

THIN SECTION LABEL ID: **362-U1480F-74X-1-W 74/75-TSB-TS#1**

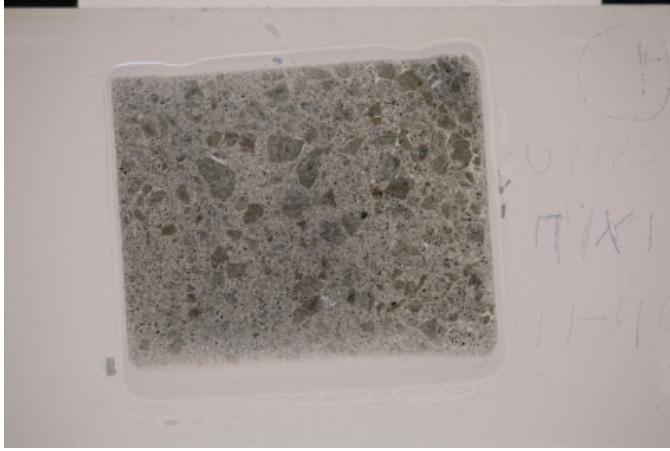
Thin section no.: 1

Observer: CHEM

Thin section description: Fine sand composed basically by quartz, feldspar, actinolite and chlorite. The grains are mostly sub-angular and moderated sorted.,

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: fine sand with silt

Grain sorting: moderate [2014]

Grain contact:

Lamina thickness (cm):

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%] 90

Silt Texture [%] 10

Clay Texture [%]

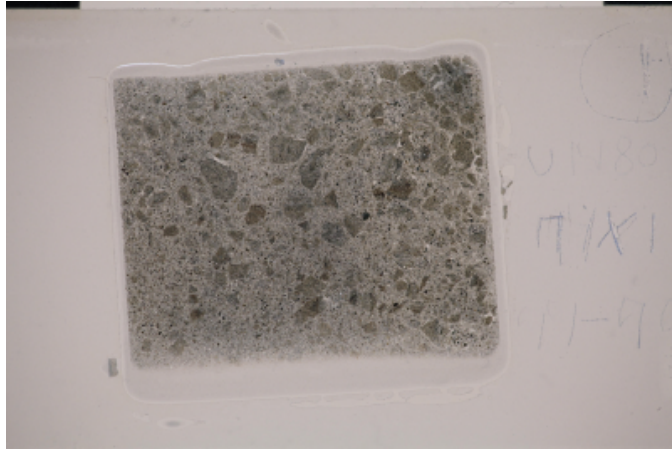
THIN SECTION LABEL ID: **362-U1480F-74X-1-W 74/75-TSB-TS#1**

Thin section no.: 1

Observer: MILL

Thin section description: Slide appears to be drilling induced--- fragments of mudstone dispersed in drilling swarf

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: silty clay

Granular Sediment	Percent Texture	
Siliclastic [%]	Sand Texture [%]	
Volcaniclastic [%]	Silt Texture [%]	25
Pelagic [%]	Clay Texture [%]	75

THIN SECTION LABEL ID: **362-U1480F-96X-1-W 17/18-TSB-TS#2**

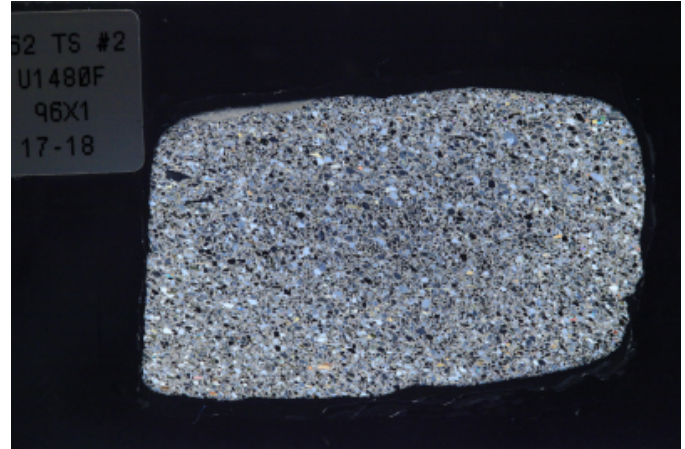
Thin section no.: 2

Observer: MILL

Thin section description: calcite-cemented medium lithic arkose

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: sandstone

Granular Sediment		Percent Texture	
Siliclastic [%]	100	Sand Texture [%]	100
Volcaniclastic [%]		Silt Texture [%]	
Pelagic [%]		Clay Texture [%]	

THIN SECTION LABEL ID: 362-U1480G-11R-3-W 60/61-TSB-TS#9

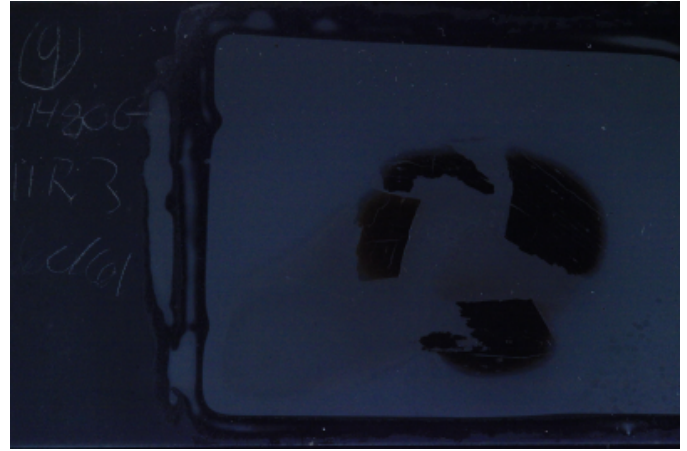
Thin section no.: 9

Observer: MILL

Thin section description: large fragment of wood; has a few sediment-filled burrows; pyritized

Plane-polarized

Cross-polarized



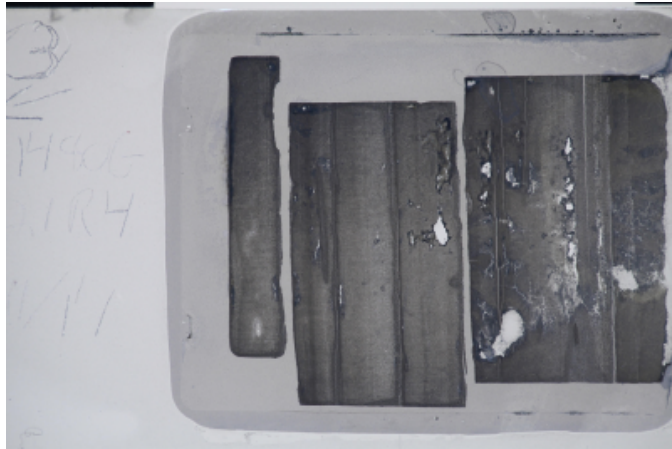
THIN SECTION LABEL ID: **362-U1480G-21R-4-W 11/14-TSB-TS#3**

Thin section no.: 3

Observer: CHEM

Thin section description: Interlayered silty clay layers represented by: (i) 0.4mm thick layers of clayey silt (with occurrence of opaques grains) and (ii) up to 3mm thick silty clay layers. They have normal gradation.

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: silty clay

Grain sorting: moderate [2014]

Grain contact: gradational

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 55

Clay Texture [%] 45

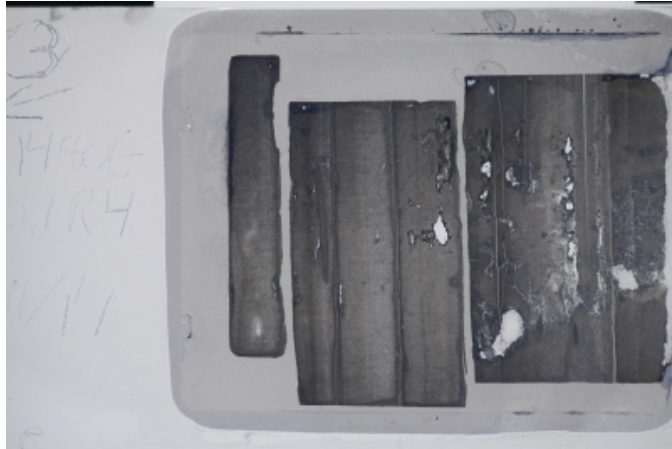
THIN SECTION LABEL ID: **362-U1480G-21R-4-W 11/14-TSB-TS#3**

Thin section no.: 3

Observer: MILL

Thin section description:

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: alternating silt and clay layers

Grain sorting: poor [2014]

Grain contact: sharp

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 25

Clay Texture [%] 75

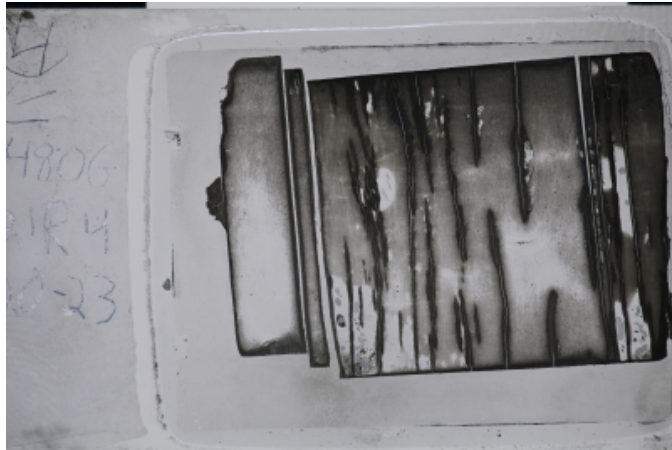
THIN SECTION LABEL ID: **362-U1480G-21R-4-W 20/23-TSB-TS#4**

Thin section no.: 4

Observer: CHEM

Thin section description: Alternating clay (2-3 mm thick) with silty clay (0.4 mm thick) laminae. There some features of dark brow color (silty clay laminaes) with major contribution of opaque minerals compared to thicker laminaes (2-3 mm). It may be connected with trace fossil acctivities.

