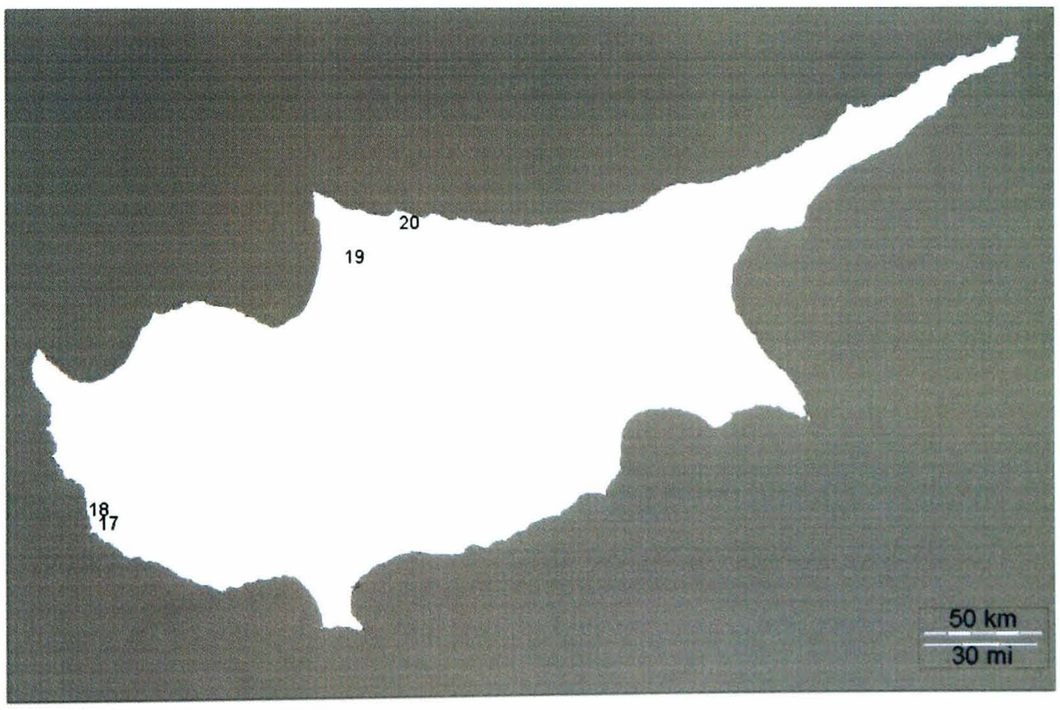
(e) Above 750°C element oxides contained in the underlying ceramic diffuse into the high viscosity liquid

Figure 2.3.4 Showing the mechanism of glaze formation using a lead-silica mixture on a fired clay body (after Walton 2004, 78).

1. Ancient Corinth
2. Zygouries
3. Lakedaimon/Sparta
4. Kounoupi
5. Athens
6. Thessaloniki
7. Serres
8. Philippi
9. Didymoteichon

Figure 3.2.1 Greece, showing the locations of sites from which the pottery has been subject to analytical investigations.





1. Istanbul
2. Hyères
3. St Blaise
4. Venice
5. Caračin
6. Preslav
7. Schumen
8. Tchervin
9. Varna
10. Chersonesos
11. Kaffa
12. Pergamon
13. Saint Symeon
14. Acre
15. Athlit
16. Caesarea
17. Paphos
18. Lemba
19. Dhioros
20. Lapithos

Figure 3.2.2 The Mediterranean and Cyprus, showing the locations of sites from which the pottery has been subject to analytical investigations.

Figure 3.2.3 An example of Serres Ware (left) and Thessaloniki Ware (right) (from Papanikola-Bakirtzis (1997, 145-146).

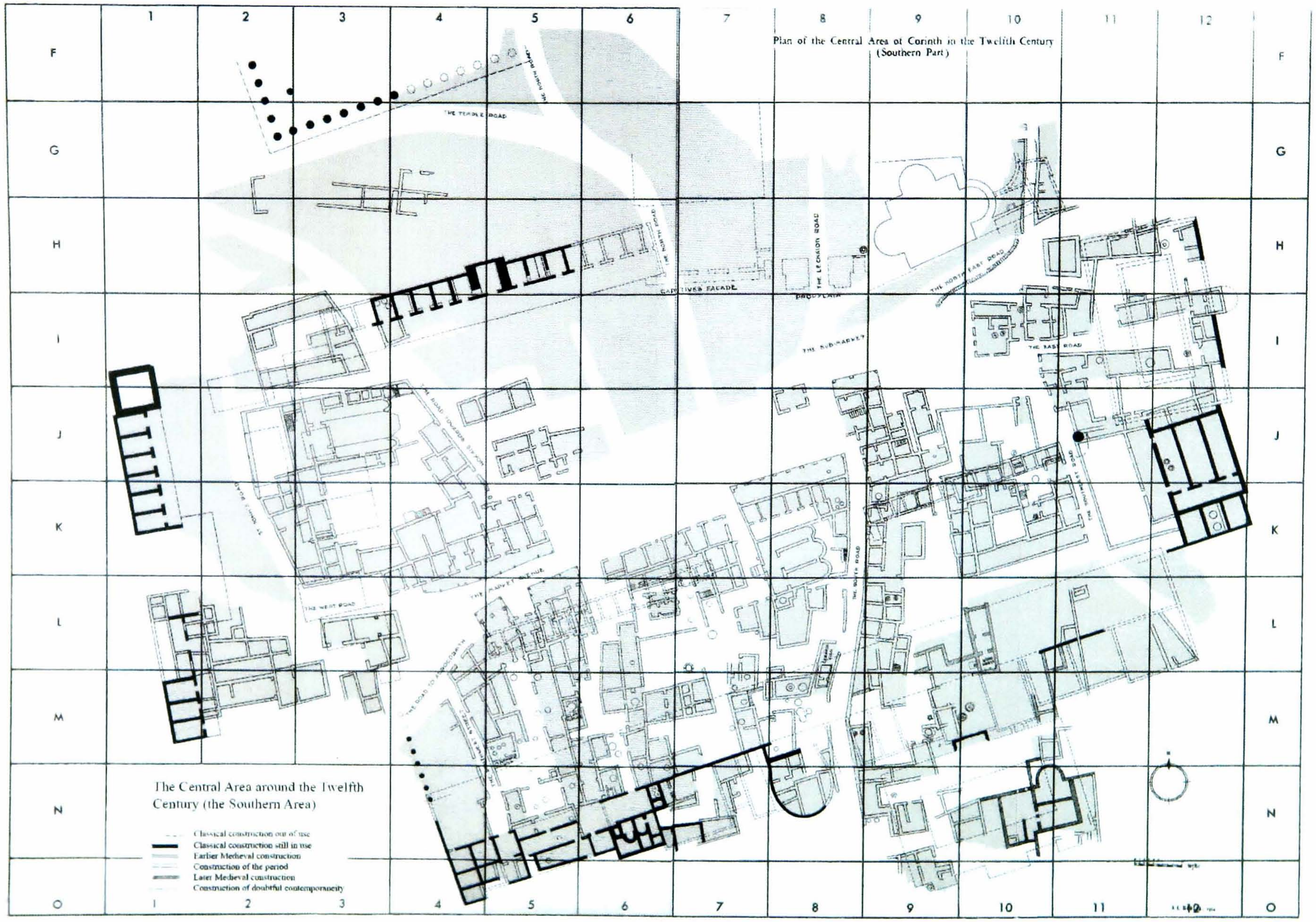


Figure 4.2.1 Plan of the southern section of the central area of Corinth in the twelfth century (from Scranton 1957, Plan VI).

Figure 4.2.2 Medieval walls in the central area of Corinth (from Scranton 1957, Plate 16).

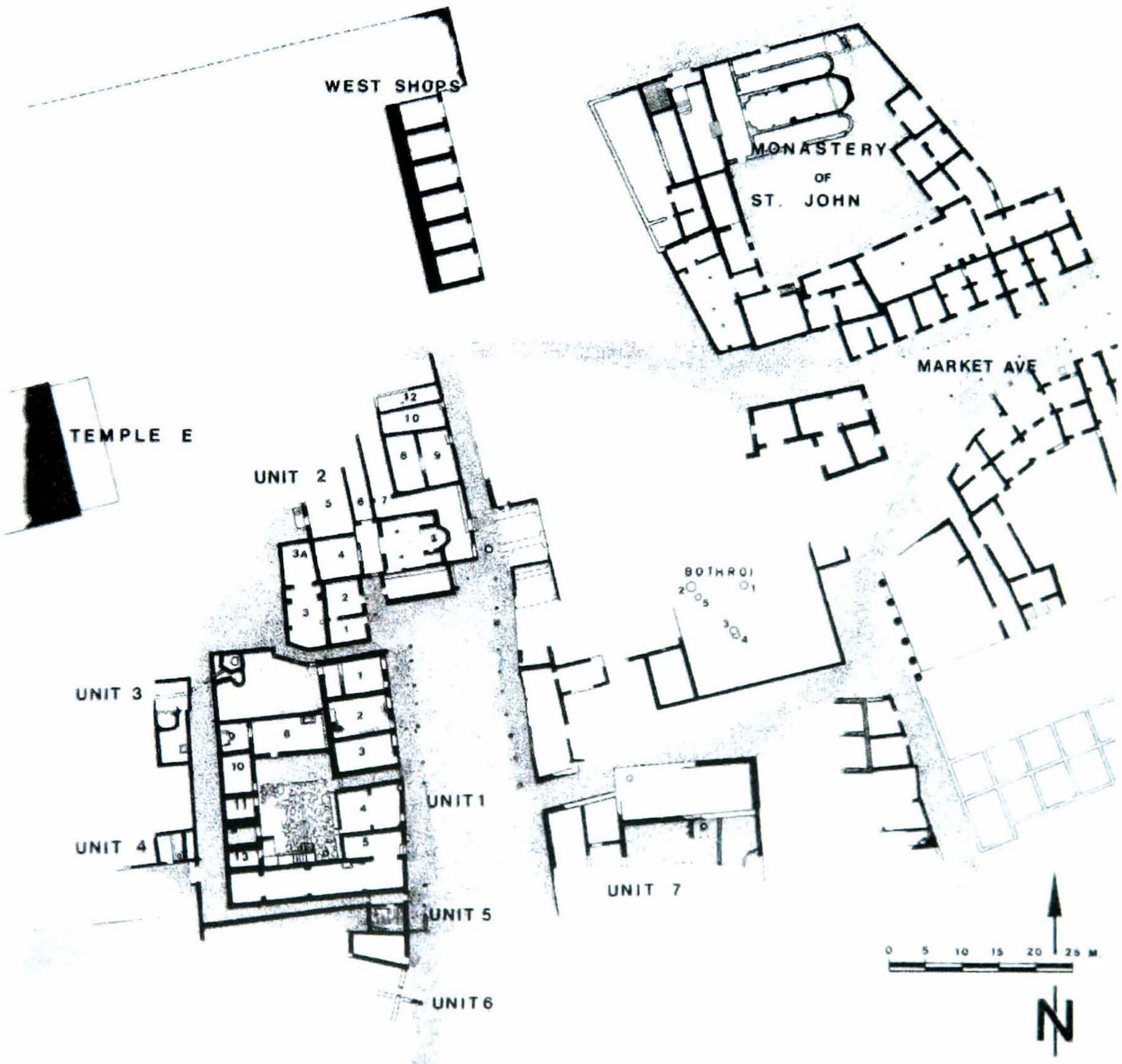


Figure 4.2.3 Plan of southeast of Temple E, circa A.D. 1300 (from Williams 2003, 427).

Figure 4.3.1 Unglazed biscuit-fired wasters in Slip Painted Light on Dark I and Dark on Light styles excavated at Corinth (after Morgan 1942, 24).

Figure 4.3.2 Firing yokes excavated at Corinth. The fragment of goblet (right) shows a yoke end still attached to the stem (after Morgan 1942, 23).

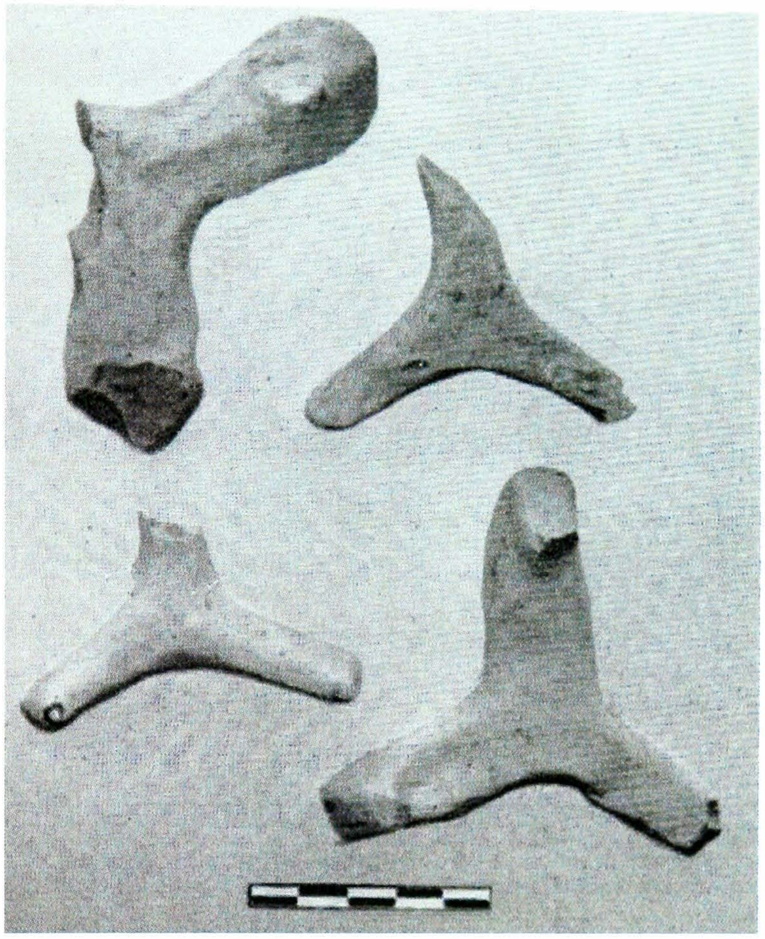


Figure 4.3.3 Firing tripods excavated at Corinth. These were used to separate glazed vessels stacked in the kiln (after Morgan 1942, 22).

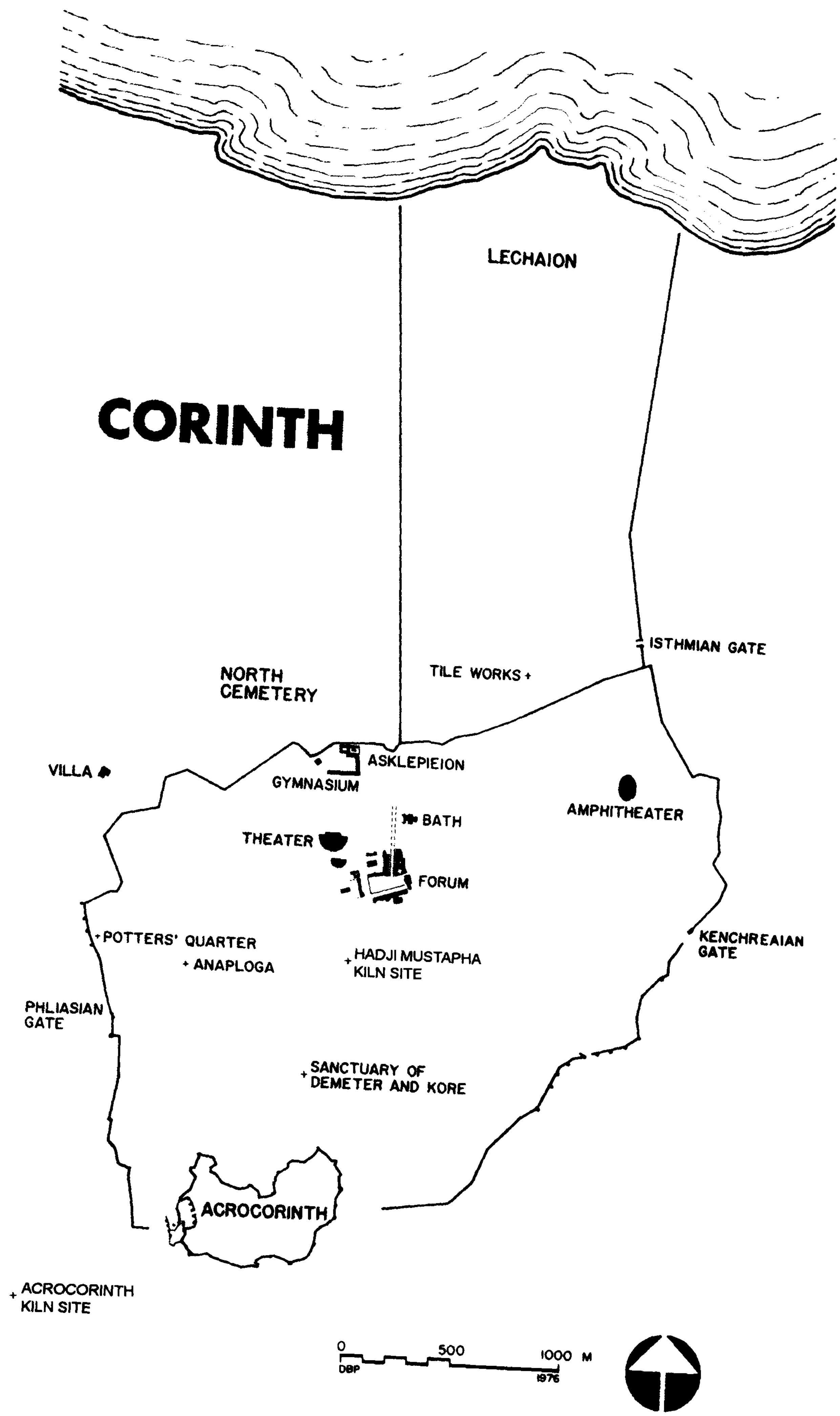


Figure 4.3.4 Overview of Ancient Corinth (after Williams and Bookidis 2003, XXVIII). The locations of the Acrocorinth kiln site and Hadji Mustapha site are shown.

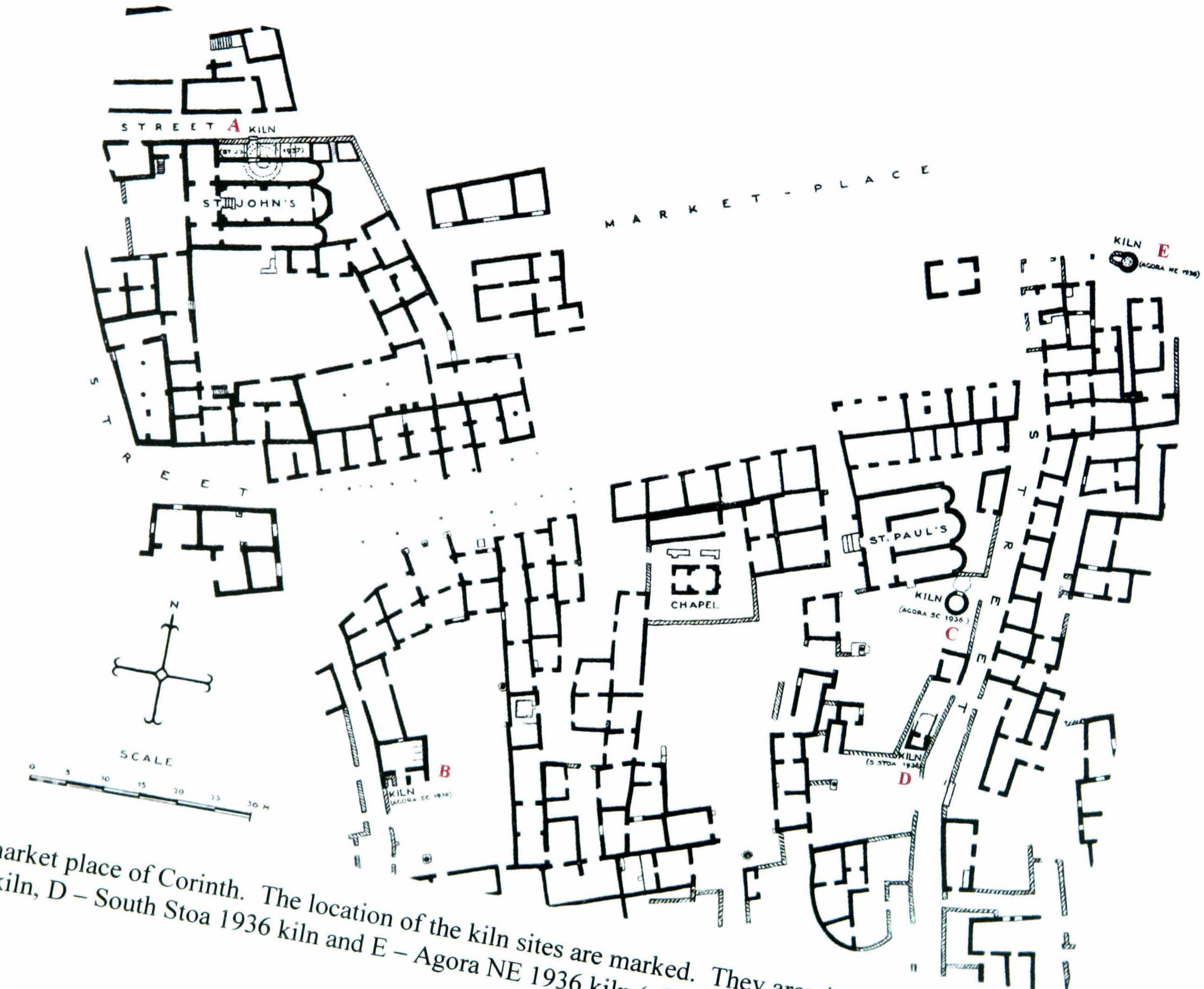


Figure 4.3.5 Plan of the market place of Corinth. The location of the kiln sites are marked. They are: A – St John's kiln 1937, B – Agora SC 1938 kiln, C – Agora SC 1936 kiln, D – South Stoa 1936 kiln and E – Agora NE 1936 kiln (after Morgan 1942, 6).

Figure 4.3.6 Examples of Byzantine cooking vessels with glaze splashes on the outer surfaces, excavated at Corinth.

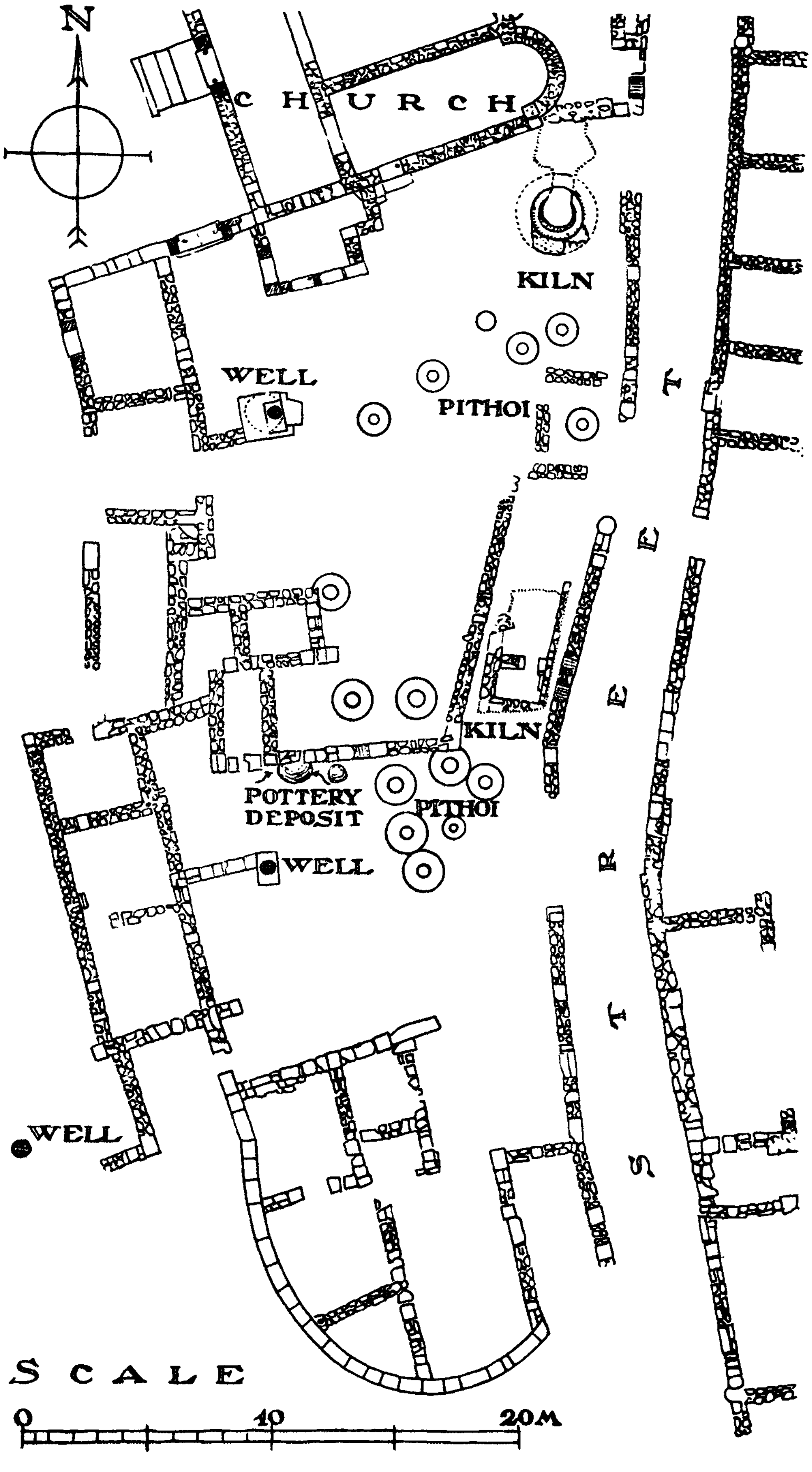


Figure 4.3.7 Plan of Potteries, Agora S.C. and South Stoa 1936 (from Morgan 1942, 15).

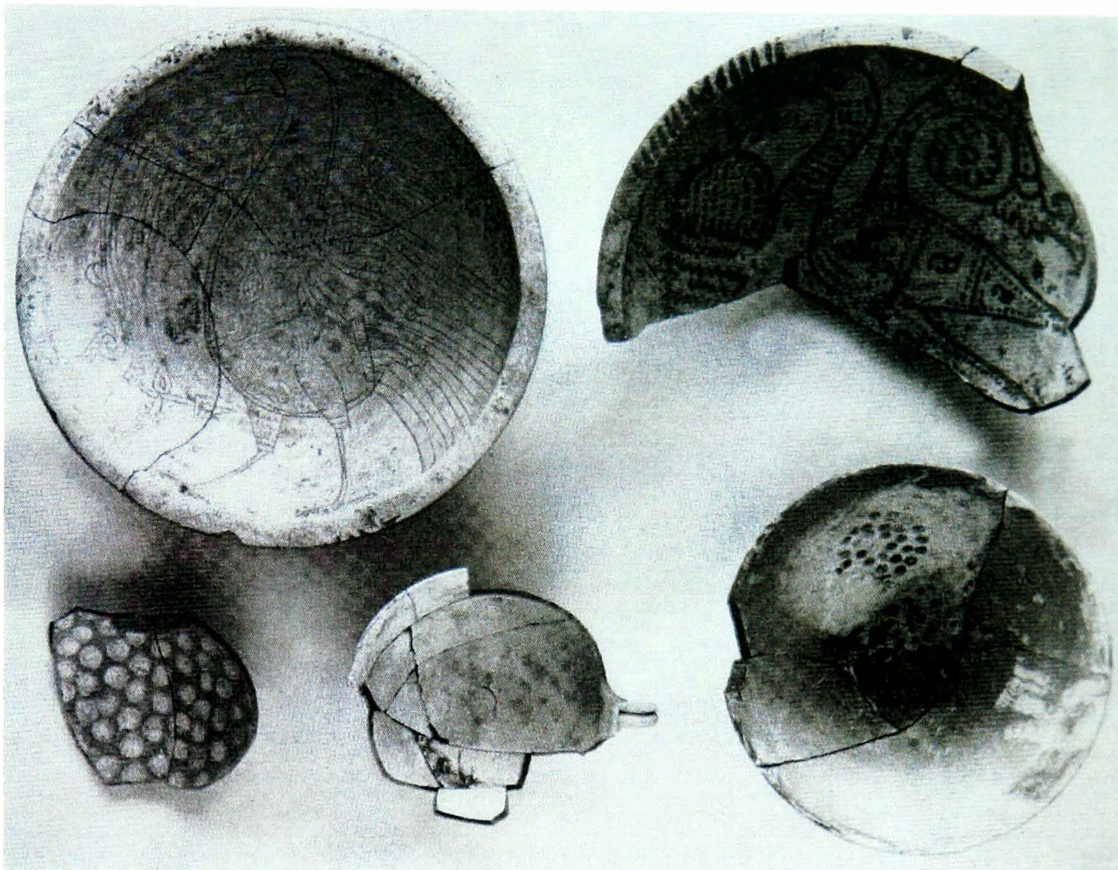


Figure 4.3.8 Slipped and unglazed biscuit fired wasters recovered from a pit found in Agora S.C. 1936 (from Morgan 1942, 174).

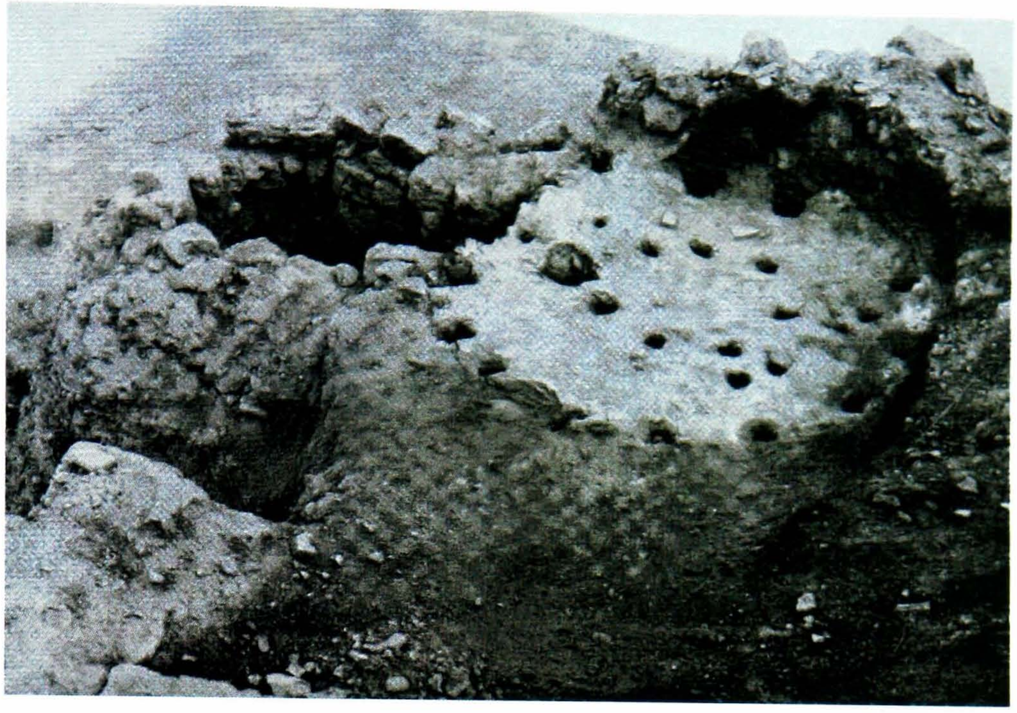


Figure 4.3.9 The Agora N. E. 1936 kiln at Corinth (from Morgan 1942, 17).

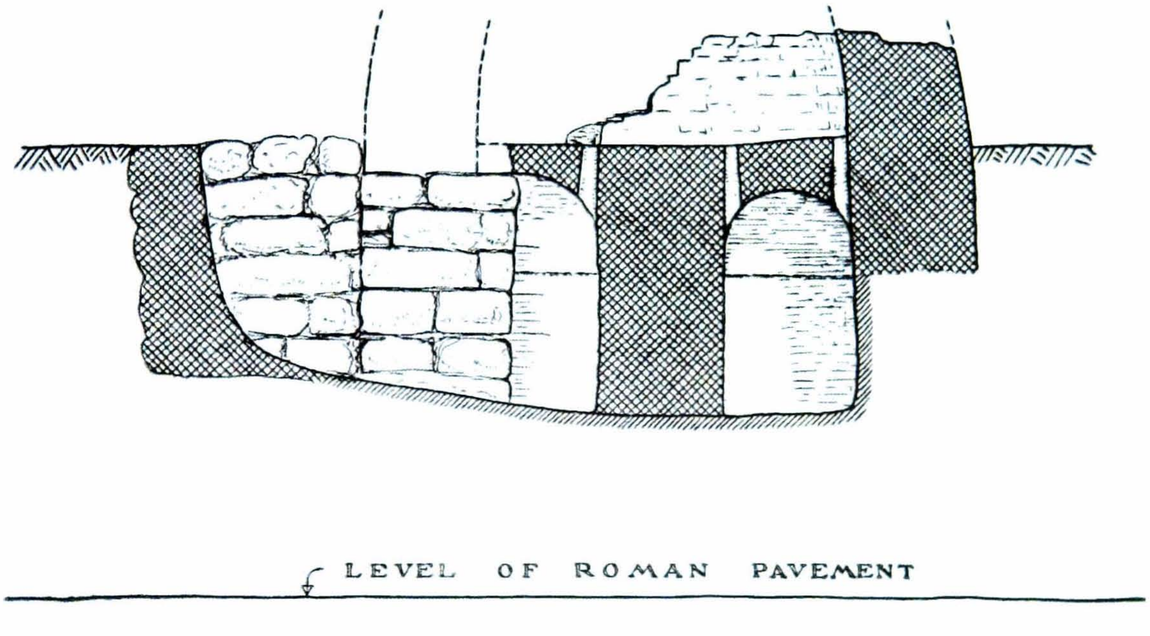


Figure 4.3.10 Section drawing of the Agora N. E. 1936 kiln shown in Figure 4.3.8 (from Morgan 1942, 18).

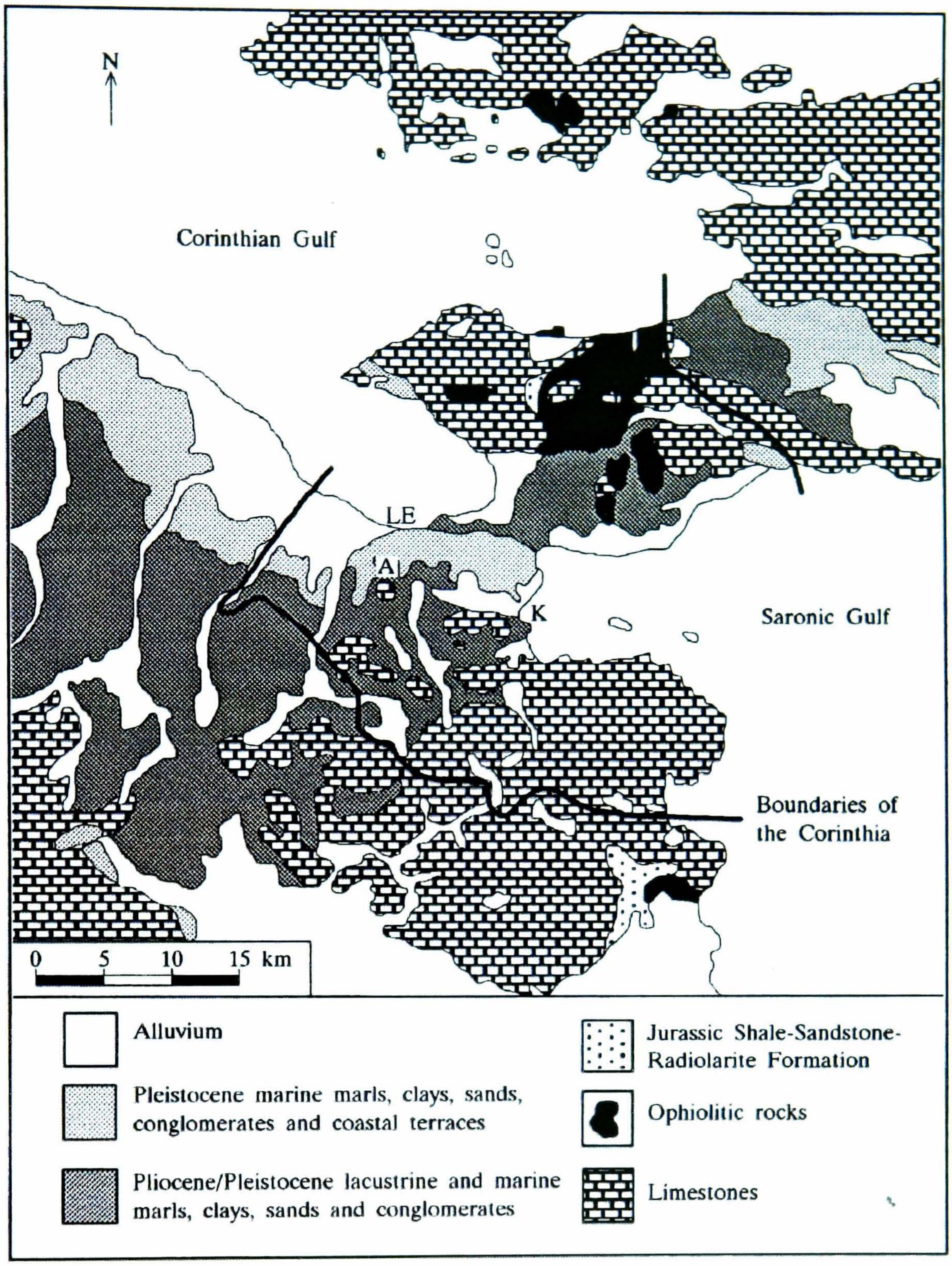


Figure 5.2.1 Geological map of the Corinthia. A is Ancient Corinth, LE is Lechaeon and K is Kenchreae (from Whitbread 1995, 262).

Figure 5.3.1 Mudstone exposure (right of photo), on the road below the first gate of Acrocorinth (from Whitbread 2003, 7).

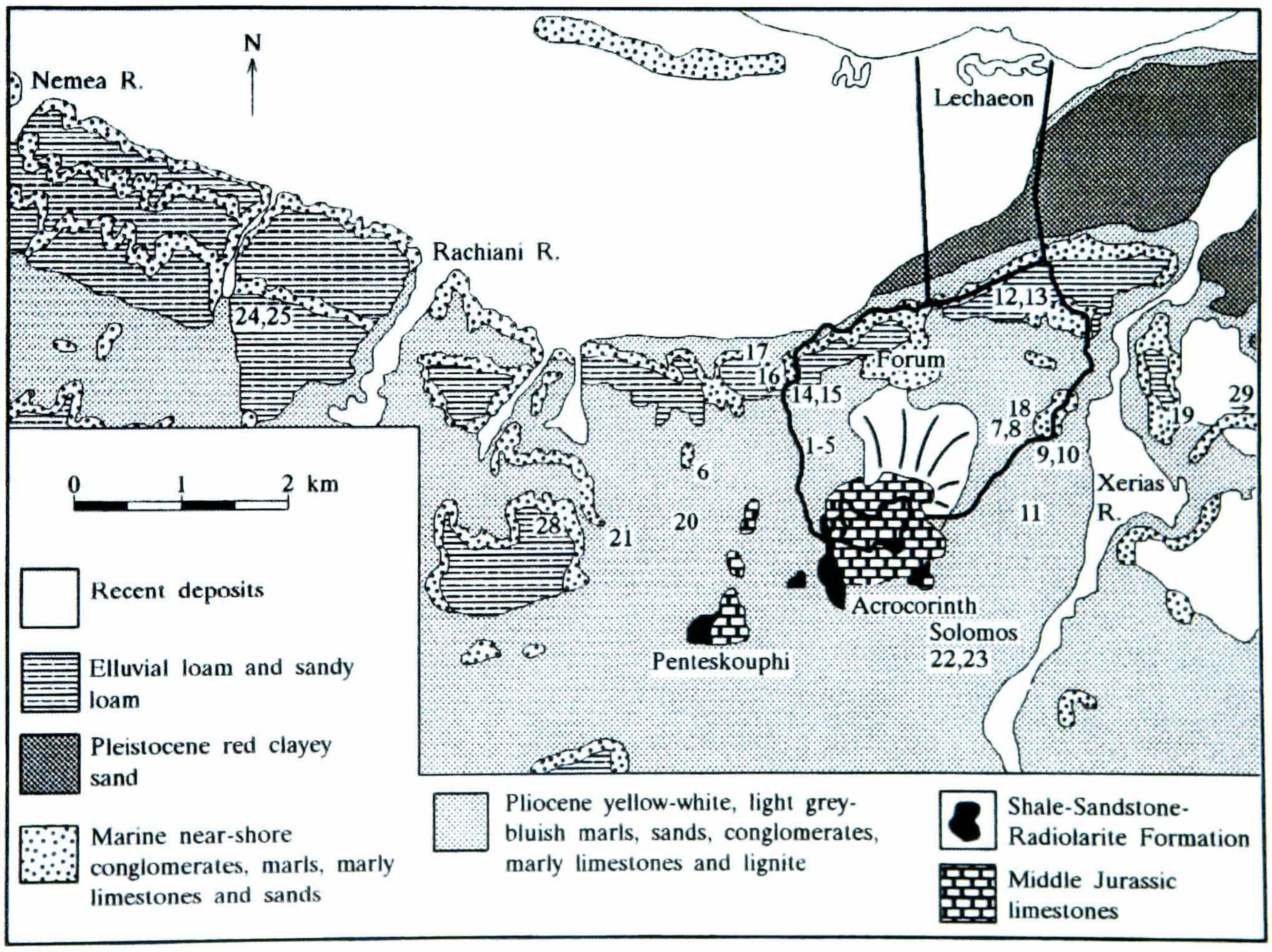


Figure 5.3.2 Geological map of the area surrounding Ancient Corinth. The numbers indicate Whitbread's clay sample locations (see also Table 5.3.1) (from Whitbread 1995, 264).

1. Corinth
2. Sikyon
3. Kenchreai
4. Nemea
5. Sparta
6. Nichoria
7. Athens
8. Askra
9. Thespiae
10. Thebes
11. Ipsilantis
12. Chalkis
13. Kalapodi
14. Larissa
15. Thessaloniki
16. Pella
17. Kythera
18. Melos
19. Keos
20. Samos

Figure 6.1 Greece, showing locations where the various wares have been recovered.

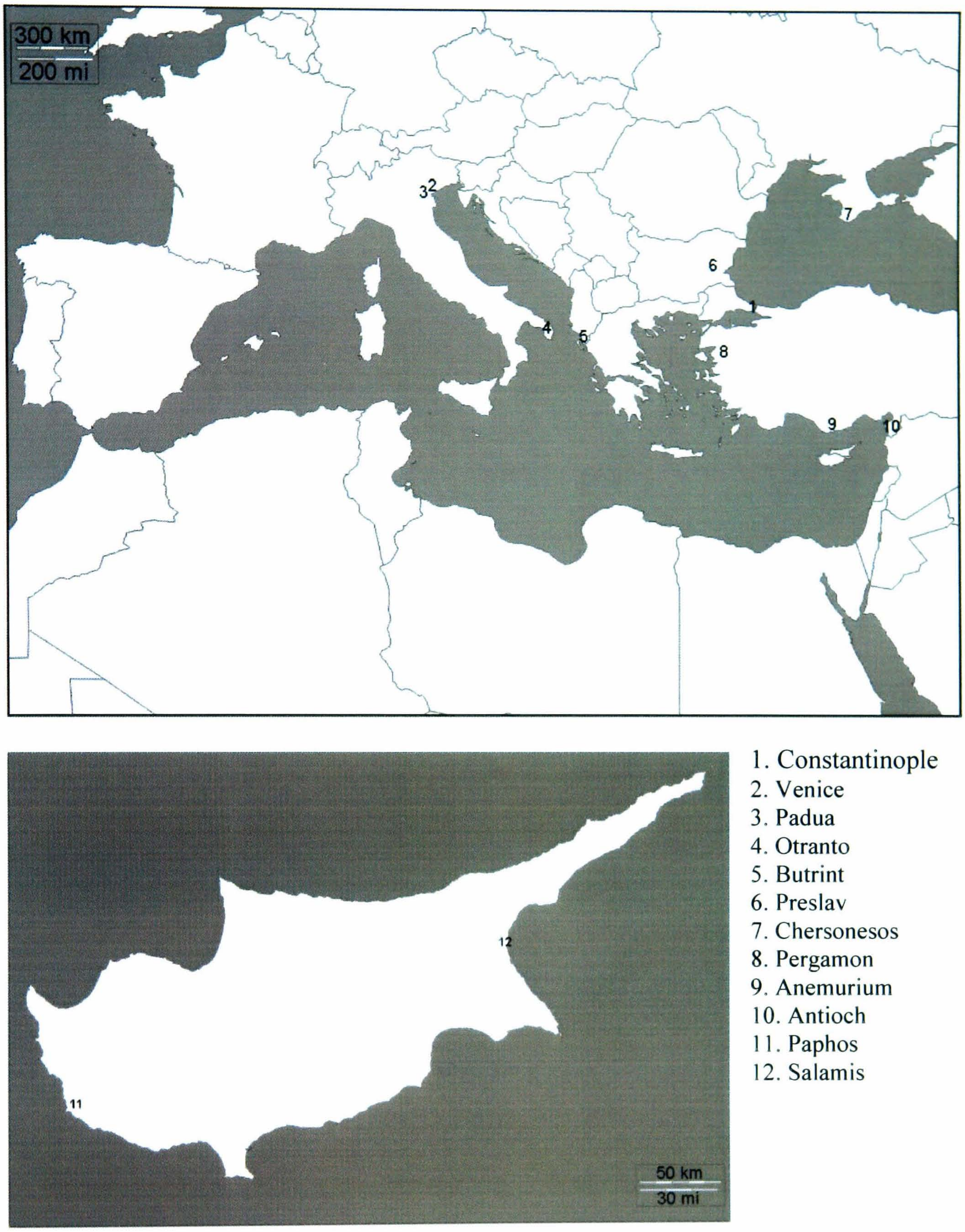


Figure 6.2 The Mediterranean and Cyprus, showing locations where the various wares have been recovered.

Figure 6.3 Slip Painted White Ware pedestal dish, green-glazed example (C-37-1656), (from Sanders 2003, 388).

Figure 6.4 A green-glazed example of an Impressed Ware bowl (C-36-109), (from Morgan 1942, Plate IV).

Figure 6.5 An example of Sanders' Type 2 Polychrome cup, (from Sanders 2003, 388).

Figure 6.6 Plain Brown Glazed Ware chafing dish, decorated with elaborate perforations, only bowl and handle is preserved (C-36-501), (from Morgan 1942, 179).

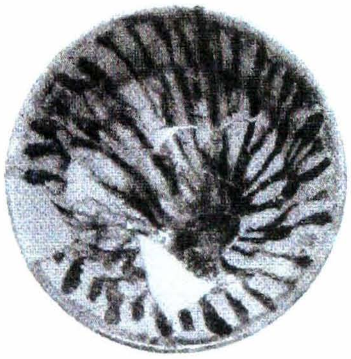


Figure 6.7 An example of a Green and Brown Painted I bowl (C-35-318), (from Sanders 2003, 389).

Figure 6.8 Spatter Painted Ware bowl (C-1990-6), (from Sanders 2003, 389).

Figure 6.9 An example of the Slip Painted Light on Dark I style, (C-1989-12), (from Sanders 2003, 388).

Figure 6.10 A Slip Painted Light on Dark Spotted jug. This example has a dark green over-glaze, (C-36-403), (from Sanders 2003, 88).

Figure 6.11 A Green and Brown Painted II bowl, (C-38-439), (from Morgan 1942, Plate XXI).

Figure 6.12 An example of a Green and Brown Painted III bowl, (C-36-847), (from Sanders 2003, 388).

Figure 6.13 A plate decorated in the Green and Brown Painted Spiral Style, (C-31-6), (from Sanders 2003, 388).

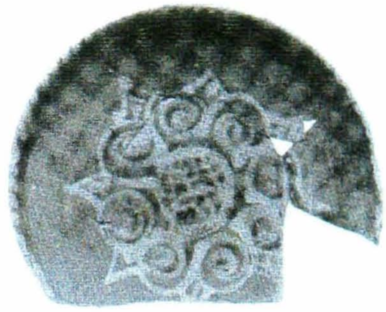


Figure 6.14 A Slip Painted Light on Dark II plate, (C-37-808). The over-glaze is yellow on this example, (from Sanders 2003, 388).

Figure 6.15 An example of a Slip Painted Dark on Light bowl, (C-36-584), (from Sanders 2003, 388).

Figure 6.16 A Measles Ware bowl decorated with a harpy, a bird and a fish, (C-31-58), (from Morgan 1942, 94).

Figure 6.17 An example of Sanders' Style I Sgraffito, (C-1990-11), (from Sanders 2003, 389).

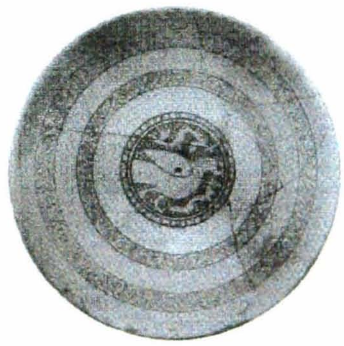


Figure 6.18 A Style II Sgraffito bowl, (C-30-56), (from Sanders 2003, 389.

Figure 6.19 A Free-Style Sgraffito plate, (C-37-1179), (from Sanders 2003, 389).

Figure 6.20 An example of a Painted Sgraffito plate, with brown glaze spirals and stripes on the rim, (C-36-583), (from Sanders 2003, 389).

Figure 6.21 An example of an Incised Sgraffito (Intermediate Style) plate, (C-37-1539), (from Morgan 1942, 151).

Figure 6.22 A Painted-Incised Sgraffito bowl, (C-38-235), (from Morgan 1942, 160).

Figure 6.23 A Champlevé plate decorated with a deer, (C-29-03), (from de Waele, 1930, 443).

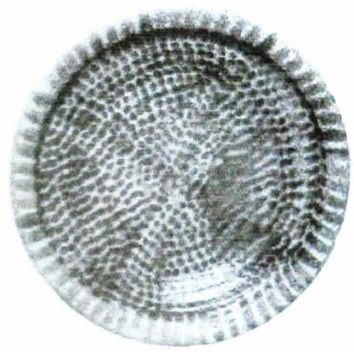


Figure 6.24 A Green and Brown Painted V(I) plate. The decoration on this example is monochrome brown, (C-37-1788), (from Sanders 2003, 389).

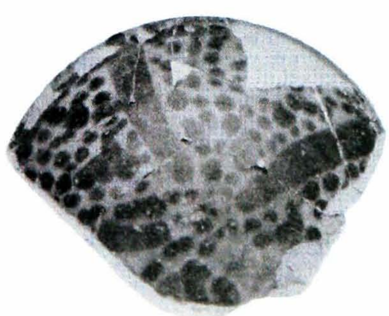


Figure 6.25 A Green and Brown Painted V(II) bowl, (C-33-432), (from Morgan 1942, 83).

Figure 6.26 An example of a Green and Brown Painted V(III) bowl, with green glaze triangles and a yellow over-glaze, (C-36-637), (from Morgan 1942, 226).

Figure 6.27 An example of a Green and Brown Painted V(IV) plate. The spiral decoration is green, (C-34-481), (from Morgan 1942, 227).

Figure 6.28 A Green and Brown Painted V(V) bowl. The loops in this example are green-glazed, (C-1992-7), (from Mackay 2003, 413).

Figure 6.29 A Slip Painted Light on Dark III bowl, (C-34-1249), (from Morgan 1942, 103).

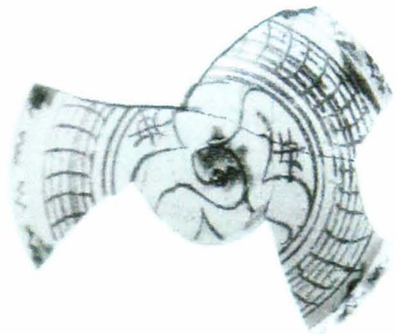


Figure 6.30 An example of Aegean Ware bowl, (C-1977-3), (from MacKay 2003, 407).

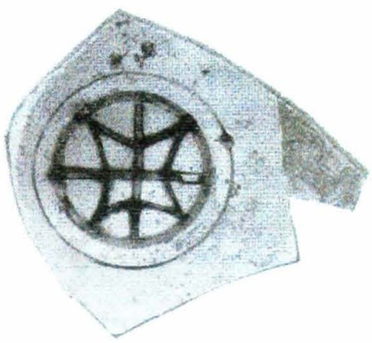


Figure 6.31 An example of Zeuxippus Ware, (C-33-360), (from Sanders 2003, 389).

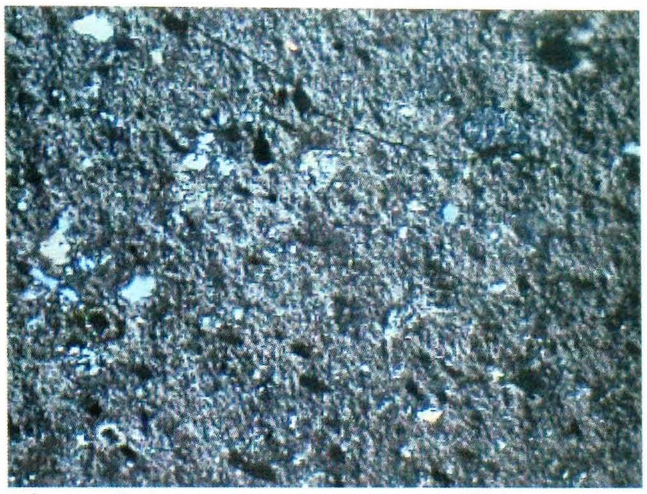


Figure 8.2.1 Altered Feldspar Group A1 (width of image = 1.75mm).

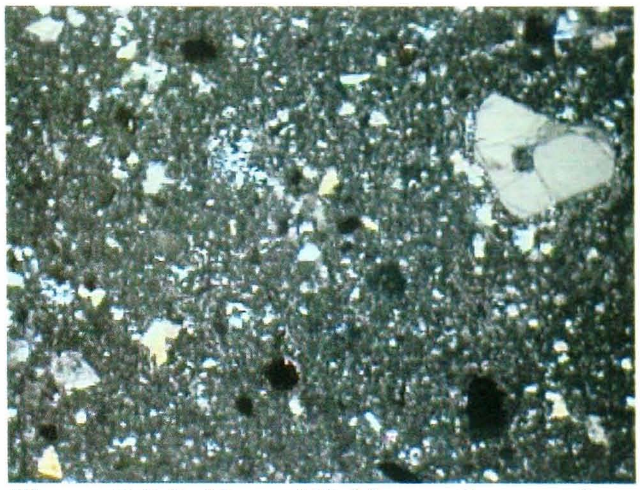


Figure 8.2.2 Altered Feldspar Group A2 (width of image = 1.75mm).

Figure 8.2.3 Altered Feldspar Group B (width of image = 1.75mm).

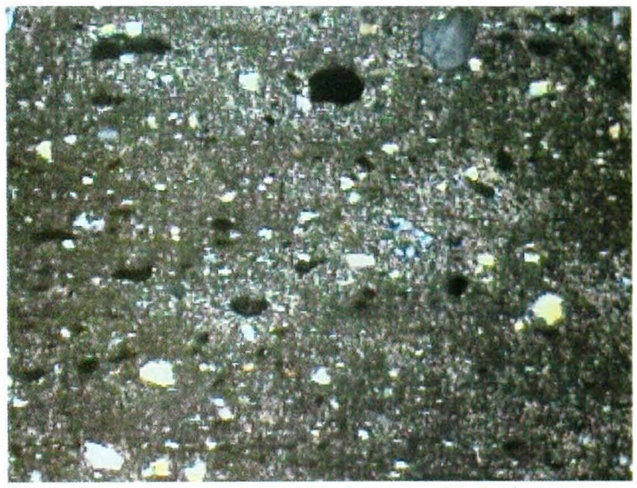


Figure 8.2.4 Altered Feldspar Fabric C (width of image = 1.75mm).

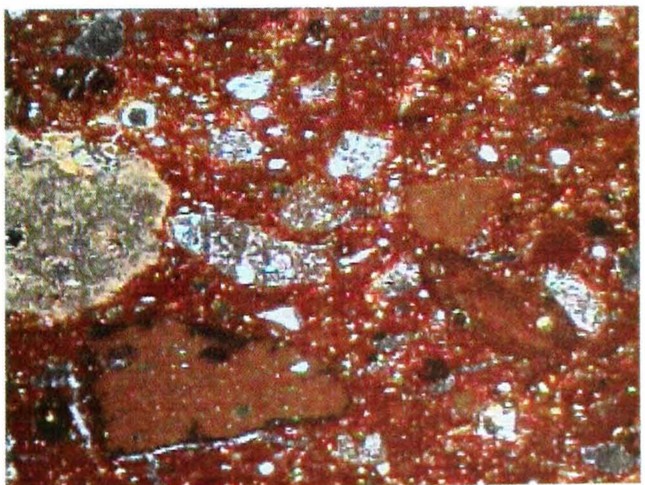


Figure 8.2.5 Coarse Mudstone-Chert Group A (width of image = 1.75mm).

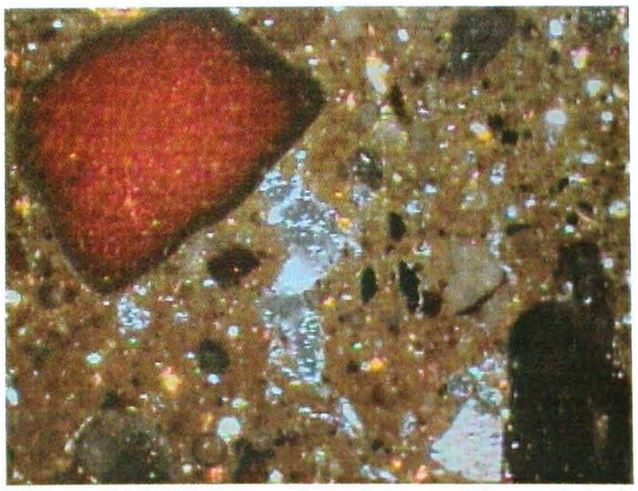


Figure 8.2.6 Coarse Mudstone-Chert Fabric B (width of image = 1.75mm).

Figure 8.2.7 Argillaceous Rock Fabric (width of image = 1.75mm).

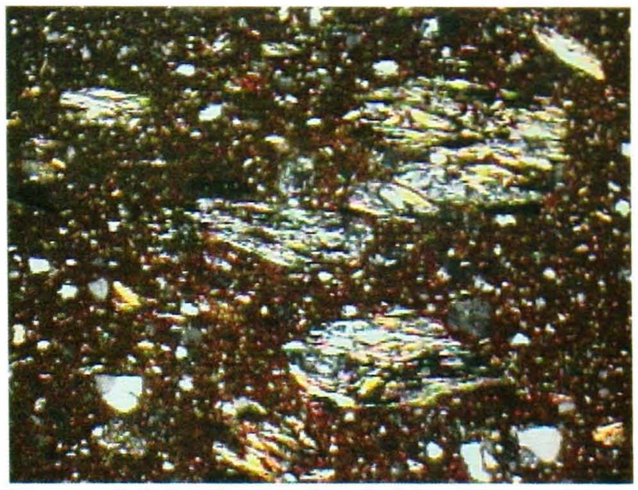


Figure 8.2.8 Muscovite Schist Group A (width of image = 1.75mm).

Figure 8.2.9 Muscovite Schist Fabric B (width of image = 1.75mm).

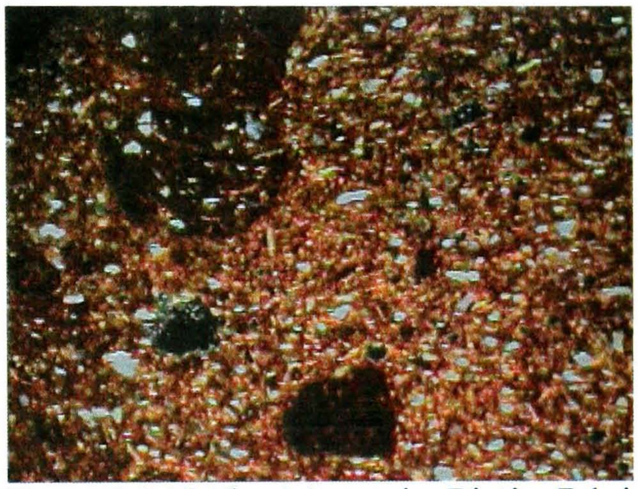


Figure 8.2.10 Fine Muscovite Biotite Fabric (width of image = 1.75mm).

