

THIN SECTION LABEL ID: **395-U1602B-14H-5-W 3/6-TSB-TS 5**

Observer: SH

Piece no.:

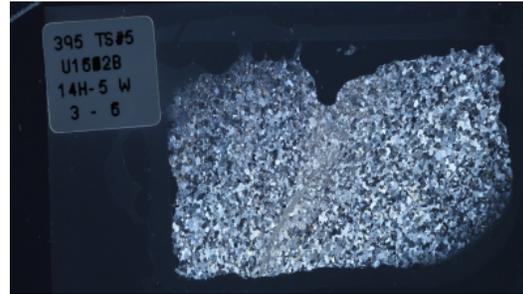
Lithology: granite

Thin section summary: DROPSTONE. Fine grained granite with partly sericitized feldspar, both plagioclase and K-feldspar, minor mica and also contains some calcite.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602B-34F-3-W 39/42-TSB-TS 6**

Observer: SH

Piece no.:

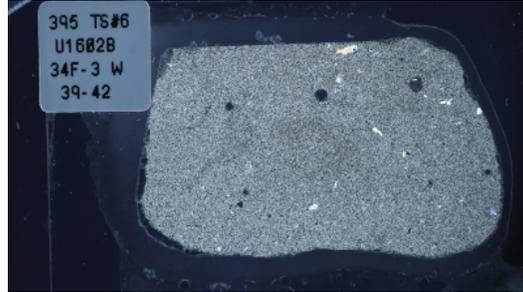
Lithology: basalt

Thin section summary: DROPSTONE. Basalt with fine groundmass and abundant larger plagioclase and pyroxene (?) crystals; lots of voids from plucking, and significant metallic opaques (pyrite?).

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602D-12H-3-W 48/50-TSB-TS07**

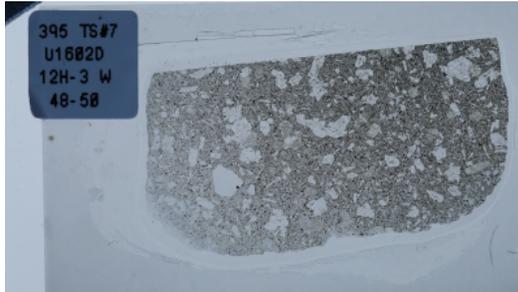
Observer: SH

Piece no.:

Lithology: basalt

Thin section summary: DROPSTONE. Porphyritic basalt with abundant large plagioclase and pyroxene (? doesn't seem colorful enough for olivine). Abundant lathe shaped metallic crystals (illmenite?). Some chlorite alteration.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-22R-4-W 2/4-TSB-TS09**

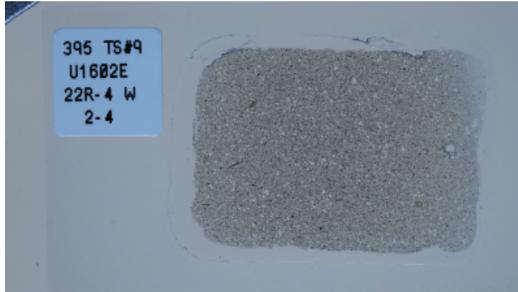
Observer: SOC

Piece no.:

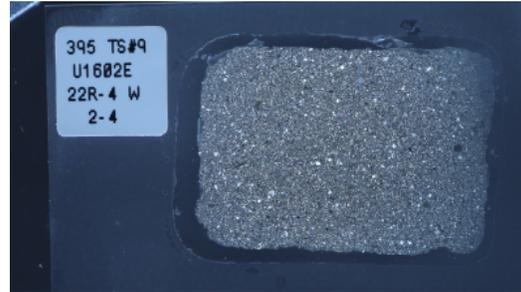
Lithology: poorly sorted sandstone

Thin section summary: Silt and fine to coarse (600 um) sand, calcite cement, 1.25 cm long vein, poorly sorted. Quartz, feldspars, pyrite; glass or glauconite very little if present; opaques, most not pyrite; mica, angular to rounded grains, large glass (?) or mud/clay bleb.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-26R-3-W 108/110-TSB-TS10**