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: clay with silt

Grain sorting: well [2014]

Grain contact:

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 15

Clay Texture [%] 85

THIN SECTION LABEL ID: **362-U1480G-22R-3-W 115/118-TSB-TS#5**

Thin section no.: 5

Observer: CHEM

Thin section description: Alternating layer clay and clay with silt with normal gradation and some erosion features at the base of each cycle. The layers can reach up 0.5 mm thick. Presence of trace fossil structures (neireites, planolites).

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: clay with silt

Grain sorting: moderate [2014]

Grain contact:

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 15

Clay Texture [%] 85

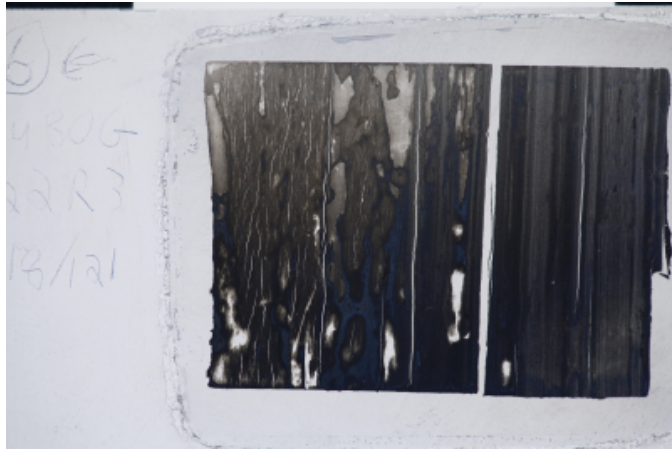
THIN SECTION LABEL ID: **362-U1480G-22R-3-W 118/121-TSB-TS#6**

Thin section no.: 6

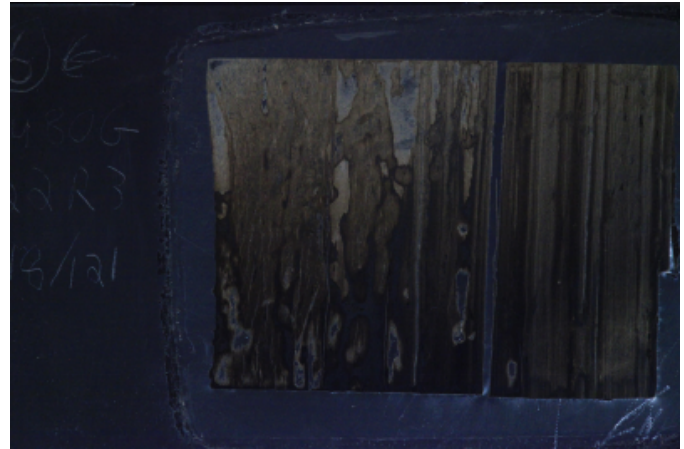
Observer: CHEM

Thin section description: Alternating clay and clay with silt layer (0.2mm and 0.02 mm thick) with well oriented mineral, well laminated. Some thin laminae are richer in opaques grains. Bioturbed material by trace fossil. Presence also the mm-size intraclast.

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: clay with silt

Grain sorting: moderate [2014]

Grain contact:

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 10

Clay Texture [%] 90

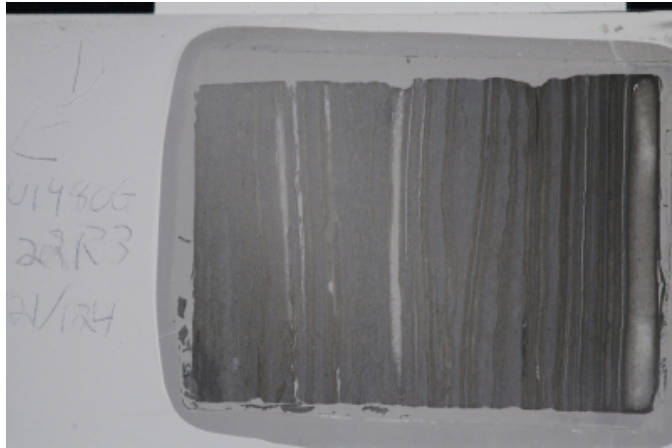
THIN SECTION LABEL ID: **362-U1480G-22R-3-W 121/124-TSB-TS#7**

Thin section no.: 7

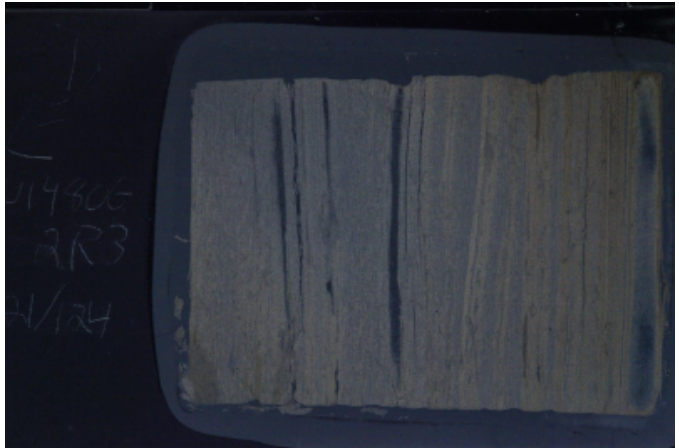
Observer: CHEM

Thin section description: Alternating clay with 2mm and 0.4 mm thick laminae. Usually the 0.4 mm thick layers are clay with silt. Some laminae can reach up to 0.8 mm. The laminae can be divided into laminae with no oriented grain (non gradational) and oriented grains. There is also 1 mm-thick intraclast.

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: clay with silt

Grain sorting: well [2014]

Grain contact:

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%]

Clay Texture [%]

THIN SECTION LABEL ID: **362-U1480G-28R-1-W 57/60-TSB-TS#10**

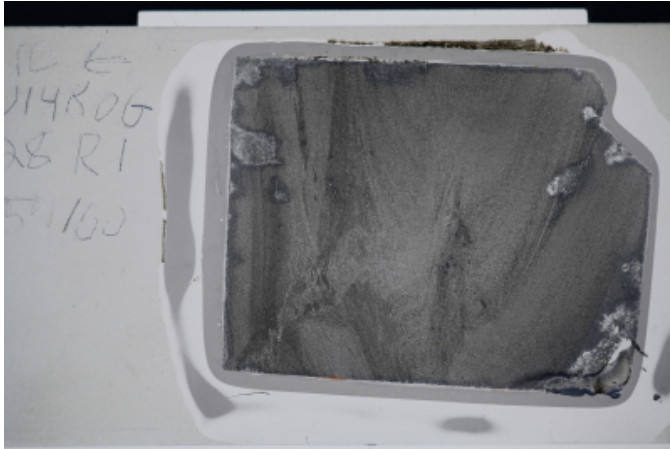
Thin section no.: 10

Observer: CHEM

Thin section description: Silt composed of quartz, feldspar, clay and carbonate(?) showing convolute structures

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: calcareous silt

Grain sorting: well [2014]

Grain contact:

Lamina thickness (cm):

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 85

Clay Texture [%] 25

THIN SECTION LABEL ID: **362-U1480G-28R-1-W 64/67-TSB-TS#11**

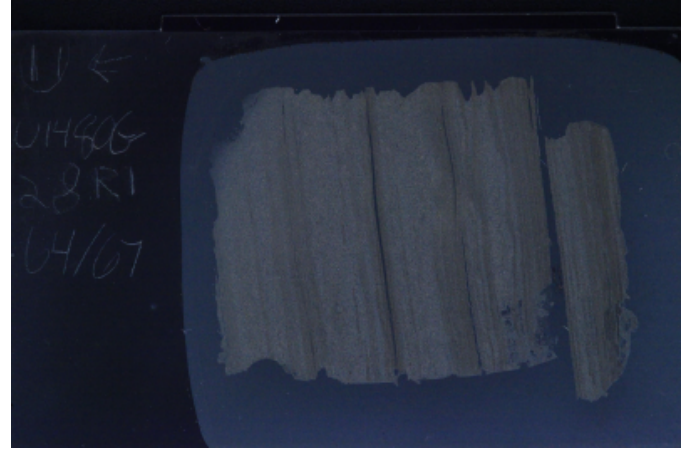
Thin section no.: 11

Observer: CHEM

Thin section description: Sandy silt with normal and inverted gradation, with laminae thickness of 0.2 to 0.02 mm, well laminated

Plane-polarized

Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: sandy silt

Grain sorting: well [2014]

Grain contact:

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%] 25

Silt Texture [%] 75

Clay Texture [%]

THIN SECTION LABEL ID: **362-U1480G-29R-1-W 65/68-TSB-TS#12**

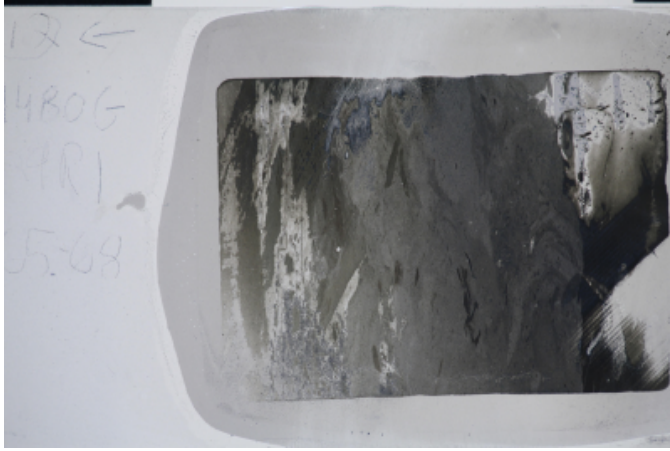
Thin section no.: 12

Observer: CHEM

Thin section description: Silty clay with convolute structures (folded laminae) with 0.4mm thick laminae of clay and silty clay. Occurrence of trace fossils (nereites).