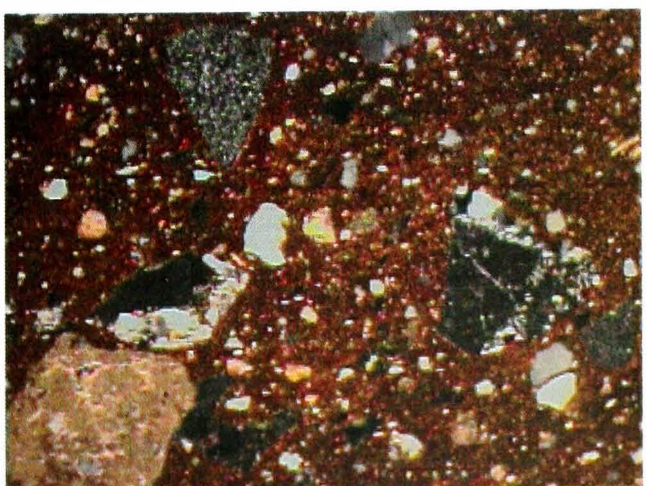


Figure 8.2.11 Quartz-Chert-Micrite Fabric (width of image = 1.75mm).

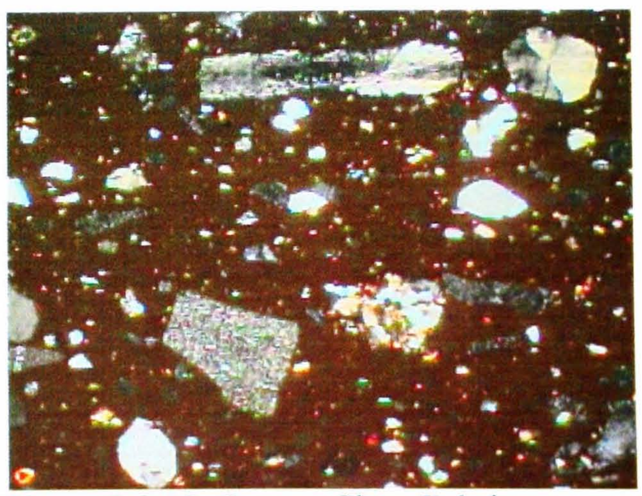


Figure 8.2.12 Quartz-Chert Fabric (width of image = 1.75mm).

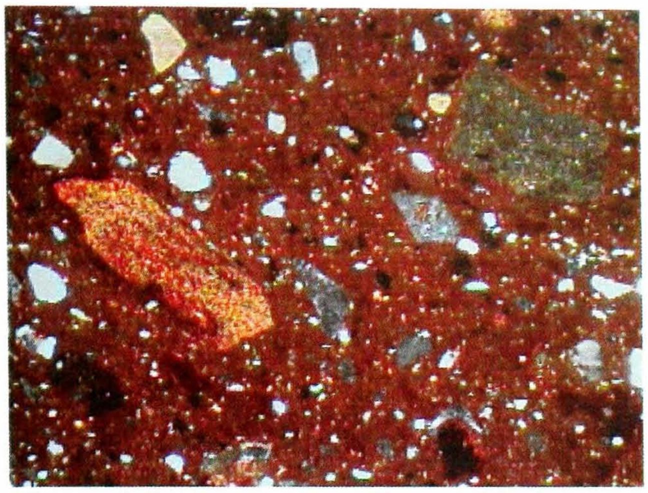


Figure 8.2.13 Medium Coarse Mudstone Chert Group (width of image = 1.75mm).

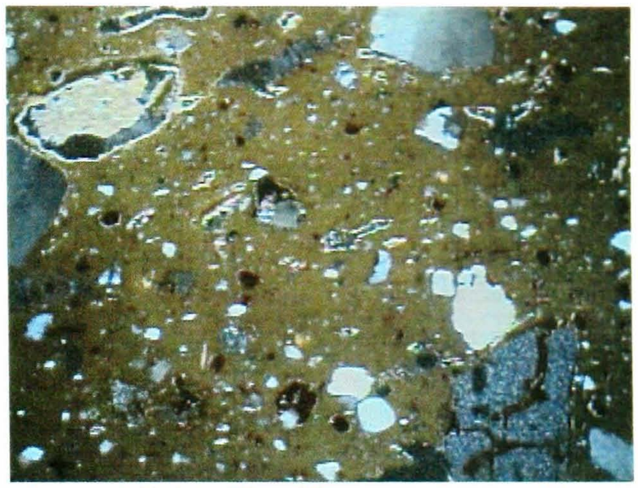


Figure 8.2.14 Clay Temper Group A1 (width of image = 1.75mm).

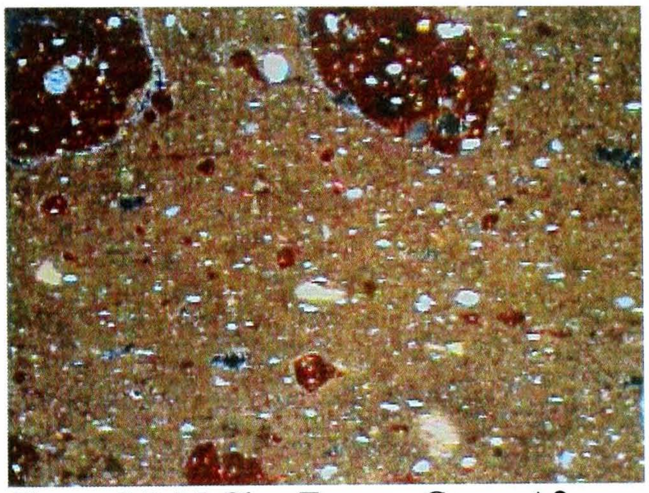


Figure 8.2.15 Clay Temper Group A2 (width of image = 1.75mm).

Figure 8.2.16 Clay Temper Group A3 (width of image = 1.75mm)

Figure 8.2.17 Phyllite Group A1 (few fine inclusions) (width of image = 1.75mm).

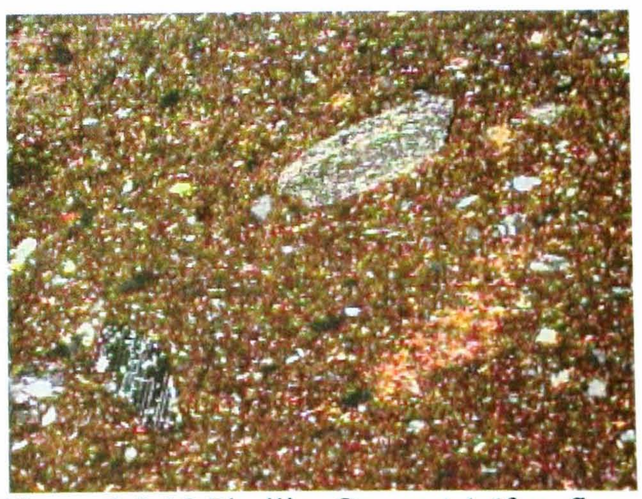


Figure 8.2.18 Phyllite Group A1 (few fine inclusions, rare coarse inclusions) (width of image = 1.75mm).

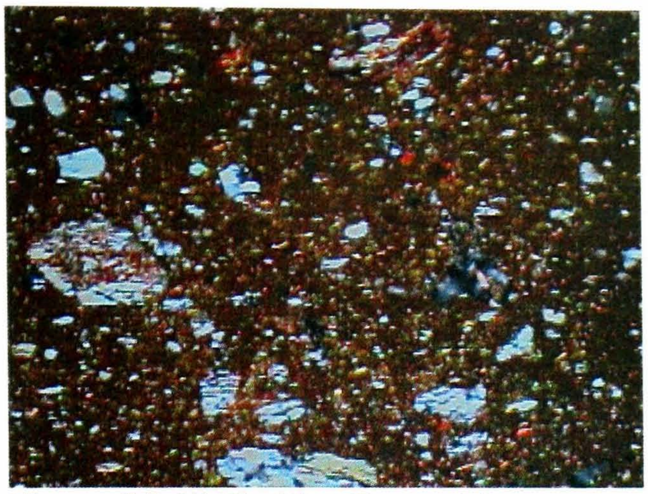


Figure 8.2.19 Phyllite Group A1
(common coarse inclusions)
(width of image = 1.75mm).

Figure 8.20 Phyllite Group A2
(width of image = 1.75mm).

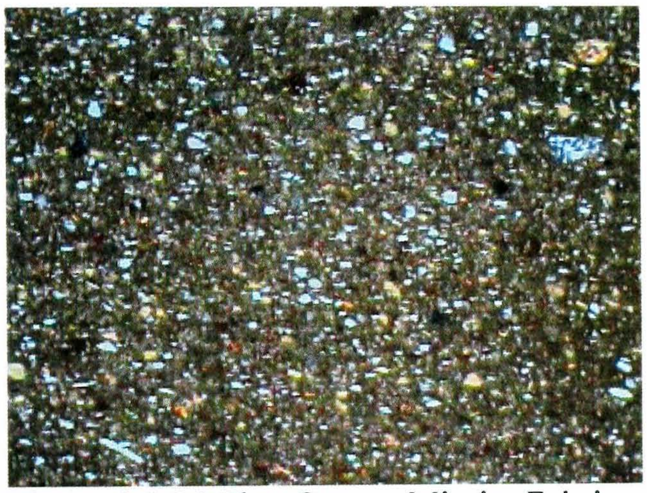


Figure 8.2.21 Fine Quartz-Micrite Fabric
(width of image = 1.75mm).

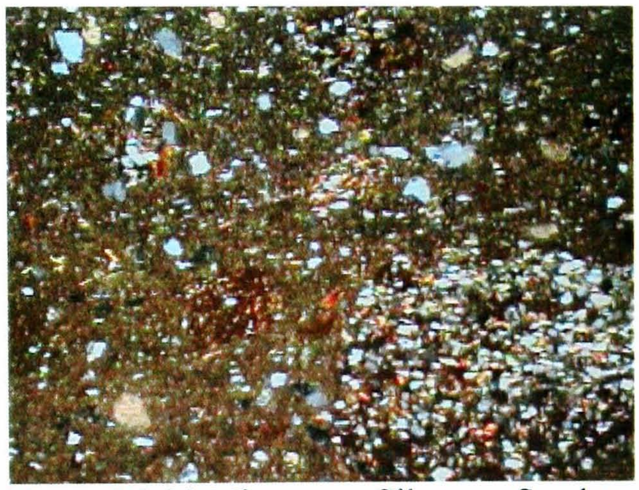


Figure 8.2.22 Micaceous Siltstone-Sandstone
Group A (width of image = 1.75mm).

Figure 8.2.23 Micaceous Siltstone-
Sandstone Group B
(width of image = 1.75mm).

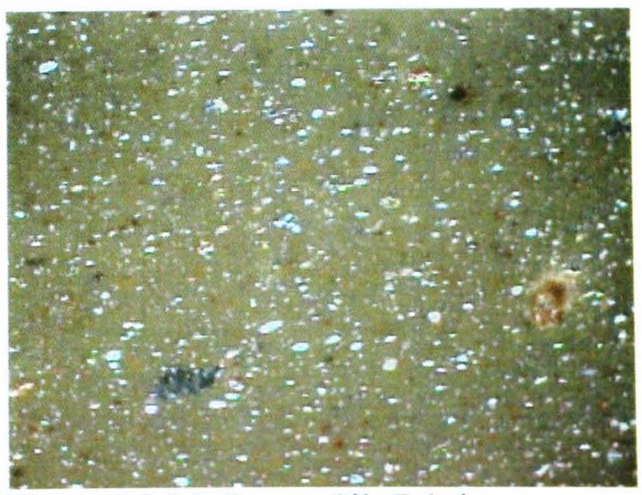


Figure 8.2.24 Quartz Silt Fabric
(width of image = 1.75mm).

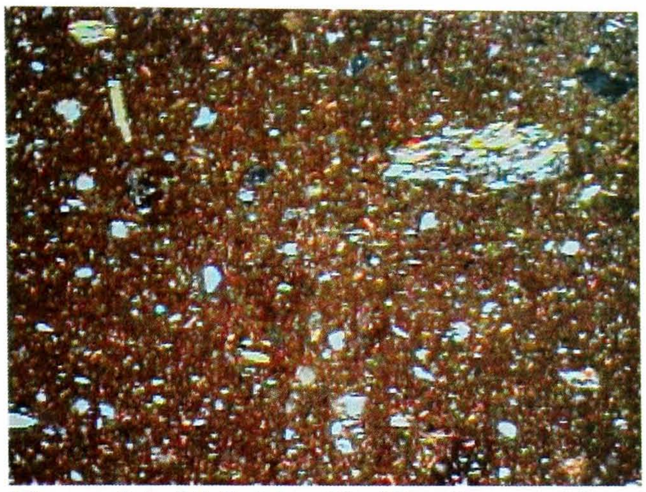


Figure 8.2.25 Schist-Phyllite Group A1 (width of image = 1.75mm).

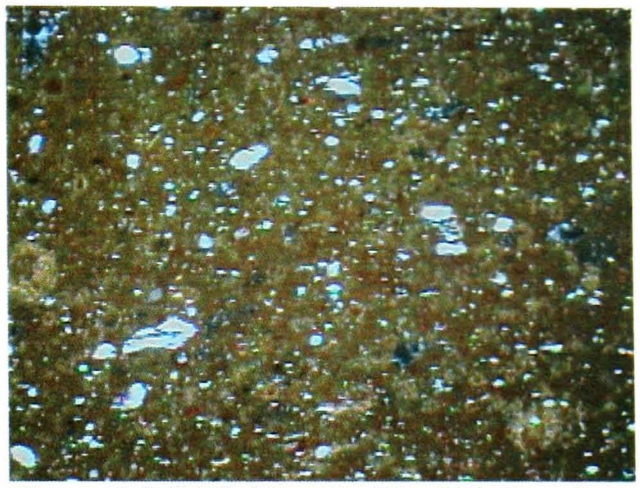


Figure 8.2.26 Schist-Phyllite Fabric A2 (width of image = 1.75mm).

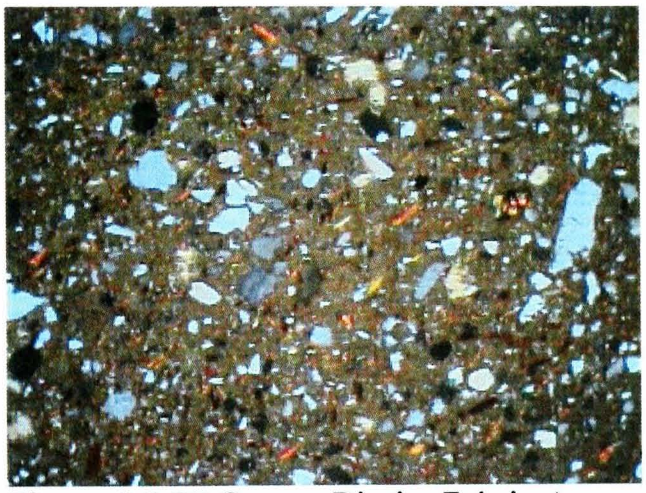


Figure 8.2.27 Quartz-Biotite Fabric A (width of image = 1.75mm).


Figure 8.2.28 Quartz-Biotite Fabric B1 (width of image = 1.75mm).

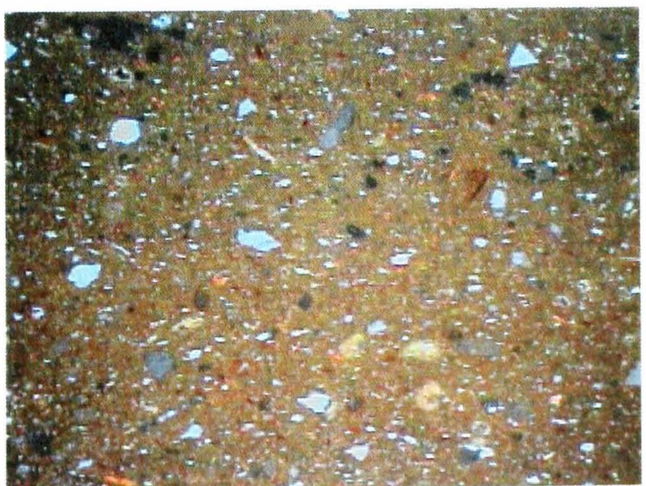


Figure 8.2.29 Quartz-Biotite Fabric B2 (width of image = 1.75mm).


Figure 8.2.30 Quartz-Biotite Fabric B3 (width of image = 1.75mm).

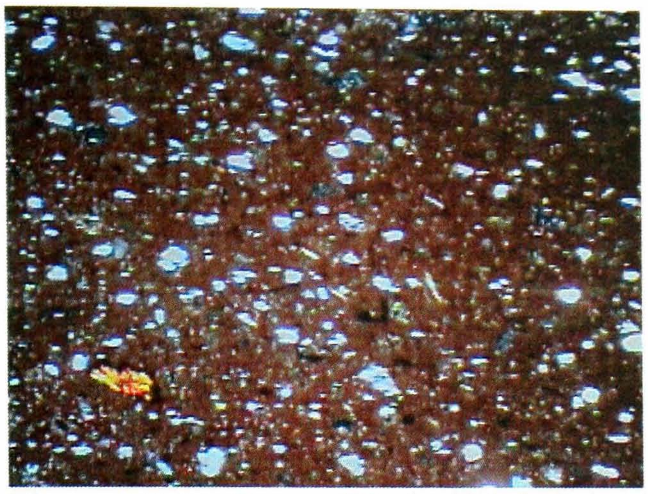


Figure 8.2.31 Quartz-Biotite Fabric B4 (width of image = 1.75mm).

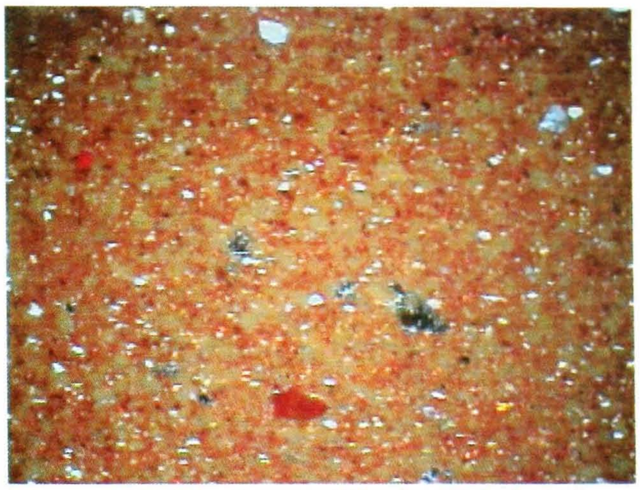


Figure 8.2.32 Quartz-Biotite Fabric B5 (width of image = 1.75mm).

Figure 8.2.33 Quartz-Mica Fabric (width of image = 1.75mm).

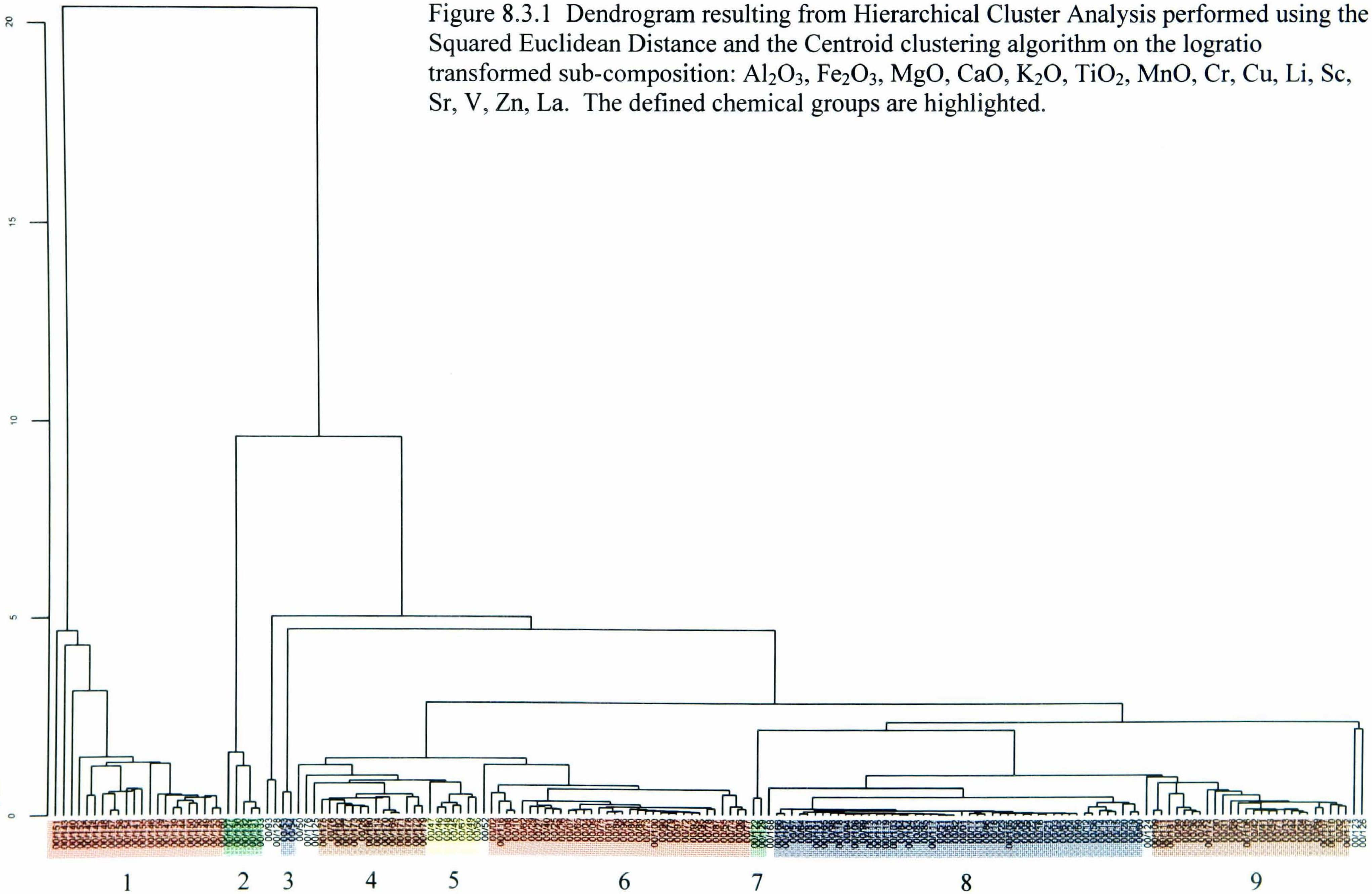


Figure 8.3.1 Dendrogram resulting from Hierarchical Cluster Analysis performed using the Squared Euclidean Distance and the Centroid clustering algorithm on the logratio transformed sub-composition: Al_2O_3, Fe_2O_3, MgO, CaO, K_2O, TiO_2, MnO, Cr, Cu, Li, Sc, Sr, V, Zn, La. The defined chemical groups are highlighted.

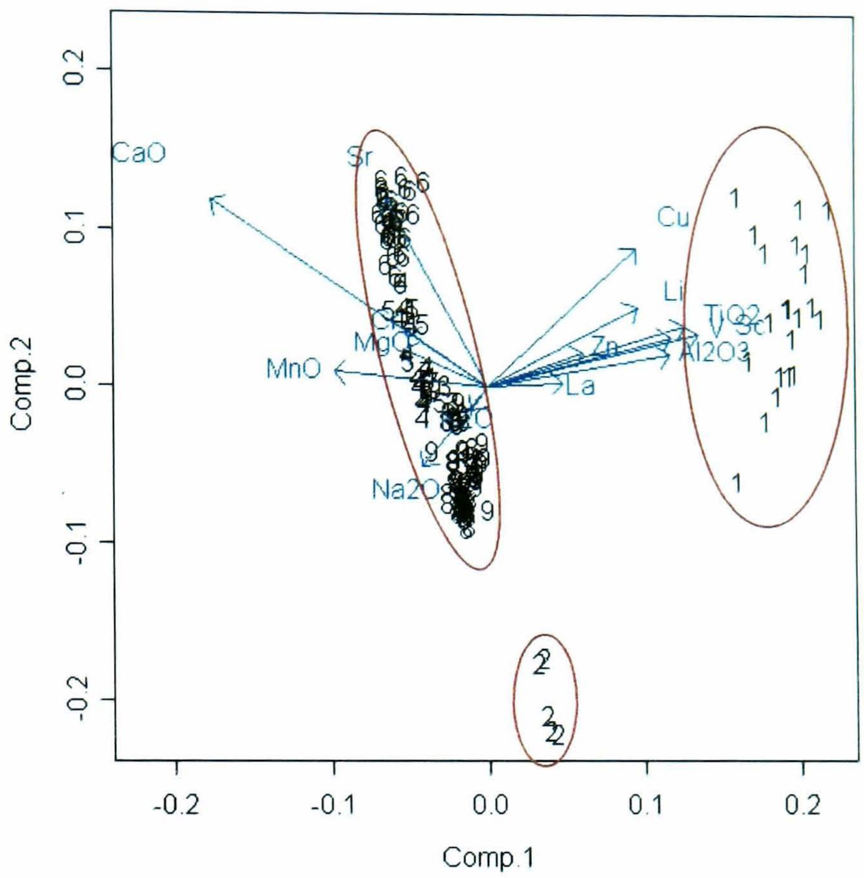


Figure 8.3.2 Biplot of the first and second principal components after a Principal Component Analysis performed using the logratio transformed sub-composition: Al_2O_3, MgO, CaO, K_2O, Na_2O, TiO_2, MnO, Cr, Cu, Li, Sc, Sr, V, Zn, La. The main elements loading PC1 are shown, and the cases are labelled by the chemical groups defined using Hierarchical Agglomerative Cluster Analysis.

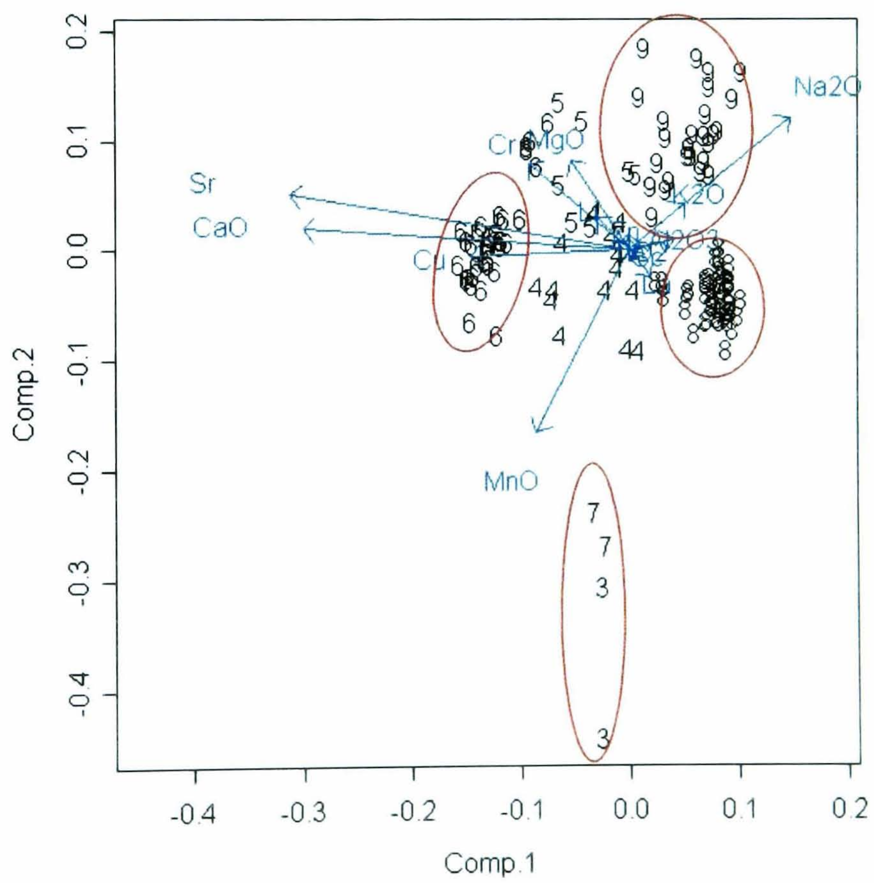


Figure 8.3.3 Biplot of the first and second principal components after a Principal Component Analysis performed on Chemical Groups 3 to 9 using the logratio transformed sub-composition: Al_2O_3, MgO, CaO, K_2O, Na_2O, TiO_2, MnO, Cr, Cu, Li, Sc, Sr, V, Zn, La. The main elements loading PC1 are shown.

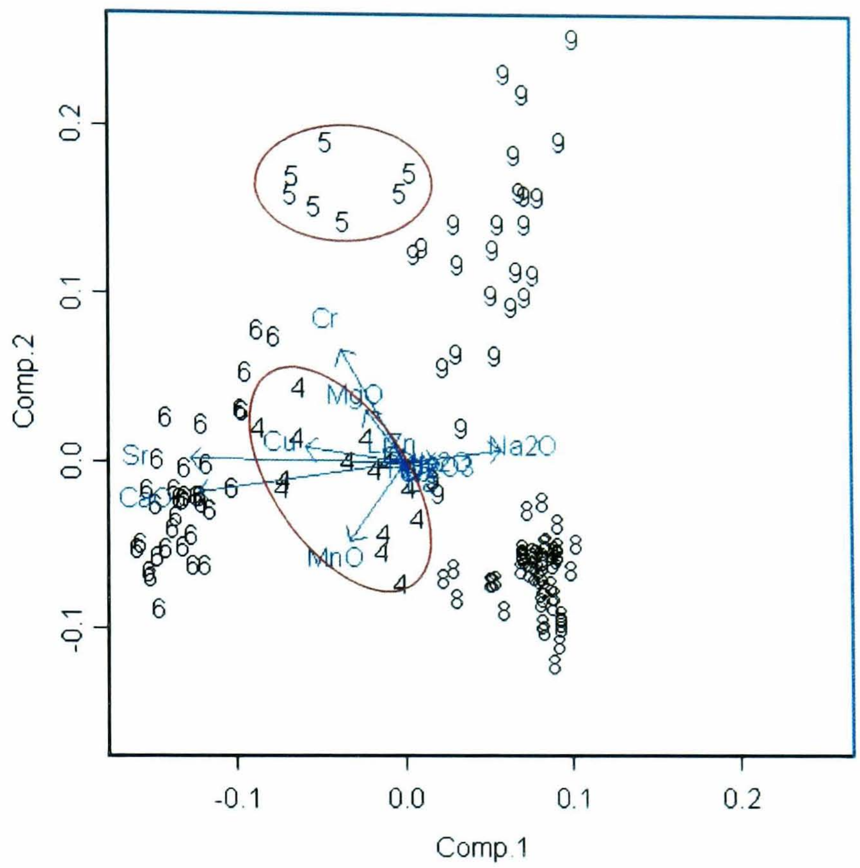


Figure 8.3.4 Biplot of the first and second principal components after a Principal Component Analysis performed on Chemical Groups 4, 5, 6, 8 and 9 using the logratio transformed sub-composition: Al_2O_3, MgO, CaO, K_2O, Na_2O, TiO_2, MnO, Cr, Cu, Li, Sc, Sr, V, Zn, La. The main elements loading PC1 are shown.

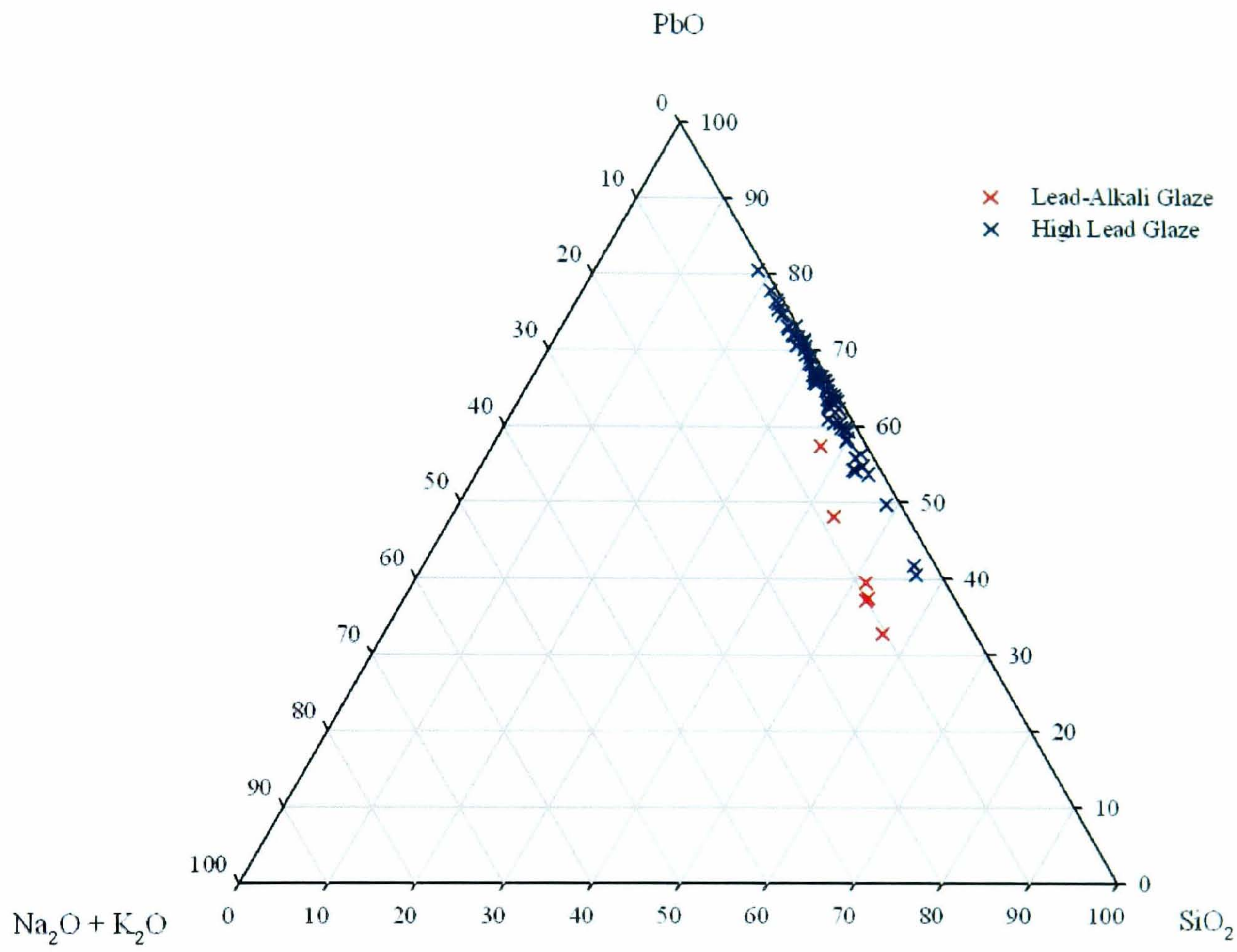


Figure 8.4.1 Ternary plot showing PbO, SiO_2 and Na_2O+K_2O contents of the glazes analysed. The data were normalised to 100%.

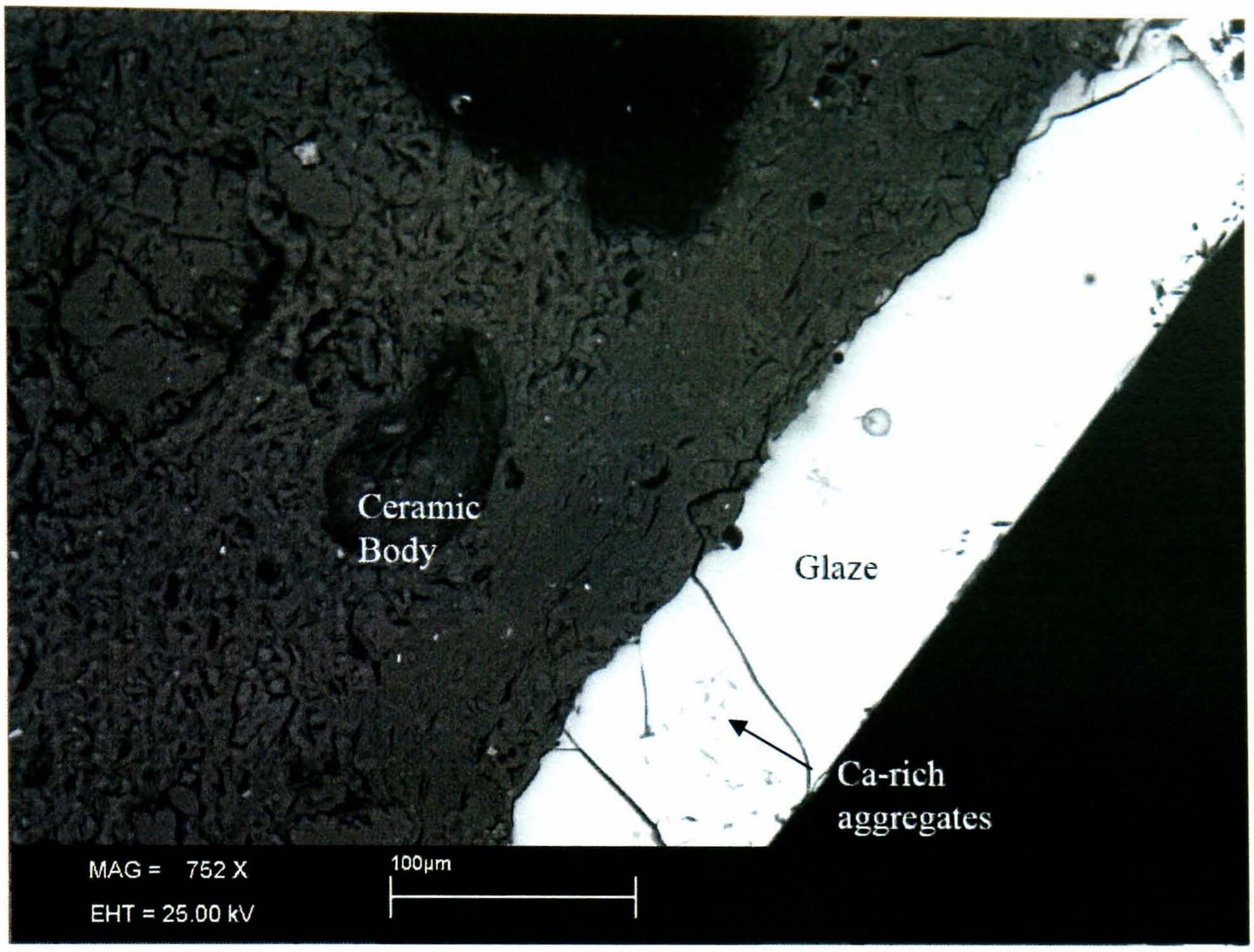


Figure 8.4.2 SEM-BSE image of turquoise lead-alkali glaze (00/141) showing absence of interaction layer between body and glaze and Ca-rich aggregates (x752).

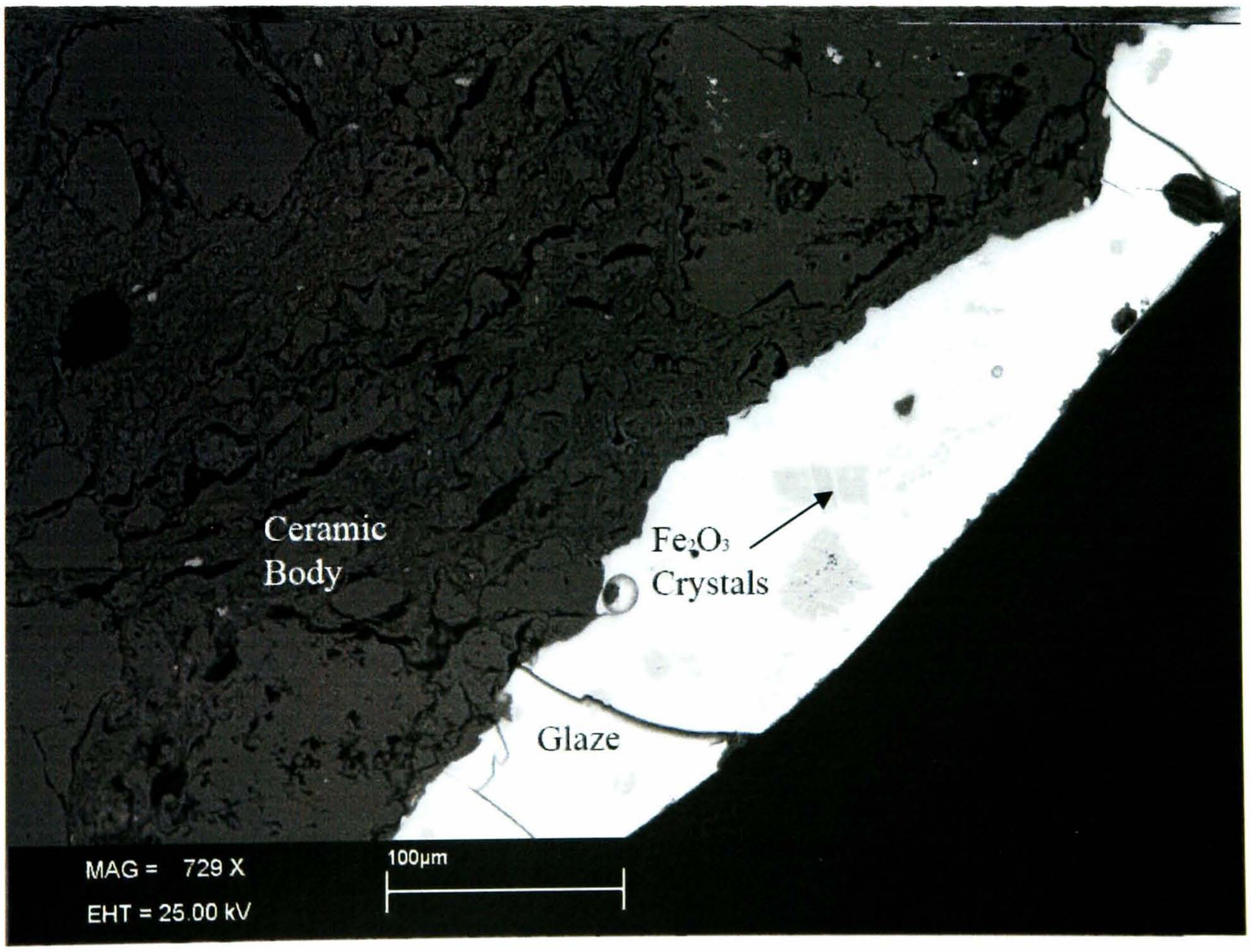


Figure 8.4.3 SEM-BSE image of brown lead-alkali glaze (00/142) showing absence of interaction layer between body and glaze and Fe_2O_3 particles (x729).

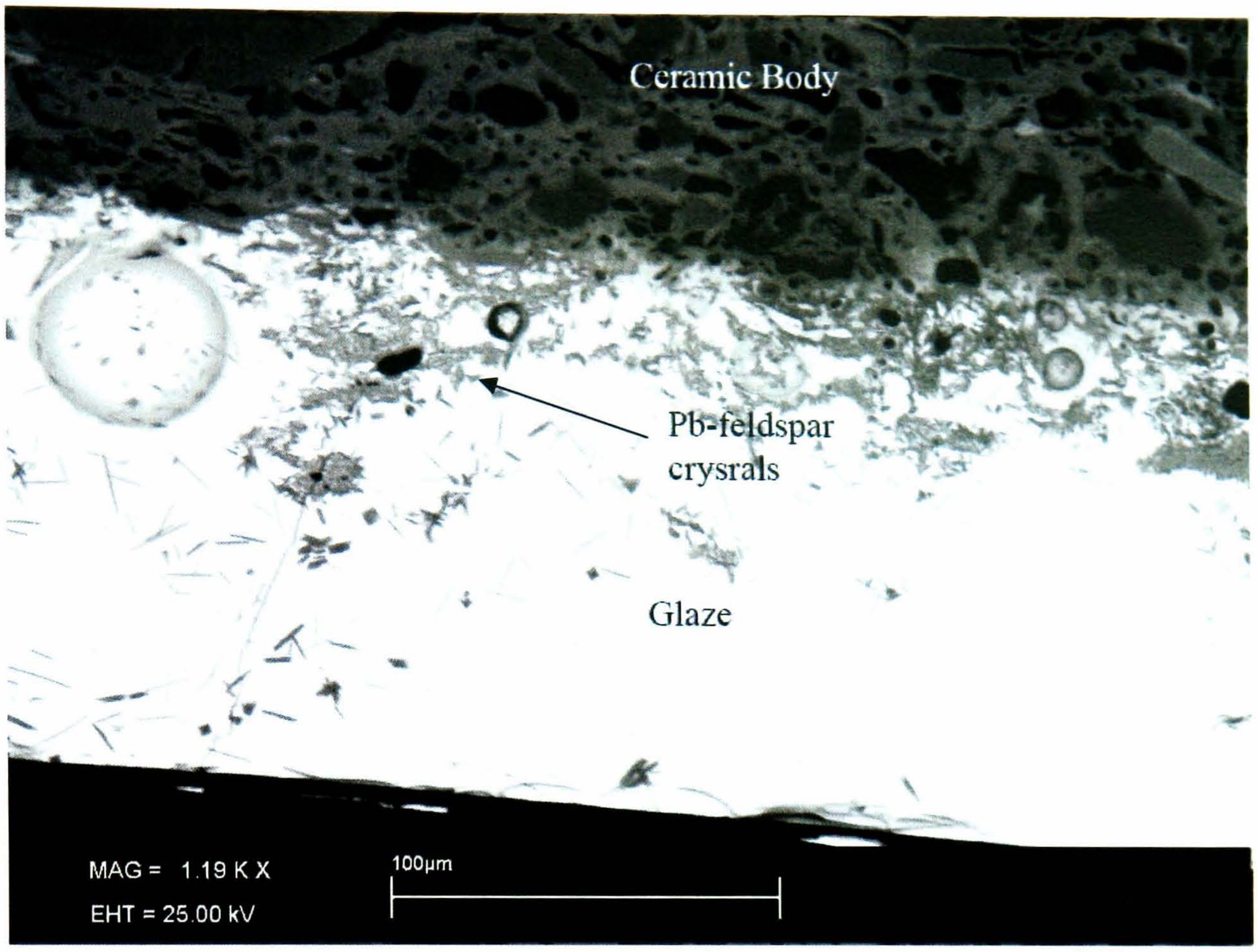


Figure 8.4.4 SEM-BSE image of Plain Brown Glazed chaffing dish (00/124) showing extensive Pb-feldspar crystal formation at the glaze/body interface (x1190).

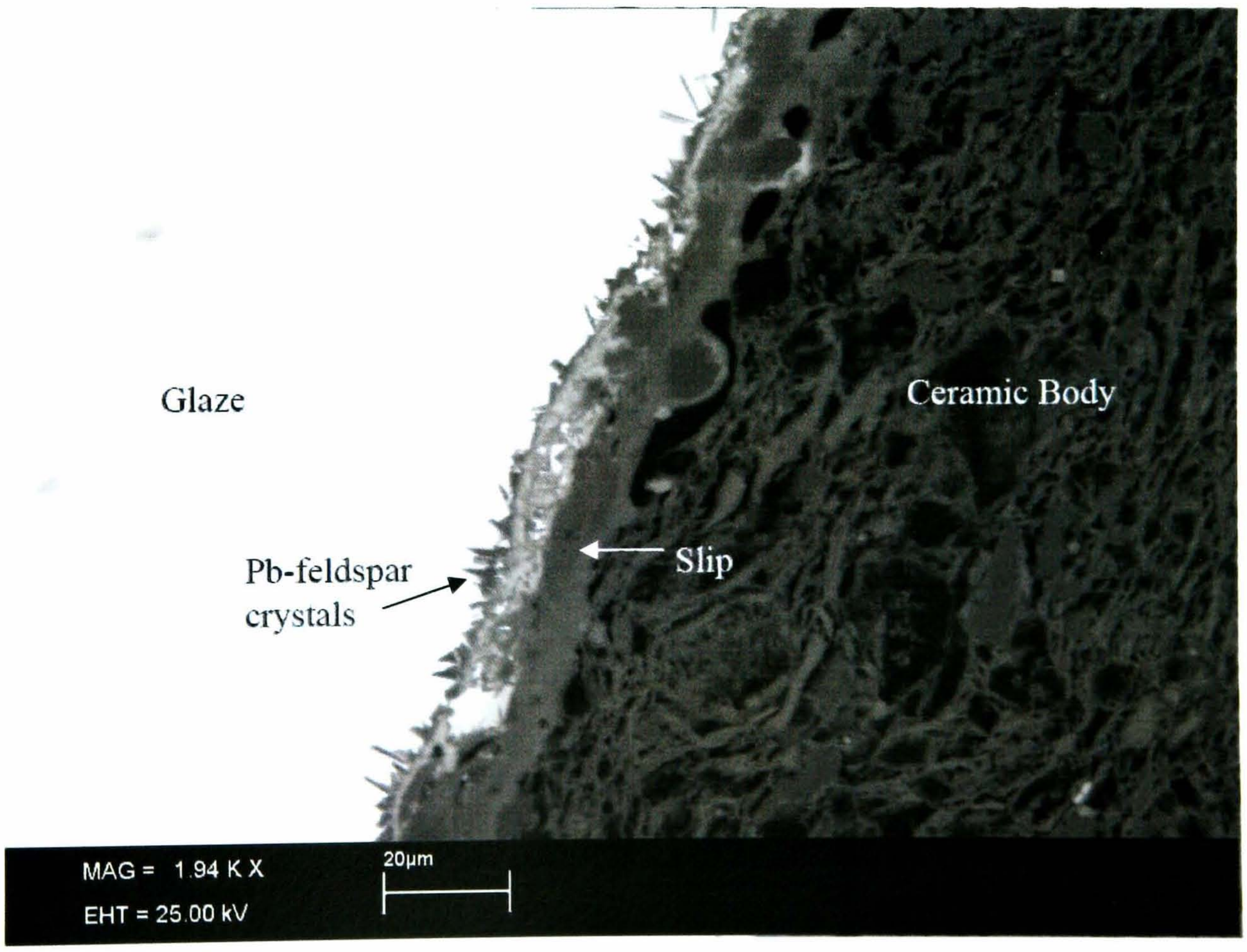


Figure 8.4.5 SEM-BSE image of the glaze/body interaction layer of an example of Green and Brown Painted I bowl. The Pb-feldspar crystal formation at the glaze/body interface is minimal measuring approximately 10 µm (x1190).

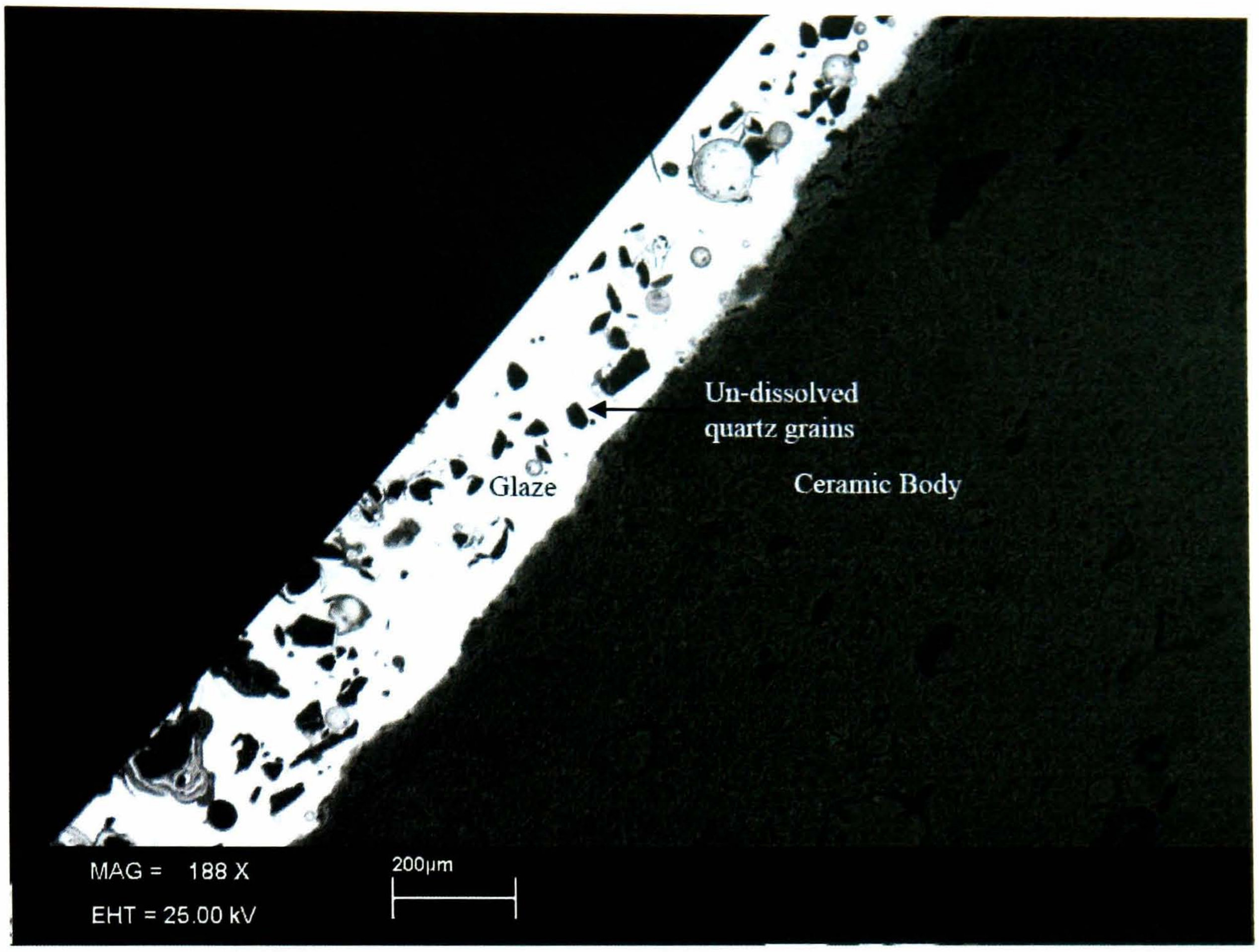


Figure 8.4.6 SEM-BSE image of sample 00/88 (Sgraffito Measles), showing un-dissolved quartz grains throughout the glaze layer (x188).

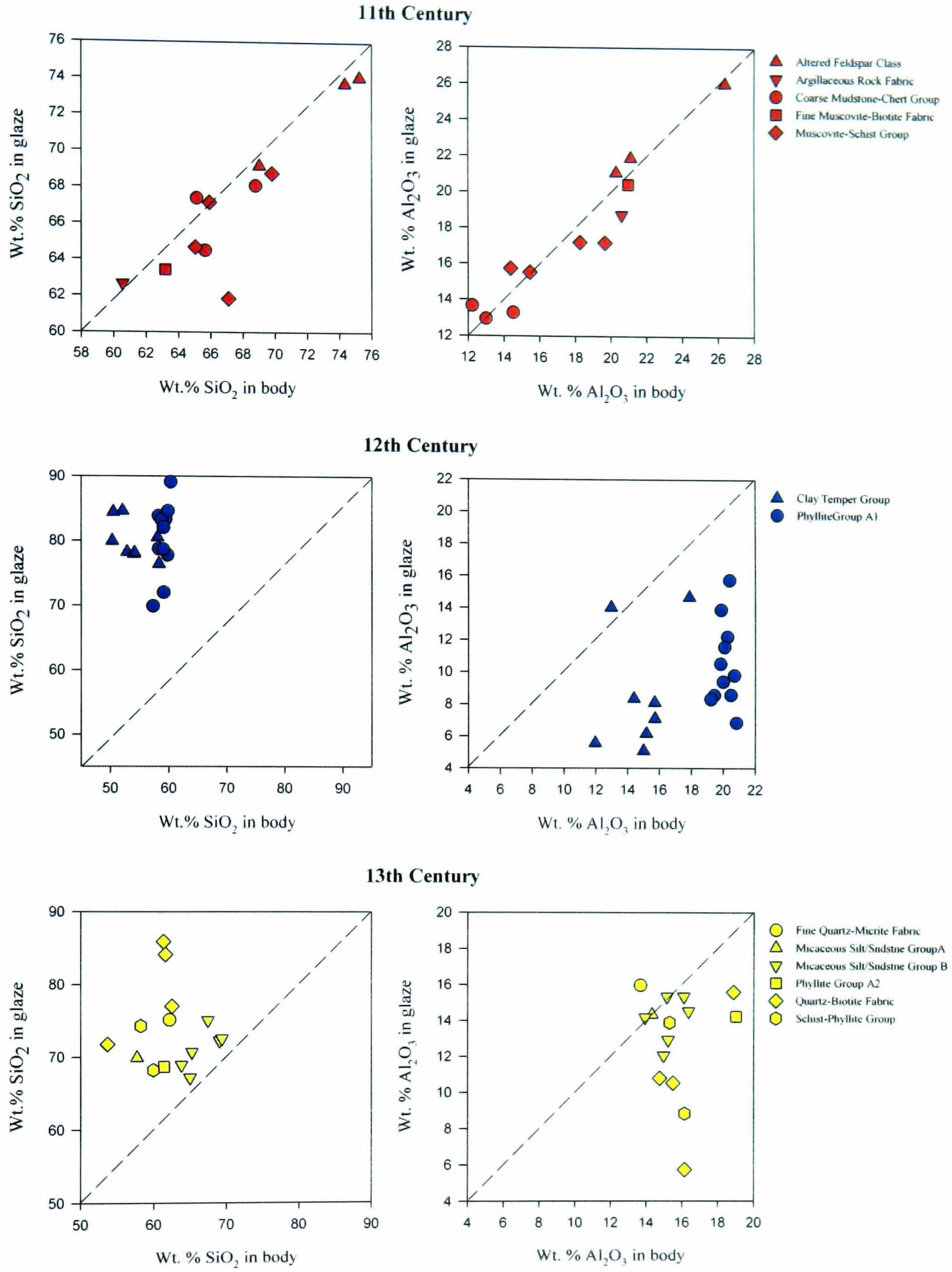


Figure 8.4.7 Biplots comparing SiO_2 (left) and Al_2O_3 (right) contents in body and glaze.

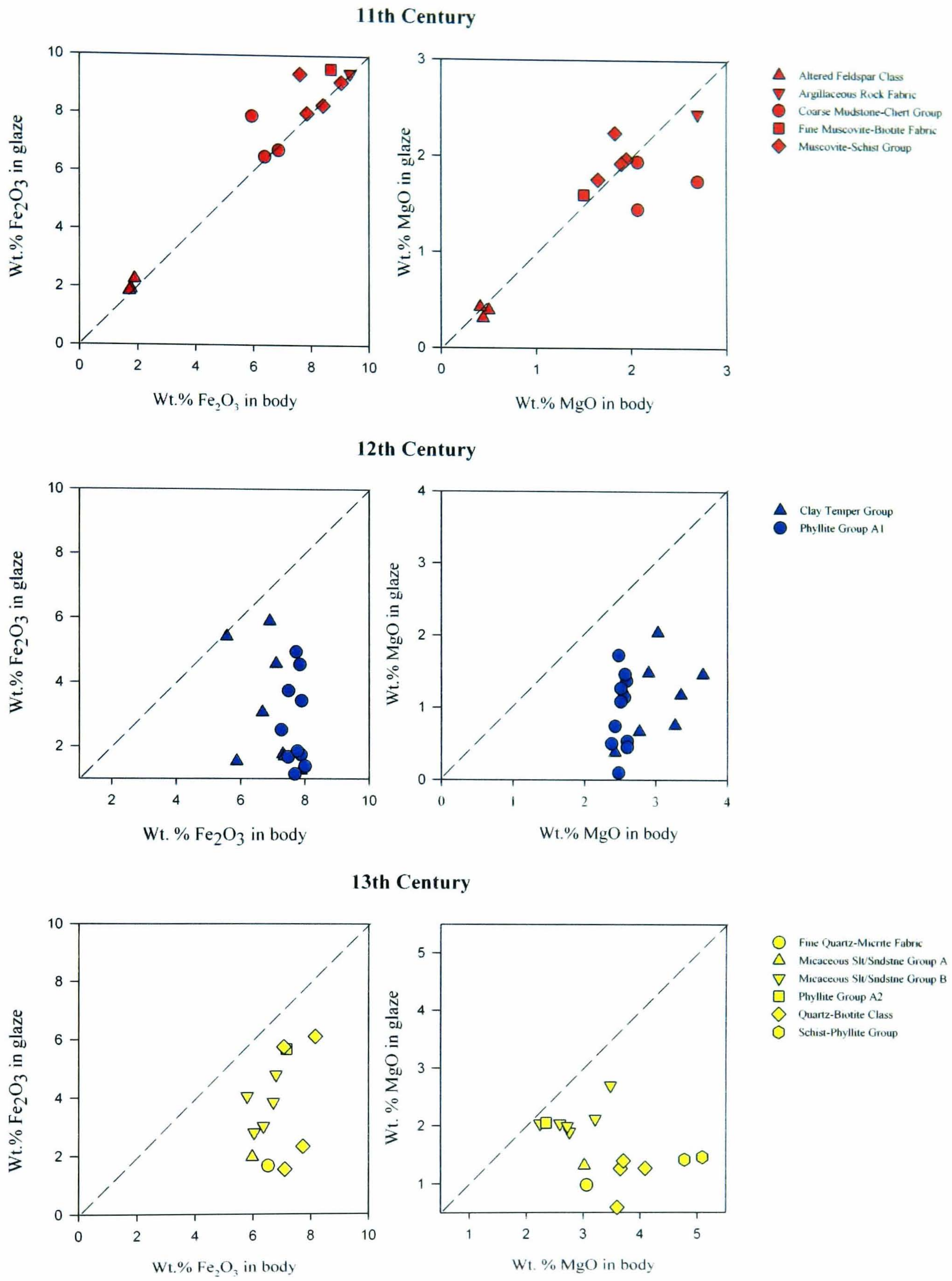


Figure 8.4.8 Biplots comparing Fe_2O_3 (left) and MgO (right) contents in body and glaze.