Observer: SOC

Piece no.:

Lithology: poorly sorted siltstone

Thin section summary: Poorly sorted mudstone. Fine grained, with coarse sand (up to 1 mm). Some grains are lithic fragments, glauconite forming in matrix which appears to be replacing other minerals.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-26R-3-W 111/113-TSB-TS08**

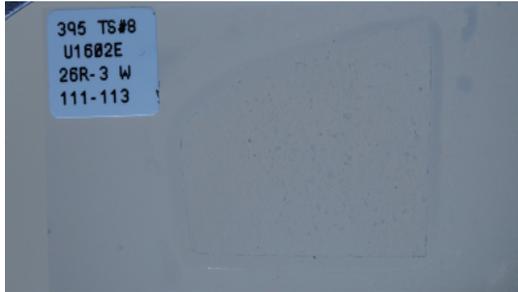
Observer: SOC

Piece no.:

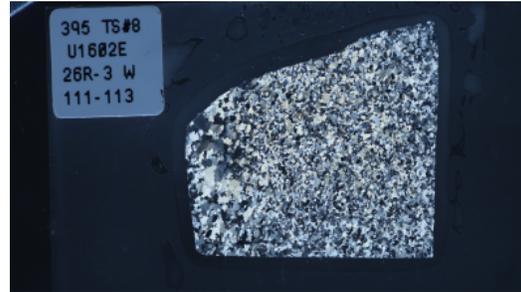
Lithology: quartzite

Thin section summary: Thin section taken from graded bed. Medium to coarse sand, some silt, mostly quartz sutured together, rare calcite cement. Feldspar, mica present; weak preferred orientation parallel to bedding.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-37R-2-W 37/39-TSB-TS11**

Observer: SOC

Piece no.:

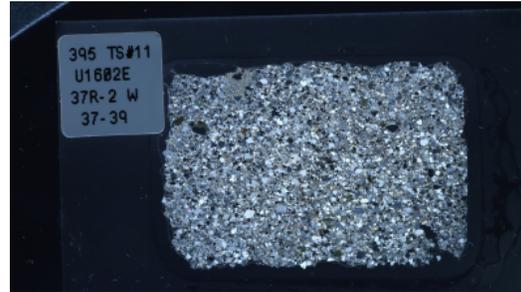
Lithology: sandstone

Thin section summary: Thin section taken from graded bed. Medium to coarse sand, some silt, mostly quartz sutured together, rare calcite cement. Feldspar, mica present, weak preferred orientation parallel to bedding.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-37R-2-W 76/78-TSB-TS12**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Thin section taken from sand filled burrow in silty clay sediment. Section mostly comprised of mud matrix, but some calcite present; well sorted, subrounded, mostly quartz grains; burrow sand is matrix supported. Matrix is a dark brown color, too fine grained to identify minerals.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-38R-6-W 58/61-TSB-TS13**

Observer: SOC

Piece no.:

Lithology: siltstone

Thin section summary: Thin section comprised of sand and silty clay. Medium sorted, slight grading, subrounded grains; calcite cement surrounding large grains; thin mud layer with forams; elongate mud rip up clasts and thin mud layer; subrounded quartz, pyrite, hornblende, mica, opaques, small amount of glauconite, some forams especially in mud layer, pyrite in many of the opaque grains, hornblend, small amount of glauconite. Plucking.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-40R-3-W 56/59-TSB-TS 17**

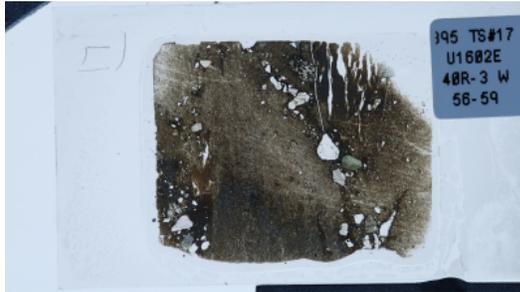
Observer: SOC

Piece no.:

Lithology: siltstone

Thin section summary: Laminated silty claystone. Silt consists of subangular to rounded quartz, feldspar, and mica, with small amounts of forams, hornblende, pyrite and glauconite. Pyrite framboids fill some of the foraminifer chambers (photo).