Plane-polarized

Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: silty clay

Grain sorting: well [2014]

Grain contact:

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 25

Clay Texture [%] 75

THIN SECTION LABEL ID: **362-U1480G-38R-1-W 61/64-TSB-TS#14**

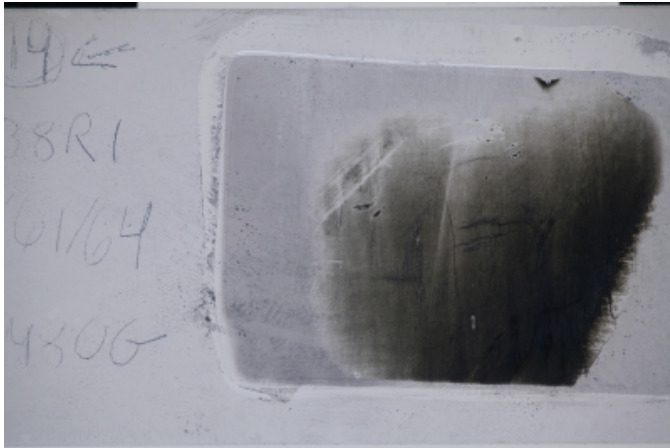
Thin section no.: 14

Observer: MILL/CHEM

Thin section description: Intercalation of approx. -.02 mm thick laminae of silt, clay, and silty clay where the darker layer are composed by laminar silty clay with more opaque grains compared to the other layers. The opaque minerals are characterized as greigite ((from interval of magnetic susceptibility spike; greigite is distributed inhomogeneously)

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: alternating silt and clay layers

Grain sorting: well [2014]

Grain contact:

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 10

Clay Texture [%] 90

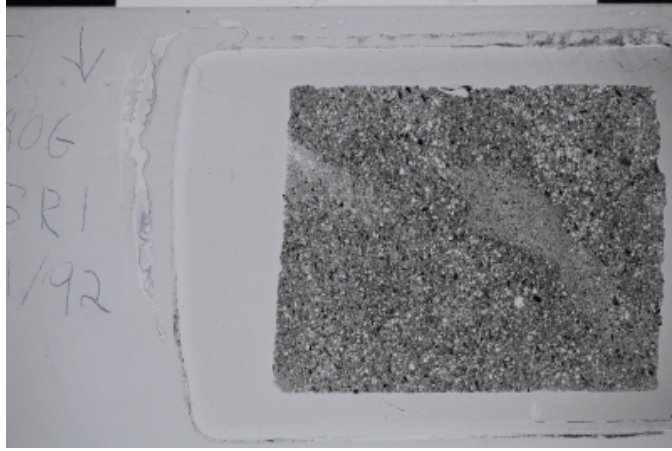
THIN SECTION LABEL ID: **362-U1480G-53R-1-W 90/92-TSB-TS#15**

Thin section no.: 15

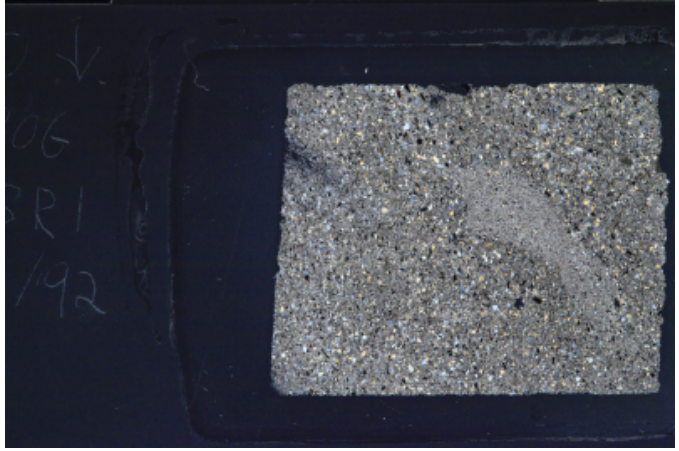
Observer: CHEM

Thin section description: Silty sand with carbonate cement (up to 20 %. Sub angular and well to moderate sorting, structureless sediment.

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: silty fine sand with carbonate allochems

Grain sorting: moderate [2014]

Grain contact:

Lamina thickness (cm):

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%] 75

Silt Texture [%] 25

Clay Texture [%]

THIN SECTION LABEL ID: **362-U1480G-53R-2-W 23/26-TSB-TS#16**

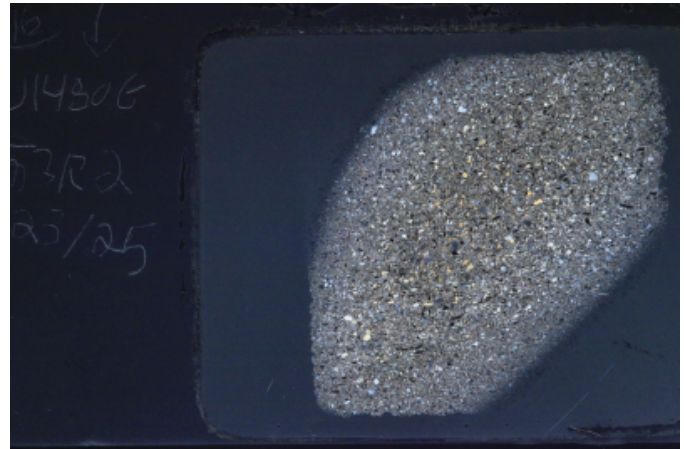
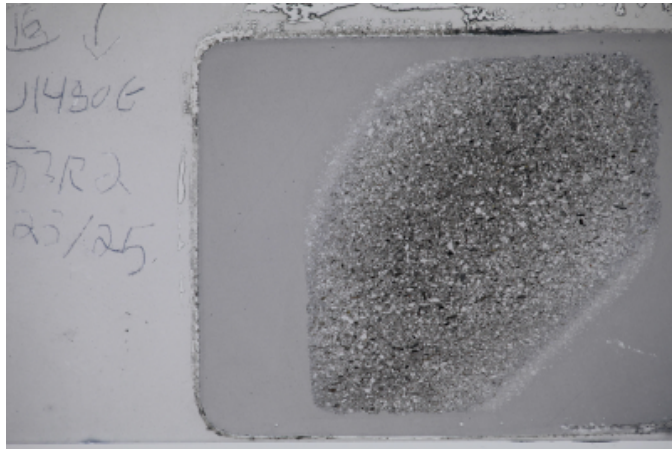
Thin section no.: 16

Observer: CHEM

Thin section description: Fine sand with carbonate cement (25%).

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: fine sand with carbonate allochems

Grain sorting: Moderate [2014] Grain contact: Lamina thickness (cm):

Granular Sediment		Percent Texture	
Siliclastic [%]	100	Sand Texture [%]	100
Volcaniclastic [%]		Silt Texture [%]	
Pelagic [%]		Clay Texture [%]	

THIN SECTION LABEL ID: **362-U1480G-60R-1-W 16/18-TSB-TS#20**

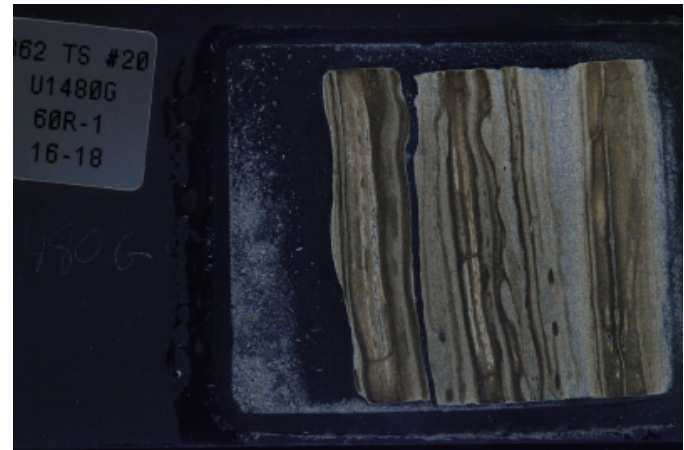
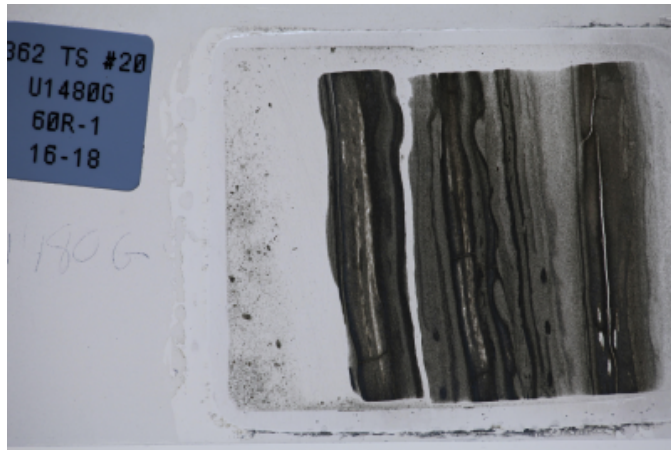
Thin section no.: 20

