

THIN SECTION LABEL ID: **400-U1607A-7R-6-W 52/55-TSB-TS#26**

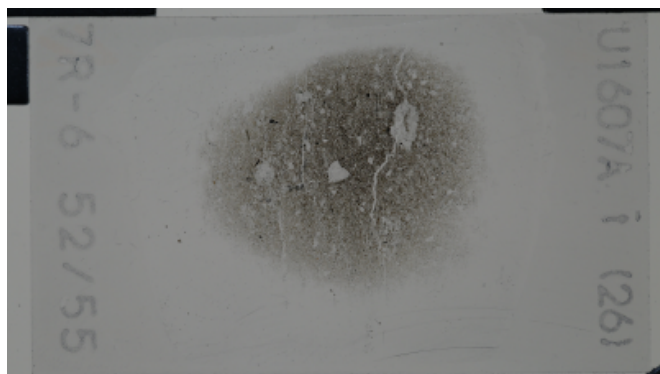
Thin section no.: **26**

Observer: Ives

Unit/subunit:

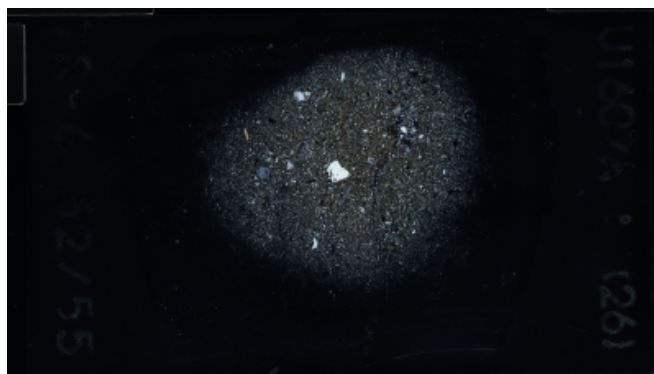
Thin section summary: Described as black sandstone" on the request form. Very poorly sorted muddy sandstone. Grains are angular to sub-angular. Quartz is the dominant grain type. Commonly contains gneissic and felsic plutonic lithics and feldspars. There are also rare amounts of pyroxene, biotite, and the bladed metamorphic silicate that is so common at this site. There is a significant amount of intragranular clay in this slide. Any cement present is not discernable. Pyrite is present, possibly in both detrital and authigenic forms."

Plane-polarized



74565851

Cross-polarized



74565881

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	igneous, metamorphic	<b>Lithic grains comments:</b>	Common intrusive felsic, and common gneiss
<b>Mineral grains:</b>	quartz, feldspar, pyroxene, mica, other	<b>Mineral grain comments:</b>	Dominant quartz, common feldspar, rare pyroxene, and rare biotite, and metamorphic silicates. Pyrite present
<b>Grain-to-grain contacts:</b>	floating, point	<b>Matrix comments:</b>	Clay

THIN SECTION LABEL ID: **400-U1607A-16R-2-W 95/98-TSB#29-TS#30**

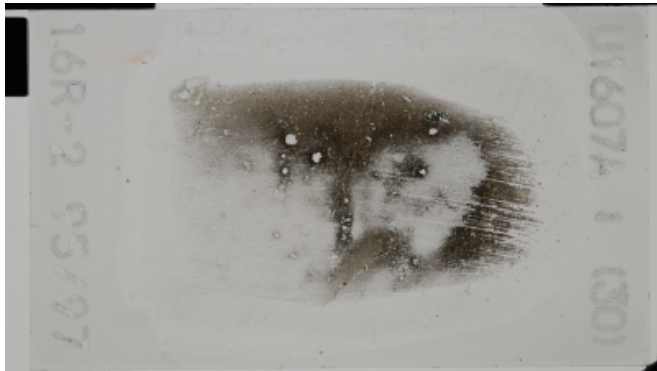
Thin section no.: **30**

Observer: Ives

Unit/subunit:

Thin section summary: Calcite cemented sandy mud. Shells are crystallized by calcite.

Plane-polarized



74220441

Cross-polarized



74220461

### Sediments & Sedimentary Rock

**Lithology:** sandy mud

<b>Lithic grains specifics:</b>	igneous	<b>Lithic grains comments:</b>	felsic
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<b>Mineral grains:</b>	quartz, feldspar	<b>Mineral grain comments:</b>	
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<b>Macrofossils:</b>	mollusc	<b>Comments on fossils:</b>	recrystallized
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<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	
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THIN SECTION LABEL ID: **400-U1607A-16R-2-W 95/98-TSB#29-TS#43**

