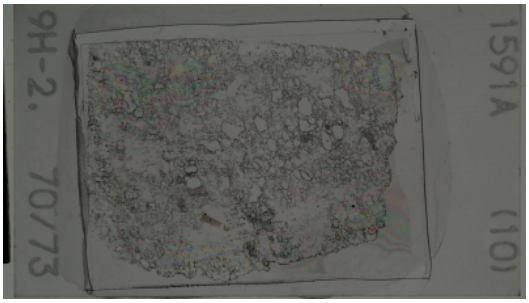
THIN SECTION LABEL ID: **398-U1591A-9H-2-W 70/73-TSB-TS 10** Thin section no.: 10

Observer: RG Piece no.:

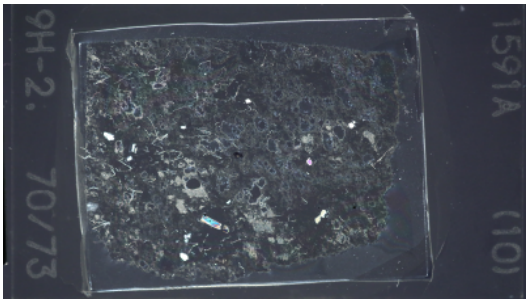
Unit/subunit:

Thin section summary: Light-colored, highly vesicular, porphyritic pumice, with sparse phenocrysts of plagioclase, clinopyroxene, Fe-Ti oxide and an undefined colorless mineral (PPL) in a glassy groundmass. Rare apatite inclusions in pyroxene. Patchy alteration of groundmass.

Plane-polarized: 67729641



Cross-polarized: 67729621



Igneous Petrology

Lithology: rhyolite

Grain size distribution: porphyritic

Texture: vesicular

Groundmass grain size (avg.):

Phenocryst proportion (%): 2

Groundmass proportion (%): 98

Constituents	Abundance	Size max. (mm)	Shape	Comments
Plagioclase	common	1	subhedral	zoned crystals
Clinopyroxene	common	2.5	euhedral	small MI, apatite, Fe-Ti oxide, and fluid inclusions
Fe-Ti oxide	rare	0.1	subhedral	microphenocrysts and inclusions in pyx

Vesicle abundance (%): 75 **Vesicle shape:** elongate **Vesicle max. size (mm):** 2.5

Degree of alteration: slight alteration **Alteration comments:** patchy alteration; carbonate

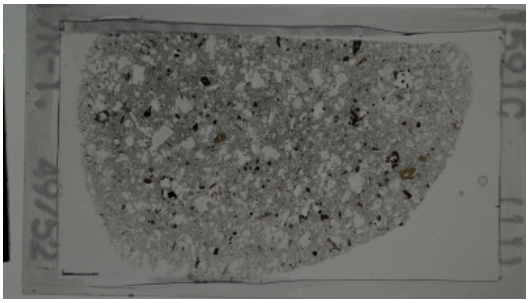
THIN SECTION LABEL ID: **398-U1591C-17R-1-W 49/52-TSB-TS 11** Thin section no.: 11

Observer: RG Piece no.:

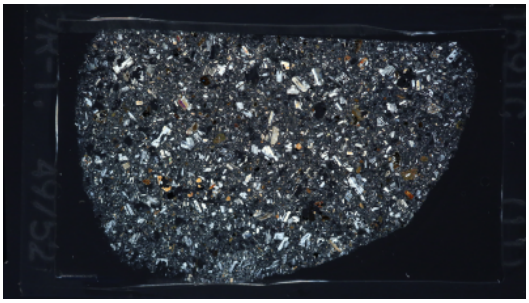
Unit/subunit: Unit IIb

Thin section summary: Porphyritic extrusive volcanic rock (lava). Phenocrysts of plagioclase, amphibole, pyroxene (predominanty orthopyroxene (hypersthene), minor clinopyroxene (augite)) and Fe-Ti oxide (Ti-magnetite). Accessory apatite as inclusions, e.g., in plagioclase. Few glomerocrsyts of plagioclase, amphibole and pyroxene. Rock contains texturally distinct plagioclase crystals (e.g. complexely zoned, sieve-textured), and amphibole with or without breakdown rim. Orthopyroxene is dominant pyroxene type. Groundmass is mostly crystalline, with crystals of mainly plagioclase as well as pyroxene and Fe-Ti oxide.

