**APPENDIX: PETROGRAPHIC SUMMARY TABLES.**

On the following tables are the petrographic descriptions of the components of each sherd. Particle size was measured with reference to the Wentworth Scale. The abbreviation PP refers to observations made under plane polarized light. The abbreviation XP refers to observations made under cross polarized light. Most observations were made using the 2.5X and 10X (25 and 100 magnification) objectives, but specific optical characteristics such as 2V angle and optic sign determination were made with the 60X (600 magnification) objective. Symbols: ± means with or without.

**Particle Size Key:**
vf (very fine) = 0.625 to 0.125 mm
f (fine) = 0.125 to 0.25 mm
m (medium) = 0.25 to 0.5 mm
c (coarse) = 0.5 to 1.0 mm
vc (very coarse) > 1.0mm

**Particle Shape Key:**
I = irregular
A = angular
SA = subangular
R = rounded
SR = subrounded

The question of what to call grog required a specific definition. For this study I defined grog as fragments of pottery that have been incorporated (either by accident or intent) into the vessel and refired. This results in a dark coloured (red-black, dark blood red, black-red) fragments with a range of shapes from subrounded to subangular. They often have a separation void surrounding them (although it may not completely encircle them). They have a range of aplastic components (generally quartz and/or feldspar with mica, mafic minerals, or opaque minerals) that are subangular to subrounded. Lastly, the arrangement of the grog fragment and the surrounding matrix is examined to determine if the orientation is parallel or non-parallel (especially with respect to the inclusions).

There were two components that were found in some of these sherds that are not grog, but not really rock fragments. These are defined as TYPE A and TYPE B (for classification). These are argillaceous clay clots or fragments (ACF; see Whitbred, 1986). They have distinctive optical properties as well as differences in the amount of mica and other aplastic grains (mainly quartz and feldspar). Although these were called grog in the Cordell (2000) study, they are sufficiently different from the grog (as I have defined it) of this and the Cordell (2000) study.

Photomicrographs of representative rock and mineral fragments, colour variations and other features are located at: http://people.uncw.edu/smithms/Ft_bragg.html. These photomicrographs have accompanying descriptions that define the magnification, field of view (FOV) and other criteria. Additional photomicrographs will be added after review of this report to further clarify any questions or observations.

| **JMH - 001** | Body sherd. Overall dark red-brown colour. Outer rim is very dark red-brown. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular, No visible rutile needle inclusions. | |
| Quartz | Monocrystalline. Subrounded to subangular. Contain rutile needle inclusions. Undulatory extinction. | |
| Feldspar | Fine grained (found in paste). No twinning. | < 1% |
| Muscovite | Coarse to medium grained. Lathes. | |
| ***Rock Fragment*** | | |
| Quartz | Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to rounded. Under PP: Red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. A few have mica lathes. Some show separation voids. | |

| **JMH - 002** | Body sherd. Overall dark red-brown colour. Outer rim is very dark red-brown. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Angular to subangular, No visible rutile needle inclusions. | |
| Feldspar | Angular to blocky grains. Polysynthetic twinning - plagioclase | |
| Muscovite | Coarse to medium grained. Lathes. | |
| ***Rock Fragment*** | | |
| Quartz | Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Petrified wood | 0.4 X 0.3 mm. PP: Yellowish brown, high relief. Only a few fine to medium grains. | ~ 1 % |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | v. coarse |
| Type B | Irregular shape. Under PP: more yellow brown w/ a little rust red colour. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Type A. These also may be argillaceous clay fragments rather than true rock fragments. One piece contains possible clast of Type A. | v. coarse |
| Grog | Subrounded to irregular. Under PP: Red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. A few have mica lathes. Some show separation voids. | Coarse ~ 2 % |

| **JMH - 003** | Body sherd. Light reddish yellow-brown. Oxidation apparent on inner and exterior edges. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular, No visible rutile needle inclusions. | |
| Feldspar | Coarse to medium. Angular to blocky grains. Tartan plaid twinning - k-spar, patchy exsolution features. | ~1 % |
| Muscovite | Coarse to medium grained. Lathes. | |
| Mafic mineral | High relief, no cleavage, 2nd order interference colours. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. Under XP: Interference colour is dominated by quartz ± feldspar inclusions (1st order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | v. coarse |
| Type B | Very irregular shape. Under PP: more yellow brown w/ a little rust red colour. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Type A. These also may be argillaceous clay fragments rather than true rock fragments. One piece contains possible clast of Type A. | v. coarse |
| Grog | Subrounded to irregular. Under PP: Red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. On sample has biotite mica lathes. Some show separation voids. | v.coarse - Coarse ~ 2 % |

| **JMH - 004** | Body sherd. More brown to brownish-tan (w/ some yellow). Thin outer rim on one edge shows oxidation. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular, No visible rutile needle inclusions. Very coarse to medium. | |
| Feldspar | Medium. Subangular to blocky. Polysynthetic twinning - plagioclase. | ~ 1 % |
| Feldspar | Medium. Angular to blocky grains. Tartan plaid twinning - k-spar (microcline), patchy exsolution features. | ~ 2 % |
| Muscovite | Fine to medium grained. Lathes. | |
| Opaque | Probably hematite. Opaque w/ slight reddish tinge. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. These have a few mica (muscovite) fleck and some surface alteration. | |
| ***Other*** | | |
| Type B | Very irregular shape. Under PP: more yellow brown w/ a little rust red colour. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Type A. These also may be argillaceous clay fragments rather than true rock fragments. One piece contains possible clast of Type A. | v. coarse |
| Grog | Subrounded to rounded. Under PP: Red-brown-black colour w/ coarse to medium grain size qtz± feldspar (subangular to angular; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | Coarse ~ 2 % |

| **JMH - 005** | Body sherd. Overall red-brown (brick) colour. V. coarse to coarse aplastic fragments in an overall fine to medium grained groundmass. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine to fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to medium. Monocrystalline. Blocky to subangular, No visible rutile needle inclusions. | |
| Feldspar | Medium to fine. Subangular to blocky grains. Polysynthetic twinning - plagioclase | ~ 4 % |
| Muscovite | Coarse to medium grained. Lathes. | 3 - 5 % |
| Opaque | Probably hematite. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some rutile needle inclusions and a two-phase fluid inclusion observed. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. Under XP: Interference colour is dominated by quartz ± feldspar inclusions (1$^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | v. coarse |
| Type B | Very irregular shape. Under PP: more yellow brown w/ a little rust red colour. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. One piece contains possible clast of Rock Fragment A. | v. coarse |
| Grog | Subrounded to irregular. Under PP: Red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Feldspars are both plagioclase and k-spar (microcline). One sample has amphibole (or clinopyroxene). Some show separation voids. | v.coarse - Coarse ~ 2 % |