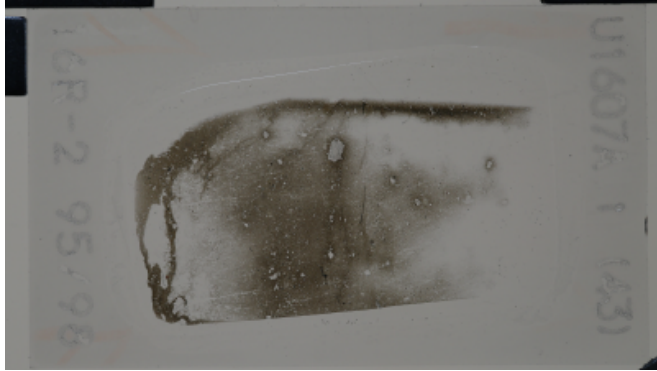
Thin section no.: **43**

Observer: Ives

Unit/subunit:

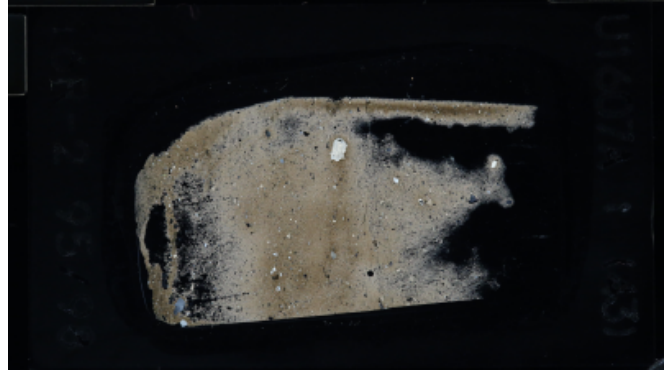
Thin section summary: Sandy carbonate mud with calcite cement. Sand component is poorly sorted, angular, and is comprised of quartz, very fresh looking plagioclase, and trace amounts of pyroxene, glauconite. There is abundant calcite cement, which appears to replace any bioclasts present. There is also in situ pyrite growth.

Plane-polarized



74498931

Cross-polarized



74498911

**Sediments & Sedimentary Rock**

**Lithology:** calcareous mud

<b>Lithic grains specifics:</b>	sedimentary	<b>Lithic grains comments:</b>	
<b>Mineral grains:</b>	quartz, feldspar, pyroxene, other	<b>Mineral grain comments:</b>	Trace pyroxene and glauconite
<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	Calcite

THIN SECTION LABEL ID: **400-U1607A-17R-6-W 135/138-TSB-TS#31**

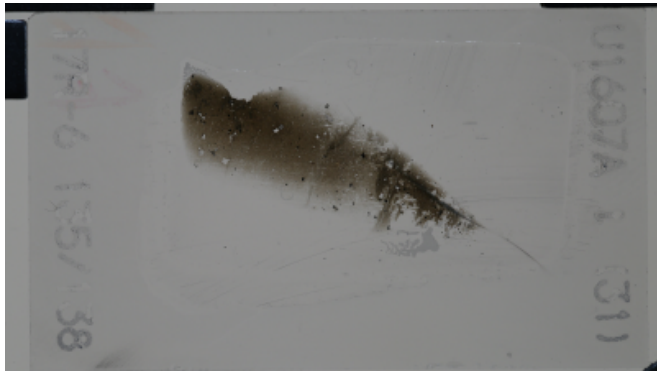
Thin section no.: **31**

Observer: Ives

Unit/subunit:

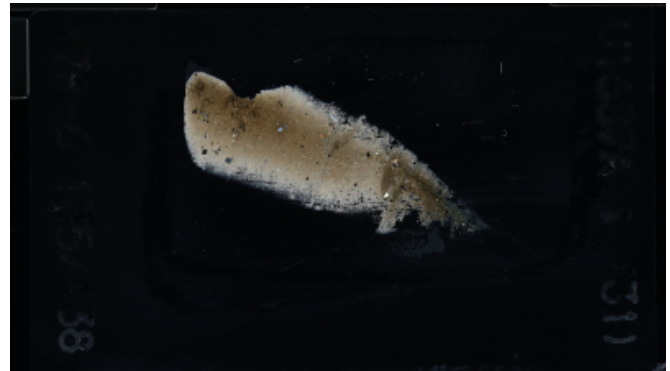
Thin section summary: Calcite mud with dispersed sand. Calcite cemented. Mud contains authigenic pyrite.