Plane-polarized: 67839311



Cross-polarized: 67839331



Igneous Petrology

Lithology:

Texture:

Phenocryst proportion (%): 50

Grain size distribution: porphyritic

Groundmass grain size (avg.): fine-grained

Groundmass proportion (%): 50

Constituents	Abundance	Size max. (mm)	Shape	Comments
Plagioclase	dominant	1.6	euhedral	complexely zoned crystals; sieve-textured crystals; texturally distinct populations; some with MI
Clinopyroxene	rare	1.4	euhedral	
Orthopyroxene	common	1.6	euhedral	
Amphibole	abundant	1.6	subhedral	may show breakdown rims
Fe-Ti oxide	rare	0.8	euhedral	

Vesicle abundance (%): 10 **Vesicle shape:** irregular **Vesicle max. size (mm):** 2

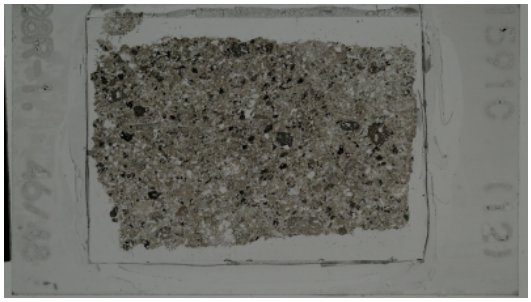
Degree of alteration: fresh **Alteration comments:**

THIN SECTION LABEL ID: **398-U1591C-28R-1-W 46/48-TSB-TS 12** Thin section no.: 12

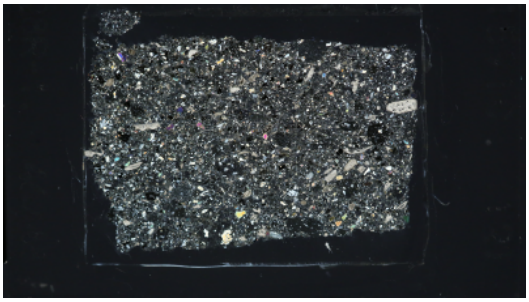
Observer: SD Unit/subunit: IIc

Thin section summary: Poorly sorted muddy sandstone with lithic, vitric, and crystal grains in a muddy matrix. Grains include subrounded volcanic lithics, scoria and bioclasts, and angular crystals of plagioclase and clinopyroxene.

Plane-polarized: 67924711



Cross-polarized: 67924731



Sediments and Sedimentary Rock

Lithology: clastic sediment

Grains: lithic,vitric,crystal or crystals,biogenic

Sorting: poorly sorted **Grading type:**

Ave grain size (mm): fine sand **Max. grain size (mm):** granule

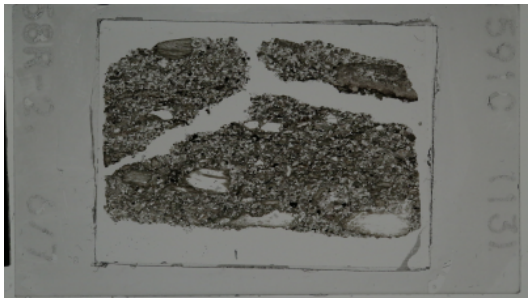
Lithic class:	volcanic	**Lithic roundness:**	angular	**Lithic abundance:**	C
Vitric clast type:	scoria	**Vitric clast roundness:**	subangular	**Vitric abundance**	C

Crystal names:	clinopyroxene,plagioclase	**Crystal shape:**	subhedral	**Crystal abundance:**	C	**Crystal features:**	

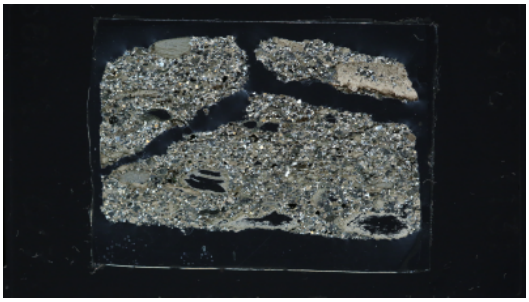
Biogenic clasts:	bioclast,benthic foraminifer,bryozoan	**Bioclasts abundance range:**	C