| **JMH - 006** | Body sherd. Overall dark brown to brown-black colour. V. coarse to coarse aplastic igneous rock fragments (~ 30 %) in an overall fine to medium grained groundmass. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine to fine grained qtz ± feldspar with little mica as aplastic grains. Possibly reduced firing conditions. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Pyroxene | Coarse to fine. Blocky to tabular. Single grains that appear to have been derived from the rock fragments described below. No visible alteration. | 5 - 7 % |
| Feldspar | Coarse to fine. Subangular to blocky grains. Polysynthetic twinning. Plagioclase | 5- 7 % |
| Opaque | Probably hematite or magnetite. Blocky. | < 1 % |
| ***Rock Fragment*** | | |
| Igneous | Very coarse. Subangular to angular to elongate and blocky. Feldspar + pyroxene intergrown crystals. Feldspar lathes are Carlsbad twinned. These fragments range from clumps of pyroxene crystals to clumps of intergrown plagioclase lathes. The pyroxene is probably a clinopyroxene such as augite based upon interference colours and other optical criteria. These rock fragments are nearly identical to Jurassic diabase dike samples acquired by the investigator from Albemarle, North Carolina | V. coarse to medium. ~30 % |

| **JMH - 007** | Body sherd. Overall red-brown (brick) colour. Lots of coarse to very coarse rock fragments and argillaceous rock fragments . | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular, No visible rutile needle inclusions. Very coarse to medium. | |
| Muscovite | Fine to very fine. | 2 - 3 % |
| ***Rock Fragment*** | | |
| Quartz | Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Type B | Very irregular shape. Under PP: more yellow brown w/ a little rust red colour. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. Less abundant than Rock Fragment A. | v. coarse |
| Grog | Angular to subangular. Under PP: Red-brown-black colour w/ coarse to medium grain size qtz± feldspar (subangular to angular; qtz both monocrystalline and polygranular) inclusions. Most aplastic inclusions are quartz. Some show separation voids. | Coarse ~ 2 % |

| **JMH - 008** | Body sherd. Overall light yellow brown colour. A much finer groundmass than the majority of samples of this project. Coarse quartz grains and rock fragments distributed throughout. Some colour change at surfaces. This may represent post depositional (groundwater) processes as the colour varies similarly along fractures that penetrate the sherd. Thin-section is a little thin. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular to subrounded, Some have visible rutile needle inclusions. Very coarse to medium. | |
| Mica | Very fine grained. Difficult to tell if it is biotite or muscovite | |
| ***Rock Fragment*** | | |
| Quartz | Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| Quartz sandstone | Medium, Rounded grain (only one). Grain supported subangular quartz grains (very little matrix). | < 1 % |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica (both biotite and muscovite) lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. Under XP: Interference colour is dominated by quartz inclusions (1$^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Phytoliths | Microgranular quartz in crescent moon shapes. | |

| **JMH - 009** | Body sherd. Overall red-brown (brick) colour. Large quartz mineral and quartz polygranular rock fragments and muscovite lathes prominent. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to fine. Monocrystalline. Subangular, No visible rutile needle inclusions. | |
| Quartz | Monocrystalline. Subrounded to subangular. Contain rutile needle inclusions. Undulatory extinction. | |
| Feldspar | Very coarse to medium. Some have tartan plaid twinning - K-spar (microcline) | |
| Muscovite | Very coarse to fine. Lathes. One very coarse grain has opaque exsolution inclusions indicating plutonic conditions of formation. | ~ 10 % |
| Opaque | Probably hematite or magnetite. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some of these have rutile needle inclusions. One grain is very recrystallized and another grain is similar to quartz sandstone grain of JMH-008. | |
| ***Other*** | | |
| Grog | Subrounded to rounded. Under PP: Red-black to dark blood red colour. Most are without mineral inclusions. No separation voids observed. Possibly ferruginous clay clots (see Cretaceous Middendorf Fm. Descriptions). | 2 - 3 % |

| **JMH - 010** | Body sherd. Overall light yellow brown colour. Has a distinctive yet diffuse colour change at one edge (not both). Thin section is a little thin. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with abundant mica (muscovite) | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some have rutile needle inclusions, one has an apatite crystal inclusion. Some show undulatory extinction suggesting some strain accumulation. | |
| Feldspar | Some have weak Carlsbad twinning and/or tartan plaid twinning - microcline (k-spar) | 1 -2 % |
| Feldspar | No twinning. | ~ 1% |
| Muscovite | Coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| Biotite | Lathes. Not very pleochroic under PP light. | < 1 % |
| Tourmaline | Fine, subangular grains in quartz rock fragments (and solo). Light gray-green to glassy green. Possibly dravite in composition. | < 1 % |
| Zircon | Fine, subrounded, high relief grains. Included with the clay materials. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Subangular to subrounded grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica. These may be argillaceous clay fragments rather than true rock fragments. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular (to irregular) to subangular. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These also may be argillaceous clay fragments rather than true rock fragments. | |

| | | |
|---|---|---|
| Grog | Subrounded to subangular. Under PP: dark blood-red to red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 011** | Body sherd. Overall brick red colour. Has distinctive light yellow rock fragments (Rock Fragment A) and grog as aplastic components. Appears to be completely oxidized. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Fine. Polysynthetic twinning - plagioclase | 1 -2 % |
| Feldspar | Medium to coarse. Blocky to subangular. No twinning. | ~ 1% |
| Muscovite | Coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| Biotite | Lathes. Not very pleochroic under PP light. | < 1 % |
| Tourmaline | Fine, subangular grains in quartz rock fragments (and solo). Light gray-green to glassy green. Possibly dravite in composition. | < 1 % |
| Zircon | Fine, subrounded, high relief grains. Included with the clay materials. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Most of these are composed of a few sutured grains but a couple of medium to fine grain size fragments are possibly recrystallized (many tiny sutured grains). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. Some of these are in close contact with Rock Fragment A. Abundance is less than Rock Fragment A. | |
| Grog | Subrounded to subangular. Under PP: red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | 2 % |