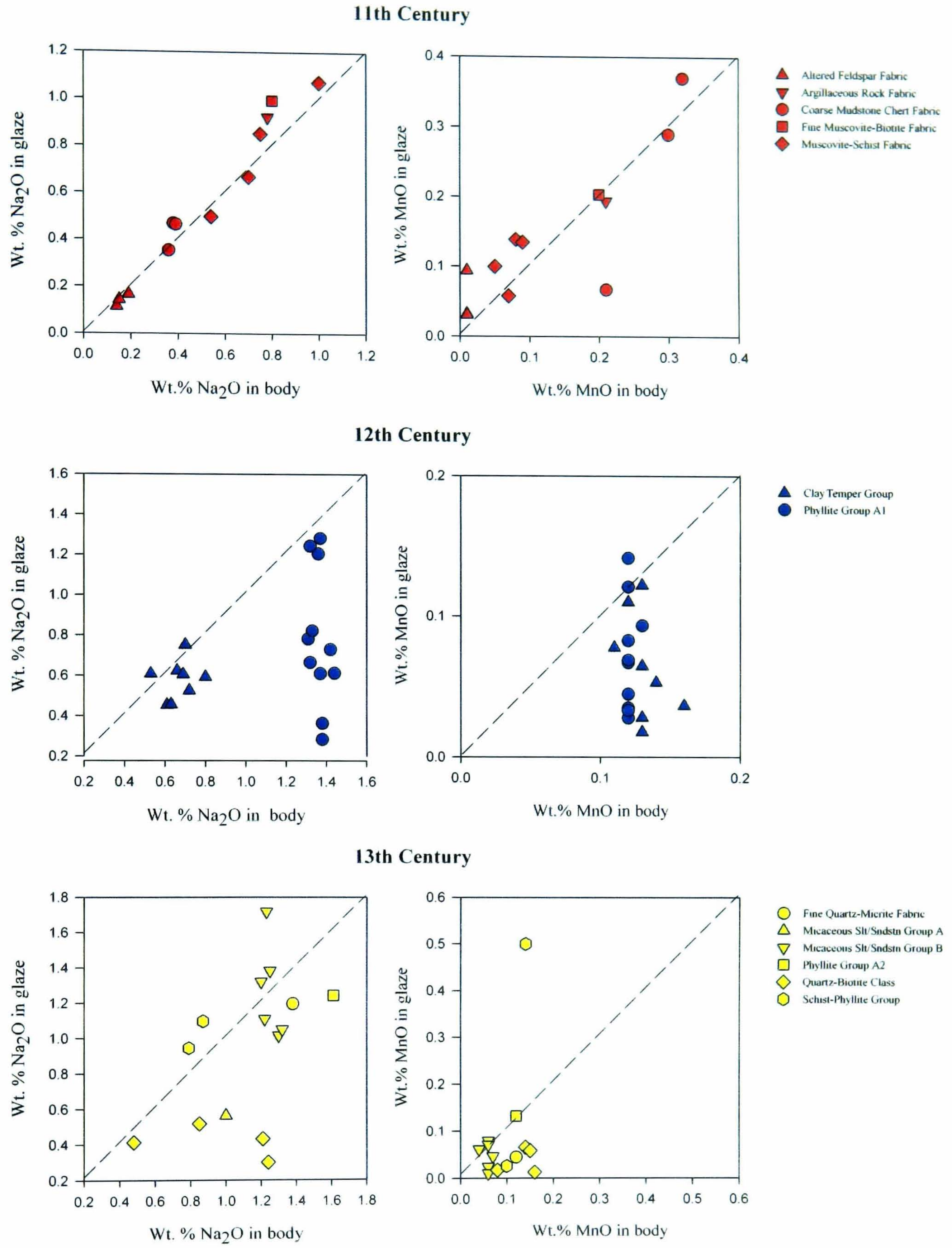


Figure 8.4.9 Biplots comparing Na_2O (left) and MnO (right) contents in body and glaze.

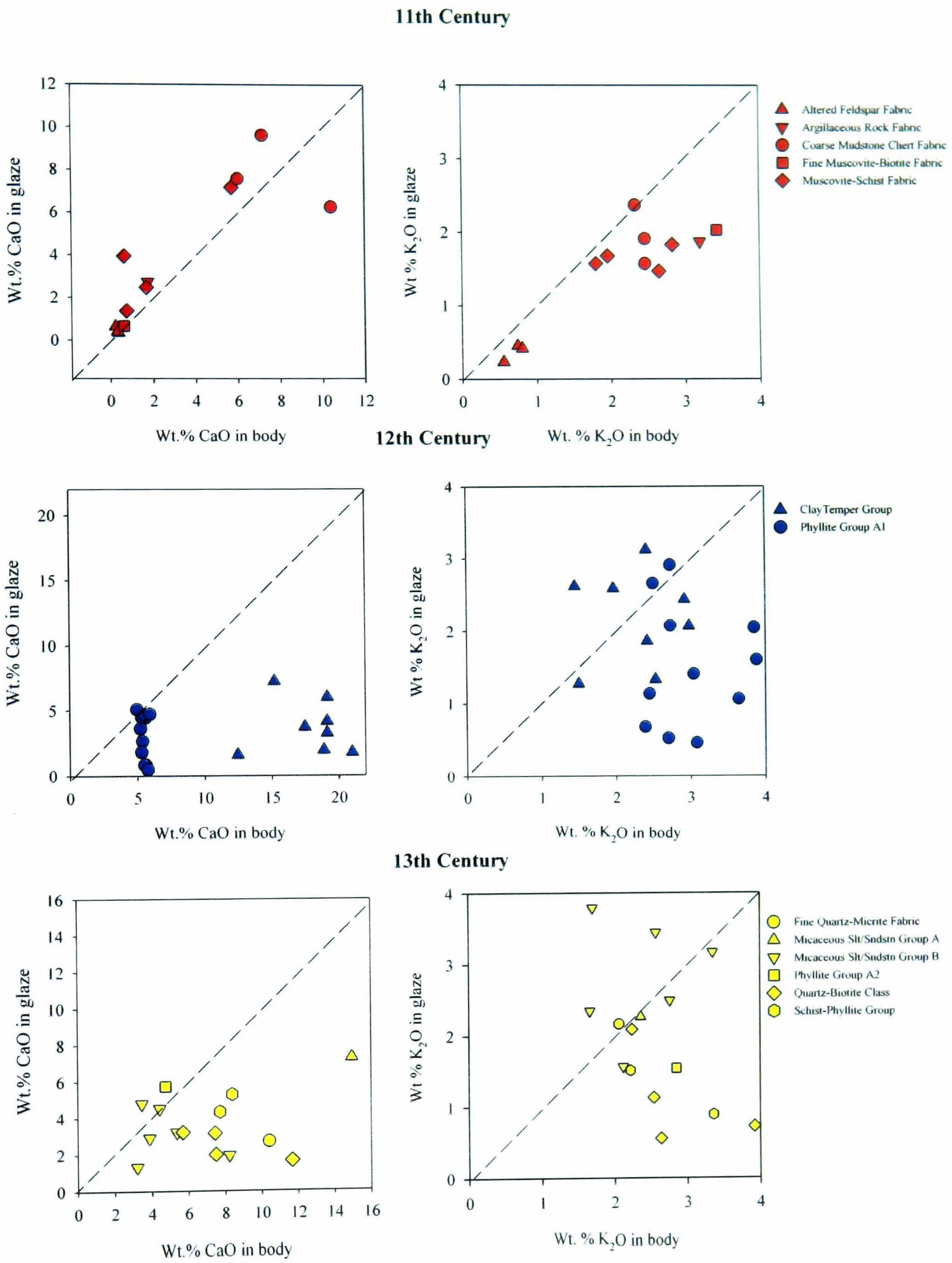


Figure 8.4.10 Biplots comparing CaO (left) and K_2O (right) contents in body and glaze.

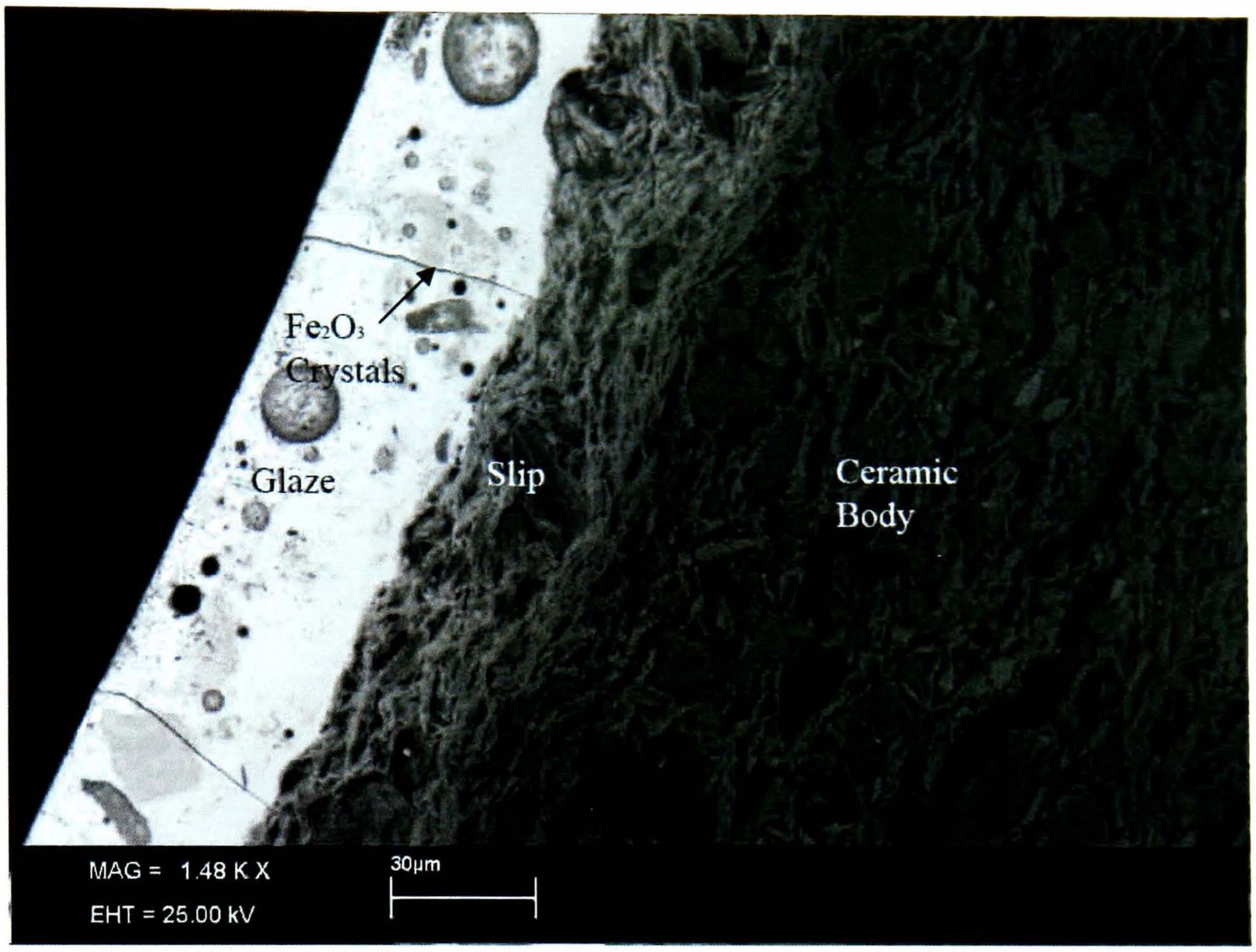


Figure 8.4.11 SEM-BSE image of brown glaze showing Fe_2O_3 crystals dispersed throughout the high lead glaze layer on an example of Green and Brown Painted Spiral Style (sherd 00/21) (x1480).

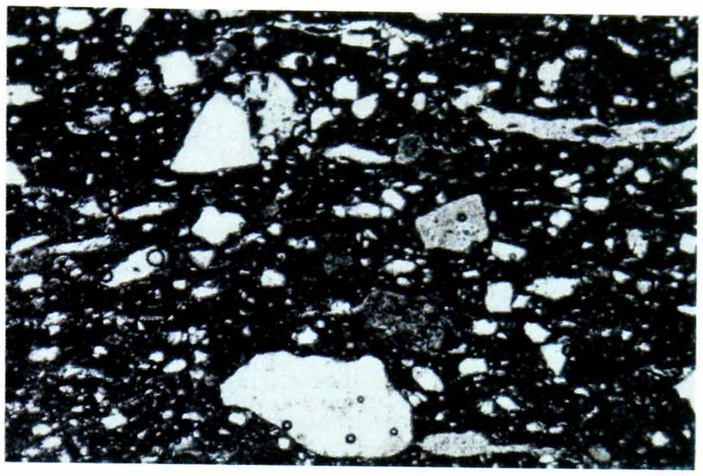


Figure 9.2.1 Joyner's Quartz-Mudstone-Chert Class represented by Byzantine and Frankish cooking wares from Corinth. Image is in plain polarized light (PPL), width of field is 3mm (From Joyner 2007, 197).

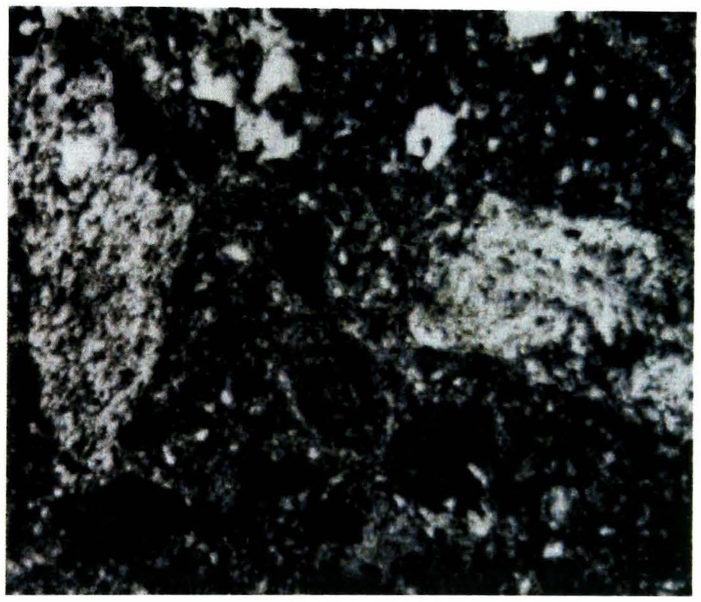


Figure 9.2.2 Whitbread's Fabric Class 3 represented by Barbarian Ware from the Menelaion, Sparta; containing coarse inclusions of quartz-muscovite, quartz-biotite-white mica +/- black opaques and micritic limestone, image is in cross polars (XP) (from Whitbread 1992, 303).

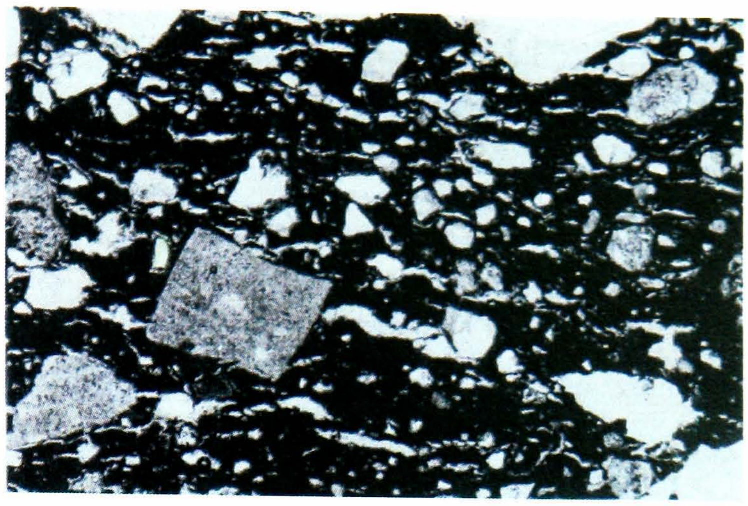


Figure 9.3.1 Joyner's Chert and Quartz Class, represented by Byzantine cooking pots from Corinth. Image is in PP, width of field is 3mm (from Joyner 2007, 194). Compare with the Quartz-Chert Fabric, Figure 9.3.2 (below).

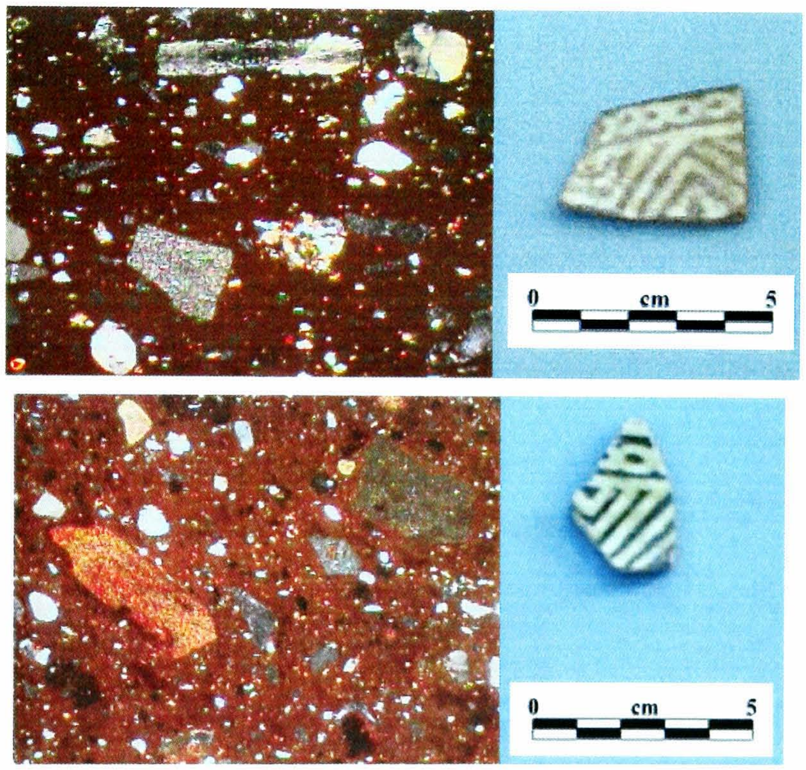


Figure 9.3.2 Examples of similar slip decorations appearing on vessels belonging to the Quartz-Chert Fabric (top) and Medium Coarse Mudstone-Chert Group (bottom). Width of field of micrographs is 1.75 mm.

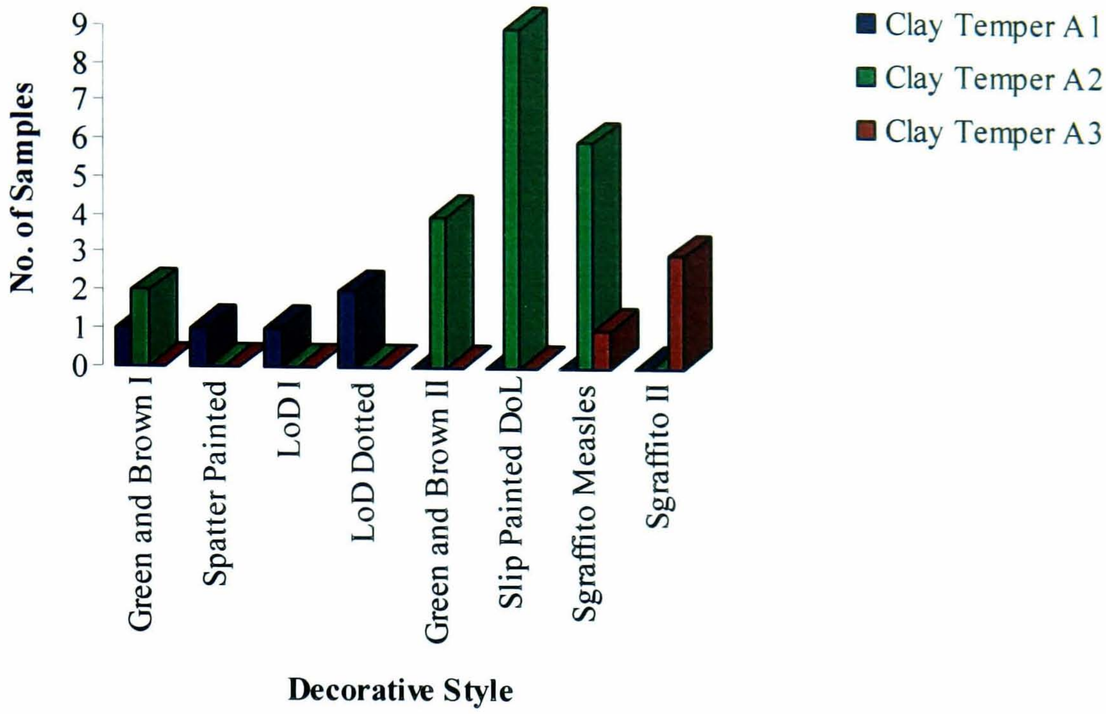


Figure 9.3.3 Showing each decorative style present in the Clay Temper fabric sub-groups.

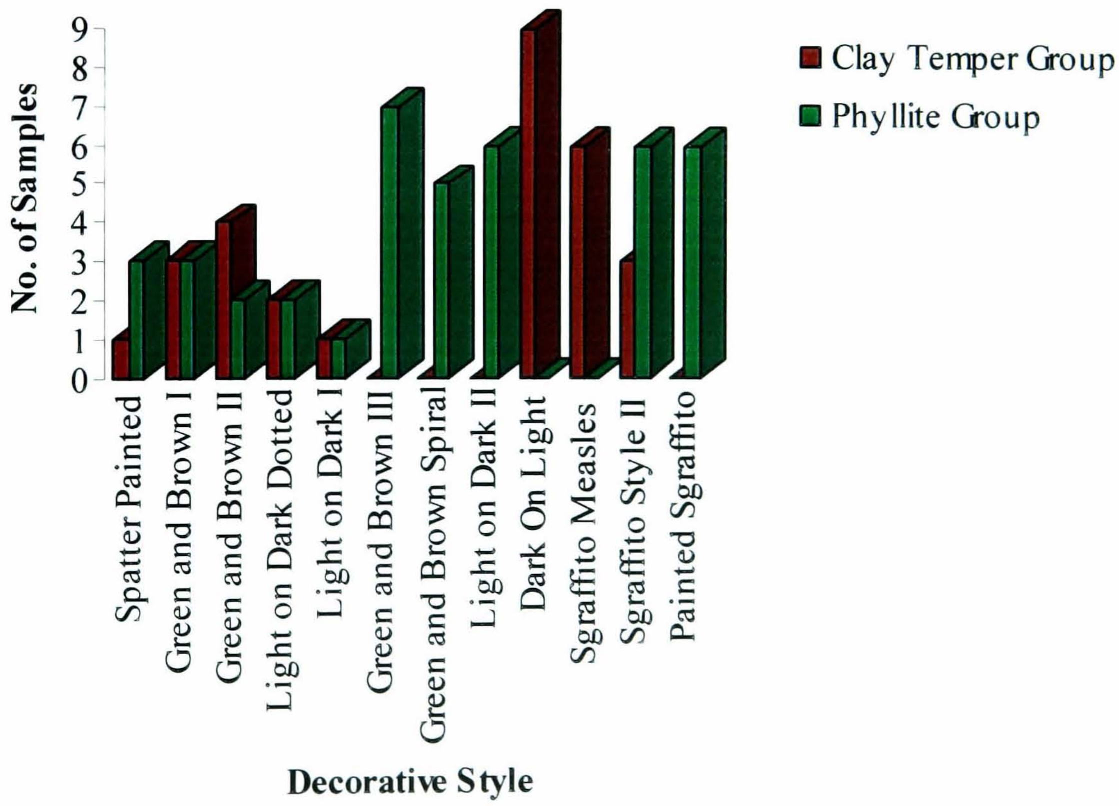


Figure 9.3.4 Comparing the decorative styles present in the Clay Temper and Phyllite Groups.

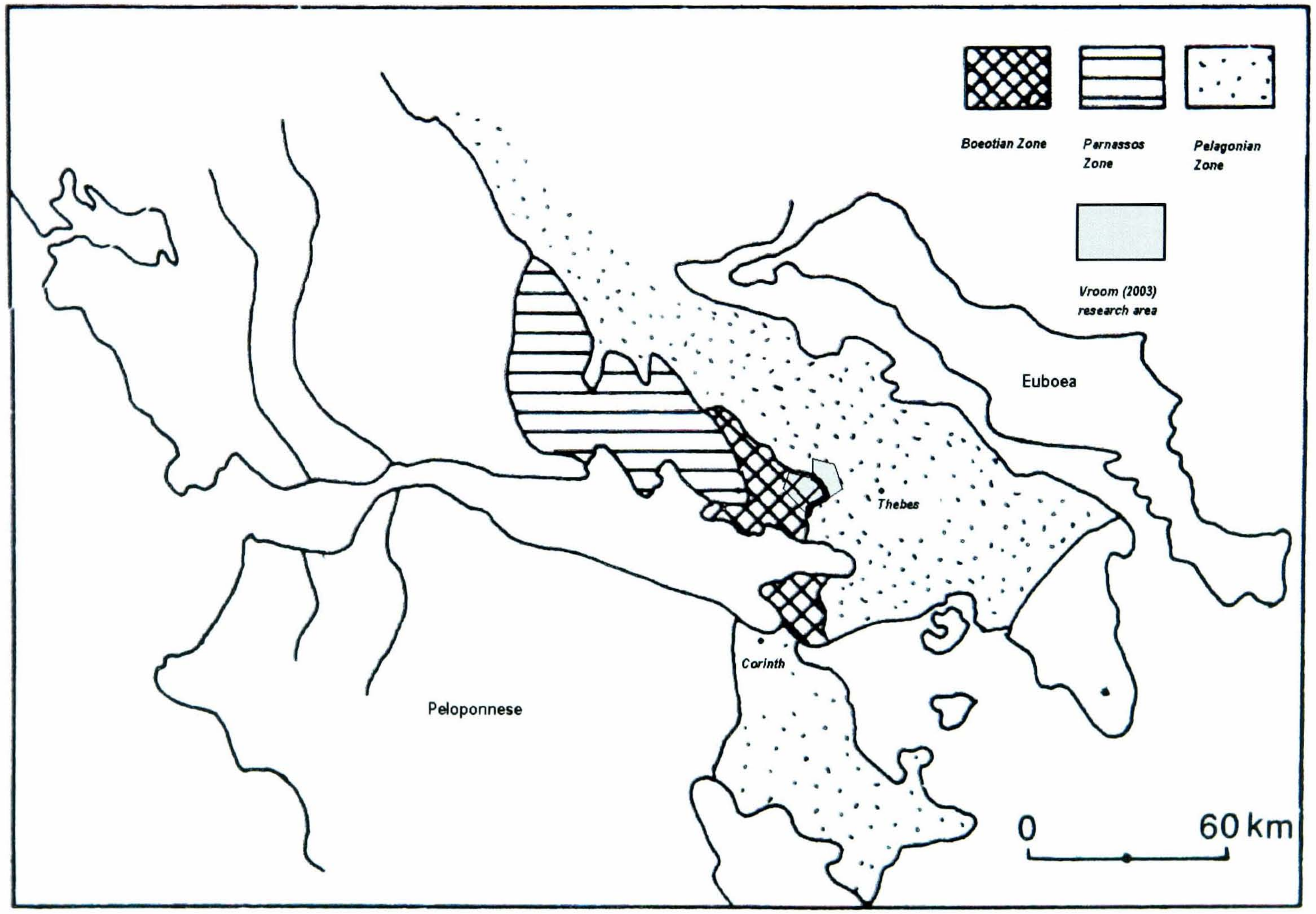


Figure 9.3.5 Showing map of Greece with geological zones (after Katsikatsou (1992)). Vroom's (2003) study area is highlighted in grey.

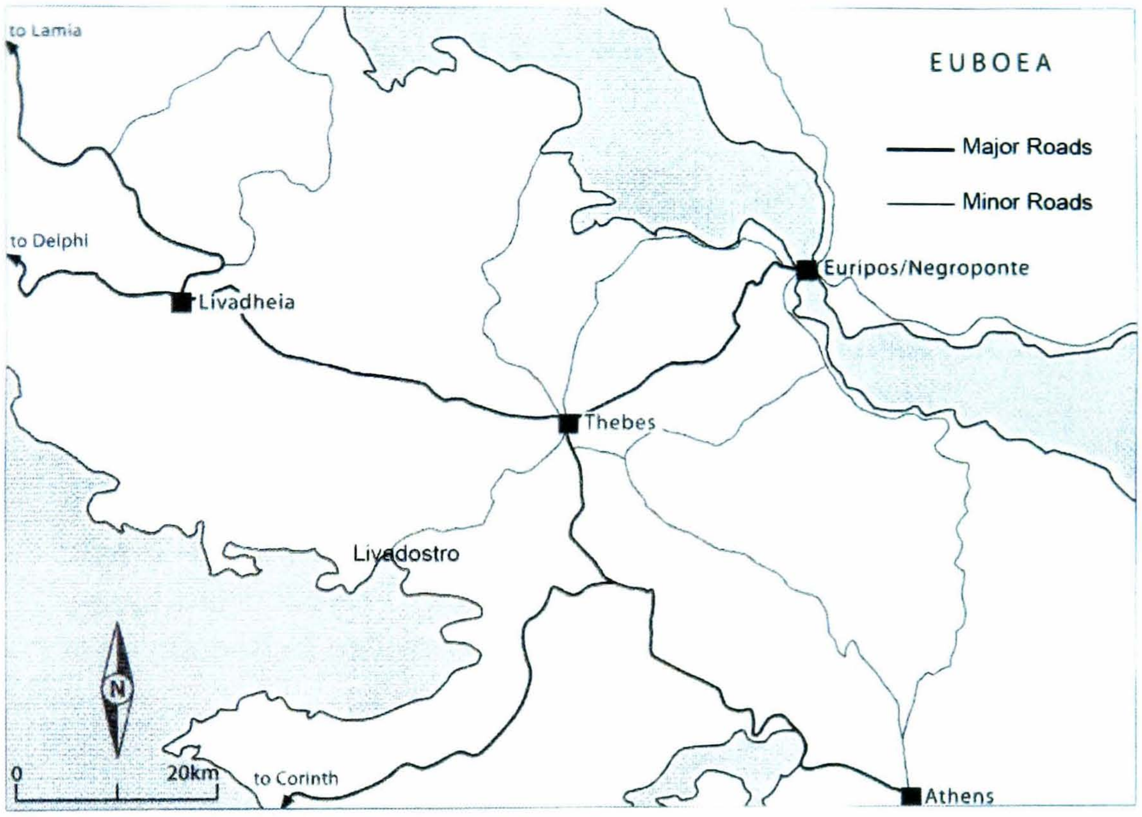


Figure 9.3.6 Showing major and minor routes in Medieval Boeotia (after Vroom 2003, 242).

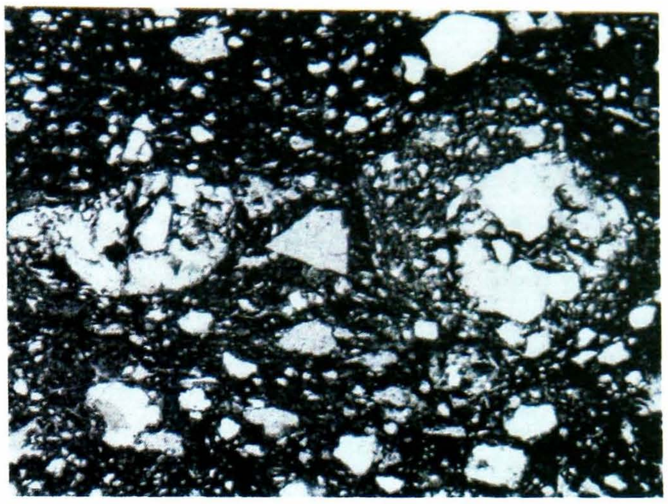


Figure 9.4.1 Joyner's Sandstone Fabric, containing large sporadically distributed sandstone. Image is in PPL, width of field is 3mm (from Joyner 2007, 197), compare with an example of the Micaceous Siltstone-Sandstone Group A, Figure 9.4.2 (below).

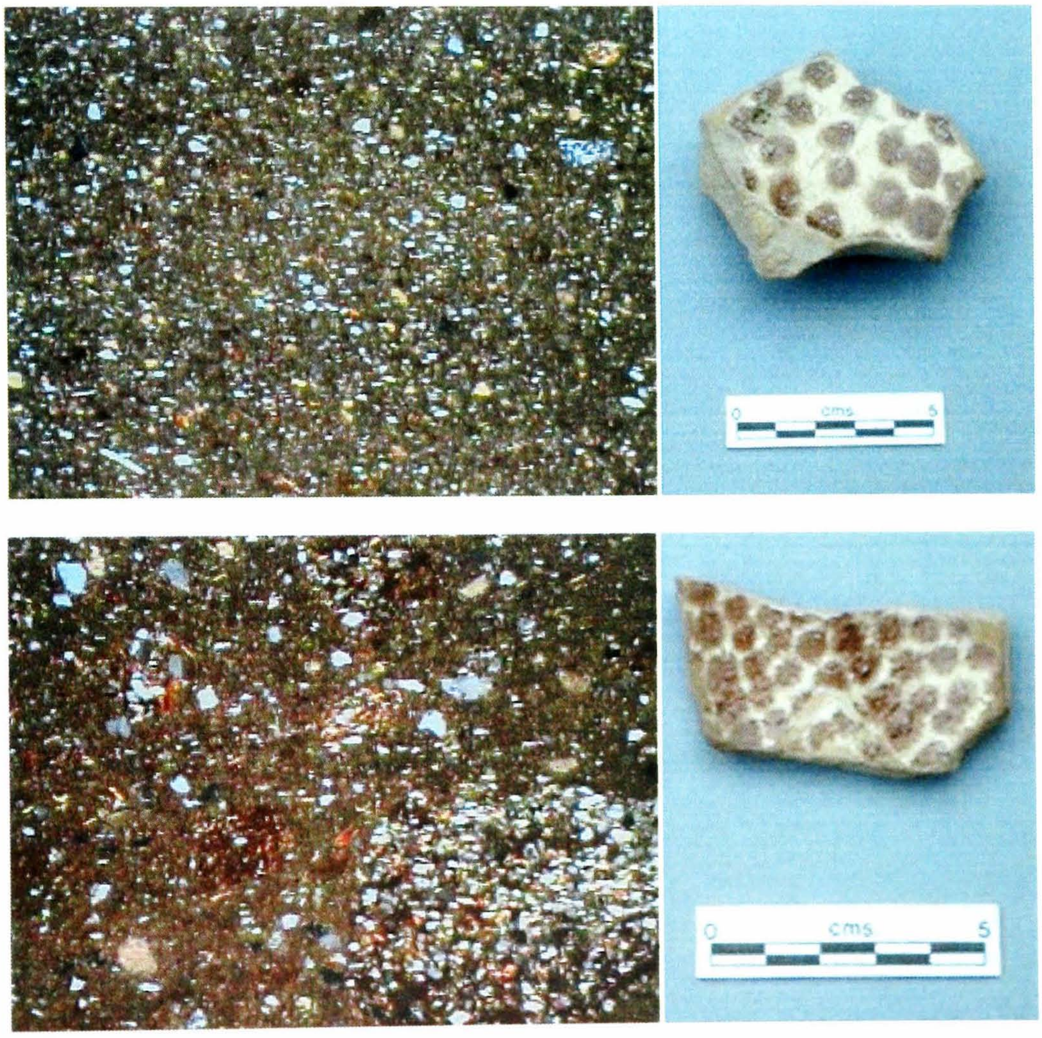


Figure 9.4.2 Comparing similarly decorated pottery manufactured from the Fine Quartz-Micrite Fabric (top) and Micaceous Siltstone-Sandstone Group A (bottom). Width of field for micrographs is 1.75mm.

Table 2.3.1 Average composition of raw glaze and resultant vitreous layer determined by SEM-EDS (after Molera and Pradell *et al.* 2001, 1125).

Sample		Composition (wt%)						
		Si	Pb	O	Al	K	Ca	Fe
70/30	Original	15.0 ± 0.2	63.5 ± 3.5	21.5 ± 0.4				
	Final	19.1 ± 0.3	44.1 ± 2.6	29.1 ± 1.1	3.0 ± 0.6	1.1 ± 0.2	1.5 ± 0.3	2.0 ± 0.5
80/20	Original	10.1 ± 0.1	73.1 ± 4.2	16.8 ± 0.3				
	Final	17.8 ± 0.2	43.8 ± 2.4	29.0 ± 1.1	4.0 ± 0.7	1.2 ± 0.2	1.8 ± 0.4	2.4 ± 0.6
90/10	Original	5.3 ± 0.07	85.7 ± 4.4	12.0 ± 0.2				
	Final	14.2 ± 0.2	54.2 ± 2.5	25.2 ± 1.0	3.3 ± 0.6	0.2 ± 0.07	1.1 ± 0.3	1.9 ± 0.4

Table 3.2.1 Showing the compositions of Byzantine glazed White Wares from Corinth and Istanbul, and comparing them with white clay from the Bosphorus (after Megaw and Jones 1983).

	Al_2O_3	CaO	MgO	Fe_2O_3	TiO_2	Na_2O	MnO	CrO	NiO
Corinth χ	>25	<1.0	0.6	3.5	1.08	0.24	0.047	0.014	0.005
s.d	—	—	0.2	0.8	0.12	0.11	0.031	0.004	0.00
Istanbul 1	24.6	2.6	0.5	4.1	1.09	0.19	0.034	0.018	0.002
Istanbul 2	30	1.1	0.7	4.8	1.26	0.21	0.032	0.016	0.002
Istanbul 3	30	1.1	0.8	2.9	0.77	0.60	0.020	0.024	0.009
Bosphorus white clay	23.7	<0.5	0.5	5.5	0.9	<0.2	0.041	0.010	<0.001

Table 3.2.2 Chemical Compositions of some Byzantine Red Wares (after Megaw and Jones 1983).

		Al_2O_3	CaO	MgO	Fe_2O_3	TiO_2	Na_2O	MnO	CrO	NiO
Corinth	χ	17.5	21.1	2.5	7.9	0.57	0.92	0.104	0.034	0.026
n=20	sd	3.0	5.5	0.7	1.2	0.08	0.33	0.015	0.013	0.0006
Thessaloniki	χ	17.3	5.3	2.4	8.0	0.72	2.15	0.104	0.021	0.021
n=20	sd	2.5	1.7	0.7	1.1	0.10	0.68	0.025	0.007	0.003
Athens	χ	18.5	3.7	3.3	10.1	0.73	1.21	0.102	0.088	0.050
(coarse) n=10	sd	2.0	2.1	1.3	1.1	0.06	0.28	0.026	0.029	0.011
Athens	χ	17.3	4.7	1.5	7.5	0.62	2.25	0.093	0.019	0.013
(fine) n=10	sd	1.9	0.8	0.2	0.8	0.05	0.56	0.014	0.006	0.002
Istanbul	χ	21.7	5.1	1.9	8.7	0.66	2.31	0.103	0.020	0.015
n=21	sd	5.3	1.6	0.4	1.7	0.09	0.59	0.018	0.005	0.003
Pelagonnisos	χ	21.6	4.4	4.0	9.8	0.78	2.07	0.093	0.025	0.018
n=20	sd	5.7	2.7	2.3	2.4	0.13	0.55	0.021	0.006	0.006

Table 3.2.3 Sherds analysed in Armstrong *et al.'s* (1997) investigation of the development of Byzantine glazing technologies during the ninth to thirteenth centuries.

Sherd	Type	Findspot	Place of Manufacture
1	Impressed White Ware	Lakedaimon	Constaninople
2	Impressed White Ware	Lakedaimon	Constaninople
3	Polychrome White Ware	Constaninople	Constaninople
4	Polychrome White Ware	Constaninople	Constaninople
5	Green and Brown Painted Ware	Lakedaimon	Lakedaimon
6	Fine Style Sgraffito	Zygouries	? Argos
7	Aegean Ware	Agia Marina	Unknown
8	Zuexippus Ware	Lakedaimon	Unknown
9	St. Symeon Ware	Al Mina (St. Symeon)	St. Symeon
10	St. Symeon Ware	Al Mina (St. Symeon)	St. Symeon

Table 3.2.4 WDS analyses of glazes analysed in Armstrong *et al.'s* investigation of the development of Byzantine glazing technologies during the ninth to thirteenth centuries (after Armstrong *et al.* 1997, 228)

Sherd	SiO_2	TiO_2	Al_2O_3	FeO	MnO	MgO	CaO	Na_2O	K_2O	PbO	CuO
1 (gr)	20.4	nd	6.7	0.5	nd	0.4	0.4	nd	0.2	68.5	2.89
2 (y)	21.4	0.2	5.8	0.2	nd	0.1	0.1	nd	0.3	71.7	0.08
3 (y)	26.5	0.1	0.9	4.6	nd	0.1	0.6	0.7	0.2	65.8	0.28
4 (y)	26.5	0.1	1.4	5.3	0.1	0.2	1.4	1.1	0.3	62.5	0.33
5 (gr)	24.9	0.3	5.7	0.9	nd	0.3	1.1	0.2	0.4	61.7	4.43
5 (cl)	23.9	0.2	4.5	2.8	nd	0.4	0.9	0.4	0.4	59.9	2.47
6 (gr)	34.8	nd	3.2	1.2	0.1	0.7	4.0	0.4	1.6	53.9	0.10
7 (y)	29.5	0.1	6.8	0.5	0.1	0.3	0.6	0.4	0.8	60.7	0.21
8 (y/gr)	28.0	nd	1.5	0.1	0.1	0.1	0.4	0.1	0.2	69.5	0.08
9 (y)	27.6	0.1	1.6	0.8	0.1	0.6	2.7	0.1	0.7	64.4	1.09
10 (y)	33.9	nd	2.3	2.3	0.1	0.6	0.7	0.1	0.6	59.3	0.06

nd = not detected, gr = green glaze, y = yellow glaze, cl = colourless glaze.

Table 4.2.1 Showing coin finds dating from the years 698-959 (after Sanders 2002, 649).

Emperor	Number of Coins
Tiberios III (698-705)	1
Justinian II (705-711)	?
Philippikos (711-713)	-
Anastasios II (713-715)	-
Theodosios III (715-717)	-
Leo III (717-741)	2
Constantine V (741-775)	7
Leo IV (775-780)	4
Constantine VI (780-802)	1
Nikophoros I (802-811)	2
Staurakios (811)	-
Michael I (811-813)	3
Leo V (813-820)	10
Michael II (820-829)	6
Theophilos (829-842)	161
Michael III (842-867)	18
Basil I (867-886)	278
Leo VI (886-912)	972
Constantine VII (913-959)	2,285

Table 5.3.1 Summary of clays from the Corinthia.

Clay	Location	Description
Acrocorinth Red*	Bank of road running from Acrocorinth to Ancient Corinth	Very plastic, high shrinkage, largely montmorillonite (smectite) with some illite, chlorite and quartz
Acrocorinth White*	Bank of road running from Acrocorinth to Ancient Corinth	Buff with rosy overtones when fired, XRD showed clay minerals to be largely montmorillonite (smectite) with some illite, chlorite, calcium carbonate, dolomite, feldspar and quartz. Inclusions are listed as feldspar, quartz, fine quartzite, fine schist, 'spotted shale' and mica
White from plains*	Vicinity of the Ancient city	Creamy with greenish overtones, XRD shows largely montmorillonite (smectite) with interlayered illite, large amounts of calcium carbonate, some chlorite, feldspar and quartz.
1†	Southwest of the village of Anaploga, from below conglomerate shelf, south of the track to Penteskouphi village	Reddish yellow (900°C), pale yellow (1100°), inclusions include dominant red and white micas, frequent monocrystalline quartz, few moderately altered micrite, dark reddish brown tcfs
2†	Southwest of the village of Anaploga, from base of terraces immediately west of the Penteskouphi village and south of track to the village	Very pale brown (900°C), pale yellow (1100°), high clay content with kaolinite, illite, chlorite and smectite. Inclusions include dominant red and white micas, frequent monocrystalline quartz, few moderately altered micrite, dark reddish brown tcfs
3†	From the western half of the second terrace immediately to the west of Anaploga village	Red (900°C). Contains large amount of poorly sorted inclusions including mudstone with radiolaria, mono and polycrystalline quartz, micrite and microsparite, chert, white mica silt, with very few orthopyroxene and very rare plagioclase and serpentinite
4†	Taken from same terrace as 21? but 10m to southeast of sample	Pale yellow (900°C), pale yellow (1100°). Inclusions include dominant red and white micas, frequent monocrystalline quartz, few moderately altered micrite, dark reddish brown tcfs

* From Farnsworth (1970) and Whitbread (1995, 309)
† From Whitbread (1995)
Table 5.3.1 continued overleaf

Table 5.3.1 continued

Clay	Location	Description
5†	From same location as 1, but taken from third terrace up the slope	XRD showed a moderate clay content with kaolinite, illite and smectite
20†	From south side of track to Penteskouphi, west of Anaploga	Light red (natural), pale yellow (1100°). XRD shows low clay mineral content with kaolinite and smectite. Inclusions (not levigated) are poorly sorted and coarse grained include micrite, monocrystalline quartz, radiolarian chert, reddish brown mudstone, and very rare quartz-biotite schist, plagioclase, white mica and serpentinite. No Tcfs.
21†	Nikoleto lignite quarry, taken from immediately below the lower lignite horizon	Pink (900°C), pale yellow (1100°). XRD shows a medium clay content with kaolinite, illite and chlorite. Inclusions consist of very well sorted silt-sized monocrystalline quartz and dark reddish brown ?mica inclusions. Dark reddish brown tcf present
24†	Unfired brick taken from inside the kiln at the Corinth Brick Factory	XRD shows a medium clay content with kaolinite, illite, and chlorite. Coarser grained (up to fine to very fine sand-sized) with less well sorted inclusions on monocrystalline quartz than 21
26†	Clay from the lignite quarry at Kokkinarea	XRD shows a medium clay content with kaolinite, illite, chlorite and smectite. Coarse inclusions of (medium to fine sand and very rarely coarse sand) mono and polycrystalline quartz and red and white mica schist
28†	From soil deposits of dark brown earth on the terrace above and to the north of Penteskouphi village	Weak red (900°C), dark reddish brown to reddish brown (1100°). Distorted above 700°C and bloated by 1100°C. XRD shows a low clay mineral content with kaolinite and illite. Inclusions (after levigation) are moderately to well sorted and fine sand to silt sized. They include mono and polycrystalline quartz, chert, rare plagioclase and very rare yellowish mica. No tcfs
29†	Taken from soils from field on south side of road between Examilia and Xylokeriza, east of Ancient Corinth	Red (900°C), dark reddish brown to reddish brown (1100°). Distorted above 700°C and bloated by 1100°C. XRD shows a low clay mineral content with Kaolinite and Smectite. Inclusions (after levigation) are moderately to well sorted and fine sand to silt sized. They include mono and polycrystalline quartz, chert, rare plagioclase and very rare yellowish mica. No tcfs

† From Whitbread (1995)

Table 6.1 Accepted dates of Byzantine and Frankish pottery from Corinth.

Pottery Style	Date	Associated Coins	Associated Pottery
Plain Glaze WW	Mid 10th to early 11th		
Slip Painted WW	Mid 10th to end 11th		
Impressed WW	Late 10th to 11th		
Polychrome Type 1	Early to mid 11th	Anon. Folles Class C (1042-1050)	
Polychrome Type 2	Late 11th		
Polychrome Type 3	Early 12th		DoL, Measles, Sgraffito
Polychrome Type 4	Late 11th		
Plain Brown	9th to early 12th		
G&B I	1090 to 1120		LoD I
LoD I	1090 to 1120		G&B I
LoD Dotted	1080 to 1120	Nicophorus III (1078-1081), Alexius I (1081-1118)	G&B I, LoD I, DoL
Spatter Painted	1080 to 1150		DoL
G&B I/II	1110+ to 1130+		
Sgraffito Measles	1125 to 1150		Painted Sgraffito, G&B I/II, DoL
DoL	1125 to 1150		
G&B Spiral Style	1125 to 1150		
G&B II/III	1135+ to 1155+	Manuel I (1143-1180)	Measles
Sgraffito Style I	Late 11th to mid 12th		LoD I, G&B I/II
LoD II	Mid 12th+	Manuel I (1143-1180)	
Sgraffito Style II	2nd quarter 12th to mid/late 12th	John II (1118-1143), Manuel I (1143-1180)	
Painted Sgraffito	1125-1150		DoL
Champlevé	Late 12th to 3rd quarter 13th	Manuel I (1143-1180), Isaac II (1185-1195), William Villehardouin (1245-1250), Alphonse, Count of Toulouse	

Table 6.1 continued overleaf

Table 6.1 continued

Pottery Style	Date Range	Associated Coins	Associated Pottery
Painted Incised Sgraffito	Late 12th to first half 13th	Manuel I (1143-1183), Isaac II (1185-1195), William Villehardouin, Corinth Issue (1245-1250)	Champlevé, LoD III
G&B V(I)	Early to late 3rd quarter 13th		
G&B V(II)	Early to late 3rd quarter 13th		
G&B V(III)	Early to late 3rd quarter 13th		
G&B V(IV)	Early to late 3rd quarter 13th	Latin Imitative coins (1204(?) to 1267(?))	Aegean Ware, Zeuxippus Ware, Protomaiolica
Aegean Ware	1st half 13th		Protomaiolica, Zeuxippus
Zeuxippus Ware	1st third 13th +	Protomaiolica	
LoD III	13th	William Villehardouin, Genoa Gate Issue (1245-?1250)	Protomaiolica, G&B V
G&B V(V)	Late 13th	William Villehardouin (1262-1278), Louis II or III (1270)	Veneto Ware
Veneto Ware	Late 13th	William Villehardouin, Clarenza Issue (1250-1278), Isabel Villehardouin (1297-1301)	Metallic Ware, ?Glossy Ware

Table 7.3.1 MDL and lowest element concentrations in archaeological samples.

Element	MDL	Lowest Conc.
Al_2O_3	0.002	1.55
Fe_2O_3	0.001	0.4
MgO	0.003	0.29
CaO	0.006	0.24
Na_2O	0.001	0.12
K_2O	0.002	0.46
TiO_2	0.000	0.07
P_2O_5	0.001	0.02
MnO	0.000	0.01
Ba	0.142	38
Co	0.444	0
Cr	0.565	9
Cu	1.107	11
Li	0.743	3
Ni	0.381	9
Sc	0.048	1
Sr	0.081	26
V	0.384	5
Y	0.372	4
Zn	0.604	22
Zr	1.036	10
La	0.730	3

Table 7.3.2 Precision and accuracy of major, minor (oxides) and trace elements of standards SL-1.

		Cert Value	Precision %	Accuracy %
Wt %	**Al_2O_3**		3.50	
	Fe_2O_3	**9.64**	3.20	7.91
	MgO		3.34	
	CaO		11.75	
	Na_2O	**0.23**	3.89	8.70
	K_2O	**1.74**	7.10	12.50
	TiO_2	**0.86**	2.83	9.01
	P_2O_5		2.11	
	MnO	**0.45**	1.94	9.44
Ppm	**Ba**	**639**	1.91	7.59
	Co	**19.8**	2.82	10.35
	Cr	**104**	2.41	14.66
	Cu	**30**	10.17	16.67
	Li		2.05	
	Ni	**44.9**	1.87	19.15
	Sc	**17.3**	2.82	2.60
	Sr	**80**	2.76	0.31
	V	**170**	2.38	4.71
	Y		4.89	
	Zn	**223**	11.98	0.90
	Zr		5.86	
	La	**52.6**	6.88	0.67

Table 7.3.3 Precision and accuracy of major, minor (oxides) and trace elements of standards Soil-7.

		Cert Value	Precision %	Accuracy %
Wt %	**Al_2O_3**	**8.88**	4.24	2.79
	Fe_2O_3	**3.67**	4.29	0.07
	MgO	**1.87**	4.20	0.40
	CaO	**22.82**	3.83	0.73
	Na_2O	**0.32**	3.39	7.81
	K_2O	**1.45**	4.04	1.90
	TiO_2	**0.5**	3.69	7.5
	P_2O_5		5.13	
	MnO	**0.08**	0	0
Ppm	**Ba**		4.25	
	Co	**8.9**	0.00	32.58
	Cr	**60**	4.27	7.08
	Cu	**11**	10.27	11.36
	Li		3.42	
	Ni		1.87	
	Sc	**8.3**	0.00	3.61
	Sr	**108**	4.41	0.00
	V	**66**	4.97	5.30
	Y	**21**	5.79	3.57
	Zn	**104**	6.61	8.41
	Zr	**185**	5.28	64.05
	La		5.41	

Table 7.4.1 The mean MDL for each element oxide for the Cameca SX 100 Microprobe system.

Element	Mean MDL (n=10)
Si_2O	0.02
Al_2O_3	0.01
Fe_2O_3	0.04
MgO	0.01
CaO	0.01
Na_2O	0.02
K_2O	0.01
TiO	0.04
MnO	0.06
Cr_2O_3	0.01
CuO	0.05
NiO	0.03
CoO	0.02
SnO	0.10
As_2O_3	0.02
PbO	0.13

Table 7.4.2 Precision and accuracy of major and minor and trace elements for NIST 620.

		Run 1 n=6		Run 2 n=6	
	Cert value	Prec %	Acc %	Prec %	Acc %
SiO_2	**72.08**	0.19	1.63	0.95	1.55
TiO_2	**0.018**	68.81	-6.48	92.67	37.78
Al_2O_3	**1.80**	0.53	7.89	1.1	9.00
Fe_2O_3	**0.043**	17.85	17.82	35.02	-5.11
MgO	**3.690**	0.57	7.12	0.81	11.86
CaO	**7.11**	0.19	6.12	0.87	5.81
Na_2O	**14.390**	0.63	-3.71	1.07	-6.06
K_2O	**0.410**	3.77	-8.98	3.12	-13.17

Table 7.4.3 Precision and accuracy of major minor and trace elements for Glass 8.

		Run 1 n=6		Run 2 n=6	
	Cert value	Prec %	Acc %	Prec %	Acc %
SiO_2	**56.34**	0.3	-1.65	1.26	-0.96
TiO_2	**0.02**	98.52	-25	86.72	78.33
Al_2O_3	**0.05**	244.94	-97.67	121.56	-96.33
Fe_2O_3	**0.01**	103	18.33	122.56	-21.66
As_2O_3	**0.32**	4.25	-6.67	3.43	-10.72
PbO	**30.59**	0.50	3.94	0.2	1.62
Na_2O	**0.23**	11.56	-10.44	9.66	-18.91
K_2O	**11.85**	0.44	-10.53	0.91	-16.82

Table 8.3.1 Mean element oxide and trace element concentrations for Chemical Groups identified by cluster analysis (continued overleaf).

	Group 1 (n=22)			Group 2 (n=5)			Group 3 (n=2)			Group 4 (n=14)			Group 5 (n=7)		
	mean	Sd	%SD	mean	Sd	%SD	Mean	Sd	%SD	mean	Sd	%SD	mean	Sd	%SD
Al_2O_3	23.45	1.25	8.82	19.84	1.00	5.03	14.19	1.25	8.82	16.67	1.74	10.41	15.94	0.56	3.54
Fe_2O_3	2.26	0.24	2.97	8.66	0.24	2.74	8.09	0.24	2.97	7.51	0.54	7.17	7.65	0.32	4.21
MgO	0.49	0.51	32.02	1.62	0.19	11.66	1.59	0.51	32.02	3.87	0.61	15.66	5.12	0.76	14.75
CaO	0.41	0.64	13.63	0.66	0.07	10.54	4.67	0.64	13.63	10.15	2.79	27.49	8.93	1.97	22.10
Na_2O	0.17	0.11	45.13	0.89	0.13	15.09	0.24	0.11	45.13	0.96	0.33	34.80	0.89	0.22	24.28
K_2O	0.70	0.42	35.36	2.97	0.29	9.88	1.20	0.42	35.36	2.63	0.36	13.84	2.47	0.49	19.97
TiO_2	1.13	0.02	3.05	0.63	0.05	7.85	0.70	0.02	3.05	0.71	0.06	8.04	0.70	0.04	5.31
MnO	0.01	0.04	8.84	0.10	0.05	53.88	0.48	0.04	8.84	0.16	0.03	20.80	0.11	0.02	16.73
Cr	36.86	59.40	12.83	144.60	70.62	48.84	463.00	59.40	12.83	236.79	57.73	24.38	493.43	50.93	10.32
Cu	78.32	1.41	1.39	54.00	18.61	34.47	102.00	1.41	1.39	64.93	13.27	20.44	66.14	13.83	20.90
Li	84.68	10.61	13.86	53.80	9.73	18.09	76.50	10.61	13.86	71.00	7.60	10.70	76.43	5.19	6.79
Sc	32.86	2.12	12.12	20.60	0.89	4.34	17.50	2.12	12.12	18.71	1.44	7.68	19.86	0.69	3.48
Sr	38.41	20.51	15.71	94.80	19.64	20.72	130.50	20.51	15.71	245.07	56.48	23.05	252.57	73.90	29.26
V	170.41	7.78	6.25	140.60	7.70	5.48	124.50	7.78	6.25	122.00	11.67	9.56	114.57	5.19	4.53
Zn	74.55	2.83	2.32	117.60	8.44	7.18	122.00	2.83	2.32	104.93	7.02	6.69	116.00	5.83	5.03
La	20.91	2.12	4.47	57.20	11.67	20.40	47.50	2.12	4.47	37.00	4.72	12.77	32.57	2.99	9.19

Table 8.3.1 continued

	Group 6 (n=34)			Group 7 (n=2)			Group 8 (n=48)			Group 9 (n=26)		
	mean	Sd	%SD	mean	Sd	%SD	mean	Sd	%SD	mean	Sd	%SD
Al_2O_3	14.29	1.14	7.99	13.76	1.07	7.81	19.84	0.89	4.50	15.39	0.96	6.25
Fe_2O_3	6.56	0.59	9.00	6.63	0.34	5.12	7.55	0.41	5.45	6.24	0.51	8.20
MgO	2.93	0.34	11.46	2.07	0.00	0.00	2.50	0.14	5.42	2.80	0.38	13.47
CaO	17.87	2.25	12.56	6.60	0.83	12.54	5.44	0.65	11.90	4.57	1.57	34.44
Na_2O	0.72	0.17	24.31	0.37	0.01	3.82	1.42	0.13	8.83	1.26	0.10	8.09
K_2O	2.26	0.64	28.27	2.40	0.09	3.84	3.09	0.56	17.98	2.40	0.62	25.85
TiO_2	0.62	0.05	7.97	0.66	0.06	9.72	0.74	0.03	4.43	0.61	0.07	11.74
MnO	0.13	0.02	15.04	0.31	0.01	4.56	0.12	0.01	4.38	0.06	0.01	19.27
Cr	214.71	34.26	15.96	170.00	33.94	19.97	141.35	17.52	12.39	226.73	65.46	28.87
Cu	90.32	38.92	43.09	75.00	11.31	15.08	50.88	15.96	31.37	48.58	8.16	16.81
Li	75.09	8.13	10.83	55.00	4.24	7.71	70.13	4.78	6.82	68.58	5.21	7.60
Sc	16.03	1.38	8.62	15.50	0.71	4.56	20.14	1.18	5.86	14.85	1.74	11.70
Sr	452.94	68.52	15.13	148.50	37.48	25.24	117.75	15.93	13.53	132.62	39.26	29.60
V	106.94	12.32	11.52	101.00	2.83	2.80	124.23	9.29	7.47	102.85	12.58	12.23
Zn	96.56	7.95	8.23	97.50	4.95	5.08	107.04	6.30	5.89	97.50	9.33	9.57
La	31.94	3.07	9.62	36.50	10.61	29.06	41.46	1.49	3.59	30.77	2.69	8.74

Table 8.3.2 Component Matrix of Chemical Groups 1 to 9 as defined by Principal Component Analysis. The first three components are shown.