THIN SECTION LABEL ID:	**398-U1591C-58R-2-W 6/9-TSB-TS 13**	Thin section no.:	13
Observer:	SD	Unit/subunit:	Unit IIf
Thin section summary:	Calcareous crystal-rich sandstone with crystals of quartz, feldspar, and biotite. Contains clasts of metamorphic rock, volcanic rock, mudstone. Also contains laminated algal mats.		

Plane-polarized: 67935061



Cross-polarized: 67935081



Sediments and Sedimentary Rock

Lithology: calcareous clastic sediment

Grains: crystal or crystals,lithic

Sorting:	moderately sorted	**Grading type:**	
Ave grain size (mm):	fine sand	**Max. grain size (mm):**	coarse sand

Lithic class:	mudstone,volcanic,carbonate,metamorphic	**Lithic roundness:**	subangular	**Lithic abundance:**	C
Vitric clast type:		**Vitric clast roundness:**		**Vitric abundance**	

Crystal names:	feldspar,quartz,biotite,anhydrite	**Crystal shape:**	anhedral	**Crystal abundance:**	A	**Crystal features:**	

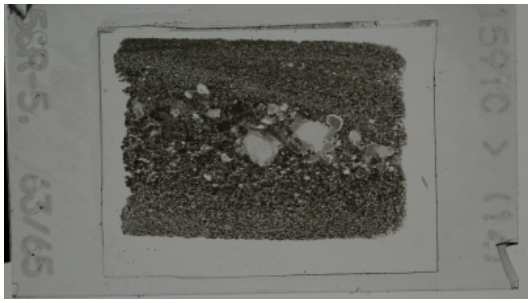
Biogenic clasts:	organic matter	**Bioclasts abundance range:**	

THIN SECTION LABEL ID: **398-U1591C-58R-5-W 63/66-TSB-TS 14** Thin section no.: 14

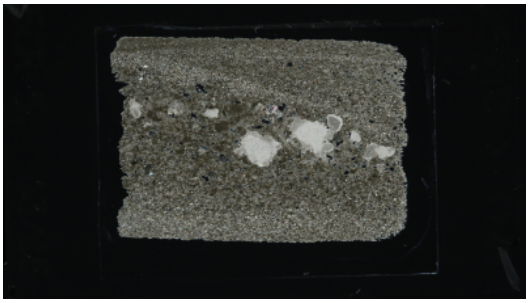
Observer: SD Unit/subunit: Unit IIIa

Thin section summary: Silty micrite interlayered with fine-grained anhydrite nodules. Contains crystals of feldspar, quartz and biotite.

Plane-polarized: 67924751



Cross-polarized: 67924771



Sediments and Sedimentary Rock

Lithology: sandy micrite with anhydrite

Grains: crystal or crystals

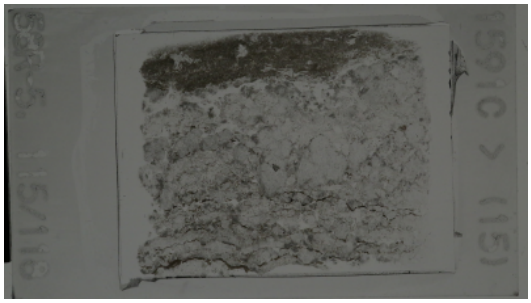
Sorting: well sorted **Grading type:**

Ave grain size (mm): clay **Max. grain size (mm):** silt

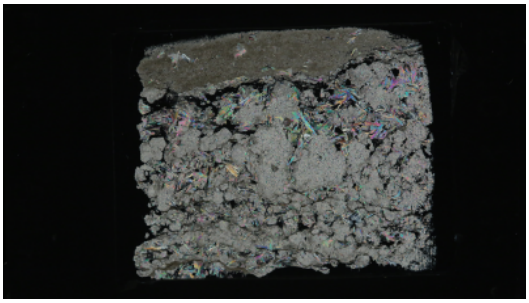
Crystal names:	quartz,feldspar,biotite	**Crystal shape:**	anhedral	**Crystal abundance:**	C	**Crystal features:**	