| **JMH - 012** | Body sherd. Distinctive gray-black with yellow brown. Suggests some oxidation and reduction. Has coarse quartz mineral, quartz rock fragments and grog as aplastic components. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some have rutile needles (and possibly apatite) inclusions. | |
| Feldspar | Fine. Polysynthetic twinning - plagioclase | 1 % |
| Feldspar | Medium to coarse. Blocky to subangular. Some are heavily altered. Tartan plaid twinning - microcline | 2 % |
| Muscovite | Medium to very fine. | |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to subangular. Under PP: red-black colour w/ medium to coarse qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 013** | Body sherd. Overall light yellow brown colour. Similar in appearance to JMH-008 but not as many very coarse rock fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with abundant mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Medium to fine. Polysynthetic twinning - plagioclase | 1 -2 % |
| Feldspar | Coarse to medium blocky crystals. No twinning. | 1% |
| Muscovite | Medium to very fine. Lathes. Not abundant in medium (~1 %). Much more abundant in fine to very fine (in paste) fraction (~3 - 4 %). | |
| Biotite | Fine (in paste) Lathes. Not very pleochroic under PP light. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Irregular to subangular. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. The micas look to be aligned (?). | |
| Grog | Subrounded to subangular. Under PP: red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. | < 1 % (one grain) |

| | | |
|---|---|---|
| **JMH - 014** | Body sherd. Looks as if this sherd is the top and bottom of a single coil. Note the offset and the void stringer orientation. Red-brown (brick) colour. Possible slip (or self slip) on one edge (very fine grained clay rich (mica) with distinctive optical separation. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some have rutile needles (and possibly apatite) inclusions. | 1 -2 % |
| Feldspar | Medium to fine. Polysynthetic twinning - plagioclase | 3 -5 % |
| Pyroxene | Medium to very fine. Subrounded to blocky. | 3 - 5 % |
| Opaque | Blocky to rectangular. Fine to medium. Probably magnetite or hematite. | ~ 1 % |
| ***Rock Fragment*** | | |
| Quartz | Medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | ~1 -2 % |
| **Other** | | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to subangular. Under PP: medium to fine, red-black colour w/ fine to medium qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. One large (coarse) rounded grog fragment with monocrystalline and polygranular quartz and feldspar (untwinned). | |

| | | |
|---|---|---|
| **JMH - 015** | Body sherd. Light reddish yellow-brown. One distinctive coarse subrounded blood-red grog fragment. Thin section is a little thin. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. | 1 -2 % |
| Feldspar | Medium to fine. Polysynthetic twinning - plagioclase. Quartz exsolution features (suggests from a granitic rock fragment). | 2 -3 % |
| Feldspar | Medium to very fine. Subrounded to blocky. Tartan plaid twinning - microcline | 2 - 3 % |
| Muscovite | Lathes | |
| Biotite | Lathes. Slightly pleochroic | < 1 % |
| Opaque | Very coarse. Rounded. Separation voids. Possibly ferruginous clots (see Cretaceous Middendorf Fm). | ~ 1 % |
| ***Rock Fragment*** | | |
| Quartz | Medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | ~1 -2 % |
| ***Other*** | | |
| Grog | Subrounded to subangular. Under PP: medium to fine, red-black colour w/ fine to medium qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. One large (coarse) rounded grog fragment with monocrystalline and polygranular quartz and feldspar (untwinned). | |

| **JMH - 016** | Body sherd (?). Overall dark brown-red to yellow-brown colour. Has lots of very coarse rock and mineral fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular. | |
| Muscovite | Fine to very fine. Lathes | 5-10 % |
| Mafic mineral | Angular, high relief, no cleavage, 2V = 90, 2$^{nd}$ order interference colours. - probably pyroxene | << 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions (1$^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Grog/ACF | Irregular to subrounded. Under PP: red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 017** | Body sherd. Overall red-brown (brick0 colour. Has lots of very coarse rock fragments (no Rock Fragment A or B). | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular. Some have rutile needle inclusions. | |
| Feldspar | Medium to fine. Blocky to subangular. Some have faint twinning. Probably k-spar. | 5-10 % |
| Mafic Mineral | Medium. Subangular to blocky. No cleavage. 1$^{st}$ order yellow green. Probably pyroxene. | < 1 % |
| Opaque | Fine to medium. Subrounded. Either hematite or ferruginous clots. | ~ 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular to subrounded, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |

| **JMH - 018** | Body sherd. Overall brown-red to tan brown colour. Note: one surface has a black, opaque glaze (?) that is about 1 mm thick (max). This material is also found on sample #21 from Cordell (2000). | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Coarse to fine. Monocrystalline. Blocky to subangular. More quartz mineral fragments than quartz rock fragments. | |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. | 3-5 % |
| Muscovite | Coarse to medium (~ 2 %) and fine to very fine (8-10 %). Lathes. Most in paste. | |
| Tourmaline | Three (3) grains in a quartz polygranular rock fragment. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium. Angular to subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Grog | Subrounded to subangular. Under PP: medium to fine, red-black colour w/ fine to medium qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. | |

| **JMH - 019** | Body sherd. Overall brick red colour. Has distinctive light yellow Rock Fragment A, more micaceous Rock Fragment B and grog as aplastic components. Appears to be completely oxidized. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular to subrounded. | |
| Feldspar | Fine. Carlsbad -Albite polysynthetic twinning - plagioclase | 1 % |
| Feldspar | Medium to coarse. Blocky to subangular. Carlsbad twinning - k-spar | 1 -2 % |
| Muscovite | Fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~ 5 - 10 %). | |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Most of these are composed of a few sutured grains but a couple of medium to fine grain size fragments are possibly recrystallized (many tiny sutured grains). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. Some of these are in close contact with Rock Fragment A. Abundance is less than Rock Fragment A. | |
| Grog | Subrounded to subangular. Under PP: red-black colour w/ qtz± feldspar (subangular; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 020** | Body sherd. Overall brick red colour. Has distinctive light yellow Rock Fragment A as aplastic components. Appears to be completely oxidized. Muscovite-rich paste. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with abundant mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Angular to subangular. | |
| Feldspar | Medium to fine. Angular to blocky. Polysynthetic twinning. Not very altered. Plagioclase | 3-5 % |
| Feldspar | Very coarse to coarse. Blocky to subangular. Carlsbad twinning - k-spar. Sericite altered. | 3 -5 % |
| Muscovite | Coarse to medium (2 %) and fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~ 5 - 10 %). | |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Igneous | Plagioclase ± k-spar + quartz. K-spar is heavily altered by sericite (white mica). The plagioclase, k-spar and quartz mineral fragments (especially the k-spar) are likely derived from this rock type (granitic) | |