	Components		
	1	2	3
Al_2O_3	0.31		-0.13
MgO	-0.14	0.11	-0.29
CaO	-0.47	0.54	-0.20
Na_2O	-0.11	-0.23	-0.67
K_2O			-0.31
TiO_2	0.3	0.177	-0.10
MnO	-0.26		0.46
Cr	-0.14	0.16	-0.17
Cu	0.26	0.40	0.15
Li	0.26	0.23	-0.15
Sc	0.36	0.15	
Sr	-0.17	0.51	
V	0.32	0.14	
Zn	0.16	0.10	
La	0.13		

Table 8.3.3 Component Matrix of Chemical Groups 3 to 9 as defined by Principal Component Analysis. The first three components are shown.

	Components		
	1	2	3
Al_2O_3			0.10
MgO	-0.10	0.33	-0.14
CaO	-0.59		0.37
Na_2O	0.29	0.49	0.42
K_2O	0.10	0.17	0.24
TiO_2			
MnO	-0.17	-0.66	
Cr	-0.18	0.32	-0.72
Cu	-0.29		-0.14
Li		0.12	
Sc			
Sr	-0.61	0.208	0.19
V			
Zn			
La			

Table 8.3.4 Component Matrix of Chemical Groups 4, 5, 6, 8 and 9 as defined by Principal Component Analysis. The first two components are shown.

	Components	
	1	2
Al_2O_3		0.33
MgO	-0.11	-0.20
CaO	-0.59	
Na_2O	0.27	
K_2O		
TiO_2		
MnO	-0.16	-0.52
Cr	-0.18	0.7
Cu	-0.29	
Li		
Sc		
Sr	-0.62	
V		
Zn		
La		-0.12

Table 8.3.5 Summary of the main petrographic groups and their chemical characteristics determined by element means. Groups are presented in chronological order.

	Fabric Groups	Chemical Groups	Petrographic Characteristics	Chemical Characteristics
Non-local	Altered Feldspar Class	Group 1	Grey to white micromass, inclusions of altered feldspars, quartz and chert	High: Al_2O_3, TiO_2, Sc, V Low: Fe_2O_3, MgO, CaO, K_2O, Ba, Cr, Sr, La
Non-local	Muscovite-Schist Group A	Group 2	Coarse fabric, inclusions of muscovite-schist and muscovite-biotite schist	High: Al_2O_3, Fe_2O_3, K_2O, Ba Low: CaO, Sr
Local	Coarse Mudstone Chert	Group 7	Medium sand to coarse sand-sized chert, mudstone and micrite	High: MnO Low: Al_2O_3, Li
Local	Medium Coarse Mudstone Chert Group	Group 3	Sand-sized inclusions of chert, mudstone, quartz and micrite.	High: Cu, Cr Low: Al_2O_3, MgO, Na_2O, K_2O
Local	Clay Temper Class	Group 6	Red clay pellets in a calcareous clay base, inclusions of quartz, chert and micrite	High: CaO, Sr, Cr Low: Al_2O_3, Ba, Sc
Non-local	Phyllite Class	Group 8	Inclusions of phyllites, fine-grained schist and metamorphosed polycrystalline quartzes in varying proportions	High: Al_2O_3, K_2O, Ba, La Low: CaO,Sr
Local	Micaceous Siltstone-Sandstone Group A	Group 6	Coarse inclusions of micaceous siltstone and sandstone in a calcareous clay	High: CaO, Sr, Cr Low: Al_2O_3, Ba, Sc
Local	Quartz Silt Fabric	Group 6	Fine silt-sized monocrystalline quartz inclusions in a calcareous clay	High: CaO, Sr, Cr Low: Al_2O_3, Ba, Sc
Local	Micaceous Siltstone-Sandstone Group B	Group 9	Well sorted, fine sand to silt sized quartz and coarse inclusions of micaceous siltstone and sandstone	Low: CaO and Sr
Non-local	Schist-Phyllite Group	Group 5	Few inclusions of silt to very fine sand-sized quartz and mica and coarser fragments of schist and phyllite	High: MgO, Cr, Sr Low: Na_2O_3
Non-local	Quartz-Biotite Class	Group 4	Inclusions of quartz, biotite, muscovite, micrite, zoned feldspars and amphibole	High: MgO, Sr Low: Na_2O_3

Table 8.4.1 Samples selected for glaze analysis from the main fabric groups identified for the eleventh century.

	Fabric	Sample	Decorative Style	Glaze analysed
Non-local	Altered Feldspar Group A1	00/141	Polychrome (Style II)	Turquoise Yellow Brown
		00/148	Slip Painted	Yellow
		00/154	Plain Green Glazed	Green
		00/160	Plain Brown Glazed	Brown
	Altered Feldspar Group A2	00/142	Polychrome (Style II)	Colourless Turquoise Brown
	Altered Feldspar Group B	00/151	Slip Painted	Yellow
		00/155	Plain Green Glazed	Green
		00/158	Impressed Ware	Green
Local	Coarse Mudstone-Chert Group A	00/122	Plain Brown Glazed	Yellow
		00/129	Plain Brown Glazed	Yellow
	Coarse Mudstone-Chert Group B	00/125	Plain Brown Glazed	Yellow
Non-local	Argillaceous Rock Fabric	00/123	Plain Brown Glazed	Yellow
	Muscovite-Schist Group A	00/126	Plain Brown Glazed	Yellow
		00/130	Plain Brown Glazed	Yellow
		00/132	Plain Brown Glazed	Yellow
	Muscovite-Schist Group B	00/124	Plain Brown Glazed	Yellow
	Fine Muscovite-Biotite	00/127	Plain Brown Glazed	Yellow

Table 8.4.2 Samples selected for glaze analysis from the main fabric groups identified for the late eleventh/twelfth century.

Fabric		Sample	Decorative Style	Glaze analysed
Local	Clay Temper Group	00/04	Green and Brown Painted I	Yellow Brown
		00/07	Green and Brown Painted II	Colourless Green Brown
		00/55	Slip Painted Light on Dark I	Dark yellow Green
		00/75	Slip Painted Dark on Light	Yellow
		00/88	Sgraffito Measles	Yellow
		00/89	Sgraffito Measles	Colourless
		00/93	Sgraffito Measles	Green
		00/97	Sgraffito Style II	Colourless
Non-local	Phyllite Group A1	00/05	Green and Brown Painted I	Colourless Green Brown
		00/13	Green and Brown Painted III	Green Brown
		00/18	Green and Brown Painted III	Colourless Green Brown
		00/21	Green and Brown Painted Spiral	Colourless Brown
		00/22	Green and Brown Painted Spiral	Colourless Brown
		00/58	Slip Painted Light on Dark II	Colourless
		00/63	Slip Painted Light on Dark Dotted	Colourless
		00/86	Painted Sgraffito	Colourless Brown
		00/99	Sgraffito Style II	Colourless

Table 8.4.3 Samples selected for glaze analysis from the main fabric groups identified for the thirteenth century.

Fabric		Sample	Decorative Style	Glaze analysed
Non-local	Phyllite Group A1	00/166	Aegean Ware	Green Yellow
		00/167	Aegean Ware	Yellow
	Phyllite Group A2	00/105	Champlevé	Yellow
Local	Micaceous Siltstone-Sandstone Group A	00/25	Green and Brown Painted V(I)	Brown
	Micaceous Siltstone-Sandstone Group B	00/33	Green and Brown Painted V(II)	Green Brown
		00/38	Green and Brown Painted V(III)	Colourless Green Brown
		00/44	Green and Brown Painted V(IV)	Colourless Green
		00/69	Slip Painted Light on Dark III	Colourless
		00/106	Champlevé	Yellow Green
		00/111	Painted Incised Sgraffito	Dark Yellow
	Fine Quartz-Micrite Fabric	00/28	Green and Brown Painted V(I)	Colourless Brown
Non-local	Schist-Phyllite Group	00/46	Green and Brown V(V)	Dark Yellow
		00/66	Slip Painted Light on Dark III	Yellow
	Quartz Biotite Group B1	00/170	Zeuxippus Ware	Colourless
		00/171	Zeuxippus Ware	Yellow
	Quartz Biotite Group B2	00/174	Zeuxippus Ware	Colourless
		00/180	Zeuxippus Ware	Yellow

Table 8.4.4 Showing compositions of lead-alkali glaze group. All samples belong to the Altered Feldspar Fabric Class

Sample	Glaze Analysed	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
00/141	Turquoise	28.55	49.16	0.13	1.60	1.31	1.51	5.58	0.50	2.55	0.06	7.81	1.22
	Brown	29.28	41.18	0.11	3.16	14.08	0.58	3.21	0.35	0.12	0.05	6.15	1.72
00/142	Colourless	37.17	48.21	0.06	1.26	0.49	0.42	3.66	0.07	0.15	0.05	7.92	0.5
	Turquoise	33.83	47.37	0.08	1.25	0.61	0.79	4.46	0.27	2.38	0.26	8.03	0.63
	Brown	39.74	35.67	0.08	1.34	12.51	0.25	2.49	0.92	0.12	0.02	6.39	0.46
00/160	Brown	47.28	30.61	0.36	2.78	6.62	0.78	4.11	0.25	2.48	0.41	3.76	0.46

Table 8.4.5 Showing compositions of the High Lead Glaze Group using typical examples from each fabric group.

FABRIC GROUP	SAMPLE		PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
Altered Feldspar Group A1	00/141	Yellow	61.10	29.21	0.11	2.46	4.22	0.31	1.13	0.04	0.15	0.25	0.48	0.50
	00/148	Yellow	63.53	25.36	0.46	8.29	1.64	0.17	0.28	0.00	0.04	0.08	0.02	0.09
Altered Feldspar Group B	00/151	Yellow	63.11	25.11	0.46	7.56	2.21	0.15	0.19	0.02	0.03	0.01	0.94	0.18
Coarse Mudstone-Chert Group A	00/122	Yellow	48.39	33.13	0.40	6.83	3.46	1.00	4.95	0.19	0.02	0.21	0.18	1.22
Coarse Mudstone-Chert Fabric B	00/125	Yellow	68.77	20.98	0.28	4.26	2.46	0.54	1.95	0.02	0.04	0.02	0.14	0.49
Argillaceous Rock Fabric	00/123	Yellow	66.63	20.82	0.34	6.23	3.13	0.82	0.91	0.06	0.04	0.06	0.31	0.62
Muscovite-Schist Group A	00/130	Yellow	70.49	19.45	0.30	4.98	2.64	0.56	0.40	0.02	0.04	0.47	0.19	0.43
Muscovite-Schist Group B	00/124	Yellow	43.80	34.65	0.60	8.82	5.25	1.26	4.02	0.08	0.02	0.12	0.48	0.88
Fine Muscovite-Biotite Fabric	00/127	Yellow	73.24	16.90	0.30	5.44	2.55	0.43	0.17	0.05	0.02	0.06	0.27	0.54
Clay Temper Group	00/07	Colourless	62.04	29.51	0.27	5.30	0.58	0.25	0.67	0.01	0.07	0.01	0.28	0.98
	00/89	Colourless	58.59	33.13	0.21	3.36	0.73	0.60	1.72	0.03	0.02	0.04	0.26	1.29
Phyllite Group A1	00/05	Colourless	54.83	37.35	0.21	3.05	0.62	0.51	1.18	0.02	0.23	0.36	0.32	1.30
	00/18	Colourless	61.76	30.61	0.13	3.45	0.42	0.18	1.33	0.17	1.27	0.09	0.29	0.17
	00/86	Colourless	63.05	32.81	0.10	3.15	0.19	0.04	0.18	0.01	0.05	0.03	0.10	0.25
Phyllite Group A2	00/105	Yellow	58.55	28.35	0.32	5.87	2.34	0.85	2.37	0.05	0.12	0.02	0.51	0.63
Fine Quartz-Micrite Fabric	00/28	Colourless	53.79	34.64	0.09	7.36	0.76	0.45	1.25	0.02	0.02	0.06	0.55	1.00
Micaceous Silt/Sandstone Group B	00/38	Colourless	64.37	25.48	0.31	5.00	1.42	0.72	1.13	0.01	0.09	0.22	0.39	0.83
	00/44	Colourless	47.96	37.49	0.44	7.92	1.44	1.05	0.68	0.01	0.22	0.09	0.71	1.96
	00/69	Yellow	45.91	36.26	0.39	8.28	2.58	1.46	2.59	0.03	0.05	0.01	0.71	1.17
Schist-Phyllite Group	00/66	Yellow	64.02	26.55	0.15	3.15	3.09	0.52	1.54	0.01	0.21	0.01	0.39	0.32
Quartz-Biotite Group B	00/171	Colourless	60.19	33.42	0.14	4.18	0.61	0.23	0.79	0.02	0.04	0.02	0.12	0.22
	00/174	Colourless	67.41	27.90	0.07	1.86	0.75	0.45	1.04	0.01	0.05	0.04	0.17	0.23

Table 8.4.6 Showing typical compositions of the lead-alkali coloured glazes from each fabric group. Element oxides considered as deliberate colorants are highlighted in bold.

Fabric Group	Decorative Style	Sample	Colour	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	$Na_2O + K_2O$
Altered Feldspar Group	Polychrome	00/141	Brown	29.28	41.18	0.11	3.16	**14.08**	0.58	3.21	0.35	0.12	0.05	7.87
		00/141	Turquoise	28.55	49.16	0.13	1.60	1.31	1.51	5.58	0.50	**2.55**	0.06	9.03
	Polychrome	00/142	Brown	39.74	35.67	0.08	1.34	**12.51**	0.25	2.49	0.92	0.12	0.02	6.85
		00/142	Turquoise	33.83	47.37	0.08	1.25	0.61	0.79	4.46	0.27	**2.38**	0.26	8.66
	Plain Brown Glazed	00/160	Brown	47.28	30.61	0.36	2.78	**6.62**	0.78	4.11	0.25	**2.48**	0.41	4.25

Table 8.4.7 Showing typical compositions of the High Lead coloured glazes from each fabric group. Element oxides considered as deliberate colorants are highlighted in bold and colourless glazes are included for comparison where necessary.

Fabric Group	Decorative Style	Sample	Colour	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	$Na_2O + K_2O$
Altered Feldspar Group	Polychrome	00/141	Yellow	61.10	29.21	0.11	2.46	**4.22**	0.31	1.13	0.04	0.15	0.25	0.98
	Slip Painted	00/148	Pale yellow	63.53	25.36	0.46	8.29	**1.64**	0.17	0.28	0.00	0.04	0.08	0.11
	Plain Green Glazed	00/154	Green	64.38	23.50	0.46	8.84	0.77	0.13	0.12	0.03	**0.93**	0.71	0.12
	Slip Painted	00/151	Yellow	63.11	25.11	0.46	7.56	**2.21**	0.15	0.19	0.02	0.03	0.01	1.12
	Plain Green Glazed	00/155	Pale green	64.34	25.83	0.43	7.35	0.66	0.15	0.22	0.01	**0.46**	0.15	0.21
Clay Temper Group	Green and Brown Painted I	00/04	Yellow	64.03	28.13	0.14	1.94	**1.89**	0.13	2.09	0.01	0.83	0.15	0.60
		00/04	Brown	64.03	24.66	0.11	1.84	**5.31**	0.13	2.00	0.01	**1.16**	0.18	0.49
	Green and Brown Painted II	00/07	Colourless	62.04	29.51	0.27	5.30	0.58	0.25	0.67	0.01	0.07	0.01	1.26
		00/07	Green	62.28	29.18	0.23	3.77	0.67	0.26	0.90	0.02	**1.70**	0.04	0.92
		00/07	Brown	62.30	27.85	0.23	4.10	**2.36**	0.28	1.07	**0.63**	0.13	0.02	0.99
	Slip Painted DoL	00/75	Pale yellow	63.23	28.63	0.18	2.60	**2.15**	0.75	1.36	0.04	0.11	0.02	0.90
	Sgraffito Measles	00/93	Green	54.84	32.61	0.28	6.12	0.52	0.32	0.67	0.03	**3.33**	0.05	1.21

Table 8.4.7 is continued overleaf

Table 8.4.7 continued

Fabric Group	Decorative Style	Sample	Colour	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	$Na_2O + K_2O$
Phyllite Class	Green and Brown Painted I	00/05	Green	59.73	32.72	0.22	2.69	0.58	0.30	0.83	0.02	**1.26**	0.31	1.34
		00/05	Brown	62.22	30.10	0.15	1.39	0.66	0.30	1.06	**1.02**	**1.93**	0.31	0.84
	Green and Brown Painted III	00/13	Green	41.07	39.99	0.07	5.72	0.99	0.72	3.02	0.06	**6.33**	0.73	1.28
		00/13	Brown	34.81	46.32	0.08	5.63	1.29	1.02	2.79	**2.87**	**2.58**	0.65	1.95
		00/18	Colourless	61.76	30.61	0.13	3.45	0.42	0.18	1.33	0.17	1.27	0.09	0.45
		00/18	Green	60.00	30.35	0.17	3.66	0.45	0.17	1.54	0.00	**2.75**	0.28	0.45
		00/18	Brown	56.56	33.61	0.26	4.73	0.69	0.25	1.68	**1.19**	0.27	0.00	0.60
	Green and Brown Spiral	00/21	Brown	56.70	32.56	0.14	4.17	**3.66**	1.28	0.62	0.05	0.06	0.28	0.31
	Green and Brown Spiral	00/22	Brown	49.66	37.39	0.21	4.87	**3.76**	1.67	1.00	0.07	0.03	0.10	1.04
	Painted Sgraffito	00/86	Brown	59.01	30.06	0.06	2.19	**6.30**	1.16	0.51	0.08	0.05	0.03	0.38
	Aegean Ware	00/166	Green	54.94	31.50	0.08	6.07	1.63	0.76	2.23	0.03	**1.18**	0.09	1.46
		00/166	Yellow	50.51	34.60	0.11	7.17	**2.18**	1.00	2.35	0.05	0.20	0.09	1.74
	Champlevé	00/105	Pale yellow	58.55	28.35	0.32	5.87	**2.34**	0.85	2.37	0.05	0.12	0.02	1.15
Fine Qz Micrite	Green and Brown V(I)	00/28	Brown	52.60	33.06	0.10	6.64	0.86	0.41	2.84	**1.96**	0.03	0.14	1.35
Micaceous Siltstone-Sandstone A	Green and Brown Painted Painted V(I)	00/25	Brown	65.13	24.32	0.26	4.98	0.68	0.46	2.53	**0.57**	0.07	0.01	0.98
Micaceous Siltstone Sandstone B	Green and Brown Painted V(II)	00/33	Brown	70.14	20.86	0.14	2.58	**3.93**	0.42	1.10	0.01	0.09	0.02	0.68
		00/33	Green	65.84	21.39	0.23	3.43	0.86	0.54	1.29	0.02	**5.47**	0.15	0.73
	Green and Brown Painted V(III)	00/38	Green	65.27	23.21	0.22	4.27	1.30	0.66	0.73	0.01	**3.13**	0.18	1.01
		00/38	Brown	65.73	23.09	0.22	4.27	**3.77**	0.65	0.69	0.02	0.26	0.22	1.06
	Champlevé	00/106	Green	52.26	31.28	0.32	6.42	1.70	0.94	1.29	0.03	**3.38**	0.05	2.28
		00/106	Yellow	59.41	29.24	0.31	5.73	**2.19**	0.75	0.59	0.01	0.04	0.00	1.70
Schist-Phyllite Group	Green and Brown V(V)	00/46	Light brown	57.65	28.70	0.11	5.84	**3.37**	0.59	2.22	**0.21**	0.15	0.07	1.03
	Slip Painted LoD III	00/66	Yellow	64.02	26.55	0.15	3.15	**3.09**	0.52	1.54	0.01	0.21	0.01	0.71
Qz-Biotite Group B	Zeuxippus	00/170	Yellow	59.00	31.52	0.19	4.42	**2.35**	0.51	1.29	0.03	0.03	0.00	0.64

Table 8.4.8 Summary results of the glaze analysis for pottery belonging to the eleventh century to thirteenth centuries.

Date	Provenance	Fabric Group	Glaze Type		Colour	Colourants used
11th Century	Imported	Altered Feldspar Class	Lead-Alkali		Turquoise	CuO
					Brown glaze outline	Fe_2O_3
					Brown overglaze	$Fe_2O_3 + CuO$
			High lead	PbO	Green	CuO
			High lead	PbO	Yellow	Fe_2O_3
		Argillaceous Rock Fabric	High lead	PbO	Yellow	Fe_2O_3 diffusion from body
		Muscovite Schist Class	High lead	PbO	Yellow	Fe_2O_3 diffusion from body
		Fine Muscovite Biotite Fabric	High lead	PbO	Yellow	Fe_2O_3 diffusion from body
	Local	Coarse Mudstone Chert Group	High lead	PbO	Yellow	Fe_2O_3 diffusion from body
Late 11th / 12th Century	Local	Clay Temper Group	High lead	$PbO{\cdot}SiO_2$	Green Yellow Brown	CuO Fe_2O_3 $Fe_2O_3 + CuO$ $Fe_2O_3 + MnO$
	Imported	Phyllite Group A1	High lead	$PbO{\cdot}SiO_2$	Green Yellow Brown	CuO Fe_2O_3 Fe_2O_3 $MnO + CuO$ MnO
13th Century	Local	Fine Quartz Micrite Fabric	High lead	$PbO{\cdot}SiO_2$	Brown	MnO
		Micaceous Silt/Sandstone A	High lead	$PbO{\cdot}SiO_2$	Brown	MnO
		Micaceous Silt/Sandstone B	High lead	$PbO{\cdot}SiO_2$	Green Yellow Brown	CuO Fe_2O_3 Fe_2O_3
	Imported	Schist-Phyllite Group	High lead	$PbO{\cdot}SiO_2$	Yellow- brown Yellow	$Fe_2O_3 + MnO$ Fe_2O_3
		Quartz-Biotite Group	High lead	$PbO{\cdot}SiO_2$	Yellow	Fe_2O_3

Table 9.2.1 Comparing compositions of White Wares excavated at Corinth and Constantinople, and clay from the Bosphorus.

Sample		Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO
Corinth*	$\bar{X}$	>25	3.50	0.60	<1.00	0.24	–	1.08	0.05
(n=20)	*SD*	–	0.80	0.20	–	0.11		0.12	0.03
Corinth**	$\bar{X}$	23.33	2.30	0.49	0.37	0.16	0.64	1.13	0.01
(n=22)	*SD*	2.58	0.57	0.05	0.09	0.04	0.12	0.06	0.01
Istanbul*	$\bar{X}$	28.20	3.93	0.67	1.60	0.33	–	1.04	0.03
(n=3)	*SD*	3.12	0.96	0.15	0.87	0.23		0.25	0.21
Bosphorus White Clay* (n=1)		23.7	5.5	0.5	<0.5	<0.2	–	0.9	0.5

* From Megaw and Jones (1983), analytical method: OES

** WW samples analysed in the course of this study, analytical method ICP-AES

Nb. Direct comparisons between the two data sources should be made with caution given the differences in method of analysis.

Table 9.2.2 Comparing the compositions of lead-alkali glazes of the Constantinopolitan White Ware vessels excavated at Corinth with a selection of glazes from Polychrome tiles excavated at Constantinople.

Sample	Glaze Analysed	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
00/141	Turquoise	28.55	49.16	0.13	1.60	1.31	1.51	5.58	0.50	2.55	0.06	7.81	1.22
	Brown	29.28	41.18	0.11	3.16	14.08	0.58	3.21	0.35	0.12	0.05	6.15	1.72
00/142	Colourless	37.17	48.21	0.06	1.26	0.49	0.42	3.66	0.07	0.15	0.05	7.92	0.5
	Turquoise	33.83	47.37	0.08	1.25	0.61	0.79	4.46	0.27	2.38	0.26	8.03	0.63
	Brown	39.74	35.67	0.08	1.34	12.51	0.25	2.49	0.92	0.12	0.02	6.39	0.46
00/160	Brown	47.28	30.61	0.36	2.78	6.62	0.78	4.11	0.25	2.48	0.41	3.76	0.46
AC87*	Green	30.5	42.4	nd	2.0	1.1	1.2	5.6	0.5	4.8	-	9.2	0.9
7917*	Brown	56.5	25.4	nd	1.2	8	0.4	1.4	nd	nd	-	5.3	nd
AC85*	Brown	55.6	25.2		3.1	5.6	0.4	2.1	0.1	1.6	-	4.3	0.4
**	Black	49.0	28.2	-	1.4	3.7	0.3	1.6	5.3	2.6	-	5.6	0.3

*From Vogt and Bouquillon (1996, 110).
** Black glaze from Vogt *et al.* (1997), analysed by SEM-EDS.
nd is not detected.
- is not given.

Table 9.2.3 Highlighting differences in glaze composition (lead-alkali and high lead) on White Ware polychrome sherd 00/141 sampled for this study, and comparing its yellow glaze composition with yellow glazes from polychrome sherds excavated at Constantinople.

Sample	Glaze Analysed	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
	Turquoise	28.55	49.16	0.13	1.60	1.31	1.51	5.58	0.50	2.55	0.06	7.81	1.22
00/141	Brown	29.28	41.18	0.11	3.16	14.08	0.58	3.21	0.35	0.12	0.05	6.15	1.72
	Yellow	61.10	29.21	0.11	2.46	4.22	0.31	1.13	0.04	0.15	0.25	0.48	0.50
1993.14*	Yellow	65.8	26.5	0.1	0.9	4.6	0.1	0.6	nd	0.28	-	0.7	0.2
1993.19*	Yellow	62.5	26.5	0.1	1.4	5.3	0.2	1.4	0.1	0.33	-	1.1	0.3

* from Armstrong *et al.* (1997, 228). Samples were analysed using SEM-WDS
nd is not detected
\- is not given

Table 9.2.4 Highlighting the main mineralogical and textural differences between the four metamorphic fabrics.

Fabric	Characteristic Inclusions	Technological Characteristics	Suggested Provenance
Argillaceous Rock Fabric	Argillaceous rock fragments, polycrystalline quartz with straight to sutured grain boundaries, recrystallization of quartz at grain boundaries and microlithic inclusions or with elongated subgrains, foliation and undulose extinction, quartz-muscovite-biotite rock fragments, Plagioclase with deformed twins, volcanic glass, serpentinite and muscovite-phyllite	Unimodal grain-size frequency distribution with fine fraction appearing to represent terminal grades of coarser rock fragments. Indicates the use of a naturally coarse, unprocessed clay.	Unknown
Muscovite-Schist Group A	Schist (muscovite, muscovite-biotite, quartz-muscovite-biotite), polycrystalline quartz with recrystallization at sub-grain boundaries, undulose extinction with sutured grain boundaries, muscovite-biotite phyllite, chert, serpentinite	Strongly bimodal indicating the coarse component was added as temper	Unknown
Muscovite-Schist Fabric B	Schist (muscovite, quartz-biotite-muscovite+ black opaques), micrite, chert	Strongly bimodal indicating the coarse component was added as temper	?Sparta
Fine Muscovite-Biotite Fabric	Monocrystalline quartz, muscovite (lathes up to 0.25mm), biotite (up to very fine sand-sized), phyllite (muscovite, biotite-muscovite), tcfs (up to 15% of field)	Inclusions are predominantly silt to very fine sized, rarely up to medium sand-sized indicating the use of a naturally fine or refined clay, with tcfs suggesting the incomplete mixing of two different clays	Unknown

Table 9.2.5 Comparison of the chemical compositions of the Muscovite-Schist B fabric (00/124) and an example of Green and Brown Glazed Ware believed to of Spartan origin.

	SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO
00/124*	67.1	14.3	7.6	1.8	5.7	0.7	1.8	0.7	0.1
Sherd 5**	67.7	18.9	7.6	nd	0.9	nd	3.7	0.6	0.6

* Muscovite-Schist B fabric analysed by ICP-AES in the course of this study
** From Armstrong *et al.* (1995, 228), analysed by SEM-EDS

Table 9.3.1 Comparing chemical compositions of the Clay Temper Group with Byzantine unglazed wasters from the Corinth Agora analysed by Megaw and Jones (1983).

Sample		Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO
Corinth*	$\bar{X}$	17.5	7.9	2.5	21.1	0.92	–	0.57	0.104
(n=20)	*SD*	3.0	1.2	0.7	5.5	0.33		0.08	0.015
Corinth**	$\bar{X}$	14.6	6.8	2.9	19.2	0.66	2.30	0.64	0.13
(n=31)	*SD*	1.46	0.67	0.34	2.11	0.12	0.67	0.05	0.01

* From Megaw and Jones, Table 2 (1983, 257), analytical method: OES.

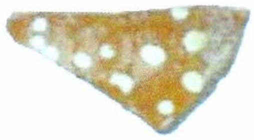
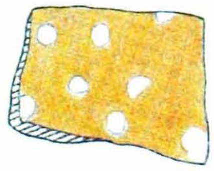
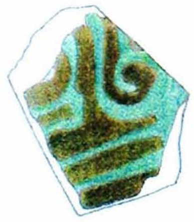
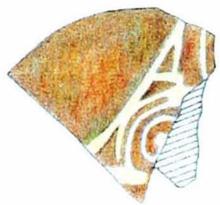
** Samples analysed in the course of this study, analytical method ICP-AES.

Nb. Direct comparisons between the two data sources should be made with caution given the differences in method of analysis.

Table 9.3.2 Composition of the Clay-Temper Fabric sub-groups demonstrating the dilution effect, where many element oxides and trace elements have higher concentrations in the finer variant (sub-group A3) than the coarser variant (sub-group A1) of the fabric group.

Fabric		Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Ba	Cr	Li	Sc	Sr	V	Zn	La
Sub-group A1 (n=5)	$\overline{X}$	13.64	6.31	2.57	17.22	0.62	1.69	0.64	0.14	313.80	212.60	72.00	14.80	483.40	99.60	89.60	32.80
	SD	1.66	0.78	0.29	1.71	0.25	0.29	0.05	0.02	43.94	36.53	9.33	1.79	53.51	11.52	9.21	3.56
Sub-group A2 (n=21)	$\overline{X}$	14.58	6.73	2.89	18.09	0.67	2.34	0.63	0.13	367.52	210.88	76.10	16.48	453.24	111.05	98.00	32.90
	SD	1.44	0.65	0.26	2.26	0.08	0.68	0.05	0.01	69.61	36.30	9.46	1.59	39.99	12.38	8.25	3.10
Sub-group A3 (n=5)	$\overline{X}$	15.51	7.24	3.32	19.43	0.66	2.74	0.67	0.14	362.40	221.60	86.40	17.60	521.80	122.60	104.20	34.40
	SD	0.36	0.26	0.22	0.53	0.11	0.28	0.01	0.00	44.42	13.92	4.93	0.55	36.70	9.45	4.87	0.49

Table 9.3.3 Comparing examples of decorative styles occurring in the Phyllite Group with sherds recovered from surface survey in Boeotia.

Decorative Style	Phyllite Fabric (from Corinth)	Boeotian Examples*
Slip Painted Light on Dark Dotted		
Slip Painted Light on Dark II (green glazed)		
Slip Painted Light on Dark II (yellow glazed)		
Green and Brown Painted III		
Painted Sgraffito		

* Examples taken from Vroom (2003, 197-198, 201-202)

Table 9.3.4 Comparing compositions of Chemical Group 8/Phyllite Group with Schwedt *et al.'s* (2006) Group L derived from Aliartos and Akraiphnion in Boeotia.

	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 8*	19.84	7.55	2.5	5.44	1.42	3.09	0.74	0.12	141.3	50.8	70.1	20.1	117.7	124.2	107.0	41.46
Group L**		6.52		5.72	1.31	3.33	0.5		210			19.5			113	32

* Chemical Group 8 containing pottery relating to the Phyllite Group, analysed by ICP-AES.
** Schwedt *et al.'s* Group L, containing pottery derived from Aliartos and Akraiphnion, analysed by NAA (after Schwedt *et al.* 2006, 1070).

Table 9.4.1 Comparison of chemical compositions of Zeuxippus Ware from Corinth (Quartz-Biotite Class/Chemical Group 4) and Saranda Kolones, Cyprus analyzed by Megaw *et al.* (2003) using ICP-AES.

Zeuxippus Ware		Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Ba	Cr	Li	Sc	Sr	V	Zn	La
Corinth*	$\bar{X}$	16.8	7.5	3.9	9.4	0.9	2.6	0.7	0.2	412	237	70	19	231	123	104	37
(n=11)	*SD*	1.6	0.4	0.5	2.6	0.3	0.3	0.0	0.03	45.6	63.4	6.4	1.3	44.5	10.0	7.6	4.6
Sarandra Kolones	$\bar{X}$	15.0	7.1	3.6	7.8	1.2	2.4	0.7	0.2	437	198	73	19	289	125	95	37
** (n=20)	*SD*	0.6	0.3	0.1	0.8	0.1	0.1	0.0	0.0	103.7	14.81	4.7	1.0	22.3	12.1	5.2	1.3

* Samples from Corinth analysed in the course of this study, analytical method ICP-AES (COR 00/114,169,170,171,172,175,177,178,179,180,182)
** Samples from Saranda Kolones, Cyprus analyzed by Megaw *et al.* (2003), analytical method ICP-AES.

APPENDIX I
CATALOGUE OF SHERDS

Sample No.	Decorative Type	Vessel form	Sherd	Rim Diameter (mm)	Base Diameter (mm)	Wall thickness (mm)	Munsell Colour (fabric)
00/01	Green + Brown I	Pitcher	Base		50	7.6	5YR 5/8
00/02	Green + Brown I	Bowl	Base		40	4.9	Inner + outer: 5YR 6/6, core: 2.5Y 7/4
00/03	Green + Brown I	Bowl	Body			4.3	Inner: 10YR 4/2, Outer: 5YR 6/6
00/04	Green + Brown I	Bowl	Body			5.5	7.5YR 7/3-8/3
00/05	Green + Brown I	Bowl	Body			8.9	10YR 7/1
00/06	Green + Brown I	Bowl	Body			4.2	5YR 6/6
00/07	Green + Brown II	Bowl	Body			11.1	7.5YR 7/3
00/08	Green + Brown II	Bowl	Base		105	8.6	7.5YR 6/4
00/09	Green + Brown II	Bowl	Base		60	5.3	7.5YR 6/4
00/10	Green + Brown II	Bowl	Base		Not enough preserved	Lower 9.5 Upper 6.5	5YR 6/6
00/11	Green + Brown II	Bowl	Base		93	6.2	Inner: 5YR 6/3 Outer: 5YR 6/6
00/12	Green + Brown II	Bowl	Body			7.1	2.5YR 5/8
00/13	Green + Brown III	Bowl	Base		120	8.9	5YR 6/4
00/14	Green + Brown III	Bowl	Rim	240		8.1	5YR 5/6
00/15	Green + Brown III	Bowl	Rim	240		7.2	5YR 6/6
00/16	Green + Brown III	Bowl	Body			7.9	5YR 5/8
00/17	Green + Brown III	Bowl	Rim	245		7.2	5YR 5/8
00/18	Green + Brown III	Bowl	Rim	240		4.1	5YR 6/6
00/19	Green + Brown III	Bowl	Rim	235		8.7	5YR 5/6
00/20	Green + Brown Spiral	Bowl	Rim	180		5.5	5YR 5/8
00/21	Green + Brown Spiral	Bowl	Rim	320		4.8	5YR 6/6
00/22	Green + Brown Spiral	Bowl	Rim	250		4.6	5YR 5/4
00/23	Green + Brown Spiral	Bowl	Rim	250-260		8	5YR 5/6
00/24	Green + Brown Spiral	Bowl	Base		85	6.8	5YR 5/6
00/25	Green + Brown V(I)	Bowl	Rim	240		6.4	7.5YR 7/4
00/26	Green + Brown V(I)	Bowl	Body			8.1	5YR 6/6

00/27	Green + Brown V(I)	Bowl	Body			7.8	10YR 6/4
00/28	Green + Brown V(I)	Bowl	Base		90	10	10YR 6/4
00/29	Green + Brown V(I)	Bowl	Rim	210		6.7	7.5YR 7/4
00/30	Green + Brown V(II)	Bowl	Base		110	7.3	Inner: 10YR 7/3 Outer: 5YR 6/6
00/31	Green + Brown V(II)	Bowl	Body			7.1	7.5YR 6/6
00/32	Green + Brown V(II)	Bowl	Rim	265		9.5	10YR 4/2
00/33	Green + Brown V(II)	Bowl	Rim	250		7.4	10YR 6/4
00/34	Green + Brown V(III)	Bowl	Rim	300		9	7.5YR 6/6
00/35	Green + Brown V(III)	Bowl	Rim	260		9.3	7.5YR 6/6
00/36	Green + Brown V(III)	Bowl	Body			8.4	7.5YR 6/6
00/37	Green + Brown V(III)	Bowl	Rim	Not enough preserved		12.9	7.5YR 6/6
00/38	Green + Brown V(III)	Bowl	Body			6.4	Inner: 10YR 6/4 Outer: 5YR 6/6
00/39	Green + Brown V(III)	Bowl	Rim	240		12	5YR 6/6
00/40	Green + Brown V(IV)	Bowl	Body			7.7	2.5Y 8/3
00/41	Green + Brown V(IV)	Bowl	Rim	Not enough preserved		9.6	5YR 6/6
00/42	Green + Brown V(IV)	Bowl	Rim	Approx 330		9.3	5YR 5/6
00/43	Green + Brown V(IV)	Bowl	Body			9.5	5YR 6/6
00/44	Green + Brown V(IV)	Bowl	Rim	230		10.9	5YR 5/6
00/45	Green + Brown V(V)	Bowl	Body			8.2	5YR 6/6
00/46	Green + Brown V(V)	Bowl	Body			8.9	5YR 6/6
00/47	Green + Brown V(V)	Bowl	Rim	190		6.6	10YR 7/4
00/48	Green + Brown V(V)	Bowl	Rim	190		6.5	7YR 6/6
00/49	Green + Brown V(V)	Bowl	Body			9.3	5YR 5/6
00/50	Slip Painted I (LoD)	Jar	Body			10	Gley 1 5/N
00/51	Slip Painted I (LoD)	Bowl	Base		Not enough preserved	6.2	2.5YR 6/8
00/52	Slip Painted I (LoD)	Bowl	Rim	250-300		5.5	2.5YR 5/6
00/53	Slip Painted I (LoD)	Bowl	Body			4.4	2.5YR 5/8
00/54	Slip Painted I (LoD)	Bowl	Body			5	2.5YR 5/6
*0/55	Slip Painted I (LoD)	Bowl	Rim	240		6.9	10YR 6/4
**00/56	Slip Painted II (LoD)	Bowl	Body			9	5YR 5/4

00/57	Slip Painted II (LoD)	Bowl	Rim to base	Approx 255	120	Upper 6.5 Lower 10	5YR 5/8
00/58	Slip Painted II (LoD)	Bowl	Rim	Not enough preserved		7.5	5YR 5/4
00/59	Slip Painted II (LoD)	Bowl	Rim	280		6.2	2.5YR 6/8
00/60	Slip Painted II (LoD)	Bowl	Body			6.4	2.5YR 5/8
00/61	Slip Painted II (LoD)	Bowl	Base		100	4.5	5YR 6/6
00/62	Slip Painted Dotted/Spotted	Cup	Rim	110		2.5	5YR 7/6
00/63	Slip Painted Dotted/Spotted	Bowl?	Rim	Not enough preserved		5.3	5YR 7/6
00/64	Slip Painted Dotted/Spotted	Bowl	Rim	270		5.5	7.5YR 5/3
00/65	Slip Painted Dotted/Spotted	Cup	Rim	130		4.3	7.5YR 8/1
00/66	Slip Painted III (LoD)	Bowl	Body			5	7.5YR 7/6
00/67	Slip Painted III (LoD)	Bowl	Rim	240		7.8	10YR 8/4
00/68	Slip Painted III (LoD)	Bowl	Rim	180		6.4	7.5YR 6/6
00/69	Slip Painted III (LoD)	Bowl	Body			10.9	7.5YR 6/4
00/70	Slip Painted III (LoD)	Bowl	Rim	200		9.1	5YR 6/8
00/71	Slip Painted III (LoD)	Bowl	Rim	230		8.3	5YR 6/6
00/72	Slip Painted (DoL)	Bowl	Rim	Not enough preserved		6.2	7.5YR 7/6
00/73	Slip Painted (DoL)	Bowl?	Base		55	6.1	7.5YR 8/4
00/74	Slip Painted (DoL)	Bowl	Body			4.7	5YR 7/6
00/75	Slip Painted (DoL)	Bowl	Base		70	5.8	7.5YR 8/3
00/76	Slip Painted (DoL)	Bowl	Rim	210		7	Inner + outer: 2.5YR 6/8, Core: 7.5YR 6/6
00/77	Slip Painted (DoL)	Bowl	Base		110	7	10YR 8/3
**00/78	Slip Painted (DoL)	Bowl	Base		100		5YR 6/6
**00/79	Slip Painted (DoL)	Bowl	Body			8.8	10YR 7/4
**00/80	Slip Painted (DoL)	Bowl	Base		70		5YR 6/6
00/81	Painted Sgraffito	Bowl	Body			7	5YR 6/8
00/82	Painted Sgraffito	Bowl	Base		85		2.5YR 5/8
00/83	Painted Sgraffito	Bowl	Base		65		2.5YR 5/8

00/84	Painted Sgraffito	Dish	Base		Not enough preserved		7.5YR 6/4
00/85	Painted Sgraffito	Dish	Rim	180		5.4	5YR 5/6
**00/86	Painted Sgraffito	Dish	Base		57	4.6	2.5YR 5/8
**00/87	Sgraffito Measles	Bowl	Base		95	8.2	5YR 7/6
00/88	Sgraffito Measles	Bowl	Body			6.5	Inner + outer: 5YR 6/6, Core: 7.5YR 7/6
00/89	Sgraffito Measles	Dish	Rim	240		5.9	7.5YR 7/6
00/90	Sgraffito Measles	Bowl	Base		90	6.2	Inner: 5YR 7/5, Outer: 10YR 7/4
00/91	Sgraffito Measles	Bowl	Base		90	5.4	Inner + outer: 2.5YR 6/6, Core: 7.5YR 6/6
00/92	Sgraffito Measles	Dish	Rim to base	200	80	6.8	2.5YR 6/6
00/93	Sgraffito Measles	Bowl	Rim	270		6.9	Inner + outer: 5YR 7/6, Core: 10YR 7/2
00/94	Fine Style Sgraffito	Dish	Rim	450		9.8	5YR 6/4
00/95	Fine Style Sgraffito	Bowl?	Base		83		7.5YR 8/3
00/96	Fine Style Sgraffito	Bowl	Base		65	8.6	Inner: 5YR 7/4, Outer: 10YR 8.3
00/97	Fine Style Sgraffito	Dish	Rim	245		9.5	Inner + outer: 5YR 7/6, Core: 10YR 8.3
00/98	Fine Style Sgraffito	Dish	Body			7.7	2.5YR 7/6
00/99	Fine Style Sgraffito	Dish	Rim	235		6.6	2.5YR 6/6
00/100	Fine Style Sgraffito	Bowl	Body			7.7	2.5Y 7/3
00/101	Fine Style Sgraffito	Dish	Rim	410		7.7	2.5YR 6/8
00/103	Freestyle Sgraffito	Bowl	Base		112		7.5YR 6/3
00/104	Champleve	Bowl	Body			12.5	2.5YR 5/8
00/105	Champleve	Fruit stand	Base		Not enough preserved	8.3	2.5YR 6/8
00/106	Champleve	Fruit stand	Base		7.5	7.8	Gley 1 5/N
00/107	Champleve	Bowl	Body			9	2.5YR 5/8
00/108	Champleve	Bowl	Body			9.7	5YR 5/4
00/109	Painted Incised Sgraffito	Bowl	Rim	180-122		8.3	Inner: 10YR 5/2, Outer: 2.5YR 6/8
00/110	Painted Incised Sgraffito	Bowl	Rim	200		9.2	5YR 6/6

00/111	Painted Incised Sgraffito	Bowl	Rim	233		7.1	5YR 6/6
00/112	Painted Incised Sgraffito	Bowl	Rim	Not enough preserved	195	8.2	2.5YR 6/8
00/113	Fine Style Sgraffito	Dish	Rim	240		8.1	7.5YR 5/2
00/114	Fine Style Sgraffito	Bowl	Rim	135		4.4	7.5YR 6/4
00/115	Fine Style Sgraffito	Plate?	Rim	300-370		4.5	5YR 5/6
*00/116	Spatter Painted	Bowl	Body			5.7	7.5YR 7/4
**00/117	Spatter Painted	Bowl	Rim	230		5.9	5YR 5/8
00/118	Spatter Painted	Chafing dish	Base		140	9.5	2.5YR 6/8
00/119	Spatter Painted	Bowl	Body			7.5	2.5YR 6/8
00/122	Plain Brown Glazed	Chafing dish	Rim	220		5.9	5Y 3/1
00/123	Plain Brown Glazed	Chafing dish	Rim	240		9.1	Inner: Gley 1 5/N Outer: 2.5YR 5/8
00/124	Plain Brown Glazed	Chafing dish	Rim	185		8.7	Inner: 10YR 3/1 Outer: 7.5YR 5/2
00/125	Plain Brown Glazed	Chafing dish	Rim	240		8.6	10YR 5/2
00/126	Plain Brown Glazed	Chafing dish	Rim	200		7.9	5YR 4/4
00/127	Plain Brown Glazed	Chafing dish	Rim	220		8.3	7.5YR 3/2
00/128	Plain Brown Glazed	Chafing dish	Rim	210		8.1	7.5YR 6/6
00/129	Plain Brown Glazed	Chafing dish	Rim	250		9.8	2.5YR 4/6
00/130	Plain Brown Glazed	Chafing dish	Rim + handle	270			2.5YR 5/8
00/131	Plain Brown Glazed	Chafing dish	Lower Body				2.5YR 5/8
00/132	Plain Brown Glazed	Chafing dish	Lower body			Maximum 12.7	2.5YR 5/8
*00/133	Plain Brown Glazed	Chafing dish	Handle				7.5YR 4/1
00/139	White Ware Polychrome	Cup	Rim	90		3.3	2.5YR 8/1
00/140	White Ware Polychrome	Cup?	Body			2.8	5YR 8/1
00/141	White Ware Polychrome	Cup	Body			3.6	2.5YR 8/1
00/142	White Ware Polychrome	Bowl	Body			5	5YR 8/1
00/143	White Ware Polychrome	Dish	Rim	180			5YR 8/1
00/144	White Ware Polychrome	Bowl	Body			3.3	5YR 8/1
00/145	White Ware Polychrome	Bowl	Rim	170		5.5	5YR 8/1
00/146	White Ware Slip Painted	Bowl	Body			8.1	2.5Y 8/1
00/147	White Ware Slip Painted	Bowl	Rim	160		5.3	2.5Y 8/1
00/148	White Ware Slip Painted	Bowl	Body			6.2	2.5Y 8/1

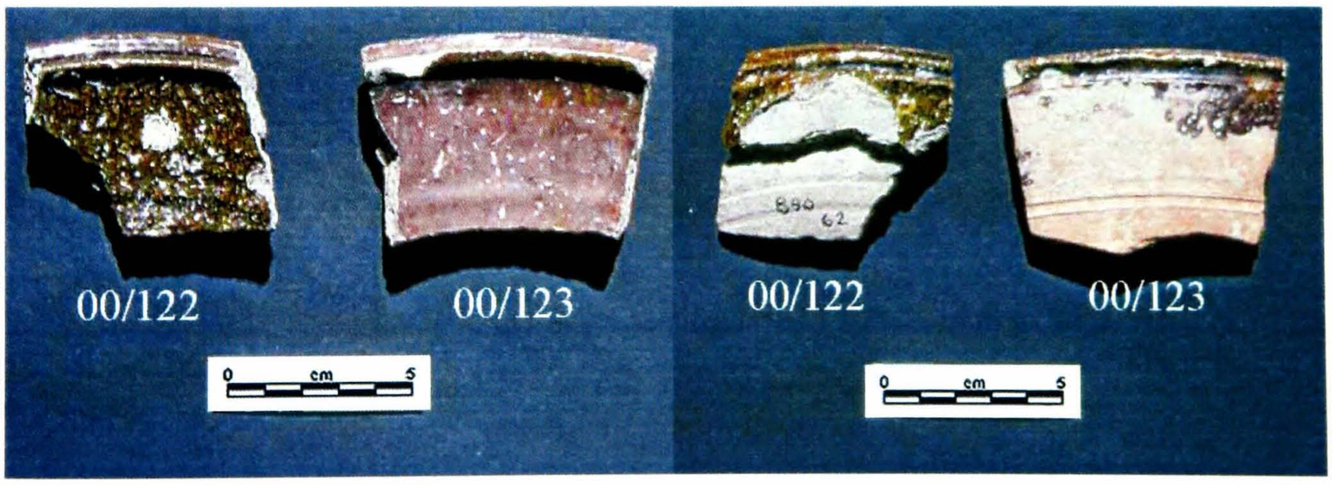
00/149	White Ware Slip Painted	Bowl	Body			4	2.5Y 8/1
00/150	White Ware Slip Painted	Bowl	Rim	160		3.7	5YR 8/4
00/151	White Ware Slip Painted	Bowl	Body			6.3	7.5YR 6/2
00/152	White Ware Slip Painted	Bowl	Body			7.5	7.5YR 8/4
00/153	White Ware Plain Green	Bowl	Base		50	4.5	5Y 8/1
00/154	White Ware Plain Green	Bowl	Rim	155		4.1	5Y 8/1
00/155	White Ware Plain Green	Bowl	Body			7.8	7.5YR 8/3
00/156	White Ware Plain Green	Bowl	Rim	150		4.6	2.5Y 8/1
00/157	White Ware Impressed	Bowl	Body			6.7	10YR 6/1
00/158	White Ware Impressed	Bowl	Body			9.1	7.5YR 4/1
00/159	White Ware Green + Brown	Bowl	Body			5.9	7.5YR 8/4
00/160	White Ware Plain Brown	Cup	Rim	100		3.1	7.5YR 8/1
00/165	Aegean Ware	Bowl	Body			11.5	7.5YR 6/4
00/166	Aegean Ware	Bowl	Body			10.4	7.5YR 7/3
00/167	Aegean Ware	Bowl	Body			11.3	5YR 6/6
00/168	Aegean Ware	Bowl	Rim	300		5.8	5YR 5/6
00/169	Zeuxippus Ware	Bowl	Base		65	6.5	5YR 5/6
00/170	Zeuxippus Ware	Bowl	Body			4.5	5YR 5/1
00/171	Zeuxippus Ware	Dish	Rim	Approx 270		5.2	5YR 6/4
00/172	Zeuxippus Ware	Bowl	Body			6.9	Inner + outer: 5YR 5/4 Core: 10YR 5/1
00/173	Zeuxippus Ware	Bowl	Base		65	7.3	2.5YR 6/6
00/174	Zeuxippus Ware	Bowl	Body			7.3	7.5YR 6/4
00/175	Zeuxippus Ware	Bowl	Body			7.5	7.5YR 5/4
00/176	Zeuxippus Ware	Bowl	Body			5.5	Inner: 7.5YR 4/2 Outer: 7.5YR 6/4
00/177	Zeuxippus Ware	Bowl	Rim	Approx 180			7.5YR 6/6
00/178	Zeuxippus Ware	Bowl	Rim	230		4	10YR 5/3
00/179	Zeuxippus Ware	Bowl	Body			8	7.5YR 7/6
00/180	Zeuxippus Ware	Bowl	Rim	Approx 178			5YR 6/6
00/181	Zeuxippus Ware	Bowl	Rim	Not enough preserved		4.8	5YR 5/6
00/182	Zeuxippus Ware	Bowl	Body			6.4	7.5YR 6/6

* denotes samples from Lot 5117, ** denotes samples from Lot 418

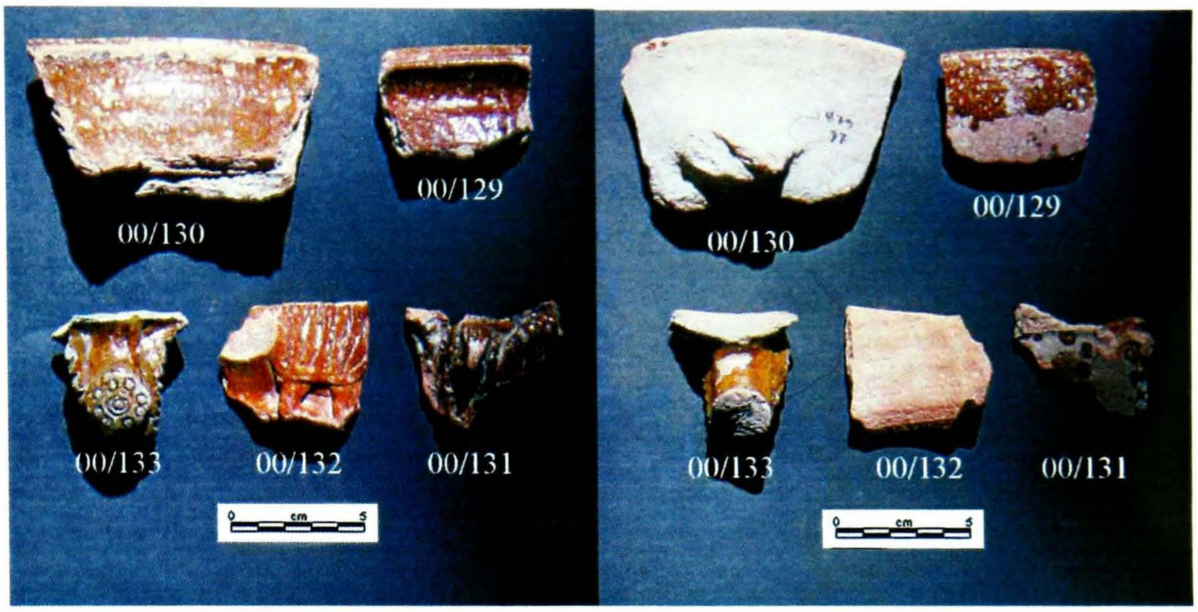
APPENDIX II
PHOTOGRAPHS OF SAMPLED SHERDS

II.1 Plain Brown Glazed Ware. Left: vessel interiors, Right: vessel exteriors.

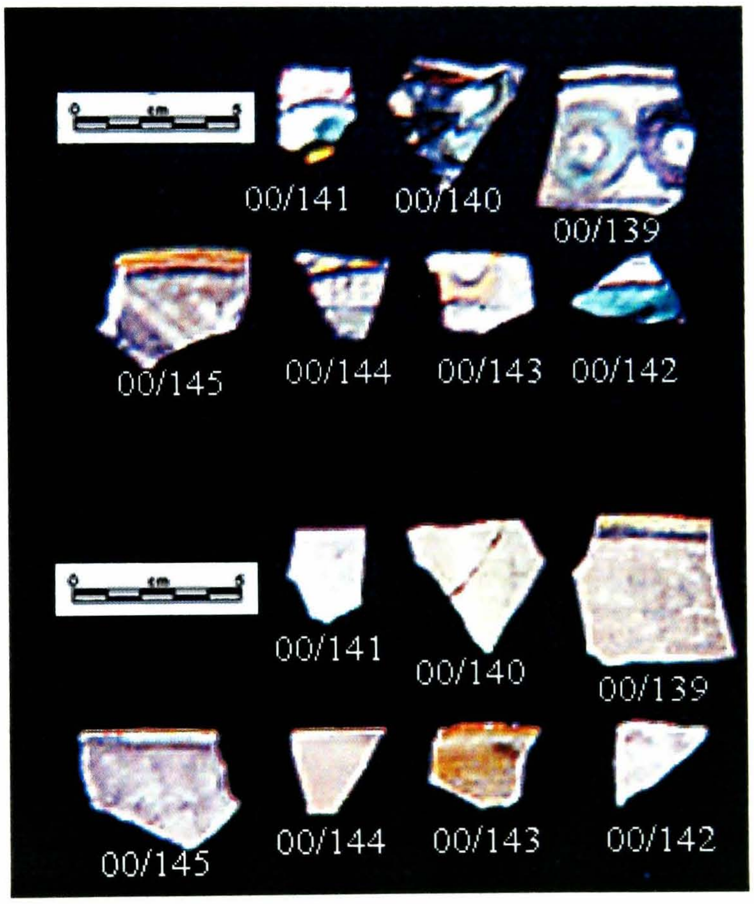
II.2 Plain Brown Glazed Ware. Left: vessel interiors, Right: vessel exteriors.



II.3 Plain Brown Glazed Ware. Left: vessel interiors, Right: vessel exteriors.

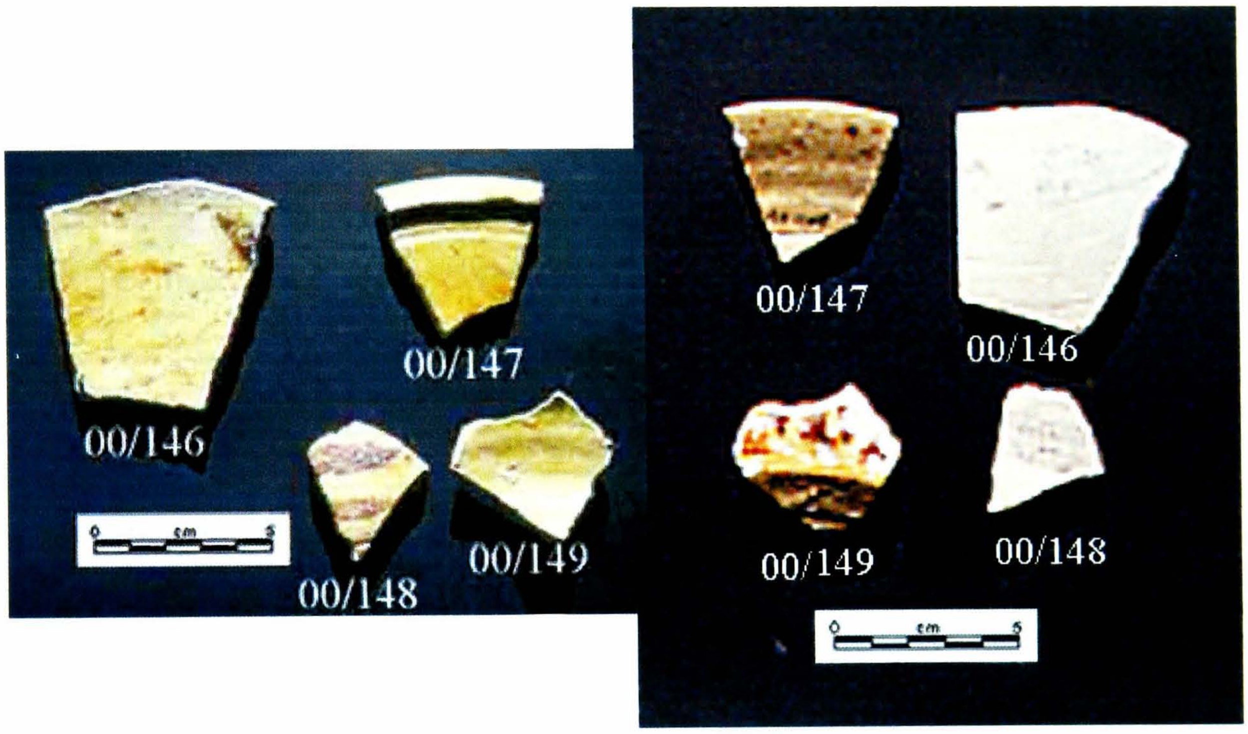


II.4 Plain Brown Glazed Ware. Left: vessel interiors, Right: vessel exteriors.



II.5 Polychrome White Ware. Above: glaze decorated surfaces, Below: reverse of sherds.

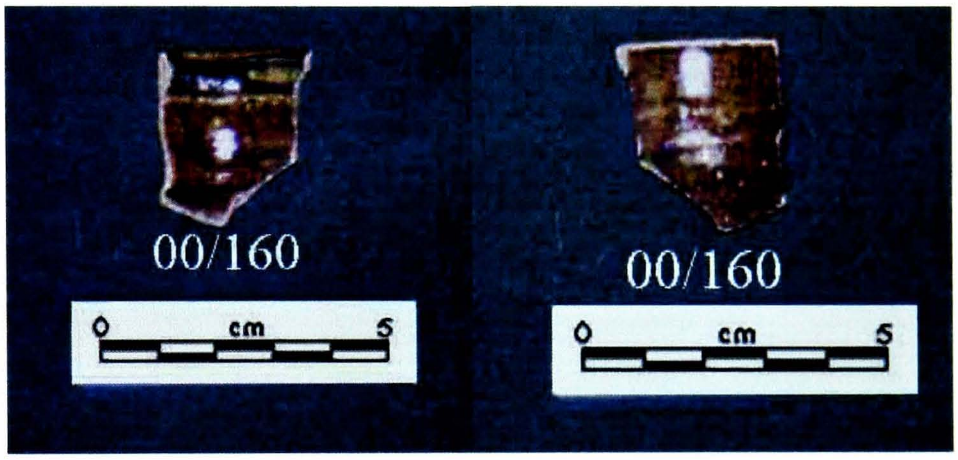
II.6 Slip Painted White Ware. Left: interior surfaces, Right: exterior surfaces.