THIN SECTION LABEL ID: **398-U1591C-58R-5-W 115/118-TSB-TS 15** Thin section no.: 15
Observer: SD Unit/subunit: Unit IIIa
Thin section summary: Nodular anhydrite interlayed with micrite

Plane-polarized: 67924841



Cross-polarized: 67924861



Sediments and Sedimentary Rock

Lithology: nodular anhydrite with micrite

Grains:

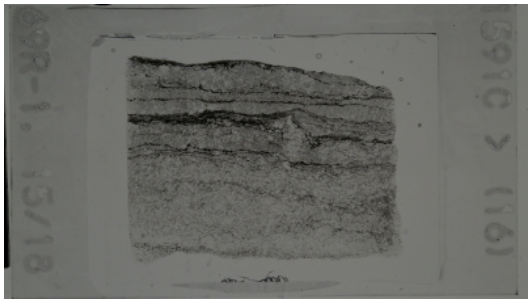
Crystal names:	anhydrite,calcite	**Crystal shape:**	subhedral	**Crystal abundance:**		**Crystal features:**	

THIN SECTION LABEL ID: **398-U1591C-69R-1-W 15/18-TSB-TS 16** Thin section no.: 16

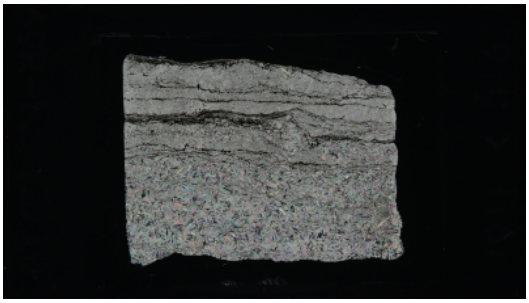
Observer: RG Unit/subunit: Unit IIIa

Thin section summary: Laminated nodular anhydrite with micrite and algal mats.

Plane-polarized: 67932241



Cross-polarized: 67932261



Sediments and Sedimentary Rock

Lithology: laminated anhydrite with micrite

Grains:

Crystal names:	anhydrite,calcite,opaque	**Crystal shape:**	subhedral	**Crystal abundance:**		**Crystal features:**	

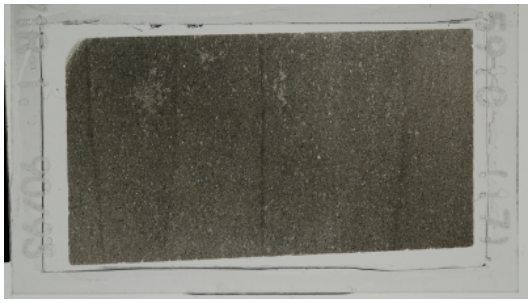
Biogenic clasts:	algal	**Bioclasts abundance range:**	

THIN SECTION LABEL ID: **398-U1591C-71R-1-W 90/93-TSB-TS 17** Thin section no.: 17

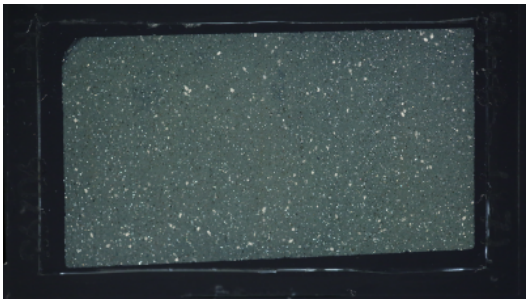
Observer: RG Unit/subunit: Unit IIIb

Thin section summary: Fine-grained glauconized mudstone with crystals of feldspar and biotite and some anhydrite.