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-40R-4-W 101/103-TSB-TS14**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Sand and silty clay. Grains moderately sorted, slight grading, subrounded. Elongate mud rip up clasts and thin mud layer, some foraminifers especially in mud layer. Significant plucking.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-42R-2-W 74/76-TSB-TS15**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Arkosic silty clay matrix, some calcite cement, layers defined by more and less matrix. Poorly sorted, rounded to subangular, mostly matrix supported, glauconite present. Glauconite grains show complex perimeters (not transported). Glauconite grains are approximately as large as the largest quartz grains and larger than adjacent grains.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-42R-5-W 51/53-TSB-TS16**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Well sorted, grains subangular to subrounded. Matrix contains smaller grains and mud, calcite and mud cement. Very interesting feldspar twinning, mica, hornblende, opaques, some glauconite. Some pyrite and quartz on rim of burrow.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-45R-3-W 146/149-TSB-TS18**

Observer: SEM

Piece no.:

Lithology: laminated sandstone

Thin section summary: Laminated immature sandstone with a variety of different mineral grains along with quartz, feldspar, pyroxene, pyrite, and a greenish, clayey mineral like glauconite or celadonite. Opaque grains and a large red biotite grain near centre of thin section. Mineral banding/grading may be present; in addition to size grading, some layers/laminations contain more colorful grains than others (in xpl).

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-47R-5-W 35/37-TSB-TS19**

Observer: SOC

Piece no.:

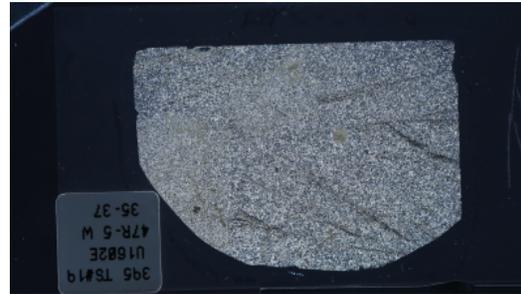
Lithology: sandstone

Thin section summary: Cross-bedded, very fine sandstone. Grains are subrounded, and include quartz and feldspar, with subordinate mica, hornblende, glauconite. Opaque grains and brown grains common, but few are pyrite. Remnant foram shells in mud. Glauconite appears to have formed in situ. Calcite cement, some of which appears to be replacing other minerals.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-52R-6-W 119/122-TSB-TS 20**

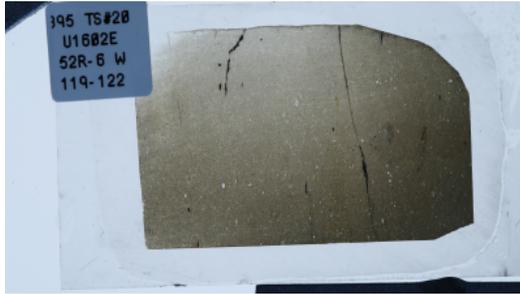
Observer: SOC

Piece no.:

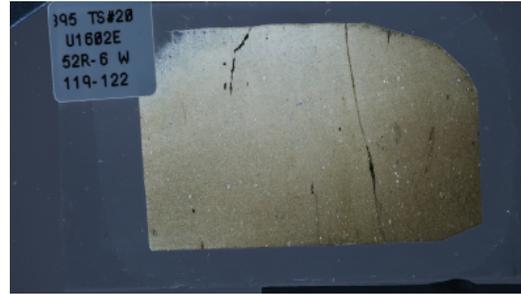
Lithology: laminated siltstone

Thin section summary: Laminated silty claystone with some foram rich layers. Opaque grains are common, though few are pyrite. Other grains include quartz and a small amount of glauconite. Other minerals difficult to identify due to size or composition.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-52R-6-W 124/127-TSB-TS 21**