Observer: MILL

Thin section description: Intercalation of dark brown and brown laminae with thickness ranging from 0.4 mm up to 2.0 mm. Dark brown laminae contain more opaque minerals than the brow ones. In the opaque rich layers we recognize basal erosion surface. This sample occurs near base of Subunit IIIA; coarser material

Plane-polarized

Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: silty clay

Grain sorting: poor [2014]

Grain contact: sharp

Lamina thickness (cm): 0.4 - 0.2

Granular Sediment

Siliclastic [%] 100

Volcaniclastic [%]

Pelagic [%]

Percent Texture

Sand Texture [%]

Silt Texture [%] 25

Clay Texture [%] 75

THIN SECTION LABEL ID: **362-U1480G-60R-4-W 38/40-TSB-TS#21**

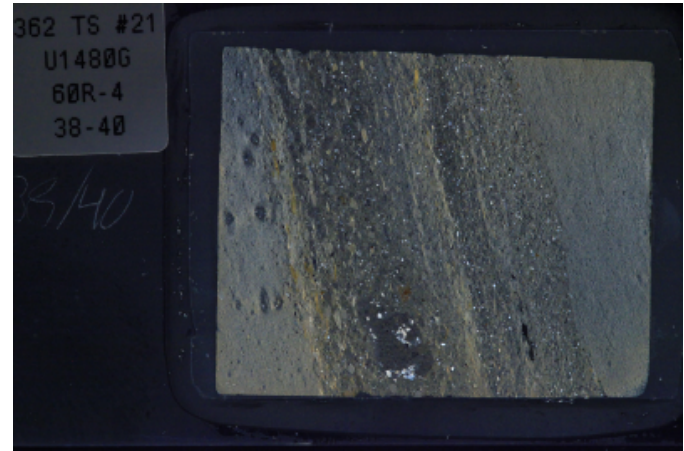
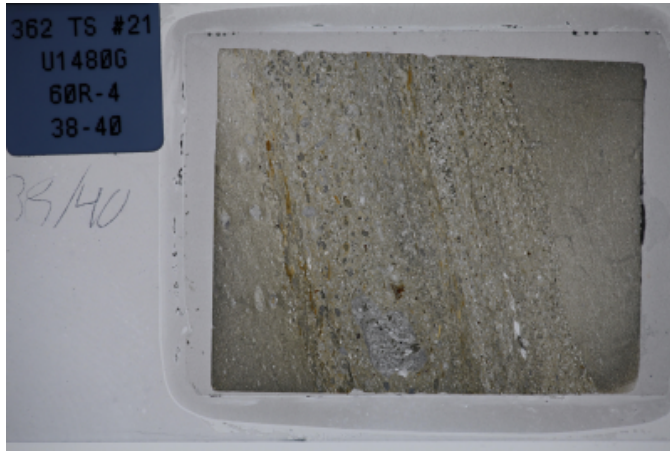
Thin section no.: 21

Observer: MILL

Thin section description: interbedded claystone, silty claystone, and sandy claystone; Subunit IIIB; bone

Plane-polarized

Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: claystone

Grain sorting: poor [2014]

Grain contact: sharp

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 80

Volcaniclastic [%] 15

Pelagic [%] 5

Percent Texture

Sand Texture [%] 20

Silt Texture [%] 30

Clay Texture [%] 50

THIN SECTION LABEL ID: **362-U1480G-60R-5-W 42/44-TSB-TS#22**

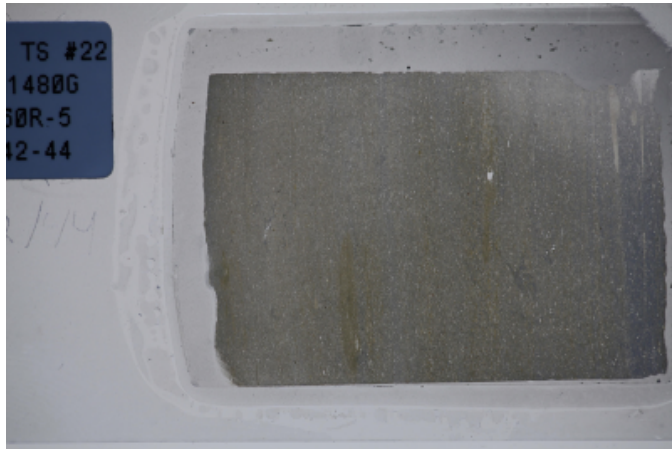
Thin section no.: 22

Observer: MILL

Thin section description: parallel laminations, abundant clay clasts/aggregates (pellets? intraclasts?)

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: silty clay

Grain sorting: poor [2014]

Grain contact: gradational

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 60

Volcaniclastic [%]

Pelagic [%] 40

Percent Texture

Sand Texture [%] 10

Silt Texture [%] 30

Clay Texture [%] 60

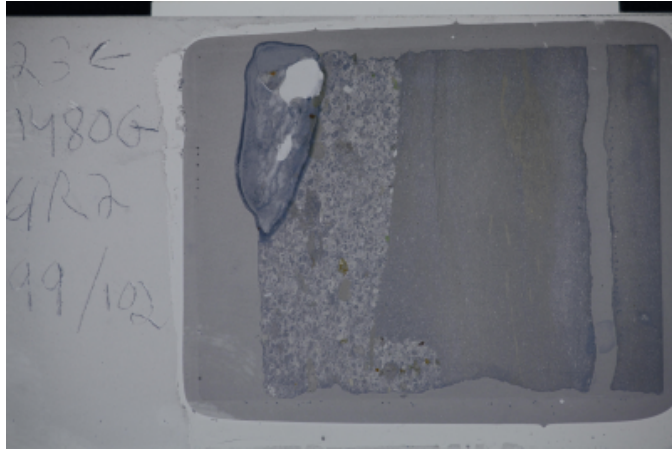
THIN SECTION LABEL ID: **362-U1480G-61R-2-W 99/102-TSB-TS#23**

Thin section no.: 23

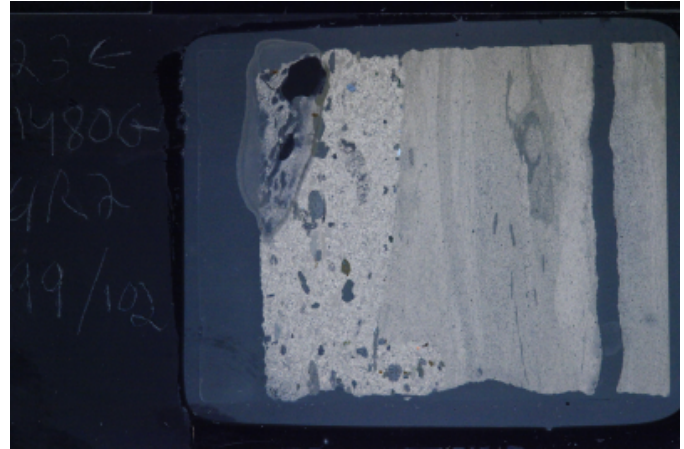
Observer: MILL

Thin section description: two layers: silty clay and foraminifer packstone; coarse grain assemblage is complex

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: silty clay

Grain sorting: poor [2014]

Grain contact: sharp

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 30

Volcaniclastic [%] 5

Pelagic [%] 65

Percent Texture

Sand Texture [%] 30

Silt Texture [%] 20

Clay Texture [%] 50

THIN SECTION LABEL ID: **362-U1480G-61R-4-W 49/52-TSB-TS#24**

Thin section no.: 24

Observer: MILL

Thin section description: foraminifer grainstone (?) or packstone with VRFs and other diverse lithic fragments including large pumice fragments; cemented with micro-calcite

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: conglomerate

Grain sorting: moderate [2014]

Grain contact: sharp

Lamina thickness (cm): > 0.4

Granular Sediment

Siliclastic [%] 20

Volcaniclastic [%] 10

Pelagic [%] 70

Percent Texture

Sand Texture [%] 80

Silt Texture [%] 20

Clay Texture [%]

THIN SECTION LABEL ID: **362-U1480G-61R-5-W 13/14-TSB-TS#25**

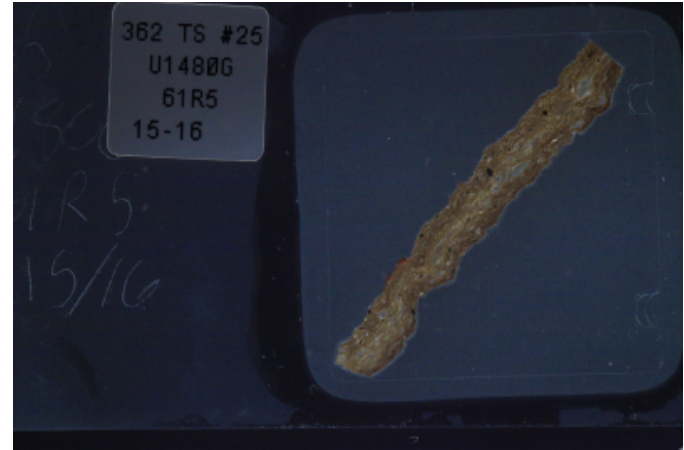
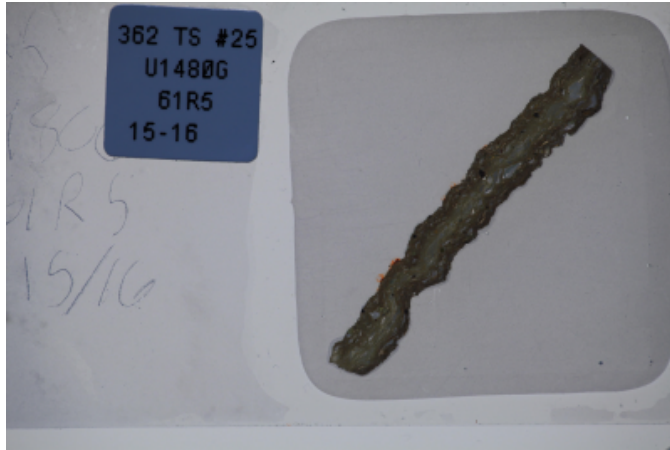
Thin section no.: 25