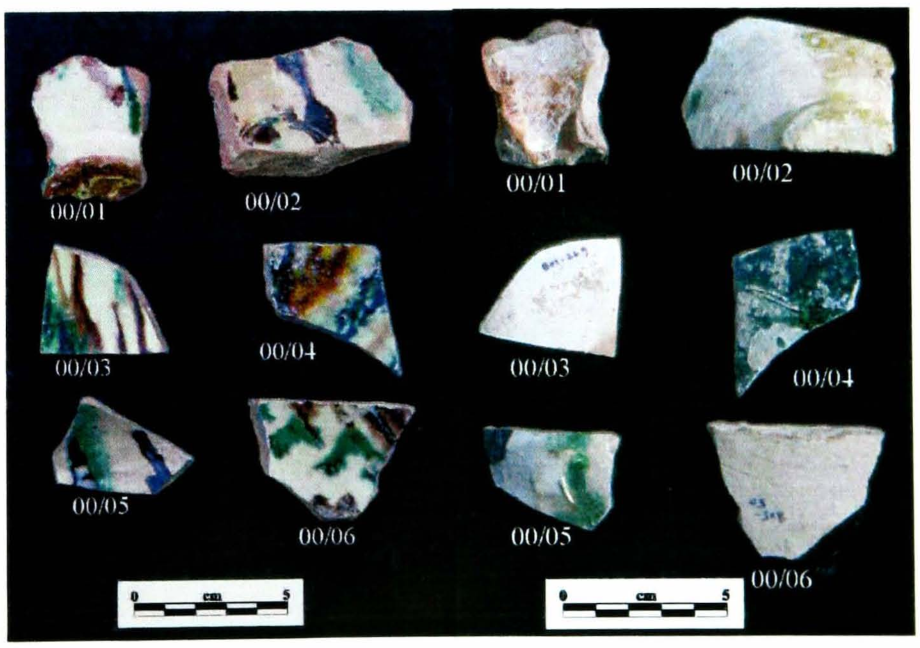
II.7 Slip Painted White Wares. Left: vessel interiors, Right: vessel exteriors.

II.8 Plain Green Glazed White Ware. Left: interior surfaces, Right: exterior surfaces.

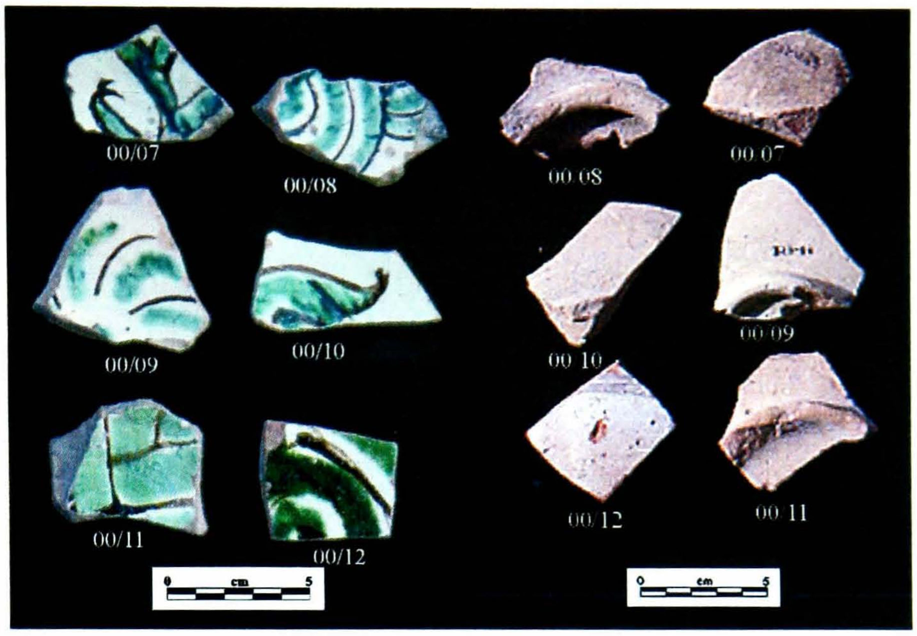
II.9 Green and Brown Incised White Ware. Left: vessel interior, Right: Vessel exterior.



II.10 Plain Brown Glazed White Ware. Left: vessel interior, Right: Vessel exterior.



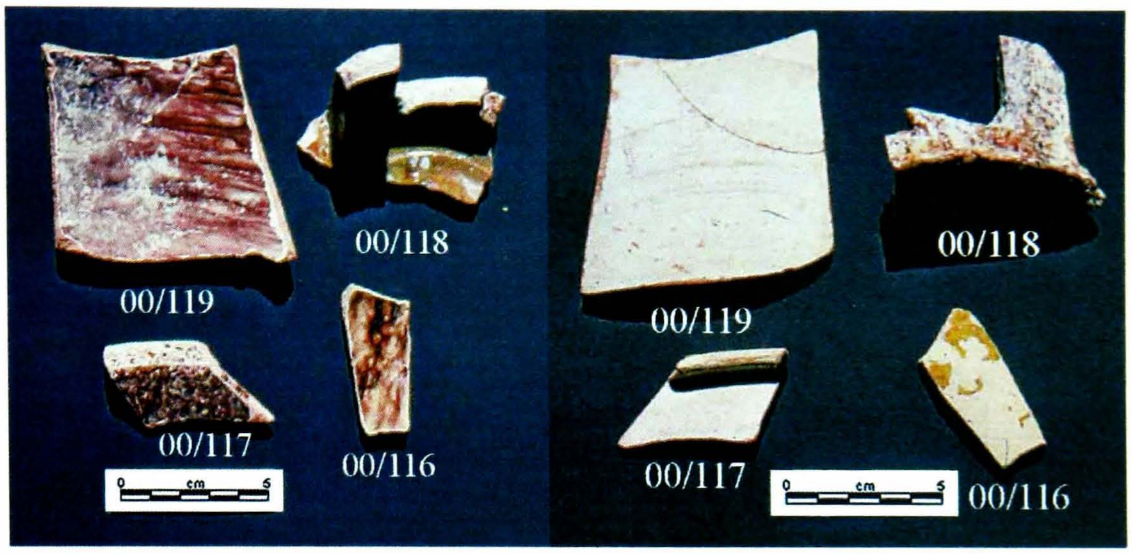
II.11 Green and Brown Painted I. Left: glaze decorated surface, Right: reverse of sherds.



II.12 Green and Brown Painted II. Left: interior surfaces, Right: exterior surfaces.

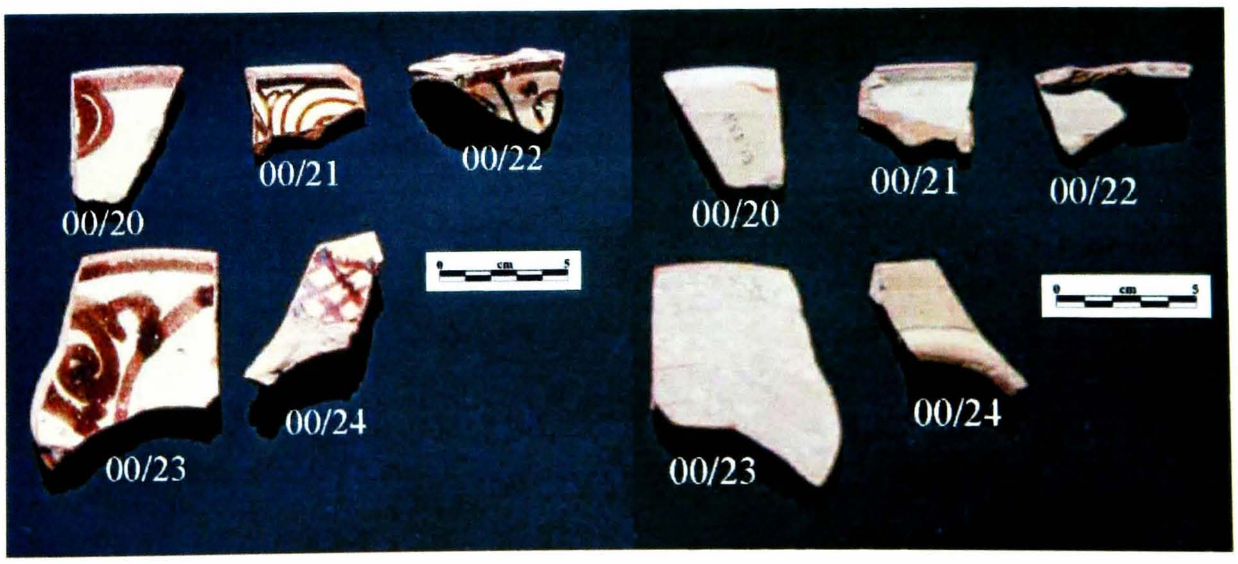
II.13 Slip Painted Light on Dark I. Left: slip decorated surfaces, Right: reverse surfaces.

II.14 Slip Painted Dotted/Spotted. Left: interior surfaces, Right: exterior surfaces.



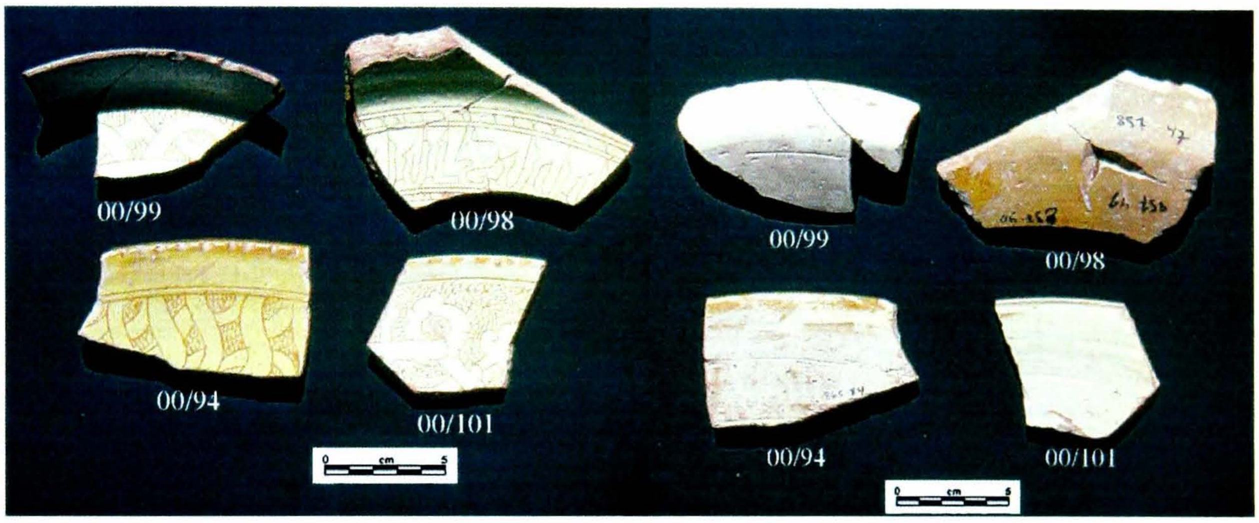
II.15 Spatter Painted Ware. Left: internal surfaces, Right: external surfaces

II.16 Green and Brown Painted III. Left: internal surfaces, Right: external surfaces.



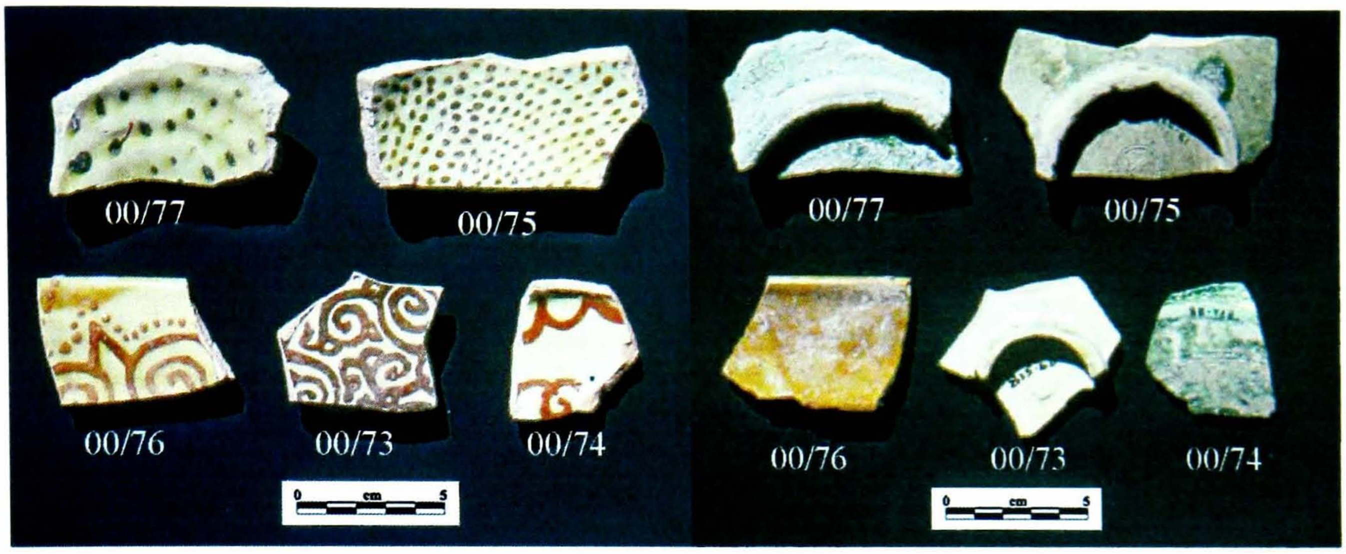
II.17 Green and Brown Spiral. Left: internal surfaces, Right: external surfaces.

II.18 Style II Sgraffito. Left: internal surfaces, Right: external surfaces.



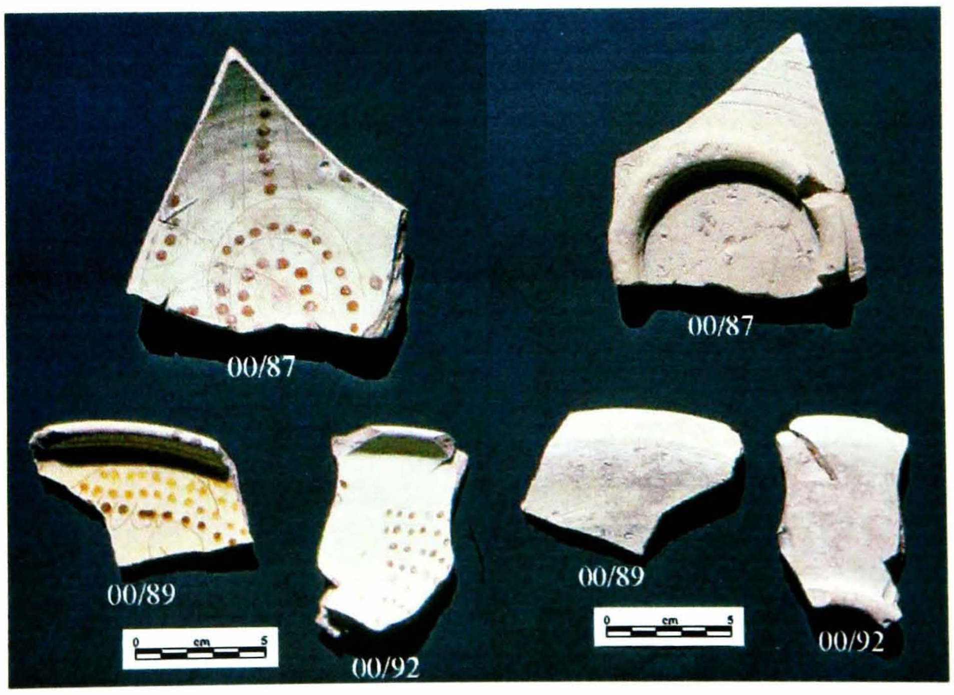
II.19 Style II Sgraffito. Left: internal surfaces, Right: external surfaces.

II.20 Sherds 00/113 and 114 are Style II Sgraffito, Sherd 00/115 is ?Incised Sgraffito. Left: internal surfaces, Right: external surfaces.

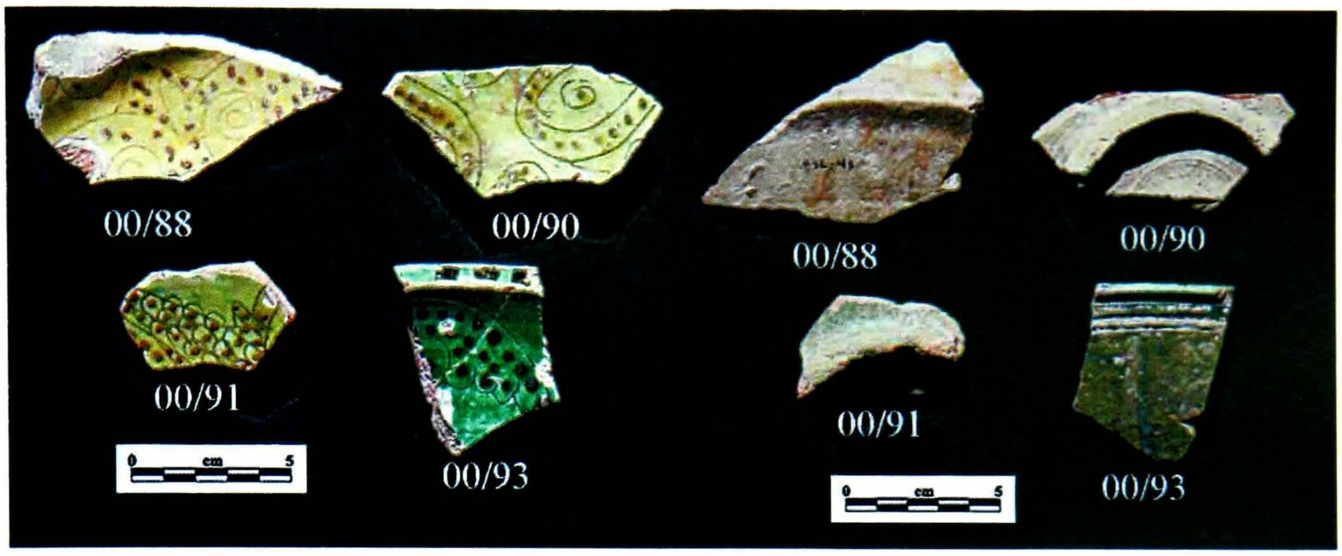


II.21 Slip Painted Dark on Light Ware. Left: internal surfaces, Right: external surfaces.

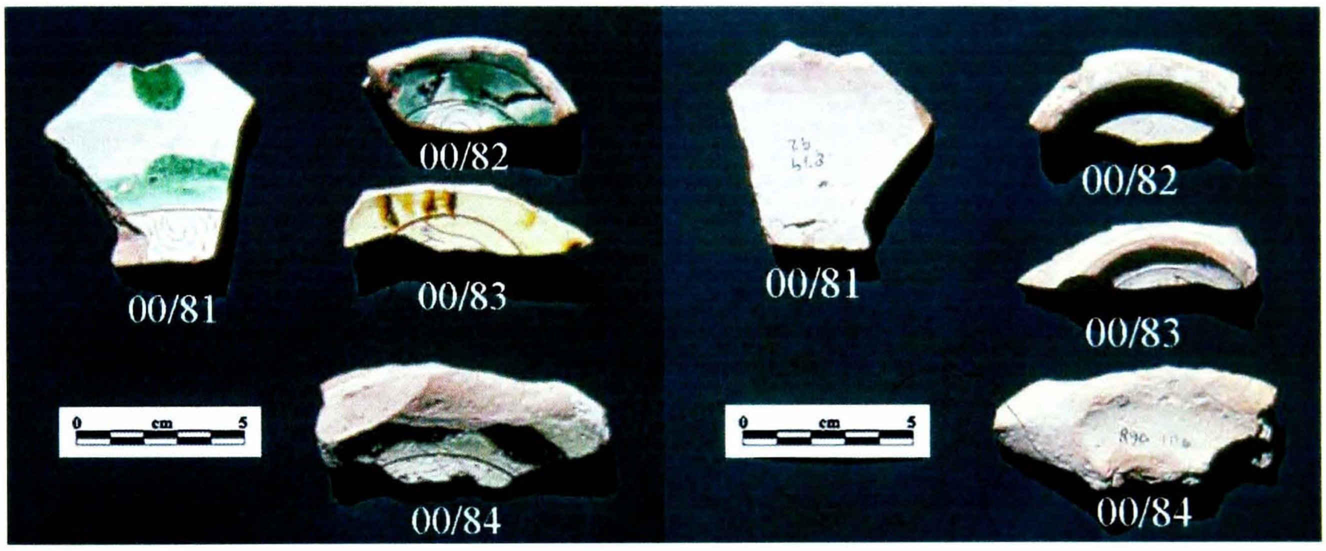
II.22 Unglazed, biscuit fired examples of Slip Painted Dark on Light Ware. Left: internal surfaces, Right: external surfaces.



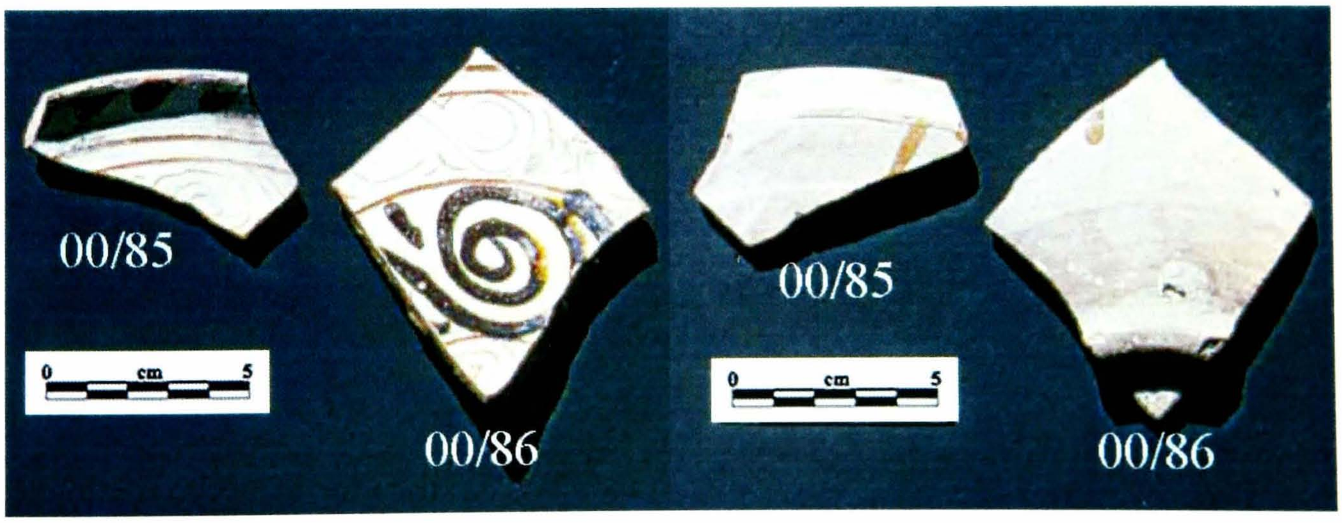
II.23 Sgraffito Measles. Left: internal surfaces, Right: external surfaces.



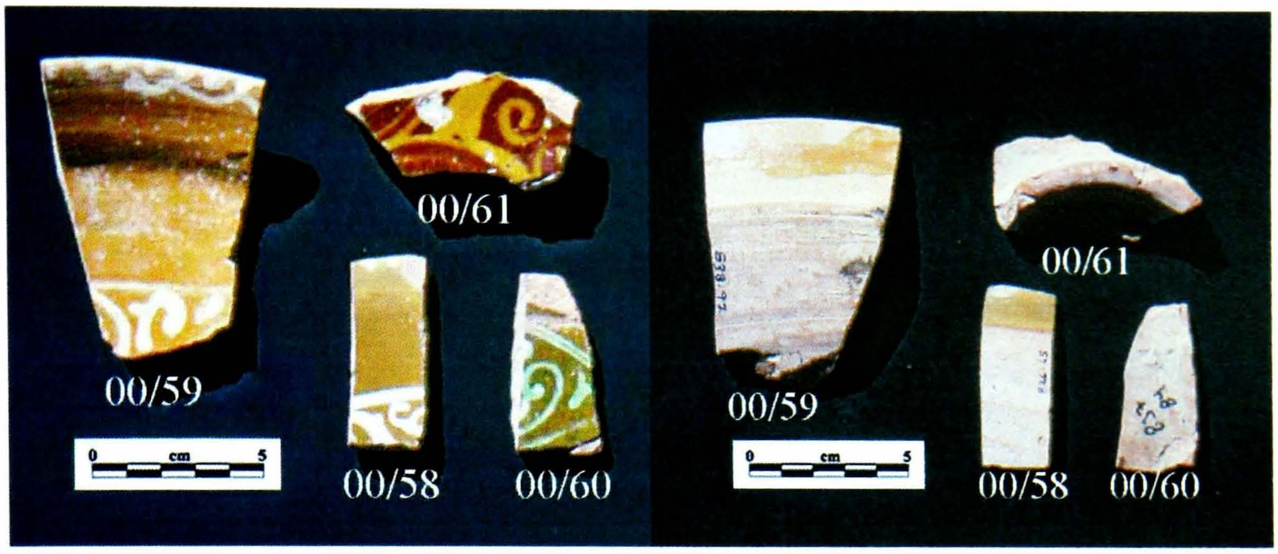
II.24 Sgraffito Measles. Left: internal surfaces, Right: external surfaces.



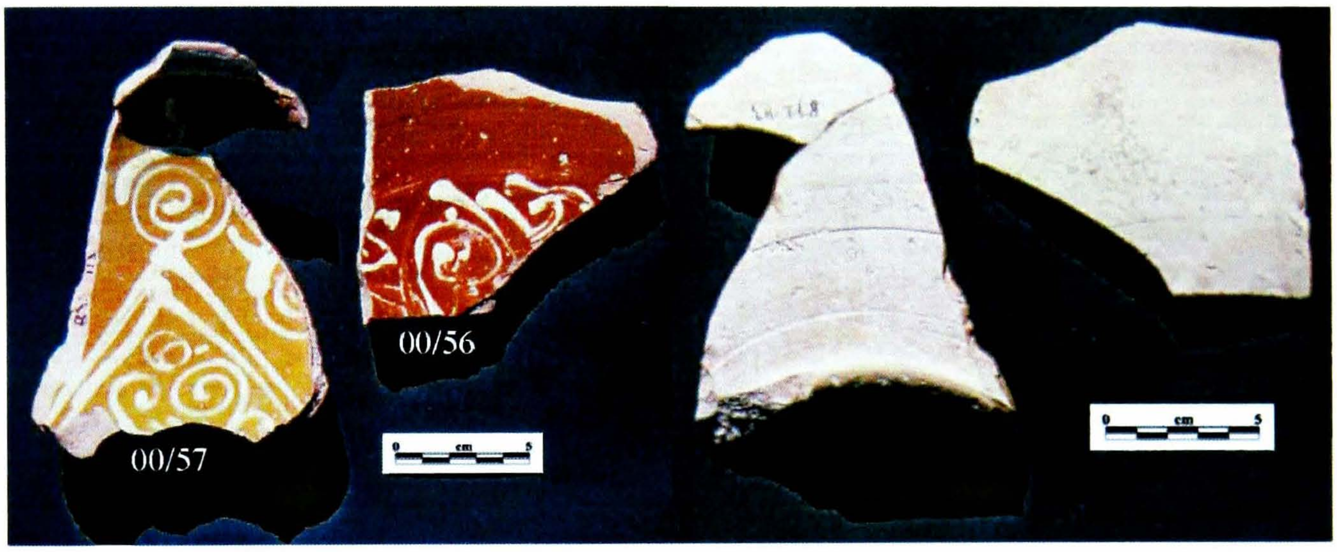
II.25 Painted Sgraffito. Left: internal surfaces, Right: external surfaces.



II.26 Painted Sgraffito. Left: internal surfaces, Right: external surfaces.

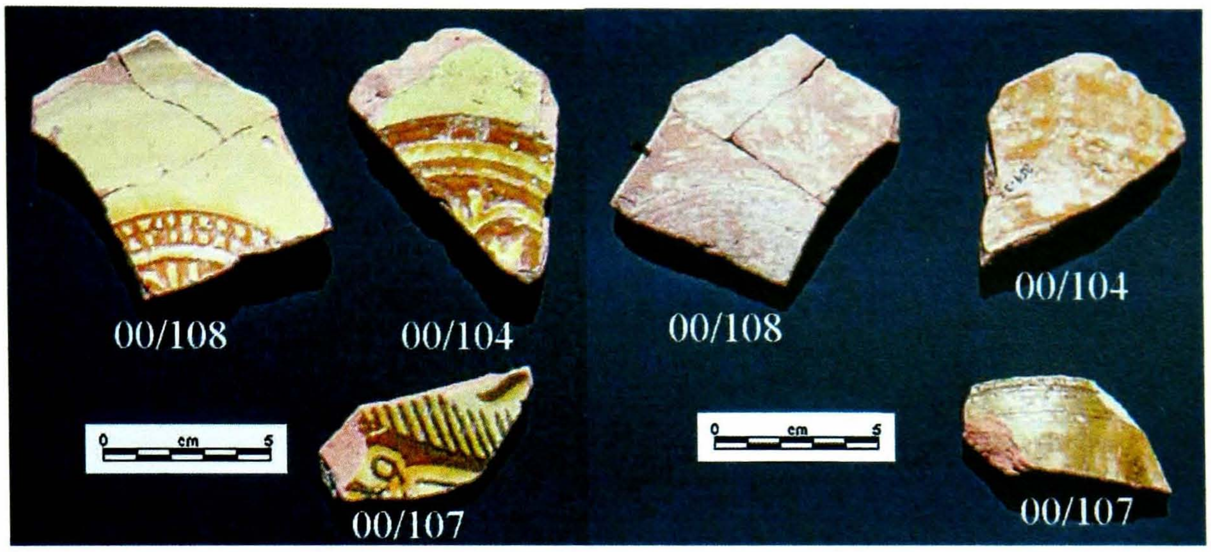


II.27 Slip Painted Light on Dark II. Left: internal surfaces, Right: external surfaces.



II.28 Slip Painted Light on Dark II. Left: internal surfaces, Right: external surfaces.

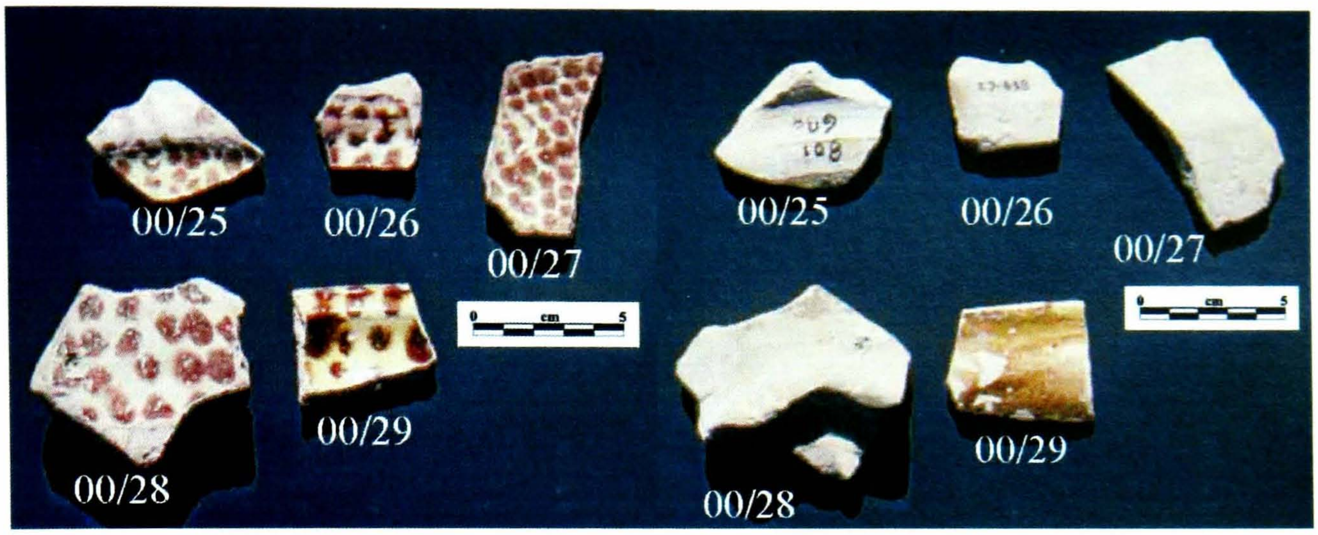
II.29 Champlevé. Left: internal surfaces, Right: external surfaces.



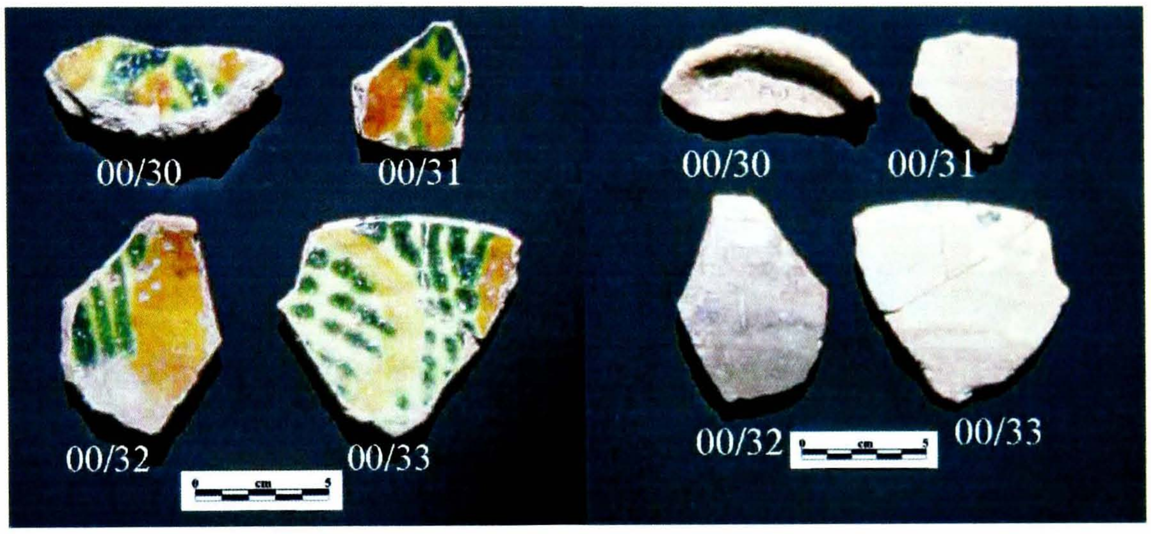
II.30 Champlevé. Left: internal surfaces, Right: external surfaces.

II.31 Freestyle Sgraffito. Left: internal surface, Right: external surface.

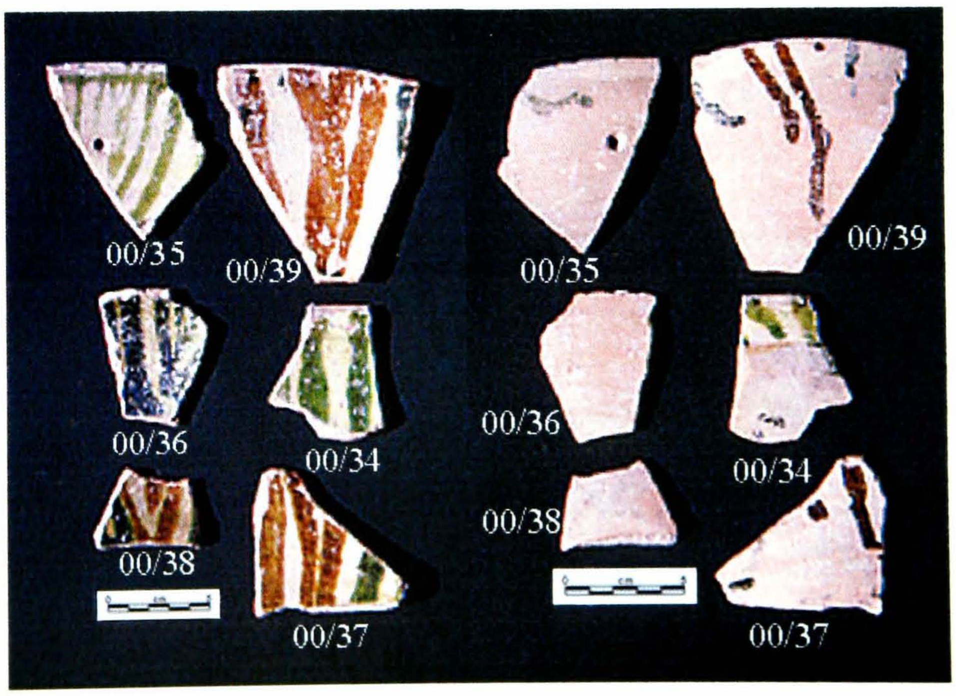
II.32 Painted Incised Sgraffito. Left: internal surfaces, Right: external surfaces.



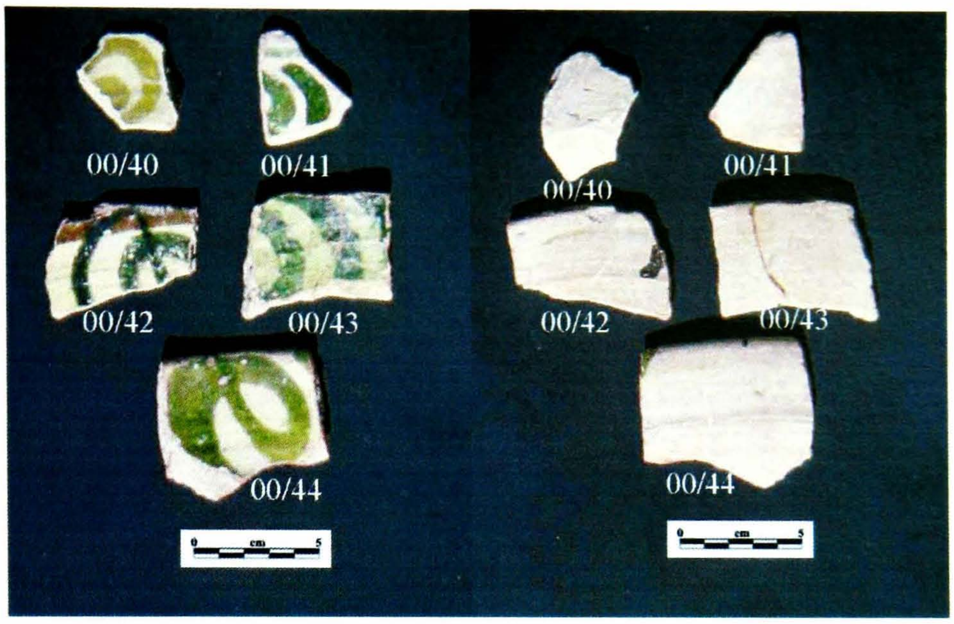
II.33 Green and Brown Painted V(I). Left: internal surfaces, Right: external surfaces.



II.34 Green and Brown Painted V(II). Left: internal surfaces, Right: external surfaces.



II.35 Green and Brown Painted V(III). Left: internal surfaces, Right: external surfaces.



II.36 Green and Brown Painted V(IV). Left: internal surfaces, Right: external surfaces.

II.37 Slip Painted Light on Dark III. Left: internal surfaces, Right: external surfaces.

II.38 Aegean Ware. Left: internal surfaces, Right: external surfaces.

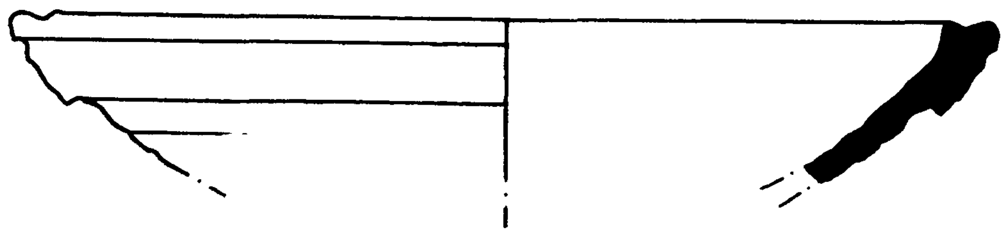
II.39 Zeuxippus Ware. Left: internal surfaces, Right: external surfaces.

II.40 Zeuxippus Ware. Left: internal surfaces, Right: external surfaces.

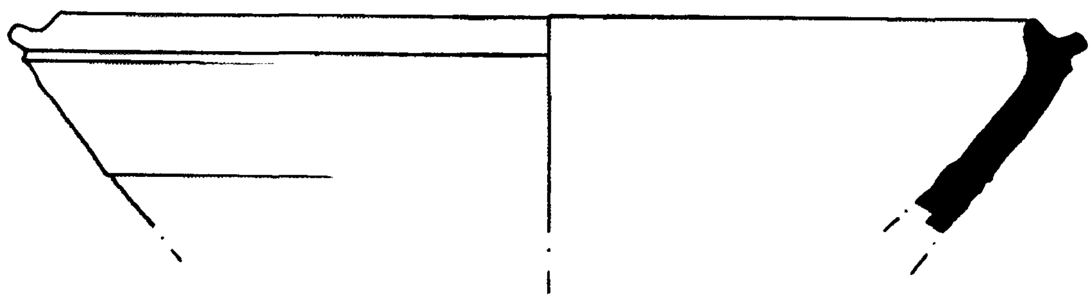
II.41 Zeuxippus Ware. Left: internal surfaces, Right: external surfaces.

II.42 Green and Brown Painted V(V). Left: internal surfaces, Right: external surfaces.

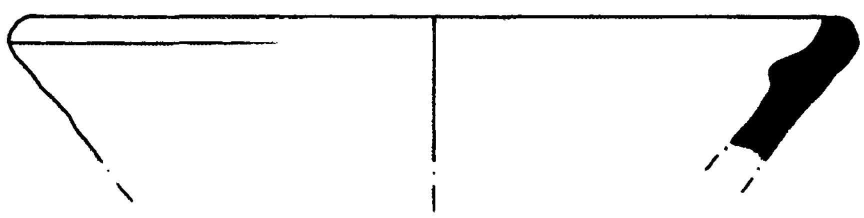
APPENDIX III
PROFILES OF DIAGNOSTIC SHERDS



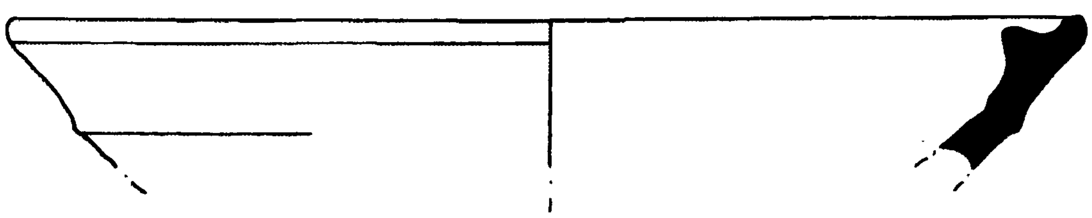
III.1 Plain Brown Glazed Ware, sherd 00/122
(Scale 1:2)



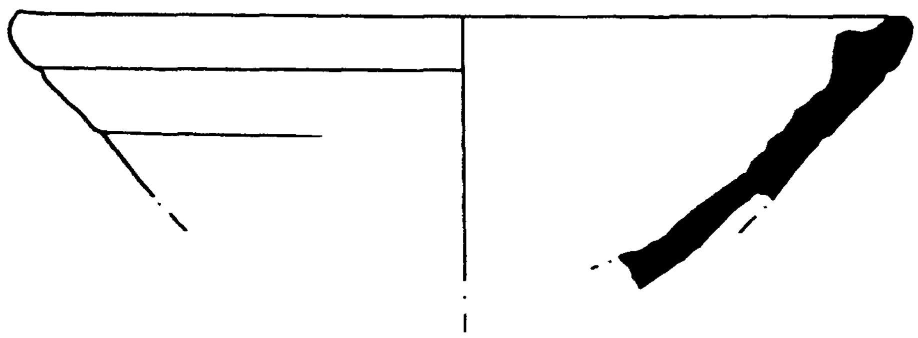
III.2 Plain Brown Glazed Ware, sherd 00/123
(Scale 1:2)



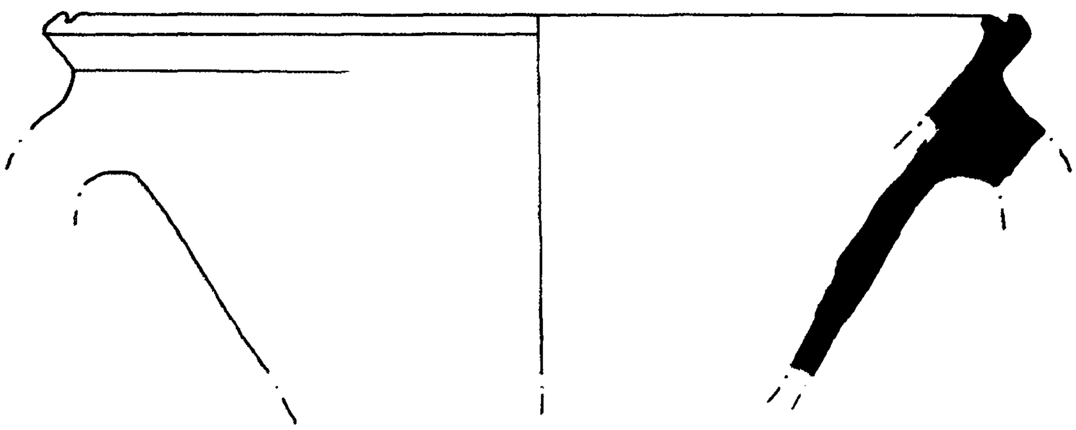
III.3 Plain Brown Glazed Ware, sherd 00/124
(Scale 1:2)



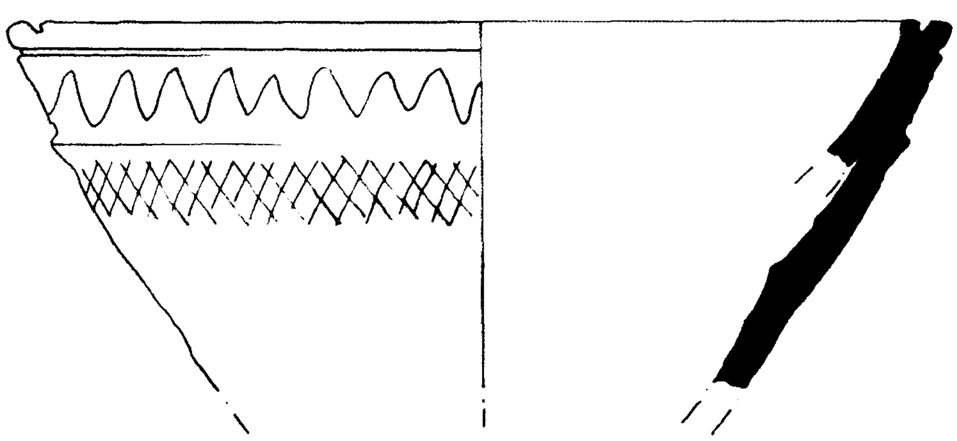
III.4 Plain Brown Glazed Ware, sherd 00/125
(Scale 1:2)



III.5 Plain Brown Glazed Ware, sherd 00/126
(Scale 1:2)

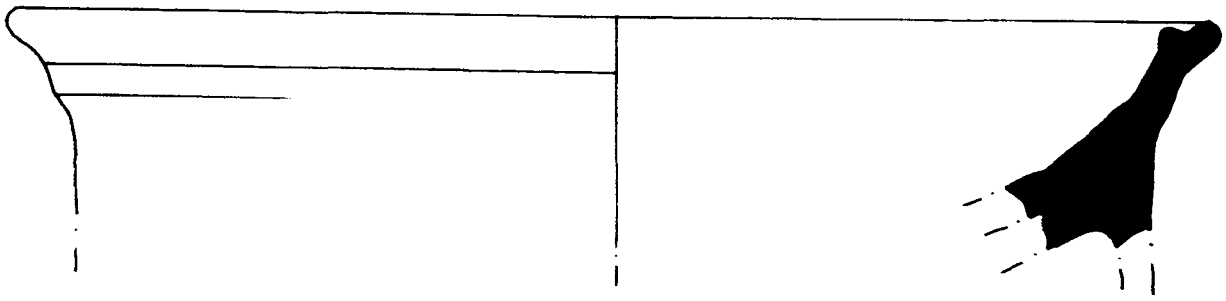


III.6 Plain Brown Glazed Ware, sherd 00/127
(Scale 1:2)

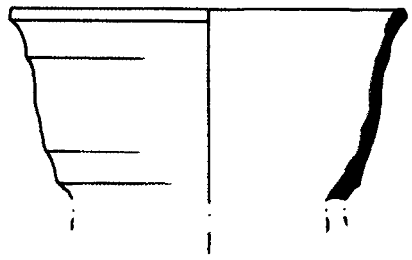


III.7 Plain Brown Glazed Ware, sherd 00/128
(Scale 1:2)

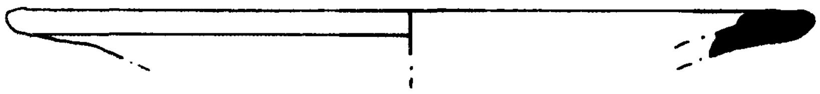
III.8 Plain Brown Glazed Ware, sherd 00/129
(Scale 1:2)



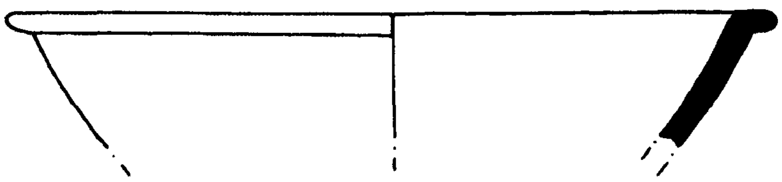
III.9 Plain Brown Glazed Ware, sherd 00/130
(Scale 1:2)



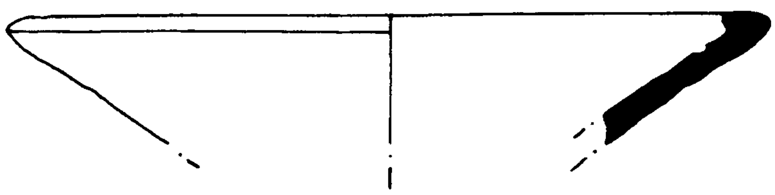
III.10 Polychrome White Ware,
sherd 00/139 (Scale: 1:2)



III.11 Polychrome White Ware,
sherd 00/143 (Scale: 1:2)



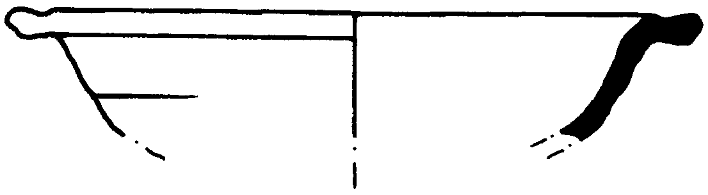
III.12 Polychrome White Ware,
sherd 00/145 (Scale: 1:2)



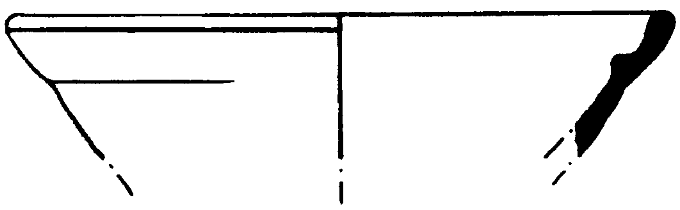
III.13 Slip Painted White Ware,
sherd 00/147 (Scale: 1:2)

III.14 Slip Painted White Ware,
sherd 00/150 (Scale: 1:2)

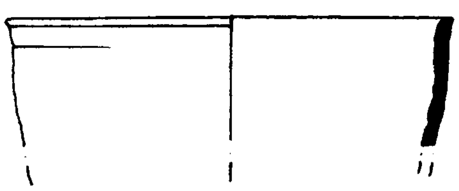
III.15 Plain Green Glazed White Ware,
sherd 00/153 (Scale: 1:2)



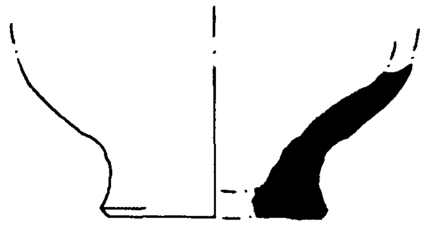
III.16 Plain Green Glazed White Ware,
sherd 00/154 (Scale: 1:2)



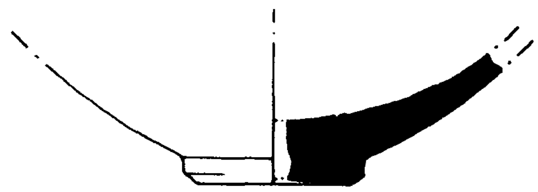
III.17 Plain Green Glazed White Ware,
sherd 00/156 (Scale: 1:2)



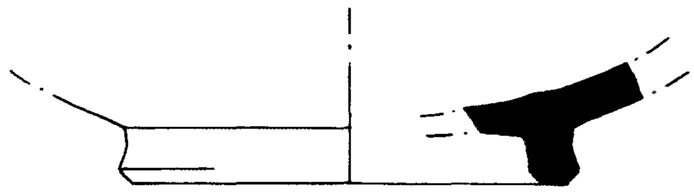
III.18Plain Brown Glazed White Ware,
sherd 00/160 (Scale: 1:2)



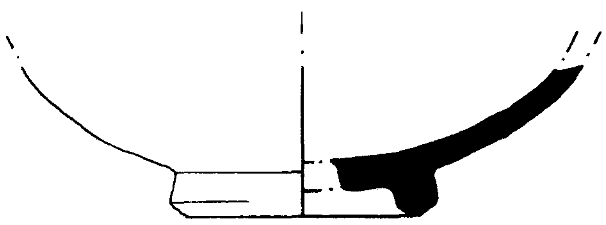
III.19 Green and Brown Painted I, sherd 00/01 (Scale: 1:2)



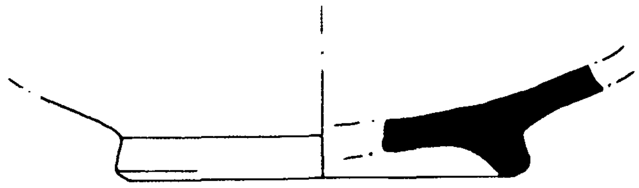
III.20 Green and Brown Painted I, sherd 00/02 (Scale: 1:2)



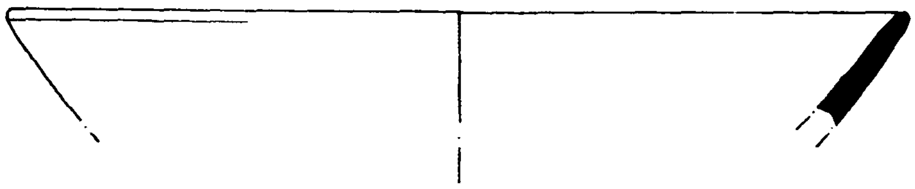
III.21Green and Brown Painted II, sherd 00/08 (Scale: 1:2)



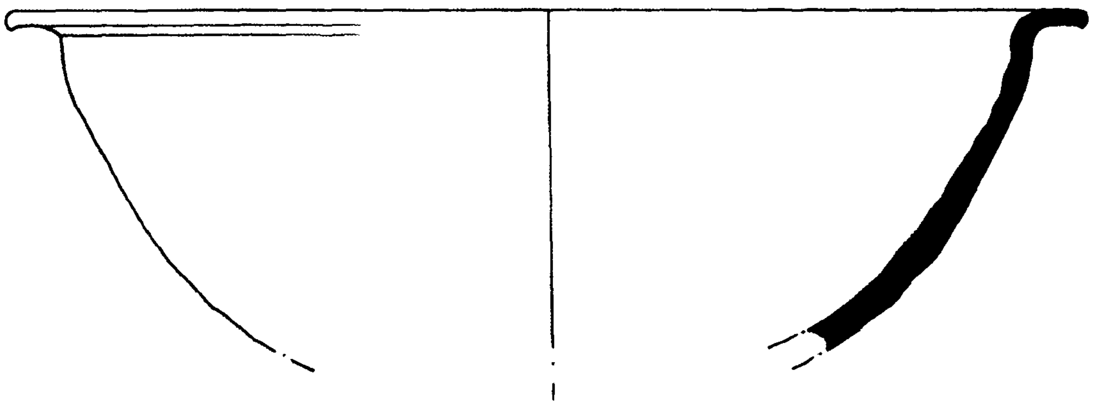
III.22Green and Brown Painted II, sherd 00/09 (Scale: 1:2)



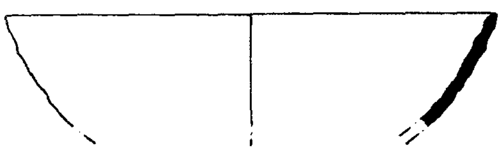
III.23Green and Brown Painted II, sherd 00/11 (Scale: 1:2)



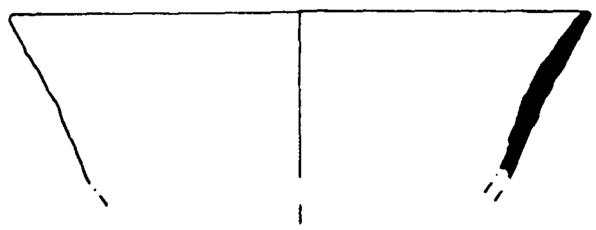
III.24 Slip Painted Light on Dark I,
sherd 00/52 (Scale: 1:2)



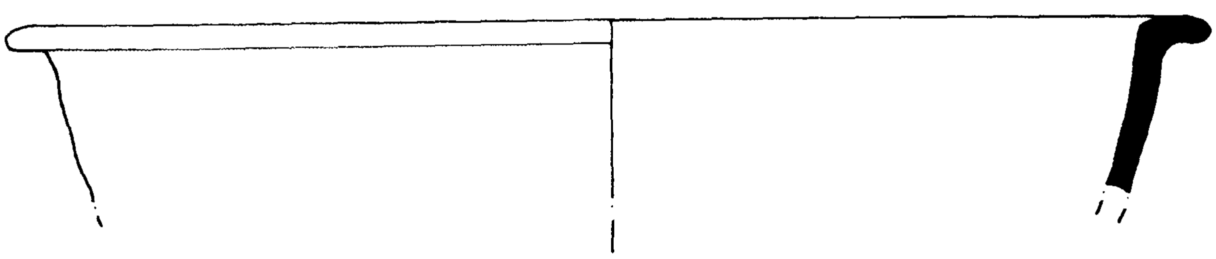
III.25 Slip Painted Light on Dark I,
sherd 00/55 (Scale: 1:2)



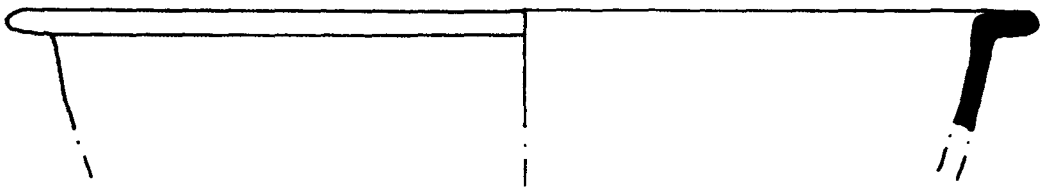
III.26 Slip Painted Light on Dark Dotted, sherd 00/62 (Scale: 1:2)



III.27 Slip Painted Light on Dark Dotted, sherd 00/65 (Scale: 1:2)

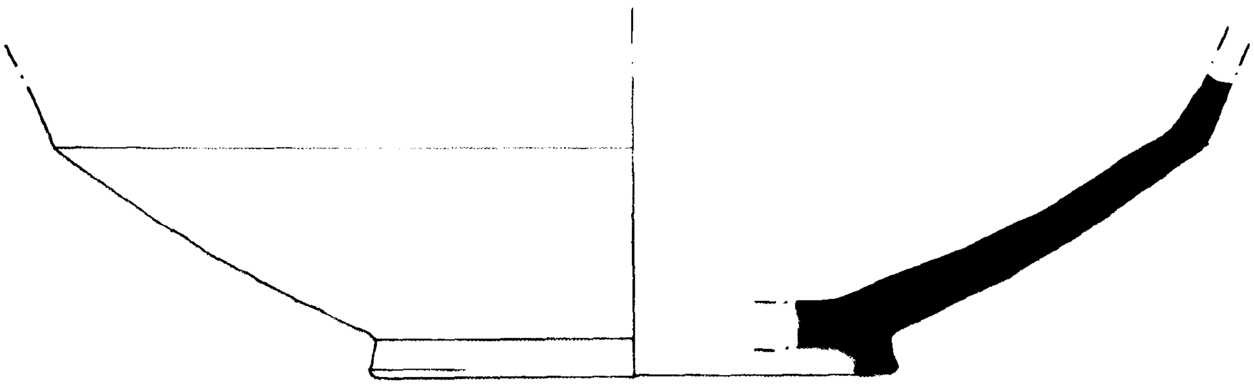


III.28 Slip Painted Light on Dark Spotted,
sherd 00/64 (Scale: 1:2)