Plane-polarized



74499411

Cross-polarized



74499451

### Sediments & Sedimentary Rock

**Lithology:** sandy mud

<b>Lithic grains specifics:</b>	metamorphic	<b>Lithic grains comments:</b>	Gneiss
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<b>Mineral grains:</b>	quartz, feldspar, other	<b>Mineral grain comments:</b>	Dominant clay
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<b>Microfabric/deformation:</b>		<b>Textural maturity:</b>	Low	<b>Mineralogical maturity:</b>	Low
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<b>Grain-to-grain contacts:</b>	tangential	<b>Matrix comments:</b>	Silt, clay
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<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	Calcite
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THIN SECTION LABEL ID: **400-U1607A-17R-7-W 6/8-TSB-TS#32**

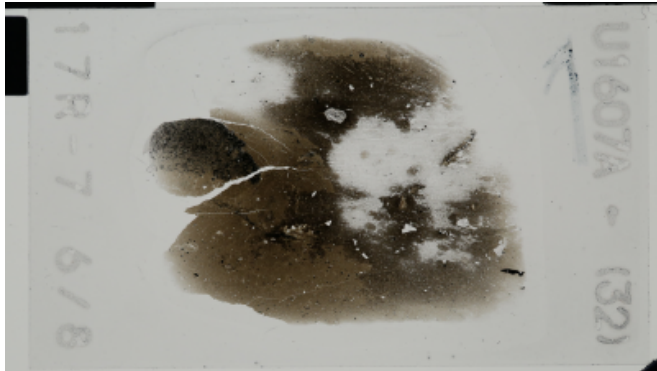
Thin section no.: **32**

Observer:

Unit/subunit:

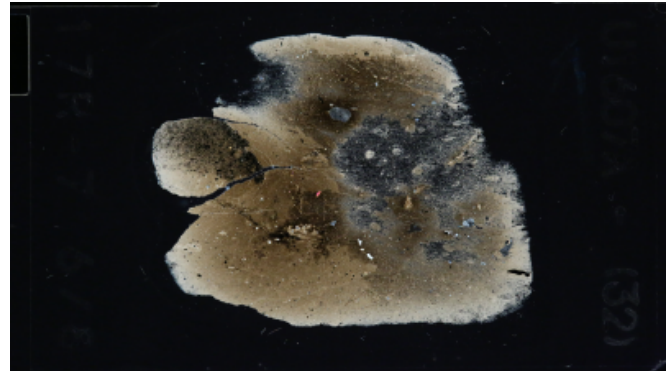
Thin section summary: Carbonate horizon with burrows. Clay with silt and sand. Clasts are dominantly quartz with some pyroxene. Microcrystalline calcite cement is common throughout but especially notable as likely shell replacement. Black material is likely pyrite but appears green in ppl (glaucanite)?

Plane-polarized



74220531

Cross-polarized



74220551

**Sediments & Sedimentary Rock**

**Lithology:**

<b>Mineral grains:</b>	pyroxene, quartz, other	<b>Mineral grain comments:</b>	Dominant quartz. Rare pyroxene and trace other, common opaque minerals, glauconite or pyrite?
<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	No pore spaces and replacement of shells common. Fracture-fill limited

THIN SECTION LABEL ID: **400-U1607A-17R-7-W 6/8-TSB-TS#44**

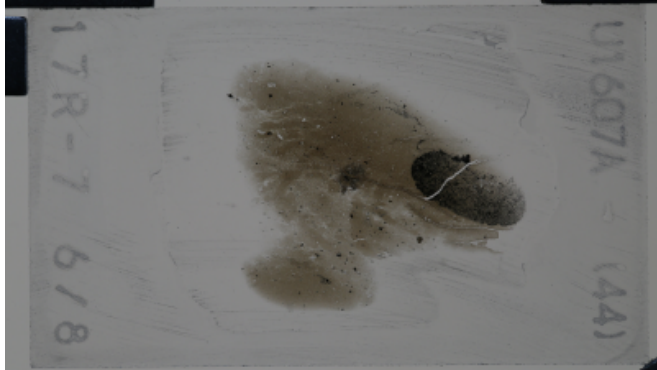
Thin section no.: **44**

Observer:

Unit/subunit:

Thin section summary: Calcareous mud with pyrite filled burrow. Contains silt and sand sized quartz clasts and pyritized skeletal debris (unidentifiable). Opaque cubes (pyrite) are concentrated within the burrow fill. Matrix is finely crystalline carbonate, with well-sorted crystals.