Observer: MILL

Thin section description: wavy fabric suggestive of microbial mat; grains include tooth/bone fragments, radiolaria, VRFs, agglutinates

Plane-polarized

Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: calcareous clay with silt

Grain sorting: poor [2014]

Grain contact: sharp

Lamina thickness (cm): < 0.2

Granular Sediment

Siliclastic [%] 40

Volcaniclastic [%] 20

Pelagic [%] 40

Percent Texture

Sand Texture [%] 5

Silt Texture [%] 30

Clay Texture [%] 65

THIN SECTION LABEL ID: **362-U1480G-61R-7-W 45/47-TSB-TS#26**

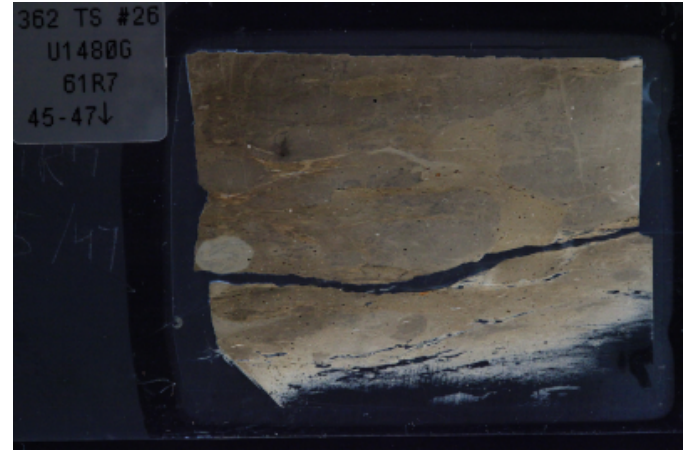
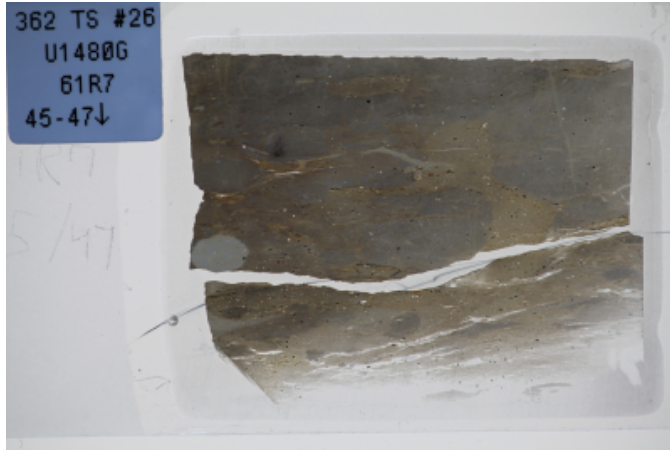
Thin section no.: 26

Observer: MILL

Thin section description: mudstone contains spiky rosettes of an authigenic opaque mineral throughout matrix; also fills foram chambers; minor bone fragments

Plane-polarized

Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: calcareous claystone

Granular Sediment		Percent Texture	
Siliclastic [%]	40	Sand Texture [%]	2
Volcaniclastic [%]		Silt Texture [%]	8
Pelagic [%]	60	Clay Texture [%]	90

THIN SECTION LABEL ID: **362-U1480G-62R-1-W 87/90-TSB-TS#27**

Thin section no.: 27

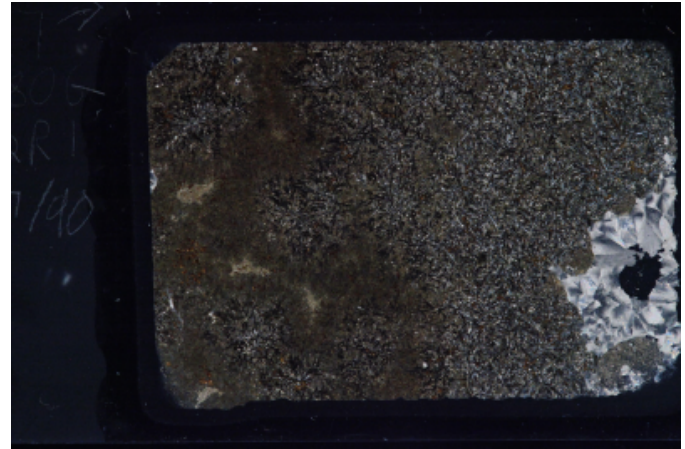
Observer: CHEM

Thin section description:

The strongly hydrothermalized m-thick basalt flow has a dominant intergranular texture and local ophitic texture. There is a widespread carbonatization or calcite crystallization on the plagioclase or mafic mineral as well replacing of some crystals after dissolution process. It is composed by clinopyroxene and plagioclase which both are strongly altered. The plagioclase crystals are mostly albitized while the clinopyroxene are replaced by Fe-oxide or opaques and hydroxide and calcite. Usually, the Fe-oxide or opaques replace along the cleavage of the mafic minerals There many dissolution of mineral and later infilling with calcite and zeolite. Some of them are not filled, so are empty pores (or holes).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Altered basalt
Texture: intergranular subophitic

Phenocryst total [%]: 65 Groundmass total [%]: 30

Mineral	Present [%]	Shape	Habit	Alteration mineral
Olivine	3	euohedral	prismatic	iddingsite+Fe-oxide+chlorite
Plagioclase	30	euohedral	tabular	Saussuritization
Clino-pyroxene	15	euohedral	prismatic	chlorite+opaques

Mineral replacement DOMINANT:	oxide	Mineral replacement 2nd ORDER:	chlorite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Vesicles	carbonate	zeolite	The vesicle can mostly correspond to mineral dissolution due interaction wiith ocean water and later filling with calcite and zeolite.

THIN SECTION LABEL ID: **362-U1480G-62R-4-W 57/60-TSB-TS#28**

Thin section no.: 28

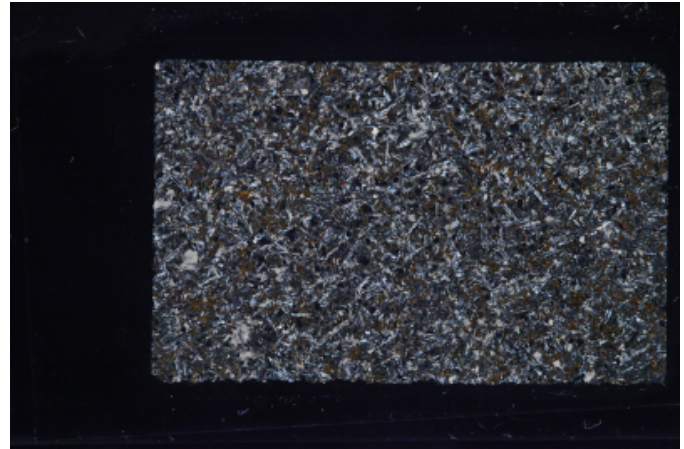
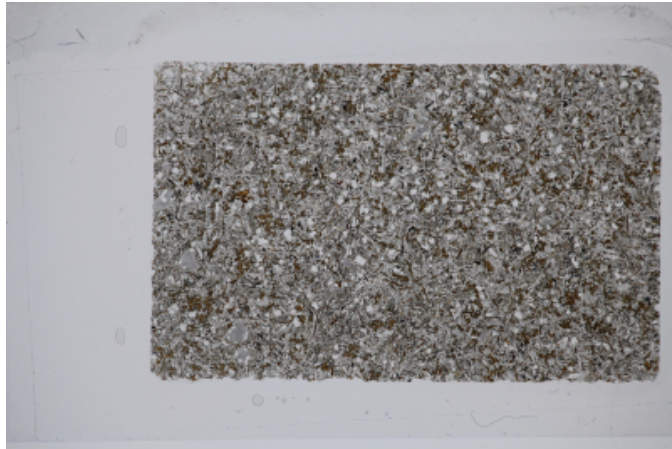
Observer: CHEM

Thin section description:

The strongly hydrothermalized m-thick basalt flow with intergranular texture and local ophitic texture. There is a widespread carbonatization or calcite crystallization on the plagioclase or mafic mineral as well replacing of some crystals after dissolution process. It is composed by clinopyroxene and plagioclase which both are strongly altered. The plagioclase crystals are mostly albitized while the clinopyroxene are replaced by Fe-oxide or opaques and hydroxide and calcite. Usually, the Fe-oxide or opaques replace along the cleavage of the mafic minerals There many dissolution of mineral and later infilling with calcite and zeolite. Some of them are not filled, so are empty pores (or holes).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Altered basalt
Texture: intergranular subophitic

Phenocryst total [%]: 60 Groundmass total [%]: 40

Mineral	Present [%]	Shape	Habit	Alteration mineral
Olivine		euohedral	prismatic	iddingsite+Fe-oxide+chlorite
Plagioclase	15	euohedral	tabular	Saussuritization
Clino-pyroxene	20	euohedral	prismatic	chlorite+opaques

Mineral replacement DOMINANT:	oxide	Mineral replacement 2nd ORDER:	chlorite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Vesicles	carbonate	zeolite	The vesicle can mostly correspond to mineral dissolution due interaction wiith ocean water and later filling with calcite and zeolite.