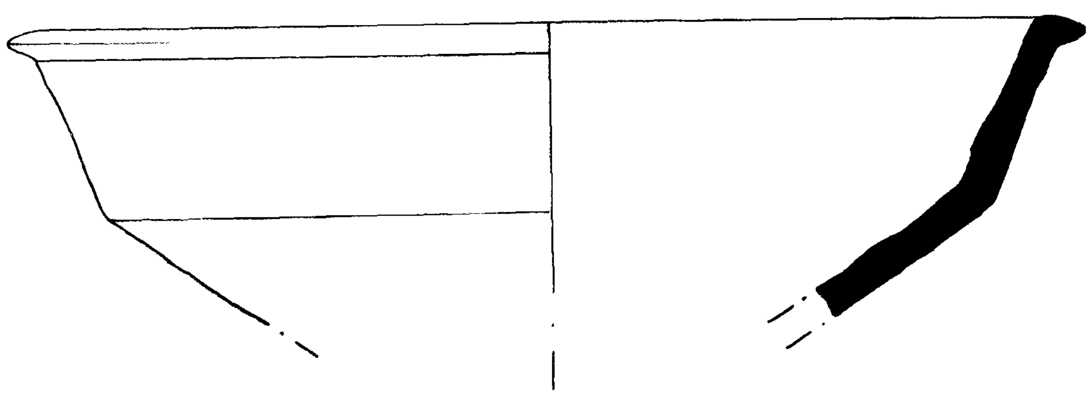


III.29 Spatter Painted Ware,
sherd 00/117 (Scale: 1:2)

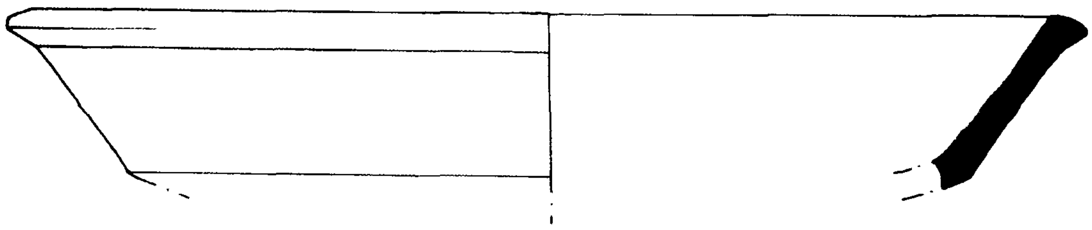
III.30 Spatter Painted Ware,
sherd 00/118 (Scale: 1:2)



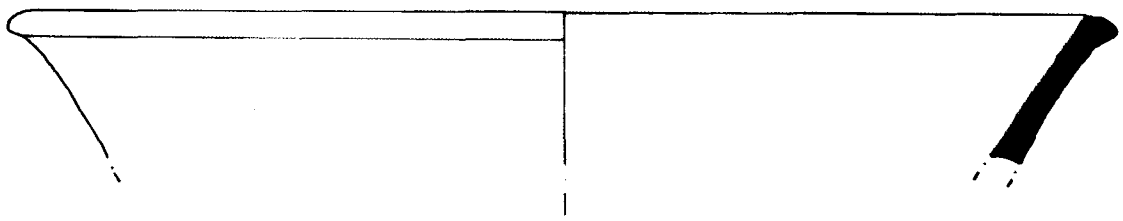
III.31 Green and Brown Painted III, sherd 00/13
(Scale: 1:2)



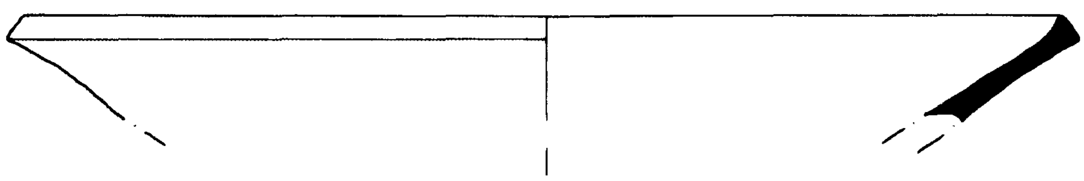
III.32a Green and Brown Painted III, sherd 00/14
(Scale: 1:2)



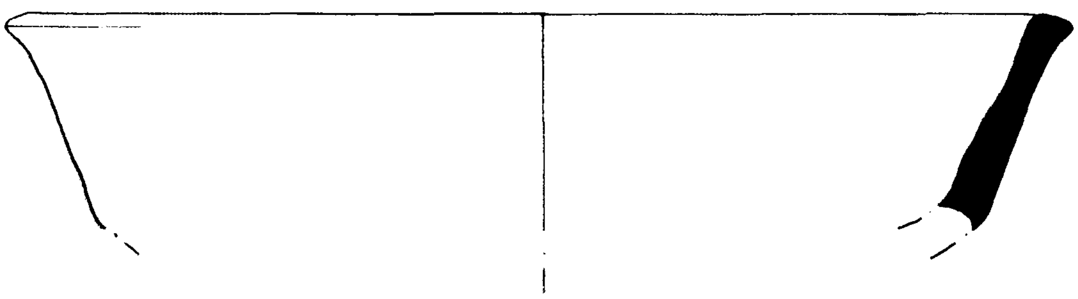
III.32b Green and Brown Painted III, sherd 00/15
(Scale: 1:2)



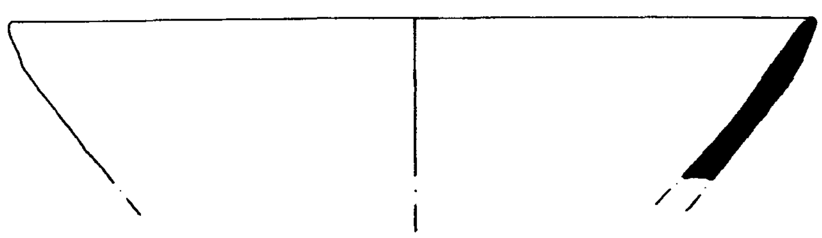
III.33 Green and Brown Painted III, sherd 00/17
(Scale: 1:2)



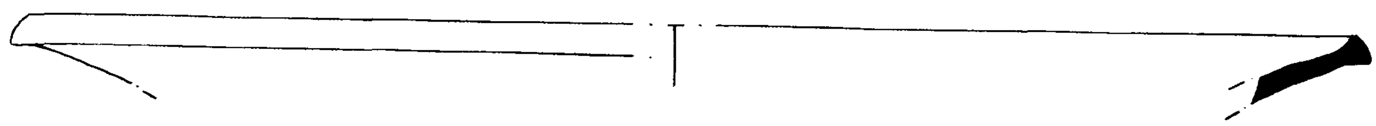
III.34 Green and Brown Painted III, sherd 00/18
(Scale: 1:2)



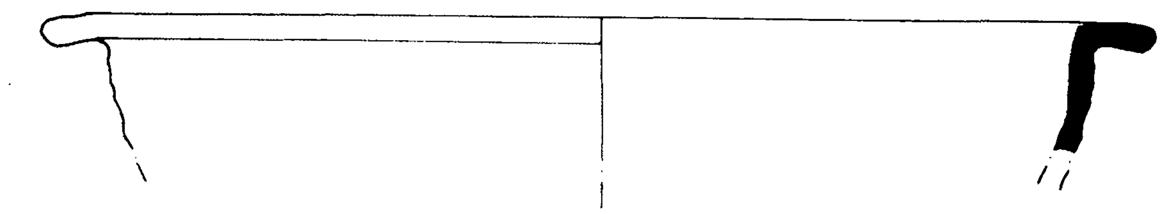
III.35 Green and Brown Painted III, sherd 00/19
(Scale: 1:2)



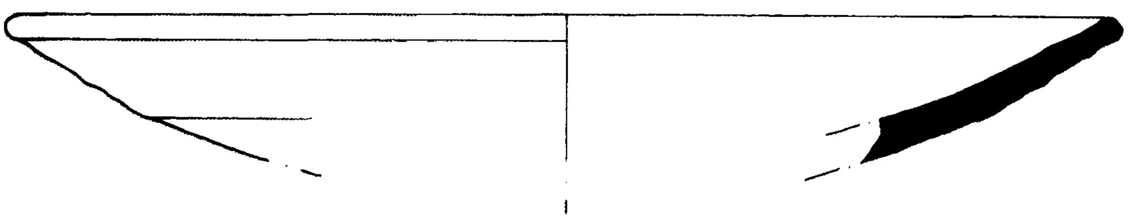
III.36 Green and Brown Painted Spiral, sherd 00/20
(Scale: 1:2)



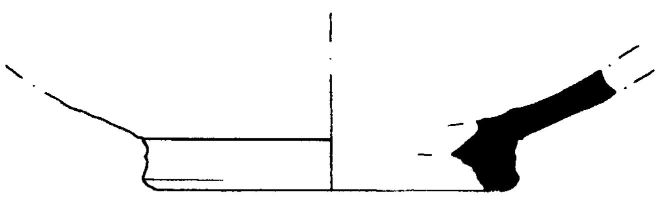
III.37 Green and Brown Painted Spiral, sherd 00/21,
rim diameter: 320mm (Scale: 1:2)



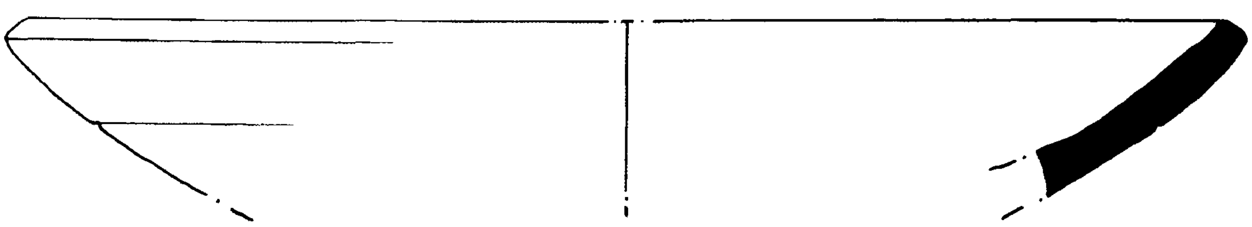
III.38 Green and Brown Painted Spiral, sherd 00/22,
(Scale: 1:2)



III.39 Green and Brown Painted Spiral, sherd 00/23,
(Scale: 1:2)

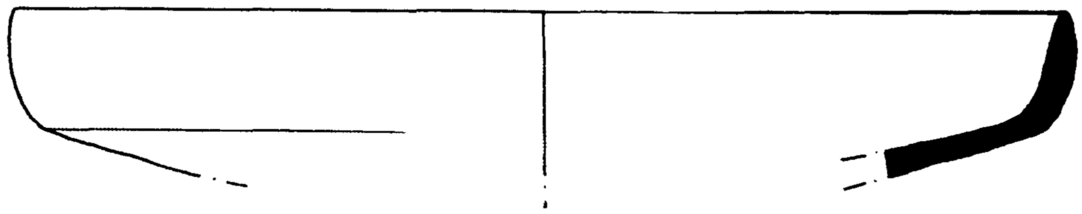


III.40 Green and Brown Painted Spiral,
sherd 00/24, (Scale: 1:2)

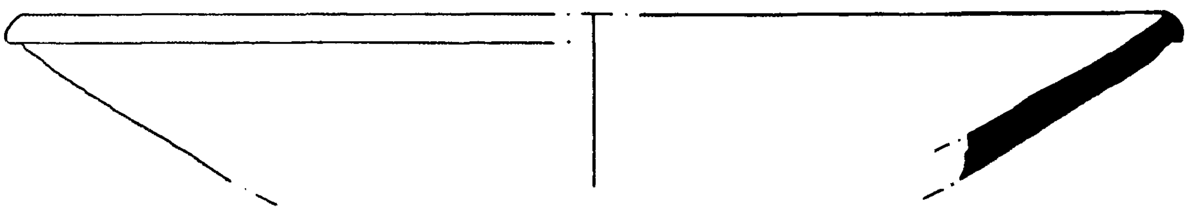


III.41 Style II Sgraffito, sherd 00/94,
Rim diameter: 420mm (Scale: 1:2)

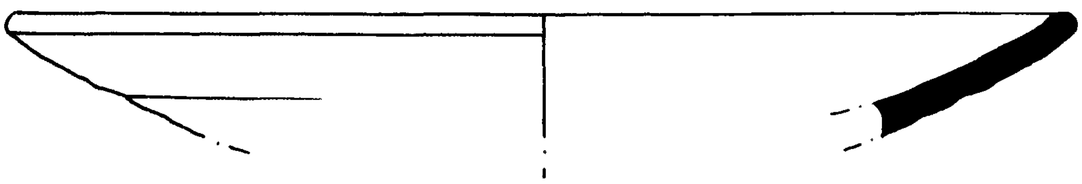
III.42 Style II Sgraffito, sherd 00/97,
(Scale: 1:2)



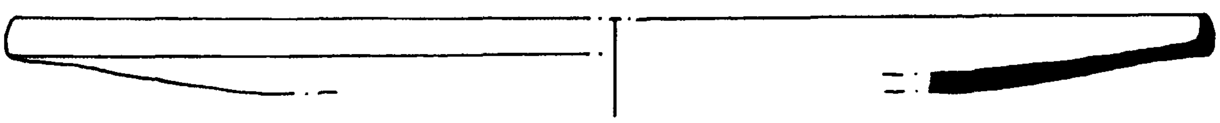
III.43 Style II Sgraffito, sherd 00/99,
(Scale: 1:2)



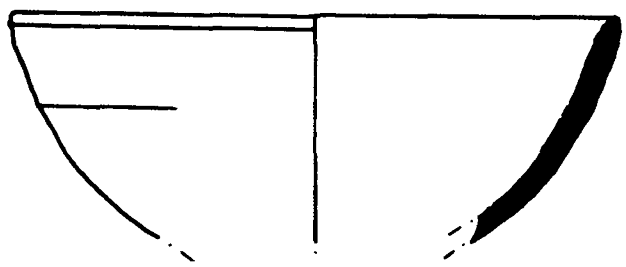
III.44 Style II Sgraffito, sherd 00/101,
rim diameter: 410mm (Scale: 1:2)



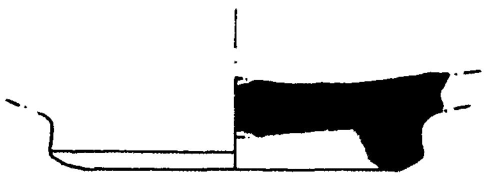
III.45 Style II Sgraffito, sherd 00/113,
(Scale: 1:2)



III.46 Style II Sgraffito, sherd 00/115,
(Scale: 1:2)

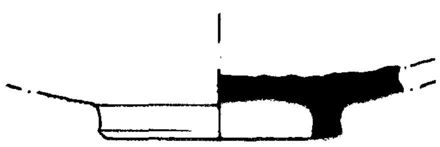


III.47 Style II Sgraffito, sherd 00/114
(Scale: 1:2)

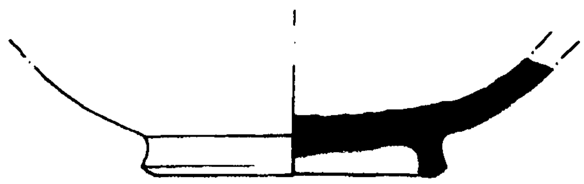


III.48 Style II Sgraffito,
sherd 00/95 (Scale: 1:2)

III.49 Style II Sgraffito,
sherd 00/96, (Scale: 1:2)

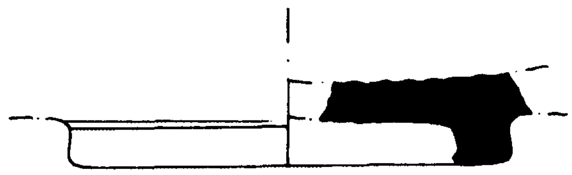


III.50 Slip Painted Dark on Light, sherd
00/73, (Scale: 1:2)

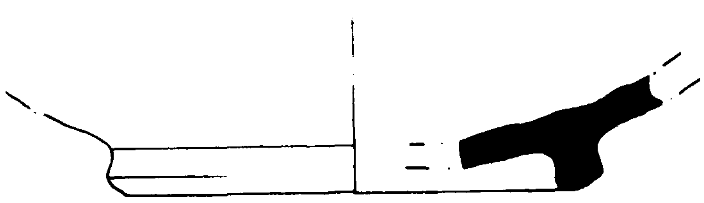


III.51 Slip Painted Dark on Light, sherd
00/75, (Scale: 1:2)

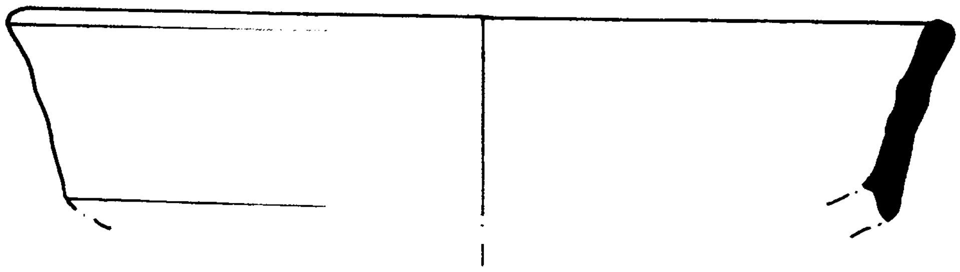
III.52 Slip Painted Dark on Light, sherd
00/80, (Scale: 1:2)



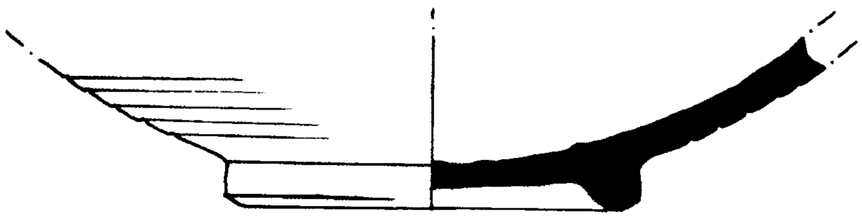
III.53 Slip Painted Dark on Light, sherd
00/78, (Scale: 1:2)



III.54 Slip Painted Dark on Light,
sherd 00/77, (Scale: 1:2)

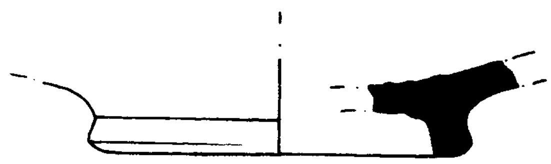


III.55 Slip Painted Dark on Light, sherd 00/76, (Scale: 1:2)

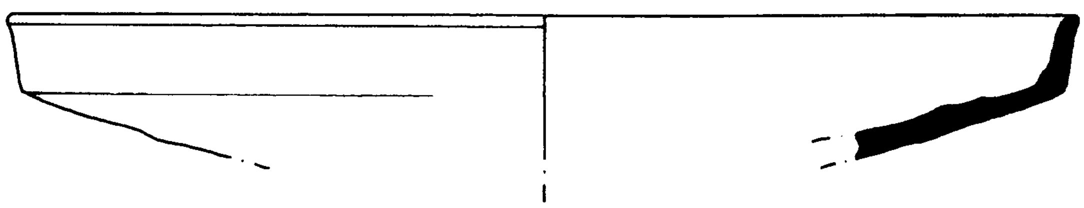


III.56 Sgraffito Measles, sherd 00/87, (Scale: 1:2)

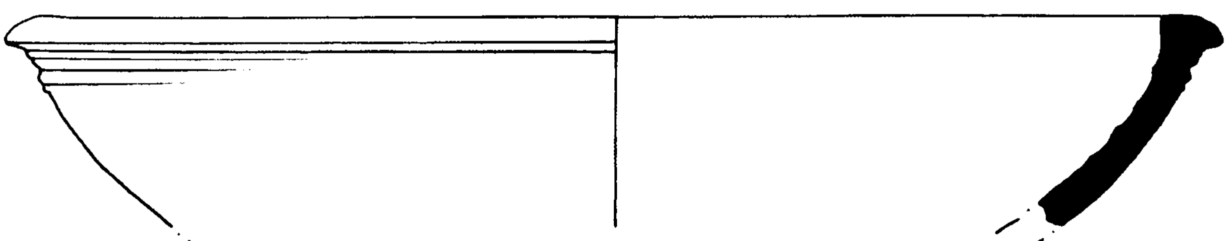
III.57 Sgraffito Measles, sherd 00/90, (Scale: 1:2)



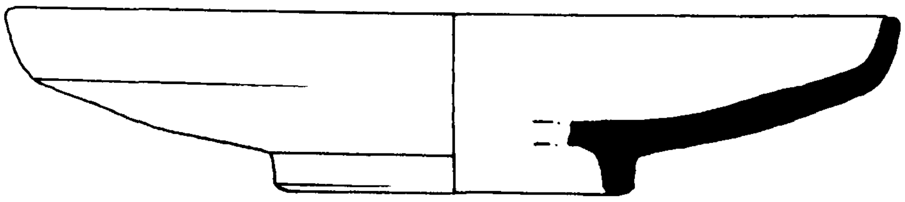
III.58 Sgraffito Measles, sherd 00/91, (Scale: 1:2)



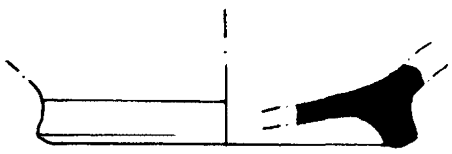
III.59 Sgraffito Measles, sherd 00/89, (Scale: 1:2)



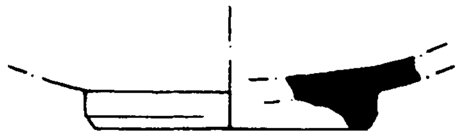
III.60 Sgraffito Measles, sherd 00/93, (Scale: 1:2)



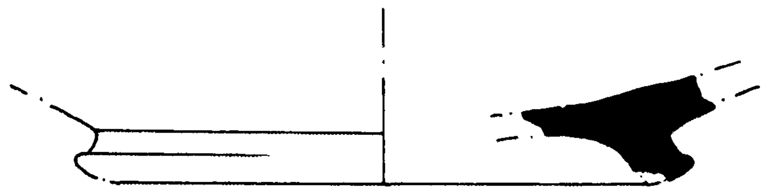
III.61 Sgraffito Measles, sherd 00/92,
(Scale: 1:2)



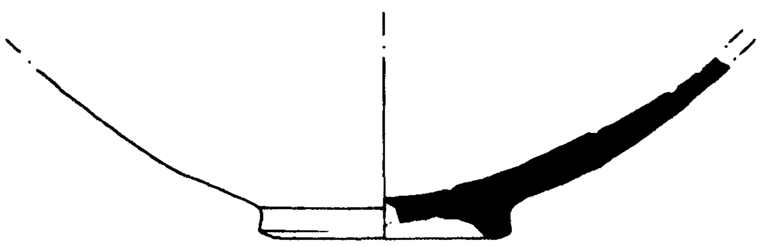
III.62 Painted Sgraffito,
sherd 00/82, (Scale: 1:2)



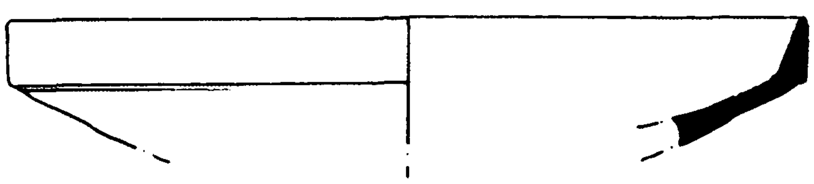
III.63 Painted Sgraffito,
sherd 00/83, (Scale: 1:2)



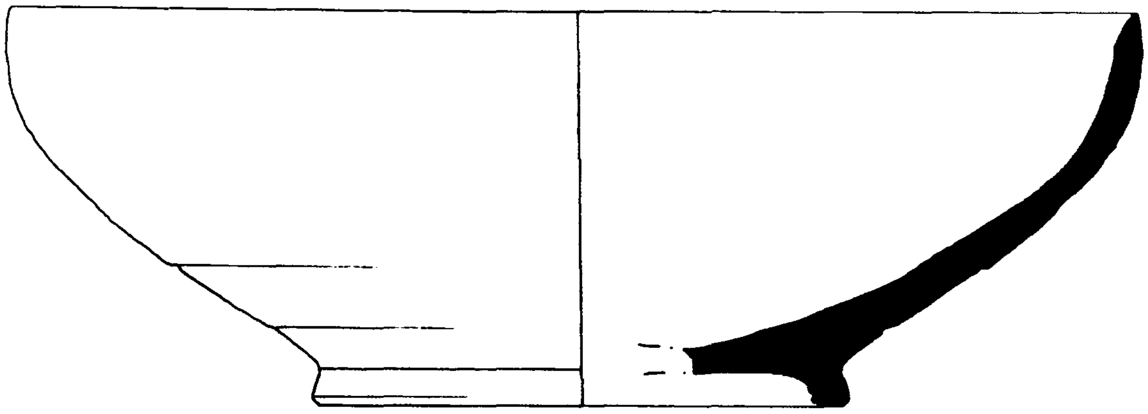
III.64 Painted Sgraffito, sherd 00/84,
(Scale: 1:2)



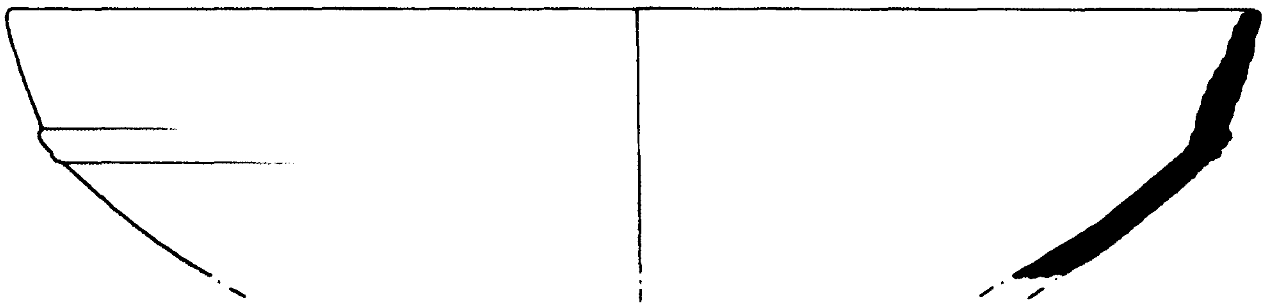
III.65 Painted Sgraffito, sherd 00/86,
(Scale: 1:2)



III.66 Painted Sgraffito, sherd 00/85,
(Scale: 1:2)

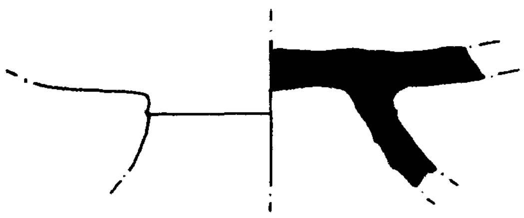


III.67 Slip Painted Light on Dark II, sherd 00/57,
(Scale: 1:2)

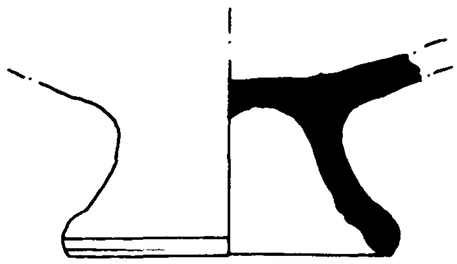


III.68 Slip Painted Light on Dark II, sherd 00/59,
(Scale: 1:2)

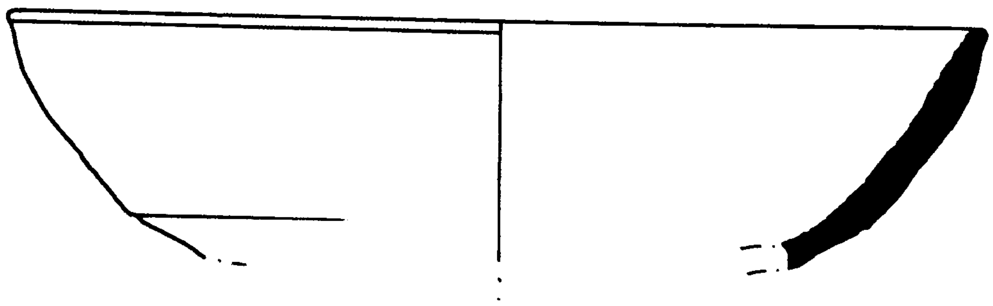
III.69 Slip Painted Light on Dark II, sherd 00/61,
(Scale: 1:2)



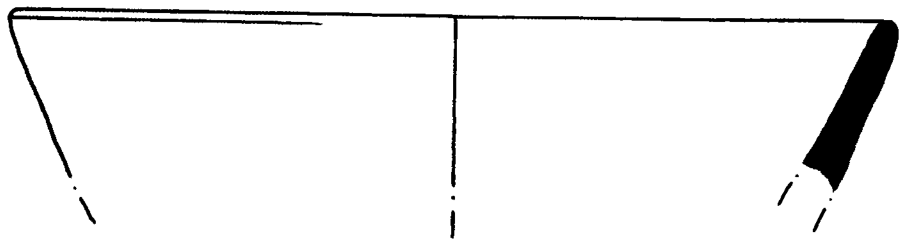
III.70 Champlevé, sherd 00/105,
(Scale: 1:2)



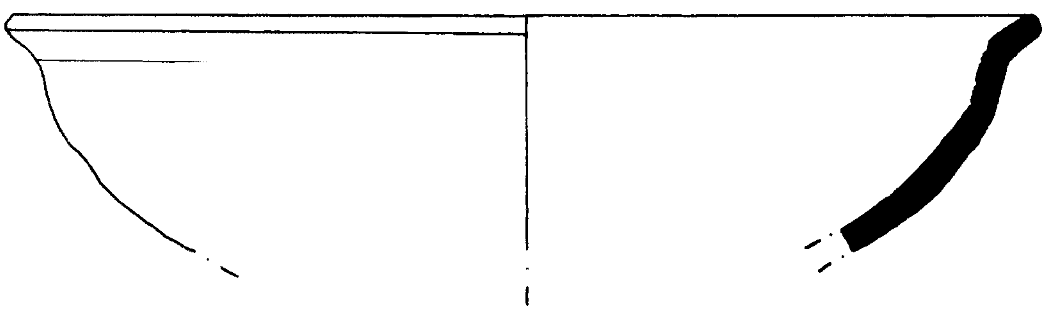
III.71 Champlevé, sherd 00/106,
(Scale: 1:2)



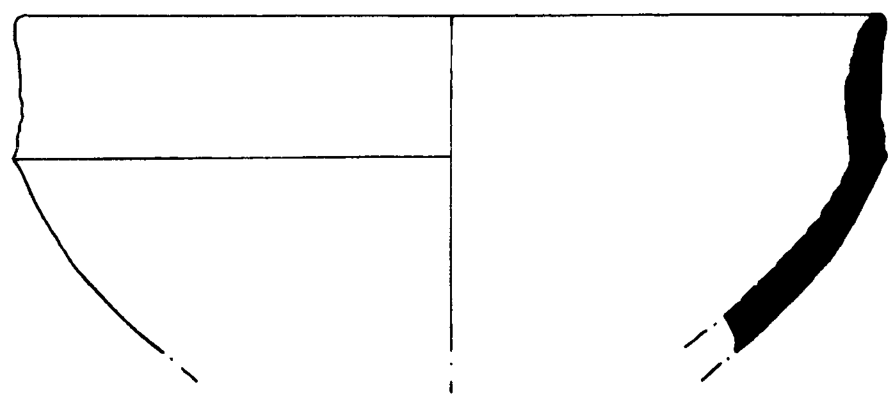
III.72 Painted Incised Sgraffito, sherd 00/109,
(Scale: 1:2)



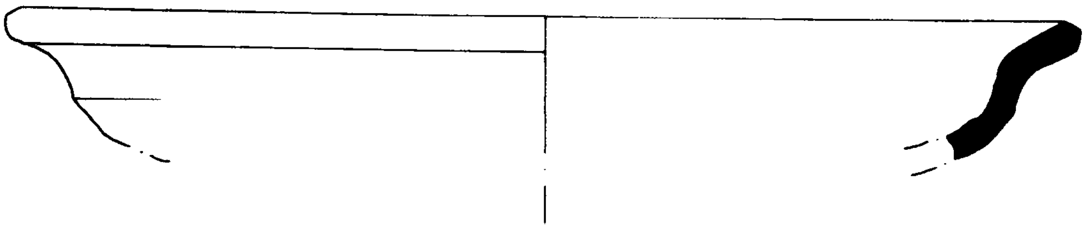
III.73 Painted Incised Sgraffito, sherd 00/110,
(Scale: 1:2)



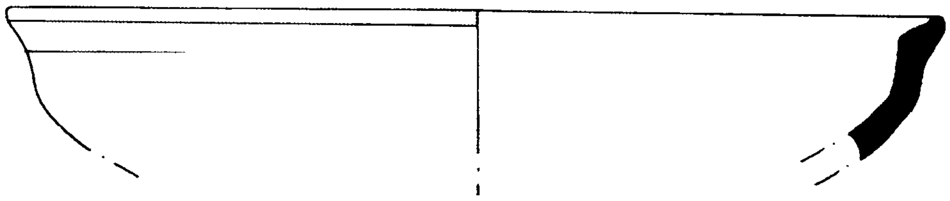
III.74 Painted Incised Sgraffito, sherd 00/111,
(Scale: 1:2)



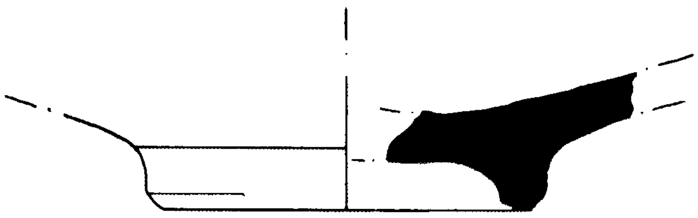
III.75 Painted Incised Sgraffito, sherd 00/112,
(Scale: 1:2)



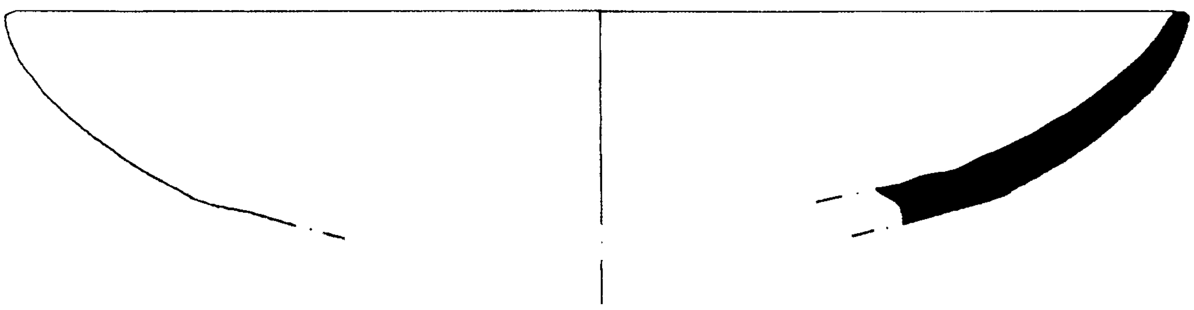
III.76 Green and Brown Painted V(I), sherd 00/25,
(Scale: 1:2)



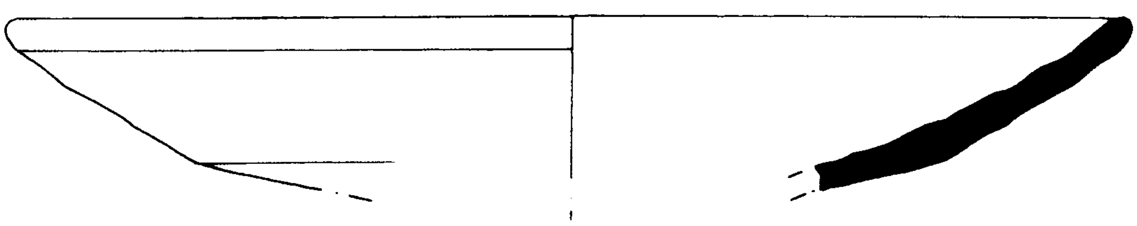
III.77 Green and Brown Painted V(I), sherd 00/29,
(Scale: 1:2)



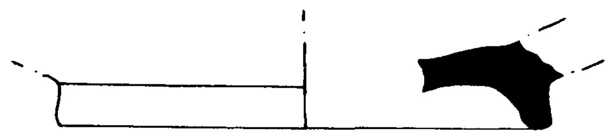
III.78 Green and Brown Painted V(I), sherd 00/28,
(Scale: 1:2)



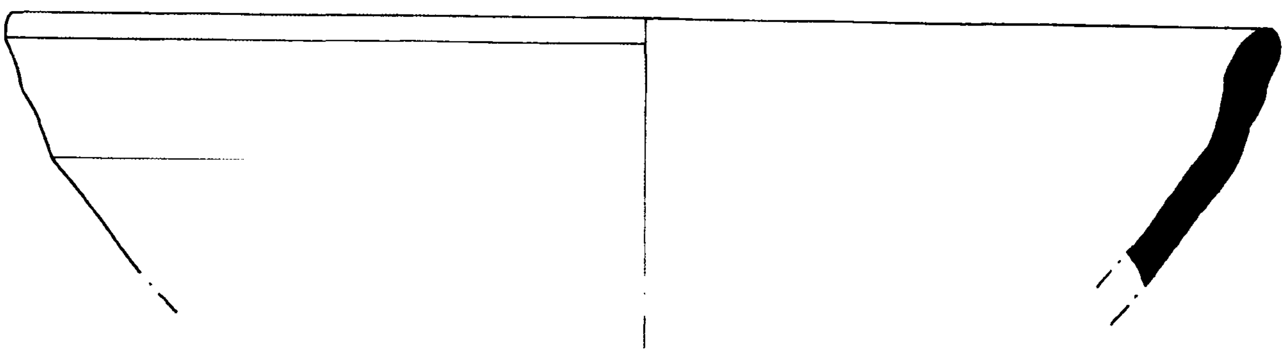
III.79 Green and Brown Painted V(II), sherd 00/32,
(Scale: 1:2)



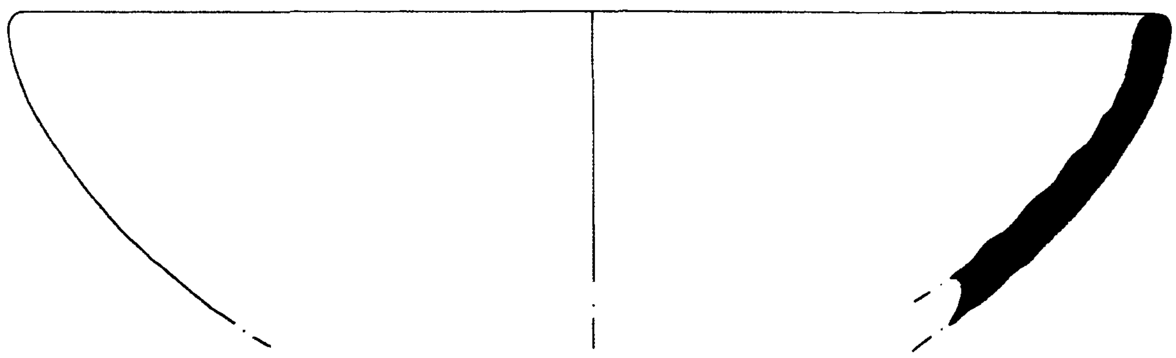
III.80 Green and Brown Painted V(II), sherd 00/33,
(Scale: 1:2)



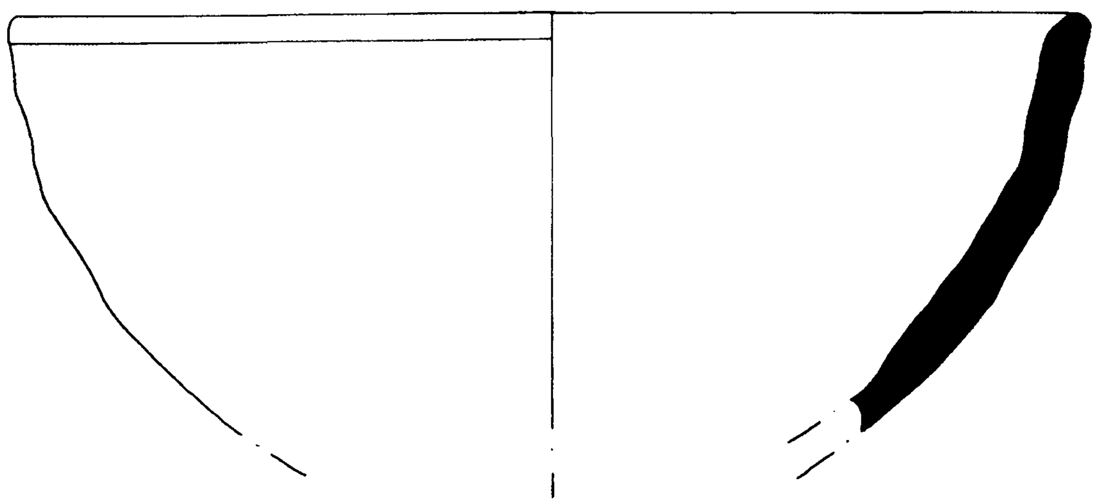
III.81 Green and Brown Painted V(II), sherd 00/30,
(Scale: 1:2)



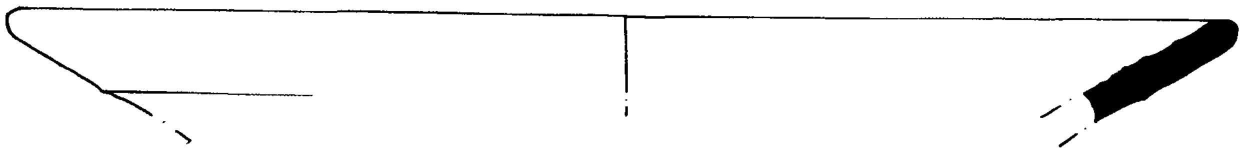
III.82 Green and Brown Painted V(III), sherd 00/34,
(Scale: 1:2)



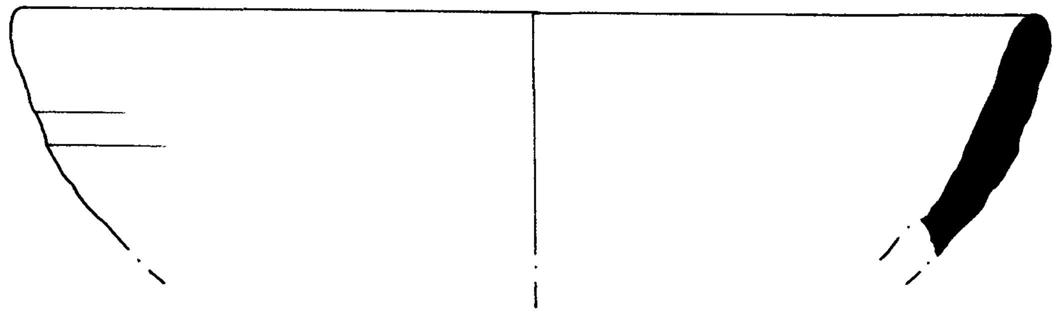
III.83 Green and Brown Painted V(III), sherd 00/35,
(Scale: 1:2)



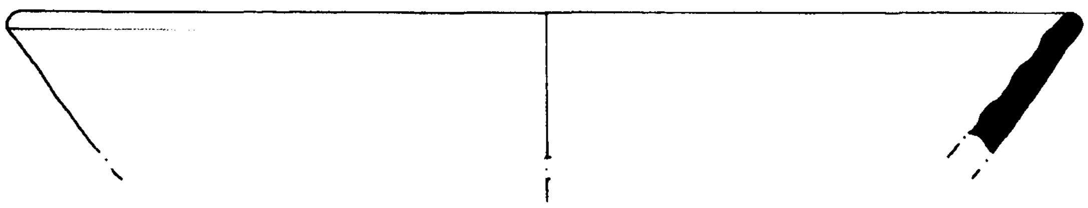
III.84 Green and Brown Painted V(III), sherd 00/39,
(Scale: 1:2)



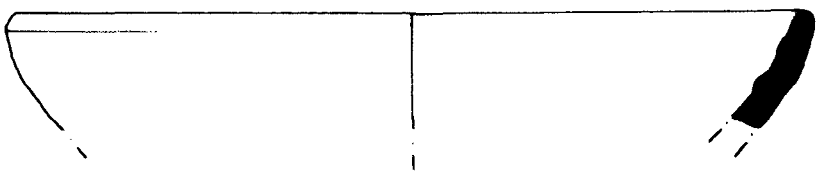
III.85 Green and Brown Painted V(IV), sherd 00/42,
(Scale: 1:2)



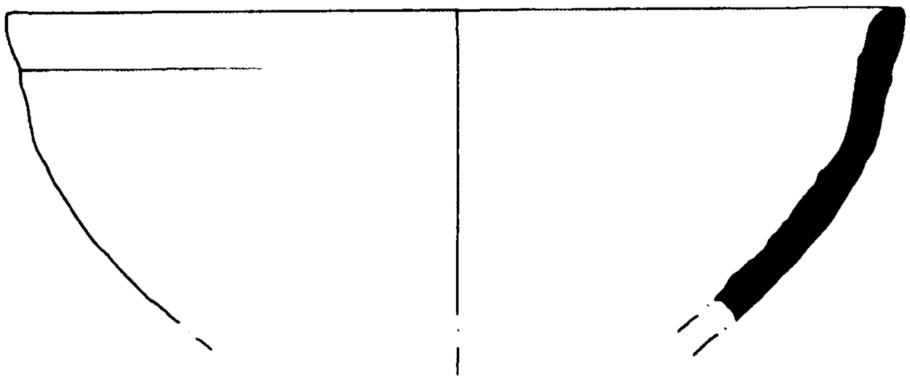
III.86 Green and Brown Painted V(IV), sherd 00/49,
(Scale: 1:2)



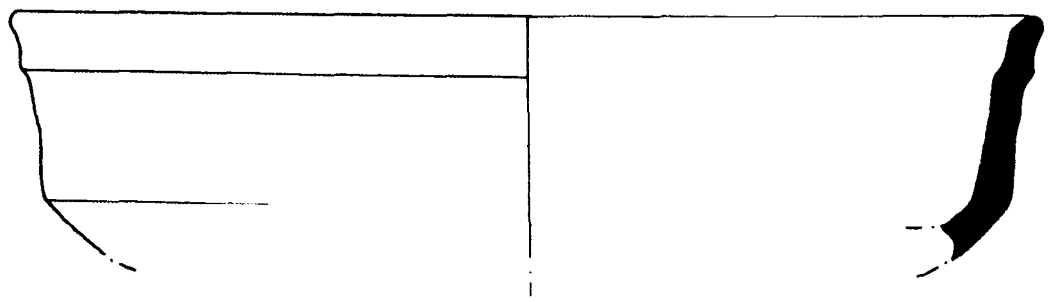
III.87 Slip Painted Light on Dark III, sherd 00/67,
(Scale: 1:2)



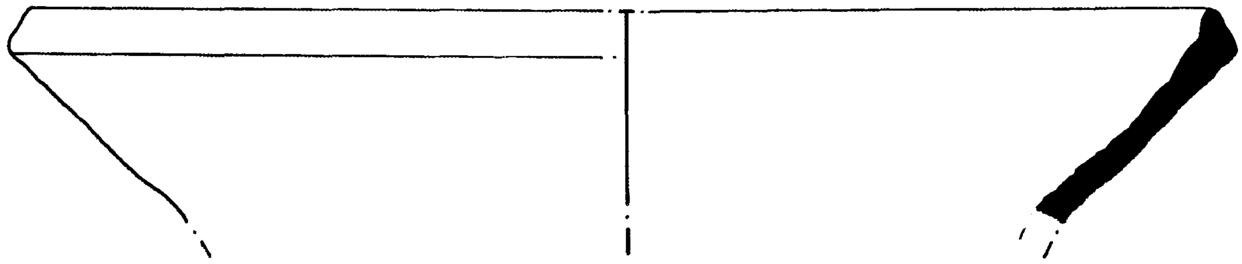
III.88 Slip Painted Light on Dark III, sherd 00/68,
(Scale: 1:2)



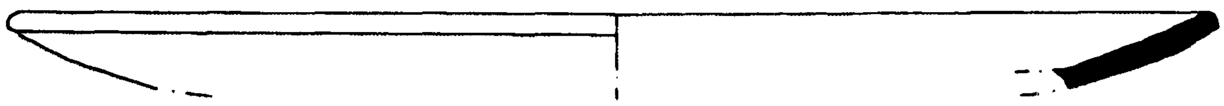
III.89 Slip Painted Light on Dark III, sherd 00/70,
(Scale: 1:2)



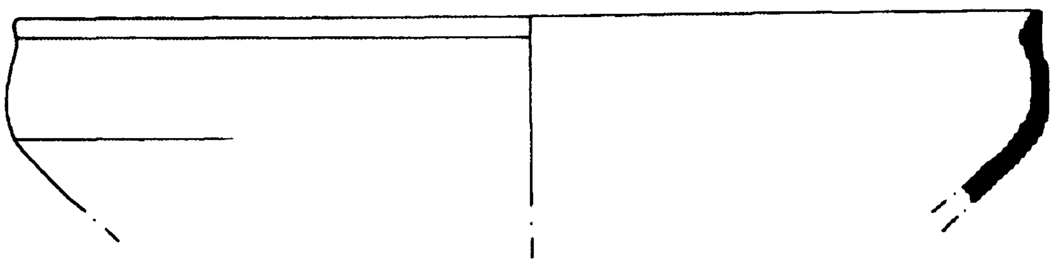
III.90 Slip Painted Light on Dark III, sherd 00/71,
(Scale: 1:2)



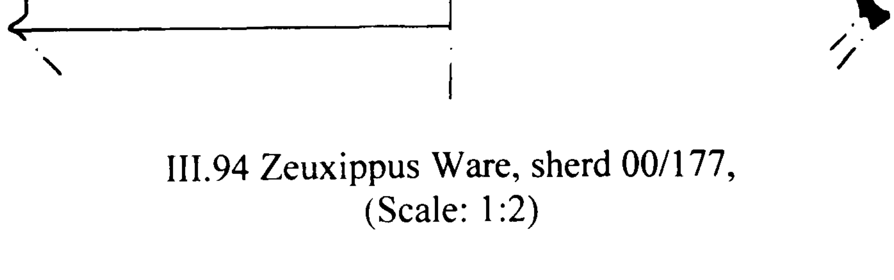
III.91 Aegean Ware, sherd 00/169,
rim diameter: 300mm (Scale: 1:2)



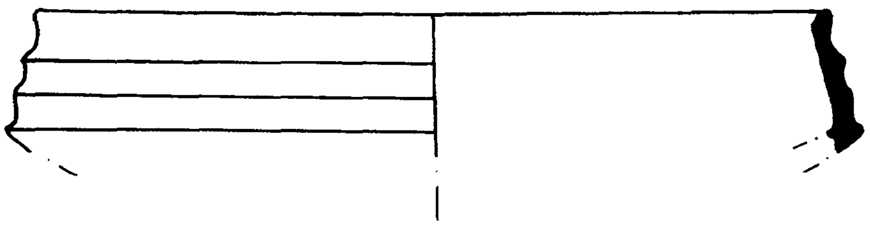
III.92 Zeuxippus Ware, sherd 00/171,
(Scale: 1:2)



III.93 Zeuxippus Ware, sherd 00/178,
(Scale: 1:2)

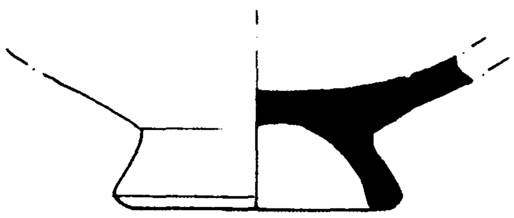


III.94 Zeuxippus Ware, sherd 00/177,
(Scale: 1:2)

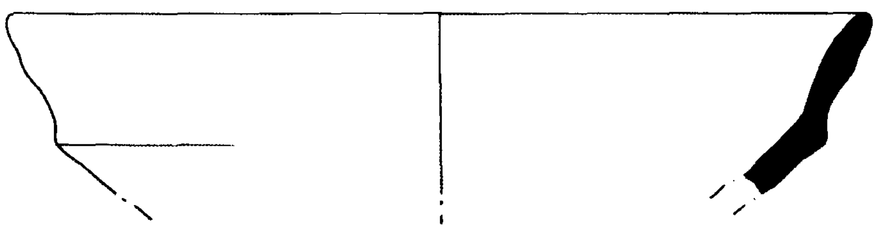


III.95 Zeuxippus Ware, sherd 00/180,
(Scale: 1:2)

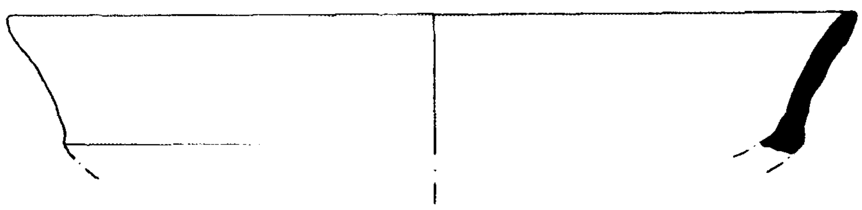
III.96 Zeuxippus Ware, sherd 00/169,
(Scale: 1:2)



III.97 Zeuxippus Ware, sherd 00/173,
(Scale: 1:2)



III.98 Green and Brown Painted V(V), sherd 00/47
(Scale: 1:2)



III.99 Green and Brown Painted V(V), sherd 00/48
(Scale: 1:2)

APPENDIX IV
FULL THIN SECTION DESCRIPTIONS

1. ALTERED FELDSPAR CLASS
1.1 ALTERED FELDSPAR GROUP A1
Sample: 00/139,140,141,144,146,148,149,153,154,156,159,160

I. Microstructure

(a) Massive (00/144) to vughy microstructure (*c.* 2%); predominant mesovughs, none to very rare macrovughs, (b) double to open-spaced porphyric related distribution, (c) voids show moderate to strong preferred orientation.

II. Groundmass

(a) Predominantly homogenous but rarely (00/139, 00/140), reddish brown streaks with strongly preferred orientation occur. Sample 00/159 had greyish core and pinkish margins.

(b) Micromass: predominantly optically very active to optically slightly active. Colour: pp (x40) = pale brown grey, xp (x40) = white grey. Sample 00/159 has brown grey margins and pale brown core (pp x40) and pinkish margins, greyish core (xp x40).
(c) Inclusions:
c:f:$v_{10\mu m}$ 5:93:2 to 5:90:5

Composition: Due to the unimodal grain-size distribution frequency the coarse and fine fraction are treated together.

Common: FELDSPAR - sub-angular to sub-rounded medium sand to silt sized grains showing cloudy alteration and barely distinguishable from groundmass in pp.
Few: MONOCRYSTALLINE QUARTZ - rounded to sub-angular, containing vacuoles and showing undulose extinction. Grains are fine sand to silt-sized and very rarely granules, CHERT - predominantly equigranular megaquartz but microquartz also occurs. Coarse sand to very fine sand-sized, very rare to absent granules. POLYCRYSTALLINE FELDSPAR - sub-grains vary in size and commonly have sutured grain boundaries. They display cloudy alteration, and in pp are barely distinguishable from groundmass. Grains are coarse to very fine sand-sized
Very rare: Silt-sized MUSCOVITE mica

III. Textural concentration features
Tcf = absent to <1% of total area
Absent to very rare reddish brown streaks with strongly preferred orientation.

IV Amorphous concentration (depletion) features
Acf = 2 to 10% of total field
Black (pp x40), dark red brown to black (xp x40), opaque nodules, ranging from moderately to purely impregnated. Maximum size is 1.3 mm with a mode of about 0.1 mm (subset 00/146,153,159 with a maximum size of 1mm and a mode of about 0.2 to 0.25).

V Crystalline concentration (depletion) features
Kcf = <1% of total area

Very rare hypocoatings (0.02 to 0.08 mm thick) with clear boundaries around voids

1.2 ALTERED FELDSPAR GROUP A2
Sample: 00/142,145,147

This fabric corresponds to Altered Feldspar Group A1 in terms of mineralogical composition and properties of micromass, but form a sub-group based on textural differences. In this group the c:f:$v_{10\mu m}$ ratio is given as15:77:8. Sample 00/145 shows significant secondary calcite (up to 25% of total field) occurring as hypocoatings around voids and as lenses of microcrystalline calcite.

1.3 ALTERED FELDSPAR GROUP B
Sample: 00/150,151,152,155,157,158

I. Microstructure
(a) Vughy microstructure: predominantly mesovughs, rare macrovughs, (b) single-spaced porphyric related distribution, (c) preferred alignment of voids is moderately developed.

II. Groundmass
(a) Predominantly homogenous but samples 00/157 and 00/158 show reddish staining around iron oxides, and rarely (00/155) reddish streaks with strongly preferred orientation occur.
(b) Micromass: optically very active to optically slightly active, Colour: pp (x40) = pale orange brown, xp (x40) = pale pinkish grey to pale orange gray to grey.

(c) Inclusions:
c:f:$v_{10\mu m}$ 15:80:5, c:f:$v_{100\mu m}$ 10:85:5

Composition: Due to the bimodality of the inclusions, the coarse and fine fraction (either side of 0.1 mm) are treated separately.

(a) Coarse Inclusions:
Common: CHERT - occurring as megaquartz and microquartz. Grains are rounded to sub-rounded and fine sand to medium sand-sized.
Common to Few: MONOCRYSTALLINE QUARTZ - sub-angular to sub-rounded grains commonly containing vacuoles and showing undulose extinction. Fine sand to medium sand-sized. K-FELDSPAR - monocrystalline, sub-angular to sub-rounded medium sand-sized grains showing cloudy alteration which are barely distinguishable from groundmass in pp.
Very Few: polycrystalline K-FELDSPAR - sub-grains vary in size and commonly have sutured grain boundaries. They display cloudy alteration, and are barely distinguishable from groundmass in pp. Grains are coarse to very fine sand-sized.

(b) Fine Inclusions
Frequent: MONOCRYSTALLINE QUARTZ, altered K-FELDSPAR
Very Rare: Red and White MICA

III. Textural concentration features
Tcf = 0 to 5% of total field
1. Dark reddish brown to black (pp x40), orange red to dark red (xp x40), high to neutral optical density with clear to diffuse boundaries. Rounded to sub-rounded with medium apparent sphericity. Constituents: 1 to 5% coarse silt to very fine sand-sized monocrystalline quartz and chert. Maximum size is 1.25 mm, mode is *c.* 0.4mm.
2. Absent to very rare reddish brown streaks with strongly preferred orientation.

IV Amorphous concentration (depletion) features
Acf = 2 to 10% of total field
Black (pp x40), dark red brown to black (xp x40), opaque nodules. Well sorted. Mode is about 0.2 mm. Occasionally hypocoatings up to 0.1mm occur (e.g. 00/157).

V Crystalline concentration (depletion) features
Kcf = absent

1.4 ALTERED FELDSPAR FABRIC C
Sample: 00/143

I. Microstructure
(a) Vughy microstructure: predominantly macrovughs with rare mesovughs, (b) open-spaced porphyric related distribution, (c) strongly preferred orientation of voids and opaques.

II. Groundmass
(a) Heterogeneous: dark grey brown banding and patches predominantly towards vessel core.
(b) Optically very active, colour: pp (x40) = pale brown to grey brown, xp (x40) white grey to grey brown.

(c) Inclusions
c:f:$v_{10\mu m}$ 15:80:5

Composition: Due to the unimodal grain-size distribution frequency the coarse and fine fraction are treated together.

Dominant: MONOCRYSTALLINE QUARTZ - rounded to sub-angular grains, commonly containing vacuoles and rarely showing undulose extinction. Size ranges from coarse silt to fine sand.
Very few: K-FELDSPARS - showing cloudy alteration in xp, barely distinguishable from groundmass in pp. Coarse silt to very fine sand-sized.
Very Rare: MUSCOVITE MICA - coarse silt-sized lathes, also pale yellow mineral, slightly pleochroic (pp) second order colours (xp), sub-rounded, no cleavage.

III. Textural concentration features
Tcf = none

IV Amorphous concentration (depletion) features
Acf = 5% of total field
Black to very dark red brown (pp), dark grey brown to dark red brown (xp) opaque nodules showing pure impregnation. Also occurs as elongate nodules showing preferred orientation with the vessel margin. Maximum size 0.5mm, mode *c.* 0.1mm

V Crystalline concentration (depletion) features
Kcf = none

2. COARSE MUDSTONE-CHERT CLASS
2.1 COARSE MUDSTONE-CHERT GROUP A1
Sample: 00/122, 129

I. Microstructure
(a) Vughy microstructure, dominant macrochannels, common macrovughs, few mesovughs, (b) fine inclusions show double to open-spaced porphyric related texture, coarse inclusions show single-spaced porphyric related texture, (c) voids show strongly preferred orientation.