| **JMH - 021** | Body sherd. Has a more red-brown to dark red brown (and irregular) core region and a lighter (more oxidized?) outer region to edge of sherd. Distinctive very coarse rock and grog fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular to subrounded. | |
| Feldspar | Medium to coarse. Blocky to subangular. Tartan plaid twinning. Microcline | 1 -2 % |
| Muscovite | Coarse to medium (~ 2 %) and fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~5 - 10 %). | |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Also a fragment that is either microgranular quartz and/or chalcedony. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to subangular. Under PP: black to red-black colour w/ qtz± feldspar (subangular; qtz both monocrystalline and polygranular) inclusions. Some show partial separation voids. | 2 - 3 % |

| **JMH - 022** | Body sherd (?). Light red-brown (light brick) colour. Lots of blocky to subangular to subrounded rock and mineral fragments. No observable Rock Fragment A or B. Diffuse colour change at both edges. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular to subrounded. Some have rutile needle inclusions and one grain has a single phase fluid inclusion. | |
| Feldspar | Medium to coarse. Block to subangular. Carlsbad-Albite twinning. Plagioclase. | 2-4 % |
| Feldspar | Medium to coarse. Blocky to subangular. Tartan plaid twinning. Microcline. K-spar > plagioclase | 3-5 % |
| Muscovite | Coarse to medium (~ 1 %) and fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~3 - 5 %). | |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |

| **JMH - 023** | Body sherd. Finer overall grain size. Very fine to fine matrix with aplastics in medium to very coarse range. Very coarse rock fragments A and B, quartz rock fragments and grog. Red-brown (brick) to lighter red tan overall colour. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular. Some have rutile needle inclusion, a few have fluid inclusions and one has both rutile and apatite inclusions. | |
| Feldspar | Medium to coarse. Blocky to subangular. Tartan plaid twinning - microcline | 1 -2 % |
| Muscovite | Coarse to medium (~ 1 %) and fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~5 - 10 %). | |
| Biotite | Medium to fine. Blocky, pleochroic lathes. More muscovite than biotite. | 1 - 2 % |
| Opaque | Black, blocky to subrounded. Probably magnetite or hematite. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |

| | | |
|---|---|---|
| Grog | Subrounded to subangular. Under PP: black to red-black colour w/ qtz± feldspar (subangular; qtz both monocrystalline and polygranular) inclusions. Some show partial separation voids. | |

| **JMH - 024** | Body sherd. Light red-tan to tan-red overall colour. Muscovite-rich. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular. | |
| Feldspar | Medium to coarse. Blocky to subangular. Tartan plaid twinning - microcline | 1 -2 % |
| Muscovite | Coarse to medium (~ 2 %) and fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~5 - 10 %). | |
| Biotite | Coarse to medium. Blocky, pleochroic lathes. More muscovite than biotite. | 1 - 2 % |
| Opaque | Black, rounded to subrounded. Probably magnetite or hematite. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Coarse to medium to fine. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Sedimentary | Subrounded to blocky to elongate. Very fine grained quartz ± mica grains. Metasedimentary? | 2 % |

| | | |
|---|---|---|
| Grog | Subrounded to subangular. Under PP: black to red-black colour w/ qtz± feldspar (subangular; qtz both monocrystalline and polygranular) inclusions. Some show partial separation voids. | |

| **JMH - 025** | Body sherd. Red-brown (brick) overall colour. Coarse to medium Rock Fragment A and grog. Muscovite-rich. Similar to JMH-024. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular. Some have rutile needle inclusions. | |
| Feldspar | Medium to coarse. Blocky to subangular. Tartan plaid twinning. Microcline. | 1 -2 % |
| Feldspar | Medium to coarse. Blocky to subangular. Polysynthetic twinning. Plagioclase. | |
| Muscovite | Coarse to medium (~ 2 %) and fine to very fine. Lathes. Abundant in fine to very fine fraction of the paste (~5 - 10 %). | |
| Biotite/chlorite | Coarse to medium. Blocky, pleochroic lathes. More muscovite than biotite/chlorite. | 1 - 2 % |
| Opaque | Black, rounded to subrounded. Probably magnetite or hematite. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse to medium. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. | |
| Sedimentary/Metasedimentary | Subangular. Very fine grained quartz + feldspar + opaque (no mica observed) grains. One fragment has kyanite. Metasedimentary from the slate belt? | 2 % |
| Grog | Subrounded to subangular. Under PP: black to red-black colour w/ qtz± feldspar (subangular; qtz both monocrystalline and polygranular) inclusions. Some show partial separation voids. | |