Plane-polarized



74498501

Cross-polarized



74498521

**Sediments & Sedimentary Rock**

**Lithology:** calcareous mud

<b>Lithic grains specifics:</b>	sedimentary	<b>Lithic grains comments:</b>	
<b>Mineral grains:</b>	quartz, other	<b>Mineral grain comments:</b>	Rare quartz and opaque mineral pyrite
<b>Macrofossils:</b>	mollusc	<b>Comments on fossils:</b>	Possible mollusc? Pyritized
<b>Grain-to-grain contacts:</b>		<b>Matrix comments:</b>	Clay

THIN SECTION LABEL ID: **400-U1607A-27R-6-W 0/2-TSB#32-TS#33**

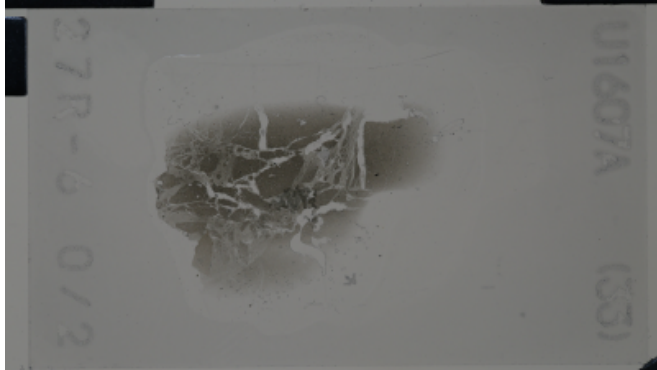
Thin section no.: **33**

Observer:

Unit/subunit:

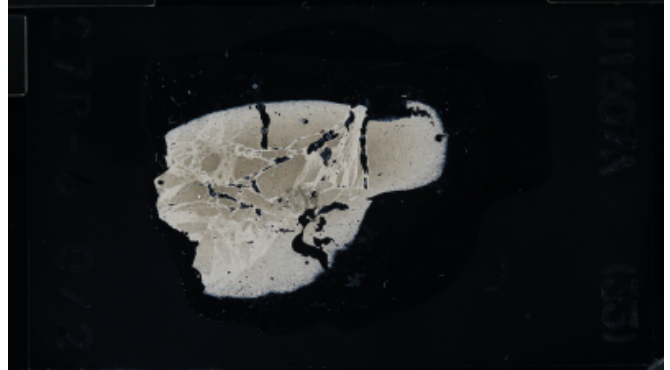
Thin section summary: Clast of limestone (may not be in place). Carbonate mudstone with brecciated internal fabric consistent with karsting.

Plane-polarized



74499391

Cross-polarized



74499371

### Sediments & Sedimentary Rock

**Lithology:**

<b>Lithic grains specifics:</b>	sedimentary	<b>Lithic grains comments:</b>	May be in fall in		
<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>			
<b>Porosity:</b>	moderate porosity	<b>Porosity rank:</b>	3	<b>Porosity type:</b>	Secondary

THIN SECTION LABEL ID: **400-U1607A-27R-6-W 137/139-TSB#33-TS#34**

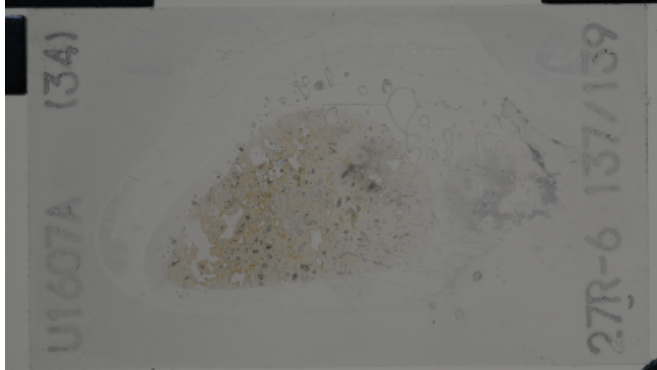
Thin section no.: **34**

Observer: Frank

Unit/subunit:

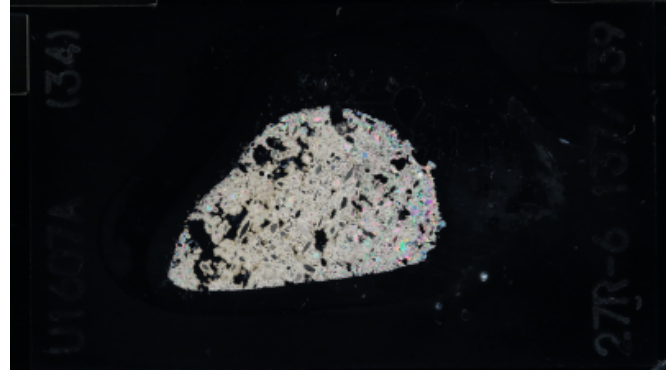
Thin section summary: Pseudomorph after ikaite (aka glendonite). Characteristic guttulate calcite crystals with overgrowths of fibrous botryoids of carbonate cement (aragonite??).

Plane-polarized



74424131

Cross-polarized



74424151

### Sediments & Sedimentary Rock

**Lithology:**

<b>Lithic grains specifics:</b>		<b>Lithic grains comments:</b>	Guttulate calcite crystals
<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	Aragonite?