Plane-polarized: 67924881



Cross-polarized: 67924901



Sediments and Sedimentary Rock

Lithology: anhydrite mudstone with crystal or crystals

Grains: crystal or crystals

Sorting: well sorted **Grading type:**

Ave grain size (mm): clay **Max. grain size (mm):** silt

Crystal names:	biotite,plagioclase,calcite,glauconite	Crystal shape:	subhedral	Crystal abundance:	C	Crystal features:	

Biogenic clasts:	organic matter	Bioclasts abundance range:	

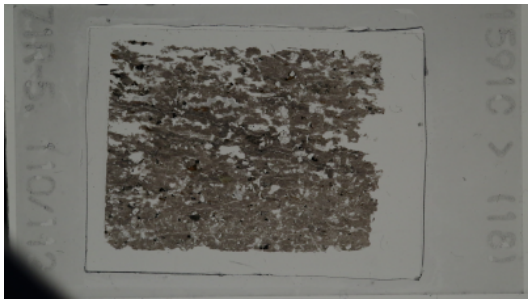
Degree of alteration:	moderate alteration	Alteration feature:	

THIN SECTION LABEL ID: **398-U1591C-71R-5-W 110/112-TSB-TS 18** Thin section no.: 18

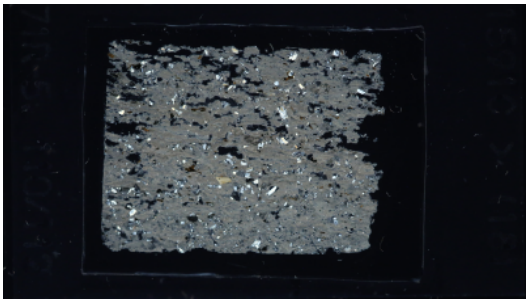
Observer: RG Unit/subunit: Unit IIIb

Thin section summary: Crystal-rich, laminated calcareous mudstone with crystals of feldspar, biotite, and oxides

Plane-polarized: 67932281



Cross-polarized: 67932301



Sediments and Sedimentary Rock

Lithology: anhydrite mudstone with crystal or crystals

Grains: crystal or crystals,lithic

Sorting: moderately sorted **Grading type:**

Ave grain size (mm): clay **Max. grain size (mm):** fine sand

Lithic class:	micrite,sedimentary	**Lithic roundness:**		**Lithic abundance:**	
Vitric clast type:		**Vitric clast roundness:**		**Vitric abundance**	

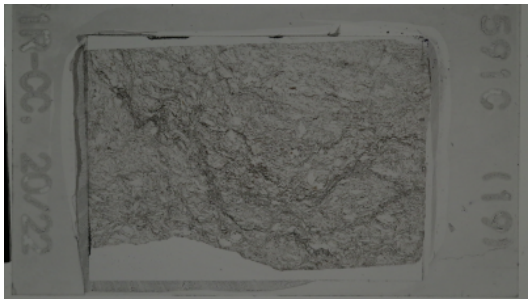
Crystal names:	biotite,plagioclase	**Crystal shape:**	subhedral	**Crystal abundance:**	C	**Crystal features:**	

Biogenic clasts:	organic matter	**Bioclasts abundance range:**	

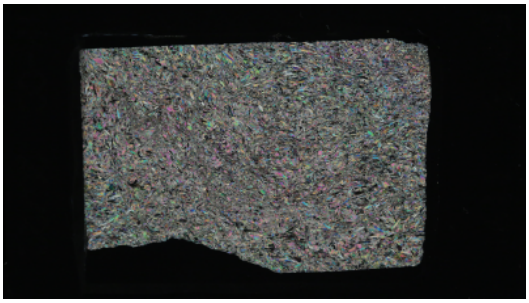
Degree of alteration:	slight alteration	**Alteration feature:**	

THIN SECTION LABEL ID:	**398-U1591C-71R-CC-W 20/22-TSB-TS 19**	Thin section no.:	19
Observer:	RG	Unit/subunit:	Unit IIIb
Thin section summary:	Coarse-grained calcareous anhydritic with elongate anhydrite crystals with interstitial calcite		

Plane-polarized: 67924921



Cross-polarized: 67925111



Sediments and Sedimentary Rock

Lithology: anhydrite with micrite

Grains:

Crystal names:	anhydrite,gypsum	**Crystal shape:**	euhedral	**Crystal abundance:**	C	**Crystal features:**	