| **JMH - 026** | Body sherd. Overall light red-brown to tan-red colour. One outer edge blackened. Has distinctive light yellow rock fragments (Rock Fragment A) and grog as aplastic components. Muscovite-rich. Similar to JMH-024 and JMH-025. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Medium to fine. Blocky to subangular. No twinning | 1 -2 % |
| Muscovite | Very coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| | | |
|---|---|---|
| **JMH - 027** | Body sherd. Overall light red-brown to tan-red colour. One outer edge blackened (2 mm deep). Has distinctive light yellow rock fragments (Rock Fragment A) and grog as aplastic components. Muscovite-rich. Similar to JMH-024, JMH-025 and JMH-026. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Medium to fine. Blocky to subangular. polysynthetic twinning. Plagioclase. | 1 -2 % |
| Muscovite | Very coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 028** | Body sherd. Overall tan-red colour. Has distinctive light yellow rock fragments (Rock Fragment A) and grog as aplastic components. Muscovite-rich. Similar to JMH-024, JMH-025, JMH-026 and JMH-027. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Medium to fine. Blocky to subangular. polysynthetic twinning. Plagioclase. | 1 -2 % |
| Muscovite | Very coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Grog | Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 029** | Body sherd. Overall tan-red colour. Has distinctive light yellow rock fragments (Rock Fragment A) and grog as aplastic components. Muscovite-rich. Similar to JMH-024, JMH-025, JMH-026, JMH-027 and JMH-028. One edge blackened (1-2 mm) deep. Thin section a little thin. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Medium to fine. Blocky to subangular. polysynthetic twinning. Plagioclase. | 1 -2 % |
| Muscovite | Very coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Petrified Wood | PP: Yellowish brown, high relief. Only a few fine to medium grains. | < 1 % |
| Grog | Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| **JMH - 030** | Body sherd. Overall tan-red colour. Has distinctive light yellow rock fragments (Rock Fragment A) and grog as aplastic components. Muscovite-rich. Similar to JMH-024, JMH-025, JMH-026, JMH-027, JMH-028 and JMH-029. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. Some show undulatory extinction. | |
| Feldspar | Medium to fine. Blocky to subangular. polysynthetic twinning. Plagioclase. | 1 -2 % |
| Muscovite | Very coarse to medium to very fine. Lathes. Not abundant in medium to coarse size (~2 %). Much more abundant in fine to very fine fraction (~5 - 10 %). | |
| ***Other*** | | |
| Type A | Under PP: light yellow-greenish tan colour. Very coarse. Blocky to subangular to subrounded to elongate grains that contain medium to coarse, angular to subangular aplastic grains of quartz (often subrounded), feldspar (blocky) ± mica lathes. These aplastic grains are embedded in a very fine grained mass of clay (now vitrified), quartz ± mica (muscovite). Under XP: Interference colour is dominated by quartz ± feldspar inclusions ($1^{st}$ order gray interference colour). These may be argillaceous clay fragments rather than true rock fragments. Almost all have separation voids. | |
| Type B | Under PP: more yellow brown w/ a little rust red colour. Angular to subangular to subrounded. More clay ± mica rich with some angular to subangular aplastic grains of quartz + feldspar (often plagioclase) ± mica (biotite). These are much more micaceous in PP and XP and have less aplastic grains than Rock Fragment A. These also may be argillaceous clay fragments rather than true rock fragments. | |
| Petrified Wood | PP: Yellowish brown, high relief. Only a few fine to medium grains. | < 1 % |
| Grog | Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | |

| | | |
|---|---|---|
| **JMH - 031** | Body sherd. Overall dark brown to brownish red colour. V. coarse to coarse aplastic igneous rock fragments (~ 30 %) in an overall fine to medium grained groundmass. Note this sample has quartz mineral and rock fragments and the igneous rock fragments are altered more than JMh-006. | |
| **Paste** | Clay minerals vitrified. Very fine to fine grained quartz + pyroxene ± feldspar as aplastic grains. Possibly reduced firing conditions. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular to subrounded. | 3 - 5 % |
| Pyroxene | Coarse to fine. Blocky to tabular. Single grains that appear to have been derived from the rock fragments described below. No visible alteration. | 5 - 7 % |
| Feldspar | Coarse to fine. Subangular to blocky grains. Polysynthetic twinning - plagioclase | 5- 7 % |
| Opaque | Blocky. One grain with quartz (subangular) inclusions. Probably ferruginous clot. | < 1 % |
| ***Rock Fragment*** | | |
| Igneous | Very coarse. Subangular to angular to elongate and blocky. Feldspar + pyroxene intergrown crystals. Feldspar lathes are Carlsbad twinned. These fragments range from clumps of pyroxene crystals to clumps of intergrown plagioclase lathes. The pyroxene is probably a clinopyroxene such as augite based upon interference colours and other optical criteria. These rock fragments are nearly identical to Jurassic diabase dike samples acquired by the investigator from Albemarle, North Carolina. Some of these fragments are heavily altered compared to JMH-006. | V. coarse to medium. ~25 % |
| Quartz | Subrounded. Polygranular with sutured grain boundaries. Show some alteration (white mica or clay minerals) at grain boundaries. | 2 -3 % |

| **JMH - 032** | Body sherd. Black to black-gray overall colour. Coarse to medium igneous rock fragments (two types). Appears to be a slip on one surface. Similar to JHM-031. Appears to have been reduced fired. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) and amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Blocky to subangular.. | 8 - 10 % |
| Feldspar | Medium to coarse. Blocky to subangular. Tartan plaid twinning. Microcline. | 2 % |
| Feldspar | Medium to coarse. Blocky to subangular. Polysynthetic twinning. Plagioclase. | 2 % |
| Mafic mineral | Medium to fine. Pleochroic green, 2$^{nd}$ order interference colour, one good cleavage, blocky. Amphibole. | 2 % |
| Muscovite | Coarse to medium (~ 1 %) and fine to very fine. Lathes and blocky lathes. More abundant in fine to very fine fraction of the paste (~3- 5 %). | |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some show recrystallization. | 5 % |
| Igneous | Quartz + k-spar (microcline; tartan plaid twinning)± plagioclase (no distinctive twinning) ± amphibole. Sutured grain boundaries. Probably feldspar, amphibole and quartz mineral grains are derived from this rock type. | 5 % |
| ***Other*** | | |
| Charcoal (woody plant carbonized?) | Two fragments. Black to black-gray colour. Show separation void and features I associate with carbonized remnants. | << 1 % |

| **JMH - 033** | Body sherd. Black to black-gray overall colour. Coarse to medium igneous rock fragments (two types). Similar to JHM-031 and JMH-032. Appears to have been reduced fired. No visible slip as in JMH-032. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) and amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular to subrounded. | 5 - 7 % |
| Feldspar | Medium to coarse. Blocky to subangular. No twinning. | 2 % |
| Feldspar | Medium to coarse. Blocky to subangular. Polysynthetic twinning. Plagioclase. | 2 % |
| Mafic mineral | Medium to fine. Pleochroic green, 2$^{nd}$ order interference colour, one good cleavage, blocky. Either clinopyroxene or amphibole. | 2 % |
| Biotite | Coarse to medium (~ 3 %). Pleochroic. Blocky lathes. | |
| Muscovite | Coarse to medium (~ 3 %) and some fine to very fine (2 -3 %). Lathes and blocky lathes | |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some alteration at grain boundaries. Some of these may be remnants of the igneous rock fragments described below. | 5 % |
| Igneous | Quartz + plagioclase + biotite + muscovite. There is k-spar but it is not twinned and the spot optical checks indicate some of the feldspar in the rock fragments have optical 2V that are different from the plagioclase in the same fragment. Sutured grain boundaries. Probably feldspar, (coarse) mica and quartz mineral grains are derived from this rock type. Some alteration at grain boundaries. Feldspar shows some sericite and argillite (clay mineral) alteration. | 5 % |
| Igneous | Biotite + muscovite. Probably derived from quartz + plagioclase + mica rock fragments. | 1 % |
| ***Other*** | | |
| Charcoal (woody plant carbonized?) | One fragment. Black to black-gray colour. Show separation void and features I associate with carbonized remnants. | << 1 % |

