DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE RAPPORT 2003/10

Preliminary report on prospecting for high quality aggregates in South Greenland 2002

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Summary

In 2002 five samples each of 100 kg of aplite and granite were sampled for testing the aggregate quality.

One of the world's largest aggregate producers, Lafarge, has joined the project and they will test the samples for parameters that are relevant for use in the Southeast USA.

The potential for high quality aggregates will be evaluated after the samples have been tested, and the results will be presented in the final report.

Contents

Introduction

This is a preliminary report describing observations in the field and progress in creating contact to the aggregate industry in North America.

The work has been conducted by GEUS for Greenland Resources A/S.

The objective was to collect rock samples from specified localities in Greenland to test the qualitis and the potential for a possibly high-grade aggregate production with export to the Southeast USA in mind.

Participants: Thomas V. Rasmussen (project leader) and Paarvo Härmä (Geological Survey of Finland) natural stone consultant.

Period: 22/7-22/8 2002.

Local transport: M/S J.F. Johnstrup in South Greenland.

Laboratory analysis

In the process of designing a test program, it became clear that the methods and parameters differ from state to state and from authorities to authorities in the USA. The employment of standard methods for testing aggregates in the European countries will not be acceptable solution because the methods differ in important aspects from the methods used in the USA. Therefor we have established a contact to Lafarge in USA, on of the world's largest aggregate producer. Lafarge has agreed to test the samples for the parameters that are relevant to the use in Southeast USA. The test results will be presented and evaluated in the final report.

The contact person at Lafarge is:
Victor Toneatti
Manager Aggregate Development
Lafarge North America
Direct: (905) 738-7653
Mobile: (416) 819-2033
Fax: (905) 738-0224
Victor.Toneatti@lafarge-na.com

Recommendation

We recommend awaiting the laboratory analysis, before embarking on new projects on this topic. If Lafage is interested in continued prospecting in the area, GEUS has agreed to guide them in co-operation with Greenland Resources.

Target areas

The target areas for collecting samples for aggregate quality test has been chosen from the following criteria; the rock type is well known for it's high quality of aggregate products, the area has to be near relative good logistics and the possibility for large ships to load.

Locality: 11, 1 km west of Tasiluk (Appendix A map B)

Sample GPS position: 60°41'097N 45°51'646W.

Sample no. 486508.

Rock type: Light aplitic granite.

100 kg of aplitic granite was sampled for further testing (Fig. 1).

The area is dominated by the light aplitic granite (Fig. 2) and there is not observed any intrusive rocks in the area.

Figure 1. Sampling the light aplitic granite.

Figure 2. The light aplitic granite.

Thin section description:
The crystals are fine-grained, anhedral and intergrown. The minerals are 40% quarts, 30% partly seritized plagioclase, 25% microcline and 5% biotite (Fig. 3)