THIN SECTION LABEL ID: **362-U1480G-62R-4-W 124/127-TSB-TS#29**

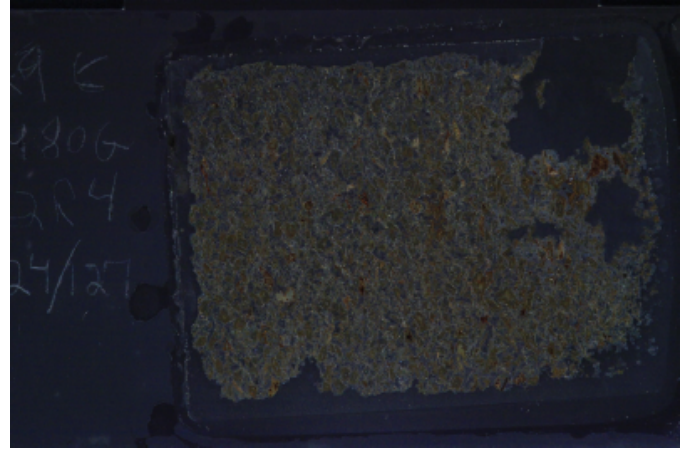
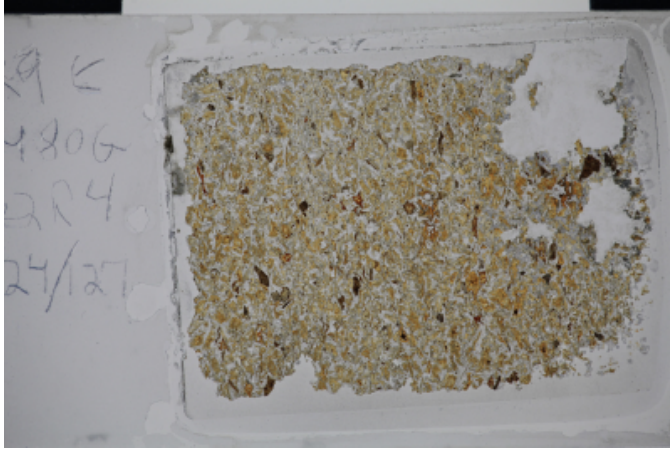
Thin section no.: 29

Observer: MILL

Thin section description: zeolite cemented tuffaceous sandstone; volcanicarenite; grains are silicified and palagonized glass

Plane-polarized

Cross-polarized



GRAIN AND LAMINA DEFINITION

Major Lithology: tuffaceous sandstone

Granular Sediment		Percent Texture	
Siliclastic [%]		Sand Texture [%]	100
Volcaniclastic [%]	100	Silt Texture [%]	
Pelagic [%]		Clay Texture [%]	

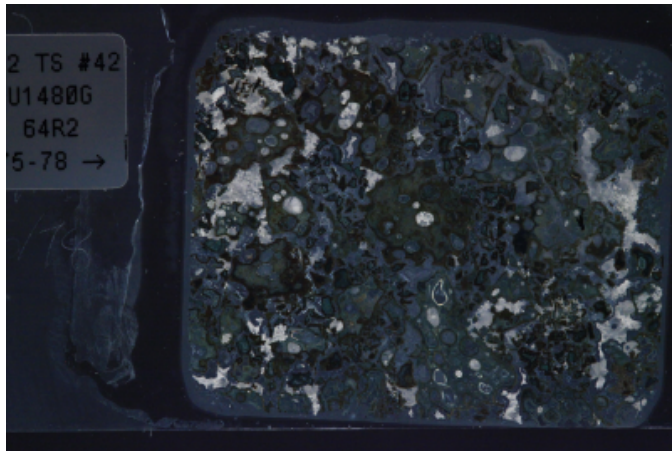
THIN SECTION LABEL ID: **362-U1480G-64R-2-W 75/78-TSB-TS#42**

Thin section no.: 42

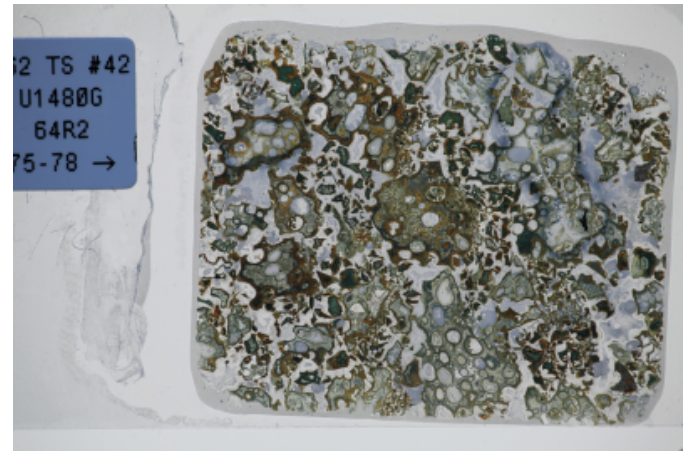
Observer: MILL

Thin section description: zeolite and chalcedony cemented tuffaceous sandstone; volcanic arenite; grains are glass shards replaced by microquartz, chalcedony, palagonite, and possible chlorite; many grains have vesicles now filled with cements

Plane-polarized



Cross-polarized

**GRAIN AND LAMINA DEFINITION**

Major Lithology: tuffaceous sandstone

Granular Sediment		Percent Texture	
Siliclastic [%]		Sand Texture [%]	
Volcaniclastic [%]	100	Silt Texture [%]	
Pelagic [%]		Clay Texture [%]	

THIN SECTION LABEL ID: **362-U1480G-66R-3-W 79/82-TSB-TS#31**

Thin section no.: 31

Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques which are mostly altered to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?). There are some vesicles or pores (as dissolved igneous minerals) filled up with radiaxial calcite and microquartz and/or zeolite in two phases of hydrothermal crystallization (associated with ocean water percolation).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 95 Groundmass total [%]: 5

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	62	euhedral	tabular	Saussuritization
Clino-pyroxene	10	euhedral	prismatic	chlorite+opaques
Amphiboles	1	euhedral	prismatic	chlorite. Fe-oxide
Biotite	2			Chlorite
Opaques	10			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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THIN SECTION LABEL ID: **362-U1480G-66R-4-W 96/99-TSB-TS#32**

Thin section no.: 32

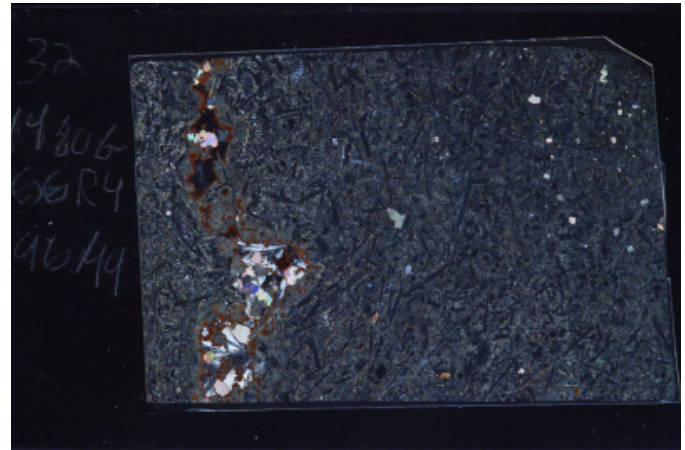
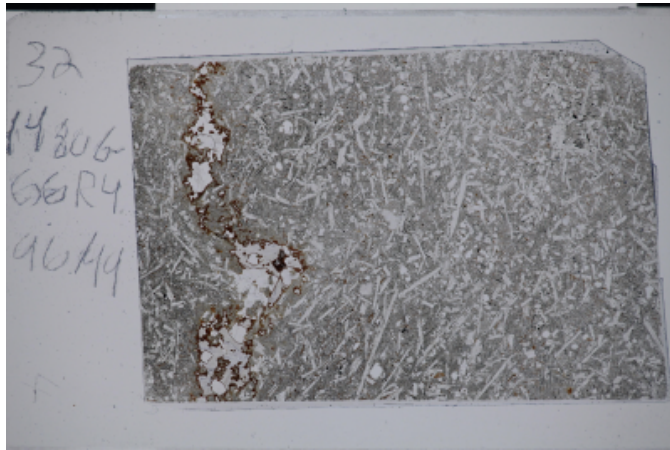
Observer: CHEM

Thin section description:

Moderate to strong altered hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also well altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altd to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?). There are some vesicles or pores (as dissolved igneous minerals) filled up with radiaxial calcite and microquartz and/or zeolite in two phases of hydrothermal crystallization (associated with ocean water percolation).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 90 Groundmass total [%]: 10

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	40	euohedral	tabular	Saussuritization
Clino-pyroxene	25	euohedral	prismatic	chlorite+opaques
Amphiboles	11	euohedral	prismatic	chlorite, Fe-oxide
Biotite	10			Chlorite
Opaques	15			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Vesicles	microquartz	zeolite	Some filling can be either opale or zeolite