| **JMH - 034** | Body sherd. dark brown-red to gray-black overall colour. Coarse to medium igneous rock and mineral fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with mica (muscovite) and amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular to subrounded. | 10-12 % |
| Feldspar | Medium to coarse. Blocky to subangular. No twinning. Very altered (sericite) | 1 -2 % |
| Feldspar | Medium to coarse. Blocky to subangular. Polysynthetic twinning. Plagioclase. Very altered. | 1 - 2 % |
| Mafic mineral | Medium to fine. Pleochroic green, 2$^{nd}$ order interference colour, one good cleavage, blocky. Amphibole. | 1 - 2 % |
| Muscovite | Medium to very fine (2 -3 %). Lathes. | |
| **Rock Fragment** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | 5 - 7 % |
| Igneous | Quartz + feldspar + mafic mineral. There is k-spar but it is heavily altered (the plagioclase is also altered). Feldspar shows some sericite and argillite (clay mineral) alteration. Mafic mineral is similar to the mafic mineral fragments and its optical properties suggest either clinopyroxene or amphibole. Probably feldspar, mafic and quartz mineral grains are derived from this rock type. Some alteration at grain boundaries. | 5 % |
| Sedimentary/Meta sedimentary | Subrounded to elongate. Looks like a sandy shale or a phyllite. For comparison with comparable metasedimentary rocks, acquired samples of the Tillery Fm (which is a commonly exposed rock in the Ft. Bragg region). These fragments and the Tillery are very similar. | 1 - 2 % |
| ***Other*** | | |
| Charcoal (woody plant carbonized?) | One fragment. Black to black-gray colour. Show separation void and features I associate with carbonized remnants. | << 1 % |

| **JMH - 035** | Body sherd. Light tan to reddish-yellow overall colour. Coarse to medium rock and mineral fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica and amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. | 5 % |
| Feldspar | Coarse. Blocky to subangular. No twinning. Very altered (sericite) | 2 % |
| Feldspar | Coarse. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | 2 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Very altered. | 1-2 % |
| Muscovite | Fine to very fine. Lathes | < 1 % |
| Mafic mineral | Medium to fine. Pleochroic green, 2nd order interference colour, one good cleavage, blocky. Amphibole. | 3 - 5 % |
| Opaque | Blocky. See rock descriptions. | |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some of these rock fragments have opaque blocky grains from which the opaque minerals could be derived. | 3 - 5 % |

| **JMH - 036** | Body sherd (?). Light tan to reddish-yellow overall colour. Coarse to medium rock and mineral fragments. Similar to JMH-035. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica and amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. | 3 - 4 % |
| Feldspar | Coarse. Blocky to subangular. No twinning. Very altered (sericite) | 2 % |
| Feldspar | Coarse. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | ~ 1% |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Very altered. | 2 -3 % |
| muscovite | Fine to very fine. Lathes | 1 - 2 % |
| Mafic mineral | Medium to fine. Pleochroic green, 2$^{nd}$ order interference colour, one good cleavage, blocky. Amphibole. | 2 - 3 % |
| Opaque | Blocky. See rock descriptions. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some of these rock fragments have opaque blocky grains from which the opaque minerals could be derived. | 5 -7 % |
| Igneous | Very coarse to coarse. Quartz + feldspar (no distinctive twinning). Sutured grain boundaries. Probably feldspar and quartz mineral grains are derived from this rock type. | 3 -4 % |

| **JMH - 037** | Body sherd (?). Brown-red to red-brown overall colour. Diffuse colour change (light tan-yellow) at both edges (~ 1 - 2 mm thick). Very coarse to coarse angular to subangular rock and mineral fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar and very little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Very coarse to coarse. Angular to subangular. | 2 -3 % |
| Quartz | Monocrystalline. Medium to fine. Subangular to subrounded. | 2 % |
| Feldspar | Coarse. Blocky to subangular. No twinning. Feldspar is altered. | 2 -3 % |
| Mafic mineral | Amphibole. Fine to medium. Blocky to subangular. | 1 - 2 % |
| Muscovite | Fine to very fine. Lathes. | ~ 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some of these have rutile needle inclusions and appear to have been recrystallized. | 5 - 7 % |
| Igneous | Very coarse to coarse. Quartz + feldspar (no distinctive twinning). Feldspar is altered. Sutured grain boundaries. Probably feldspar and quartz mineral grains are derived from this rock type. | 2 - 3 % |

| **JMH - 038** | Body sherd. Red-brown (brick) overall colour. Very little mica visible. A few grog fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Coarse to fine. Monocrystalline. Subangular to blocky. | 8 - 10 % |
| Feldspar | Very coarse to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Heavily altered by sericite along fractures. | 2 - 3 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Not very altered. | 2 - 3 % |
| Opaque | Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries | 8 - 10 % |
| Igneous | Very coarse to coarse. Quartz + feldspar (no distinctive twinning). Sutured grain boundaries. Some of these show graphic exsolution textures (indicating plagioclase and probable granitic rock origin). Probably feldspar and quartz mineral grains are derived from this rock type. | 5 - 7 % |
| ***Other*** | | |
| Grog | Subrounded to subangular. Under PP: blood-red to black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | 1 - 2 % |

| | | |
|---|---|---|
| **JMH - 039** | Body sherd. Tan-yellow overall colour. Diffuse colour variation (more brown-red) on one edge (1 - 2 mm thick). The aplastic grains of this sherd are mainly medium to fine grained with only a few very coarse rock or mineral fragments. Very little mica visible.. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Coarse to fine. Monocrystalline. Subangular to blocky. | 8 - 10 % |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Altered by sericite along fractures. | 3 - 4 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Not very altered. | 3 - 4 % |
| Muscovite | Fine to very fine. Lathes (some might be biotite) | 1 - 2 % |
| Biotite | Medium to fine. Lathes. Pleochroic. | ~1 % |
| unknown | Fine. High relief grains w/ no cleavage, high 2V, some are slightly pleochroic. Either amphibole or epidote. | 1 -2 % |
| Opaque | Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries | 4 - 5 % |

| **JMH - 040** | Body sherd. Split colour. Dark brown/red-brown for one-half of sherd, other half is more light red-brown. Overall tan-red colour. Very coarse to coarse rock and mineral fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar with little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Monocrystalline. Subangular. | 3 - 4 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 3 -4 % |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | 3 -4 % |
| Mafic mineral | Medium to fine. Pleochroic green. 2V ~ 80-85. Amphibole. See rock descriptions. | 2 - 3 % |
| Biotite | Very coarse to medium. Blocky lathes. Pleochroic. | 1 % |
| Opaque | Medium to fine. Blocky to subangular. | ~ 1 % |
| ***Rock Fragment*** | | |
| Igneous | Quartz (w/ fluid inclusions) + feldspar (heavily altered) + mafic mineral (amphibole) + opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars = mafic to quartz + 2 feldspars to quartz + feldspar + amphibole. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). | 10 % |
| ***Other*** | | |
| Grog | Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | 1 - 2% |
| Petrified Wood | PP: Yellowish brown, high relief. Only a few fine to medium grains. | < 1 % |

| | | |
|---|---|---|
| **JMH - 041** | Body sherd. Split colour in sherd. Dark brown/red-brown for one-half of sherd, other half is more light red-brown, possibly a result of oxidation-reduction during firing. Very coarse to coarse rock and mineral fragments. No visible grog. Similar to JHM-040. Thin section looks thin. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to fine. Monocrystalline. Subangular. | 5 - 7 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 2 % |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | 2-3 % |
| Opaque | Medium to fine. Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Angular to subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. These appear to be recrystallized (Uhwarrie quartzite?). | 3 - 5 % |
| Igneous | Quartz + feldspar (heavily altered) ± mafic mineral (amphibole) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars + mafic to quartz + 2 feldspars to quartz + feldspar. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). | 2 -3 % |

| | | |
|---|---|---|
| **JMH - 042** | Body sherd. Split colour. Dark brown/red-brown for one-half of sherd, other half is more light red-brown. Very coarse to coarse rock and mineral fragments. No visible grog. Similar to JHM-041. Thin section looks thin. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to fine. Monocrystalline. Subangular. | 4 -5 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 2 % |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | 2-3 % |
| Opaque | Medium to fine. Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Angular to subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. These appear to be recrystallized (Uhwarrie quartzite?). | 5 % |
| Igneous | Quartz + feldspar (heavily altered) ± mafic mineral (amphibole) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars + mafic to quartz + 2 feldspars to quartz + feldspar. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). | 5 -7 % |

| **JMH - 043** | Body sherd. Dark brown/red-brown for one-half of sherd, other half is more light red-brown. Very coarse to coarse rock and mineral fragments. Medium to fine grog. Similar to JHM-041 and JHM-042. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to fine. Monocrystalline. Subangular. | |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 2 % |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | 2-3 % |
| Amphibole | Medium to fine. Blocky to subangular. Pleochroic. | ~ 1 5 |
| Opaque | Medium to fine. Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. These appear to be recrystallized (Uhwarrie quartzite?). | 5 % |
| Igneous | Quartz + feldspar (heavily altered) ± mafic mineral (amphibole) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars + amphibole to quartz + 2 feldspars to quartz + feldspar. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). | 2 - 3 % |
| ***Other*** | | |
| Grog | Medium to fine. Subrounded to subangular. Under PP: black-red colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | 1 - 2% |

| **JMH - 044** | Body sherd. Red-brown (brick) overall colour. Very little mica visible.. Similar to JHM-038. Thin section looks thin. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar w/ little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to fine. Monocrystalline. Subangular. | 5 - 6 % |
| Feldspar | Very coarse to medium. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 2 % |
| Feldspar | Very coarse to medium. Blocky to subangular. Tartan plaid twinning. Microcline. Altered. | 2-3 % |
| Muscovite | Lathes | 1 -2 % |
| Biotite | Lathes. Pleochroic. | 1 -2 % |
| Opaque | Medium to fine. Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. These appear to be recrystallized. | 5 % |
| Igneous | Quartz + feldspar (heavily altered) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars to quartz + feldspar. Graphic exsolution texture observed. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). | 2 -3 % |

| **JMH - 045** | Body sherd. Brown to brownish-red overall colour. No (visible) polygranular quartz rock fragments. Very coarse to medium angular to subangular rock and mineral fragments. Similar to JHM-040. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar w/ little mica as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to fine. Monocrystalline. Angular to subangular. | 5 % |
| Feldspar | Very coarse to medium. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered by sericite (white mica), less than the microcline. | 2 % |
| Feldspar | Very coarse to medium. Blocky to subangular. Tartan plaid twinning. Microcline. Highly altered by sericite (white mica) and argillite (clay minerals). | 2-3 % |
| Mafic mineral | Pleochroic green. 2V > 70. Probably amphibole. See rock descriptions. | 1 -2 % |
| Mica | Fine to very fine. | ~ 1% |
| Opaque | Medium to fine. Blocky to subangular. | < 1 % |
| ***Rock Fragment*** | | |
| Igneous | Quartz + feldspar (heavily altered) ± amphibole ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars ± amphibole ± opaque to quartz + feldspar. Graphic exsolution texture observed. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). | 25-30 % |

| **JMH - 046** | Body sherd. Overall black to black-gray colour. Very coarse to coarse aplastic igneous rock fragments (mainly quartz ± feldspar, but some Jurassic diabase rock fragments). | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar ± pyroxene as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to coarse. Monocrystalline. Angular to subangular. | 3 -5 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 1 -2 % |
| Mafic mineral | Pleochroic green. 2V ~ 80-85. Probably clinopyroxene. See rock descriptions. | 3 - 5 % |
| Opaque | Medium to fine. Blocky to subangular. | ~ 1 % |
| ***Rock Fragment*** | | |
| Igneous | Very coarse to medium. Subangular to angular to elongate and blocky. Feldspar + pyroxene intergrown crystals. Feldspar lathes are Carlsbad twinned. These fragments range from clumps of pyroxene crystals to clumps of intergrown plagioclase lathes. The pyroxene is probably a clinopyroxene such as augite based upon interference colours and other optical criteria. These rock fragments are nearly identical to Jurassic diabase dike samples acquired by the investigator from Albemarle, North Carolina. The feldspar and mafic minerals of this sherd could be derived from this rock material. | ~30 % |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | 3 -5 % |