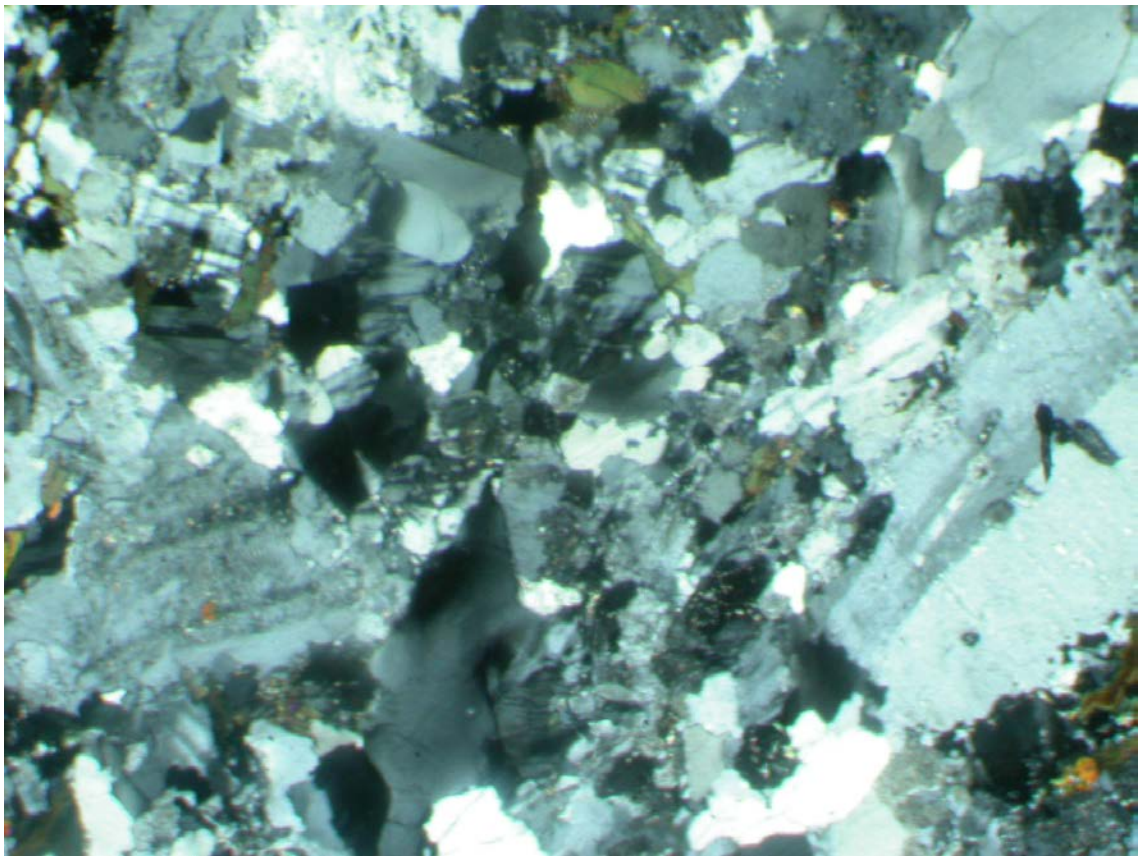


Figure 3. Thin section from sample no. 486508. Width of foto: 5 mm.

Locality: 12, South part of Arpatsivik island (Appendix A map B)

Sample GPS position: 60°45’056N 45°55’668W.

Sample no. 486509.

Rock type: Red-grey aplitic granite.

100 kg of aplitic granite is sampled for further testing (Fig. 4).

Figure 4. Red-grey aplitic granite at Arpatsivik.

Thin section description:
The crystals exist in two grain sizes fine- and medium-grained. Both grain sizes are anhedral and intergrown. The fine-grained crystals runs in thin bands through the medium grained crystals The minerals are 50% quarts, 45% microcline and 5% biotite (Fig. 5)