THIN SECTION LABEL ID: **400-U1607A-37R-3-W 135/138-TSB#34-TS#35**

Thin section no.: **36**

Observer:

Unit/subunit:

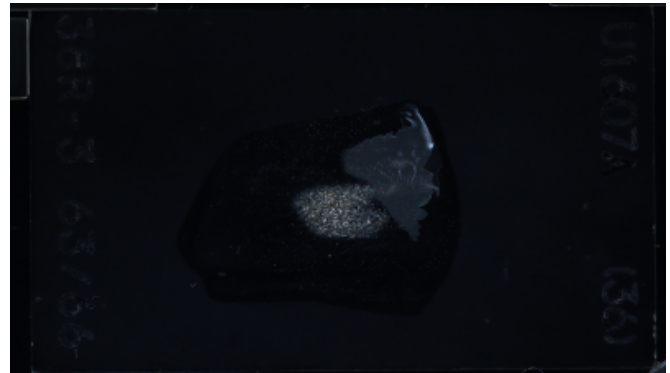
Thin section summary: Moderately well sorted sandstone with abundant quartz, common feldspar and mica, and trace glauconite. Matrix appears to be clay and grains are in tangential contact.

Plane-polarized



74498981

Cross-polarized



74499001

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	sedimentary	<b>Lithic grains comments:</b>	Common felsic	
<b>Mineral grains:</b>	quartz, feldspar, mica, glauconite, other	<b>Mineral grain comments:</b>	Abundant quartz, common feldspar, rare glauconite, rare opaque minerals	
<b>Microfabric/deformation:</b>		<b>Textural maturity:</b>	Low	<b>Mineralogical maturity:</b> Low
<b>Grain-to-grain contacts:</b>	tangential	<b>Matrix comments:</b>	Clay	

THIN SECTION LABEL ID: **400-U1607A-38R-3-W 63/66-TSB#35-TS#36**

Thin section no.: **35**

Observer:

Unit/subunit:

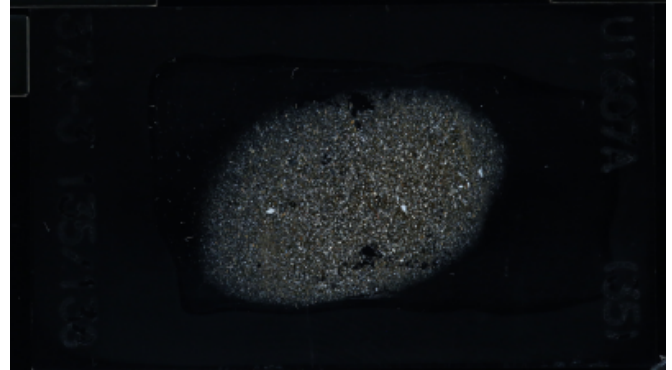
Thin section summary: Poorly sorted sandstone with common intrusive igneous rock fragments, abundant quartz, common feldspar and mica, along with rare glauconite (green/brown) and pyrite. The matrix is clay. Grains are in tangential contact.

Plane-polarized



74565931

Cross-polarized



74565911

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	sedimentary	<b>Lithic grains comments:</b>			
<b>Mineral grains:</b>	quartz, feldspar, mica, glauconite	<b>Mineral grain comments:</b>	Abundant quartz, common feldspar, common mica, and trace glauconite		
<b>Microfabric/deformation:</b>		<b>Textural maturity:</b>	Medium	<b>Mineralogical maturity:</b>	Medium
<b>Grain-to-grain contacts:</b>	tangential	<b>Matrix comments:</b>	Clay		
<b>Porosity:</b>	low porosity	<b>Porosity rank:</b>	2	<b>Porosity type:</b>	Primary

THIN SECTION LABEL ID: **400-U1607A-39R-1-W 25/29-TSB#36-TS#37**

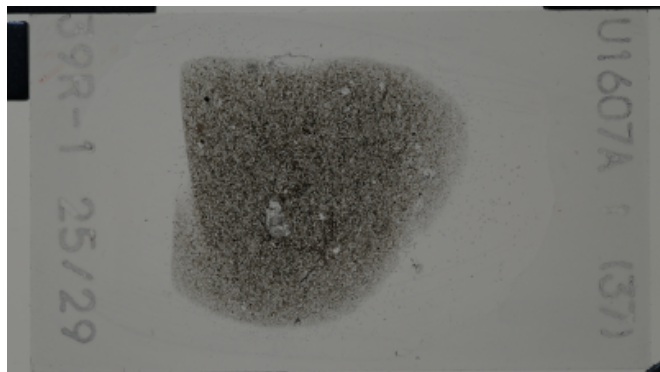
Thin section no.: **37**

Observer: Ives

Unit/subunit:

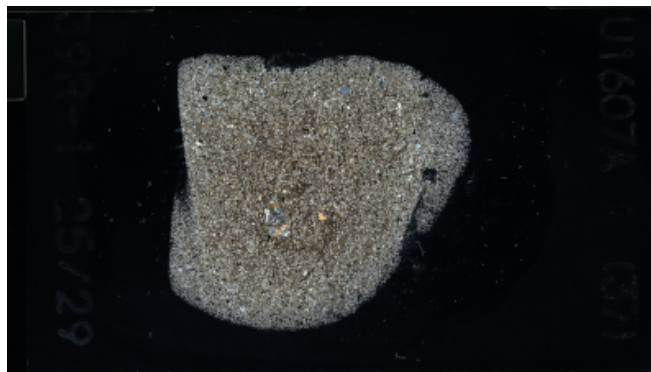
Thin section summary: Moderately well sorted sandstone. Grains are predominantly quartz with common amounts of both plagioclase and potassium feldspars and trace amounts of chlorite, hornblende, and shell fragments. Rare clay matrix is also present. Cemented by calcite. Trace amounts of authigenic pyrite.

Plane-polarized



74477511

Cross-polarized



74477561

### Sediments & Sedimentary Rock

**Lithology:**

<b>Mineral grains:</b>	quartz, feldspar, pyroxene, other	<b>Mineral grain comments:</b>	Dominant quartz, common plagioclase and potassium feldspar, trace chlorite, trace hornblende		
<b>Macrofossils:</b>		<b>Comments on fossils:</b>	Fragments		
<b>Microfabric/deformation:</b>		<b>Textural maturity:</b>		<b>Mineralogical maturity:</b>	Medium
<b>Grain-to-grain contacts:</b>	point, tangential	<b>Matrix comments:</b>	Clay		
<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	Intergranular in fine sand/silt laminae		

THIN SECTION LABEL ID: **400-U1607A-48R-2-W 41/43-TSB#37-TS#38**

Thin section no.: **38**

Observer: Ives

Unit/subunit:

Thin section summary: Moderately well sorted sandstone with abundant detrital glauconite grains. Other grain types include quartz, feldspar, pyroxene, mica, and gneissic lithics.

Plane-polarized



74565831

Cross-polarized



74565811

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	sedimentary, metamorphic	<b>Lithic grains comments:</b>	Trace gneiss		
<b>Mineral grains:</b>	quartz, feldspar, pyroxene, mica, other	<b>Mineral grain comments:</b>	Abundant quartz, rare feldspar, trace pyroxene, trace mica, and abundant glauconite		
<b>Microfabric/deformation:</b>		<b>Textural maturity:</b>	Medium	<b>Mineralogical maturity:</b>	Medium
<b>Grain-to-grain contacts:</b>	tangential	<b>Matrix comments:</b>	Clay		

THIN SECTION LABEL ID: **400-U1607A-50R-6-W 50/52-TSB#38-TS#39**

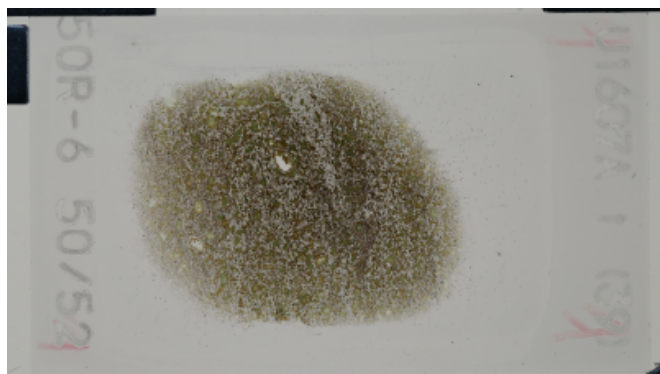
Thin section no.: **39**

Observer: Ives

Unit/subunit:

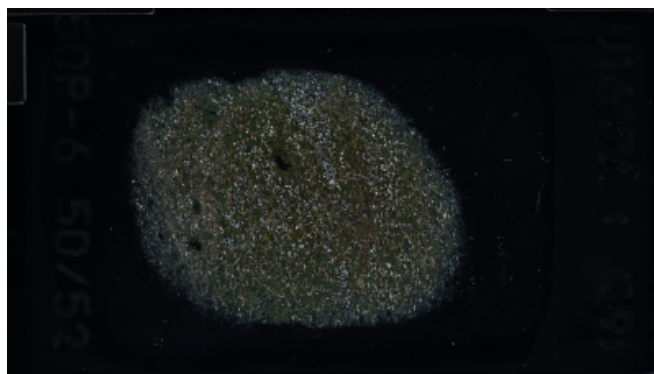
Thin section summary: Poorly sorted sandstone with abundant glauconite intraclasts. Also contains sand and silt grains composed of quartz, feldspar, pyroxene, biotite, and muscovite. Some area of the slide are rich in clay matrix material. Sand sized grains are angular to rounded. Grain contact type varies widely, and seems to tell a complex compaction and cementation story. Two intragranular cements are present. Calcite appears to be secondary (occur later). The primary intragranular cement is clear in ppl and black in xpl - zeolite?