II. Groundmass
(a) Heterogeneous; the fabrics are either oxidized or reduced.
(b) Micromass: no optical activity, Colour: pp (x40) = dark red brown (00/129), and brown black (00/122), xp (x40) = red (00/129), and brown black (00/122)

(c) Inclusions
$c:f:v_{10\mu m}$ 25:70: 5, $c:f:v_{125\mu m}$ 22:73: 5

Composition: Due to the bimodal grain-size frequency distribution, the coarse and fine modes (either side of about 0.125 mm) are discussed separately.

(a) Coarse Inclusions
Common: CHERT - Dominantly equigranular microquartz but megaquartz is also present. Grains are angular to sub-rounded and are dominantly of coarse sand-size. Megaquartz rarely contains spherulitic structures which may be radiolaria. MUDSTONE varies in colour between grey (00/122) and orange red (00/129). Commonly shows polygonal cracks in pp. Constituents: *c.* 0 to 10%: Dominant to very rare radiolaria and rarely other siliceous fossils, very rare silt-sized monocrystalline quartz and up to very fine sand sized chert. Rarely, the mudstone is optically active with the presence of parallel striated b-fabric (00/129). The mudstone of 00/122 is optically inactive and is in the medium to coarse sand-size range.
Common to few: LIMESTONE - micrite, predominantly sub-rounded and coarse sand sized (mode: *c.* 0.6mm). Rarely the micrite contains very rare monocrystalline quartz silt.

(b) Fine Inclusions
Predominant: MONOCRYSTALLINE QUARTZ
Rare: red and white MICA
Very rare: CHERT - spherulitic, possibly radiolaria, PLAGIOCLASE

Tcf = 5% of total field
Grey black (00/122), dark reddish brown (00/129) (pp x40), black (00/122), dark red (00/129) (pp x40). High to neutral optical density, sharp to clear boundaries, well to sub-rounded, high apparent sphericity. Constituents: *c.*10 % predominant well sorted, silt-sized monocrystalline quartz, rare red mica silt and showing no preferred internal orientation. Maximum size is 0.85 mm with a mode of about 0.2 mm.

IV Amorphous concentration (depletion) features
Acf = < 1% of total field
Black to very dark red (pp x40) angular to sub-rounded, opaque nodules. Maximum size 0.3 mm with a mode of about 0.08 mm

V Crystalline concentration (depletion) features
Kcf = none

2.2 COARSE MUDSTONE-CHERT FABRIC A2
Sample: 00/125

I. Microstructure
(a) Vughy microstructure; dominant mesovughs, common macrovughs, rare megavughs (b) inclusions show single-spaced porphyric related texture, (c) voids show weakly preferred orientation

II. Groundmass
(a) Homogenous.
(b) Micromass: Optically inactive, Colour: pp (x40) = dark grey brown, xp (x40) = dark brown.
(c) Inclusions
c:f:$v_{10\mu m}$ 20:70:10, c:f:$v_{100\mu m}$ 15:75:10

Composition: Due to the bimodal nature of the inclusions the coarse and fine fractions are treated separately.

(a) Coarse Inclusions
Predominant: MUDSTONE - medium coarse to very coarse sand-sized and sub-rounded to angular. It is characterized by polygonal cracks in pp and its colour ranges from grey brown to dark brown and dark red (xp x40). Constituents: <2% common well sorted medium silt-sized quartz silt, rare silt-sized yellow mica lathes and very rare radiolarian. Also, very rarely are optically isotropic inclusions, colourless in pp (x40) which may be volcanic glass.
Rare: CHERT - angular to sub-angular, very fine sand to medium sand-sized, predominantly megaquartz, but microquartz also occurs. Megaquartz commonly shows chalcedonic quartz and radiolarians.
Very Rare: MONOCRYSTALLINE QUARTZ - angular to rounded, fine sand-sized with unit extinction, SERPENTINITE - sub-angular and very coarse sand sized. Dark orange-red in pp and contains relic olivine, LIMESTONE - micrite, rounded to sub-angular and medium to very coarse sand-sized.

b. Fine Inclusions
Predominant: MONOCRYSTALLINE QUARTZ
Very few: CHERT - spherulites, white MICA silt-sized.

III. Textural concentration features
Tcf = none

IV Amorphous concentration (depletion) features
Acf = < 1% of total field
Black (xp x40) angular to sub-rounded, pure nodules. Maximum size 0.16mm, mode *c.* 0.08mm

V Crystalline concentration (depletion) features
Kcf = none

3 ARGILLACEOUS ROCK FABRIC
Sample: 00/123

I. Microstructure
(a) Vughy microstructure; predominant mesovughs, few macrovughs and rare micro- and mesovesicles, (b) single-spaced porphyric related distribution, (c) voids show moderately preferred orientation.

II. Groundmass
a. Heterogeneous; the fabric ranges from oxidized with slight optical activity (vessel interior) to reduced and optically inactive (vessel exterior)
b. Micromass; optically active through to optically inactive, Colour: pp (x40) = orange-brown (interior vessel margin), grey brown (vessel core), black (exterior vessel margin), xp (x40) = dark orange red (interior vessel margin), dark brown (vessel core), grey-brown (exterior vessel margin)

(c) Inclusions
$c:f:v_{10\mu m}$ 15:75:10
Composition: Due to the unimodal grain-size frequency distribution the coarse and finer fractions are treated together

Common: ARGILLACEOUS ROCK fragments – fine sand to coarse sand-sized, angular to sub-rounded and commonly optically active. Colour: pp (x40) = orange brown (interior vessel margin), grey brown (vessel core), dark grey brown (exterior vessel margin), xp (x40) = orange red (interior vessel margin), dark brown (vessel core), grey brow (exterior vessel margin). It is commonly difficult to distinguish the argillaceous rock fragments from the micromass in pp and xp. Constituents; 0-10% predominant silt-sized quartz, few red and white mica lathes. Banding is rarely present and micas show preferred internal orientation. POLYCRYSTALLINE QUARTZ – (a) angular to sub-rounded and medium sand to very coarse sand-sized. Sub-grains are of varying sizes, have straight to sutured grain boundaries and show undulose extinction. Commonly they contain vacuoles, fractures and microlithic inclusions. Rarely, recrystallization of quartz at grain boundaries occurs. MONOCRYSTALLINE QUARTZ – angular to sub-rounded and medium silt to

fine sand-sized. Grains commonly show undulose extinction, and contain vacuoles and fractures and more rarely microlithic inclusions. Given the size and morphology of the coarser monocrystalline quartz grains it is likely they represent terminal grades of the larger rock fragments, CHERT – predominantly megaquartz, angular to sub-rounded and medium sand-sized.
Few: QUARTZ-MUSCOVITE-BIOTITE rock fragments – medium to coarse sand-sized and rounded to sub-angular.
Very few: red (biotite) and white (muscovite) MICA – silt to very fine sand-sized.
Rare: Rock fragments containing QUARTZ and PLAGIOCLASE – fine to medium sand-sized and sub-angular, PLAGIOCLASE – very fine sand to fine sand sized and angular to sub-rounded. Rarely, they contain microlithic inclusions and the twins show deformation, POLYCRYSTALLINE QUARTZ – (b) medium sand-sized and sub-rounded. Sub-grains are elongate, have undulose extinction and show foliation. VOLCANIC GLASS – colourless, sub-angular to sub-rounded and fine to very-fine sand-sized, SERPENTINITE – bright orange in pp, sub-rounded to sub-angular and very fine sand to fine sand-sized.
Very rare: MUSCOVITE PHYLLITE – sub-angular and medium sand-sized.

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = <1% of total field
Black (pp and xp), well sorted pure nodules, with a mode of *c.* 0.06mm

V Crystalline concentration (depletion) features
Kcf = % absent

4. MUSCOVITE-SCHST CLASS
4.1 MUSCOVITE-SCHIST GROUP A
Sample: 00/126,130,131,132,133

I. Microstructure

(a) Vughy microstructure; frequent mesovughs, few macrovughs, very rare macro channels and megavughs (b) fine fraction shows single spaced porphyric related distributrion, coarse fraction shows single to open-spaced porphyric related distribution, (c) voids and micas show moderately preferred orientation.

II. Groundmass

(a) Heterogeneous; samples are oxidized and optically very active (00/130, 131, 132) or reduced and optically inactive (00/126,133). Also 00/130 has a higher proportion of coarse fraction.
(b) Optically inactive to optically very active, Colour; pp (x40) = orange brown to dark brown, xp (x40) = orange red to brown black.

c. Inclusions
$c:f:v_{10\mu m}$ 16:79:5 to 23:67:10, $c:f:v_{125\mu m}$ 12:83:5 to 15:78:8

Composition: Due to the bimodal grain-size frequency distribution the coarse and fine fraction are treated separately.

(a) Coarse Inclusions
Frequent: MUSCOVITE-SCHIST grains are sub-rounded to sub-angular and are in the fine to coarse sand-size range, and rarely show foliation. MUSCOVITIE-BIOTITE SCHIST grains are sub-rounded to sub-angular and are coarse to very coarse sand-size.
Common: QUARTZ-MUSCOVITE-BIOTITE SCHIST sub-rounded, with equigranular quartz sub-grains with straight grain boundaries which commonly show undulose extinction. Coarse to very coarse sand-sized.
Few: MONOCRYSTALLINE QUARTZ angular to sub-rounded and fine to very coarse sand sized. Commonly shows undulose extinction
Very few: POLYCRYSTALLINE QUARTZ (a) angular to sub-angular and very coarse sand-sized to granules. Sub-grains are of varying sizes and show recrystallization at boundaries. Extinction is undulose and grain boundaries are commonly sutured. (b) angular to sub-angular and medium to coarse sand sized. Sub-grains are equigranular and have straight grain boundaries. Undulose extinction is common. These are probably related to quartz-muscovite-biotite-schist.
Rare: MUSCOVITE-BIOTITE PHYLLITE sub-rounded, fine to medium sand-sized.
None to very rare: SERPENTINITE sub-rounded to sub-angular, coarse sand-sized grains, CHERT sub-rounded to sub-angular, medium sand-sized, equigrannular megaquartz with red and white mica lathes at grain boundaries.

(b) Fine Inclusions
Frequent: MONOCRYSTALLINE QUARTZ, MUSCOVITE silt.
Common to few: BIOTITE SILT.
Very rare: PLAGIOCLASE

III. Textural concentration features
Tcf = 0-5% of total field.
Orange brown to brown black (pp x40), orange red to dark brown black (xp x40). High to neutral optical density, clear to diffuse boundaries with high to low apparent sphericity. Constituents: *c.* 1-10%; predominant well sorted, monocrystalline quartz silt, frequent yellow mica silt. Internal preferred orientation is weak.

IV Amorphous concentration (depletion) features
Acf = 2 % of total field
These are black (pp x40), dark brown black (xp x40) pure nodules. Maximum size: 0.75 mm, mode *c.* 0.1mm

V Crystalline concentration (depletion) features
Kcf = 0-2% of total field
Present as calcitic infilling of pores (00/130)

4.2 MUSCOVITE-SCHIST FABRIC B
Sample: 00/124

I. Microstructure
(a) Vughy microstructure; predominant mesovughs, common microvesicles, few macrovughs, (b) fine inclusions show single to double-spaced porphric related distribution, coarse fraction shows single-spaced porphyric related distribution, (c) voids show weakly preferred orientation.

II. Groundmass
(a) Homogenous
(b) Micromass: optically inactive, Colour; pp (x40) = dark brown, xp (x40) = black brown.

(c) Inclusions
c:f:$v_{10\mu m}$ 20:70:10, c:f:$v_{100\mu m}$ 16:74:10

Composition: Due to the bimodal grain-size frequency distribution the coarse and fine fraction are treated separately.

(a) Coarse Inclusions
Frequent: MUSCOVITE SCHIST, sub-rounded to sub-angular, medium to very coarse sand-sized. Commonly contains black opaques.
Few: MONOCRYSTALLINE QUARTZ angular to sub-rounded, fine to medium sand-sized, commonly shows undulose extinction.
Very few: QUARTZ-BIOTITE-MUSCOVITE + BLACK OPAQUES SCHIST sub-rounded, with equigranular quartz sub-grains with straight grain boundaries which commonly show undulose extinction, very coarse sand-sized, LIMESTONE – micritic, angular to sub-rounded and fine to coarse sand-sized, rarely containing silt-sized monocrystalline quartz.
Rare: CHERT angular, coarse sand-sized grains of equigrannular microquartz.

(b) Fine Inclusions
Predominant: MONOCRYSTALLINE QUARTZ
Common: MUSCOVITE mica lathes
Few: Red BIOTITE mica lathes
Very Rare: OLIVINE

III. Textural concentration features
Tcf = 5% of total field
Black (pp x40), black (xp x40), rounded with high optical density, sharp boundaries and high apparent sphericity. Constituents: *c.* 2%; predominantly well sorted quartz silt. Also frequent microvesicles present. Maximum size 0.56 mm, mode *c.* 0.25mm

IV Amorphous concentration (depletion) features
Acf = 2% of total field
Predominantly black (pp x40), black (xp x40) well sorted, pure nodules with a mode of *c.* 0.25mm.

V Crystalline concentration (depletion) features
Kcf = <1% of total field
Present as calcitic infilling of voids

5. FINE MUSCOVITE-BIOTITE FABRIC
Sample: 00/127

I. Microstructure
(a) Vughy microstructure; predominantly mesovughs, rare macrovughs, (b) single-spaced porphyric related distribution, (c) voids and micas show moderately preferred orientation.

II. Groundmass
(a) Homogenous
(b) Micromass: optically slightly active, Colour: pp (x40) dark orange brown, xp (x40) dark red-orange.

(c) Inclusions
$c:f:v_{10\mu m}$ 5:87:8

Composition: Due to the unimodal grain-size frequency distribution the coarser and finer inclusions are treated together

Frequent: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and coarse silt to very fine sand-sized. Grains commonly display undulose extinction and very rarely contain microlithic inclusions.
Common: MUSCOVITE – lathes occur in sizes up to *c.* 0.25mm, BIOTITE – sub-angular, up to very fine sand-sized.
Rare: BIOTITE-MUSCOVITE PHYLLITE – sub-rounded, very fine sand to medium sand-sized, MUSCOVITE PHYLLITE – sub-rounded and medium sand-sized.
Very rare: ?ANDALUSITE – colourless in pp, first order interference colours, two cleavages at approximately right-angles and showing symmetrical extinction.

III. Textural concentration features
Tcf = 15% of total field
Dark orange-brown (pp x40), dark red (xp x40), high optical density with sharp to clear boundaries. Well rounded with high apparent sphericity. Constituents: up to 10%; predominantly well sorted quartz silt, frequent muscovite and biotite silt, with lathes up to 0.1mm. Weak preferred internal orientation. Maximum size 1.25mm, mode *c.* 0.5mm

IV Amorphous concentration (depletion) features
Acf = less than 1% of total field
Black (pp x40), dark brown black (xp x40) well sorted pure nodules. The average size is *c.* 0.05mm

V Crystalline concentration (depletion) features
Kcf = absent

6. QUARTZ-CHERT-MICRITE FABRIC
Sample: 00/128

I. Microstructure
(a) Vughy microstructure; dominant mesovughs, common microvughs, few macrovughs, (b) fine inclusions show double to open-spaced porphyric related distributions, coarse inclusions show single to double spaced-porphyric related distribution, (c) voids show strongly preferred orientation

II. Groundmass
(a) Homogenous
(b) Micromass: optically moderately active, Colour: pp (x40) = dark orange brown, xp (x40) = orange red

(c) Inclusions
$c:f:v_{10\mu m}$ 20:75:5, $c:f:v_{100\mu m}$ 14:81:5

Composition: Due to the bimodal grain-size frequency distribution the coarse and fine fraction are treated separately.

(a) Coarse Inclusions
Common: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and fine to medium sand-sized. Grains show unit extinction, CHERT – Predominantly microquartz, and rarely megaquartz. Grains are sub-rounded to sub-angular and medium sand to very coarse sand-sized, MICRITE – sub-angular to sub-rounded and very fine sand to very coarse sand-sized. Grains rarely contain coarse silt-sized inclusions of monocrystalline quartz.
Few: POLYCRYSTALLINE QUARTZ – (a) More or less equigranular with straight sub-grain boundaries and unit extinction. Grains are angular to sub-angular and fine to medium sand-sized, (b) sub-grains are of varying sizes, with sutured grain boundaries and commonly show undulose extinction. Rarely white mica lathes are present at grain boundaries and sub-grains are supported by microquartz.
Very few: CALCITE – sub-rounded and very fine sand to medium sand-sized

(b) Fine Inclusions
Frequent: MONOCRYSTALLINE QUARTZ – silt-sized and angular to sub-rounded.
Common: CHERT – rounded, coarse silt-sized, CALCITE
Rare: BIOTITE MICA – silt-sized, MUSCOVITE – silt-sized,
Very Rare: EPIDOTE

III. Textural concentration features
Tcf = 5% of total field
(1) Orange brown (pp x40), dark orange red (xp x40), sharp to clear boundaries, rounded to distorted with high to low apparent sphericity, and high to neutral optical density. Constituents: 0-5%; predominant silt-sized monocrystalline quartz, very rare biotite silt. Internal preferred orientation is weak and discordant with external features.
(2) Orange brown (pp x40), dark orange red (xp x40), striations of clay associated with tcfs described above. Maximum size is 0.65mm, mode is *c.* 0.2mm.

IV Amorphous concentration (depletion) features
Acf = <1% of total field
Dark red to black (pp x40), black (xp x40) sub-angular to sub-rounded pure nodules. Maximum size is 0.16mm, mode is *c.* 0.04mm

V Crystalline concentration (depletion) features
Kcf = absent

7. CHERT-QUARTZ FABRIC
Sample: 00/52

<u>I. Microstructure</u>
(a) Vughy microstructure; dominant mesovughs, frequent microvughs, few macrovughs, (b) fine-grained inclusions show open-spaced porphyric related distribution while coarse-grained inclusions show single to double-spaced porphyric related distribution, (c) preferred orientation is strong

<u>II. Groundmass</u>
(a) Homogeneous
(b) Micromass: optically inactive. Colour: pp (x40) = dark brown, xp (x40) = dark red

(c) Inclusions
$c{:}f{:}v_{10\mu m}$ 15:75:10, $c{:}f{:}v_{125\mu m}$ 10:80:10

Composition: Due to the bimodal grain-size frequency distribution, the coarse and fine modes (either side of about 0.125mm) are discussed separately

(a) Coarse inclusions
Frequent: MONOCHRYSTALLINE QUARTZ - angular to sub-rounded and very fine sand to medium sand-sized. Undulose extinction is common and grains frequently contain vacuoles, CHERT - dominantly equigranular microquartz. Grains are angular to sub-angular and very fine sand to coarse sand sized. Includes very rare cherty fossil 1.05mm long with silaceous core.
Few: POLYCRYSTALLINE QUARTZ – sub-angular and medium to coarse sand-sized. Sub-grains are more or less equigranular with straight boundaries, commonly contain vacuoles and show undulose extinction.

(b) Fine inclusions
Predominant: MONOCRYSTALLINE QUARTZ
Rare: MICA silt-sized, predominantly red (biotite) and more rarely white (muscovite) mica.

III. Textural concentration features
Tcf = 2% of total field
Black (pp x40), dark red (xp x40), high to neutral optical density, sharp to clear boundaries, rounded to sub-rounded. Constituents: *c.* < 2% predominant monocrystalline quartz silt and

very rare red micaceous material with no internal preferred orientation and no optical activity. Maximum size is about 0.4mm with a mode of about 0.15mm.

IV Amorphous concentration (depletion) features
Acf = <1% of total field
Black (pp x40) opaque nodules, sub-angular, largest 0.35 mm, mode *c.* 0.08 mm.

V Crystalline concentration (depletion) features
Kcf = absent

8. MEDIUM COARSE MUDSTONE CHERT FABRIC
Sample: 00/50,53,54

I. Microstructure
(a) Vughy microstructure; Frequent microvesicles and mesovughs, few macrovughs, (b) fine inclusions show double to open-spaced porphyric related distribution, coarse inclusions show single to double-spaced porphyric related distribution, (c) voids show moderate preferred orientation

II. Groundmass
(a) Heterogeneous; the micromass is either oxidized (00/53,54) or reduced (00/50).
(b) Micromass: optically slightly active, Colour: pp (x40) = dark orange brown to dark grey brown, xp (x40) = dark red to dark grey brown.

(c) Inclusions
$c{:}f{:}v_{10\mu m}$ 15:75:10, $c{:}f{:}v_{100\mu m}$ 10:80:10

Composition: Due to the bimodal grain-size frequency distribution the coarse and fine fraction (either side of about 0.1mm) are treated separately

(a) Coarse Inclusions
Common: CHERT – predominantly microquartz. Angular to sub-rounded and fine sand to coarse sand-sized.
Common to few: MUDSTONE – sub-angular to sub-rounded and fine to very coarse sand-sized. In xp the colour varies from grey-brown to orange-red to dark red. Commonly the fragments are optically active (either silvery grey in grey micromass or yellow in orange red micromass. The dark red mudstones show now optical activity. Constituents: *c.* 1-5%; predominant well sorted monocrystalline quartz, rare yellow mica silt,
Few: MONOCRYSTALLINE QUARTZ – sub-angular to sub-rounded and fine to medium sand sized. Grains commonly contain vacuoles an undulose extinction is rare.
Rare: POLYCRYSTALLINE QUARTZ – sub-angular to sub-rounded and medium sand-sized. Sub-grains are of varying sizes and have more or less straight boundaries. Undulose extinction is rare.
Rare to absent: MICRITE – sub-angular to sub-rounded and fine to medium sand-sized.
Very rare to absent: VOLCANIC ROCK – medium sand-sized yellowish brown volcanic glass containing rare feldspar lathes, PLAGIOCLASE - .angular and fine sand-sized, polysynthetic twinning and may contain microlithic inclusions

(b) Fine Inclusions
Common: MONOCRYSTALLINE QUARTZ – very fine sand to silt-sized, CHERT – very fine sand to coarse silt-sized
Few: BIOTITE mica – silt-sized
Very rare: MUSCOVITE mica – silt-sized, PLAGIOCLASE – coarse to medium silt-sized

III. Textural concentration features
Tcf = 2% of total field
Dark red-brown to dark orange brown to dark grey brown (pp x40), dark red to brown black (xp x40), neutral optical density, clear to diffuse boundaries, well to sub-rounded with medium apparent sphericity. Constituents: *c.* 2-10% predominant poorly sorted monocrystalline quartz, very fine sand to silt-sized, rare chert, coarse silt-sized and silt-sized biotite mica. Internal preferred orientation is very weak and discordant with external features. Maximum size is about 0.8mm, mode is *c.* 0.4mm.

IV Amorphous concentration (depletion) features
Acf = 1% of total field.
Predominantly pure black (pp x40) nodules, maximum size is 0.1mm, mode is *c.* 0.6mm

V Crystalline concentration (depletion) features
Kcf = absent

9. CLAY TEMPER GROUP
9.1 CLAY TEMPER GROUP A1
Sample: 00/4,55,62,65,116
<u>I. Microstructure</u>
(a) Vughy microstructure; frequent mesovughs and macrovughs, few microvughs, (b) single to double spaced porphyric related distribution, (c) voids have moderate to strong preferred orientation.

<u>II. Groundmass</u>
(a) Homogenous
(b) Micromass: Optically inactive, Colour: pp (x40) = dark grey brown, xp (x40) = dark green brown to dark grey brown to dark red brown

(c) Inclusions
$c:f:v_{10\mu m}$ 15:80:5 to 15:75:10, $c:f:v_{100\mu m}$ 10:85:5 to 10:80:10

Composition: Due to bimodal grain-size frequency distribution the coarser and finer fractions (either side of about 0.1mm) are described separately.

(a) Coarse Inclusions
Frequent: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and very fine sand to medium sand-sized. Commonly shows undulose extinction and contains vacuoles.
Frequent to common: CHERT – microquartz. Grains are angular to sub-angular and fine to coarse sand-sized.

Few: POLYCRYSTALLINE QUARTZ – grains are angular to rounded and medium to coarse sand-sized. Sub-grains are of varying sizes, commonly have straight boundaries and show undulose extinction.
Rare to very rare: MICRITE – sub-rounded and fine to coarse sand-sized. Commonly decomposed into micritic clots.
Very rare to absent: MUDSTONE – sub-angular to sub-rounded and medium sand-sized. Dark brown (pp x40), red brown (xp x40).

(b) Fine Inclusions
Predominant: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and medium to coarse silt-sized
Very rare: silt-sized BIOTITE and MUSCOVITE mica

III. Textural concentration features
Tcf = 2-6% of total field
(1) Dark red brown to black (pp x40), dark red to black (xp x40), high optical density with sharp boundaries and well rounded to distorted with high to medium apparent sphericity. Constituents: up to 10%; predominant poorly sorted medium silt to very fine sand-sized monocrystalline quartz, rare red mica silt. Internal preferred orientation is weak and discordant with external features. Maximum size is 0.85mm, mode is *c.* 0.2mm. These tcfs are the predominant type
(2) Dark red brown to black (pp x40), dark red to black (xp x40) clay striations associated with tcfs described above. Preferred orientation is very strong.

IV Amorphous concentration (depletion) features
Acf = absent

V Crystalline concentration (depletion) features
Kcf = 0-25% of total field.
Predominantly present as fringes of microcrystalline calcite on void walls and infilling of voids around tcfs (e.g. 00/120)

9.2 CLAY TEMPER GROUP A2
Sample: 00/2,6,7,8,9,10,72,73,74,75,76,77,78,79,80,87,88,90,91,92,93

I. Microstructure
(a) Vughy microstructure; dominant mesovughs, common to few macrovughs and common to few microvughs, (b) coarse inclusions have single to open-spaced porphyric related distributions, fine inclusions have double to open-spaced porphyric related distributions, (c) preferred orientation is weak to strong.

II. Groundmass
(a) Hetrogeneous. This fabric groups contains inclusions of quartz, chert and micrite and clay pellets of varying proportions and range in size. Obvious end-members exist, but the gradation between from one end-member to the other meant that no clear break between the two could be established. All of the samples are therefore kept together (see Whitbread 1995; 372)

(b) Micromass: Frequently optically inactive, few are optically slightly active and few are optically very active. Colour: optically inactive - pp (x40) = dark reddish brown to dark greyish brown, xp (x40) = dark orange brown through to dark greenish brown; optically slightly active - pp (x40) = orange brown, xp (x40) = reddish brown to yellow brown; optically very active – pp (x40) orange, xp (x40) = orange to orangey red

c. Inclusions
c:f:v $_{10\mu m}$ 2:88:10 through to 6:84:10

Composition: Due to the unimodal grain-size frequency distribution the coarse and fine fraction are described together

Frequent: MONOCRYSTALLINE QUARTZ - angular to sub-rounded, predominantly straight extinction though some display undulose extinction. Microlitic inclusions are rarely present. Grains are medium sand to silt-sized.
Common to few: CHERT - predominantly equigranular microquartz rarely showing chalcedonic structures and radiolaria. Grains are predominantly angular to sub-angular and rarely sub-rounded. Very coarse to very fine sand-sized, LIMESTONE - micrite, angular to sub-rounded, rarely fossiliferous. Commonly in optically inactive samples the micrite shows decomposition to secondary calcite. Very fine to coarse sand-sized.
Few: MICA - red, very fine sand to silt-sized
Few to very rare: POLYCRYSTALLINE QUARTZ - sub-angular to sub-rounded and fine to very coarse sand-sized. Commonly sub-grains vary in size, have sutured boundaries and display undulose extinction.
Very rare to absent: MICACEOUS SANDSTONE - very fine, well-sorted coarse samd-sized sandstone. Sub-grains are predominantly monocrystalline quartz with few lathes of biotite mica in a dark red cement (pp x40), opaque cement, CALCITE - anhedral, twinned, fine to very fine sand-sized. Present only in samples that are optically very active.

III. Textural concentration features
Tcf = 20 to 25 % of total field.
(1) Red orange to red to black (pp and xp x40), high to neutral optical density with sharp to clear boundaries, rounded to sub-rounded with high apparent sphericity. Frequently separated from the micromass by a void. Constituents: up to 10% very fine sand to silt-sized monocrystalline quartz and rare red (biotite) mica. No internal preferred orientation. Where they are optically active they show mosaic-speckled b-fabric. Maximum size is 1.6 mm, with a mode of *c.* 0.15 mm. These are the predominant type of tcfs
(2) Red orange to red to black (pp and xp x40) clay striations up to 1.5 mm in length with strongly developed preferred orientation

IV Amorphous concentration (depletion) features
Acf = <1% of total field
Black (pp and xp x40), opaque, angular to sub-angular nodules. Average size c. 0.05mm

V Crystalline concentration (depletion) features
Kcf = 0 to 10% of total field
Present as fringes of microcrystalline calcite around voids and tcfs, often accompanied by a lighter border. Also present as patches of microcrystalline calcite heterogeneously distributed in the groundmass.

9.3 CLAY TEMPER GROUP A3
Sample: 00/89,95,96,97,100

I. Microstructure
(a) Voids occupy between 5 and 15% of area; common mesovughs, few to rare macrovughs, rare microvughs, (b). inclusions have open spaced porphyric related distribution, (c) preferred orientation is weak to strong.

II. Groundmass
(a) Homogenous
(b) Optically slightly active, Colour: pp (x40) = greyish brown to reddish brown, xp (x40) = greenish brown to red brown.
(c) Inclusions

c:f:v $_{10\mu m}$ = 3:92:5 to 3:82:15

Composition
Due to the unimodal grain-size frequency distribution the coarse and fine fraction are described together

Predominant: MONOCRYSTALLINE QUARTZ - predominantly in the fine sand to coarse silt size. Grains are sub-rounded to sub-angular with more or less straight extinction.
Few to Very Few: MICRITE - predominantly in the fine to medium sand range. Most examples are decomposed to secondary calcite.
Very Rare: CHERT - dominantly equigranular microquartz in the medium to very fine sand range. Few contain rare spherulitic structures, possibly radiolarian, MICA - silt-sized, red and white.

III. Textural concentration features
Tcf = 10 % (of total field).
(1) Dark red brown to black (pp x40), dark red to black (xp x40), high optical density, sharp to diffuse boundaries, sub-angular to rounded and of a high to low apparent sphericity, and showing shrinkage from surrounding matrix. Constituants: *c.* <5% predominant monocrystalline quartz silt and very rare red micaceous material with weak internal preferred orientation. Where there is low apparent sphericity, they are concordant with external preferred orientation. They show very low to no optical activity. Maximum size is about 0.8mm with a mode of about 0.2mm.
(2) Very rare dark red brown to black (pp x40), dark red to black (xp x40) clay striations, up to 0.9mm in length. Strong preferred orientation

IV Amorphous concentration (depletion) features
Acf = absent

V Crystalline concentration (depletion) features
Kcf = 5 to15 % of total field
Predominantly present as patches of microcrystalline calcite heterogeneously distributed in the groundmass. Also present as micritic clots caused by the decomposition of primary carbonate grains. These commonly have a reaction rim around the original clast up to 0.15mm thick.

10. PHYLLITE CLASS
10.1 PHYLLITE GROUP A1
Sample:
00/01,03,05,11,12,13,15,14,16,17,18,19,20,21,22,23,24,51,56,57,58,59,60,61,63,64, 81,82,83,84, 85,86,94,98,99,101,103,113,115,117,118,119,121,166,167,168

I. Microstructure
(a) Vughy microstructure; frequent to common mesovughs and macro vughs, common to few micro-vughs, very few to rare mega vughs, (b) fine fraction has double to open-spaced porphyric related distribution, coarse fraction has single to open-spaced porphyric related distribution, (c) voids show strong preferred orientation (e.g. 00/16) to moderate preferred orientation (e.g. 00/05).

II. Groundmass
(a) Heterogeneous; the fabrics in this group contain phyllites and metamorphosed polycrystalline quartzes in varying proportions and grain-size frequencies so that it ranges from rare fine inclusions (<0.1mm) in the clay micromass (e.g. 00/64) to frequent fine inclusions and very few poorly sorted coarse inclusions (>0.1mm) (e.g. 00/61), to few coarse inclusions in the clay micromass with very rare to few fine inclusions (e.g. 00/01). There is also a range in optical activity from optically very active to optically inactive. Despite the fact that distinct end-members do exist a gradation is present between the end-members so that no clear breaks could be made to form separate sub-groups. This observation is supported by the absence of any correlation between the fabrics and archaeological divisions (stylistic or chronological) between the samples. The fabrics are therefore treated as a broad heterogeneous group.

(b) Micromass: optically very active (e.g. 00/57) through to optically inactive (e.g. 00/84), Colour: pp (x40) = orange brown (optically very active) to dark orange brown (optically moderately active) to brown (optically inactive), xp (x40) = yellow brown (optically very active) to red brown (optically moderately active) to dark brown (optically inactive)

(c) Inclusions
c:f:v $_{10\mu m}$ 1:94:5 (00/64) through to 10:80:10 (00/24). Where a bimodal grain-size frequency distribution is present the c:f:v$_{100\mu m}$ ratio may be set at c. 5:85:10

Composition: Predominant unimodal grain-size frequency distribution though some samples show a bimodal grain-size frequency distribution with a poorly sorted coarse fraction.

Frequent to few: PHYLLITES – three types (a) biotite-muscovite phyllite, sub-rounded and elongate, predominantly fine sand to medium sand-sized, (b) muscovite phyllite, sub-rounded and elongate and very fine sand to coarse sand-size. Coarse fragments may show foliation (e.g. 00/81), (c) quartz-biotite-muscovite phyllite, sub-rounded and elongate, up to coarse sand-sized, POLYCRYSTALLINE QUARTZ – angular to sub-angular and medium to coarse sand-sized and rarely very coarse sand-sized (e.g. 00/12), ranging from having sub-grains of varying sizes with sutured grain boundaries and straight to undulose extinction, commonly with white mica lathes at sub-grain boundaries (e.g. 00/83) to cataclasites (e.g 00/81), to polycrystalline quartzes with stretched metamorphic structures (e.g. 00/84), MONOCRYSTALLINE QUARTZ – angular to sub-rounded and very fine

sand to medium sand-sized, commonly showing undulose extinction and containing white microlithic inclusions.
Common: MICA lathes – dominant white mica lathes up to 0.2mm, common red mica lathes up to 0.16mm
Few to rare: CHERT – sub-angular to sub-rounded and up to medium sand-sized. Both megaquartz and microquartz are present, with megaquartz commonly containing white mica inclusions.
Few to very rare: PLAGIOCLASE – angular to sub-angular and coarse silt to coarse sand-sized and can contain microlithic inclusions (e.g. 00/85)
Rare: SERPENTINITE – angular to sub-rounded and commonly coarse silt to fine sand-sized but can be up to medium sand-sized (e.g. 00/60).
Rare to absent: SCHIST – quartz-biotite-muscovite schist, sub-rounded and fine to coarse sand-sized, ROCK FRAGMENTS – comprising sub-grains of plagioclase and quartz in a recrystallized quartz bedding with intergranular white mica. Grains are sub-rounded and coarse sand-sized (e.g. 00/17).
Very rare to absent: CLAYSTONE – sub-angular and fine to very coarse sand-sized, dark orange brown (pp x40), red-orange (xp x40), optically very active, Constituents: absent.

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = <1%
Well sorted pure nodules, black (pp x40), very dark red-black (xp x40), mode *c.* 0.08mm.

V Crystalline concentration (depletion) features
Kcf = absent to *c.* 10% of total field (e.g. 00/60)
Present as patches and lenses of microcrystalline calcite in the micromass in addition to calcitic infilling of voids. This secondary calcite is considered completely allochthonous (CA) in origin (see Cau *et al.* 2002).

10.2 PHYLLITE GROUP A2
Sample: 00/104,105,108,165

I. Microstructure
(a) Vughy microstructure; dominant mesovughs, few microvughs and rare macrovughs, (b) fine inclusions have single-spaced porphyric related distribution while coarse inclusions have double to open-spaced, poorly sorted, porphyric related distributions, (c) voids and micas show moderately preferred orientation.

II. Groundmass
(a) Homogeneous
(b) Micromass: optically inactive to optically slightly active, Colour: pp (x40) = dark grey-brown, xp (x40) = dark red brown

(c) Inclusions
c:f:v $_{10\mu m}$ 15:75:10, c:f:v $_{100\mu m}$ 5:85:10

Composition: Due to the bimodal nature of the grain-size frequency distribution the coarse and fine inclusions (either side of about 0.1mm) are treated separately

(a) Coarse Inclusions
Common: POLYSCRYSTALLINE QUARTZ – sub-angular to sub-rounded and fine sand to very coarse sand-sized. Ranging from having sub-grains of varying sizes with sutured grain boundaries and undulose extinction commonly with white mica or white and red mica lathes at sub-grain boundaries, to cataclasites. Sub-grains rarely contain acicular crystals, colourless in pp with high relief, second order interference colours and parallel extinction - ?sillimanite. Also present is polycrystalline quartz with equigranular sub-grains (*c.* 0.02mm) with straight boundaries and intergranular red mica.
Common to few: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and very fine sand to medium sand-sized. Grains commonly contain vacuoles and show undulose extinction, PHYLLITES – three types, (a) biotite-muscovite-quartz phyllite, sub-rounded and elongate, fine to medium sand-sized. Coarser grains show foliation, (b) quartz- biotite phyllite, sub-rounded and medium sand to coarse sand-sized, (c) muscovite phyllite, sub-rounded and elongate, fine sand-sized.
Few to rare: CHERT – rounded to sub-rounded and fine to very coarse sand-sized, predominantly equigranular microquartz, PLAGIOCLASE – sub-angular to sub-rounded and very fine sand to medium sand-sized. Grains commonly microlithic inclusions and the twins rarely show deformation, BIOTITE – sub-rounded and fine sand-sized.
Very rare: SERPENTINITE – angular to sub-rounded, fine sand to coarse sand-sized.
Very rare to absent: ROCK FRAGMENTS – comprising sub-grains of plagioclase and muscovite, sub-angular and medium sand-sized

(b) Fine Inclusions
Common: MONOCRYSTALLINE QUARTZ, BIOTITE MICA, MUSCOVITE MICA
Very few: PLAGIOCLASE
Rare: CHERT, SERPENTINITE

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = 2% of total field
Black (pp), black (xp), well sorted pure nodules

V Crystalline concentration (depletion) features
Kcf = absent to 1% of total field
Occurs as total calcitic infilling of voids. The absence of micritic clots or lighter borders around the infilled voids suggest secondary calcite of a CA origin (Cau *et al.* 2002).

11. FINE QUARTZ-MICRITE FABRIC
Sample 00/28

I. Microstructure
(a) Vughy microstructure; predominantly mesovughs, rare macrovughs, (b) single-spaced porphyric related distribution, (c) preferred orientation of voids is strong

II. Groundmass
(a) Homogenous
(b) Micromass: optically slightly active, Colour: pp (40) = yellow brown, xp (x40) = dark yellow brown.

(c) Inclusions
$c:f:v_{10\mu m}$ = 10:85:5

Composition: Due to the unimodal grain-size frequency distribution the coarse and fine fraction are treated together

Common: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and coarse silt to very fine sand-sized, MICRITE – rounded to sub-rounded and predominantly coarse silt to very fine sand-sized, very rarely occurs as coarse sand-sized, MICA – equal amounts of red and white mica silt
Rare: CHERT – rounded to sub-rounded and fine to medium sand-sized, PLAGIOCLASE – sub-angular and very fine sand-sized

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = 5% of total field
Dark red to black (pp x40), dark red (xp x40) halo nodules, with pure core and moderately to weakly impregnated cortex (see Bullock *et al.*1985;104-105). Maximum size 0.45mm, mode *c*. 0.1mm

V Crystalline concentration (depletion) features
Kcf = absent

12. MICACEOUS SILTSTONE-SANDSTONE CLASS
12.1. MICACEOUS SILTSTONE-SANDSTONE GROUP A
Sample: COR 00/25,26,27,29

I. Microstructure
(a) Vughy microstructure, predominantly mesovughs, few macrovughs and microvughs,
(b) Coarse and fine inclusions have single to double-spaced porphyric related distributions,
(c) preferred orientation is weak to moderate.

II. Groundmass
(a) Homogenous
(b) Micromass: optically slightly active, Colour: pp (x 40) dark yellowish brown, xp (x 40) dark yellowish brown

c. Inclusions
c:f:$v_{10\mu m}$ = 20:70:10, c:f:$v_{100\mu m}$ 15:75:10

Composition
Owing to the bimodal grain-size frequency distribution, the coarse and fine modes (either side of 0.1 mm) are treated separately

Coarse inclusions
Dominant to frequent: MICACEOUS SILTSTONE – two types, (1) predominant to frequent: grains are rounded to sub-rounded and medium to very coarse sand-sized. Contains about 20 to 40% silt; frequent monocrystalline quartz and white mica and rare red mica, in a reddish brown (pp x 40), optically active to optically inactive cement. The micas show preferred orientation, (2) few: medium to coarse siltstone, well sorted and grain supported. Grains are rounded to sub-rounded and medium to very coarse sand-sized. Contains 90% silt, predominantly monocrystalline quartz and frequent lathes of muscovite mica, with very rare to absent plagioclase embedded in a dark reddish brown (pp x40) opaque cement, LIMESTONE - micrite, rounded to sub-angular, rarely fossiliferous, and fine to medium sand-sized. Few contain rare monocrystalline quartz silt
Frequent: MONOCRYSTALLINE QUARTZ – sub-rounded to sub-angular and fine to very fine sand-sized
Few: MICACEOUS SANDSTONE - very fine to fine sandstone, well sorted and grain supported. Grains are rounded to sub-rounded and medium to very coarse sand-sized. Contains 80-90% sand, predominantly monocrystalline quartz, few muscovite mica, very rare chert and plagioclase embedded in a dark red brown (pp x40) opaque cement.
Very rare: PLAGIOCLASE - sub-angular with polysynthetic twinning, fine sand-sized, CHERT - microquartz, sub angular to sub-rounded and fine to very fine sand-sized.
Absent to very rare: SERPENTINITE – sub-rounded and fine sand-sized, yellow in pp (x40)

(b) Fine Inclusions
Dominant: MONOCRYSTALLINE QUARTZ
Common: LIMESTONE - micrite, rounded to sub-angular
Few: MICA - equal amounts of red and white mica, well sorted, silt-sized
Very rare: PLAGIOCLASE, CHERT

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = *c*.1% of field
Predominantly dark red brown to black in pp (x40) nodules, size range approximately 0.08 to 0.04mm

V Crystalline concentration (depletion) features
Kcf = absent

12.2. MICACEOUS SILTSTONE-SANDSTONE GROUP B
Sample: COR 00/30,31,32,33,34,35,36,37,38,39,41,42,43,44,68,69,70,71,106,107,109,110, 111,112

I. Microstructure
(a) Vughy microstructure: dominant mesovughs, common macrovughs, few microvughs , rare megavughs, (b) fine inclusions show single-spaced porphyric related distribution, coarse inclusions show open-spaced porphyric related distribution, (c) preferred orientation is weakly developed

II. Groundmass
(a) Homogenous
(b) Micromass: optically slightly active to optically inactive, Colour: pp (x40) = red brown to brown, xp (x40) = red to brownish red and rarely pp (x40) = dark brown, xp (x40) = dark grayish brown

(c) Inclusions
$c:f:v_{10\mu m} = 20:70:10$, $c:f:v_{100\mu m} = 8:82:10$ to $12:78:10$

Composition: Due to the bimodal nature of the grain-size frequency distribution the coarse and fine inclusions (either side of *c.* 0.1mm) are treated separately.

(a) Coarse Inclusions
Frequent: MICACEOUS SILTSTONE –medium to coarse siltstone, well sorted and grain supported. Grains are rounded to sub-rounded and medium to very coarse sand-sized. Contains 60-80% silt, predominantly monocrystalline quartz and frequent lathes of muscovite mica, with very rare to absent plagioclase embedded in a dark reddish brown (pp x40) opaque cement, MICACEOUS SANDSTONE - very fine to fine sandstone, well sorted and grain supported. Grains are rounded to sub-rounded and medium to very coarse sand-sized. Contains 80-90% sand, predominantly monocrystalline quartz, few muscovite mica, very rare chert and plagioclase, rare to absent micrite and very rare to absent epidote embedded in a dark red brown (pp x40) cement.
Common to few: LIMESTONE – predominantly micritic limestone though calcite is rarely present (e.g. 00/38). Grains are rounded to sub-angular, rarely fossiliferous, and medium to very coarse sand-sized.
Few to Rare: CHERT - dominantly equigranular microquartz, angular to sub-rounded, and fine to medium sand sized, rarely showing chalcedonic structures.
Very rare to absent: VOLCANIC ROCK – (e.g. 00/32) well rounded and coarse sand-sized. Strongly weathered, containing lathes of sanidine showing some alteration embedded in a dark red brown (pp x40) opaque groundmass, SERPENTINITE – rounded and fine sand-sized, yellow in pp (x40), MUDSTONE – angular to sub-angular and coarse sand sized. Dark brown (pp x40), dark red (xp x40), and optically inactive. Constituents: *c.* 2% predominant monocrystalline quartz silt, few white mica lathes.

(b) Fine Inclusions
Predominant: MONOCRYSTALLINE QUARTZ – well sorted very fine sand to coarse silt sized, sub-rounded to angular, with more or less straight extinction.
Common: MICA - predominantly silt-sized, white (muscovite)
Few: MICA - predominantly silt-sized, red (biotite)

Very rare: PLAGIOCLASE
Very rare to absent: SERPENTINITE

III. Textural concentration features
Tcf = 2 to5% of total field
Dark brown (pp x40), dark red brown (xp x40), neutral optical density, clear to merging boundaries and rounded to distorted with high to low apparent sphericity. Constituents: *c.* 10% predominant well sorted monocrystalline quartz silt and rare yellow mica silt. Internal preferred orientation is weak. Maximum size is 1.5 mm, mode is *c.* 0.5mm.

IV Amorphous concentration (depletion) features
Acf = 1 % (of total field)
Predominantly black nodules (pp x40), maximum size is 0.5mm, mode is *c.* 0.1mm

V Crystalline concentration (depletion) features
Kcf = % 0-5% of total field
Present as patches and lenses of microcrystalline calcite in the micromass in addition to calcitic infilling of voids.

13. QUARTZ SILT FABRIC
Sample: 00/40

<u>I. Microstructure</u>
(a) Vughy microstructure; frequent microvesicles and mesovesicles, rare macrovughs, (b) open-spaced porphyric related distribution, (c) moderately preferred orientation of voids

<u>II. Groundmass</u>
(a) Homogenous
(b) Micromass: optically inactive, Colour: pp (x40) = grey brown, xp (x40) = green brown

(c) Inclusions
$c:f:v_{10\mu m} = 5:90:5$

Composition: Well sorted unimodal grain-size frequency distribution

Frequent: MONOCRYSTALLINE QUARTZ – sub-angular to rounded and medium silt to very fine sand-sized, MICA – red biotite mica silt
Common: MICA – white mica silt

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = <1% of total field
Well sorted, black (pp x40), dark red to black (xp x40) rounded, pure nodules. Size is *c.* 0.04mm,

V Crystalline concentration (depletion) features
Kcf = 5% of total field
Present as (1) lenses of microcrystalline calcite, (2) geodic calcite on void walls accompanied by lighter halos around the pores. This second form may indicate limestone was originally present as inclusions in the ceramic but was decomposed to secondary calcite due to its high firing.

14. SCHIST-PHYLLITE GROUP
14.1 SCHIST-PHYLLITE GROUP A1
Sample: 00/45,46,48,49,66,67

I. Microstructure
(a) Vughy microstructure; dominant mesovughs, common microvughs, very rare macrovughs, (b) single to double-spaced porphyric related distribution, (c) weakly preferred internal orientation

II. Groundmass
(a) Homogenous
(b) Micromass: optically slightly active to optically inactive, Colour: pp (x40) = orange brown to brown, xp (x40) = orange brown to red brown

(c) Inclusions
$c:f:v_{10\mu m}$ = 10:80:10

Composition: Due to the unimodal grain-size distribution frequency the coarse and fine components are treated together

Common: MONOCRYSTALLINE QUARTZ - sub-angular to rounded and silt to fine sand-sized, more or less straight extinction, rarely containing microlitic inclusions and vacuoles. MUSCOVITE MICA – lathes up to 0.4mm,
Few: BIOTITE MICA - slightly pleochroic, silt to fine sand-sized, LIMESTONE - micrite, rounded to sub-rounded and very fine to very coarse sand-sized. Rarely contains monocrystalline quartz silt,
Very few: rock fragments of QUARTZ-MUSCOVITE, QUARTZ-MUSCOVITE-BIOTITE SCHIST, QUARTZ-BIOTITE PHYLLITE and MUSCOVITE-QUARTZ PHYLLITE fragments are commonly sub-rounded and very fine sand to coarse sand-sized, CHERT - predominantly equigranular microquartz, rounded to sub-rounded and very fine to fine sand-sized.
Very rare: PLAGIOC LASE angular to sub-angular, showing polysynthetic twinning, very fine sand to silt-sized, rock fragments of QUARTZ-PLAGIOCLASE-BIOTITE-MUSCOVITE – very fine sand to coarse sand-sized, POLYCRYSTALLINE QUARTZ commonly with uneven, sheared sub-grains with sutured boundaries and undulose extinction, very fine sand to medium sand-sized
Very rare to absent: VOLCANIC ROCK – (e.g. 00/66) containing lathes of altered feldspars

III. Textural concentration features
Tcf = 10 to 15% of total field

(1) yellow brown to red brown (pp x40), brown to red (xp x40), high to neutral optical density, and not clear to diffuse boundaries, sub-rounded to sub-angular, rarely distorted, medium apparent sphericity. Constituents: <1 % monocrystalline quartz and mica silt with weak internal preferred orientation. Commonly optically active with stipple-speckled b-fabric. Maximum size is 2.mm with a mode of *c.* 0.75 mm. These Tcfs are the dominant type present and not always easily distinguishable from the groundmass.
(2) dark red (pp and xp x40), opaque, high optical density, clear to diffuse boundaries, rounded to sub-rounded, high apparent sphericity. Constituents: 70% moderately sorted, fine to very fine sand-sized monocrystalline quartz, chert, polycrystalline quartz and biotite mica. No internal preferred orientation. Maximum size is 0.65 with a mode of *c.* 0.35. These Tcfs are rare to absent.

IV Amorphous concentration (depletion) features
Acf = 3% of total field
Black (pp and xp x40), opaque rounded to sub-angular nodules with a maximum size of 0.35 mm and a mode of *c.* 0.2 mm

V Crystalline concentration (depletion) features
Kcf = absent

14.2 SCHIST/PHYLLITE GROUP A2
Sample: 00/47

This sample is identified as a member of the muscovite-biotite schist group described above, however, due to its very high firing temperature is significantly different in appearance. The differences can be listed as (a) optically inactive, mottled, grey brown (pp x40), dark brown (xp x40) micromass, (b) the presence of bloated pores commonly at the vessel margin, (c) loss of micrite and micaceous component through the majority of the sample (one end of sample which apparently received less heat during firing retains micrite and mica component).

15. QUARTZ-BIOTITE CLASS
15.1 QUARTZ-BIOTITE FABRIC A
Sample: 00/172,179

<u>I. Microstructure</u>
(a) Vughy microtructure; predominant mesovughs, few macrovughs, very few microvesicles and mesovesicles, (b) single-spaced porphyric related distribution, (c) micas show strong to weak preferred orientation

<u>II. Groundmass</u>
(a) Homogenous
(b) Micromass: optically inactive, Colour: pp (x40) = brown to orange brown, xp (x40) = orange brown to orange red

(c) Inclusions
$c{:}f{:}v_{10\mu m}$ 25:60:15

Composition: Well sorted, unimodal grain-size frequency distribution

Frequent: MONOCRYSTALLINE QUARTZ - well sorted, sub-angular to rounded silt to fine sand-sized. It shows more or less straight extinction and rarely contains vacuoles and microlitic inclusions, BIOTITE - oxidized, coarse silt to medium sand-sized, pleochroic.
Few: MUSCOVITE silt to fine sand-sized.
Very few: PLAGIOCLASE –angular to sub-angular and very fine sand to fine sand-sized, fresh with polysynthetic twinning, CHERT- equigranular microquartz, sub-angular to sub-rounded and very fine sand-sized
Very few to rare: LIMESTONE micrite, sub-angular to sub-rounded, predominantly fine sand-sized, rarely medium sand-sized. POLYCRYSTALLINE QUARTZ –sub-angular to sub-rounded and medium to coarse sand-sized. Subgrains are equigranular, predominantly with straight boundaries and rarely with sutured boundaries. More or less straight extinction, and rarely containing microlitic inclusions of red mica.
Very rare: AMPHIBOLE sub-angular and subhedral and medium silt to fine sand-sized, pleochroic, brown to pale green
Very rare to absent: Rock fragments containing QUARTZ-PLAGIOCLASE-AMPHIBOLE – sub-angular and fine sand-sized

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = *c*. 1% of total field
Dark red brown to black (pp x40), opaque nodules. Rounded to sub-rounded and well sorted. Average size is *c*. 0.16 mm

V Crystalline concentration (depletion) features
Kcf = < 1% of total field
Very rare microsparite occurs as secondary coatings up to 0.03 mm thick within voids.

15.2 QUARTZ-BIOTITE FABRIC B1
Sample: 00/114,169,170,171

<u>I. Microstructure</u>
(a) Vughy microstructure with predominant mesovughs, rare macrovughs (b) single- to douple-spaced porphyric related distribution (c) preferred orientation of voids is strong.

<u>II. Groundmass</u>
(a) Hetrogeneous: Samples 00/114,169,170 show fully oxidized fabric while sample 00/171 shows reduced (black) core with oxidized surfaces
(b) Micromass: optically inactive. Colour: pp (x40) = yellowish brown, sample 00/114 brown edges, grey brown core, xp (x40) dark red brown, sample 00/114 dark red brown edges, black core

(c) Inclusions
c:f:v $_{10\mu m}$ = 10:80:10

Composition: Due to unimodal grain size frequency the coarse and fine fraction are treated together.

Dominant: MONOCRYSTALLINE QUARTZ - predominantly coarse silt-sized with rare fine sand-sized grains. Grains are sub-angular to sub-rounded, few showing undulose extinction
Frequent: BIOTITE MICA - predominantly silt-sized, but very rarely medium sand-sized, MUSCOVITE – predominantly silt-sized but lathes may be up to 0.2mm in length
Rare: POLYCRYSTALLINE QUARTZ - equigranular, elongated sub-grains with slightly sutured grain boundaries. Extinction is undulose. Fragments are very fine to fine sand-sized. CHERT- equigranular microquartz, sub-angular to sub-rounded and very fine to fine sand-sized.
None to very rare: PHYLLITE - predominantly biotite mica with silt-sized quartz. Sub-angular and fine sand-sized, PLAGIOCLASE – cloudy, showing polysynthetic twinning, sub-rounded grains up to very fine sand-sized, AMPHIBOLE – medium to coarse silt-sized, pleochroic

III. Textural concentration features
Tcf = <5% of total field
Very dark brown to black (pp x40), dark red (xp x40), optically inactive, high optical density, sharp to clear boundaries, well rounded with apparent high sphericity.
Constituents: 0-2% well sorted, silt-sized monocrystalline quartz. Between 0.1 and 0.75 mm, with a mode of *c.* 0.25mm.

IV Amorphous concentration (depletion) features
Acf = < 1% of total field
Black to dark red brown (xp x45) nodules. Well sorted, approximately 0.1mm in size

V Crystalline concentration (depletion) features
Kcf = 2% of total field
Present as geodic calcite on void walls accompanied by lighter halos around the pores. This may indicate limestone (micrite) was originally present as inclusions in the ceramic but was decomposed to secondary calcite due to its high firing. Also present as lenses of microcrystalline calcite

15.3 QUARTZ-BIOTITE FABRIC B2
Sample: 00/178

I. Microstructure
(a) Vughy microstructure; frequent micro- and mesovesicles, common mesovughs, rare macrovughs, (b) single-spaced porphyric related distribution, (c) vughs and micas show strongly preferred orientation

II. Groundmass
(a) Homogeneous
(b) optically slightly active, Colour: pp (x40) = brown, xp (x40) = dark orange brown

(c) Inclusions
$c:f:v_{10\mu m}$ = 10:85:5, $c:f:v_{100\mu m}$ = 7:88:5

Composition: Due to the bimodal grain-size frequency distribution the coarse and fine inclusions (either side of about 0.1mm) are treated separately
(a) Coarse Inclusions
Frequent: MONOCRYSTALLINE QUARTZ – well sorted, rounded to sub-rounded and fine sand-sized, BIOTITE – very fine sand to fine sand-sized, oxidized
Common: MUSCOVITE – sub-rounded and elongated up to fine sand-sized and lathes up to 0.2mm
Few: MICRITE – rounded, very fine sand-sized.
Rare: PLAGIOCLASE – angular to sub-angular and very fine to fine sand-sized, FELDSPARS – greyish-white first order colours, two cleavages, zoning at edges, sub-rounded and very fine sand to fine sand-sized,
Very rare: POLYCRYSTALLINE QUARTZ – sub-angular and fine sand-sized. Sub-grains are equigranular with straight boundaries and more or less straight extinction, AMPHIBOLE – sub-angular and very fine sand-sized, strongly pleochroic

(b) Fine Inclusions
Common: QUARTZ, BIOTITE, MUSCOVITE
Few: PLAGIOCLASE, FELDSPARS
Very rare: AMPHIBOLE

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = 1% of total field
Black (pp x40), very dark red to black (xp x40), well sorted and rounded pure nodules. Size is c. 0.08mm

V Crystalline concentration (depletion) features
Kcf = absent

15.4 QUARTZ-BIOTITE FABRIC B3
Sample: 00/173,174,177,180,182

I. Microstructure
(a) Vughy microstructure; frequent micro- and mesovesicles, few mesovughs and macrovughs, (b) fine inclusions show open-spaced porphyric related distribution, coarse inclusions show double to open-spaced porphyric related distributions, (c) vughs show moderately preferred orientation

II. Groundmass
(a) Homogenous
(b) Micromass: optically inactive, Colour: pp (x40) = dark orange brown to grey brown, xp (x40) = dark red to mottled dark red and grey brown

(c) Inclusions
c:f:v $_{10\mu m}$ = 7:83:10, c:f:v $_{100\mu m}$ = 5:85:10

Composition: Due to the bimodal grain-size frequency distribution the coarse and fine inclusions (either side of about 0.1mm) are treated separately

(a) Coarse Inclusions
Common: MONOCRYSTALLINE QUARTZ – angular to sub-angular and very fine sand to medium sand-sized, predominantly showing straight extinction, rarely undulose extinction, LIMESTONE – micrite. Rounded to sub-rounded and medium sand-sized. Predominantly appears as micritic clots commonly with external quasi-coatings of secondary calcite surrounding the clots.
Few: POLYCRYSTALLINE QUARTZ – medium sand-sized, equigranular sub-grains with straight to sutured grain boundaries, FELDSPARS – greyish-white first order colours, two cleavages, commonly zoned, twins absent, angular to sub-angular and very fine sand to medium sand-sized,
Rare to very rare: QUARTZ-BIOTITE SCHIST/QUARTZ-BIOTITE-MUSCOVITE SCHIST – sub-rounded and elongate to sub-angular, and coarse sand-sized, MUSCOVITE PHYLLITE /QUARTZ-BIOTITE PHYLLITE – sub-rounded and fine to medium sand-sized.
Very Rare: MUSCOVITE – lathes up to 0.14mm, CHERT – rounded and coarse sand-sized, equigranular microquartz.
Very rare to absent: MICROCLINE – tartan twinning, sub-rounded and fine sand-sized, BIOTITE – sub-rounded and fine sand-sized

b. Fine Inclusions
Common: MONOCRYSTALLINE QUARTZ, BIOTITE, MUSCOVITE
Rare: FELDSPARS – showing zoning and rarely simple twinning

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = 3% of total field
Black (pp x40), dark red to black (xp x40), rounded to sub-angular, opaque nodules. Maximum size is 0.55mm, mode is 0.25mm

V Crystalline concentration (depletion) features
Kcf = 5% of total field
(1) see LIMESTONE (micritic clots) above, (2) lenses of microcrystalline calcite of CA origin

15.4 QUARTZ-BIOTITE FABRIC B4
Sample: 00/181

I. Microstructure
(a) Vughy microstructure; frequent microvesicles, common mesovesicles, rare microvughs and mesovughs, (b) double spaced-porphyric related distribution, (c) micas show moderately preferred orientation

II. Groundmass
(a) Homogenous
(b) Micromass: optically inactive, Colour: pp (x40) = dark brown, xp (x40) = mottled dark red/dark grey brown

(c) Inclusions
$c:f:v_{10\mu m}$ = 10:80:10,
Composition: Well sorted unimodal grain-size frequency distribution.

Predominant: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and very fine to fine sand-sized
Few: MUSCOVITE – very fine to fine sand-sized, BIOTITE – very fine to very fine sand-sized, oxidized
Very rare: AMPHIBOLE – sub-angular and medium sand-sized, strongly pleochroic, FELDSPAR – zoned, fine sand-sized

III. Textural concentration features
Tcf = absent

IV Amorphous concentration (depletion) features
Acf = <1% of total field
Black (pp x40), dark red to black (xp x40), well sorted nodules, mode is *c.* 0.08mm

V Crystalline concentration (depletion) features
Kcf = absent

15.5 QUARTZ-BIOTITE FABRIC B5
Sample: 00/175

As QUARTZ-BIOTITE GROUP B3 above, but with the coarse fraction absent. The $c:f:v_{10\mu m}$ ratio is et at 5:90:5

16. QUARTZ-MICA FABRIC
Sample: 00/176

I. Microstructure
(a) Vughy microstructure; predominant mesovughs, few macrovughs, (b) single-spaced porphyric related distribution, (c) micas show strongly preferred orientation

II. Groundmass

(a) Homogenous
(b) Optically very active, Colour: pp (x40) = light orange brown, xp (x40) = orange brown

(c) Inclusions
$c{:}f{:}v_{10\mu m}$ = 10:83:7

Composition: Unimodal grain-size frequency distribution

Frequent: MONOCRYSTALLINE QUARTZ – angular to sub-rounded and silt to very fine sand-sized, commonly with microlithic inclusions, MUSCOVITE – silt to fine sand-sized
Common: BIOTITE MICA – silt to fine sand-sized,
Few: MUSCOVITE-QUARTZ PHYLLITE/MUSCOVITE BIOTITE PHYLLITE – sub-rounded and very fine to fine sand-sized
Rare: POLYCRYSTALLINE QUARTZ – sub-angular and fine sand-sized, PLAGIOCLASE - sub-angular to sub-rounded and very fine to fine sand-sized, CHERT – equigrannular microquartz, sub-rounded and very fine sand to sand-sized
Very rare: CLINOPYROXINE – sub-rounded and very fine sand-sized, pale green and pleochroic

III. Textural concentration features
Tcf = 2% of total field
Dark orange red (pp x40), red (xp x40), high optical density with sharp boundaries, rounded with high apparent sphericity. Constituents: *c.* 5% predominant, well sorted, quartz silt, few white mica silt, and no preferred internal orientation. Average size is about 0.6mm

IV Amorphous concentration (depletion) features
Acf = 1% of total field
Black (pp x40), black (xp x40) well sorted, pure nodules. Average size is *c.* 0.02mm

V Crystalline concentration (depletion) features
Kcf = absent

APPENDIX V

PROTOCOL FOR CERAMIC DIGESTION FOR ICP-AES

The protocol used for the dissolution of ceramic samples for analysis by ICP-AES is that set out Royal Holloway Analytical Services (Method Sheet TRACES).

The surfaces of the ceramic samples were cleaned by drilling (using a diamond tip bit). Particular care was taken to ensure all traces of glaze and slip were removed. The cleaned sherds were powdered using an agate ball mill, and the powdered samples dried at 80°C for 24 hours.

0.1g ±0.0005g of sample were weighed into 10ml PTFE crucibles and 4ml of a 1:2 mixture of $HClO_4$ and HF acids were added to each crucible. The crucibles were set on a hot plate and evaporated to dryness (100°C for 3 to 4 hours). After cooling, 1ml each of HCl and distilled water was added to the crucible and the solutions warmed on the hot plate at 100°C until all ceramic residues had dissolved.

After cooling the solutions were transferred to plastic tubes and diluted to 10.20g ± 0.1g using 10ml of distilled water. The tubes were capped and shaken well to ensure complete mixing of the solution. Every batch of 70 samples made included two blanks (i.e. solutions made up using the above procedure but omitting the powdered sample) to check for contaminations. ARISTAR grade acids were used throughout. Between batches the PTFE crucibles were decontaminated by boiling for four hours in 50% v/v HNO_3 and followed by rinsing with 18Mς de-ionised water.

APPENDIX VI
PRECISION AND ACCURACY FOR SL-1 AND SOIL-7

VI.1 Showing calculations for the determination of precision and accuracy for ICP-AES analysis using the soil standards SL-1 and Soil-7. Major and minor elements are given.

	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K2O	TiO_2	P_2O_5	MnO
SL-1 cert		**9.64**			**0.23**	**1.74**	**0.86**		**0.45**
	21.37	10.57	1.16	0.44	0.21	1.62	0.79	0.24	0.5
	19.98	10	1.07	0.41	0.2	1.53	0.76	0.23	0.48
	21.62	10.76	1.13	0.53	0.22	1.37	0.81	0.24	0.5
	20.74	10.28	1.12	0.43	0.21	1.57	0.77	0.24	0.49
Mean	20.93	10.40	1.12	0.45	0.21	1.52	0.78	0.24	0.49
Sdev	0.73	0.33	0.04	0.05	0.01	0.11	0.02	0.01	0.01
Precision %	3.50	3.20	3.34	11.75	3.89	7.10	2.83	2.11	1.94
Accuracy %		7.91			-8.70	-12.50	-9.01		9.44

SOIL-7 cert	**8.88**	**3.67**	**1.87**	**22.82**	**0.32**	**1.45**	**0.5**		**0.08**
	9.43	3.8	1.96	23.74	0.3	1.52	0.48	0.1	0.08
	8.56	3.44	1.77	21.72	0.28	1.39	0.44	0.09	0.08
	9.26	3.7	1.89	23.34	0.3	1.51	0.47	0.1	0.08
	9.26	3.73	1.89	23.15	0.3	1.49	0.46	0.1	0.08
Mean	9.13	3.67	1.88	22.99	0.30	1.48	0.46	0.10	0.08
Sdev	0.39	0.16	0.08	0.88	0.01	0.06	0.02	0.01	0.00
Precision %	4.24	4.29	4.20	3.83	3.39	4.04	3.69	5.13	0.00
Accuracy %	2.79	-0.07	0.40	0.73	-7.81	1.90	-7.50		0.00

VI.2 Showing calculations for the determination of precision and accuracy for ICP-AES analysis using the soil standards SL-1 and Soil-7. Trace elements are given.

	Ba	Co	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zn	Zr*	La
SL-1 cert	**639**	**19.8**	**104**	**30**		**44.9**	**17.3**	**80**	**170**		**223**		**52.6**
	691	18	121	35	70	54	18	81	182	40	210	146	53
	669	18	115	32	67	52	17	77	172	36	217	127	47
	690	17	121	40	70	54	18	81	179	40	265	133	54
	700	18	120	33	69	54	18	82	179	39	208	136	55
Mean	687.5	17.75	119.25	35	69	53.50	17.75	80.25	178	38.75	225	135.5	52.25
Sdev	13.13	0.50	2.87	3.56	1.41	1.00	0.50	2.22	4.24	1.89	26.94	7.94	3.59
Precision %	1.91	2.82	2.41	10.17	2.05	1.87	2.82	2.76	2.38	4.89	11.98	5.86	6.88
Accuracy %	7.59	-10.35	14.66	16.67		19.15	2.60	0.31	4.71		0.90		-0.67
SOIL-7 cert		**8.9**	**60**	**11**			**8.3**	**108**	**66**	**21**	**104**	**185**	
	160	6	58	14	38	27	8	111	65	23	100	70	29
	146	6	52	11	35	26	8	101	58	20	86	64	26
	156	6	56	12	37	27	8	109	64	22	97	69	29
	160	6	57	12	37	27	8	111	63	22	98	63	27
Mean	155.5	6.00	55.75	12.25	36.75	26.75	8	108	62.50	21.75	95.25	66.50	27.75
Sdev	6.61	0.00	2.63	1.26	1.26	0.50	0.00	4.76	3.11	1.26	6.29	3.51	1.50
Precision %	4.25	0.00	4.72	10.27	3.42	1.87	0.00	4.41	4.97	5.79	6.61	5.28	5.41
Accuracy %		-32.58	-7.08	11.36			-3.61	0.00	-5.30	3.57	-8.41	-64.05	

APPENDIX VII

EMPA/SEM-EDS SAMPLE MANUFACTURE

Small samples of glaze and attached ceramic were cut from the sherds using a Buehler Isomet low speed saw with a diamond coated wafering blade. The samples were washed with distilled water and detergent in a Langford Sonomatic sonic bath to eliminate residues of soil, organics and fingerprints, and dried at 100°C for 24 hours. When cooled to room temperature they were mounted in Buehler Epo-Kwick epoxy resin (5 parts resin to 1 part hardener) and vacuum impregnated in a Gallenkamp vacuum oven at 950 mbar for 2 minutes to ensure sample consolidation. The resin mounts were left to cure for 1 hour at 50°C. When hardened, the mounted samples were polished down to ¼mm using Buehler Metadi diamond compound spray. Between each grade of diamond compound the samples were washed in ethanol for 5 minutes in the sonic bath to ensure removal of any contaminants. Following inspection by optical microscopy the samples were coated with a 30 nm thick carbon film in preparation for examination by EPMA and SEM-EDS

APPENDIX VIII

PRECISION AND ACCURACY FOR NIST 620 AND GLASS 8

VIII.1 Precision and accuracy calculations for standard NIST 620, Run 1, for the EPMA analysis of the glazes

	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	As_2O_3	MgO	CaO	Na_2O	K_2O
NIST 620	**72.08**	**0.02**	**1.80**	**0.04**	**0.06**	**3.69**	**7.11**	**14.39**	**0.41**
	73.16	0.01	1.96	0.05	0.00	3.95	7.55	13.86	0.37
	73.26	0.01	1.95	0.04	0.00	3.94	7.54	13.77	0.40
	73.26	0.04	1.94	0.06	0.00	3.98	7.54	13.96	0.37
	73.48	0.01	1.93	0.06	0.00	3.98	7.53	13.85	0.37
	73.07	0.02	1.94	0.04	0.00	3.92	7.53	13.75	0.38
	73.32	0.01	1.93	0.05	0.00	3.96	7.57	13.95	0.35
Mean	73.26	0.02	1.94	0.05	0.00	3.95	7.55	13.86	0.37
Sdev	0.14	0.01	0.01	0.01	0.00	0.02	0.01	0.09	0.01
Precision %	0.19	68.81	0.53	17.86	0.00	0.58	0.20	0.63	3.77
Accuracy %	1.64	-6.48	7.90	17.83	-100.00	7.13	6.12	-3.72	-8.98

VIII.2 Precision and accuracy calculations for standard NIST 620, Run 2, for the EPMA analysis of the glazes

	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	As_2O_3	MgO	CaO	Na_2O	K_2O
NIST 620	**72.08**	**0.02**	**1.80**	**0.04**	**0.06**	**3.69**	**7.11**	**14.39**	**0.41**
	72.50	0.00	1.93	0.04	0.00	4.16	7.49	13.62	0.37
	73.69	0.04	1.95	0.02	0.00	4.16	7.50	13.52	0.36
	72.52	0.05	1.98	0.06	0.00	4.11	7.50	13.65	0.34
	74.06	0.00	1.98	0.05	0.00	4.09	7.64	13.52	0.36
	73.22	0.03	1.97	0.04	0.00	4.12	7.49	13.28	0.35
	73.20	0.02	1.96	0.04	0.00	4.13	7.52	13.52	0.36
Mean	0.69	0.02	0.02	0.01	0.00	0.03	0.07	0.14	0.01
Sdev	0.95	92.67	1.10	35.02	0.00	0.81	0.87	1.07	3.12
Precision %	1.55	37.78	9.00	-5.12	-100.00	11.86	5.81	-6.07	-13.17
Accuracy %	72.08	0.02	1.80	0.04	0.06	3.69	7.11	14.39	0.41

VIII.3 Precision and accuracy calculations for standard Glass 8, Run 1, for the EPMA analysis of the glazes

	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	As_2O_3	PbO	Na_2O	K_2O	SiO_2
Glass 8	**56.34**	**0.02**	**0.05**	**0.01**	**0.32**	**30.59**	**0.23**	**11.85**	**56.34**
	55.23	0.00	0.00	0.02	0.29	31.78	0.23	10.61	55.23
	55.61	0.02	0.00	0.00	0.28	31.94	0.20	10.62	55.61
	55.30	0.00	0.00	0.01	0.30	31.50	0.20	10.63	55.30
	55.62	0.01	0.00	0.00	0.31	31.79	0.20	10.51	55.62
	55.34	0.02	0.00	0.03	0.30	31.87	0.23	10.62	55.34
	55.37	0.04	0.01	0.01	0.32	31.90	0.17	10.62	55.37
Mean	55.41	0.02	0.00	0.01	0.30	31.80	0.21	10.60	55.41
Sdev	0.16	0.01	0.00	0.01	0.01	0.16	0.02	0.05	0.16
Precision %	0.30	98.52	244.95	103.00	4.25	0.50	11.57	0.44	0.30
Accuracy %	-1.65	-25.00	-97.67	18.33	-6.67	3.94	-10.43	-10.55	-1.65

VIII.3 Precision and accuracy calculations for standard Glass 8, Run 2, for the EPMA analysis of the glazes

	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	As_2O_3	PbO	Na_2O	K_2O	SiO_2
Glass 8	**56.34**	**0.02**	**0.05**	**0.01**	**0.32**	**30.59**	**0.23**	**11.85**	**56.34**
	55.29	0.01	0.00	0.01	0.29	31.11	0.20	9.97	55.29
	56.62	0.03	0.00	0.00	0.29	31.15	0.20	9.85	56.62
	55.92	0.08	0.01	0.00	0.28	31.04	0.16	9.77	55.92
	56.65	0.00	0.00	0.02	0.29	31.13	0.19	9.93	56.65
	55.16	0.07	0.00	0.00	0.29	30.99	0.19	9.74	55.16
	55.17	0.03	0.00	0.02	0.27	31.11	0.17	9.88	55.17
Mean	55.80	0.04	0.00	0.01	0.29	31.09	0.19	9.86	55.80
Sdev	0.70	0.03	0.00	0.01	0.01	0.06	0.02	0.09	0.70
Precision %	1.26	86.72	121.56	122.56	3.43	0.20	9.66	0.91	1.26
Accuracy %	-0.95	78.33	-96.33	-21.67	-10.73	1.63	-18.91	-16.82	-0.95

APPENDIX IX

Chemical group membership of each sample as defined by cluster analysis. The composition of each sample and its petrographic group membership is also given. Samples not assigned to chemical groups in the table are considered outliers.

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 1	00/151	Altered Feldspar B	22.49	3.99	0.52	0.37	0.15	0.74	1.1	0.03	32	96	82	33	38	156	91	24
	00/143	Altered Feldspar C	23.58	1.66	0.54	0.48	0.27	1.7	1.3	0.01	60	38	57	29	62	173	50	28
	00/140	Altered Feldspar A1	28.53	2.53	0.58	0.33	0.26	0.89	1.09	0.01	81	55	56	56	32	255	28	30
	00/152	Altered Feldspar B	20.27	2.37	0.56	0.36	0.12	0.78	1.07	0.02	41	74	40	30	33	161	82	18
	00/142	Altered Feldspar A2	20.16	1.85	0.45	0.53	0.14	0.53	0.99	0.01	33	63	89	26	38	131	78	14
	00/145	Altered Feldspar A2	20.45	1.94	0.48	1.09	0.14	0.52	1.02	0.01	31	64	90	26	48	135	82	14
	00/148	Altered Feldspar A1	25.08	1.68	0.51	0.34	0.12	0.8	1.11	0.01	31	104	97	35	35	173	95	21
	00/157	Altered Feldspar B	21.31	1.7	0.45	0.34	0.16	0.8	1.11	0.01	49	122	91	29	41	150	68	14
	00/158	Altered Feldspar B	21.12	1.71	0.44	0.33	0.19	0.8	1.06	0.01	40	97	94	29	37	138	67	15
	00/154	Altered Feldspar A1	26.38	1.89	0.5	0.37	0.14	0.55	1.14	0.01	34	71	115	36	39	141	66	28
	00/141	Altered Feldspar A1	25.91	2.11	0.54	0.4	0.14	0.75	1.1	0.01	34	95	79	36	37	166	136	22
	00/155	Altered Feldspar B	20.3	1.76	0.41	0.24	0.15	0.74	1.14	0.01	22	70	84	29	33	146	67	17
	00/146	Altered Feldspar A1	23.38	3.17	0.5	0.41	0.13	0.64	1.14	0.01	30	71	82	32	38	185	76	18
	00/159	Altered Feldspar A1	27.91	2.64	0.56	0.53	0.14	0.46	1.22	0.01	32	76	116	38	44	170	87	34
	00/147	Altered Feldspar A2	21.66	2.35	0.49	0.53	0.17	0.68	1.09	0.01	32	65	76	32	38	240	61	21
	00/139	Altered Feldspar A1	25.51	2.74	0.52	0.37	0.26	0.55	1.19	0.01	37	86	96	33	40	163	84	22
	00/144	Altered Feldspar A1	25.43	2.66	0.53	0.37	0.24	0.68	1.23	0.01	27	93	92	32	36	170	83	22
	00/150	Altered Feldspar B	20.99	2.15	0.42	0.24	0.15	0.5	1.22	0.01	24	54	88	28	34	151	60	13
	00/156	Altered Feldspar A1	20.68	2.14	0.42	0.27	0.13	0.48	1.14	0.01	33	66	81	28	37	189	50	15
	00/149	Altered Feldspar A1	27.32	2.32	0.45	0.31	0.15	0.46	1.16	0.01	38	95	93	42	33	234	73	20
	00/153	Altered Feldspar A1	23.22	2.21	0.48	0.38	0.14	0.58	1.14	0.01	36	76	89	31	38	149	76	24
	00/160	Altered Feldspar A1	24.18	2.2	0.51	0.34	0.15	0.67	1.08	0.01	34	92	76	33	34	173	80	26

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 2	00/127	Fine Muscovite Biotite	20.98	8.69	1.5	0.63	0.8	3.43	0.59	0.2	115	87	48	20	121	152	124	67
	00/130	Muscovite Schist A	18.27	9.04	1.9	0.76	0.7	2.65	0.7	0.07	262	48	71	22	110	143	107	37
	00/132	Muscovite Schist A	19.68	8.42	1.65	0.65	1	2.83	0.66	0.08	156	45	49	20	78	133	125	61
	00/131	Muscovite Schist A	20.25	8.51	1.4	0.57	0.92	3.03	0.58	0.08	84	48	49	20	87	134	110	62
	00/133	Muscovite Schist A	20.01	8.66	1.63	0.67	1.01	2.89	0.64	0.08	106	42	52	21	78	141	122	59
	00/128	Quartz Chert Micrite	12.54	6.03	1.89	13.54	0.46	1.91	0.62	0.16	206	403	63	13	363	94	80	37
	00/93	Clay Pellet B	17.88	7.88	3.27	12.46	0.63	2.92	0.74	0.11	287	490	104	20	379	138	114	39
Group 3	00/53	Medium Coarse Mudstone Chert	13.3	7.92	1.23	4.22	0.16	0.9	0.68	0.51	421	101	69	16	116	119	120	49
	00/54	Medium Coarse Mudstone Chert	15.07	8.26	1.95	5.12	0.31	1.5	0.71	0.45	505	103	84	19	145	130	124	46
	00/50	Medium Coarse Mudstone Chert	17.71	7.07	2.51	6.06	0.49	2.43	0.78	0.22	257	52	95	20	334	154	128	46
	00/176	Quartz Mica	13.84	8.03	7.99	9.03	1.19	2.18	0.69	0.18	368	54	58	19	169	123	96	28
	00/125	Coarse Mudstone Chert B	12.23	5.94	2.7	10.41	0.39	2.46	0.54	0.21	195	72	54	15	301	101	87	25
Group 4	00/175	Quartz Biotite B5	19.87	8.44	4.6	11.63	0.67	3.26	0.77	0.14	283	65	79	22	197	148	110	45
	00/76	Clay Pellet B	17.74	8.31	3.18	13.84	0.64	2.75	0.75	0.14	275	66	87	20	376	137	105	39
	00/182	Quartz Biotite B3	17.03	7.28	4.03	14.03	0.58	2.98	0.62	0.16	310	92	65	18	269	116	103	38
	00/177	Quartz Biotite B3	17.96	7.57	5.17	13.56	0.9	2.27	0.68	0.16	331	71	65	19	248	123	106	40
	00/173	Quartz Biotite B3	17.59	7.48	4.53	13.44	0.53	2.8	0.64	0.15	234	62	68	19	288	119	111	42
	00/28	Fine Quartz Micrite	13.68	6.52	3.06	10.41	1.38	2.06	0.62	0.12	196	62	63	16	218	99	101	30
	00/180	Quartz Biotite B3	18.88	8.16	4.09	11.67	0.48	2.24	0.66	0.16	310	73	76	19	273	117	113	44
	00/114	Quartz Biotite B1	15.61	7.45	3.32	8.57	1.53	2.27	0.74	0.12	187	83	74	18	226	123	104	32
	00/170	Quartz Biotite B1	14.76	7.07	3.65	7.44	1.21	2.54	0.74	0.14	195	54	73	17	269	112	94	31
	00/169	Quartz Biotite B1	15.36	7.04	3.59	7.75	1.1	2.58	0.76	0.15	157	44	77	18	263	119	94	34

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 4	00/171	Quartz Biotite B1	15.5	7.1	3.6	7.49	1.24	2.64	0.7	0.15	164	48	74	18	275	120	96	34
	00/178	Quartz Biotite B2	17.81	7.21	4.26	7.01	1.12	3.27	0.77	0.22	246	50	71	19	183	117	116	37
	00/172	Quartz Biotite A	16.31	7.85	3.48	7.81	1.04	2.61	0.76	0.21	187	70	60	20	202	133	112	38
	00/179	Quartz Biotite A	15.25	7.62	3.56	7.42	0.99	2.56	0.76	0.22	240	69	62	19	144	125	104	34
Group 5	00/47	Schist Phyllite A2	15.66	7.35	6.78	10.63	1.26	2.34	0.73	0.12	461	46	77	19	404	107	116	35
	00/46	Schist Phyllite A1	15.31	7.79	4.78	8.39	0.79	2.22	0.64	0.14	511	67	72	19	223	109	115	31
	00/48	Schist Phyllite A1	16.29	7.61	4.98	8.47	0.72	1.82	0.69	0.13	495	85	78	20	242	118	116	31
	00/45	Schist Phyllite A1	15.88	7.67	4.57	10.57	0.64	2.35	0.68	0.1	531	76	74	20	278	117	115	30
	00/67	Schist Phyllite A1	15.39	7.17	4.65	11.14	1.1	2.85	0.7	0.1	574	76	69	20	201	115	109	29
	00/49	Schist Phyllite A1	16.92	8.16	5.01	5.62	0.88	2.37	0.75	0.09	421	58	84	21	241	114	128	36
	00/66	Schist Phyllite A1	16.15	7.79	5.09	7.72	0.87	3.36	0.73	0.1	461	55	81	20	179	122	113	36
	00/52	Chert Quartz A	15.77	7.3	2.22	10.09	0.3	1.6	0.7	0.11	251	139	82	16	303	131	95	37
Group 6	00/02	Clay Pellet B	15.65	7.3	3.03	15.02	0.55	0.78	0.69	0.15	246	87	78	18	444	110	99	37
	00/116	Clay Pellet A	15.58	7.25	3.02	17.4	1.06	1.5	0.69	0.13	245	88	81	17	521	112	103	35
	00/08	Clay Pellet B	13.49	6.06	2.7	19.61	0.63	1.01	0.63	0.14	188	63	72	15	469	96	97	34
	00/10	Clay Pellet B	13.11	5.97	2.59	20.64	0.69	1.06	0.61	0.13	148	60	71	15	502	98	87	32
	00/62	Clay Pellet A	14.43	6.61	2.24	15.77	0.41	2	0.66	0.12	256	60	76	15	551	110	91	35
	00/29	Micaceous Silt/Sandstone A	14.27	6.21	3.02	13.45	0.92	2.09	0.54	0.1	311	64	68	16	297	93	94	27
	00/27	Micaceous Silt/Sandstone A	13.73	5.7	3.13	13.55	0.99	1.54	0.53	0.08	207	60	71	15	327	94	94	27
	00/40	Quartz Silt	13.15	6.17	3.52	16.21	1.1	2.66	0.6	0.1	211	81	72	15	318	93	94	28
	00/25	Micaceous Silt/Sandstone A	14.33	5.97	3.02	14.96	1	2.36	0.57	0.09	209	62	75	16	358	98	96	28
	00/26	Micaceous Silt/Sandstone A	14.14	6.06	3.13	12.69	1.08	2.57	0.56	0.08	242	64	68	15	311	90	97	27

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 6	00/07	Clay Pellet B	12.97	5.88	2.77	21	0.7	1.97	0.57	0.13	180	76	73	15	529	98	92	31
	00/65	Clay Pellet A	11.82	5.44	2.58	18.58	0.51	2.01	0.59	0.14	171	69	63	13	414	88	78	30
	00/04	Clay Pellet B	11.97	5.57	2.43	19.15	0.61	1.5	0.57	0.13	175	84	61	13	468	88	85	28
	00/09	Clay Pellet B	13.18	5.92	2.66	20.35	0.61	1.45	0.61	0.14	173	69	71	15	471	87	89	33
	00/75	Clay Pellet B	15.72	6.91	3.03	17.48	0.8	2.42	0.65	0.12	263	125	93	18	390	120	104	35
	00/91	Clay Pellet B	15.61	7.5	3.3	17.55	0.6	2.59	0.67	0.14	257	113	79	18	508	111	111	35
	00/88	Clay Pellet B	15.01	7.11	2.9	18.88	0.72	2.53	0.66	0.13	224	119	75	17	496	119	95	34
	00/96	Clay Pellet C	16.02	7.49	3.34	19	0.62	2.92	0.67	0.14	230	109	90	18	515	133	109	35
	00/80	Clay Pellet B	14.75	6.95	3.03	17.59	0.64	3.32	0.64	0.12	201	87	72	17	435	125	104	32
	00/89	Clay Pellet C	15.7	7.32	3.66	19.14	0.66	2.41	0.67	0.13	214	73	91	18	571	116	108	34
	00/73	Clay Pellet B	14.13	6.56	2.67	21.49	0.65	2.26	0.59	0.12	193	60	72	16	485	113	92	32
	00/100	Clay Pellet C	15.19	6.81	3.14	19.6	0.82	2.46	0.68	0.14	201	77	84	17	488	129	102	35
	00/90	Clay Pellet B	14.9	6.95	2.93	17.21	0.91	2.93	0.64	0.13	233	70	73	16	423	106	95	33
	00/79	Clay Pellet B	14.21	6.53	2.8	17.96	0.69	2.7	0.58	0.13	224	72	69	16	422	119	94	32
	00/97	Clay Pellet C	15.18	7.37	3.35	19.13	0.69	2.98	0.67	0.14	242	81	79	18	488	125	97	34
	00/72	Clay Pellet B	13.3	6.28	2.65	17.91	0.73	2.45	0.57	0.12	160	64	66	15	450	108	100	29
	00/92	Clay Pellet B	14.38	6.5	2.7	17.95	0.57	2.66	0.65	0.13	178	70	76	16	451	105	92	32
	00/95	Clay Pellet C	15.48	7.21	3.09	20.26	0.52	2.94	0.66	0.13	221	71	88	17	547	110	105	34
	00/78	Clay Pellet B	11.98	5.78	2.29	19.06	0.7	2.89	0.51	0.12	189	76	59	14	433	98	86	25
	00/87	Clay Pellet B	14.44	6.71	3.07	19.78	0.66	2.94	0.62	0.16	200	104	79	17	481	109	110	32
	00/55	Clay Pellet A	14.4	6.68	2.56	15.21	0.53	1.45	0.68	0.16	241	147	79	16	463	100	91	36
	00/74	Clay Pellet B	15.69	7.03	3.29	15.84	0.67	2.74	0.66	0.12	240	239	82	17	459	114	108	34
	00/06	Clay Pellet B	14	6.59	3.15	19.86	0.7	2.29	0.6	0.13	200	166	79	16	460	108	98	30
	00/77	Clay Pellet B	14.05	6.65	2.67	18.42	0.59	2.42	0.64	0.11	227	161	68	15	455	113	86	31

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
7	00/122	Coarse Mudstone Chert A	14.52	6.87	2.07	7.18	0.36	2.33	0.7	0.32	194	83	52	16	122	103	101	44
	00/129	Coarse Mudstone Chert A	13	6.39	2.07	6.01	0.38	2.46	0.61	0..30	146	67	58	15	175	99	94	29
	00/168	Phyllite A1	17.78	6.6	2.66	7.13	1.39	3.45	0.71	0.11	102	62	63	17	166	111	97	39
Group 8	00/167	Phyllite A1	20.4	7.73	2.57	5.91	1.32	3.88	0.78	0.12	101	49	70	21	104	127	107	42
	00/166	Phyllite A1	19.87	7.49	2.48	4.95	1.37	3.85	0.74	0.12	105	44	69	21	113	125	106	41
	00/57	Phyllite A1	20.32	7.73	2.79	6.76	1.42	3.17	0.74	0.13	143	58	72	20	136	133	111	40
	00/64	Phyllite A1	20.58	7.88	2.4	4.77	1.34	3.78	0.8	0.12	165	41	75	21	100	132	112	41
	00/81	Phyllite A1	21.32	8.29	2.58	4.86	1.29	4.06	0.78	0.13	159	44	72	22	112	142	108	43
	00/101	Phyllite A1	20.21	7.82	2.54	5.08	1.34	3.52	0.77	0.13	154	52	75	21	104	138	110	42
	00/165	Phyllite A2	17.5	6.49	2.2	4.59	1.69	3.27	0.69	0.11	129	45	62	17	107	102	95	41
	00/98	Phyllite A1	19.55	7.49	2.4	6.54	1.43	3.73	0.76	0.12	154	46	72	20	117	133	104	40
	00/118	Phyllite A1	18.82	7.07	2.52	4.94	1.5	3.68	0.73	0.11	171	38	67	19	116	112	101	41
	00/94	Phyllite A1	18.28	6.8	2.37	5.76	1.76	3.31	0.71	0.12	142	35	62	18	113	121	94	41
	00/108	Phyllite A2	18.11	6.92	2.34	5.84	1.58	3.4	0.78	0.12	147	33	60	18	105	115	99	39
	00/99	Phyllite A1	19.22	7.27	2.43	5.29	1.44	3.64	0.75	0.12	157	36	69	20	100	127	101	42
	00/113	Phyllite A1	19.44	7.19	2.55	5.53	1.53	3.67	0.77	0.12	151	42	66	20	107	125	103	43
	00/115	Phyllite A1	21.32	8.12	2.52	5.86	1.32	3.97	0.81	0.13	142	44	81	22	112	138	109	43
	00/119	Phyllite A1	20.22	7.56	2.29	5.78	1.51	3.44	0.76	0.12	134	45	73	20	117	125	104	44
	00/103	Phyllite A1	18.66	7.01	2.24	4.83	1.54	3.62	0.78	0.11	149	36	65	18	108	108	99	41
	00/84	Phyllite A1	19.64	7.42	2.27	4.96	1.53	3.55	0.8	0.12	152	45	72	19	107	121	109	43
	00/104	Phyllite A2	19.33	7.21	2.29	4.63	1.53	3.71	0.76	0.12	150	44	66	19	107	110	103	42
	00/83	Phyllite A1	20.75	8.03	2.58	5.52	1.28	3.87	0.71	0.13	163	47	77	22	130	135	122	42
	00/85	Phyllite A1	19.68	7.36	2.55	5.69	1.39	2.99	0.72	0.12	152	44	72	20	122	121	102	41
	00/117	Phyllite A1	19.45	7.42	2.43	4.85	1.58	3.11	0.75	0.12	155	39	69	20	117	126	101	42

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 8	00/51	Phyllite A1	20.28	7.77	2.51	5.44	1.32	3.35	0.74	0.12	155	46	72	21	123	119	114	41
	00/61	Phyllite A1	19.64	7.48	2.57	5.1	1.45	3.06	0.71	0.12	155	42	68	20	115	113	108	42
	00/82	Phyllite A1	19.89	7.57	2.7	4.89	1.51	3.37	0.74	0.12	151	43	69	20	124	115	111	42
	00/01	Phyllite A1	19.97	7.68	2.41	4.23	1.35	2.7	0.75	0.12	163	49	73	20	112	113	103	39
	00/17	Phyllite A1	19.29	7.4	2.71	5.1	1.55	2.39	0.71	0.12	168	54	68	20	115	127	101	41
	00/11	Phyllite A1	18.91	6.91	2.26	4.88	1.54	2.28	0.69	0.11	136	44	65	19	112	114	101	43
	00/86	Phyllite A1	19.44	7.39	2.48	5.75	1.38	2.39	0.74	0.12	156	48	73	20	112	121	106	41
	00/18	Phyllite A1	20	7.69	2.38	5.21	1.31	3.08	0.71	0.12	118	48	60	20	123	132	107	39
	00/23	Phyllite A1	20.29	7.66	2.47	5.75	1.54	3.29	0.73	0.12	114	48	72	21	117	128	107	42
	00/105	Phyllite A2	19.02	7.16	2.35	4.76	1.61	2.85	0.74	0.12	108	48	65	19	103	117	104	43
	00/58	Phyllite A1	20.69	7.9	2.51	5.32	1.37	3.04	0.78	0.13	144	49	73	21	109	119	112	43
	00/05	Phyllite A1	20.82	8.01	2.56	5.36	1.42	2.73	0.74	0.12	131	58	73	22	115	136	111	41
	00/22	Phyllite A1	20.09	7.77	2.6	5.51	1.33	2.73	0.77	0.12	138	54	73	21	119	122	112	40
	00/16	Phyllite A1	20.28	7.87	2.5	5.14	1.24	2.62	0.7	0.12	141	43	71	21	127	134	104	40
	00/21	Phyllite A1	20.27	7.88	2.6	5.6	1.38	2.7	0.71	0.12	155	48	74	21	122	135	101	40
	00/03	Phyllite A1	22.13	8.68	2.67	5.54	1.1	2.81	0.82	0.13	144	49	80	23	112	146	121	40
	00/63	Phyllite A1	20.48	7.85	2.51	5.49	1.32	2.45	0.74	0.12	120	40	73	21	103	131	109	41
	00/24	Phyllite A1	19.7	7.51	2.51	4.99	1.41	2.83	0.73	0.12	118	39	68	21	111	119	107	41
	00/59	Phyllite A1	20.77	7.89	2.56	6.08	1.19	2.87	0.75	0.12	137	41	75	21	108	128	111	41
	00/12	Phyllite A1	20.84	7.9	2.58	5.39	1.31	3.03	0.73	0.13	150	83	79	21	108	125	113	45
	00/56	Phyllite A1	20.95	8.1	2.65	5.43	1.37	2.79	0.78	0.13	147	96	74	21	109	129	125	41
	00/14	Phyllite A1	18.76	7.16	2.72	6.24	1.42	2.09	0.7	0.12	112	91	66	19	155	121	107	41
	00/13	Phyllite A1	19.83	7.48	2.59	5.58	1.36	2.5	0.73	0.12	125	95	65	20	131	118	108	45
	00/15	Phyllite A1	19.46	7.41	2.53	4.96	1.44	1.98	0.7	0.13	112	95	68	20	123	125	107	44

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 8	00/20	Phyllite A1	19.55	7.38	2.58	6.03	1.4	2.05	0.72	0.12	133	46	68	20	155	112	117	42
	00/19	Phyllite A1	18.55	7.13	2.45	6.98	1.38	2.57	0.7	0.12	141	73	66	19	152	124	105	39
	00/60	Phyllite A1	19.68	7.55	2.69	7.62	1.33	2.45	0.71	0.12	138	65	69	20	183	124	106	39
	00/124	Muscovite Schist B	14.38	7.61	1.83	5.72	0.75	1.8	0.72	0.09	321	51	65	18	130	124	97	34
Group 9	00/109	Micaceous Silt/Sandstone B	14.26	6.02	2.78	8.16	1.15	2.94	0.55	0.05	246	47	61	14	150	86	86	30
	00/111	Micaceous Silt/Sandstone B	15.23	5.38	2.72	8.23	1.32	2.76	0.52	0.04	208	40	58	14	133	85	85	28
	00/181	Quartz Biotite B4	18.52	7.56	2.92	7.15	1.25	2.75	0.81	0.07	145	44	64	21	289	144	97	37
	00/39	Micaceous Silt/Sandstone B	14.95	5.87	2.33	5.46	1.2	2.23	0.64	0.05	153	46	71	14	154	104	94	28
	00/35	Micaceous Silt/Sandstone B	14.26	5.93	2.15	6.19	1.19	1.57	0.66	0.07	118	48	75	14	158	110	96	31
	00/36	Micaceous Silt/Sandstone B	14.02	5.91	2.41	5.37	1.26	1.6	0.64	0.06	160	46	73	13	163	103	93	30
	00/38	Micaceous Silt/Sandstone B	13.95	5.8	2.24	5.36	1.22	1.66	0.66	0.06	129	39	74	13	148	100	96	28
	00/174	Quartz Biotite B3	16.16	7.73	3.71	5.69	0.85	3.92	0.53	0.08	321	44	61	19	184	124	121	37
	00/30	Micaceous Silt/Sandstone B	14.88	5.81	2.76	5.73	1.31	1.33	0.57	0.05	240	52	64	14	112	96	89	29
	00/31	Micaceous Silt/Sandstone B	15.76	6.12	3.36	2.23	1.31	2.3	0.52	0.04	316	48	71	15	94	97	96	28
	00/68	Micaceous Silt/Sandstone B	14.98	6.2	2.83	3.19	1.31	2.91	0.64	0.06	225	77	75	14	130	103	106	31
	00/70	Micaceous Silt/Sandstone B	14.32	6.02	2.48	4.15	1.24	2.64	0.69	0.06	163	39	76	13	144	107	94	31
	00/106	Micaceous Silt/Sandstone B	16.37	6.71	3.21	3.88	1.23	2.57	0.74	0.06	209	66	75	16	114	128	100	34
	00/42	Micaceous Silt/Sandstone B	15.59	6.34	2.73	3.27	1.3	2.04	0.62	0.05	250	46	72	15	109	103	95	32
	00/41	Micaceous Silt/Sandstone B	15.55	6.02	2.49	3.41	1.37	2.37	0.62	0.05	187	45	70	14	115	98	93	33
	00/43	Micaceous Silt/Sandstone B	15.94	5.97	2.76	3.1	1.32	2.29	0.58	0.05	238	51	66	15	121	105	98	30
	00/71	Micaceous Silt/Sandstone B	15.4	6.44	2.84	3.17	1.25	1.9	0.66	0.06	247	50	73	15	126	101	98	31
	00/33	Micaceous Silt/Sandstone B	14.98	6.36	2.76	4.43	1.3	2.12	0.56	0.06	238	51	66	14	121	104	96	28
	00/44	Micaceous Silt/Sandstone B	15.17	6.04	2.59	3.21	1.25	1.7	0.62	0.06	189	44	74	15	115	97	97	34
	00/34	Micaceous Silt/Sandstone B	14.98	6.09	2.55	3.68	1.25	1.9	0.64	0.06	184	49	71	14	117	101	94	29

Group	Sample	Petrographic Group	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO	Cr	Cu	Li	Sc	Sr	V	Zn	La
Group 9	00/37	Micaceous Silt/Sandstone B	14.92	6.03	2.55	4.33	1.31	1.81	0.64	0.06	204	45	70	14	123	98	92	30
	00/69	Micaceous Silt/Sandstone B	16.11	6.8	3.48	3.46	1.2	3.35	0.57	0.07	351	50	64	16	125	99	107	29
	00/107	Micaceous Silt/Sandstone B	16.12	6.31	3.09	3.09	1.37	3.13	0.56	0.05	295	42	66	15	96	90	92	31
	00/110	Micaceous Silt/Sandstone B	15.99	5.93	2.88	4.46	1.34	2.67	0.55	0.04	224	49	64	15	90	93	94	34
	00/32	Micaceous Silt/Sandstone B	15.39	6.3	3.04	4.27	1.37	2.14	0.51	0.04	321	46	63	15	97	96	98	27
	00/112	Micaceous Silt/Sandstone B	16.37	6.51	3.16	4.1	1.29	2.91	0.55	0.04	334	59	66	15	120	102	128	30
	00/123	Argillaceous Rock	20.61	9.35	2.7	1.75	0.78	3.2	0.85	0.21	323	61	85	23	98	165	111	48
	00/126	Muscovite Schist A	15.46	7.86	1.95	1.69	0.54	1.96	0.68	0.05	353	80	81	20	110	130	97	31

APPENDIX X
GLAZE COMPOSITIONAL DATA AS DETERMINED BY EPMA ANALYSIS

Sample	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
00/04 (brown)*	64.03	24.66	0.11	1.84	5.31	0.13	2.00	0.01	1.16	0.18	0.14	0.36
00/04 (yellow)	64.03	28.13	0.14	1.94	1.89	0.13	2.09	0.01	0.83	0.15	0.16	0.44
00/05 (brown)	62.22	30.10	0.15	1.39	0.66	0.30	1.06	1.02	1.93	0.31	0.24	0.59
00/05 (colourless)	54.83	37.35	0.21	3.05	0.62	0.51	1.18	0.02	0.23	0.36	0.32	1.30
00/05 (green)	59.73	32.72	0.22	2.69	0.58	0.30	0.83	0.02	1.26	0.31	0.32	1.02
00/07 (brown)	62.30	27.85	0.23	4.10	2.36	0.28	1.07	0.63	0.13	0.02	0.24	0.75
00/07 (colourless)	62.04	29.51	0.27	5.30	0.58	0.25	0.67	0.01	0.07	0.01	0.28	0.98
00/07 (green)	62.28	29.18	0.23	3.77	0.67	0.26	0.90	0.02	1.70	0.04	0.22	0.70
00/13 (brown)	34.81	46.32	0.08	5.63	1.29	1.02	2.79	2.87	2.58	0.65	0.64	1.31
00/13 (colourless)	34.48	48.07	0.13	6.50	1.03	0.85	2.75	0.09	2.92	0.77	0.74	1.64
00/13 (green)	41.07	39.99	0.07	5.72	0.99	0.72	3.02	0.06	6.33	0.73	0.44	0.84
00/18 (brown)	56.56	33.61	0.26	4.73	0.69	0.25	1.68	1.19	0.27	0.00	0.36	0.23
00/18 (colourless)	61.76	30.61	0.13	3.45	0.42	0.18	1.33	0.17	1.27	0.09	0.29	0.17
00/18 (green)	60.00	30.35	0.17	3.66	0.45	0.17	1.54	0.00	2.75	0.28	0.28	0.17
00/21 (brown)	56.70	32.56	0.14	4.17	3.66	1.28	0.62	0.05	0.06	0.28	0.13	0.18
00/21 (colourless)	59.28	33.44	0.22	4.90	0.70	0.21	0.34	0.02	0.03	0.44	0.15	0.21
00/22 (brown)	49.66	37.39	0.21	4.87	3.76	1.67	1.00	0.07	0.03	0.10	0.33	0.71
00/22 (colourless)	49.64	41.15	0.20	5.80	0.93	0.23	0.41	0.01	0.02	0.14	0.41	1.04
00/25	65.13	24.32	0.26	4.98	0.68	0.46	2.53	0.57	0.07	0.01	0.20	0.79
00/28 (brown)	52.60	33.06	0.10	6.64	0.86	0.41	2.84	1.96	0.03	0.14	0.49	0.86
00/28 (colourless)	53.79	34.64	0.09	7.36	0.76	0.45	1.25	0.02	0.02	0.06	0.55	1.00
00/33 (brown)	70.14	20.86	0.14	2.58	3.93	0.42	1.10	0.01	0.09	0.02	0.24	0.44
00/33 (green)	65.84	21.39	0.23	3.43	0.86	0.54	1.29	0.02	5.47	0.15	0.29	0.44
00/38 (brown)	65.73	23.09	0.22	4.27	3.77	0.65	0.69	0.02	0.26	0.22	0.33	0.72
00/38 (colourless)	64.37	25.48	0.31	5.00	1.42	0.72	1.13	0.01	0.09	0.22	0.39	0.83

*Where more than one glaze colour on a sherd is analysed, the glaze colour is given

Sample	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
00/38 (green)	65.27	23.21	0.22	4.27	1.30	0.66	0.73	0.01	3.13	0.18	0.43	0.59
00/44 (colourless)	47.96	37.49	0.44	7.92	1.44	1.05	0.68	0.01	0.22	0.09	0.71	1.96
00/44 (green)	53.06	32.66	0.39	6.35	1.31	0.93	0.96	0.01	2.28	0.10	0.63	1.29
00/46	57.65	28.70	0.11	5.84	3.37	0.59	2.22	0.21	0.15	0.07	0.40	0.64
00/55 (yellow)	45.51	34.19	0.42	4.93	3.96	0.69	6.28	0.09	2.20	0.08	0.31	1.30
00/55 (green)	54.62	31.42	0.21	3.43	1.26	0.50	2.97	0.02	3.94	0.19	0.25	1.08
00/58	54.16	36.00	0.17	4.48	1.56	0.50	2.04	0.04	0.08	0.02	0.28	0.64
00/63	61.52	30.20	0.18	3.29	1.75	0.49	1.79	0.03	0.03	0.00	0.26	0.44
00/66	64.02	26.55	0.15	3.15	3.09	0.52	1.54	0.01	0.21	0.01	0.39	0.32
00/69	45.91	36.26	0.39	8.28	2.58	1.46	2.59	0.03	0.05	0.01	0.71	1.71
00/75	63.23	28.63	0.18	2.60	2.15	0.75	1.36	0.04	0.11	0.02	0.22	0.68
00/86 (brown)	59.01	30.06	0.06	2.19	6.30	1.16	0.51	0.08	0.05	0.03	0.10	0.27
00/86 (colourless)	63.05	32.81	0.10	3.15	0.19	0.04	0.18	0.01	0.05	0.03	0.10	0.25
00/88	59.01	33.91	0.15	2.04	1.83	0.59	0.77	0.05	0.05	0.85	0.21	0.53
00/89	58.59	33.13	0.21	3.36	0.73	0.60	1.72	0.03	0.02	0.04	0.26	1.29
00/93	54.84	32.61	0.28	6.12	0.52	0.32	0.67	0.03	3.33	0.05	0.19	1.02
00/97	66.24	28.34	0.19	2.07	0.57	0.40	1.09	0.02	0.11	0.00	0.20	0.69
00/99	60.78	33.13	0.12	3.25	0.98	0.29	0.71	0.03	0.04	0.01	0.24	0.42
00/105	58.55	28.35	0.32	5.87	2.34	0.85	2.37	0.05	0.12	0.02	0.51	0.63
00/106 (green)	52.26	31.28	0.32	6.42	1.70	0.94	1.29	0.03	3.38	0.05	0.76	1.52
00/106 (yellow)	59.41	29.24	0.31	5.73	2.19	0.75	0.59	0.01	0.04	0.00	0.50	1.19
00/111	63.42	25.11	0.21	4.71	3.68	0.73	0.70	0.02	0.09	0.01	0.38	0.91
00/122	48.39	33.13	0.40	6.83	3.46	1.00	4.95	0.19	0.02	0.21	0.18	1.22
00/123	66.63	20.82	0.34	6.23	3.13	0.82	0.91	0.06	0.04	0.06	0.31	0.62
00/124	43.80	34.65	0.60	8.82	5.25	1.26	4.02	0.08	0.02	0.12	0.48	0.88
00/125	68.77	20.98	0.28	4.26	2.46	0.54	1.95	0.02	0.04	0.02	0.14	0.49

Sample	PbO	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	MnO	CuO	SnO	Na_2O	K_2O
00/126	56.35	29.84	0.42	6.74	3.48	0.86	1.07	0.04	0.02	0.20	0.22	0.73
00/127	73.24	16.90	0.30	5.44	2.55	0.43	0.17	0.05	0.02	0.06	0.27	0.54
00/129	54.99	30.57	0.34	5.81	2.92	0.65	3.41	0.13	0.03	0.05	0.21	0.86
00/130	70.49	19.45	0.30	4.98	2.64	0.56	0.40	0.02	0.04	0.47	0.19	0.43
00/132	66.43	21.62	0.36	5.75	2.78	0.59	1.32	0.05	0.01	0.12	0.36	0.61
00/141 (turquoise)	28.55	49.16	0.13	1.60	1.31	1.51	5.58	0.50	2.55	0.06	7.81	1.22
00/141 (brown)	29.28	41.18	0.11	3.16	14.08	0.58	3.21	0.35	0.12	0.05	6.15	1.72
00/141 (red)	32.82	46.91	0.20	3.11	2.72	0.94	4.59	0.57	0.23	0.06	6.42	1.41
00/141 (yellow)	61.10	29.21	0.11	2.46	4.22	0.31	1.13	0.04	0.15	0.25	0.48	0.50
00/142 (turquoise)	33.83	47.37	0.08	1.25	0.61	0.79	4.46	0.27	2.38	0.26	8.03	0.63
00/142 (brown)	39.74	35.67	0.08	1.34	12.51	0.25	2.49	0.92	0.12	0.02	6.39	0.46
00/142 (colourless)	37.17	48.21	0.06	1.26	0.49	0.42	3.66	0.07	0.15	0.05	7.92	0.50
00/148 (yellow)	63.53	25.36	0.46	8.29	1.64	0.17	0.28	0.00	0.04	0.08	0.02	0.09
00/151	63.11	25.11	0.46	7.56	2.21	0.15	0.19	0.02	0.03	0.01	0.94	0.18
00/154	64.38	23.50	0.46	8.84	0.77	0.13	0.12	0.03	0.93	0.71	0.04	0.08
00/155	64.34	25.83	0.43	7.35	0.66	0.15	0.22	0.01	0.46	0.15	0.05	0.16
00/158	64.64	26.02	0.42	7.73	0.65	0.11	0.14	0.01	0.02	0.03	0.06	0.15
00/160	47.28	30.61	0.36	2.78	6.62	0.78	4.11	0.25	2.48	0.41	3.76	0.50
00/166 (green)	54.94	31.50	0.08	6.07	1.63	0.76	2.23	0.03	1.18	0.09	0.56	0.90
00/166 (yellow)	50.51	34.60	0.11	7.17	2.18	1.00	2.35	0.05	0.20	0.09	0.62	1.12
00/167	58.87	28.65	0.13	6.45	2.02	0.60	1.94	0.05	0.07	0.03	0.51	0.66
00/170	59.00	31.52	0.19	4.42	2.35	0.51	1.29	0.03	0.03	0.00	0.18	0.46
00/171	60.19	33.42	0.14	4.18	0.61	0.23	0.79	0.02	0.04	0.02	0.12	0.22
00/174 (colourless)	67.41	27.90	0.07	1.86	0.75	0.45	1.04	0.01	0.05	0.04	0.17	0.23
00/180 (yellow)	52.37	34.08	0.52	7.40	2.90	0.60	0.79	0.01	0.07	0.01	0.20	0.99

APPENDIX XI
COMPARISON OF GLAZE AND BODY COMPOSITIONS

Fabric	Sample		SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	Ti O_2	MnO
Altered Feldspar Class	00/154	Glaze	69.19	26.03	2.26	0.39	0.34	0.11	0.23	1.35	0.09
		Body	69.02	26.38	1.89	0.50	0.37	0.14	0.55	1.14	0.01
	00/155	Glaze	74.08	21.09	1.91	0.43	0.64	0.14	0.46	1.25	0.03
		Body	75.25	20.30	1.76	0.41	0.24	0.15	0.74	1.14	0.01
	00/158	Glaze	73.73	21.89	1.84	0.31	0.40	0.17	0.42	1.20	0.03
		Body	74.34	21.12	1.71	0.44	0.33	0.19	0.80	1.06	0.01
Arg. Rock Fabric	00/123	Glaze	62.64	18.74	9.42	2.45	2.73	0.92	1.88	1.01	0.19
		Body	60.55	20.61	9.35	2.70	1.75	0.78	3.20	0.85	0.21
Coarse Mudstone Chert Group	00/122	Glaze	64.50	13.29	6.74	1.95	9.63	0.35	2.37	0.78	0.37
		Body	65.65	14.52	6.87	2.07	7.18	0.36	2.33	0.70	0.32
	00/129	Glaze	68.09	12.95	6.50	1.45	7.59	0.47	1.92	0.75	0.29
		Body	68.78	13.00	6.39	2.07	6.01	0.38	2.46	0.61	0.30
	00/125	Glaze	67.39	13.66	7.90	1.75	6.28	0.46	1.58	0.90	0.07
		Body	65.12	12.23	5.94	2.70	10.41	0.39	2.46	0.54	0.21
Fine Musc-Biotite Fabric	00/127	Glaze	63.43	20.43	9.55	1.60	0.65	0.99	2.03	1.11	0.20
		Body	63.18	20.98	8.69	1.50	0.63	0.80	3.43	0.59	0.20
Muscovite Schist Group A	00/126	Glaze	68.76	15.54	8.02	1.98	2.47	0.50	1.68	0.96	0.10
		Body	69.81	15.46	7.86	1.95	1.69	0.54	1.96	0.68	0.05
	00/130	Glaze	67.15	17.21	9.10	1.93	1.37	0.67	1.47	1.03	0.06
		Body	65.91	18.27	9.04	1.90	0.76	0.70	2.65	0.70	0.07
	00/132	Glaze	64.68	17.19	8.30	1.76	3.94	1.07	1.84	1.09	0.14
		Body	65.03	19.68	8.42	1.65	0.65	1.00	2.83	0.66	0.08

Fabric	Sample		SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO
Muscovite Schist Fabric B	00/124	Glaze	61.83	15.74	9.37	2.25	7.18	0.85	1.58	1.06	0.13
		Body	67.1	14.38	7.61	1.83	5.72	0.75	1.80	0.72	0.09
Clay Temper Group	00/04	Glaze	80.52	5.57	5.41	0.38	5.99	0.45	1.27	0.40	0.02
		Body	58.07	11.97	5.57	2.43	19.15	0.61	1.50	0.57	0.13
	00/07	Glaze	77.96	14.01	1.53	0.67	1.76	0.75	2.59	0.70	0.03
		Body	54.01	12.97	5.88	2.77	21.00	0.70	1.97	0.57	0.13
	00/55	Glaze	76.40	8.35	3.06	1.21	7.22	0.61	2.62	0.51	0.04
		Body	58.33	14.4	6.68	2.56	15.21	0.53	1.45	0.68	0.16
	00/75	Glaze	78.23	7.10	5.88	2.04	3.71	0.59	1.86	0.49	0.11
		Body	52.87	15.72	6.91	3.03	17.48	0.8	2.42	0.65	0.12
	00/88	Glaze	84.60	5.08	4.57	1.48	1.93	0.52	1.33	0.36	0.12
		Body	52.06	15.01	7.11	2.90	18.88	0.72	2.53	0.66	0.13
	00/89	Glaze	79.94	8.11	1.76	1.46	4.14	0.62	3.12	0.51	0.06
		Body	50.31	15.7	7.32	3.66	19.14	0.66	2.41	0.67	0.13
	00/93	Glaze	78.08	14.66	1.25	0.76	1.60	0.46	2.43	0.68	0.08
		Body	54.11	17.88	7.88	3.27	12.46	0.63	2.92	0.74	0.11
	00/97	Glaze	84.43	6.16	1.69	1.18	3.24	0.60	2.07	0.57	0.05
		Body	50.49	15.18	7.37	3.35	19.13	0.69	2.98	0.67	0.14
Phyllite Group	00/05	Glaze	83.83	6.84	1.38	1.14	2.66	0.73	2.91	0.47	0.03
		Body	58.24	20.82	8.01	2.56	5.36	1.42	2.73	0.74	0.12
	00/13	Glaze	77.78	10.52	1.67	1.37	4.45	1.20	2.66	0.20	0.14
		Body	59.81	19.83	7.48	2.59	5.58	1.36	2.50	0.73	0.12
	00/18	Glaze	83.30	9.40	1.14	0.50	3.62	0.78	0.46	0.36	0.45
		Body	59.50	20.00	7.69	2.38	5.21	1.31	3.08	0.71	0.12
	00/21	Glaze	83.20	12.19	1.74	0.53	0.85	0.36	0.52	0.55	0.04
		Body	58.74	20.27	7.88	2.60	5.60	1.38	2.70	0.71	0.12

Fabric	Sample		SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	MnO
Phyllite Group	00/22	Glaze	82.02	11.55	1.85	0.45	0.82	0.82	2.07	0.40	0.03
		Body	59.08	20.09	7.77	2.60	5.51	1.33	2.73	0.77	0.12
	00/58	Glaze	78.74	9.80	3.42	1.08	4.47	0.61	1.41	0.38	0.09
		Body	58.26	20.69	7.90	2.51	5.32	1.37	3.04	0.78	0.13
	00/63	Glaze	78.61	8.57	4.54	1.27	4.67	0.66	1.14	0.46	0.08
		Body	59.04	20.48	7.85	2.51	5.49	1.32	2.45	0.74	0.12
	00/86	Glaze	89.09	8.560	0.51	0.10	0.48	0.28	0.68	0.26	0.03
		Body	60.31	19.44	7.39	2.48	5.75	1.38	2.39	0.74	0.12
	00/99	Glaze	84.59	8.31	2.51	0.74	1.81	0.61	1.06	0.30	0.07
		Body	59.84	19.22	7.27	2.43	5.29	1.44	3.64	0.75	0.12
	00/166	Glaze	71.99	13.87	3.73	1.73	5.10	1.28	2.05	0.19	0.07
		Body	59.13	19.87	7.49	2.48	4.95	1.37	3.85	0.74	0.12
	00/167	Glaze	69.85	15.73	4.94	1.46	4.73	1.24	1.60	0.32	0.12
		Body	57.29	20.40	7.73	2.57	5.91	1.32	3.88	0.78	0.12
	00/105	Glaze	68.65	14.22	5.66	2.05	5.73	1.24	1.54	0.77	0.13
		Body	61.39	19.02	7.16	2.35	4.76	1.61	2.85	0.74	0.12
Fine Quartz-Micrite Fabric	00/28	Glaze	75.12	15.95	1.65	0.97	2.70	1.19	2.16	0.20	0.04
		Body	62.15	13.68	6.52	3.06	10.41	1.38	2.06	0.62	0.12
Micaceous Siltstone- Sandstone Class	00/25	Glaze	69.93	14.32	1.96	1.31	7.26	0.56	2.26	0.75	1.65
		Body	57.70	14.33	5.97	3.02	14.96	1.00	2.36	0.57	0.09
	00/33	Glaze	75.06	12.05	3.01	1.89	4.52	1.01	1.56	0.82	0.08
		Body	67.43	14.98	6.36	2.76	4.43	1.30	2.12	0.56	0.06
	00/38	Glaze	72.22	14.17	4.04	2.04	3.20	1.11	2.35	0.87	0.02
		Body	69.05	13.95	5.80	2.24	5.36	1.22	1.66	0.66	0.06
	00/44	Glaze	72.51	15.32	2.79	2.04	1.32	1.38	3.79	0.84	0.01
		Body	69.36	15.17	6.04	2.59	3.21	1.25	1.70	0.62	0.06

Fabric	Sample		SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	Ti O_2	MnO
Micaceous Siltstone-Sandstone Class	00/69	Glaze	67.15	15.33	4.78	2.70	4.79	1.32	3.17	0.72	0.05
		Body	64.96	16.11	6.80	3.48	3.46	1.20	3.35	0.57	0.07
	00/106	Glaze	70.67	14.51	3.83	2.12	2.91	1.72	3.44	0.73	0.07
		Body	65.23	16.37	6.71	3.21	3.88	1.23	2.57	0.74	0.06
	00/111	Glaze	68.89	12.92	10.11	1.99	1.93	1.05	2.49	0.57	0.06
		Body	63.80	15.23	5.38	2.72	8.23	1.32	2.76	0.52	0.04
Schist Phyllite Group	00/46	Glaze	68.20	13.88	8.02	1.41	5.28	0.94	1.51	0.25	0.50
		Body	59.94	15.31	7.79	4.78	8.39	0.79	2.22	0.64	0.14
	00/66	Glaze	74.29	8.83	8.65	1.45	4.32	1.10	0.89	0.43	0.03
		Body	58.19	16.15	7.79	5.09	7.72	0.87	3.36	0.73	0.1
Quartz-Biotite Group	00/170	Glaze	76.98	10.79	5.73	1.26	3.15	0.43	1.13	0.48	0.07
		Body	62.45	14.76	7.07	3.65	7.44	1.21	2.54	0.74	0.14
	00/171	Glaze	84.11	10.51	1.53	0.59	1.99	0.30	0.55	0.35	0.06
		Body	61.58	15.50	7.10	3.60	7.49	1.24	2.64	0.70	0.15
	00/174	Glaze	85.88	5.73	2.31	1.39	3.21	0.52	0.72	0.21	0.02
		Body	61.33	16.16	7.73	3.71	5.69	0.85	3.92	0.53	0.08
	00/180	Glaze	71.79	15.58	6.10	1.27	1.66	0.41	2.09	1.10	0.01
		Body	53.66	18.88	8.16	4.09	11.67	0.48	2.24	0.66	0.16