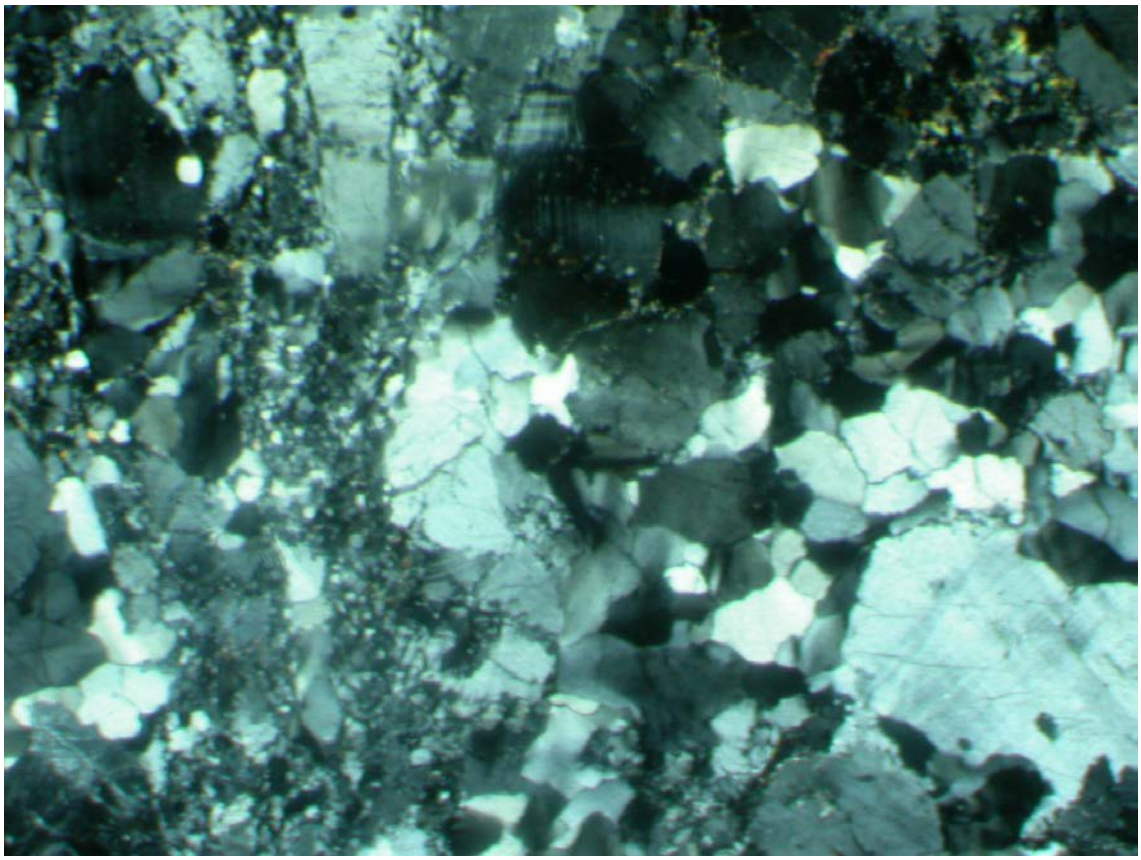


Figure 5. Thin section from sample no. 486508. Width of foto: 5 mm.

Locality: 13, Kangilleq.

Sample GPS position: 60°50’439N 45°52’612W.

Sample no. 486510

The rock type on the beach is not aplitic as expected, but a medium to coarse-grained porphyritic granite with several kinds of cross cutting dykes. About 500 m inland, along a small stream, there is a red-grey aplitic granite (Fig. 6). In the aplitic granite there are purple fluorite crystals and an unknown blue-grey ore mineral. Both the ore mineral and the fluorite are related to fractures and the ore mineral is also observed as 5 mm large spots in the aplitic granite.

100 kg of aplitic granite is sampled for testing.

Figure 6. The sampling site, of the red-grey aplitic granite with a blue-grey ore mineral and fluorite, at Kangilleq.

Thin section description:
The crystals are fine- to medium-grained, anhedral and intergrown. Fractures filled with quarts and hematite are common. The minerals are 40% quarts, 30% partly seritized plagioclase, 25% microcline and 5% biotite (Fig. 7).