Plane-polarized



74565771

Cross-polarized



74565791

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	sedimentary, metamorphic	<b>Lithic grains comments:</b>	Common gneiss
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<b>Mineral grains:</b>	quartz, feldspar, pyroxene, mica, glauconite, other	<b>Mineral grain comments:</b>	Abundant quartz, common feldspar, rare pyroxene, and trace biotite, abundant glauconite, abundant clay, and abundant muscovite
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<b>Microfabric/deformation:</b>		<b>Textural maturity:</b>		<b>Mineralogical maturity:</b>	Low
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<b>Grain-to-grain contacts:</b>	floating, point, tangential	<b>Matrix comments:</b>	Clay
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<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	Calcite appears to be secondary. The primary intragranular cement is clear in ppl and black in xpl zeolite?
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THIN SECTION LABEL ID: **400-U1607A-51R-6-W 61/63-TSB#39-TS#40**

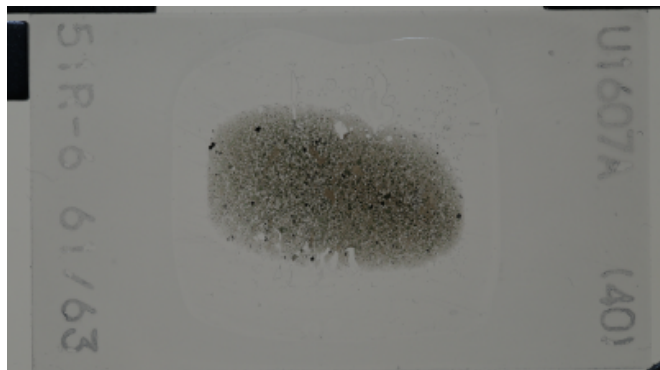
Thin section no.: **40**

Observer: Ives

Unit/subunit:

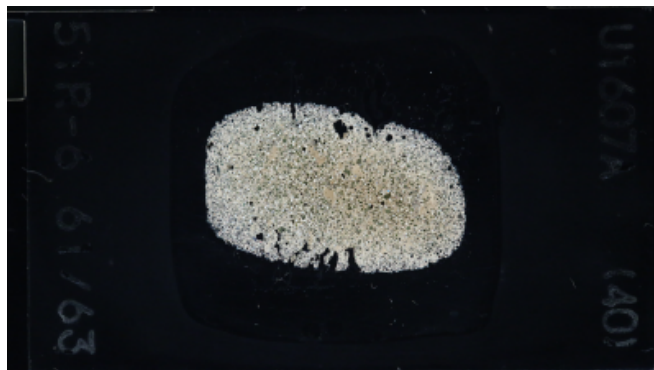
Thin section summary: Sandstone with abundant glauconite intraclasts. Also contains sand grains of quartz, plagioclase feldspar, pyroxene, a bladed silicate mineral, as well as gneissic and intrusive felsic lithic grains. Rare round, biogenic-shaped, calcite-replaced areas occur. Calcite cemented with only floating and few point grain contacts.

Plane-polarized



74477701

Cross-polarized



74477681

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	sedimentary, metamorphic	<b>Lithic grains comments:</b>	Trace felsic and trace gneiss
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<b>Mineral grains:</b>	quartz, feldspar, pyroxene, glauconite, other	<b>Mineral grain comments:</b>	Common quartz, rare plagioclase, rare pyroxene, common glauconite, and common clay. Both detrial and in situ pyrite
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<b>Macrofossils:</b>	echinoid, mollusc	<b>Comments on fossils:</b>	Some biogenic shapes. Echinoid? Mollusc?
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<b>Microfabric/ deformation:</b>		<b>Textural maturity:</b>	Low	<b>Mineralogical maturity:</b>	Low
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<b>Grain-to-grain contacts:</b>	floating, point	<b>Matrix comments:</b>	
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<b>Cement mineralogy:</b>	carbonate	<b>Cement mineralogy and type:</b>	Equant to bladed
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<b>Porosity:</b>	no porosity	<b>Porosity rank:</b>	1	<b>Porosity type:</b>	Primary
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THIN SECTION LABEL ID: **400-U1607A-82R-3-W 85/88-TSB-TS#42**