THIN SECTION LABEL ID: **362-U1480G-66R-7-W 72/75-TSB-TS#33**

Thin section no.: 33

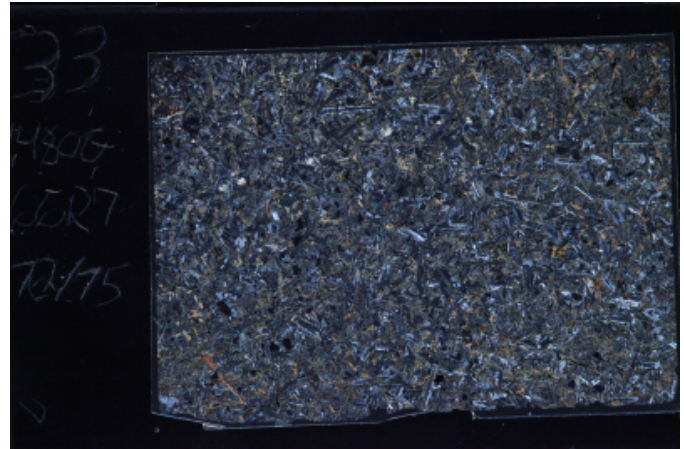
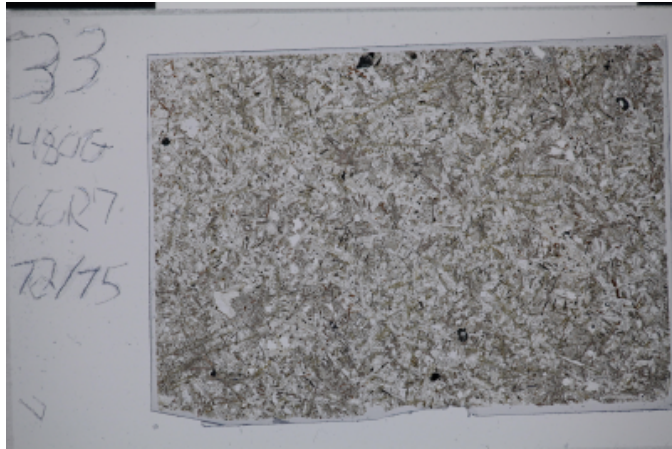
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altred to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 100 Groundmass total [%]:

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	67	euhedral	tabular	Saussuritization
Clino-pyroxene	15	euhedral	prismatic	chlorite+opaques
Amphiboles	1	euhedral	prismatic	chlorite. Fe-oxide
Biotite	11			Chlorite
Opaques	3			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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THIN SECTION LABEL ID: **362-U1480G-67R-1-W 48/50-TSB-TS#34**

Thin section no.: 34

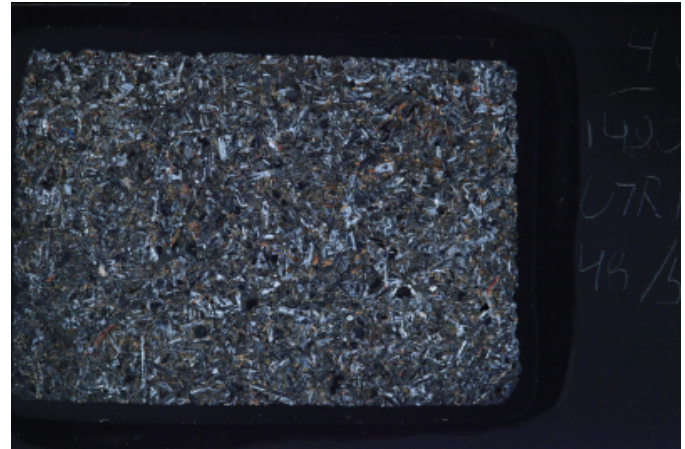
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altred to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 90 Groundmass total [%]: 10

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	60	euohedral	tabular	Saussuritization
Clino-pyroxene	15	euohedral	prismatic	chlorite+opaques
Amphiboles	2	euohedral	prismatic	chlorite, Fe-oxide
Biotite	5			Chlorite
Opaques	5			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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THIN SECTION LABEL ID: **362-U1480G-67R-8-W 68/70-TSB-TS#35**

Thin section no.: 35

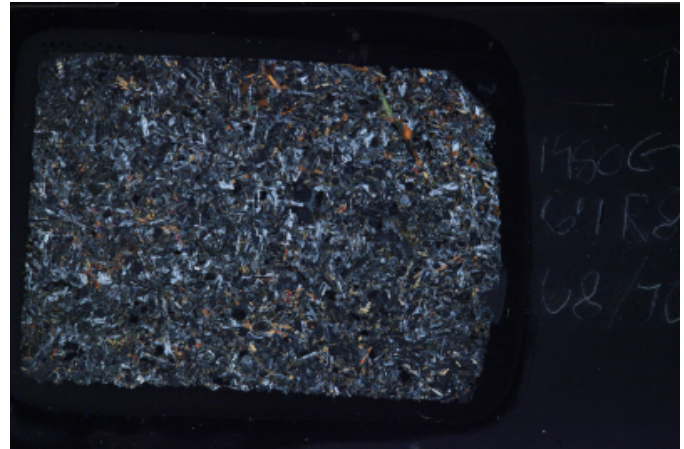
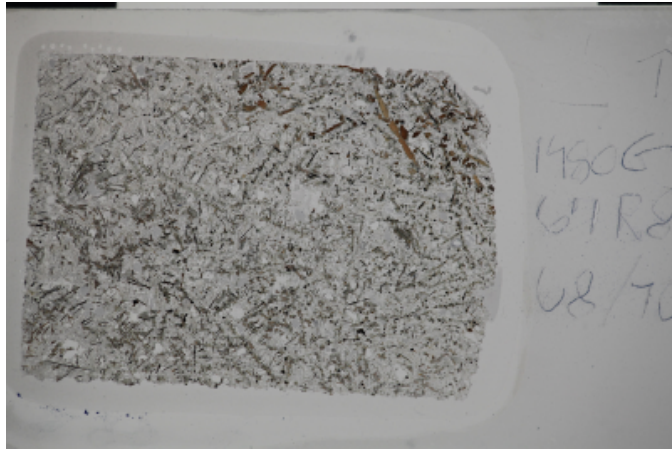
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altred to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 90 Groundmass total [%]: 10

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	66	euohedral	tabular	Saussuritization
Clino-pyroxene	10	euohedral	prismatic	chlorite+opaques
Amphiboles	1	euohedral	prismatic	chlorite, Fe-oxide
Biotite	4			Chlorite
Opaques	7			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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THIN SECTION LABEL ID: **362-U1480G-67R-9-W 5/7-TSB-TS#36**

Thin section no.: 36

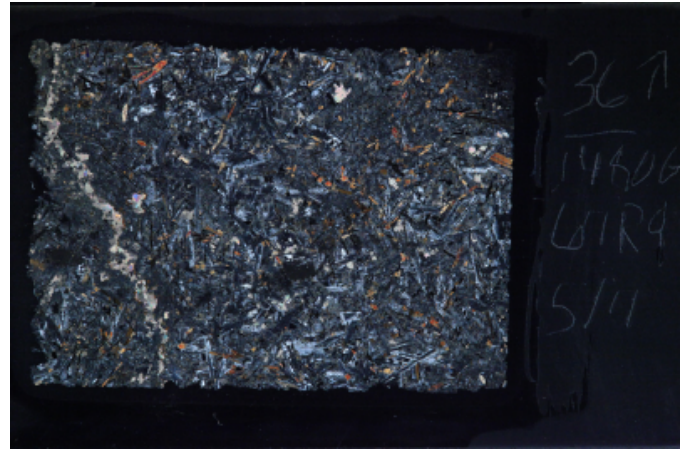
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altred to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]:	95	Groundmass total [%]:	5
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Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	75	euohedral	tabular	Saussuritization
Clino-pyroxene	5	euohedral	prismatic	chlorite+opaques
Amphiboles	5	euohedral	prismatic	chlorite, Fe-oxide
Biotite	3			Chlorite
Opaques	7			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Veins	carbonate	zeolite	

THIN SECTION LABEL ID: **362-U1480G-68R-2-W 59/61-TSB-TS#37**

Thin section no.: 37

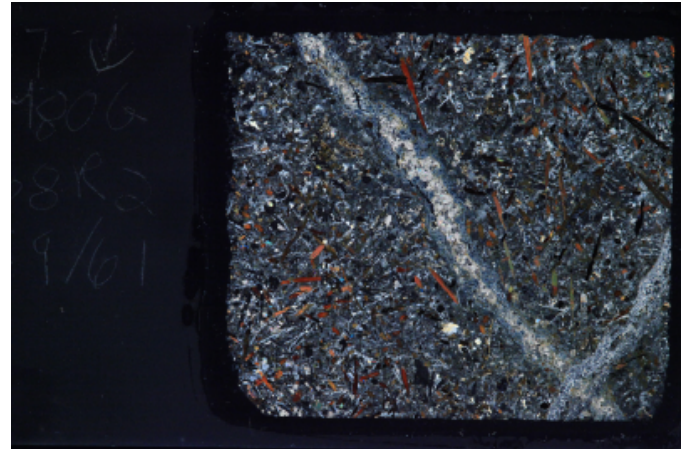
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, hornblende, as igneous minerals, which are also less or more altered (Hornblende is the expressive mafic mineral). The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altdred to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?). Presence of vein with calcite+zoelite+microquartz.