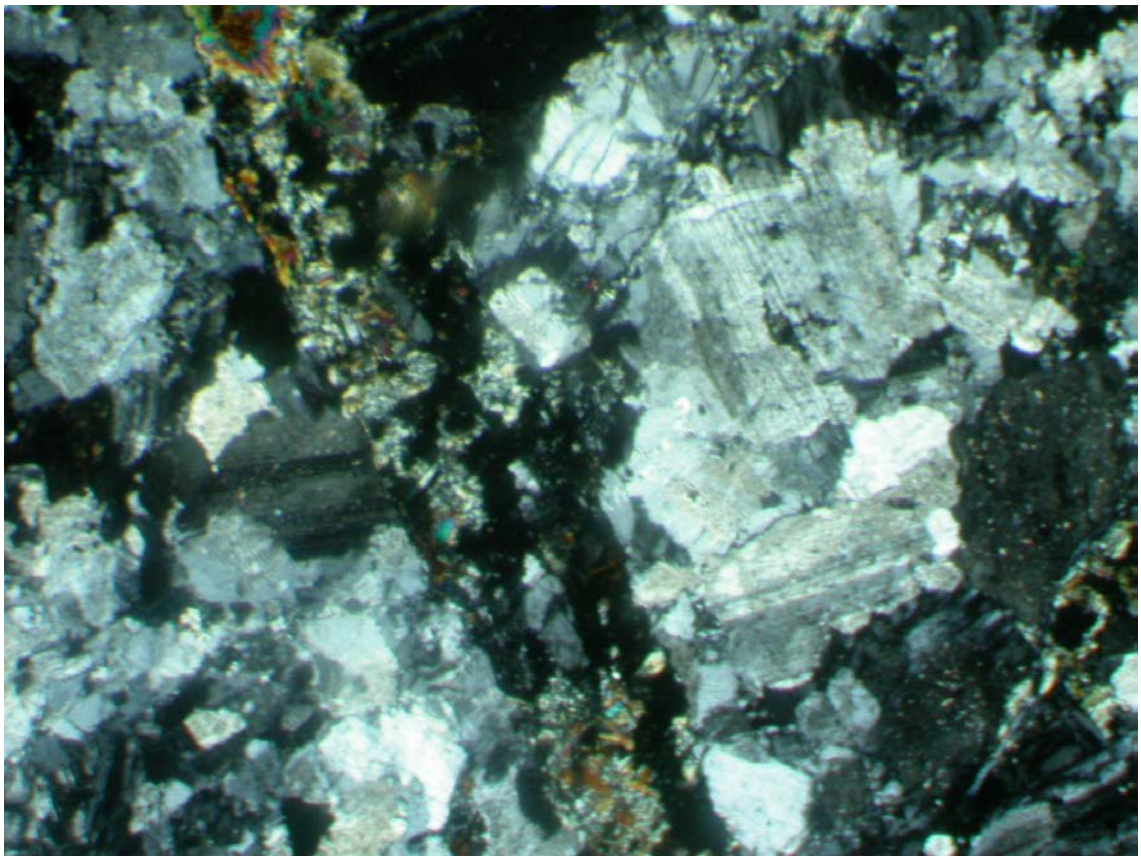


Figure 7. Thin section from sample no. 486508. Width of foto: 5 mm.

Locality: 14, Peninsula east of Akunnaat (Munkebugten**)** (Appendix A map B)

Sample GPS position: 60°42’931N 46°10’625W.

Sample no. 486511.

Many mafic dykes and several medium grained granitic irregular dykes cut the grey aplitic granite in the area (Fig. 8). This scenario makes the place less suitable for an aggregate quarry. But because of the logistic in the area (near Qaqortoq) we sampled 100 kg of the grey aplitic granite.

Figure 8. The grey aplitic granite east of Akunnaat.

Thin section description:
The crystals are fine- to medium-grained, anhedral and intergrown. The minerals are 50% quarts, 20% partly seritized plagioclase, 20% microcline and 10% green and brown biotite (Fig. 9).