Thin section no.: **42**

Observer:

Unit/subunit:

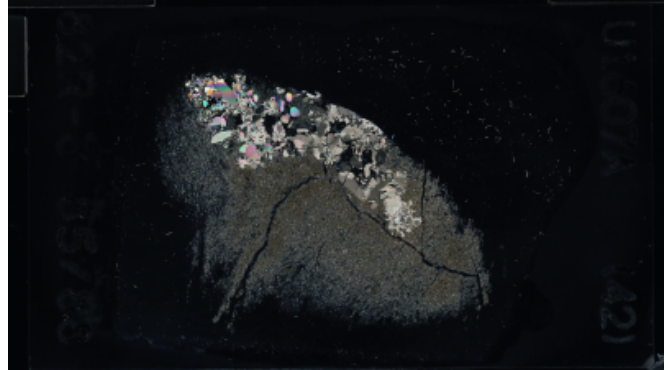
Thin section summary: Ikaite pseudomorph in siltstone. Contains guttalatic calcite, indicative of the transformation from ikaite to calcite. Crystals are coarse and inclusion-rich, often zoned. Lots of remaining porosity.

Plane-polarized



74601441

Cross-polarized



74601461

### Sediments & Sedimentary Rock

**Lithology:** siltstone

<b>Lithic grains specifics:</b>	sedimentary	<b>Lithic grains comments:</b>	Contains guttalatic calcite
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<b>Porosity:</b>	moderate porosity	<b>Porosity rank:</b>	3	<b>Porosity type:</b>	
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THIN SECTION LABEL ID: **400-U1607A-91R-5-W 69/72-TSB-TS#45**

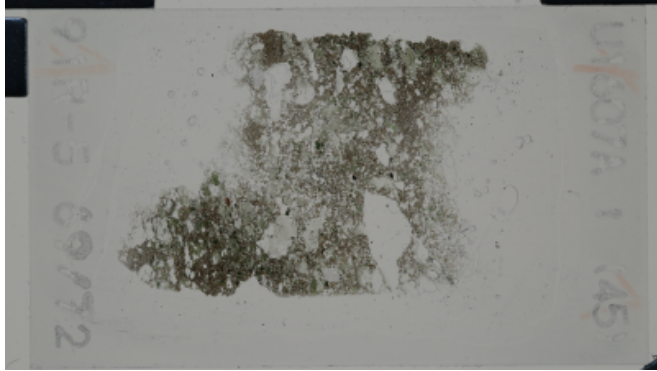
Thin section no.: **45**

Observer:

Unit/subunit:

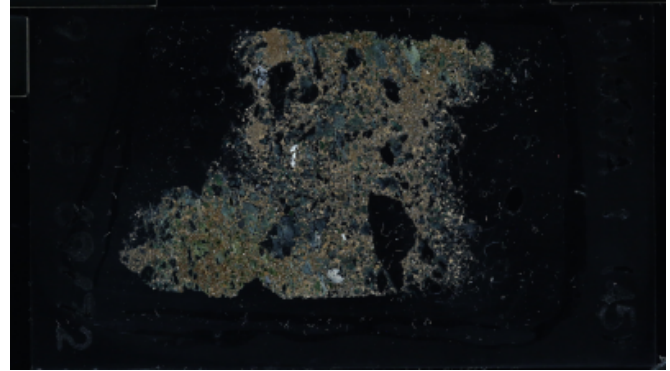
Thin section summary: Glauconitic sandstone. Sand-sized framework grains are glauconite, quartz, and intrusive igneous rock fragments, along with some carbonate clasts (fine matrix). The matrix of the rock is partially replaced by calcite or possibly dolomite (rhombs of equal size).

Plane-polarized



74601421

Cross-polarized



74601401

### Sediments & Sedimentary Rock

**Lithology:** sandstone

<b>Lithic grains specifics:</b>	sedimentary, igneous	<b>Lithic grains comments:</b>	
<b>Mineral grains:</b>	glauconite, quartz	<b>Mineral grain comments:</b>	
<b>Grain-to-grain contacts:</b>		<b>Matrix comments:</b>	Carbonate matrix



THIN SECTION LABEL ID: **400-U1607A-99R-1-W 29/31-TSB#43-TS#46**

Thin section no.: **46**

Observer:

Unit/subunit:

Thin section summary: Appeared as black-filled void in core. Contains pyrite cubes. Some sort of red Fe-oxide fills fractures (red in transmitted light, but does not reflect in reflected light).

Plane-polarized



74601311

Cross-polarized



74601331

### Sediments & Sedimentary Rock

Lithology:

Mineral grains:	other	Mineral grain comments:	Pyrite and authigenic Fe Oxide in cracks
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