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 100 Groundmass total [%]:

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	65	euohedral	tabular	Saussuritization
Clino-pyroxene	2	euohedral	prismatic	chlorite+opaques
Amphiboles	24	euohedral	prismatic	chlorite. Fe-oxide
Opagues	3			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Veins	carbonate	zeolite	Present also microquartz or chalcedony

THIN SECTION LABEL ID: **362-U1480G-68R-4-W 76/78-TSB-TS#38**

Thin section no.: 38

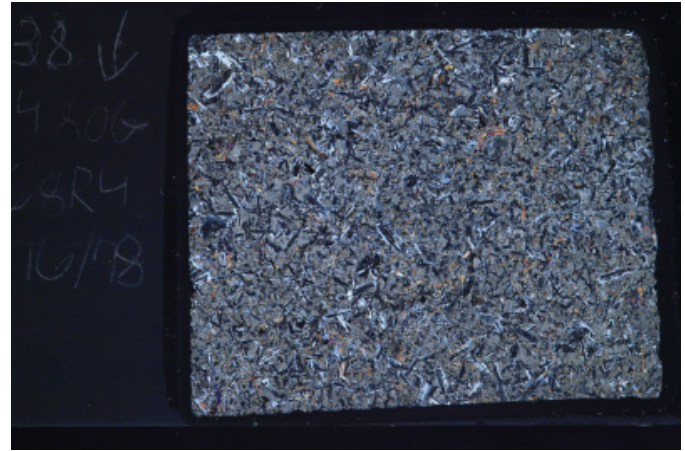
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, biotite, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altered to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 85 Groundmass total [%]: 15

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	61	euhedral	tabular	Saussuritization
Clino-pyroxene	10	euhedral	prismatic	chlorite+opaques
Amphiboles	2	euhedral	prismatic	chlorite. Fe-oxide
Biotite	5			Chlorite
Opaques	5			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Veins	carbonate	zeolite	

THIN SECTION LABEL ID: **362-U1480G-68R-CC-W 5/7-TSB-TS#39**

Thin section no.: 39

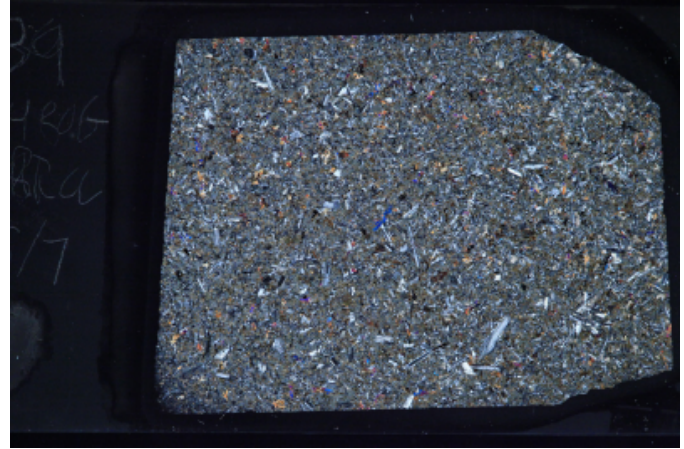
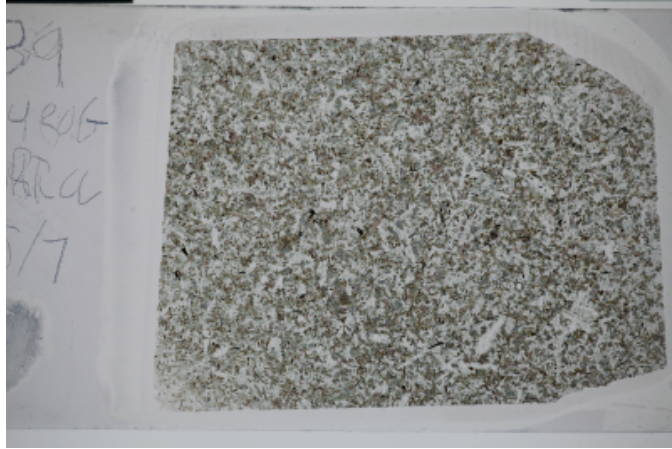
Observer: CHEM

Thin section description:

Hypabyssal diorite with ophitic texture composed of dominant plagioclase laths (with different degree of alteration), clinopyroxene, opaques, biotite, hornblende, as igneous minerals, which are also less or more altered. The alteration products of mafic minerals are mostly chlorite, hornblende, serpentine (?) and Fe-oxide and hydroxide, whereas the plagioclase laths have some saussuritization (carbonate plus clays) and dark gray secondary alteration along transversal fractures in the plagioclase laths (glass?, albitization?). The matrix is formed of earlier fine grained plagioclase and mafic fine with opaques witch are mostly altdred to Fe-oxide, Fe-hydroxide, chlorite, and serpentine(?) and carbonate (+ clays?).

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Ophitic hypabyssal diorite

Texture: ophitic

Phenocryst total [%]: 100 Groundmass total [%]:

Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	60	euhedral	tabular	Saussuritization
Clino-pyroxene	15	euhedral	prismatic	chlorite+opaques
Biotite	2			Chlorite
Opagues	3			

Mineral replacement DOMINANT:	quartz	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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THIN SECTION LABEL ID: **362-U1480G-72R-3-W 53/55-TSB-TS#40**

Thin section no.: 40

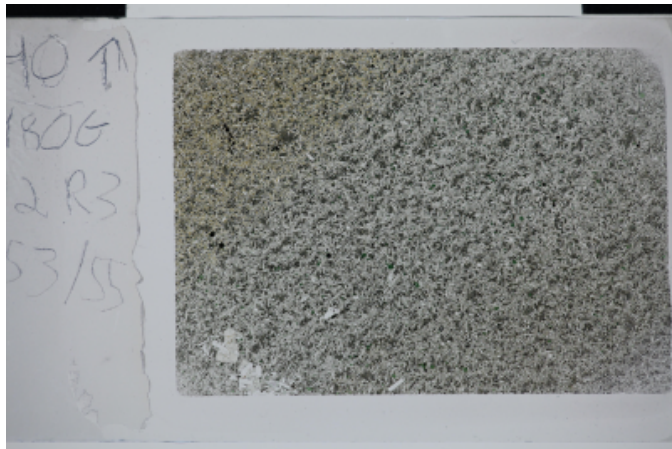
Observer: CHEM

Thin section description:

Basic lava with intersertal texture and composed of phenocrysts of plagioclase (51-57 %), Clinopyroxene (26-30%) and opaque (3-7%) and groundmass (10%). The groundmass is made up of opaques and secondary alteration minerals (dominant chlorite). We recognize some vesicle or holes filled of a dark green material (probable clay mineral). The alteration process is moderate in these rocks so theris some saussuritization in plagioclase and alteration products as chlorite and opaques after the pyroxene and ground mass (altered glass). In macroscopic core, there some calcite veins and cm-thick vitrified black dykes or veins.

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Augite-plagioclase basalt

Texture: intersertal

Phenocryst total [%]:	90	Groundmass total [%]:	10
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Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	51	euhedral	tabular	Saussuritization
Clino-pyroxene	30	euhedral	prismatic	
Opaques	7			

Mineral replacement DOMINANT:	clay	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Veins	carbonate		

THIN SECTION LABEL ID: **362-U1480G-72R-4-W 3/5-TSB-TS#41**

Thin section no.: 41

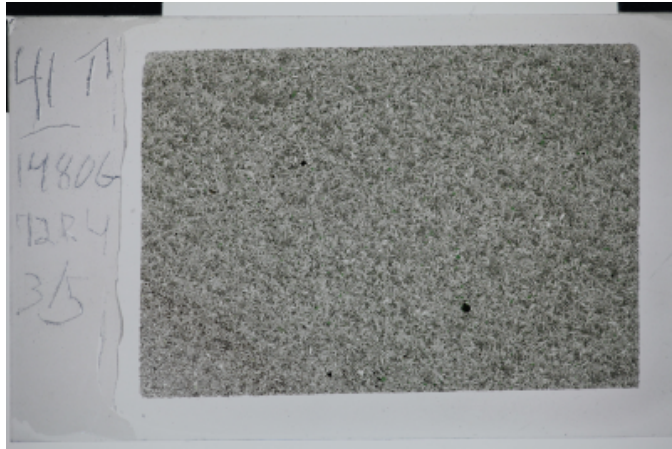
Observer: CHEM

Thin section description:

Basic lava with intersertal texture and composed of phenocrysts of plagioclase (51-57 %), Clinopyroxene (26-30%) and opaque (3-7%) and groundmass (10%). The groundmass is made up of opaques and secondary alteration minerals (dominant chlorite). We recognize some vesicle or holes filled of a dark green material (probable clay mineral). The alteration process is moderate in these rocks so theris some saussuritization in plagioclase and alteration products as chlorite and opaques after the pyroxene and ground mass (altered glass). In macroscopic core, there some calcite veins and cm-thick vitrified black dykes or veins.

Plane-polarized

Cross-polarized



PETROLOGY

Lithology: Augite-plagioclase basalt

Texture: intersertal

Phenocryst total [%]:	90	Groundmass total [%]:	10
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Mineral	Present [%]	Shape	Habit	Alteration mineral
Plagioclase	57	euhedral	tabular	Saussuritization
Clino-pyroxene	26	euhedral-subhedral	poikilitic	
Opaques	3			

Mineral replacement DOMINANT:	clay	Mineral replacement 2nd ORDER:	zeolite	Mineral replacement 3rd ORDER:	carbonate
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VESICLES & VEINS

Feature type	Fill DOMINANT	Fill 2nd ORDER	Fill Comment
Veins	carbonate		