Observer: SOC

Piece no.:

Lithology: siltstone

Thin section summary: Silty clay, fine-grained pyrite and forams present. Burrow filled with quartz, silt and pyrite.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-56R-2-W 28/30-TSB-TS22**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Laminated sandstone.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-59R-1-W 77/80-TSB-TS23**

Observer: SOC

Piece no.:

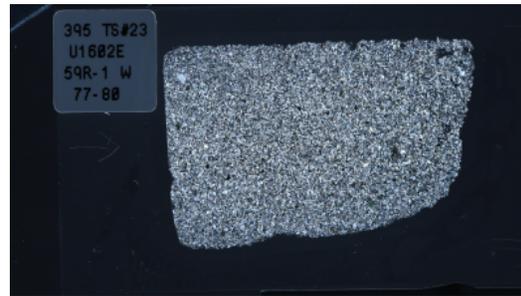
Lithology: sandstone

Thin section summary: Fine grained sandstone with calcite cement. Grains are well sorted and subrounded with no preferred orientation. Grains dominantly composed of quartz; feldspar is common, mica is rare; glauconite and pyrite are present. This sample may contain two separate stages of glauconite formation.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-60R-2-W 65/68-TSB-TS 24**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: This thin section was made from a contact between silty clay (lower layer) and glauconite-rich, foram-containing sandstone (upper layer). Mud clast near top of thin section. Mud contains forams, diatoms and radiolaria (photo), burrow in upper corner is filled with silty clay with dark rim. Pyrite rich layer truncated at sand/mud contact. Thin section is slightly thicker than usual, evidenced by higher birefringence in quartz.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-60R-3-W 122/125-TSB-TS25**

Observer: SOC

Piece no.:

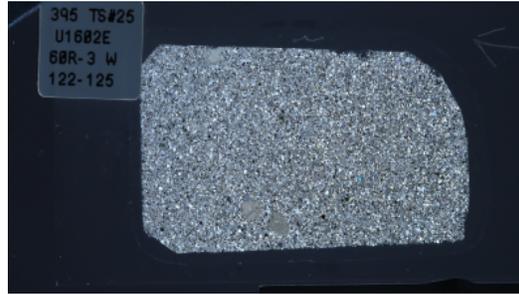
Lithology: sandstone

Thin section summary: Poorly sorted medium to coarse sandstone. Micritic calcite cement. Sample appears graded in hand specimen, but not in this thin section. Large glauconite grains, two different colors; larger ones may be forming in place.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-65R-2-W 60/63-TSB-TS26**

Observer: SOC

Piece no.:

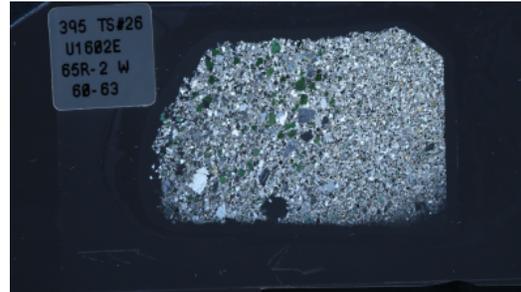
Lithology: sandstone

Thin section summary: Medium to coarse sandstone with calcite cement. Large glauconite pellets; some appear to have formed in situ, and some rounded (transported) glauconite with calcite incisions.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-66R-2-W 108/111-TSB-TS27**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Well sorted, layered sandstone with generally subround to rounded grains. Layers defined by concentrations of heavy minerals, many of which are subangular pyrite grains. Heavy minerals tend to be smaller.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-66R-3-W 79/82-TSB-TS 28**

Observer: SOC

Piece no.:

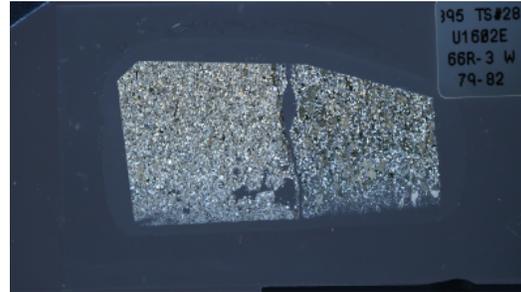
Lithology: poorly sorted sandstone

Thin section summary: Poorly sorted, mud matrix supported sandstone. Grains angular to rounded and include quartz, feldspar, mica, and rare lithic grains, e.g. quartzite. Sample composed of roughly 1/4 to 1/3 matrix.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-67R-3-W 90/92-TSB-TS29**

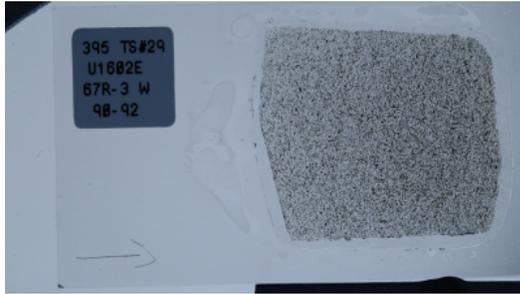
Observer: SOC

Piece no.:

Lithology: well sorted sandstone

Thin section summary: Well sorted quartz sandstone. Grains subrounded to subangular, some completely rounded. Also contains grains of feldspar, glauconite, and mica. Weak preferred orientation of mica. Micritic calcite cement. Plucked centers.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-68R-2-W 100/102-TSB-TS30**

Observer: SOC

Piece no.:

Lithology: laminated sandstone

Thin section summary: Fine to medium laminated quartz sand with calcite cement. Grains subrounded to subangular, slight orientation. Minor feldspar. Glauconite present, much of which seems to be matrix filling. Glauconite also follows linear planes within the matrix, imposing a layered appearance. Possible replacement of feldspar by glauconite.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-71R-1-W 122/125-TSB-TS31**

Observer: SOC

Piece no.:

Lithology: laminated sandstone

Thin section summary: Moderately sorted sandstone. Grains rounded to subrounded, calcite cement. Glauconite pellets present, surrounded by matrix. Grains composed of quartz, feldspar, mica, glauconite, pyrite, and rare lithic grains (e.g. quartzite), chlorite. Thin layers with higher concentration of pyrite and heavy minerals in clay matrix.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-72R-2-W 142/145-TSB-TS32**

Observer: SOC

Piece no.:

Lithology: fine-grained sandstone

Thin section summary: Fine grained, moderately sorted sandstone. Grains are subangular. Quartz dominant; feldspar, hornblende, mica, glauconite present. Calcite and mud matrix. Pyrite burrow infilling. Angular opaque grains. Foraminifers present (recrystallized).

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-73R-2-W 19/22-TSB-TS33**

Observer: SOC

Piece no.:

Lithology: laminated sandstone

Thin section summary: Poorly sorted, angular to subrounded medium-grained sandstone. Grains include quartz, feldspar, mica, glauconite, green hornblende, pyrite. Calcite cement.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-74R-2-W 69/72-TSB-TS34**

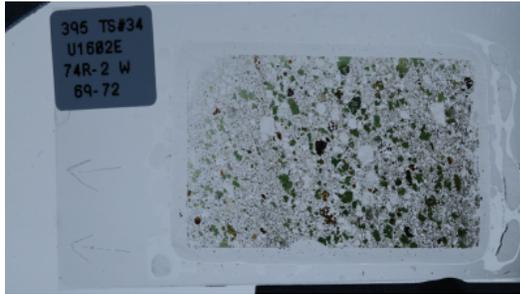
Observer: SOC

Piece no.:

Lithology: coarse grained sandstone

Thin section summary: Medium to coarse sandstone with laminations. Cemented with calcite. Large glauconite pellets throughout appear to have formed in situ.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-74R-3-W 107/109-TSB-TS35**