| **JMH - 047** | Body sherd. Overall red-brown to red-tan colour. Very coarse to coarse aplastic igneous rock fragments . Similar to JMH-046 but rock fragments are more abundant. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar ± pyroxene as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to coarse. Monocrystalline. Angular to subangular. | 2 - 3 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 1 -2 % |
| Mafic mineral | Pleochroic green. 2V ~ 80-85. Probably clinopyroxene. Somewhat altered. See rock descriptions. | 3 -4 % |
| Opaque | Medium to fine. Blocky to subangular. | ~ 1 % |
| ***Rock Fragment*** | | |
| Igneous | Very coarse to medium. Subangular to subrounded. Feldspar + pyroxene ± clinozosite /epidote intergrown crystals. Feldspar lathes are Carlsbad twinned. These fragments range from clumps of pyroxene crystals to clumps of intergrown plagioclase lathes. The pyroxene is probably a clinopyroxene such as augite based upon interference colours and other optical criteria. These rock fragments are more altered than the Jurassic diabase dike samples acquired by the investigator from Albemarle, North Carolina, but still suggest that they are equivalent. The feldspar and mafic minerals of this sherd could be derived from this rock material. | ~30 % |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. These rock fragments are recrystallized as it is difficult to see the grain boundaries. | 3 - 4 % |
| ***Other*** | | |
| Grog | Subrounded to rounded. Under PP: Red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | ~ 2 % |

| | | |
|---|---|---|
| **JMH - 048** | Body sherd. Overall red-brown to red-tan colour. Very coarse to coarse aplastic igneous rock fragments . Similar to JMH-040 and JMH-045, but does not have any visible polygranular rock fragments as in JMH-049. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar ± amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to coarse. Monocrystalline. Angular to subangular. | 3 - 4 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Somewhat altered. | 2 % |
| Mafic mineral | Pleochroic green. 2V ~ 80-85. Probably amphibole. Somewhat altered. See rock descriptions. | 3 - 4 % |
| Opaque | Medium to fine. Blocky to subangular. | ~ 1 % |
| ***Rock Fragment*** | | |
| Igneous | Very coarse to medium. Subangular to subrounded. Feldspar + amphibole or amphibole ± biotite intergrown crystals. Feldspar lathes are polysynthetically twinned (plagioclase). The feldspar and mafic minerals of this sherd could be derived from this rock material. | ~25 % |
| Igneous | Quartz + feldspar (heavily altered) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars to quartz + feldspar. Graphic exsolution texture observed. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). Some of the feldspar and quartz of this sherd could also be derived from this material. | 5 - 7 % |
| ***Other*** | | |
| Grog | Subrounded to rounded. Under PP: Red-black colour w/ qtz± feldspar (subangular to subrounded; qtz both monocrystalline and polygranular) inclusions. Some show separation voids. | ~ 2 % |

| | | |
|---|---|---|
| **JMH - 049** | Body sherd. Overall dark reddish-brown colour. Very coarse to coarse aplastic igneous rock fragments . Similar to JMH-040, JMH-045 and JMH-048, but has visible polygranular quartz rock fragments. | |
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar ± biotite ± clinopyroxene or amphibole as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Very coarse to coarse. Monocrystalline. Angular to subangular. | 3 - 4 % |
| Feldspar | Medium to fine. Blocky to subangular. Polysynthetic twinning. Plagioclase. Altered by sericite and epidote. | 2 % |
| Feldspar | Medium to fine. Blocky to subangular. Tartan plaid twinning. Microcline. Highly altered. | 2 - 3 % |
| Mafic mineral | Pleochroic green. 2V ~ 80-85. Probably amphibole. See rock descriptions. | 2 - 3 % |
| Biotite | Coarse to fine. Lathes. See rock descriptions | 1 - 2 % |
| Opaque | Medium to fine. Blocky to subangular. | ~ 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. | 5 % |
| Igneous | Very coarse to medium. Subangular to subrounded. Feldspar + amphibole ± biotite intergrown crystals. Feldspar lathes are polysynthetically twinned (plagioclase). Some of these are biotite + feldspar and quartz + biotite + amphibole. The feldspar and mafic minerals of this sherd could be derived from this rock material. | 5 - 6 % |
| Igneous | Quartz + feldspar (heavily altered) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars to quartz + feldspar. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). These rock fragments are probably part of the continuum with the other biotite and mafic mineral bearing rock fragments. Some of the feldspar and quartz of this sherd could also be derived from this material. | 15-17 % |

| **JMH - 050** | Body sherd. Overall dark reddish-brown to brown-red colour. Very coarse to coarse aplastic igneous rock fragments . Similar to JMH-040, JMH-045, JMH-048 and JMH-049, but has visible polygranular quartz rock fragments. | |
|---|---|---|
| **Paste** | Clay minerals vitrified. Very fine grained qtz ± feldspar as aplastic grains. | |
| **Component** | **Description** | **Mode** |
| ***Mineral*** | | |
| Quartz | Coarse to fine. Monocrystalline. Angular to subangular. | ~10 % |
| Feldspar | Coarse to medium. Blocky to subangular. Polysynthetic (Carlsbad-Albite) twinning. Plagioclase. Altered by sericite and epidote. | 2 % |
| Feldspar | Coarse to medium. Blocky to subangular. Tartan plaid twinning. Microcline. Highly altered. | 3 - 4 % |
| Opaque | Medium to fine. Blocky to subangular. | ~ 1 % |
| ***Rock Fragment*** | | |
| Quartz | Very coarse to medium. Subangular, polygranular quartz rock fragment where quartz grains have sutured grain boundaries. Some clinozoisite (epidote) and white mica at grain boundaries. | 5 - 7 % |
| Igneous | Quartz + feldspar (heavily altered) ± opaque. The feldspar in various fragments is either microcline or plagioclase (based upon twinning). The variation of the rock fragments ranges from quartz + 2 feldspars to quartz + feldspar. The mineral fragments of this sherd could be derived from this rock material (granitic in origin). Some of the feldspar and quartz of this sherd could also be derived from this material. | 5 % |