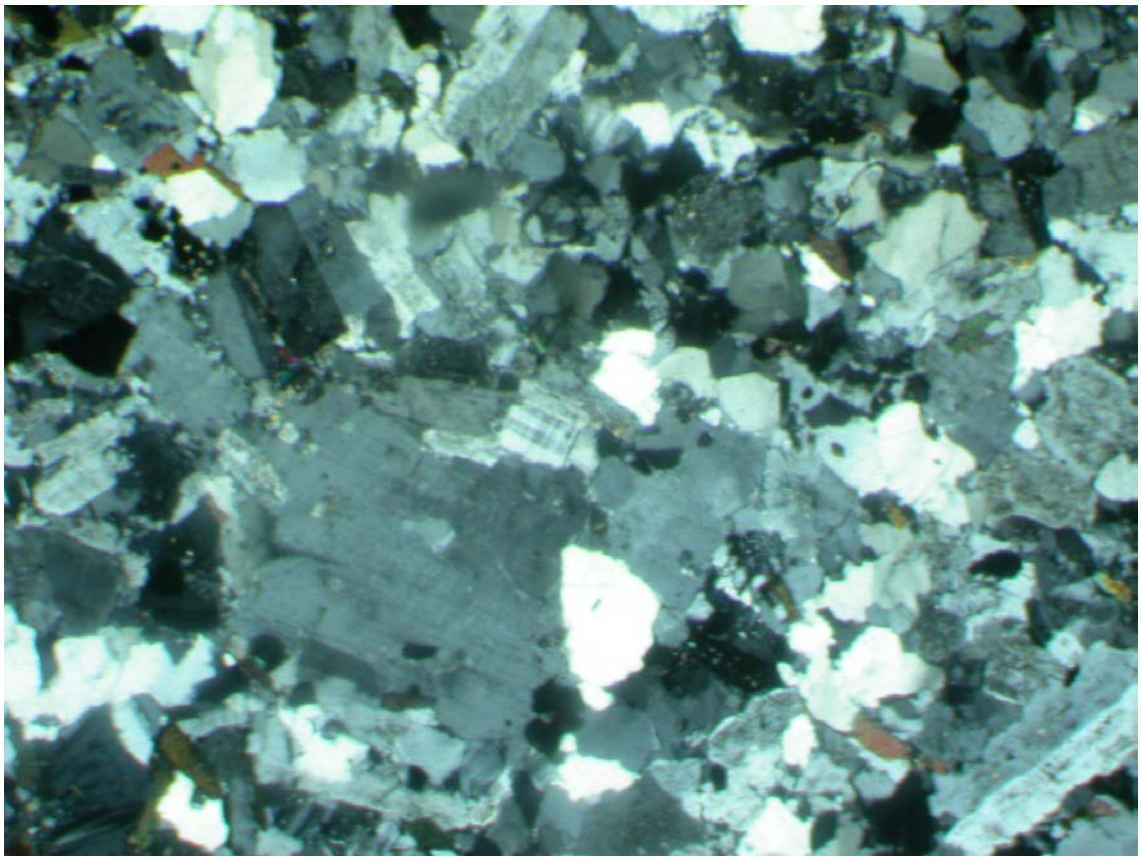


Figure 9. Thin section from sample no. 486508. Width of foto: 5 mm.

Locality: 15, South part of Kingittoq (Appendix A map B)

Sample GPS position: 60°42’883N 46°24’427W.

Sample no. 486512.

The rock type at the locality is a medium grained red granite and not, as expected from the map studies, an aplitic granite (Fig. 10).

100 kg of medium grained red granite is sampled for further testing.

Figure 10. Medium grained red granite at Kingittoq.

Thin section description:
The crystals are fine- to medium-grained, anhedral and intergrown. The minerals are 60% quarts, 15% seritized plagioclase, 15% microcline and 10% green biotite (Fig. 11)

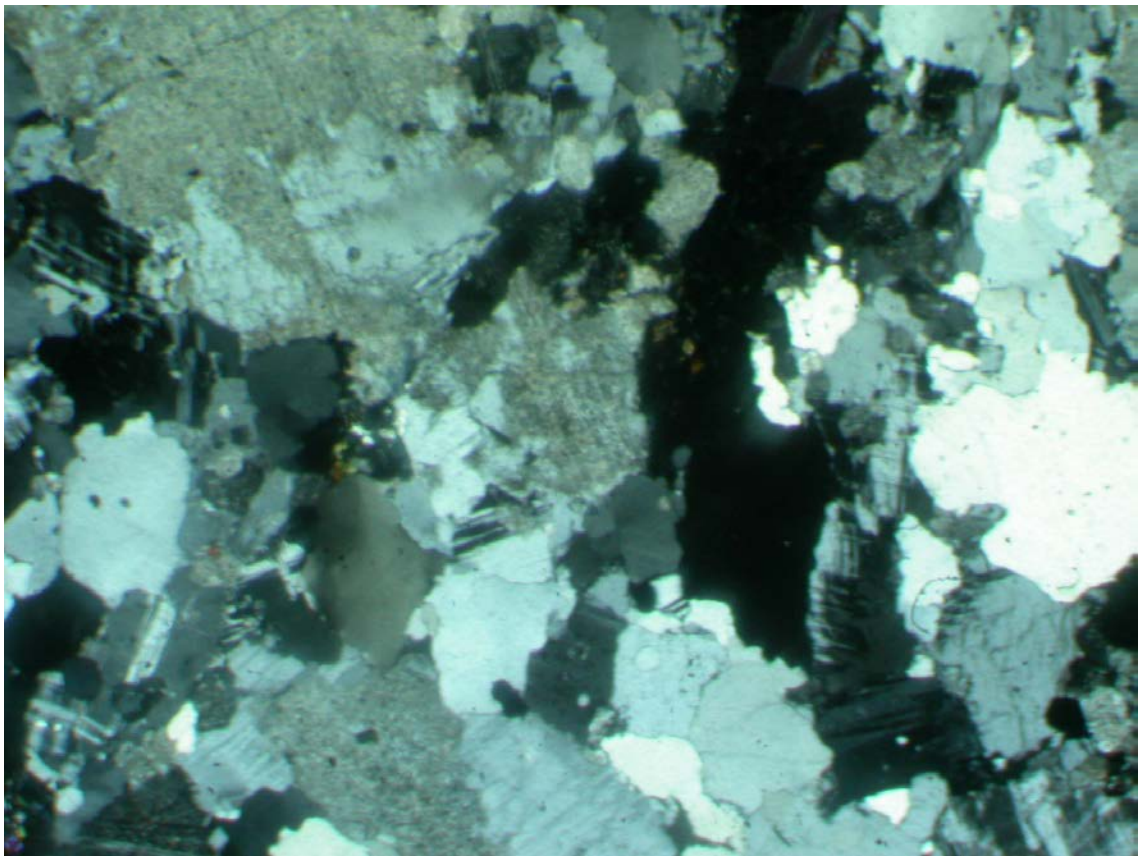
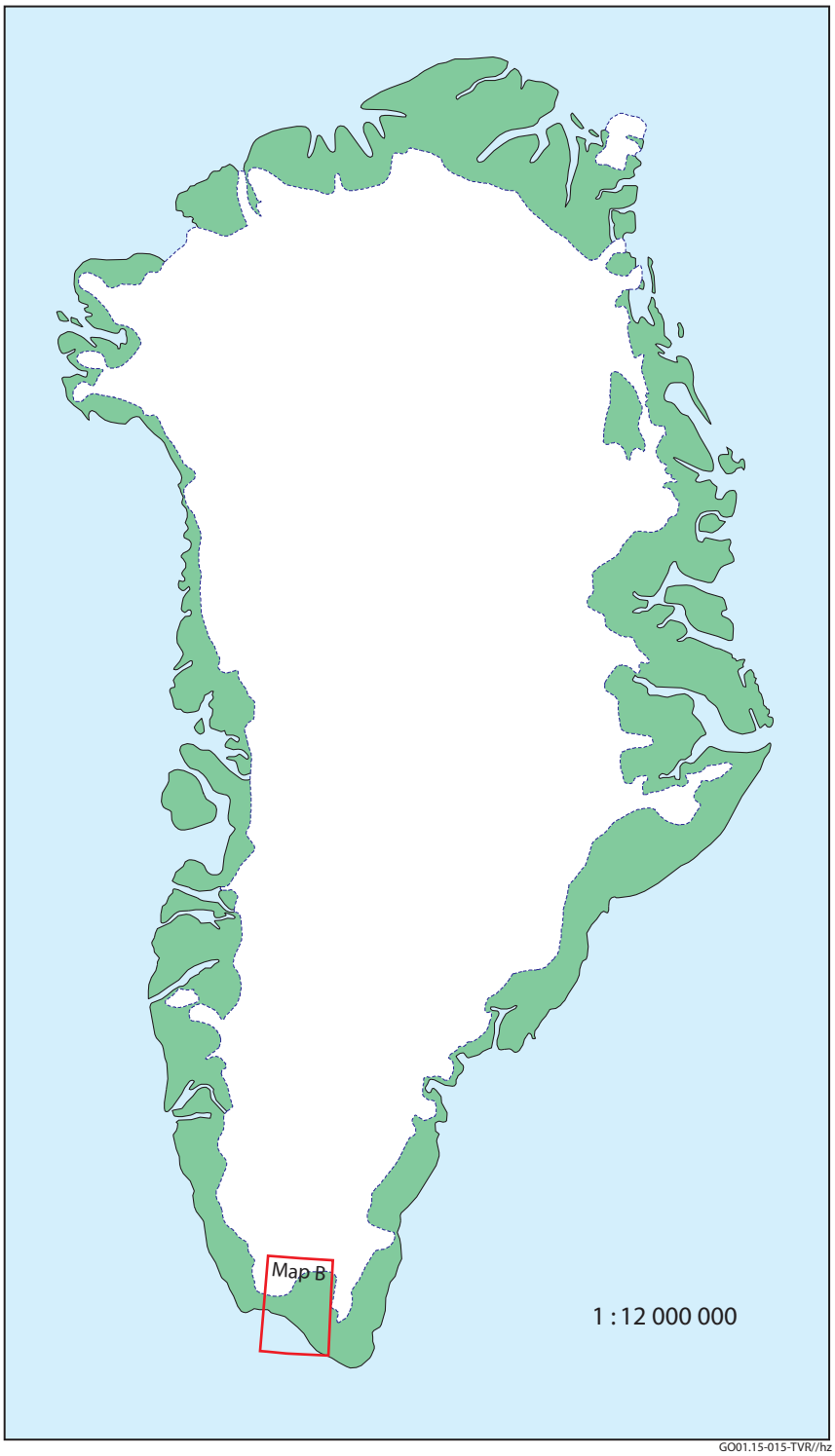
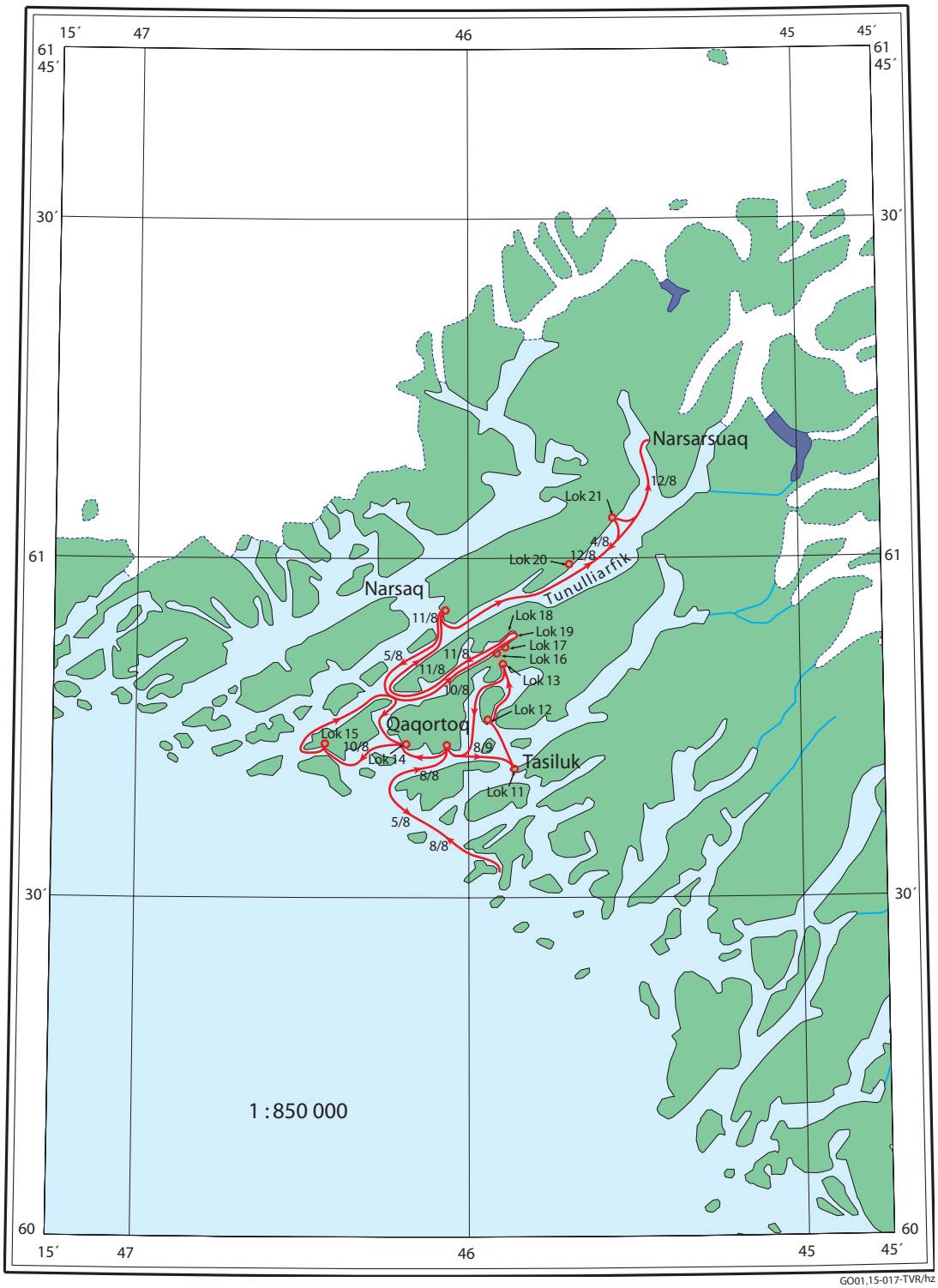


Figure 11. Thin section from sample no. 486508. Width of foto: 5 mm.

Appendix A. Index map of Greenland and local map B



Map. B



Routes, localities and date. 50 km