Observer: SEM

Piece no.:

Lithology:

Thin section summary: This thin section was sampled at a 1.5 cm diameter pyritized nodule. Section comprised of well sorted sandstone with subrounded sand sized (and some silt sized) grains. Quartz, feldspar, amphibole common; a variety of other minerals in subordinate abundance. Glauconite pellets are abundant, both inside and outside of the nodule. Within the nodule, glauconite and some other grains appear to be expanded by growth of the pyrite. Outside of pyritized area the sandstone is cemented with calcite.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-75R-1-W 44/46-TSB-TS36**

Observer: SOC

Piece no.:

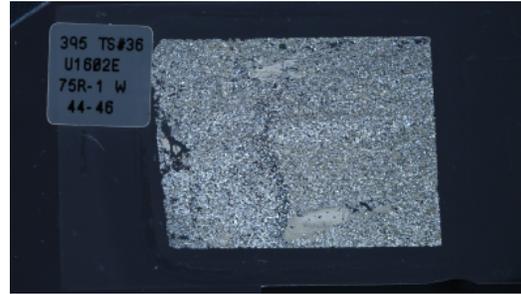
Lithology: laminated sandstone

Thin section summary: Sandstone with disturbed layering. Moderately sorted, rounded to subangular grains. Foraminifers present in silty clay intervals (likely burrows). Minerals include abundant quartz, chlorite, and feldspar; pyrite also present.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-75R-1-W 74/76-TSB-TS37**

Observer: SOC

Piece no.:

Lithology: well sorted sandstone

Thin section summary: Sandstone. Moderately well sorted, subangular to subrounded grains. Minerals include primarily quartz and feldspar. Glauconite is present but not common, and is rounded.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-81R-2-W 88/91-TSB-TS38**

Observer: SOC

Piece no.:

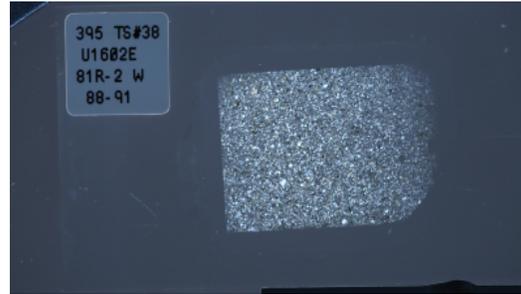
Lithology: sandstone

Thin section summary: Sandstone with subangular to subrounded clasts. Grains predominantly composed of quartz, feldspar, chlorite, mica; hornblende, pyrite, non-reflective opaque minerals also present.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-82R-2-W 122/125-TSB-TS39**

Observer: SOC

Piece no.:

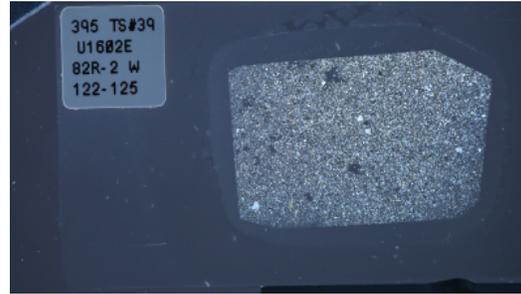
Lithology: well sorted sandstone

Thin section summary: Well sorted sandstone composed mainly of fine sand sized, sub-angular grains. Minerals include quartz, feldspar, hornblende, mica, pyrite, glauconite. Some rare foraminifers. Micritic calcite cement.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-83R-4-W 54/57-TSB-TS40**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Moderately well sorted sandstone. Subangular to subrounded grains. Abundant pyrite, quartz, feldspar, chlorite, hornblende. Calcite cement.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-84R-2-W 27/30-TSB-TS41**

Observer: SOC

Piece no.:

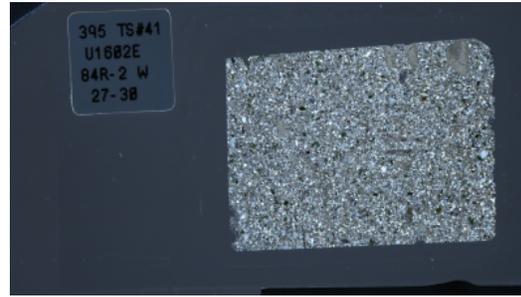
Lithology: sandstone

Thin section summary: Sandstone. Grains mostly subrounded. Some mud clasts or burrows containing foraminifers and smaller clasts. Burrow tube (1.1 mm wide) infilled with fine sand with sand about the same size and composition as the surrounding material. Small pellet of glauconite in burrow filling. Some glauconite in sandstone. Calcite cement.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-88R-1-W 32/35-TSB-TS42**

Observer: SOC

Piece no.:

Lithology: poorly sorted sandstone

Thin section summary: Sandstone. Poorly sorted. Grains subangular to rounded, and include abundant quartz and feldspar, but also hornblende, pyrite, and glauconite as pellets as well as infilling between grains. Calcite cement.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-88R-1-W 98/101-TSB-TS 43**

Observer: SOC

Piece no.:

Lithology: sandstone

Thin section summary: Sandstone. Grains are finer grained in size than sample TS42. This sample also has more mud in matrix and/or mud clasts, more rounded grains and slightly better sorting. One large (300 um) bent chlorite grain. Some foraminifers present. Quartz, feldspar, hornblende, very little pyrite.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-88R-2-W 44/47-TSB-TS 44**

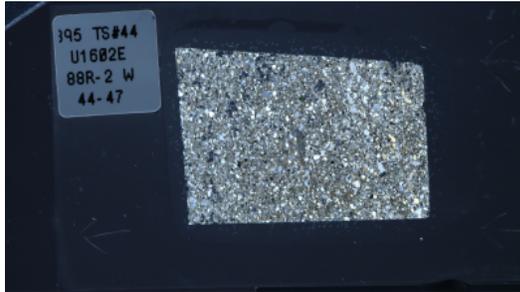
Observer: SOC

Piece no.:

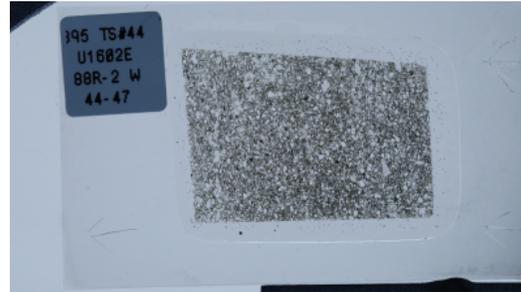
Lithology: poorly sorted sandstone

Thin section summary: Sandstone, poorly sorted. Subangular to rounded grains, composed of quartz and feldspar with subordinate hornblende, lithic fragments, chlorite, and pyrite. Some foraminifers present; very little glauconite. Porosity filled with calcite cement and clay matrix.

Plane-polarized:



Cross-polarized:



THIN SECTION LABEL ID: **395-U1602E-88R-2-W 87/89-TSB-TS 45**

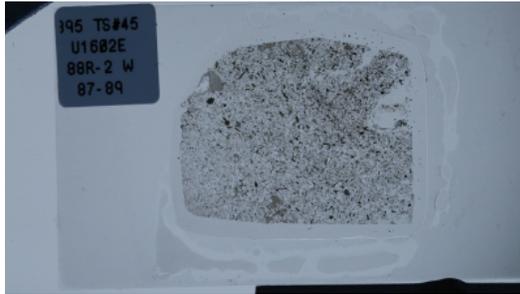
Observer: SOC

Piece no.:

Lithology: well sorted sandstone

Thin section summary: Graded sandstone. Well-sorted, sub-angular grains composed of quartz, feldspar, glauconite, hornblende, and minor pyrite. Calcite cement.

Plane-polarized:



Cross-polarized:

